

This is the peer reviewed version of the following article:

PRELIMINARY FINDINGS OF A POTENZIATED PIEZOSURGICAL DEVICE AT THE RABBIT SKULL / Anesi, Alexandre; Palumbo, Carla; Ferretti, Marzia; Salvatori, Roberta; Cavani, Francesco; Chiarini, Luigi. - (2014). (22° Congress of European Association for Cranio-Maxillofacial Surgery (EACMFS) Praga (Repubblica Ceca) 23-26 September 2014).

Terms of use:

The terms and conditions for the reuse of this version of the manuscript are specified in the publishing policy. For all terms of use and more information see the publisher's website.

06/05/2026 03:55



EACMF5 2014



XXII Congress of the European Association for Cranio-Maxillo-Facial Surgery

Prague, Czech Republic
23-26 September 2014
Prague Congress Centre



Book of Abstracts



BOOK OF ABSTRACTS

**XXII Congress of the European Association for Cranio-Maxillo-Facial Surgery
23 – 26 September 2014 | Prague, Czech Republic**

Issued by Provided Service & Co. s.r.o., Vyhlídková 1420/6, Plzeň, Czech Republic
Reviewed by Peter Ramsay-Baggs, Assistant Editor, Journal of Cranio-Maxillo-Facial Surgery
Copyright © Provided Services s.r.o. | Text © Authors

Every effort has been made to faithfully reproduce the abstracts as submitted and other information as received. However, no responsibility is assumed by organizers for any misspelled data or misleading information within the submitted abstracts or other texts provided.

All Rights Reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means without permission in writing from the copyright holders.

ISBN 978-80-260-6781-8



Dear Congress Participants,
Dear Colleagues and Friends,

It was about 8 years ago when I was encouraged by John Lowry the past Secretary General of EACMFS, to apply along with Prague as a future congress location. What seemed a long time ago is finally now coming into reality, therefore it is my great pleasure to welcome you to the 22nd Congress of the European Association for Cranio-Maxillo-Facial Surgery in Prague.

Both the Organizing and Scientific Committees have been working hard on the congress and the scientific programme these past years.

The idea of "Europe. Look in the mirror" is behind the program outline, which appears different than previous EACMFS congresses. As an addition to the traditional associations, all national EACMFS member associations were asked to participate in the congress guest society sessions. In total, the final numbers include 22 guest societies accepted our invitation, 4 Past President Sessions, 4 Panel Discussions on hot topics with experienced speakers and moderators, 20 Masterclasses given by renowned experts, 35 Oral Sessions with about 330 oral presentations and an extensive E-poster session with 800 poster presentations.

E-posters have more impact compared to the evanescent flash of an oral presentation as all of them will be accessible online for the duration of one year after the congress in the Abstract Book E-publication. All authors were also encouraged to submit full papers for "Proceedings from the EACMFS 2014", another new feature of the digitalized era. Together with the Abstracts, the Proceedings are available on USB sticks given to all present participants.

This Abstract Book contains all abstracts accepted for the congress including the oral presentations and the posters evenly. I would like to thank both, the Organizing Committee and the Scientific Committee, all the reviewers, especially Peter Ramsay-Baggs for his involvement in reviewing all abstracts before being published.

On behalf of the Congress Organizing and Scientific Committees and the EACMFS Executive Committee I wish you an exceptional scientific meeting and an unforgettable stay in Prague.

MUDr. Daniel Hrušák, PhD.
XXII Congress President, EACMFS President 2012-2014



Table of Contents

<u>Presidential Lectures</u>	6
<u>Past President Sessions</u>	8
<u>Panel Discussions</u>	10
<u>Masterclasses</u>	15
<u>Guest Society Sessions</u>	25
<u>Oral Sessions</u>	

Tuesday, 23 September 2014

<u>1. Microsurgical Reconstruction in Head and Neck</u>	52
<u>2. Skull Base Surgery</u>	61
<u>3. Temporomandibular Joint Pathology and Surgery</u>	70
<u>4. Head and Neck Oncological Surgery</u>	81
<u>5. Reconstructive Surgery of Craniofacial Malformations & Cleft Surgery</u>	91
<u>6. Evidence Based Medicine</u>	100
<u>7. Orthognathic Surgery</u>	109
<u>8. Embryology and Prenatal Diagnosis of Craniofacial Malformations</u>	120

Wednesday, 24 September 2014

<u>9. Preprosthetic Surgery and Implantology</u>	129
<u>10. Head and Neck Oncological Surgery</u>	140
<u>11. Advanced Imaging and CAD / CAM Technology</u>	148
<u>12. Tissue Engineering and Cell Therapy</u>	157
<u>13. Prevention of Head and Neck Tumours</u>	165
<u>14. Reconstructive Surgery of Craniofacial Malformations & Cleft Surgery</u>	174
<u>15. Microsurgical Reconstruction in Head and Neck</u>	185
<u>16. Orthognathic Surgery</u>	194
<u>17. Evidence Based Medicine</u>	204
<u>18. Head and Neck Oncological Surgery</u>	214
<u>19. Surgery for Facial Paralysis / Craniomaxillofacial Traumatology</u>	222

Thursday, 25 September 2014

<u>20. Temporomandibular Joint Pathology and Surgery</u>	230
<u>21. Orbital, Paranasal Sinuses and Nasal Cavity Surgery</u>	240
<u>22. Obstructive Sleep Apnea</u>	246
<u>23. Preprosthetic Surgery and Implantology</u>	255
<u>24. Tissue Engineering and Cell Therapy</u>	266
<u>25. Advanced Imaging and CAD / CAM Technology</u>	275
<u>26. Reconstructive Surgery of Craniofacial Malformations & Cleft Surgery</u>	286
<u>27. Microsurgical Reconstruction in Head and Neck</u>	295
<u>28. Head and Neck Oncological Surgery</u>	303



Friday, 26 September 2014

<u>29. Rhinoplasty and Otoplasty / Salivary Glands - Minimal Invasive Surgery and Pathology</u>	311
<u>30. Bisphosphonate Related Disease of the Jaws</u>	321
<u>31. Temporomandibular Joint Pathology and Surgery</u>	331
<u>32. Orthognathic Surgery</u>	340
<u>33. Advanced Imaging and CAD / CAM Technology</u>	350
<u>34. Reconstructive Surgery of Craniofacial Malformations & Cleft Surgery</u>	360
<u>35. Craniomaxillofacial Traumatology</u>	369

E-poster Session

<u>1. Embryology and Prenatal Diagnosis of Craniofacial Malformations</u>	376
<u>2. Reconstructive Surgery of Craniofacial Malformations & Cleft Surgery</u>	394
<u>3. Orthognathic Surgery</u>	493
<u>4. Head and Neck Oncological Surgery</u>	583
<u>5. Prevention of Head and Neck Tumours</u>	706
<u>6. Chemotherapy and Radiation in Head and Neck Oncology and Metastatic Disease</u>	729
<u>7. Microsurgical Reconstruction in Head and Neck</u>	760
<u>8. Surgery for Facial Paralysis</u>	822
<u>9. Structural Fat Grafting - 25 years of experience</u>	836
<u>10. Skull Base Surgery</u>	845
<u>11. Orbital, Paranasal Sinuses and Nasal Cavity Surgery</u>	847
<u>12. Rhinoplasty and Otoplasty</u>	883
<u>13. Salivary Glands - Minimal Invasive Surgery and Pathology</u>	888
<u>14. Temporomandibular Joint Pathology and Surgery</u>	914
<u>15. Preprosthetic Surgery and Implantology</u>	956
<u>16. Bisphosphonate Related Disease of the Jaws</u>	1007
<u>17. Obstructive Sleep Apnea</u>	1030
<u>18. Tissue Engineering and Cell Therapy</u>	1040
<u>19. Advanced Imaging and CAD / CAM Technology</u>	1072
<u>20. Evidence Based Medicine</u>	1104
<u>21. Craniomaxillofacial Traumatology</u>	1160
<u>22. Craniomaxillofacial Varia</u>	1293



Presidential Lectures

PL-1

A TRIBUTE TO PROFESSOR FRANTIŠEK BURIAN

Miroslav Tvrdek, Miroslav Fára†

Department of Plastic Surgery, 3rd Medical faculty, Charles University in Prague, Czech Republic

Czech lands can be proud of many doctors, who significantly raised the level of their fields and who are included not only at home but also internationally among highly recognized personalities, in the 19th and 20th century.

Among these medical giants one of the pioneers of plastic surgery, prof. František Burian occupies the place of honor not only in Czechoslovakia but in Europe, who in the second decade of the 20th century initiated a new field of plastic and reconstructive surgery. As a first person in the world, he achieved the recognition of the plastic surgery as an independent surgical speciality.

He helped its prime in the multilateral use. He was a person with a broadly prominent surgical skills as well as inventiveness in introducing new surgical techniques, but he was also a painter, an expert in human psyche, linguist and organizer.

Virtually, one generation earlier than in the majority of European and American advanced countries, he raised our field to a high level for the benefit of a wide community.

Thereupon after his death in 1965 academician Burian left a legacy which fully, according to his intentions, allowed us to strive for the advancement in the treatment, the development and complex care of our patients.

PL-2

KUFNER'S INFLUENCE TO THE MANAGEMENT OF FACIAL DEFORMITIES

Timothy A. Turvey

Department of Oral and Maxillofacial Surgery, University of North Carolina, USA

Professor, MU Dr. Josef Kufner, DrSc (October 28, 1924 – July 31, 1995) was a man of extraordinary skills who dedicated his life to helping the facially handicapped. A military surgeon, his interest spanned missile injuries, burns, fracture treatment, tumor surgery, reconstruction, etc. to the orthopedic procedures necessary to restore form and function to the facially malformed and deformed. He had interest in implants, transplants and oral rehabilitation as well. He was influenced and stimulated by the works of some of the greatest maxillofacial surgeons of the post-World War II era including: Schuchardt, Schmid, Pickler, Pfeiffer, Obwegesser, Cohn-Stock, Gilles, Rowe, Wunderer, Wassmund, Trauner, Köle, Tessier, etc. and he made every attempt to develop and promote maxillofacial surgery in the Czech Republic and other countries including Cuba and Kuwait.

Educated in post-World War II Prague, he was arrested and persecuted for his anti-fascist activities. After completing medical school in 1950, he spent time in the Department of Stomatology in Pilsen and later returned to Prague. He was fortunate enough to be guided by Professors Urban, Toman and Burian and assisted Burian with an early attempt to mobilize the midface (1958). His early interest in segmental osteotomies was apparent and in 1960 he published a modification of Schuchardt's posterior maxillary osteotomy which simplified the procedure and reduced treatment time. He was awarded a scholarship to train in Zurich with Professor Obwegesser in 1968 where he also met Professors Steinhäuser, Perko and Freihoffer (1968). Along with Professor Urban, Kufner established the Department of Maxillofacial Surgery at the Central Military Hospital in Prague in 1956. He later became Head of this Department until 1977. In 1971 he became the Chairman of Stomatological Unit at the University Hospital in Prague and in 1977 he succeeded Professor Urban at



the Second Stomatological Clinic of the General University Hospital in Prague. During the mid-1960s Kufner established a maxillofacial department in Kuwait.

Czechoslovakia was under siege by the Soviet and Warsaw pact soldiers in 1968 when Kufner completed fellowship in Zurich. He was convinced to return to his homeland with new and fresh ideas. It isn't clear if he was coerced to return to Czechoslovakia or if he returned voluntarily. In either case, he was not imprisoned or persecuted by the government. Desertion from a Soviet Country at that time was a very serious crime.

Proficient enough to publish in 6 languages, Kufner shared his expertise and experiences in his native Czech, German, English, Russian, French and Spanish.

In 1968 Kufner also published more details on the posterior maxillary osteotomy on 18 patients. In the early 1970's he published a seminal article on experiences with high level mid facial advancement. Although this was 3 years after Tessier's description of LeFort III osteotomy, he had accumulated experience on 64 patients.

The country of Cuba which is isolated and is 90 miles from the southern tip of the U.S. has a sophisticated level of maxillofacial surgical expertise, especially in comparison to other neighboring islands which are not as isolated. Although it is not known if Kufner ever visited the island, some of his publications were written in Spanish and were directed to the Cubans. It is fair to say that his work was influential in the development of craniomaxillofacial surgery in Cuba and in Kuwait.

Why Kufner didn't publish or present at international venues after 1977 is not obvious. Perhaps, like all of us, he became absorbed by his work and increasing responsibilities. What is clear is that his contributions to craniomaxillofacial surgery worldwide were significant and allowed the next generation of surgeons to build on the foundations of knowledge and experience that he established.



Past President Sessions

PP-1

RHINOPLASTY: FUNCTIONAL AND AESTHETIC APPROACHES

Guillermo Raspall

University San Pablo, Spain

Beauty is based in harmony.

We may consider facial beauty as the result of an harmonic proportion between its different parts, specially the middle and the inferior facial third.

A disharmonic face should be meticulously studied, to identify dentofacial and/or nasal deformities, because it is not so strange to find both deformities in the same patient.

Rhinoplasty may be defined as the art of correcting nasal deformities.

Rhinoplasty should be considered as the most difficult of all cosmetic surgical procedures due to 3 main reasons:

1. The high variability of nasal anatomy
2. Both nasal form and function must be corrected
3. The final result must achieve patient's expectations

Functional and aesthetic rhinoplasty is reviewed in this presentation.

PP-2

REPARATIVE & REGENERATIVE THERAPY IN FACIAL RECONSTRUCTIONS. BACKGROUND, PRINCIPLES, CLINICAL APPLICATIONS

Luigi C. Clauser¹, Francesco Carinci¹, Barbara Zavan²

¹*Cranio Maxillo Facial Surgery, Hospital & University, Ferrara, Italy*

²*Department of Biomedical Sciences, University of Padova, Italy*

The emerging field of regenerative medicine will require a reliable source of stem cells in addition to biomaterial scaffolds and cytokine factors. Adipose tissue represents an abundant and accessible source of adult stem cells with the ability to differentiate along multiple lineage pathways.

Tissue engineering and regenerative medicine is a multidisciplinary science that has evolved in parallel with recent biotechnological advances. It combines biomaterials, growth factors and stem cells.

The adipose derived stem cells (ADSC) have the same characteristics of mesenchymal stem cells (MSC) residing in bone marrow. They have the same cell surface markers and are capable of differentiating into the same cell types, including osteoblasts, chondrocytes, myoblasts, adipocytes, and neuron-like cells.

The development of adipose tissue-engineering strategies requires investigation of all key aspects of the tissue engineering process.

Evidence exists that stem cells contribute to the restoration of tissue vascularization and organ function. For these reasons, adipose tissue represents a potential clinical use for cellular therapy, tissue engineering, and gene transfer applications in regenerative medicine

The current state of the art in adipose tissue engineering as well as the clinical applications in reconstructive facial surgery will be discussed.



PP-3

FACELIFT WITHOUT INTUBATION – KEYSTONES

Maurice Yves Mommaerts

European Face Centre - MKA dienst, Universitair Ziekenhuis Brussel, Belgium

PO or IV "twilight" sedation

Local anesthesia with Withacre spinal needle and "suprawet" technique

Microliposuction of the jowls

Low suspension with Quill™ knotless sutures

Ear lobe control and respect for tragal morphology

Scar reduction by beveled and scalloped incision

PP-4

NECK DISSECTION: WHEN, HOW AND WHY

Mišo Virag¹, Luiz Paulo Kowalski²

¹*Center for expert medicine, Zagreb, Croatia*

²*Centro de Tratamento e Pesquisa Hospital do Câncer A C Camargo, Fundação Antonio Prudente, São Paulo, Brazil*

The classical neck dissection was described by George Crile and published initially in 1905. In 1906, his landmark article was published in JAMA comparing 36 patients having undergone "radical block dissection" and 96 that did not have "radical block dissection". Among patients with a follow up of at least 3 years the survival was 75% vs. 19%.

However, it was almost 50 years later that the operation was popularized by Hayes Martin and became a standard method around the world.

The levels of lymph node metastasis were defined at Memorial Sloan-Kettering Cancer Center; Level I being the submandibular lymph nodes; Level II, III, and IV along the jugular vein, high, mid, and low; Level V lymph nodes in the posterior triangle of the neck; and Level VI lymph nodes in the paratracheal area. Studies of lymphatic tumor spread (Lindberg, Shah) have shown a predictive pattern of lymph node metastases to certain levels allowing less than radical neck dissection especially in cases of elective neck dissection. This was the basis of neck dissection classification: radical, modified radical, selective and extended neck dissection.

Radical neck dissection remains the basic surgical treatment of the neck. From there on we will discuss oncologic implications and indications of the types that are used today.

A modified neck dissection became very popular and has now become a common operation and the standard of care for the majority of patients with head and neck cancer. In spite of this, there is still a significant place for radical neck dissection and even extended neck dissection in patients with advanced metastatic tumor to the neck.

The extended neck dissection is reserved for select circumstances in patients with bulky nodal disease or involvement of the platysma, skin, or carotid artery. Dissection of the retropharyngeal nodes is very seldom described (or performed) but also has a role in a series of patients. Lymphadenectomy beyond the neck (level VII, axilla) will also be described.

New guidelines were continuously changed by new proposals for surgery after adjuvant or curative radio- and/or chemotherapy.

The experience gained from head and neck melanoma has been extended to the mucosal tumors and sentinel node biopsy for the mucosal tumors of the head and neck has gained academic interest. Current experience is limited and the question is whether a selective neck dissection is a more realistic option.

All these techniques have their place, specific indications and limitations. The surgeon must know them and choose for the best sake of the patient.



Panel Discussions

PD-1

FACIAL TRANSPLANTATION

Moderator:

Alexander Schramm

Universitätsklinikum Ulm, Germany

Panelists:

Bernard Deavauchelle

Department of Maxillo Facial surgery, University Hospital, Amiens, France

Sylvie Testelin

Department of Maxillo Facial surgery, University Hospital, Amiens, France

Eduardo D. Rodriguez

Institute of Reconstructive Plastic Surgery, NYU Langone Medical Center, New York, USA

Jean Paul Meningaud

Henri Mondor Hospital, Créteil, France

Adam Maciejewski

Department of Onc. Surg Cancer Centre M.C.S. Institute, Gliwice, Poland

Since the first facial transplantation on 27 November 2005 by Bernard Devauchelle and his team in Amiens, France, further procedures have been performed in China, France, Turkey, USA, Spain and Poland.

Until today 27 patients with postraumatic injuries, burns and malformations have been operated with facial transplantation.

This treatment caused considerable debates at the time concerning the ethics of this procedure, since an alternative to a face transplant is facial reconstruction.

In this panel the world leading experts in this field will discuss the following key questions:

- What are the indications for facial transplantation, why not facial reconstruction in these cases?
- What is needed to build up a team for this complex treatment and which are the specialties to be involved?
- What are the limiting factors/ risk factors to be addressed?
- What are the contraindications for facial transplantation?



PD-2

TMJ SURGERY

PHYSIOLOGY AND FUNCTION OF THE TMJ ARTICULAR DISC

Dušan Hirjak

Department of oral and maxillofacial surgery, Comenius University, Bratislava, Slovakia

LAVAGE AS THERAPEUTIC METHODS FOR DISCOPATHY OF THE TMJ

Vladimír Machoň

Charles University in Prague, Dept of Oral and Maxillofac Surgery, Prague, Czech Republic

DISC REPOSITION. ARTHROSCOPICAL METHODS AND OPEN SURGERY

Salvatore Sembronio

Maxillofacial Department, S. Maria degli Angeli Hospital, Pordenone, Italy

The most common temporomandibular joint disease is disk displacement and clinically this condition is characterized by variable articular pain and limited mouth opening. Many surgical techniques have been proposed, such as minimally invasive surgery (arthrocentesis and arthroscopy), open TMJ surgery and extra-articular procedures (condylotomy).

A philosophy, supported by the literature, is that of having to proceed in the choice of surgical procedure, for degrees of invasiveness, choosing the least invasive and passing to the subsequent more invasive procedures only if they had a previous negative result. Although the majority of patients with temporomandibular joint disorders benefit from conservative treatment or arthrocentesis or arthroscopy, there is a small number of patients who do not respond to these minimally invasive therapies, and therefore it is recommended to perform open surgery for pain control and to improve function.

The open joint surgery includes all surgical procedures performed through the surgical opening of the joint (arthrotomy). There are mainly two types of surgical procedures: the techniques of disk repositioning and removal of the same disk (discectomy).

The importance of the disk and its position has been debated, as well as surgical procedures that aim to recover the disk displacement or that aim to remove the disk.

The Author reports his experience in open TMJ surgery discussing indications and limitations of the surgical procedures. The Author finally suggests a surgical protocol to manage internal derangement of temporomandibular joint.

DISCECTOMY. METHODS FOR DISC REPLACEMENT.

David Psutka

Mount Sinai Hospital, TMJ Reconstructive Surgery Unit, Toronto, Canada



PD-3

ADVANCED BONE SURGERY

INTRODUCTION - PIEZOSURGERY IN COMBINATION WITH MODERN PLANNING AND IMAGING TOOLS IN ORAL MAXILLOFACIAL SURGERY

Rainer Schmelzeisen

Medical University Freiburg, Germany

Today piezosurgical technics have been developed to a standard procedure in Oral and Maxillofacial Surgery. Experimental results have shown, that in the proximity of peripheral nerves injury is less likely using piezosurgical methods compared to traditional round burs. However in a clinical study on nerve lateralization, injury patterns using both methods are similar and may reveal additional reasons for sensitivity disorders. Piezosurgical techniques allow precise atraumatic bone preparations in demanding areas. The combination of piezosurgery with computer aided planning and (intraoperative) imaging procedures is a field that will be further developed. In sinus augmentations, piezosurgery can add further precision and reduce likeliness of perforations of the sinus membrane. In combination with endoscopic techniques, septae can be removed by piezosurgery, hidden perforations can be detected. For orthognathic surgery, piezo surgery reduces the risk of nerve injuries and can be combined with endoscopy for a better visualization. Additionally piezosurgery tips can be tracked with navigation and contribute to minimal invasive application of osteotomies, for example in maxillary expansion and mandibular osteotomies. Combined applications of pre-operative computer planning, navigation, intraoperative imaging and piezosurgery allow for removal of benign bone tumors medial to the condylar head at the skull base avoiding external approaches with possible facial nerve injuries. In Eagle Syndrome, pre-operative computer planning, endoscopy and piezosurgery facilitate a keyhole approach to the styloid process. With clinical examples the widespread use of piezo especially in combination with modern computer planning and imaging techniques will be demonstrated.

CRANIO-MAXILLO-FACIAL PIEZOELECTRIC SURGERY: A NEW CONCEPT ABOUT 10 YEARS OF EXPERIENCE

Jean-Luc Béziat

University Lyon EST, France

The appearance of the piezoelectric bone section has revolutionized not only our conception of bone section but also our conception of surgery. In a first time, piezosurgery was used simply as a tool replacement of mechanical section. It indeed provides a more accurate and less dangerous section than the other instruments because it respects the soft parts. But quickly, it became apparent that it also allowed to carry safe osteotomies without full use of the hammer, so without any aggressive manipulations. Thus, it appeared that its use should be accompanied by a complete change in operating procedures. This was particularly true in the main areas of cranio-maxillo-facial surgery in which the use of the Piezosurgery® technology represents a considerable progress. Full use of the piezosurgery requires changing not only instruments but changing all our surgical practice.

PIEZOSURGERY IN MAXILLO & CRANIO-ORBITO-FACIAL AREA

Luigi C. Clauser

Cranio Maxillo Facial Surgery, Hospital & University, Ferrara, Italy

Traditionally, a variety of surgical tools like saws, drills and osteotomies have been used in cranio and orbito-maxillo- facial surgery. Cranio, orbito and maxillofacial osteotomies risk injury to the adjacent structures and soft tissue. The piezoelectric system (PES) is a relatively new surgical device that was first introduced in 2000 by the Italian Tomaso Vercellotti in oral and dental-implant preprosthetic surgery. The system uses microvibrations at a specific frequency range in the order of 20 to 30 kHz to



cut mineralized tissue selectively, thus sparing surrounding soft tissue. Since its introduction, PES has been used in a variety of surgical fields, including neurosurgery, hand, otologic and facial reconstructive surgeries (craniofacial, orbital-periorbital, orthognathic, distraction osteogenesis, and bone harvesting). The potential benefits of PES are particularly helpful in cranio-orbital surgery because of minimal damage to the surrounding soft tissue, improved visualization and optimal bone healing. Longer operation time has been reported as a limit in orthognathic surgery. This is probably due to larger bone volume in mandibular osteotomies compared with the thin orbital and periorbital bones. In any case postoperative recovery is faster when using PES. Piezosurgery also requires a short learning curve and adequate dexterity. The aim of this presentation is to describe the use of the piezoelectric ultrasonic device particularly in the upper maxillo & orbito-cranio facial area.

SURGICAL OPTIONS IN THE TREATMENT OF THE SEVERE MAXILLARY ATROPHY: ZYGOMATIC IMPLANTS VERSUS 3D RECONSTRUCTIONS

Pier Francesco Nocini

Department of Surgery of the University of Verona, Verona, Italy

Edentulous patients suffer from a severe functional and aesthetic deficit. The complete absence of teeth is constantly associated with anatomical changes to both skeletal and perioral soft tissues. The modern approach of the oral-maxillo-facial surgeon to total edentulism is based on a meticulous clinical examination of the patient from the occlusal, skeletal and aesthetic point of view. This kind of approach allows the elaboration of a treatment plan focusing primarily on the functional rehabilitation of edentulism in terms of chewing, swallowing and speech, and secondly on the correction of all the oral dysfunctions associated to an unpleasant aging effect of the face. The bony reconstruction of the upper jaw has represented for a long time one of the main surgical challenges in the patient suffering from severe atrophy. Traditional bony reconstruction techniques based on osteotomies and inlay-onlay bone grafts are still considered the gold standard in this field, though requiring remarkable efforts to both the clinician and the patient. Zygomatic implants are an outstanding alternative technique overcoming the traditional problems encountered in bone grafting, and their use is becoming widespread also in the field of atrophy rehabilitation. The use of new materials and new technologies, such as zygomatic implants, allow today a complete functional and aesthetic rehabilitation with a minor morbidity rate.

PD-4

PHOTODYNAMIC THERAPY – NEW HORIZONT IN TREATMENT OF PREMALIGN AND MALIGN LESIONS. WHERE WE ARE?

EFFECTIVENESS AND CURRENT INDICATIONS OF PHOTODYNAMIC THERAPY IN HEAD & NECK CANCER

Max J.H. Witjes

Dept. of Oral & Maxillofacial Surgery, University Medical Center Groningen, The Netherlands

Since the introduction of photodynamic therapy (PDT) in 1978 as a new treatment for cancer, the field of „optical diagnostics and therapy“ continues to develop at a rapid pace. In PDT, a topically applied or intravenously administered light sensitive drug, a so called photosensitizer, is activated by use of an appropriate light source. As a result, reactive oxygen species are formed which results in necrosis of the target tissue by direct cell kill and induced vascular shutdown. After more than 35 years of research and clinical use, the field of PDT has matured and clinical indications have been established. Currently, two clinical applications of PDT in Head & Neck cancer can be identified.

Palliative treatment of H&N squamous cell carcinoma: In the EU, mTHPC (Foscan) is approved for palliative treatment of patients suffering from incurable Head & Neck cancer. Several studies demonstrated PDT with palliative intent was predominantly used in patients unsuitable for further



conventional treatment. After PDT, substantial tumor response leading to prolonged survival (average 7 months) and increase in quality of life was observed.

Curative treatment of early micro-invasive H&N carcinoma: Pooling of data (n = 301) from 6 published studies of PDT with curative intent showed complete response rates of 86% for T1 oral cavity tumors and 63% for T2. Furthermore comparison with our surgical database showed that surgery performs slightly better than PDT for T1 tumors (not significant), while for T2 tumors PDT performs clearly worse. No significant differences in overall survival between surgery and PDT were observed. In future, focus should be on the morbidity since clinical observations show that PDT patients show less long term morbidity than surgically treated patients.

MINIMAL INVASIVE SYSTEMIC PDT FOR POORLY ACCESSIBLE TUMOURS

Mathias von Beckerath

Örebro University Hospital, Center for Head and Neck Oncology, Örebro, Sweden

In the head and neck area tumors are normally treated with surgery, radiation therapy or a combination of both. There are however instances when the conventional therapies are less suitable.

At the Örebro University Hospital we have treated patients in the head and neck area with photodynamic therapy (PDT) for many years and have found good use of it as an addition to our treatment arsenal. The therapy is particularly useful in hard to reach areas, when other therapies have failed and, as it seems, for some sarcomas.

A study of the photodynamic treatment of both primary and recurring tumors in the larynx shows a comparable outcome compared to other therapies and the therapy is also organ and function sparing. PDT requires a sensitizer, oxygen and light of a specific wavelength. For the light (laser) to be able to reach some areas and depths we are using an interstitial technique that can be placed and guided by CT, ultrasound or navigation instruments. These techniques and results will be presented.

TOPICAL PHOTODYNAMIC THERAPY OF PREMALIGNANT LESIONS IN ORAL CAVITY. CHALLENGES AND OPPORTUNITIES

Roman Šmucler

First faculty of Medicine in Plzen, Charles University, Czech Republic

Aim of this lecture is to demonstrate new possible and promising method in treatment of pre-malignant lesions in oral cavity, topical photodynamic therapy (tPDT). Photodynamic therapy (PDT) is not new method; first use in oncology is known from Ancient Egypt, modern science started in this field in first decade of twentieth century. Systemic Photodynamic therapy (sPDT) is approved method for many premalignant or malignant lesion in head and neck region, mostly with temoporfin (Foscan), but many other new drugs are waiting in pipeline. They are two main limitations of sPDT: Systemic photosensitization of whole body and costly and time-consuming protocol. Those obstacles made this procedure very rarely indicated in Europe, mostly in position of infrequent alternative.

tPDT changed dermatology in last years and it is method of choice for most common cancer, superficial basal cell carcinoma. We can see many more experiments with multiple other indications (actinic keratosis, nodular basal cell carcinoma, carcinoma in situ, acne...). This procedure takes only hours (not days like sPDT), it is cheaper and safer. It is hot topics with multiple new photosensitizers, irradiation techniques and pre-treatments. Why not use this simple technique in oral cavity, which is easy to access as skin? Main problem is proper incubation in aggressive oral environment, another challenge is regular irradiation of mouth in some difficult to access areas (under tongue for example). We prepared some different formulas of aminolevulinic acid or temoporfin for this application in special adhesive gel in last years. We are testing this method on model of oral leukoplakia, which is recommended to remove but we have no imminent problem in case of recurrence, like in case of cancer. We want to show some of our promising results as well as complications to open this field for oral surgery, because we think, that tPDT has potential to change it forever as we see it in dermatology today.



Masterclasses

M-1

STANDARD APPROACHES TO FLAP RAISING

Klaus-Dietrich Wolff

Klinikum rechts der Isar, Maxillofacial Surgery, Munich, Germany

The aim of the masterclass is to describe development, indications, anatomy, and advantages and disadvantages of routinely used standard flaps. The complex surgical procedure of flap raising will be split up into simple steps, making it easier to end up every operation successfully. Although various techniques, strategies, and approaches have proven useful at the different donor sites, we will focus solely on one standard procedure for each flap. These standard procedures represent the best combination of safety, simplicity, and reliability and can be varied or expanded as soon as the surgeon has gained more experience. Instruction on flap raising is given by anatomical photographs, schematic drawings, and videos. If time allows, we also will also demonstrate the raising of a perforator flap.

M-2

UNILATERAL CLEFT OF LIP, ALVEOLUS, AND PALATE - CLASSIFICATION, DETAILS, SURGICAL TECHNIQUES AND POSTOPERATIVE RESULTS

Karsten K. H. Gundlach

Dept. of Oral and Maxillofacial Plastic Surgery, Rostock University, Rostock, Germany

This masterclass will touch upon 6 major topics relevant for surgeons taking care of patients with a cleft and will offer conclusions based - among others - on 11 different scientific studies from our institutions:

1. Why and how to classify craniofacial anomalies and clefts according to morphogenetic, i. e. embryogenetical criteria rather than according to anatomical criteria.
2. Why several cleft centres are believing in presurgical orthodontic therapy using a passive HOTZ' plate with or without nasoalveolar molding and how to do it.
3. Why we prefer PFEIFER's waveline procedure for labioplasty and how to do it.
4. Why so many cleft centres are so sure that osteoplasty for the alveolar cleft in infants is detrimental.
5. Why we still adhere to two-stage palatoplasty (i. e. why we prefer to close the hard palate not too early) and are applying VON LANGENBECK's technique when ever possible.
6. Lastly, why dental implants often are a great therapeutic option for cleft patients.

M-3

PRE-IMPLANTOLOGICAL AUGMENTATION SURGERY; STATE OF THE ART

Eppo B. Wolvius, Maarten Koudstaal

Department of Oral and Maxillofacial Surgery, Erasmus Medical Center, Rotterdam, The Netherlands

For optimal implant placement sufficient bone is absolutely mandatory to achieve excellent esthetic and functional outcome. In this masterclass the following topics are addressed: indication for bone augmentation from severe atrophic mandible/maxilla to small dehiscence around implants seen at



implant placement, several options to harvest autogenous bone intra-orally or extra-orally, sinus elevation procedure with alloplastic versus autogenous materials, short implants as serious alternative for sinus elevation. Complications are demonstrated to learn and to avoid next time. In 90 minutes these topics are covered with enough time for interactive discussion.

M-4

OVERVIEW OF TMD, MANAGEMENT WITH MINIMALLY INVASIVE INTERVENTIONS

Reha Kisnisci

Ankara University, Ankara, Turkey

Temporomandibular joint and related structures may be adversely affected resulting in a wide range of morbidities. The cascade of events predispose disruption of articular disc relationship with glenoid fossa, articular eminence and condylar head that lead to restricted condylar movements with or without pain. Failed management with non-surgical treatments may necessitate surgical interventions. Arthrocentesis is a minimally invasive treatment to improve the symptoms effectively albeit without intraarticular viewing hence lacking controlled manipulations whatsoever. On the other hand arthroscopy yet another minimally invasive intervention can also be beneficial in several temporomandibular symptoms and may even obviate the need of open arthrotomy or arthroplasty which were more commonly practiced surgical treatment and currently needs to resorted unless for intractable and refractory cases. In addition muscular involvement either as the initiative source or in conjunction with intra-articular derangements can complicate the diagnosis, management and patient satisfaction accordingly. This masterclass will be focused on above minimally invasive modalities, pros and cons, commonly executed techniques and comparisons.

M-5

RECONSTRUCTION OF FACIAL DEFECTS

Eduardo D. Rodriguez

Institute of Reconstructive Plastic Surgery, NYU Langone Medical Center, New York, USA

Over the last several decades there have been numerous advances in the fields of aesthetic, craniofacial, and microsurgery. Aesthetic units are no longer „skin deep“, but are recognized as being comprised of both soft and hard tissue. Microsurgical reconstruction may be performed with a number of flap options depending on the location and include the fibula, anterolateral thigh, ulnar, groin, iliac, radius, and vastus lateralis flaps. In addition, revisionary procedures including suction lipectomy, dermabrasion, tissue re-suspension, and cutaneous flap excision followed by full thickness skin grafting or tissue rearrangement have become necessary to achieve the desired result.

To achieve aesthetically pleasing results in free flap facial reconstruction, seven critical concepts are defined to guide the reconstruction: aesthetic unit appearance, defect boundaries, tissue requirements, vascularized skeletal buttress framework, ample soft tissue volume, early reconstruction, and local revisional procedures.



M-6

KUFNER'S MODIFIED LEFORT II OSTEOETOMY: A VERSATILE OPERATION FOR SELECT INDICATIONS

Timothy A. Turvey

Department of Oral and Maxillofacial Surgery, University of North Carolina, USA

In 1971 Kufner published an operation that he developed to improve midface deficiency including the maxilla, cheeks, inferior orbital rim and floor. The operation design was unique and it reflected the influence of Burian, Obwegesser, Tessier, Wassmund, Gilles, etc. whom he referenced. The procedure was conducted on animals and cadavers prior to humans.

The specific indications for this procedure are midface deficiency extending to the orbit to the extent that there is excessive scleral show, deficiency of cheek prominence and class III malocclusion. The operation is designed for patients with adequate nasal bridge projection. The design addresses these esthetic units and can be further modified to extend to the frontozygomatic suture if the lateral orbital rim is deficient as well (LeFort III osteotomy).

The operation is conducted via coronal incision, transfacial incisions involving the inferior eyelids or transconjunctival incisions with lateral canthotomy. Any of these approaches also require transoral access to the lateral maxillary walls, nasal septum, lateral nasal walls and ptergomaxillary junction. The operation design is customized based on the patient's needs. The mobilized face requires stabilization with plates and screws as well as bone grafts into the defects. Commonly, additional onlay grafting is employed to further contour the face. The procedure can also be done simultaneously with other facial osteotomies involving the maxilla at LeFort I level, the mandible, chin or even rhinoplasty. These additional procedures must be planned and sequenced carefully.

This procedure is always performed in conjunction with orthodontics to maximize esthetics and function. During this workshop a comprehensive review of the procedure and the author's experience will be presented including complications.

M-7

ORTHOGNATHIC SURGERY PLANNING WITH FACEWIZZ

Maurice Yves Mommaerts

European Face Centre - MKA dienst, Universitair Ziekenhuis Brussel, Belgium

Facial recontouring by orthognathic surgery requires detailed planning, similarly to an architect planning a building construction. The surgeon executes the plan, but modifies it during reconstruction depending on how changes actually appear to the eye. Art follows science in orthofacial surgery!

Because the surface is visible and the soft tissues are supported by the facial bones, planning should focus on surface changes and smile morphology, and suggest hard tissue movements. Planning must take into account both occlusal stability and facial contour.

Older concepts of three-dimensional planning failed due to lack of ratios between hard and soft tissues in the parasagittal regions, lack of differentiation between the elasticity modulus of attached soft tissues, and changes in lip posture. I present a semi-automated planning tool that is web-based, simple, and versatile. The tool uses of widely available cephalograms. An Adobe Photoshop add-on demonstrates surgical goals to patients and facilitates discussion.



M-8

SURGICAL COMPLICATIONS IN IMPLANTOLOGY: PREVENTION & TREATMENT

Manlio Galiè

St. Anna Hospital and University, Center for Orbital Pathology & Surgery, Unit of Cranio Maxillo Facial Surgery, Ferrara, Italy

Implants have evolved to a rapidly growing techniques for replace the missing teeth. The total number of implants being placed has increased significantly over the years, as the prevalence of complications. In oral implantology, the most serious complications and those most frequently described in the literature occur during surgery.

They may result from inadequate planning, overworking of the implant bed, contamination of the implant by incorrect manipulation or mishandling; by poor implant orientation, or by the surgical procedure itself, which is not without risk.

There are several reasons for the increased number of implant complications in the last years, mainly related to the increased number of implants being placed, the increased number of dentists, and the lack of adequate training. Intraoperative complications may be related with surgery such as hemorrhage, neurosensory alterations, damage to adjacent teeth and mandibular fractures.

Otherwise complications may be associated with implant placement such as absence of primary stability, fenestration or displacement into maxillary sinus.

Given this background the role of the maxillofacial surgeon is essential and he must possess basic knowledge in implantology and advanced preprosthetic surgery techniques.

A spectrum of surgical implant complication is reported, and the Author provide a detailed analysis of the etiology, prevention and treatment. Moreover the effects of implant placement in patients taking medications related to osteonecrosis of the jaw (MRONJ) are discussed.

M-9

COMPUTER ASSISTED CRANIO-MAXILLOFACIAL SURGERY IN CLINICAL ROUTINE

Alexander Schramm

University Hospital Ulm, Germany

Computer-assisted preoperative planning, intraoperative navigation and intraoperative imaging for a long period of time have not been practiced as part of the surgical routine in the field of oral and cranio-maxillofacial surgery. Advances in imaging techniques pre- and intraoperatively and associated technologies have led within the past 20 years to improve preoperative and intraoperative guidance for the surgeon. Virtual resections and reconstructions in midface and skull base tumors, complex trauma and craniofacial malformations as much as orthognathic surgery and guided dental implantology have become clinical routine in our patients care. Intraoperative navigation is done using frameless stereotaxy combined with intraoperative imaging techniques. Intraoperative guidance by navigational surgery or CAD-CAM templates is used. New software developments for automatic bone segmentation of standard CT data sets dramatically reduce the time period for preoperative planning in virtual facial reconstruction. The resulting virtual model is used for intraoperative navigation, guiding the reconstructive procedure to the desired result and controlled by intraoperative ct scanning. Computer-assisted preoperative planning and surgery techniques have improved operators confidence in maxillofacial surgery. Anatomical structures can be identified intraoperatively and preplanned reconstructions can be realized. Especially image fusion of pre- and intraoperative data sets enables detailed evaluation of postsurgical outcomes already inside the OR theatre, especially when stereolithographic models can be produced at a very low cost level they should be considered as a operation time saving factor when they are used to prebend the plates and measuring the screw length preoperatively in primary and secondary reconstructions. Using this technique all kinds of modifications of the shape of the plates can be virtually or mechanically preformed to allow patient



specific prefabrication for primary and secondary reconstructions of the mandible and midface independent from the type of reconstruction (e.g. vascularized bone graft, free bone graft, alloplast). Also the installation of fixtures for prosthetic reconstruction in maxillofacial surgery in patients is performed on the base of 3D-toothborn devices used for intraoperative controlling of insertion of dental implants. Virtual insertion of implants, with different diameters and length with or without previous bony reconstruction of the maxilla and mandible was performed in our department in over 2000 patients. In this presentation routine use of computer-assisted maxillofacial surgery is presented in facial trauma, orthognathic surgery, tumor treatment and oral implantology.

M-10

THE VALIDITY OF SURGERY FIRST ORTHOGNATHIC APPROACH WITHOUT PRESURGICAL ORTHODONTIC TREATMENT

Jong-Woo Choi

Seoul Asan Medical Center, Department of Plastic surgery, Seoul, South Korea

Orthognathic surgery with pre- and post-surgical orthodontic treatment is the widely accepted method for the correction of dentofacial deformity. As recent advancements in orthodontic treatments have shown remarkable stability and control of the occlusion following orthognathic surgery, we have adopted a surgery-first orthognathic approach without presurgical orthodontic treatment based on the novel presurgical simulation process on the dental model, which would be the crucial steps for the successful surgery first orthognathic approach, since 2006.

This class will deal with the indications and contraindications of the surgery first approach, the presurgical simulation process on the dental model, cephalometric planning, surgery first orthognathic surgery itself, postsurgical orthodontic treatment and outcomes in terms of aesthetics, airway and stability of occlusion. Our data revealed that the surgery-first approach without presurgical orthodontic treatment is possible and can give similar results to traditional orthognathic surgery.

Although I fully understand the many concerns related to the occlusal and skeletal stability in surgery first orthognathic approach, the surgery-first orthognathic approach without presurgical orthodontic treatment was found to be predictable and applicable to treat various dentofacial deformities if the proper presurgical simulation on the dental model and the determination of the proper indications were made. These findings suggest a possible paradigm shift in the traditional orthognathic approach.

M-11

FACIAL FAT GRAFTING: PRINCIPLES SURGICAL TECHNIQUE, INDICATIONS & RESULTS

Luigi C. Clauser

Cranio Maxillo Facial Surgery, Hospital & University, Ferrara, Italy

The use of adipous tissue transfer for the correction of maxillo-facial and cranial defects was reported for the first time at the end of the 19th century and has been the subject of numerous studies.

Grafted fat tissue has been used for years as an excellent filler during facial enhancement and recontouring. Several techniques have been proposed for harvesting and grafting the fat. However, due to the damage caused by excessive adipose tissue during these manouvers, the results were not satisfying. The situation required a larger amount of fat to be harvested even for small corrections. In 1988 the American plastic surgeon Sydney R. Coleman personally developed a technique called LipoStructure[®], which allows the fat to be harvested and injected with minimal risk of necrosis and reabsorbtion.

The authors report their experience from October 2003 to December 2013, 10 years, in managing patients affected by facial defects (burn sequelae, post-traumatic, congenital and post-tumor resection deformities, aesthetic cases) using the LipoStructure[®] principle.



Evidence exists that stem cells contribute to the restoration of tissue vascularization and organ function. For these reasons, adipose tissue represents a potential clinical use for cellular therapy, tissue engineering, and gene transfer applications in regenerative medicine. The current state of the art in adipose tissue engineering as well as the clinical applications in reconstructive facial surgery will be discussed.

M-12

PERFORATOR FLAPS IN OMS RECONSTRUCTION

Yue He

Shanghai 9th People's Hospital, Shanghai Jiao-Tong University School of Medicine, Shanghai China

Radical treatment of neoplasms may lead to complex oral and maxillofacial defects that pose a formidable challenge for reconstructive surgeons as this region is important both functionally and aesthetically. The main goal of a complex soft-tissue reconstruction is to replace "like with like" tissues at minimal donor site "cost" and with maximal efficacy. Perforator flaps represent an important step forward and allow surgeons to accomplish these goals better. A perforator flap is a flap of skin or subcutaneous tissue supplied by a vessel that perforates the deep fascia to gain access to flap. In this presentation, the anatomy and methods of preoperatively locating perforating vessels for the use of perforator flaps are described. The author also focuses on the clinical applications of a series of principal perforator flaps including ALT flap, DIEP flap, TAP flap, MSAP flap, IMAP flap and SCIAP flap in reconstruction of different oral and maxillofacial defects. The advantages and disadvantages of this technique are discussed and are compared with that of non-perforator flaps, particularly the Radial Forearm Flap. These flaps have been shown unique advantages in oral and maxillofacial reconstructions including being reliable, offering versatility in design and diverse tissues for composition, sparing major vessels, as well as improved donor site morbidity. These flaps can often be raised using a two-team approach, without change of the patient's position. They can be harvested as thin, pliable, and innervated flaps for intraoral reconstruction in one patient or modified with muscle incorporated to reconstruct a massive perioral defect in another patient. However, elevation of perforator flaps requires meticulous dissection of the musculocutaneous perforators through the underlying muscle. The variability in the position and size of the perforator vessels, unpredictable pedicle length and the feasibility for microvascular anastomosis in the perforator level have to be considered as the main disadvantages of this technique. Advances in technology and continue to make preoperative planning of surgical flaps easier. With adequate training and supramicrosurgical techniques, these flaps also can be raised safely. We believe that perforator flaps will become the most versatile options in oral and maxillofacial reconstruction.

M-13

RECONSTRUCTION OF MAXILLARY DEFECTS: A SIZEDEPENDENT ALGORITHM

Joseph I. Helman

Dept. of Maxillofacial Surgery, University of Michigan, USA

Maxillary defects have been a reconstructive challenge due to the variety of the anatomic structures associated with the maxilla (oral cavity, nasal cavity and orbit) as well as the complex shape of the maxillary bone.

Several classifications of defects have been reported in order to standardize the severity of the tissue deficit as well as the outcome and the associated post-resection/reconstruction quality of life of the patients.



While prosthetic maxillary obturators have been used for more than a century, the masticatory function of them have been limited in large defects crossing the midline. In order to provide more stability, zygomatic implants provide a simple, effective and relatively minimally invasive restorative option. For more complex defects, several reconstructive options are available. Those options include a couple of pedicle flaps for small defects and several free tissue flaps for more complex resections. The option of incorporating dental implant restoration to free tissue transfer which includes bone has a major advantage of providing an optimal rehabilitation and an almost normal masticatory function and phonation.

M-14

BASAL IMPLANTOLGY AND IMMEDIATE LOADING

Vitomir S. Konstantinović, Stefan Ihde

University of Belgrade, Clinic for Maxillofacial Surgery, Belgrade, Serbia

In order to overcome retention problems in maxillofacial prosthodontics the introduction of osseointegrated implants revolutionary improves prosthesis stability and therefore the quality of the life of the patients. However, some specifics of maxillofacial implantology could tempt some problems in everyday practice. They are: close anatomical relation to the intracranial structures; less bone quality and quantity; mainly compact bone; irradiation therapy. All of that facts usually limits usage of conventional screw like implants.

The goal of this Masterclass is to present our experiences with the philosophy of basally implants and immediate loading of cortically anchored implants in general.

In the recent time, this kind of implantology is also called "STRATEGIC IMPLANTOLOGY", which developed from "basal" implantology that used resorption free basal part of maxilla and mandible for implant anchorage. All available facial bones like zygoma and pterygoid process of sphenoid bones are used for implant insertion.

Specificity of this implants is their possibility of immediate loading because of extremely high primary stability in the compact bone using bicortical or multicortical osseointegration.

Two designs of implants have been used: Disk implants (BOI-type) and bicortical screws (BCS). However, bicortical screws are nowadays almost exclusively used.

Patients with severely resorbed maxilla and mandible, as well as patients with implants used for retention of nasal and orbital prosthesis will be shown.

M-15

TMJ TREATMENT

Piero Cascone

Università di Roma Sapienza Dipartimento Scienze Odontostomatologiche e Maxillo Facciali, Rome, Italy



M-16

DENTAL IMPLANTS IN RADIOTHERAPY PATIENTS AND MICROVASCULAR FLAPS

Rafael Martín-Granizo López

Department of Oral & Maxillofacial Surgery, Hospital Clínico San Carlos, Madrid, Spain

Nowadays, osseointegrated implants are an adequate option for dental rehabilitation in oncologic patients, and functional and aesthetic rehabilitation of these patients is a must in every oral and maxillofacial department. However, there is still controversy in when and how the implants should be inserted in those patients who underwent radiotherapy (RT). Also, microvascular (MV) reconstructive techniques provide healthy bone and soft tissues to the facial defects, but osseointegration to these vascularized grafts has still not been analyzed. The aims of this masterclass are:

- To study the mechanism of damage of RT to the tissues, to review the literature and to analyze the results obtained with dental implants in these patients.
- To show our experience in placement of dental implants in RT cases, our results with a survival rate of 92,7% and our protocol of insertion. The optimal design of the implant will be discussed.
- Some interesting clinical cases will document this topic. One case with a previous osteoradionecrosis of a fibular flap that was rehabilitated with implants after HBO therapy.
- To show the different microvascular composite flaps that provides bone for facial reconstruction. Our experience in oral rehabilitation with dental implants will be analyzed, with an osseointegration rate of 96,3% in more than 70 cases.

Also, a literature review will be done, and new digital techniques for precise insertion of implants will be studied, as well as protocols of management. Some interesting clinical cases will be added, as the one that analyzes the interface between implant and iliac crest microvascular flap after osseointegration. Surgical technique will be reviewed and some tips to improve the clinical results.

M-17

THE FUNCTIONALLY ORIENTED TREATMENT OF CLEFTS OF LIP, ALVEOLUS AND PALATE

Alexander Hemprich

Department of Oral, Craniomaxillofacial and Facial Plastic Surgery, Faculty of Medicine, University Hospital of Leipzig, Leipzig, Germany

Introduction: It must be the final goal of all cleft care to fully rehabilitate a patient as for form(aesthetics) and function (mainly speech, mastication, and breathing) at the end of growth. Many successful ways have been described on this behalf so far. In the late 1970ies the French maxillofacial surgeon and orthodontist JEAN DELAIRE was able, however, to cast his profound considerations of craniofacial development into a surgical procedure that is mainly based on the anatomical reconstruction of the facial muscle rings. Thereby it is possible to reunite primary and secondary facial growth centers and to achieve good treatment results with only a small number of operations.

Methods: Based on more than 20 years of the author's own experience it is the aim of this masterclass to:

- explain the anatomical and physiological background of functional cleft surgery (DELAIRE)
- describe the primary closure of lip, alveolus and palate accordingly
- portray the advantages of this method in secondary procedures including cleft related rhinoplasties and orthognathic cases

Results: It can be shown by the example of numerous UCL(P) and BCL(P) cases that functionally oriented cleft surgery in combination with speech training and jaw orthopedics/orthodontics will lead



to very acceptable results with rather few operative procedures in primary cases and better preconditions for secondary corrective measures.

Conclusion: A surgeon will be able to achieve good results with the operative procedure which he completely masters and he is experienced with. When there may still be a choice as for the method, however, DELAIRE's approach to cleft treatment should be given a strong consideration.

M-18

CONTEMPORARY USE OF SELECTED PEDICLED FLAPS IN COMPLEX HEAD NECK RECONSTRUCTION

Rui Fernandes

University of Florida, College of Medicine – Jacksonville, Department of Oral and Maxillofacial Surgery, USA

M-19

RECONSTRUCTION OF THE ALVEOLAR RIDGE USING DISTRACTION OSTEOGENESIS FOR IMPLANT PLACEMENT

Adi Rachmiel

Department of Oral and Maxillofacial Surgery, Rambam Medical Center, Technion faculty of medicine, Haifa, Israel

Introduction: Alveolar Distraction is a method for reconstructing a deficient or atrophic alveolar bone. The lecture will review the method of reconstructions of the alveolar ridge by Distraction Osteogenesis in mild and severe cases of alveolar bone deficiency.

Material and methods: An alveolar segmental osteotomy was carried out and the distraction device was mounted. In patients with an extensive alveolar defect two distraction devices were placed for better control of the vector of elongation in both bone edges. In patients with severe atrophy or after bone resection or bone loss due to trauma, two stages of reconstruction was performed-bone graft first, followed by distraction osteogenesis.

The distraction was started on the fourth post-operative day at a rate of 0.5 mm/day as necessary and according the length of the distraction device, followed by a consolidation period of 90 days. Subsequently, the devices were removed, and titanium dental implants were placed for osteointegration. Methods to control the vector of distraction will be presented.

Results: As a result of alveolar distraction, a segment of mature bone was transported vertically in order to lengthen the crest for better implant anchorage, either for esthetic purposes or for functional prosthetic requirements.

Conclusions: The main advantages of alveolar distraction osteogenesis are:

1. Augmentation of alveolar bone height with new bone formation and simultaneous expansion of the soft tissues.
2. Preservation of attached mucosa
3. No bone harvesting
4. Lower morbidity compared with conventional techniques.
5. Feasibility of inserting longer dental implants.

Alveolar distraction augments atrophic alveolar ridge and creates new bone that permits implant placements.



M-20

3D PLANNING AND COMPUTER-ASSISTED SURGERY IN CMF TRAUMATOLOGY

Majeed Rana

Department of Craniomaxillofacial Surgery, Hannover Medical School, Hannover, Germany

Inadequate reconstruction of the facial skeleton after trauma is often associated with complications like incomplete correction of enophthalmos, diplopia, hypoglobus and changes in facial geometry. Surgical intervention is often necessary to correct function and aesthetics and to avoid long-term complications.

Especially the severity of an orbital trauma is dependent on the size of a defect, the number of orbital walls involved, the localization of the defect and any technical difficulties during surgical repair. Patient-specific reconstruction is an option to address this.

The benefit of computer-assisted planning and computer-assisted surgery in craniofacial reconstruction has been documented over the last decade. These systems offer a safe and reliable surgical procedure. As a result, the handling of these systems is largely experimental and navigational assisted treatment of facial trauma is not routinely used.

Aim

This masterclass presents a novel solution for computer-assisted planning to design customized implants with predefined useful guidance which optimally adapt to the needs and the anatomical conditions of the patient.

Methods

To demonstrate this novel approach, we show an example of surgical planning and treatment of some patients with a traumatic mandible and midface fracture including the orbit. Based on pre-operative CT data, virtual models of the unaffected bony part were automatically generated using an atlas-based segmentation using 3D planning software, iPlan 3.0.5, (Brainlab®, Feldkirchen, Germany). 3D mesh was virtually designed using Geomagic-Freeform® Plus (3D Systems, Morrisville, NC, USA). The virtual 3D implant was produced via additive manufacturing (selective laser melting) by KLS-Martin® (Tuttlingen, Germany).

Results

Successful preoperative planning, import of image data suitable for navigation and intraoperative precise infrared-based navigation was obtained for all patients without any complications. The registration of patient data at the navigation system using screws as fiducial markers delivered a navigation accuracy. The novel method of use of PSI showed good postoperative result.

Conclusion

Regarding the advantages of computer-assisted surgery, this technique will play a major part in craniofacial reconstructive surgery and will address widespread general methodological solutions that are of great interest in multidisciplinary traumatological treatment.



Guest Society Sessions

G-1

AUSTRIAN SOCIETY FOR ORAL AND MAXILLOFACIAL SURGERY

Orthognathic Surgery - planning and preoperative issues, correction of transverse dimensions, correction of facial asymmetries and complications

Orthognathic surgery is a highly demanding procedure and needs careful diagnosis, visualization and planning. The success of corrections of dentofacial deformities depends on aesthetic and functional factors, such as skeletal and occlusal stability, facial harmony, respiratory function, and temporomandibular joint function. 2D- and 3D-imaging is helpful for objective diagnosis and visualization of deformities, especially in cases of facial asymmetries.

In the second part of the presentation, the correction of the transverse dimension of the maxilla and mandible will be discussed. New concepts, such as one-stage or two stage expansion devices as well as micro-screw supported expansion devices will be presented.

In the last part, complications in orthognathic surgery (bad split, TMJ problems etc.) will be discussed in detail.

PLANNING AND PROPERATIVE ISSUES (2D AND 3D PLANNING, HEAD POSTURE, CEPHALOMETRIC ANALYSIS)

Michael Malek

Linz, Austria

CORRECTION OF THE TRANSVERSE DIMENSION (MANDIBULAR AND MAXILLARY EXPANSION, ONE-STEP OR TWO-STEP PROCEDURES, ONE-PIECE OR MULTI-PIECE LEFORT OSTEOTOMIES)

Oliver Ploder

Feldkirch, Austria

CORRECTION OF ASYMMETRIES

Gert Santler

Klagenfurt, Austria

COMPLICATIONS IN ORTHOGNATHIC SURGERY

Inge Watzke

Vienna, Austria



G-2

ROYAL BELGIAN SOCIETY OF STOMATOLOGY AND ORAL AND MAXILLO-FACIAL SURGERY

Ongoing OMFS research and Ph.D. studies (co)-hosted in Belgium

**THREE-DIMENSIONAL RAPID PROTOTYPING PAPER BASED MODELS FOR
MAXILLOFACIAL SURGERY: EXPERIMENTAL VALIDATION AND CLINICAL APPLICATIONS**
Piotr Szymor

**DEVELOPMENT OF PRE-VASCULARIZED 3D-PRINTED TISSUE ENGINEERED COMPOSITE
BONE GRAFTS FOR CLINICAL APPLICATIONS**
Herman. Jr. Vercruysse

BONE ENGINEERING OF ALVEOLAR CLEFT DEFECT: A PRELIMINARY HUMAN STUDY
Arash Khojasteh

NEUROREGENERATION WITH DENTAL PULP CELLS
Pascal Gervois

**CONE-BEAM COMPUTERIZED TOMOGRAPHY (CBCT) EVALUATION OF THE UPPER AIRWAY
IN THE CONTEXT OF ORTHOGNATHIC SURGERY**
Raquel Guijarro-Martinez

**EFFECTS OF NANO-HYDROXYAPATITE/COLLAGEN BIPHASIC MATERIAL ON IN VITRO
BONE REGENERATION**
Alessandro Atzeni

**EARLY MANAGEMENT OF CLEFT LIP AND PALATE – COMBINATION OF SURGICAL AND
NON-SURGICAL PROCEDURES**
Balint Nemes

THE MARGIN OF ERROR USING THE BRAINLAB SKULL REFERENCE BASE
Yi Sun

**G-3****DANISH ASSOCIATION OF ORAL AND MAXILLOFACIAL SURGEONS****Current Status of the Oral and Maxillofacial Surgery in Denmark**

The Danish Association of Oral and Maxillofacial Surgeons was established in 1953. The current OMF Surgery specialist training is based on a five-year training program. The OMF Surgery Departments are in general placed regionally, attached to the major University Hospitals with Level 1 Trauma Centers serving a population of 5.7 millions. The scope of OMF Surgery has changes considerable over time in Denmark. The specialty covers maxillofacial traumatology, orthognathic surgery, cranio-maxillofacial reconstruction including secondary cleft-palate surgery, post-ablative reconstruction, TMJ reconstruction etc. In collaboration with medical specialties the OMF Specialty is significantly involved in oral cancer diagnosis, treatment and rehabilitation, oral medicine, treatment of osteoradionecrosis, osteonecrosis and in treatment of craniofacial anomalies and rare diseases.

SECONDARY CLEFT SURGERY (BONE GRAFTING – PREMAXILLARY OSTEOTOMY)**John Jensen***Department Of Oral and Maxillofacial Surgery, Aarhus University Hospital***TEMPOROMANDIBULAR JOINT SURGERY****Esben Aagaard***Department Of Oral and Maxillofacial Surgery, Odense University Hospital***BISPHOSPHONATE RELATED DISEASE OF THE JAWS****Morten Schiødt***Department Of Oral and Maxillofacial Surgery, Copenhagen University Hospital***ADVANCED IMPLANTOLOGY AND BONE GRAFTING****Thomas Jensen***Department Of Oral and Maxillofacial Surgery, Aalborg University Hospital***COMPUTER-ASSISTED MAXILLOFACIAL SURGERY****Thomas Kofod***Department Of Oral and Maxillofacial Surgery, Copenhagen University Hospital***DISTRACTION OSTEOGENESIS****Sven Erik Noerholt***Department Of Oral and Maxillofacial Surgery, Aarhus University Hospital***VSP BASED RECONSTRUCTION OF THE MAXILLA FOLLOWING ABLATIVE SURGERY****Torben Thygesen***Department Of Oral and Maxillofacial Surgery, Aarhus University Hospital*



G-4

FRENCH ASSOCIATION OF SURGEONS OF THE FACE (AFCF) & SOCIETY OF STOMATOLOGY, MAXILLOFACIAL SURGERY AND ORAL SURGERY (SFSCMFCO)

l'Association Française des Chirurgiens de la Face (AFCF) & la société française de stomatologie, chirurgie maxillo-faciale et chirurgie orale (SFSCMFCO)

Round table on orbital surgery, the « French touch »

Orbital surgery is a very large subject and for this round table, we decided to focus on very specific points of different fields of this surgery. Doing so will be approached:

- Traumatology; with a presentation on a conservative approach with a long follow up.
- Tumors; with a computer assistance for reconstruction.
- Microsurgery and all its possibilities in orbital reconstruction.
- And a long term experience in reconstruction of the anophthalmic socket.

USE OF KIRSCHNER WIRES FOR ZYGOMA FRACTURES: A CONSERVATIVE APPROACH FOR THE PERIOSTEUM OF THE ORBIT

H. Benateau, A. Chatellier, S. Ghezal, D. Labbe, J.F. Compere, A. Veyssiere

Department of Maxillo-facial surgery, Caen

COMPUTER - ASSISTED ORBITAL WALL RECONSTRUCTION IN SPHENO ORBITAL MENINGIOMAS

F. Jalbert¹, S. Boeto², F. Lauwers¹

¹ *Unit of Maxillofacial and aesthetic plastic surgery of the face, Purpan University Hospital, Toulouse Cedex*

² *Unit of Neurosurgery, Purpan University Hospital, Toulouse Cedex*

MICROSURGERY AND ORBITAL RECONSTRUCTION

J. Davrou, S. Dakpé, O. Dunaud, S. Testelin, B. Devauchelle

Department of Maxillofacial surgery, Amiens

LONG TERM EXPERIENCE RECONSTRUCTING THE ANOPHTHALMIC SOCKET

E. Sorrel Dejerine

Paris



G-5

GERMAN SOCIETY OF ORAL AND MAXILLOFACIAL SURGERY

What is new in Reconstructive Surgery?

Reconstructive surgery of the face and facial skeleton has become a key area of craniomaxillofacial surgery and a most challenging field at the same time. Therefore, this symposium emphasizes reconstructive surgery, specifically soft tissue, bone, and TMJ reconstruction. Presentations by experts in the field will focus on new developments in these areas.

The *German Society of Oral- and Maxillofacial Surgery* has more than 1,700 members, with almost 1,400 of them working with the status of a specialist. The society was founded in 1950 and has representation at all 35 medical university faculties in the country. From its inception, a full dual qualification in medicine and dentistry was mandatory for admission.

SOFT TISSUE RECONSTRUCTION

Klaus-Dietrich Wolff

BONE RECONSTRUCTION

Frank Hölzle

TMJ RECONSTRUCTION

Rudolph Reich

**G-6****HELLENIC ASSOCIATION OF ORAL & MAXILLOFACIAL SURGERY****Oral and Maxillofacial Surgery in Children**

Several differences of the oral and maxillofacial region exist between children and adults regarding anatomy, physiology and developmental aspects. Depending on the age, bones are smaller in size, tooth germs are present within the jaws and healing process is quicker, parameters requiring special attention when dealing with facial fractures, clefts and syndromes. The growth process in childhood also affects the development of cysts, tumours and tumour-like lesions, requiring thus a different therapeutic approach. Especially malignancies are mainly of mesenchymal origin, different than those developing in adults. Recognition and management of all the above issues will be the subject of the present round table.

TREATMENT OF THE MAXILLARY GAP IN CLEFT PATIENTS**Nadia Theologie-Lygidakis****MANAGEMENT OF MAXILLOFACIAL FRACTURES IN CHILDREN****Fotios Tzermpos****OROFACIAL TUMORS IN CHILDREN AND ADOLESCENTS****Ioannis Iatrou****PAROTID GLAND SURGERY****Nikolaos Papadogeorgakis**



G-7

HUNGARIAN ASSOCIATION OF ORAL AND MAXILLOFACIAL SURGEONS

Management of posttraumatic deformities in the maxillofacial region

The management of patients with different levels of posttraumatic defects/deformations is a major, multidisciplinary field in Oral and Maxillofacial surgery. Diagnostic evaluation, therapy planning, guided reconstruction are all part of novel, comprehensive treatment. 3D CT scans replaced plain, conventional radiographs in the last 10 years. 3D reconstructions support the pre-operative analysis and planning (CAD/CAM solutions). Due to difficulties and limitations during the care of these patients, the need of more immediate, accurate treatment (one-stage repair) of polytraumatic cases is advised. Secondary failures/defects/deformities of the soft or/and hard tissues are playing a significant role, and are basically influencing quality of life. The Hungarian Association of Oral and Maxillofacial Surgeons introduced some of their methods concerning the management of those cases.

AN AESTHETIC RECONSTRUCTION FOR THROUGH AND THROUGH FACIAL DEFECTS

Olasz L. MD, PhD, Gelencser G. MD, Orsi E. MD, Szabo A. MD, DMD, PhD, Szalma J. DMD, PhD

Department of Oral and Maxillofacial Surgery, University of Pécs

FRONTOBASAL INJURIES - ASPECTS OF PRIMARY CARE FROM THE PERSPECTIVE OF LATE RECONSTRUCTION

Redl P. MD, PhD, Boda R. MD, Szabo A. MD, PhD

University of Debrecen, Medical School and Health Science Center, Faculty of Dentistry, Department of Oral and Maxillofacial Surgery, Debrecen

3D- GUIDED ORBITA SURGERY IN POSTTRAUMATIC PATIENTS

Barabas J. MD, PhD¹, Markella Zs.², Vizkelety T., DMD¹

¹*Semmelweis University, Faculty of Dentistry, Department of Oro-Maxillofacial Surgery and Stomatology, Budapest*

²*Óbuda University, Kandó Kálmán Faculty of Electrical Engineering, Budapest*

POSTTRAUMATIC RECONSTRUCTION IN THE MAXILLOFACIAL REGION WITH FREE FLAPS

Oberna F. MD, DMD, PhD, FEBOMFS¹, Sass T. MD, DMD¹, Halmy Cs. MD², Santha B. MD¹, Csaki G. MD³

¹*Maxillofacial and ENT Department, Teaching County Hospital of Bács-Kiskun, Kecskemét*

²*Medical Center Hungarian Defence Forces, Department of Plastic and Burn Surgery, Budapest*

³*Medical Center, Hungarian Defence Forces, Department of Oral and Maxillofacial Surgery, Budapest*



G-8

ISRAELI ASSOCIATION OF ORAL AND MAXILLOFACIAL SURGERY

Facial trauma. From low to high energy impact

Maxillofacial trauma, is any physical trauma to the face. Facial trauma can involve soft tissue injuries such as burns, lacerations and bruises, or fractures of the facial bones such as nasal fractures and fractures of the jaw, as well as trauma such as eye injuries. Symptoms are specific to the type of injury. In developed countries, the leading cause of facial trauma used to be motor vehicle accidents, but this mechanism has been replaced by interpersonal violence; however auto accidents still predominate as the cause in developing countries and are still a major cause elsewhere. Other causes of facial trauma include falls, industrial accidents, and sports injuries. Injury mechanisms such as falls, assaults, sports injuries, and vehicle crashes are common causes of facial trauma in children as well as adults. Facial trauma can also result from wartime injuries such as gunshots and blasts. Animal attacks and work-related injuries such as industrial accidents are other causes. An immediate need in treatment is to ensure that the airway is open and not threatened, because airway compromise can occur rapidly and insidiously, and is potentially deadly. Facial fractures that threaten to interfere with the airway can be reduced by moving the bones back into place; this both reduces bleeding and moves the bone out of the way of the airway. Tracheal intubation may be difficult or impossible due to swelling.] Nasal intubation, inserting an endotracheal tube through the nose, may be contraindicated in the presence of facial trauma because if there is an undiscovered fracture at the base of the skull, the tube could be forced through it and into the brain. If facial injuries prevent orotracheal or nasotracheal intubation, a surgical airway can be placed to provide an adequate airway. In the symposium trauma to the maxillofacial region will be discussed starting with the low energy impact and finishing with high energy impact by introducing our protocol based in our experience.

OPEN REDUCTION OF LOW SUBCONDYLAR FRACTURES—A 7-YEAR RETROSPECTIVE STUDY

Imad Abu El-Naaj

Department of Oral and Maxillofacial Surgery Poria Medical Center, Tiberias

The frequency of condylar fractures accounts for more than a third of all mandibular fractures. If these fractures are left undiagnosed or incorrectly treated, the result can be severe functional impairment, including malocclusion, limited mouth opening with or without deviation, and mandibular lateral movement impairment.

The aim of the present study was to retrospectively review the treatment outcome of low subcondylar temporomandibular joint fractures. The retrospective analysis was performed on all patients treated for low subcondylar fractures (below the sigmoid notch) between 2006 and 2013. Patients were divided into two groups: the closed reduction group (maxillomandibular fixation, MMF) and the open reduction group (anteroparotid transmasseteric (APTM) approach). Out of 129 condylar fractures, a total of 37 patients met the inclusion criterion of a fracture below the sigmoid notch (low subcondylar). 14 patients (9 males and 9 females) were treated using the APTM approach, and 27 patients were treated conservatively by MMF. In the open reduction group, two patients (14%) had limited mouth opening that resolved following physiotherapy; the closed reduction group had a similar percentage (18.5%) of mouth opening limitation (below 35 mm). No facial nerve damage was noted.



APPLICATION OF DISTRACTION OSTEOGENESIS IN MAXILLOFACIAL TRAUMA

Adi Rachmiel

Department of Oral and Maxillofacial Surgery, Rambam medical center, Technion Faculty of Medicine, Haifa

Introduction: Distraction Osteogenesis is a useful method to elongate the facial bones in craniofacial anomalies as cleft palate, hemifacial microsomia, Treacher Collins syndrome, Pierre Robin Sequence and others, and in the associated Obstructive sleep apnea. However in the last years, distraction osteogenesis was introduced in treatment of maxillofacial trauma.

Material and Methods: Patients were treated by distraction or transport distraction after: 1. Condylar and subcondylar fractures, 2. Avulsion fractures of the anterior maxilla, 3. Comminuted facial fractures for facial bones reconstruction, 4. Avulsion of teeth and the alveolar supported bone for alveolar bone reconstruction and implants placement. In severe cases combination of bone grafts and distraction osteogenesis was performed.

Results: After distraction or combination of bone grafts and distraction osteogenesis, a marked new bone formation was noted that contributes to correction of the post traumatic facial asymmetry, correction of post traumatic maxillary deficiency, reconstruction of the deficient bone loss. The dental implants were osteointegrated for dental rehabilitations.

Conclusions: Distraction osteogenesis is a useful method in treatment after maxillofacial trauma with extensive loss of bone and teeth and contribute to bony and dental rehabilitation.

HIGH ENERGY PAN FACIAL TRAUMA

Ran Jahalom

Cranio-Maxillofacial Surgery, Sheba Medical Center, Tel Hashomer

A panfacial injury is a fracture conglomerate that involves the upper, middle, and lower facial regions. Component fractures involve the nose, ethmoids, orbits, zygomas, maxilla and mandible.

Severe displacement and comminution of the bony architecture with extension to the frontal bone and palate are common.

CT scan 3D reconstruction and models are aside from the clinical evaluation highly important. The aim of treatment is immediate restoration of form and function.

Exposure uses craniofacial techniques. The sequence of exposure and stabilization

is dependent on the fracture pattern. While Intra-maxillary Fixation is the key for correct reduction in mandibular fractures. In panfacial fractures it may be misleading.

Key areas are:

- the outer facial frame, including the zygomatic arches
- the main maxillary buttresses
- the occlusion

In cases where the skull base is also fractured, close cooperation with neuro-surgeons, especially concerning approach and sequence of treatment, is necessary.

TREATMENT PROTOCOL FOR GUNSHOT INJURIES TO THE FACE

Micha Peled

Department of Oral and Maxillofacial Surgery at the Rambam Medical Center in Haifa

High velocity gunshot injuries to the face are characterized by complex damage to the hard and soft structures of the face and oral cavity, thus creating severe functional and esthetic disability. The primary treatment includes life-saving procedures such as airway protection, hemodynamic stabilization and prompt evacuation to a specialized trauma center.

The initial surgical treatment, based on imaging findings shown on 3D-CT and CT-angiography, includes facial bony framework stabilization using extensive rigid fixation and primary closure of soft



tissues especially of the oral cavity. In cases of midface comminuted fractures, primary bone grafting is usually considered. The mandible is stabilized primarily with load-bearing reconstructive plates, but is finally reconstructed at a secondary operation, after resolution of infection and necrosis which may result from high velocity missiles injuries. The use of free vascularized flaps is saved only for cases of extensive tissue loss or as a back-up for failures of the primary surgery. Finally, a functional and esthetic reconstruction is performed using bone grafts for alveolar augmentation, preprosthetic procedures, dental implants and revision of scars.

In this lecture our treatment protocol and surgical experience will be presented through a series of documented cases treated in the Department of Oral and Maxillofacial Surgery at the Rambam Medical Center in Haifa which is a Level 1 Trauma Center situated in the Northern Israel.

**G-9****ITALIAN SOCIETY OF MAXILLO-FACIAL SURGERY****Roundtable on Orbital-Periorbital Pathology & Surgery**

This Symposium will feature collegial dialogue on the management of craniofacial fractures, tumors, congenital and post-trauma deformities, with a focus on the orbit.

The pioneer work of Paul Tessier, forty years ago, extended the limits of maxillofacial surgery into the orbit and the cranial cavity, and orbital surgery was the key for this milestone in surgical progress. The orbit may be now regarded as a "cross-road" between pathologies and anatomical regions and a cross-specialty involvement in the orbital area is clearly needed.

The Symposium is designed for surgeons and residents specializing in oral and maxillofacial surgery, plastic surgery, neurosurgery and ophthalmology who desire to enhance their knowledge on advanced clinical and technological updates in orbital and periorbital pathology and surgery both in pediatric and adult patients.

SECONDARY CORRECTION OF POSTTRAUMATIC ORBITAL DEFORMITIES

Giorgio Novelli, Gabriele Tonellini, Alberto Bozzetti

PERIORBITAL REGION RECONSTRUCTION

Angelo Campobassi, Massimo Bassi

REPAIRING OF ORBITAL FLOOR FRACTURES WITH REABSORBABLE MATERIALS

Pasquale Piombino, Paola Bonavolontà, Luigi Califano

THE WIDE SPECTRUM OF ORBITAL AND PERIORBITAL SURGERY: AN INTEGRATED APPROACH

Luigi Clauser

PEDIATRIC ORBITAL TRAUMA

Stefano Fusetti, Cristina Ghirotto, Giuseppe Ferronato

ORBITAL MEDIAL WALL FRACTURE: INDICATIONS AND TREATMENT

Silvestre Galioto, Mauro Pastori

VOLUMETRIC ANALYSIS OF THE ORBITAL REGION IN CRANIOSYNOSTOSIS: AN UPDATE

Giorgio Iannetti, Mario Pagnoni

ORBITAL RECONSTRUCTION WITH PATIENT SPECIFIC IMPLANTS

Guglielmo Ramieri, Giovanni Gerbino

SURGICAL APPROACH TO MEDIALY LOCATED ORBITAL TUMORS

Enrico Sesenna, Tito Poli



G-10

JAPANESE SOCIETY OF ORAL AND MAXILOFACIAL SURGEONS (JSOMS)

Contemporary Management for Advanced Head and Neck Cancer

In the JAPAN (JSOMS) Session, we would like to demonstrate contemporary management for advanced head and neck cancer from 3 view points.

The title of first presentation is "Infra-temporal Surgery for Oral Cancer Invaded to Masticator Space". Although the prognosis of advanced oral cancers invaded to the masticator space is generally poor due to difficulty of complete resection, Prof. Ota and his colleagues have challenged to completely resect them with over 5-year postoperative follow-up. Their surgical procedure was applied to 43 patients. As a result, 5-year disease specific survival rate was 47.2%, and local control rate was 70.0 %. Moreover, positive metastases to the cervical lymph nodes significantly affected the postoperative prognosis.

Second topic is "Organ Preservation with Daily Concurrent Chemoradiotherapy Using Retrograde Superselective Intra-arterial Infusion for Stage III, IV Oral Cancer: Analysis of Therapeutic Results in 112 Cases" presented by Prof. Tohnai or Assoc. Prof. Mitsudo. Retrograde superselective intra-arterial chemotherapy for oral cancer has the advantage of delivering a high concentration of the chemotherapeutic agents to the tumor bed and it can be used to provide daily concurrent chemoradiotherapy. They studied on the therapeutic results and rate of organ preservation after retrograde superselective intra-arterial chemotherapy and daily concurrent radiotherapy in 112 patients with stage III or IV (M0) oral cancer. Consequently, complete response of the primary site was achieved in 98 (87.5%) of 112 cases, but 30 patients (26.8%) died. Using the Kaplan-Meier method, 3-year, and 5-year survival rates were 74.6% and 71.3%, respectively, while 3-year, and 5-year local control rates were both 79.3%. Grade 3 or 4 toxicities included mucositis was found in 92.0%, neutropenia in 30.4%, dermatitis in 28.6%, anemia in 26.8%, and thrombocytopenia in 7.1%. Grade 3 toxicities included dysphagia was found in 72.3%, nausea/vomiting in 21.4%, fever in 8.0%, renal failure in 0.9%, and no patients died as a result of treatment toxicity.

Third presenter, Assoc. Prof. Kawaguchi will talk about "Image-guided Robotic Radiosurgery Combined with Chemotherapy for Patients with Advanced or Recurrent Head and Neck Cancer". Twenty-two patients with extended recurrent cancer and 14 patients with advanced primary cancer were treated by CyberKnife radiosurgery combined with chemotherapy. In the local lesions, 11 of the 22 recurrent patients and 10 of the 14 primary patients were satisfactorily controlled from 6 to 94 months. Therefore, if we focus on the local control of advanced or recurrent head and neck cancer, the present treatment modality is suggested to be certainly beneficial.

INFRA-TEMPORAL SURGERY FOR ORAL CANCER INVADDED TO MASTICATOR SPACE

Yoshihide Ota¹, Takayuki Aoki¹, Hiroshi Yamazaki¹, Mitsunobu Otsuru¹, Riyo Sekine¹, Miho Takahashi¹, Kenichi Aoyama¹, Kazunari Karakida², Muneo Miyasaka³, Akihiro Kaneko¹

¹Department of Oral and Maxillofacial Surgery, Tokai University, School of Medicine

²Department of Oral and Maxillofacial Surgery, Tokai University Hachioji Hospital

³Department of Plastic and Reconstructive Surgery, Tokai University, School of Medicine

Introduction and Objectives

The prognosis of advanced oral cancer invaded to masticator space is very poor. The principal reason is difficulty of complete resection of tumor invading masticator space. We have been performing infra-temporal surgery for complete resection. The usefulness of this surgical procedure will be reported.

Patients and Methods

The subjects were 43 patients who underwent infra-temporal surgery in Tokai University Hospital, from 1994 to 2004, and whose postoperative course could be observed for 5 years or longer. They



were 43 to 84 years of age, and included 29 men and 14 women. Surgery was performed using a lateral temporal approach; and complete resection of the pterygoid muscle together with that of the region of primary onset of tumor was performed.

Results

5-year disease specific survival rate was 47.2% and local control rate was 70.0%. Significant difference was found between cases with and without metastasis to cervical lymph nodes on histopathological examination, negative node 68.0% and positive node 14.7% ($p < 0.01$).

Conclusions

Infra-temporal surgery is useful for the treatment of advanced oral cancer invaded to masticator space. In the absence of lymph node metastasis, in particular, the local control obtained with this procedure appears to provide a favorable prognosis.

ORGAN PRESERVATION WITH DAILY CONCURRENT CHEMORADIO THERAPY USING RETROGRADE SUPERSELECTIVE INTRA-ARTERIAL INFUSION FOR STAGE III, IV ORAL CANCER: ANALYSIS OF THERAPEUTIC RESULTS IN 112 CASES

Iwai Tohnai, Kenji Mitsudo, Mitomu Kioi

Department of Oral and Maxillofacial Surgery, Yokohama City University Graduate School of Medicine, Yokohama

Background: Retrograde superselective intra-arterial chemotherapy for oral cancer has the advantage of delivering a high concentration of the chemotherapeutic agents to the tumor bed, it can be used to provide daily concurrent chemoradiotherapy for patients with advanced oral cancer. The purpose of this study was to evaluate the therapeutic results and rate of organ preservation in 112 patients of stage III or IV (M0) oral cancer treated with retrograde superselective intra-arterial chemotherapy and daily concurrent radiotherapy.

Methods: Between August 2006 and July 2011, 112 patients with stage III or IV oral squamous cell carcinoma underwent intra-arterial chemoradiotherapy. Catheterization from the superficial temporal and occipital arteries was performed. And treatment consisted of superselective intra-arterial chemotherapy (docetaxel, total 60 mg/m², cisplatin, total 150 mg/m²) and daily concurrent radiotherapy (total 60 Gy) for 6 weeks.

Results: The median follow-up for all patients was 46.2 months (range, 10–90 months). The median follow-up for living patients was 49.7 months (range, 36–90 months). After intra-arterial chemoradiotherapy, primary site complete response was achieved in 98 (87.5%) of 112 cases. Thirty patients (26.8%) died. Using the Kaplan-Meier method, 3-year, and 5-year survival rates were 74.6% and 71.3%, respectively, while 3-year, and 5-year local control rates were both 79.3%. Grade 3 or 4 toxicities included mucositis in 92.0%, neutropenia in 30.4%, dermatitis in 28.6%, anemia in 26.8%, and thrombocytopenia in 7.1%. Grade 3 toxicities included dysphagia in 72.3%, nausea/vomiting in 21.4%, fever in 8.0%, and renal failure occurred in 0.9%, no patients died as a result of treatment toxicity.

Conclusions: Retrograde superselective intra-arterial chemotherapy and daily concurrent radiotherapy for Stage III, IV oral cancer provided good overall survival and local control rates, thus preserving organs and contributing to patients' QOL.

KEY WORDS: Oral cancer, Chemoradiotherapy, Retrograde superselective intra-arterial infusion, Organ preservation, Survival rate

IMAGE-GUIDED ROBOTIC RADIOSURGERY COMBINED WITH CHEMOTHERAPY FOR PATIENTS WITH ADVANCED OR RECURRENT HEAD AND NECK CANCER

Koji Kawaguchi

Department of Oral and Maxillofacial Surgery, Tsurumi University, School of Dental Medicine, Yokohama

**G-11****DUTCH ASSOCIATION FOR ORAL AND MAXILLOFACIAL SURGERY****Biomarkers in Oral Cancer: where do we stand, where will we go?**

Oral cancer is the 11th most common malignancy worldwide. Its incidence of 6.2:100,000 in the Netherlands, is rising annually. Despite improvements in therapy, survival rates have not significantly changed over the past decades, urging a need for novel predictive and therapeutic biomarkers. In this session, the latest developments in biomarker discovery are addressed, such as next generation DNA/RNA sequencing, epigenetics and proteomics. Promising predictive markers have been identified, enabling the discovery of new therapeutic drug targets. The potential impact and implementation of this molecular knowledge into future daily practice, paving the road for personalized treatment of oral cancer patients, is discussed.

INTRODUCTION: THE NEED FOR PREDICTIVE BIOMARKERS IN ORAL CANCER**Robert J.J. van Es****GENETICS: APPLICATIONS OF GENE EXPRESSION PROFILING IN ORAL CANCER****Frank K.J. Leusink****GENETICS: NEXT GENERATION SEQUENCING ON RNA LEVEL IN HEAD AND NECK CANCER****Stefan M. Willems****EPIGENETICS: THE ROLE OF DNA PROMOTOR METHYLATION IN HEAD AND NECK CANCER****Rob Noorlag****PROTEINS: PREDICTIVE VALUE OF PROTEIN MARKERS IN ORAL CANCER****Michael H. Frank****WHERE WILL WE GO? A TOUCH OF UPCOMING TECHNOLOGIES AND INTEGROMICS****Stefan M. Willems**



G-12

KOREAN ASSOCIATION OF OMF SURGEONS (KAOMS)

Recent innovation in the orthognathic surgery for facial asymmetry

Facial asymmetry is a complicated maxillofacial deformation, and its correction by orthognathic surgery is more difficult procedure compared to other facial deformities. Most patients have over- or undergrowth of mandibular condyles, the deformation requires all three rotational movements, and the postoperative stability can be reduced. Therefore the conventional preoperative planning and surgical procedures cannot provide optimal results. In this session, we will present and discuss about stem cell application, concomitant TMJ surgery, technical updates of 3D simulation surgery and time point of surgery for the treatment of facial asymmetry.

STEM CELL APPLICATION IN THE ORTHOGNATHIC SURGERY FOR FACIAL ASYMMETRY; ENHANCEMENT OF STABILITY AND FACIAL CONTOURING

Dr. Seung Ki MIN, DDS, PhD¹, Joon LEE DDS, PhD²

¹Orthognathic Surgery Center, Min's V-line Dental Clinic, Daejeon

²Dept. of OMFS, Wonkwang Dental Hospital. Dental college, Wonkwang University, Daejeon

Distraction osteogenesis (DO) is a relatively new technique that can be used to treat dentofacial deformity. By creating bone, it can be used to lengthen the both of the mandible and maxilla. Like orthognathic surgery, it can be used to treat routine skeletal discrepancies ; however, it provides options to correct discrepancies that are difficult or impossible to achieve with standard orthognathic procedures. In addition, it appears to provide more stability for large movements that are not stable with standard operations.

Mandibular DO is indicated when severe mandibular retrognathia or micrognathia is present. Severe mandibular asymmetry creates difficulties in adaptation of the sagittal split osteotomy segments as flaring of the ramus occurs on one side and medial ramus displacement occurs on the contralateral side. These favorable adaptive changes maintain the soft tissue attachments to bone; hence, there is a greater blood supply to the distraction site and mandible than with conventional osteotomies.

DO is technique sensitive, and the surgical skills and experience of the surgeon reduce the complication rate and optimize treatment outcomes. DO can be associated with a wide variety of minor and major complications. Relapse, one of major complication, has high incidence. To overcome this problem, tissue engineering will ultimately guide the development of targeted strategies designed to accelerate bone healing.

Over the last few years, mesenchymal stem cells (MSCs) have attracted much interest in bone repair application area. Because the MSCs are easily isolated, expanded and can be differentiated into bone cells. In department of Oral and Maxillofacial Surgery of Wonkwang University, we have performed DO technique using the osteoblast cells derived from autologous MSCs. These implantations were performed in different clinical cases such as cysts, mandibular defects caused by tumors and osteomyelitis induced by bisphosphonates. Although to successful surgeries, these attempts required many trials and errors, and needed the establishment of a clinical procedure manual. Herein we will present a new direction technique for implantation of autologous osteoblast cells in oral and maxillofacial clinical surgery.

Acknowledgements

This research was supported by Fishery Commercialization

Technology Development Program, Ministry for Food, Agriculture, Forestry and Fisheries, Republic of Korea (112092-03-2-CG000).

ORTHOGNATHIC SURGERY WITH SIMULTANEOUS TMJ SURGERY: CONDYLECTOMY AND TOTAL JOINT REPLACEMENT

Prof. Jong-Ki HUH, DDS, PhD

Dept. of OMFS, Gangnam Severance Hospital, School of Dentistry, Yonsei University



Mandibular retrognathism with apertognathia is challenging to care when the patient is plan to do orthodontic or orthognathic surgical treatment because of condylar problem, that is, temporomandibular disorders. Idiopathic condylar resorption is more serious to do for any treatment. If condyle is under progressive resorption state, minimizing or staying the progression is better than observation until detecting no more resorption. Pharmacological prevention of condylar resorption has been reported as a treatment consideration.

On this presentation, intermaxillary traction (IMT) using skeletal anchorage system (SAS) is introduced to prevent condylar resorption and decrease anterior open bite. Indication of this treatment and additional medication are also presented. IMT using SAS is used for early stage of anterior open bite caused by temporomandibular disorders as well as post-orthognathic surgery.

TECHNICAL INNOVATIONS ACCOMPANIED WITH RAPID AND ACCURATE PROCESSING FOR 3D SIMULATION SURGERY TO CORRECT FACIAL ASYMMETRY

Prof. Soon Jung HWANG, MD DDS

Dept. of OMFS, School of Dentistry, Seoul National University

According to technical improvements in CT combined with rapid advances of soft ware for 3D medical image, the virtual simulation of surgical planning and navigation surgery are possible in orthognathic surgery for the correction of facial asymmetry. However, there is still a hesitation to use this computer assisted orthognathic surgery (CAOGS) as routine procedure, due to complicated soft ware and long working time, difficult reproduction of natural head position, and radiation during CT taking.

Major benefits of CAOGS for treatment planning in patients with facial asymmetry are to define the best symmetrical and balanced positioning of maxillomandibualr complex after virtual jaw osteotomy, and easily to recognize bony inference for passive alignment of jaw segments, which are useful for bone grinding or reduction. The amounts of correction for maxillary canting, midline deviation, jaw protrusion or retrusion can be easily planned using the conventional 2D cephalograms and clinical measurements. However, the amount of yawing movement and best symmetrical and balanced positioning of maxillomandibualr morphology can be only exactly estimated in 3D simulation surgery.

However, many patients with facial asymmetry have ocular dystopia and deviated nose, therefore, natural head position of patient should be used as a reference, which should be reproduced in 3D virtual model. Only in the reproduced natural head posture in 3D model, feasible simulation surgery and correct amount of surgical movement can be accessed. However, the head posture of patient is inevitably changed in supine position in the conventional CT or in tied head with bandage in cone beam CT.

The other factor for feasible 3D simulation is a practical soft ware which enables to easily make identical osteotomy line in the virtual jaw model like in the operation room to present bony interferences. The real osteotomy line is not the outer line of one cutting surface, but it is partly in curved form in multiple cutting planes.

In this presentation, I would like to present our methods to reproduce natural head posture and real osteotomy line in 3D virtual model, and to present intraoperative verification of maxillary position after Le Fort I osteotomy using navigation system.

SURGERY FIRST VERSUS ORTHODONTIC FIRST ORTHOGNATHIC SURGERY FOR FACIAL ASYMMETRY; STABILITY AND THEIR ADVANTAGES, DISADVANTAGES

Prof. Hee Kyun OH, DDS PhD

Dept. of OMFS, School of Dentistry, Chunam National University

Conventional orthodontic first orthognathic surgery has been widely used because of the stable and successful outcomes. However, longer treatment period and transitional deterioration of facial esthetics and dental function causes significant patient discomfort have led to a surgery-first approach, which eliminates the presurgical orthodontic treatment. The surgery-first approach has several advantages, such as significant reduction in total treatment time, rapid improvement in facial esthetics, and high patient satisfaction after surgery. But this surgery-first approach has been used in the limited cases. Recently, the surgery-first approach can be widely used in most patients with dentofacial deformities and facial asymmetry with the aid of a skeletal anchorage system and 3D cone-beam computed tomography (CBCT).



Accurate surgical planning and a team approach between the surgeon and the orthodontist are crucial in the surgery-first approach. The most complicated step with this approach is the determination of the transitional occlusion immediately after surgery. The maxillary reinforced splint is maintained about 6 ~ 8 weeks postsurgically for stability and temporomandibular joint function.

In order to get accurate, predictable, and efficient treatment outcomes with the surgery-first or orthodontic first orthognathic surgery in facial asymmetric patients, the preoperative planning, surgical procedure and postoperative management will be discussed.



G-13

KOREAN CLEFT PALATE CRANIOFACIAL ASSOCIATION (KCPA)

Recent Updates of Craniofacial Reconstructive Plastic Surgery in Korea

Korean Cleft Palate Craniofacial Association (KCPA) is scheduled to represent you the latest knowledge of various fields of craniofacial surgery. Especially we will have an in-depth discussion concerning facial resurfacing using free flap as not only for reconstruction purposes but also for cosmetic purposes, functional and cosmetic aspects of head and neck reconstruction, reconstruction using robots, distraction on the midface, secondary reconstruction of post-traumatic orbital deformity and latest knowledge of other fields including orthognathic surgery.

FREE TISSUE TRANSFER FOR THE RECONSTRUCTION OF AESTHETIC FACIAL RESURFACING

Deok-Woo Kim

ROBOT-ASSISTED HEAD AND NECK RECONSTRUCTION

In-Sik Yun

FUNCTIONAL AND AESTHETIC HEAD AND NECK RECONSTRUCTION

Jong-Woo Choi

MIDFACE RESTORATION WITH DISTRACTION

Dae-Hyun Lew

SECONDARY RECONSTRUCTION OF POST-TRAUMATIC ORBITAL DEFORMITY

Yong-Ha Kim

UTILIZING SEGMENTAL SURGERY AS AN ADJUNCT IN TWO JAW SURGERY

Myungjune Oh

**G-14****SPANISH ASSOCIATION OF ORAL AND MAXILLOFACIAL SURGERY (SECOM)****Controversies in orthognathic surgery**

Orthognathic surgery (OS) is one of the most relevant and specific working area for any oral & maxillofacial surgeon in the world. Nowadays the level of accuracy and precision in this surgery has reached very high standards. However, still there are some topics where controversy exists and literature bibliography is not clear at all. This session specifically deals with these topics and tries to give some light. What are the pros and cons of 3D planning in OS? New trends in OS focused on surgery first (and old concept came to life...). Is piezosurgery necessary for OS? Advantages & disadvantages. What about the only uncontrolled area in OS: the temporomandibular joint? How to manage position of the condyle in OS? Can we perform some aesthetic procedures at the same time of OS? Rhinoplasty simultaneous or not? Volumetric surgery: is the next step? When and how can we treat with OS those asymmetries due to condylar hyperplasia?

3D VIRTUAL PLANNING. PROS & CONS**Néstor Montesdeoca****SURGERY FIRST IN ORTHOGNATHIC SURGERY. ARE WE LOOKING TO THE FUTURE OR TO THE PAST?****Federico Hernández-Alfaro****IS PIEZOSURGERY NECESSARY FOR ORTHOGNATHIC SURGERY?****Dolores Martínez****TMJ MANAGEMENT IN ORTHOGNATHIC SURGERY****Rafael Martín-Granizo****RHINOPLASTY AND ORTHOGNATHIC SURGERY. SINGLE OR CONSECUTIVE PROCEDURE?****Javier González Lagunas****MANAGEMENT OF FACIAL ASYMMETRIES SECONDARY TO CONDYLAR HYPERPLASIA****Florencio Monje Badajoz****VOLUMETRIC ORTHOFACIAL SURGERY****Joan Birbe Foraster**



G-15

SWEDISH ASSOCIATION OF ORAL AND MAXILLOFACIAL SURGEONS

Oral & Maxillofacial Surgery in Sweden

IMPORTANCE OF ANTIBIOTIC STRATEGIES IN ORAL AND MAXILLOFACIAL SURGERY

Bodil Lund

*Department of Oral and maxillofacial Surgery, Karolinska University Hospital, Stockholm and
Department of Dental Medicine, Karolinska Institutet*

FIXATION METHODS AFTER MANDIBULOTOMY FOR OROPHARYNGEAL TUMORS

Mikael Korduner

*Department of Oral and maxillofacial Surgery, Lund University Hospital and Department of Oral
Surgery and Oral Medicine, Malmö University*

RECONSTRUCTION IN MAXILLARY 3D DEFECTS

Stefan Lundgren

Department of Oral & Maxillofacial Surgery, Umeå University, Umeå

MAXILLOFACIAL SURGERY AT A NATIONAL CRANIOFACIAL CENTRE

Lars Rasmusson

Department of Oral and Maxillofacial surgery, The Sahlgrenska Academy, University of Gothenburg

ASPECTS OF SINUS MEMBRANE ELEVATION

Lars Sennerby

*Department of Oral and Maxillofacial surgery, The Sahlgrenska Academy,
University of Gothenburg*

PREOPERATIVE VIRTUAL PLANNING OF FIBULA FLAP IN MANDIBLE AND MAXILLA RECONSTRUCTION

Andreas Thor

Institute for Surgical Sciences, Uppsala University and Uppsala University Hospital, Uppsala

RECONSTRUCTION WITH TMJ-PROSTHESES

Anders Westermarck

Oral & maxillofacial surgeon in Stockholm and Åland



G-16

BRITISH ASSOCIATION OF ORAL AND MAXILLOFACIAL SURGEONS (BAOMS)

Skin Surgery in the Head and Neck

Evidence of skin concerns are increasing. The majority of Oral and Maxillofacial Units workload is now filled with Surgical Dermatology.

Moh's Surgery concept has quadrupled in the last 10 years. Reconstruction of facial appendages such as nose, eyelids and ears are challenging problems.

In this symposium we are planning to discuss the reconstruction options available to us. One stage or multiple stage options are discussed.

We also aim to provide evidence based information towards the benefits and disadvantages of Moh's Surgery.

NASAL RECONSTRUCTION

Carl Jones

EYELID RECONSTRUCTION

Carrie Newlands

EAR RECONSTRUCTION

Madan Ethunandan

MOHS SURGERY - IS THERE A NEED?

Martin Telfer



G-17

AMERICAN ASSOCIATION OF ORAL AND MAXILLOFACIAL SURGEONS (AAOMS)

AESTHETIC PROCEDURES TO ENHANCE ORTHOGNATHIC & DENTAL IMPLANT SURGERY

G. E. Ghali

Department of Oral & Maxillofacial Surgery, Louisiana State University Health Sciences Center – Shreveport, Louisiana

The pivotal role of the oral and maxillofacial surgeon in the comprehensive management of patients with dentofacial deformities and those in need of complex dental implant restoration can not be overemphasized. Our expertise in skeletal manipulation coupled with carefully planned adjunctive hard and soft tissue procedures positively complement the overall results that may be achieved on our orthognathic and dental implant patients. This presentation will provide an overview of the available aesthetic procedures to achieve these fruitful results as part of a comprehensive treatment plan. We will build from the simple to more complex modalities that are available and review the techniques in detail.



G-18

AMERICAN SOCIETY OF MAXILLOFACIAL SURGEONS (ASMS)

Improving Outcomes in Primary and Secondary Craniomaxillofacial Surgery - Applying Principles from Orthopedic and Aesthetic Surgery

New techniques using computer planning and design as well as intra-operative navigation allow us to accurately position and secure cranial and facial bones.

These advances have helped improve our results but in many instances the final result is determined by the status of the overlying soft tissues.

The application of a wide array of techniques used in aesthetic surgery will improve outcomes when applied in primary and secondary craniomaxillofacial procedures.

APPLYING AESTHETIC PRINCIPLES AND PROCEDURES TO IMPROVE CRANIOFACIAL OUTCOMES

Donald Mackay

THE ANATOMY OF A SMILE. IMPROVING LOWER 1/3 FACIAL AESTHETIC OUTCOMES IN MAXILLOFACIAL SURGERY

Andrew Wexler

COMPUTER AIDED DESIGN/ COMPUTER AIDED MANUFACTURING (CAD/CAM) PLANNING IN COMPLEX CRANIOMAXILLOFACIAL SURGERY

Frank Papay

THE EVOLVING ROLE OF DISTRACTION OSTEOGENESIS (DO) IN CRANIOMAXILLOFACIAL SURGERY

Robert Havlik



G-19

AO FOUNDATION AOCMF

Orbital Trauma and Reconstruction

The symposium will include a discussion of the timing of surgery for orbital trauma and reconstruction, eyelid approaches and techniques, materials used for orbital reconstruction, and the use of intra-operative navigation and imaging.

Improving patient care worldwide

Officially recognized as an AO Specialty in 1974, AOCMF has since worked to foster a multi-specialty organization to serve as the voice and professional resource for individuals working in the field of craniomaxillofacial trauma and reconstruction. Today, the AOCMF community embodies a unique culture of teaching and learning, combined with research and development. The universal spirit of this community transcends borders and Specialties, benefitting both patients and healthcare providers across the globe.

BASIC EYE EXAM AND OCULAR INJURIES FOLLOWING ACUTE TRAUMA, PERIORBITAL APPROACHES, AND EYELID PROBLEM AS A RESULT OF TRAUMA/SURGERY

Michael Grant

INDICATIONS FOR RECONSTRUCTION, EXAMPLES OF FLOOR, MEDIAL WALL AND ORBITAL ROOF RECONSTRUCTION, AND USE OF BONE FOR RECONSTRUCTION

Eppo Wolvius

THE USE OF TITANIUM MESH FOR MASSIVE DEFECTS

Warren Schubert

INDICATIONS FOR THE USE OF INTRA-OPERATIVE IMAGING VERSUS NAVIGATION

Alexander Schramm



G-20

INTERNATIONAL ACADEMY / ASSOCIATION OF ORAL ONCOLOGY (IAOO)

Reconstructive surgery of the maxillofacial skeleton after ablative surgery. Pitfalls and pearls from across the Atlantic.

The last 30 years have seen an explosion of knowledge on oral carcinogenesis as well as technological advances in the diagnosis and multidisciplinary treatment of oral cancer. Despite these developments the 5 year overall survival has advanced little, though the quality of life has undoubtedly improved. The revolution in the surgical treatment of oral/head and neck cancer was the introduction of reconstructive techniques with both pedicled locoregional flaps and free tissue transfer which allows for safer and wider resections and functional reconstruction of the created surgical defects. Oral cavity defects may not be amenable to reconstruction with a single free flap, and multiple flap reconstruction may be required.

RECONSTRUCTION OF MANDIBULAR DEFECTS WITH FREE TISSUE TRANSFER

Bryan R. Bell

RECONSTRUCTION OF MAXILLARY DEFECTS: A SIZE DEPENDENT ALGORITHM

Joseph Helman

THE ROLE OF PERFORATOR FLAPS IN HEAD NECK RECONSTRUCTION, LESSONS LEARNED

Rui Fernandes

FREE TISSUE TRANSFER FOR ROBOTIC SURGICAL APPLICATIONS

Brett Miles



G-21

INTERNATIONAL ASSOCIATION OF ORAL AND MAXILLOFACIAL SURGEONS (IAOMS)

Innovations in OMF Surgery: A global perspective

It is a great honor for IAOMS to be invited for the first time to organize a symposium during the biannual EACMFS Congress. This symposium gives a taste of some of the many areas of OMFS clinical research and international collaboration that take place globally, hence presentations by 5 speakers representing 5 continents. May this be an opportunity for all involved to be informed of some research projects and an incentive to seek opportunities to initiate international collaboration in many diverse areas. If so, let us do it in a meaningful way. IAOMS may facilitate this.

MEETING THE CHALLENGES OF EARLY TONGUE CANCER WITH FOCUSED RESEARCH

David Wiesenfeld

BIPHOSPHONATE RELATED OSTEONECROSIS OF THE JAWS

Joseph Helman

APPLICATION OF STEM-CELLS IN DEGENERATIVE TMJ CONDITIONS

Alejandro Martinez

SPEECH IN RELATION TO CLEFT PALATE – OVERVIEW OF SURGERY AND OUTCOMES

Nabil Samman

CLEFT TREATMENT AND RESEARCH IN PRETORIA WITH ITS NATIONAL, AFRICAN AND INTERNATIONAL CONNECTION AND COOPERATION

Kurt Butow



G-22

INTERNATIONAL BONE RESEARCH ASSOCIATION (IBRA)

Reconstruction of the TMJ

On the initiative of eighteen clinicians, IBRA was founded on 2004. Exchange of professional knowledge, promotion of new scientific developments, engineering of the musculoskeletal system, coordinated multicentre research and highly specialized training are the primary aims of IBRA.

IBRA encourages the development of innovative solutions. Future-oriented open-mindedness and international acceptance form the basis for outstanding assistance. IBRA maintains close contacts with respected international scientific societies. As an international forum reaching across geographic and cultural borders, IBRA offers an up-to-date network for the exchange of experience and knowledge.

CURRENT CONCEPTS IN CONDYLAR FRACTURE OSTEOSYNTHESIS CONSENSUS OF THE 2ND ISCFO IN MARSEILLE, 2012

Andreas Neff

BIOMECHANICS BASE NECK FRACTURES VIA HIGH SUB-MANDIBULAR APPROACH

Christophe Meyer

TRANSORAL ENDOSCOPIC ASSISTED SURGERY PRE- OR RETROAURICULAR APPROACHES

Andreas Neff

AUTOGENOUS VERSUS ALLOPLASTIC RECONSTRUCTION OF THE TMJ

Andrew Sidebottom



Oral Sessions

1. Microsurgical Reconstruction in Head and Neck

O-0101

MASSETER INHIBITORY REFLEX TO EVALUATE RESULTS OF LINGUAL NERVE NEURORRAPHY.

F. Riva, M. Pedrazzoli, F. Allevi, M. Ferrari, L. Comini, G. Motta, F. Biglioli

Departement of Maxillo facial surgery San Paolo Hospital, Milan, Italy

Objectives: Lingual nerve injury is a common complication in oral surgery. There are different etiology: third molar surgery is the dominant. Three lesion degrees are possible: neuroapraxia, axonotmesis and neurotmesis (Seddon's classification). Patients can show a loss of function (hypoesthesia or anesthesia) and neurogenic discomfort such as dysesthesia, paresthesia, allodynia or ageusia. If there is anesthesia at 3 months postoperatively or hypoesthesia after 8 months surgery is indicated. The aim of the study is to evaluate function of the nerve after 12 months after microsurgical reconstruction.

Material and Methods: 10 patients (6 female and 4 men) with hemitongue anesthesia underwent lingual nerve reconstruction by simple anastomosis of the stumps. Their median age was 42 years (25-64). Average time between lesion and repair was 196 days.

Sensitivity status was assessed in all patients by clinical and neurophysiological tests, performed preoperatively and postoperatively.

Clinical evaluation was conducted with feather light touch test, two point discrimination test, brushing test, pain reaction and taste perception. Medical research council scale (MRCS) was used to classify the severity of the injury in each patient.

Neurophysiological evaluation was performed with masseter inhibitory reflex (MIR): patient had to judge intensity of stimulus perception on affected side and healthy side, distinguishing tactile threshold (perception of low electrical stimulation) and pain threshold (when perception of the stimulus became painful).

Results: Preoperative data collected with clinical tests had showed: anesthesia in 4 patients, high grade hypoesthesia/paresthesia in 6 patients, 5 patients had also pain. Neurophysiological tests had demonstrated tactile and pain threshold values pathologically elevated compared to healthy side.

After surgery data showed a high grade of functional recovery of sensitivity in 70% of cases, medium grade in 20% and null in only one case. 80% of patients with pain showed resolution of the symptom. Taste sensitivity recovered in 60% of cases. No worsening of symptoms was observed in any case.

Discussion and Conclusion: Microsurgical reconstruction of the injured lingual nerve leads to a good grade of functional recovery.

**O-0102****MINIMALLY INVASIVE HARVEST OF FREE FIBULA FLAP IN RECONSTRUCTIVE SURGERY FOR HEAD AND NECK DEFECTS.**

A. Russillo¹, A. Bolzoni¹, G. A. Beltramini¹, O. Massarelli², A. B. Gianni¹, A. Baj¹

¹ *Maxillofacial Surgery and Odontostomatology, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy*

² *Maxillofacial Surgery, Azienda Ospedaliera- Universitaria di Sassari, Sassari, Italy*

Objectives

The harvesting of the fibula free flap can have a high number of possible complications for the donor site and the receiving site. The aim of this study is to compare and quantify with objective data, the complications of the donor site between patients undergoing to a "classical" harvesting technique in comparison with a minimally invasive harvesting approach.

Material and methods

We selected 10 patients underwent to free fibular flap surgery for mandible or maxilla reconstruction, 5 patients undergone to a "classical" approach and 5 patients with minimally invasive technique.

We submit all patients to a QoL evaluation test, where noted analgesic drug required and use of device support for the resumption of the march.

An optoelectronic three-dimensional motion analyzer (SMART system, E-motion) was used to evaluate gait.

Donor site functional defects were evaluated through analysis of shifts of Center of Mass (CoM), velocity and step length during a normal walk and on stairs. The results obtained from the patients undergoing to minimally invasive technique were compared to the patients operated with "classical" technique and to a healthy control group with similar anthropometric data.

Results

The analysis of velocity and step length has found significant differences between patients undergone to minimally invasive approach and classical technique. The patients of the first group had CoM analysis results much closer to the healthy control subjects, they required less analgesic drugs and less time of convalescence with early recovery time, an highest score in QoL test compared to the classical approach.

Conclusion

The functional and aesthetic result was excellent in all 10 patients. The biological cost of free fibula flap harvested in minimally invasive technique was less than the patients undergone to a classical approach as we saw it in the results (QoL test, CoM analysis, Analgesic drug required, recovery time). We suggest where the dimension of the defect to be restored allow it to use a minimally invasive harvesting technique instead of a classical approach.

**O-0103****A PERIOPERATIVE EVALUATION OF THROMBELASTOMETRY AND PLATELET FUNCTION TESTING IN FREE-FLAP SURGERY**

J. Wikner, S. Schlesinger, M. Heiland, K. Heckel, B. Riecke

UKE, Hamburg, Germany

Objective. Microvascular tissue transfer as primary treatment option of complex defects is a fundamental pillar in reconstructive surgery. The procedures are performed in a sophisticated manner by several disciplines. However, the perioperative management of free flaps is still under discussion, the concepts vary. Especially the hemostaseologic concept in free-flap management is subject of an ongoing debate. It has to be clarified if alternative approaches beyond common procedures are sufficient to improve current practice in monitoring the patients. To make elusive parameters feasible this must be proven under controlled conditions to reveal a potential impact on clinical outcome in this multi-modal entity.

Methods. 20 consecutive patients undergoing free-flap surgery were enrolled. Procedures included radial forearm flaps (RFF), anterior lateral thigh flaps (ALT) and fibular flaps with transfer to various recipient sites. Three time points were defined to obtain blood samples: 1. prior to surgery 2. at time of establishing anastomosis after scheduled administration of weight-adjusted heparin and 3. 24hrs afterwards. We used thrombelastometry (ROTEM™) to measure clotting time, clot formation time, maximal clot firmness and thus testing extrinsic and intrinsic coagulation system, the fibrinogen contribution to coagulation and possible heparin effects in the course. Moreover, the „in-vitro bleeding time“ was measured using a platelet function analyzer (PFA100™). Additionally global coagulation markers were sampled simultaneously as well as clinical parameters and analyzed subsequently. The study has been approved by the local Medical Ethical Committee.

Results. Hemostatic changes were deducible using thrombelastometry and platelet-function analysis perioperatively. Alterations detected by ROTEM™ suggest a noninferiority to standard testing but lacking standardization. A screening via PFA provides additional information on patient-specific parameters. Interferences with applied medication were detectable.

Conclusions. Thrombelastometry and PFA might serve as supplementary tools in free-flap surgery. Early statements in case of flap-revision are deducible, allowing an assessment of coagulation status with faster turnaround times than standard testing. The methods might offer significant contribution to perioperative risk stratification of patients undergoing free-flap surgery and could increase future safety and outcome. Their utilization might meet individual needs in therapeutic interventions that go along with hemodynamic and hemostasiologic changes.



O-0104

SEGMENT TRANSFER DISTRACTION OF THE MANDIBLE,CAN WE CROSS THE MIDLINE.

H. El-Mekkawi, M. Hassan, G. El-Morshedy, A. El-Sakka

Oral & Maxillofacial Surgery, Misr University for Science & Technology Teaching Hospital, 6 October City, Egypt

Introduction:Reconstruction of mandibular defects has been a serious challenge to the experienced surgeons; segment transfer distraction osteogenesis is an accepted method of dealing with such defects.

Objective:Analysis of the cases performed using external segment transfer distractor.

Materials and methods:44 patients with defects of the mandible ranging from 35mm up to more than100mm.All cases had a symphysis or parasymphysis defect.

Results:All cases with a midline mandibular defect were reconstructed successfully by segment transfer distraction from both sides.Cases with a unilateral defect involving the midline or parasymphysis region could not be reconstructed by this method.Distraktion resulted in chin deviation to the deficient side.Predistraktion bone graft covering the bone defect till the canine region was a must,to be followed 3 month later by distraction if needed.

One case with 84mm defect crossing the midline was reconstructed successfully by distraction from the right side crossing the midline to the left side.

Conclusion:Segment transfer distraction is an accepted method for reconstruction of mandibular defects.The following guidelines are essential:Reconstruction of midline defects should be done by bone transport from both sides meeting at midline.Unilateral crossing of the midline causes midline shift and chin deviation to the defective side. In unilateral defects involving midline a bone graft reconstructing the defect till the canine region followed by distraction 3 month later is an accepted procedure for mandibular defects reconstruction.For proper bone union a bone graft at the docking site is mandatory.

**O-0105****SONOGRAPHIC MEASUREMENT OF FLAP THICKNESS OF SIX COMMON FLAPS USED IN RECONSTRUCTIVE SURGERY OF THE HEAD AND NECK.**

H. Wieker, H.C. Jacobsen, P. Sieg, S.G. Hakim

Klinik für Kiefer- und Gesichtschirurgie, UKSH, Lübeck, Germany

PURPOSE: The head and neck region consists of various types and layers of tissue forming the structural, functional and aesthetic complex of the face and neck. Reconstruction of tissue lost e.g. by trauma or oncologic surgery requires adequately sized soft tissue transplants not only in two but in three dimensions.

The aim of this study was to determine the thickness of some commonly used microvascular flaps and to resolve the influential effect of various parameters BMI, smoking, sex and age relating to the thickness of those flaps. The following flap regions were examined: radial forearm flap (RFF), ulnar forearm flap (UFF), scapular and parascapular flap (SF and PF), anterolateral thigh flap (ALT) and the cutaneous part of the fibula flap (FF).

Materials and Methods: In a total number of 122 healthy test persons (62 female) the thickness of the whole flap consisting of skin and subcutaneous fat layer was measured by means of ultrasound. In the RFF, UFF, ALT and FF sites 4 areas were defined; the SF and PF were divided into 3 areas each. In each area 3 measurements were taken. The resulting database included 16104 test results which were processed by using correlation analysis concerning e.g. the parameters BMI, smoking, sex and age. Furthermore regression analysis was performed to determine the influence of the aforementioned parameters on flap thickness and describe the variation in different donor sites.

Results: Analysis of the diversion of flap thickness showed the UFF to be the thinnest flap, followed by RFF, FF, SF, PF, while the thickest flap was the ALT. A tendency to variation of flap thickness regarding a difference between body sides could be found in both forearm flaps but not in any other donor site. Due to correlation analysis the parameter "age" was dropped out of the regression formula. The resulting mathematical formula describes the flap thickness in a certain individual. The BMI is the major factor influencing flap thickness, but sexual dimorphism plays a significant role especially in the ALT flap particularly in women. Smoking has no relevant effect on flap thickness. Additionally the FF shows almost the same thickness values as the RFF.

Conclusion: Choosing a suitable flap for reconstructing lost tissues in defects of various types and depths in the head and neck region could become more convenient by determining the ideal flap preoperatively by calculating its dimensions in the respective patient.

**O-0106****MICROVASCULAR RECONSTRUCTION OF THE HEAD AND NECK IN PAEDIATRIC PATIENTS: THE LONDON SARCOMA SERVICE EXPERIENCE**

L. Williams, T. Wong, P. Drury, C. Liew, L. Newman, N. Kalavrezos

University College London Hospital, London, United Kingdom

Objective:

Microvascular reconstruction of the head and neck in adults is widely reported and is considered the functional and aesthetic gold standard for large volume or composite defects however there is a paucity of literature concerning this surgical modality in the paediatric patient. This study evaluates the outcome of microvascular reconstruction of head and neck defects in paediatric patients.

Methods:

Retrospective analysis of departmental database from University College London Hospital, a supra-regional centre for head and neck sarcoma, identified patients aged 18 or younger who underwent free flap reconstruction of head and neck defects arising from surgical resection of sarcoma over a 14-year period. Data concerning patient demographics, diagnosis, surgical and medical management, survival and surgical complications were obtained.

Results:

Thirteen patients were identified that had 15 free flaps for head and neck reconstruction. The mean age was 14 years (range 10-18). Neoadjuvant treatment comprised chemotherapy in 10 patients and chemo-radiotherapy in one patient. Adjuvant treatment comprised chemotherapy in 2 patients, radiotherapy in 2 patients and chemo-radiotherapy in 5 patients. Flaps utilised included fibula, DCIA, radial forearm and ALT. There were no flap failures or mortality arising from surgery. Four patients had died at a mean 15.5 months post operation and one patient lost to follow up. The remaining patients had normal feeding and dental rehabilitation either planned or in progress.

Conclusions:

Surgical management of head and neck sarcoma in paediatric patients presents unique challenges to surgeons however good functional and aesthetic outcomes are achievable following reconstruction of even the largest defects. Immediate reconstruction following tumour resection should be attempted where possible.



O-0107

THE USE OF ILIAC CREST FREE FLAP IN OROMANDIBULAR FUNCTIONAL AND AESTHETIC RECONSTRUCTION

I.Moldovan

cranio maxillo-facial clinic cluj, cluj-napoca, Romania

Microsurgical free flaps represent today the best solution for reconstruction of wide defects resulting from total mandibulectomies, subtotal and hemimandibulectomies.

The objective of this study is to show the advantages of using the iliac crest free flap in comparison with the other feasible solutions for the morpho-functional rehabilitation of the lower third of the face.

Throughout the years in our clinic we have used from free grafts of autologous bone, heterologous bone, ceramics, metal to vascularised grafts of osseous pedicled flaps and osseous free flaps for the reconstruction of mandibular defects following oncologic resection.

For us the optimal solution was the iliac crest free flap with whom we obtained the best oro maxillo-facial rehabilitation of the mandibular continuity as well as the soft tissue and a prothetic rehabilitation using osseointegrated implants

**O-0108****WHICH IS BETTER FOR RECONSTRUCTION OF TONGUE: COMPARISON OF THE MEDIAL SURAL ARTERY PERFORATOR FLAP WITH THREE OTHER FLAPS?**

Y-N WU, Y. YUAN, H-M. WU, X-M. SONG, J-H. YE, X. DING, J. CHEN, J. CHENG, S-Z. XING

Stomatologic Hospital, Nanjing Medical University, Nanjing, China

Objective: To compare the application of medial sural artery perforator flap, lateral arm flap, anterolateral thigh flap and forearm flap in reconstruction of defects in the tongue and floor of mouth following ablative oncological surgery.

Subjects and Methods: The study included 76 patients (47 male, 29 female, mean ages 58.8, and range 38–73 years). 19 medial sural artery perforator flap, 20 lateral arm flap, 14 anterolateral thigh flap and 23 forearm flap were harvested to reconstruct defects caused by the resection of malignant tumors in the tongue and floor of mouth. Flap sizes ranging from 5×6 to 8×11 cm were harvested; the anastomoses were carried out using a magnifier or microscope. All donor defects were closed primarily.

Results: 70 (92.10%) flaps healed without venous insufficiency. There was no significant complication at the donor sites.

Conclusions: Each flap has its own advantage. Compared with the radial artery, the medial sural artery, posterior radial collateral artery, and descending branch of the lateral circumflex femoral artery is a nonessential vessel. Medial sural artery perforator flap, lateral arm flap and anterolateral thigh flap have the advantages including anatomically reliable vascular supply; accessible donor site; and the aesthetic quality of donor tissue; primary closure can be achieved in most patients. The disadvantages of lateral arm flap and anterolateral thigh flap are the relatively smaller vessel size for anastomosis and thicker subcutaneous tissue; while for medial sural artery perforator flap, the thickness and volume can be adjusted to accommodate the extent of the defect.



O-0109

PROGRESSIVE MIDFACIAL BONE EROSION AND NECROSIS: CASE REPORT AND DIFFERENTIAL DIAGNOSIS.

F.A. Bianchi¹, G. Gerbino¹, P. Tosco¹, G. Tanteri¹, E. Zavattero¹, G. Gatti², G. Ramieri¹

¹ *Surgical Sciences, Division of Maxillofacial Surgery, University of Turin, Turin, Italy*

² *Biomedical Sciences and Human Oncology, Division of Pathology, University of Turin, Turin, Italy*

Objective: a midline destructive lesion (MDL) can be caused by multiple conditions but it is less known that cocaine abuse can produce a severe midfacial destruction mimicking other aggressive conditions. Here we discuss a case of a young woman with MDL, including the formulation of a detailed and well thought out differential diagnosis.

Case report: a 31-year-old woman presented with a typical MDL with nasal septum and hard/soft palate perforation with a friable granular surface and a large amount of necrotic tissues. The patient denied previous local trauma, including surgical procedures or drug assumption. Pathological examination revealed the presence of necrosis and chronic inflammation. Clinical history, endoscopy, radiology, laboratory tests and histopathologic examination allowed to exclude infectious diseases, sarcoidosis and nasal-type natural killer/T-cell lymphoma (nNKTL). The main differential diagnostic considerations remain between Wegener's granulomatosis (GPA) and cocaine-induced midline destructive lesions (CIMDL), even if the patient continued to deny cocaine abuse. The p-ANCA test was positive and MPO-ANCA negative, keeping with CIMDL. The patient finally admitted to inhalation cocaine for the past five years. The patient abandoned the cocaine addiction. She was followed-up for six months, further serologic test and urine investigation resulted negative for cocaine therefore a two stage plan was designed. In the first operation an accurate surgical toilette of all necrotic tissue was accomplished. A bilateral Bichat's buccal fat pad flap was performed in order to close the hard palate defect. The reconstruction of the nasal frame and the maxilla was achieved by means of a fascio-cutaneous forearm free flap. In the second operation a costal cartilage graft was used so as to allow support of the septal/columella element and to restore the nasal tip. At one year postoperatively, the patient exhibited satisfactory palatal and nasal structure with functional nasal airways.

Conclusions: This case has been presented to bring to the attention of practicing oral and maxillofacial surgeons that CIMDL is an important differential diagnosis in young patients presenting with MDL, even when the patients deny cocaine abuse. An adequate reconstruction may be required to restore function and aesthetic in this group of patients.



2. Skull Base Surgery

O-0201

VARIOUS SURGICAL APPROACHES BY PLASTIC SURGEONS TO SECURE WIDE EXPOSURE OF SKULL BASE

S.R. Kim¹, J.W. Lee¹, H.K. Kim¹, D.Y. Kim², H.K. Kim², Y.S. Han¹

¹ *Department of Plastic and Reconstructive Surgery, Kosin University College of Medicine, Busan, South Korea*

² *Department of Neurosurgery, Kosin University College of Medicine, Busan, South Korea*

Objective

The surgical treatment of the tumor located at the skull base is challenging due to the limited surgical access, and to the important neurovascular structures nearby. The success of total tumor resection depends on the levels of tumor exposure and the security of operative vision. Recently the removal of the skull base tumor using endoscopy is widely performed, while the transfacial approach is less chosen than before. However, the transfacial approach is sometimes required according to the location and size of the tumor, and the role of a plastic surgeon may also be necessary. In this study, various cases of transfacial approach to secure the sufficient operative vision in 12 patients with the skull base tumor are described.

Methods

Between March 2013 and September 2013, 12 skull base tumor patients underwent various approaches at the authors' hospital: two clivus tumor patients did LeFort I transmaxillary approach; two tuberculum sellae and suprasellar hypothalamus tumor patients, transbasal approach; two clinoid tumor patients, orbitozygomatic approach; and six petroclival area, pons, cavernous sinus, and lateral sphenoid wing tumor patients, transtemporal approach (Figs. 1-4). Information on the completeness of tumor resection, surgical outcome, and postoperative complications was obtained.

Results

In all cases, the upper and lower margins of the tumor were visible. Total tumor removal (Fig 5.) was performed in 9 cases, and partial tumor removal in 3 cases. 1 case with transbasal approach, forehead emphysema occurred but spontaneously resolved in several days. In the LeFort I transmaxillary approach cases, a tingling sensation on the both cheeks was reported, but no malocclusion was observed (Table 1). The overall cosmetic results were satisfactory.

Conclusions

In the surgery for skull base tumor patients, a plastic surgeon can use various transfacial approaches according to the location and size of the tumor to secure a sufficient operative vision. Therefore, the transfacial approach in cooperation with a plastic surgeon can be an option in skull base surgery.

**O-0202****SURGICAL MANAGEMENT OF SKULL BASE SARCOMAS – LIMITS, POSSIBILITIES, OUR VIEW**

A. Vlasak¹, J. Kozak¹, M.Chovanec², L. Frajer³, M. Tichy¹

¹ *Department of Adult and Pediatric Neurosurgery, University Hospital Motol, Prague, Czech Republic*

² *Department of Otorhinolaryngology and Head and Neck Surgery, University Hospital Motol, Prague, Czech Republic*

³ *Department of Surgery, University Hospital Motol, Prague, Czech Republic*

Sarcomas are malignant tumors that arise from transformed cell of connective tissue. There are about 100 different sub-types of sarcoma depending on the type of tissue that they most closely resemble. Two main types can be distinguished - bone sarcomas and soft tissue sarcomas, which occur more frequently. Skull base sarcomas comprise 10% of these tumors. From all head and neck tumors skull base sarcomas account for 1%, the majority in children and youth. Among all sarcoma cases, those originating in the skull base region have the lowest overall survival rates. About half of the patients survive beyond 2-3 years post-treatment. Unlike sarcomas in other parts of body, where metastasis are the most common cause of death, in skull base sarcomas patients eventually die of local recurrence involving vital structures. Even though radical resection in this location is sometimes very difficult to achieve, radical surgery still remains number one option. In many cases after the resection soft tissue reconstruction must follow. Surgical treatment is usually followed with adjuvant radiotherapy.

Aims

The aim of this lecture is to present our experience with treatment of complex skull base sarcomas – successes and pitfalls.

Materials and Methods

In our cohort we would like to demonstrate 3 osteosarcomas, 2 chondrosarcomas, Ewing's sarcoma and rhabdomyosarcoma. There were 5 men and 3 women. All patients underwent complex multidisciplinary skull base resection and in 3 cases free flap transfer was used.

Results

Two patients died because of tumor progression (one with osteosarcoma and Ewing's sarcoma case). Two patients are now recurrence free (one with osteosarcoma and one with chondrosarcoma). Two patients wait for another surgery (one with chondrosarcoma and rhabdomyosarcoma case). One patient with osteosarcoma has a recurrence, but refused another surgery.

Discussion and Conclusion

Surgery of skull base sarcomas belongs to the most difficult issues, because of the presence of vital anatomical structures in this region. It brings a lot of complications. On the other hand, in the treatment of sarcomas radical surgery still remains number one option. Very important factor in decision making is a wish of a patient.

**O-0203****FRONTAL SINUS MUCOCELES WITH ORBITAL COMPLICATIONS: DIAGNOSIS AND MANAGEMENT**

R. Luaces-Rey, N. Carral, V. Chávez, A.García-Rozado, J.Collado, F.Gálvez, A.González, M.Pombo, B.Patiño, J.L.López-Cedrún

Department of Oral and Maxillofacial Surgery, A Coruña University Hospital, A Coruña, Spain

Objectives

Frontal sinus mucocoeles are slowly expanding lesions caused by accumulation of mucoid secretion and desquamated epithelium. These usually arise due to sinus ostium obstruction, preceded by infection, inflammation, trauma, surgery or blockage by tumors. Frontal mucocoeles behave like space-occupying lesions that cause bone erosion and the displacement of surrounding structures. Ophthalmic manifestations can appear when orbital cavity is affected. These can be orbital swelling, proptosis, diplopia, decreased visual acuity or restriction of extraocular movements. The mainstay of management is surgery, which ranges from functional endoscopic surgery to craniofacial exposure.

Material and Methods

Six cases of frontoethmoidal mucocoeles involving orbit are presented. Initial symptoms were orbital swelling in most of them and proptosis in one. All of them were males treated by open surgery for mucocoele excision, duct obstruction and sinus obliteration or cranoialization. Three of them had history of major facial trauma. Two cases showed intracranial extension through erosion of the posterior wall of the frontal sinus. Different ways of sinus management are exposed. Autologous bone graft, carbonated calcium phosphate bone cement, fibrin glue and galeal flap were used for obliteration.

Results

Follow up ranged from 1 to 12 years. No mucocoele recurrence or infectious complication was observed. Radiological control was performed with CT scan. Nowadays autologous bone graft seems to be accepted as the gold standard for sinus and duct obliteration instead of alloplastic materials.

Conclusions

Frontal mucocoeles can appear many years after a facial trauma that involves sinus drainage. Surgery is the only accepted treatment. Ophthalmological manifestations can be the first when orbital walls are involved. Sometimes neurosurgeon collaboration is needed although endoscopic approach is increasing its indication. Orbital walls should be reconstructed in order to avoid enophthalmos.

**O-0204****RETROSPECTIVE VALIDATION OF A NEW UK NATIONAL CRANIOPLASTY DATABASE**

A. Bardazzi, C. Coulter, K. Fan, R.P. Bentley

Oral and Maxillofacial Surgery, King's College Hospital NHS Foundation Trust, London, United Kingdom

Objective: The increased number of decompressive craniectomies and improved long-term patient outcomes have resulted in an increased demand for reconstructive cranioplasty.

Indications for cranioplasty include brain protection, improved aesthetics, improved quality of life and now increasing recognition of neurological functional improvement.

Unfortunately at the moment a specific national or international database for cranioplasties does not exist and therefore there is no general consensus on how and when to perform it for optimal outcomes. In an attempt to address this a United Kingdom study group has published a recent paper outlining such a database (UK Cranial Reconstruction Registry)¹. The objective of this paper was to retrospectively populate the proposed database and to compare the accuracy of the data retrieved against the criteria established and to help validate the new database.

Methods: from 2006 to 2013, 159 cranioplasties were performed at King's College Hospital in London by a single surgeon. Baseline demographics, operative data, outcomes measures and patients reported quality of life were obtained from the patient's clinical notes and computer records.

Results: For all the 159 patients it was possible to obtain the baseline demographics and most of the operative data but not all the data requested in the UKCRR database. In particular there was no clear documentation of the patients quality of life or the size of the implant, which was only clearly documented in one of the 159 patients.

Conclusions: This study demonstrates the crucial importance of standardizing data collection and validates the proposed cranioplasty database.

1. Proposal for establishment of the UK Cranial Reconstruction Registry (UKCRR) - British Journal of Neurosurgery 2013 Nov 18

**O-0205****IMPROVED SURGICAL PLANNING, TARGETING AND PLACEMENT FOR SPG NEUROSTIMULATOR THROUGH DIGITALLY RECONSTRUCTED FLUOROSCOPIC IMAGES.**

A. T. Assaf, S. Hillerup, J. Rostgaard, M. Puche, H. Olze, O. Müller, B. Ramachandran, R. Powell, A. Caparso, F. Papay

Department of Oral and Maxillofacial Surgery, University Medical Center Hamburg Eppendorf, Hamburg, Germany

Introduction: The ATI SPG Neurostimulator is designed to be implanted in the mid face, with the integrated lead extending into the pterygopalatine fossa (PPF) to electrically stimulate the Sphenopalatine Ganglion (SPG) as a treatment for primary headaches. Pre-operative surgical planning to ensure the placement of the Neurostimulator in close proximity to the SPG is critical for treatment efficacy.

Material and Methods: Custom methods and software were developed that results in a 3D-rotatable digitally-reconstructed fluoroscopic image illustrating the patient specific placement with the ATI Neurostimulator. The reconstructed digital fluoroscopic images are created from a pre-operative CT scan of the patients' anatomy which is then volume rendered. A digital representation of the Neurostimulator is placed at the desired target (within the PPF, at the superior medial aspect of the vidian canal) within the volume rendering which allows for the reconstructed fluoroscopic image to be a patient specific anatomical representation nearly identical to the image obtained with fluoroscopy. This method allows for visual comparison between the real time surgical fluoroscopic image and the digitally reconstructed fluoroscopic image during surgery. The visual comparison can be done using bone landmarks that are identifiable on both the reconstructed images as well as the real time fluoroscopic images.

Results: 23 surgeries have been performed using this new method with an average distance reduction between the target and Neurostimulator of 1.24mm (Pre visualization 2.24 ± 1.54 mm; Post visualization 1.00 ± 1.02 mm). To better activate the SPG, a distance of less than 5mm is required based on the ATI lead diameter and electrode spacing dimensions. When using software visualization, no placement was greater than 5mm from the desired target location, compared to the 6.5 % occurrence in the surgeries where visualization was not performed.

Conclusions: Results from this testing have shown a reduction in the average distance from the Neurostimulator to the desired target and therefore a distinct improvement in the positioning of the ATI Neurostimulator through the use of this new method of surgical planning.



O-0206

NASOSEPTAL FLAP FOR ANTERIOR SKULL BASE RECONSTRUCTION: OUR EXPERIENCE.

F. Giovannetti, I. V. Aboh, F. Cascino, I. Parrucci, B. Beccatini, N. Di Grazia, P. Di Giovanni, G. Oliveri, G. Iannetti

Neurosurgery and Maxillofacial surgery, Policlinico Universitario Le Scotte, Siena, Italy

Introduction

Various endoscopic techniques have been described for reconstructing the anterior skull base to prevent cerebrospinal fluid (CSF) leak.

Reconstruction of the barriers separating the subarachnoid space from the sinonasal tract may be the greatest obstacle.

Material and methods

We retrospectively reviewed the pathological, and surgical outcome data 25 patients who underwent reconstruction of the skull base with the HBF after EEA from January 2007 to January 2011 at the Departments of Neurosurgery and Maxillofacial surgery of the Universities of Rome "La Sapienza".

Results

We have had the opportunity to use the HBF in 25 patients, including 10 men and 15 women with ages ranging from 22 to 65 years (mean, 44 yr).

The largest defect resulted from the resection of the anterior cranial base from the ethmoidal sinus to the planum sphenoidale.

The only one patients required additional surgery for the new skull base reconstruction.

Discussion

Synthetic materials have been used extensively, but problems with host-tissue reaction and magnetic resonance imaging interference remain.

Autologous grafts interact with the surrounding physiological structures, promoting the migration of fibroblasts and leading to complete recovery of the anatomical barrier.

Conclusion

The HBF is a reliable reconstructive technique for extensive defects of the anterior, clival, and parasellar cranial base.

A vascular pedicled flap of the nasal septum mucoperiosteum and mucoperichondrium based on the nasoseptal artery (Hadad-Bassagasteguy flap [HBF]) may be harvested and used via an endonasal approach.

Reference

1. Hadad G, Bassagasteguy L, et al: A novel reconstructive technique after endoscopic expanded endonasal approaches: Vascular pedicle nasoseptal flap. *Laryngoscope* 116:1882–1886, 2006.
2. Cappabianca P, de Divitiis E: Endoscopy and transsphenoidal surgery. *Neurosurgery* 54:1043–1050, 2004.
3. Castelnuovo P, Dallan I, Battaglia P, Bignami M. Endoscopic endonasal skull base surgery: past, present and future. *Eur Arch Otorhinolaryngol.* 2010 May;267(5):649-63

**O-0207****THE ENDOSCOPIC SKULL BASE SURGERY IN PEDIATRIC PATIENTS. A MULTICENTRIC STUDY.**

P. Priore¹, F. Giovannetti¹, I. Raponi¹, F. Cascino², E. Tedone², V. Valentini¹, F. Mussa³, M. Scagnet³, L. Genitori³, G. Iannetti²

¹ *Maxillofacial Surgery, Sapienza University of Rome, Rome, Italy*

² *Maxillofacial Surgery, Policlinico Universitario Le Scotte, Siena, Italy*

³ *Neurosurgery, Azienda Ospedaliera Universitaria Meyer, Florence, Italy*

Objective:

The use of endoscopic endonasal surgery in pediatric patients, to treat the skull base pathologies, is currently an effective alternative in centres specialized on open surgery. The authors show their experience and results obtained using this method.

Materials and methods:

The retrospective study was conducted on the clinic folders of 18 pediatric patients treated in the Hospital Umberto I, in Rome, Hospital Meyer, in Florence, and Hospital Le Scotte, in Siena, from January 2010 to January 2014. 11 patients were females, and their average age was 12.5 years. The treated pathologies were 6 intrasellar craniopharyngiomas, 5 hypophysis adenomas, 3 ethmoidal mucoid fibrous tumors, 2 dermoid cysts and 2 post-traumatic cerebrospinal fluid fistulas. In none of our patients we observed relapse of pathology. Only one patient showed rhinorrhea, and another one showed insipid diabetes after removing the craniopharyngioma. The average of the stay in hospital was 5 days.

Discussion:

The endoscopic endonasal surgery has been shown to be a safe and standardized procedure to treat a wide range of the skull base pediatric pathologies. The endoscopic endonasal surgery, when advisable, allows to obtain excellent results in pediatric patients.



O-0208

CRANIOPLASTY RECON PLATES – INDICATIONS, PRESENTATIONS AND COMPLICATIONS

A. Abbas, S. Bhatia, A. Cronin

University Hospital of Wales, Cardiff, United Kingdom

Cranioplasty plates for repair of defects and deformities in the skull have been traced back to Incan and Muisca surgeons as early as the 14th century, and are now routinely employed by neurosurgeons and maxillofacial surgeons to reconstruct pathological processes which involve the cranium including calvarial and skull base anatomical regions, like congenital or iatrogenic defects, traumatic injuries and post-infective defects.

In this audit we present our unit's experience with the placement and removal of these plates, the presenting clinical picture, the operative and post-operative complications and factors associated with these complications, including surgical, material and patient factors. Indications for removal and/or replacement of these plates is also examined. This is a retrospective audit over the last 5 years up to and including 2013.

**O-0209****EAGLE'S SYNDROME: INTRAORAL OR CERVICAL APPROACH? OUR EXPERIENCE WITH TEN PATIENTS IN A CORUÑA UNIVERSITY HOSPITAL**

M. Pombo, N. Carral, J. Collado, F. Lorenzo, A. García-Rozado, JL López-Cedrún

Oral and Maxillofacial Surgery, CHU A Coruña, A Coruña, Spain

INTRODUCTION: Eagle's syndrome consists of several head and neck symptoms due to an elongated styloid process, normally more than 3cm. The most frequent complaints are pain in the face, neck, throat or ear, dysphagia, pharyngeal foreign body sensation and headaches.

MATERIAL AND METHODS: We have performed a retrospective study of the patients operated in the Department of Oral and Maxillofacial Surgery in A Coruña University Hospital because of a symptomatic elongated styloid process. All patients underwent physical examination and radiographic studies, including a panoramic radiograph and computed tomography. The length of the styloid processes was measured from the base to the tip. Several variables were evaluated: age, gender, main complaint of the patient, affected side, surgical approach, complications of the surgical procedure and symptoms relief.

RESULTS: From 2001 to 2013 a total of ten patients underwent surgery in our department because of an Eagle's syndrome, eight females and two males. Mean age was fifty years, ranging from twenty-nine to sixty-six. In all patients the main complaint was pain in the cervical or facial region; one of them also complained of discomfort when swallowing. In five patients the elongation of the styloid process occurred in the right side and in four patients in the left side; the remaining patient suffered from a bilateral elongation of the styloid process. Every surgical procedure was performed under general anaesthesia. In three cases we performed a cervical approach and in six patients, an intraoral approach. In the bilaterally affected patient, we used an intraoral approach in one side and an extraoral one in the other side. In all patients the pain disappeared after surgery. Among patients with extraoral approach, complications included one temporary paresis of the facial nerve and one temporary affectionation of spinal nerve, both solved with physical therapy. The only complication in patients with intraoral approach was one temporary aphonia due to edema.

CONCLUSIONS: In our experience, the intraoral approach for the excision of an elongated styloid process leads to symptoms relief with less complications than the extraoral one, avoiding also an unsightly scar.



3. Temporomandibular Joint Pathology and Surgery

O-0301

NEW CONCEPT AND DESIGN FOR TOTAL TMJ PROSTHESIS IN PEEK

W. Genovesi, M.Marim, W.L.Pereira, I.Comenalli, W.Genovesi Filho

CranioFacial pain clinic, Hospital 9 de Julho, São paulo, Brazil

Like other synovial joints, the TMJ is also likely injuries and pathologies inherent in these joints. It has long been studying these joints because they are the same Diartroidial , difficulties to reestablish a healthy joint, after the onset of disease or injury, and even today, is the object of study and controversy.

With the technological advancement of new materials and designs that somehow resembles bio mechanically with the normal joint, new prosthesis for TMJs are being prepared. Several models are found in the market for replacement of the temporomandibular joints , among them we can mention: Cristhensen TMJ prosthesis system, Hoffmann TMJ prosthesis, Lorenz Inc. and TMJ concept.

The total or partial reconstruction of the TMJ has its specific indications , studies show that for a period no longer than 20 months, we do not maintain a condylar prosthesis without proper coating of the skull base , as may occur: Metallosis, neo bone formation (hectopic bone) and or reabsorption of the skull base.

In an attempt to improve the TMJ prosthesis systems, some materials were used , but were short lifespan. Such materials are: Silastic, Proplast / Teflom, Vitallium, Ultra Molecular Weight Polyethylene and Titanium Alloy. Recently, after extensive laboratory testing (Labmat) was developed a New design for a total TMJ prosthesis system in PEEK.

We will discuss a follow up of 5 years with a new prosthesis design in PEEK and new surgical technique in 21 patients, 4 patients had bi lateral surgeries and 17 uni lateral surgeries.

**O-0302****ELECTROMYOGRAPHIC MONITORING OF SUCCESSFUL CORRECTION MEASURES IN TEMPORO-MANDIBULAR JOINT DYSFUNCTION**

Arlind Myftari¹, Gentian Vyshka²

¹ *Service of Maxillofacial Surgery, Hospital Centre "Mother Theresa", Tirana, Albania*

² *Biomedical and Experimental Department, Faculty of Medicine, University of Tirana, Tirana, Albania*

OBJECTIVES

Temporo-mandibular joint dysfunction is a common disorder with panoply of clinical symptoms, among which pain is the most frequent. Considered generally as a neurological epiphenomenon, local factors leading to malocclusion seem to be a very important factor. We have selected a pilot group of eight patients with local pathologies needing surgical corrections, and registered masseter electromyography prior to the intervention, and after the latter.

MATERIAL AND METHODS

Problematic occlusion was confirmed through dynamic imaging and temporo-mandibular joint computerized tomography. Eight patients aging from 12 to 28 years (mean 21 years 5 months), four females and four males, were recruited for the study. Masseter electromyography through skin electrodes was registered prior to the intervention (correction surgery) and one month after the latter.

RESULTS

All cases showed increased polyphasic activity registered above the masseters (polyphasic potentials > 40% up to a maximum of 55% of the total of registered potentials). Lateralization of electromyographic abnormalities was but subliminal (15% of the cases) although joint dysfunctions were overwhelmingly unilateral (in six out of eight cases). One month after surgical correction polyphasic activity decreased to a maximum of 35% and to an optimum of 20% ($p < 0, 0005$).

CONCLUSIONS

Masseter activity registration might mirror quite credibly the temporo-mandibular joint function and dysfunction and will objectively prove the efficacy of corrections suggested and applied. Strain of masseter muscles and neurogenic activity over the latter is a common finding in temporo-mandibular joint dysfunction. Our data suggest that masseter electromyography, as a non-invasive and economic diagnostic procedure will help confirming the success of correction surgery, when applied.

**O-0303****RELATIONSHIP BETWEEN MRI, ARTHROSCOPIC AND CLINICAL FINDINGS IN TMJ DISORDER: OUR EXPERIENCE IN MANITOBA**

Z. Pan¹, R.F. Elgazzar^{2,3}

¹ Faculty of Dentistry, University of Manitoba, Winnipeg, Canada

² Asso. Prof., Oral and Maxillofacial Surgery, Faculty of Dentistry, University of Manitoba, Winnipeg, Canada

³ Prof., Oral and Maxillofacial Surgery, Faculty of Dentistry, Tanta University, Tanta, Egypt

Objectives: The purpose of this study was to explore our temporomandibular joint (TMJ) arthroscopy experience in Manitoba, and to find out whether there is a correlation between magnetic resonance imaging (MRI) findings, arthroscopic findings and clinical signs and symptoms in patients with TMJ internal derangement (TMD).

Study design: A retrospective chart study was conducted on TMD patients who were diagnosed with MRI and treated with arthroscopic lysis and lavage in both the Health Sciences Center and Seven Oaks General Hospital from 2006-2012. Clinical findings were assessed based on mandibular range of motion, pain and clicking both pre and post-arthroscopy. The disc positions including displacement with/without reduction, as inferred from the MRI, arthroscopic findings were also studied. Minitab 15 Statistical package was employed in this study.

Results: Eighty seven joints of 59 patients who underwent arthroscopic surgery were evaluated in this study. Of the 87 arthroscopies, the average age of the twelve males and 75 females was 34.56 years old. Preoperative MRI showed that 52% of the joints had anterior disc displacement (ADD) without reduction. Arthroscopic findings showed 89% cases had adhesions, 47% with hyperemia, and 24% with synovitis regardless of the MRI results. Three cases had disc perforations/fragmentations, which were treated later, out of this study, with open arthroplasty. The data showed an improvement from a preoperative inter-incisal distance (IID) of 29.16mm to 34.36mm postoperatively with the average follow up time being 23.80 weeks. Right lateral excursion improved from 5.86mm to 7.42mm and left lateral excursion went from 6.38mm to 7.31mm.

Conclusion: Endoscopic lysis and lavage has significantly improved pain & jaw range of motion. MRI has not affected the decision to do or not to do an arthroscopy, and there was no correlation between the MRI results and the endoscopic results; as all joints with disc displacement (both with/without reduction) showed variable degrees of joint adhesion and hyperaemia which indicate that MRI should not be considered a necessity before TMJ arthroscopy.

**O-0304****RATIONALE USE OF TOTAL TEMPORO-MANDIBULAR JOINT REPLACEMENT**

N. Fakh-Gomez, LM. Gonzalez-Perez, M. Sanchez-Sanchez

Virgen del Rocío University University Hospital, Seville, Spain

Objective:

The purpose of this study was to evaluate the criteria for the successful utilization of temporo-mandibular joint prosthesis and thereby establish a rationale for the use of these devices in the long-term management of advanced temporo-mandibular joint disorders.

Methods:

26 patients (18 females, 8 males) involving 33 joints (19 unilateral: 9 right/ 10 left, and 7 bilateral) were operated on, and 33 stock total joint prostheses (Biomet Microfixation TMJ Replacement System) were fitted. The mean age at surgery was 55.04 years ($SD \pm 13.15$). All patients had: 1) a history of persistent and significant pain and functional impairment; 2) clinically and radiographically documented end-stage TMJ disease. All patients were included in a 6-year prospective follow-up study. Pain experience, pain intensity, jaw opening, chewing ability and joint noise were evaluated. Surgical morbidity and implant survival were documented.

Results:

After treatment pain experience, pain intensity and joint noise were reduced 6.1 ($SD \pm 1.5$), 6.5 ($SD \pm 2.3$) and 5.7 ($SD \pm 1.3$), respectively. Jaw opening and chewing ability were improved by 5.8 ($SD \pm 1.3$) and 6.2 ($SD \pm 1.5$), respectively. The results found a statistically significant relationship ($p < 0.01$) between surgical intervention and the improvement of pain and jaw movements. Two of the TMJ prostheses were deemed to have a poor fit, by postoperative imaging studies data at 1^o year, but no clinical alterations that would justify its removal were observed in the follow-up in subsequent revisions and, therefore, none of the implants were removed during the study period.

Conclusions:

The surgical placement of TMJ prosthesis significantly reduces pain and dysfunction secondary to advanced disease. It has been demonstrated that the use of appropriate biomaterials and design parameters can decrease material wear and increase the longevity of TMJ prostheses. Tried and tested stabilized polyethylene bearings articulating against polished metal condylar components have a very high probability of providing more than 6 years' successful clinical use. The results of this study, in a rigorously controlled 6-year prospective analysis, show a significant reduction in pain scores, an increase in mandibular function and a significant improvement in mandibular range of motion with no prosthesis removed in the study period.



O-0305

ALLOPLASTIC PROSTHESIS FOR TEMPOROMANDIBULAR JOINT RECONSTRUCTION: HOSPITAL UNIVERSITARI SON ESPASES EXPERIENCE

C. A. Salcedo Gil, M. A. Morey Mas, A. García Sánchez, M. I. Molina Barraguer, V. Hidalgo López, J. I. Iriarte Ortabe

Oral and Maxillofacial Surgery, University Hospital Son Espases, Palma de Mallorca, Spain

BACKGROUND: The use of alloplastic prosthesis for temporomandibular joint (TMJ) reconstruction still a unique challenge for the maxillofacial surgeons, several pathologies can benefit from alloplastic joint reconstruction including:

- Osseous and fibrous Ankylosis
- TMJ dysfunction in advanced stages
- Failed autogenous grafts, especially in the multi- operated patient.
- Severe polyarticular inflammatory joint disease affecting the TMJ.
- Failed previous alloplastic reconstruction
- Tumor resection and congenital pathologies affecting the TMJ.

OBJECTIVE: The aim of this study was to assess the indications and effectiveness of alloplastic prosthesis for temporomandibular joint reconstruction at our institution; in this study we present all the data between 2005 and 2014

MATERIAL AND METHODS: We present a total of 13 patients with 22 TMJ prosthesis (19 Biomet® and 3 TMJ Concepts®) that have been placed in 7 men and 6 women; mean age was 50.1 years (range 32 - 74 years). The indications for Total Joint reconstruction were posttraumatic ankylosis in a total of 7 patients; severe degenerative joint disease in 4 patients; after tumor surgery defect one patient and one because of inflammatory joint disease (rheumatoid arthritis).

Three patients underwent a one stage operation of total joint reconstruction and orthognathic surgery. All the cases of custom-fitted temporomandibular joint reconstruction were computer assisted surgical simulated.

We analyzed subjective and objective data like pain, improvement in quality of life, maximal incisal opening and mandibular function, before surgery and at 6 months and 1 year (or latest review at clinic) after the procedure.

RESULTS: In all cases an adequate joint function was achieved with an interincisal opening greater than 30 mm and with pain improvement. Restrictions of lateral and protrusive movements were observed. We had one TMJ prosthesis infection that solved with broad spectrum antibiotics, one patient required reoperation due to condyle dislocation and another patient needed change of the stock prosthesis for a custom- made device because of lack of adaptation of the fossa component to the bone.

CONCLUSION: Total joint reconstruction with alloplastic prosthesis is an effective treatment option for functional recovery and pain improvement in patients with advanced temporomandibular joint pathology.

KEY WORDS: Temporomandibular joint replacement, alloplastic prosthesis.



O-0306

PATIENT REPORTED OUTCOMES FOLLOWING TOTAL ALLOPLASTIC TEMPOROMANDIBULAR JOINT REPLACEMENT SURGERY

J Kunjur, S. N. Matthews, R. Niziol

Oral & Maxillofacial surgery, King's College London, London, United Kingdom

Title: Patient reported outcomes following total alloplastic temporomandibular joint replacement surgery.

Aim of the Study: To assess the subjective and objective quality of life (QOL) outcomes in a group of patients who have undergone total alloplastic joint replacement surgery (TJR) for end stage temporomandibular joint (TMJ) disease.

Patients & Methods: A total of 24 patients, 21 females and 3 males, who fulfilled the criteria put forward by NICE for total prosthetic replacement of the temporomandibular joint were included in the study. They were treated using either custom-made or stock Biomet prostheses.

Patients subjective opinions of TMJ pain, function and quality of life since reconstructive surgery was recorded using a TMJ quality of life questionnaire. The questionnaire not only encompassed questions relating to function such as eating, speech and pain, but also facial appearance and various aspects of social and mental health. The questions were answered on a 5-point scale as they pertained to both pre and post-surgery status. Objective variables such as maximum interincisal opening (MIO) were obtained during routine follow up post reconstructive surgery.

The data collected was statistically analyzed using the Wilcoxon Signed Ranks Test.

Results: Both the subjective and objective variables post surgery showed a statistically significant improvement in function and in the control of symptoms such as pain, leading to a statistically significant improvement in their quality of life when compared to the pre operative period.

Conclusion: Patients with end stage TMJ disease suffering from chronic pain and limited mouth opening, who are unable to enjoy normal daily activities such as eating a normal diet, will find a significant improvement in their quality of life after TJR as shown by our study



O-0307

NOVEL RETROMANDIBULAR SUBPARATIDEOMASSATERIC FASCIAL APPROACH FOR REPLACEMENT OF A TEMPOROMANDIBULAR JOINT PROSTHESIS

C.Candirli, F. Taskesen, N. Altintas, U. Coskun, S. Memis

Oral and Maxillofacial Surgery, Karadeniz Technical University Department of Oral and Maxillofacial Surgery, Trabzon, Turkey

Objective: The aim of this study was to introduce the retromandibular subparotideomasseteric fascial approach (RSF) as an alternative technique to prevent injury to the marginal and cervical branch of the facial nerve and to expose the mandibular ramus for replacement TMJ prosthesis.

Methods: We performed temporomandibular joint prosthesis replacement via preauricular and retromandibular subparatideomasseteric fascial approach on 8 patients. All patients were evaluated in terms of damage of marginal mandibular branch of facial nerve. We also compared these patients with another group of 7 patients that underwent TMJ replacement surgery via preauricular and conventional retromandibular approach.

Results: No marginal mandibular nerve paralysis was observed at the end of the operation and post-op. period in patients operated with the retromandibular subparatideomasseteric fascial approach whereas 3 patients operated with conventional retromandibular approach represented marginal mandibular nerve paralysis. 2 of them got rid of paralysis 4 months after the operation and one of them healed over 6 months period.

Conclusion: The retromandibular subparotideomasseteric fascial approach may be an alternative method to avoid marginal mandibular nerve injury that commonly observed in conventional retromandibular approach in TMJ prosthesis replacement surgery.

**O-0308****TREATMENT OF INTERMITTENT LOCKING OF THE JAW BY ARTHROSCOPICALLY-ASSISTED ARTHROCENTESIS.**

W Abboud, N Givol, R Yahalom

Oral and Maxillofacial surgery, Sheba Medical Center, Tel Hashomer, Israel

Objectives:

Many TMD patients suffer from intermittent locking of the jaw, a condition classified as derangement stage 2 or 3 according to Wilkes. In between the locking episodes, these patients maintain a normal range of motion with no limitation in mouth opening.

Few studies in the literature (four to our knowledge) evaluated the efficacy of arthroscopy and arthrocentesis in treating intermittent locking of the jaw. Maximal mouth opening and pain were the primary outcome parameters. The frequency of the locking episodes was not addressed.

The aim of our retrospective study was to assess whether arthroscopically-assisted arthrocentesis (AA) is successful in decreasing the frequency of the locking episodes in patients suffering from intermittently locking jaw (Wilkes 2-3).

Patients/Methods:

The diagnosis of Wilkes 2-3 derangement was based on anamnestic, clinical, and radiographic criteria.

The main outcome variable for evaluating efficacy of treatment was frequency of the locking episodes. It was documented preoperatively and postoperatively as the rough number of "locks" per day, week, or month. Secondary outcome variables were VAS-pain and maximal mouth opening.

Twenty seven patients (39 joints) suffering from intermittent closed-lock of the jaw were treated in our department by AA between 4.2010 and 8.2013.

Results:

Out of 27 patients, 22 reported no episodes of locking and 4 reported decrease in frequency of the locking episodes since treatment and 1 remained unchanged.

The mean follow-up period was 18 months (Range 6 months to 36 months).

The maximal mouth opening did not change significantly.

Discussion:

Different stages of TMJ derangement conditions respond differently to arthroscopy and arthrocentesis. It is agreed that AA is unsuccessful in eliminating the clicking of the joints in Wilkes stage 1. The efficacy of AA in treating non-reducing disc displacements (Wilkes 4) is considered moderate, whereas it is considered excellent for treating degenerative conditions (Wilkes 5) and anchored disc phenomenon. In our opinion, intermittent locking of the jaw (Wilkes 2-3) was not fully evaluated.

Our study demonstrated the efficacy of AA in reducing the locking episodes in Wilkes 2-3 derangements.

**O-0309****COMPLICATIONS IN ARTHROSCOPY OF THE TMJ: HOW TO AVOID THEM. A RETROSPECTIVE STUDY OF 600 PROCEDURES**

R. Martín-Granizo, A. Encinas, O. de la Sen, E. Varela, I. Martinez Padilla, A. Millón, M. de Pedro, JJ. Sánchez, A. Berguer

Department of Oral and Maxillofacial Surgery, Hospital Clinico San Carlos, Madrid, Spain

Objective: Minimally invasive surgery (MIS) of the temporomandibular joint (TMJ) is considered today as the initial surgical treatment of choice in temporomandibular dysfunction syndrome (TMDS) that has not responded to conservative treatment, because of its potential benefits and low morbidity. The objective is to analyze the different techniques in arthroscopy and to relate them with the complications found in this procedure. Some tips are stressed to learn how to avoid them.

Methods: We retrospectively studied patients who underwent TMJ arthroscopy. They included 600 arthroscopies in 360 patients who underwent surgery in the same institution by the same surgeon from 1997 to 2014. Surgical techniques varied from standard lysis and lavage to operative procedures, such as electrocoagulation, myotomy, discopexy, synovectomy, biopsy, lysis of adhesions and eminectomy. Also, different substances were infiltrated subsynovially or free in the articular space, as sclerotherapy, hyaluronic acid, PRGF or botulinum toxin.

Results: Complications were divided in those that occurred during the surgical procedure and those after it in the postoperative period. A global rate of 2% was found, with similar rates than in other published studies. The most common complication was damage to the tissues inside the joint, followed by serum extravasation and nervous sensitive or motor impairment. Also, bleeding inside the joint was more common after myotomy of the lateral pterygoid muscle previous to discopexy and in some cases a balloon stopped the bleeding. Advanced discopexy technique with resorbable pins showed a rate of complications in 10% of the cases, being the postoperative malocclusion the most common. Also 2 cases of ear perforation were registered (0,3%) one of them with entrance in the middle ear.

Conclusions: The rate of complications in the arthroscopy of the TMJ in our study is very low. Some useful manoeuvres are shown to avoid them. Arthroscopy needs a long-learning curve and proper equipment and is a safe surgical technique. Complications must be included in the informed consent for the patient and every TMJ surgeon should be prepared to manage them.

**O-0310****WHY TEMPOROMANDIBULAR JOINT SURGERY? 7TH YEAR UPDATE.**

J. Bilhoto¹, T. Burnay¹, M. Arrais-de-Castro ²

¹ *Department of Maxillofacial surgery, Centro Hospitalar de São João, Porto, Portugal*

² *Psicology, Instituto superior de Ciências da Saúde – Norte, Gandra, Portugal*

Objective:

Assess the surgical results of temporomandibular joint (TMJ) surgery, namely arthroscopic and open joint surgery in the treatment of temporomandibular joint pathology.

Methods:

The patients presented in the maxillofacial consultation due to orofacial pain, TMJ noise or limited mouth opening. All patients were studied with orthopantomogram and magnetic resonance imaging of the temporo-mandibular joint, in severe cases of mouth opening limitation a computed tomography was preferred. Surgery of the TMJ was performed after the failure of conservative treatment. 122 patients underwent TMJ surgery in the period between 2007 and 2014 of which 109 were female and 13 male whose age at surgery ranged from 15 to 66 years (mean 33.25 years). Giving a total of 177 joints operated, 78 athroplasties and 99 arthroscopies.

The interincisal opening was measured during consultation and the patients rated their pain in a visual analogue scale (VAS) and answered a questionnaire where pain, jaw dysfunction and activities of daily living (ADL) were noted prior to surgery and in different occasions after surgery. The data was analysed using statistical software SPSS, the Independent Sample Mann-Whitney U Test and the Wilcoxon Signed Ranks were performed, in order to establish whether there were significant improvements in the results obtained after surgery.

Results:

There were statistical significant differences between pre and post surgical status in al measured parameters. Mouth opening increased over 30%, pain in VAS decreased more than 50%, Pain (8 to 40 scale), dysfunction (5 to 25 scale) and ADL (18 to 90 scale) scores also improved dramatically.

Conclusion:

The surgery of the temporo-mandibular joint is a safe procedure that allows a dramatic improvement in the quality of life of the patients who suffer from TMJ pain and dysfunction.



O-0311

TEMPOROMANDIBULAR ARTHROSCOPY FOR TEMPOROMANDIBULAR SYNOVITIS IN JUVENILE IDIOPATHIC ARTHRITIS

G-Y. Cho-Lee¹, E. M. García-Díez¹, A. I. Ferrer-Fuertes¹, C. Martí-Pagès¹, J. Antón-López², E. Iglesias-Jiménez², R. Bou², E. Inarejos³, N. Rodríguez-Nieva⁴

¹ Oral and Maxillofacial Surgery Unit. Pediatric Surgery Department., Sant Joan de Déu University Hospital. Barcelona University., Barcelona, Spain

² Department of Pediatric Rheumatology, Sant Joan de Déu University Hospital. Barcelona University., Barcelona, Spain

³ Department of Radiology, Sant Joan de Déu University Hospital. Barcelona University., Barcelona, Spain

⁴ Department of Rehabilitation, Sant Joan de Déu University Hospital. Barcelona University., Barcelona, Spain

OBJECTIVES: Temporomandibular joint (TMJ) involvement is quite frequent in juvenile idiopathic arthritis (JIA), particularly in polyarticular and systemic forms. The treatment of TMJ arthritis is controversial. Traditional and more recently developed biologic disease-modifying antirheumatic drugs are often highly effective in the management of JIA in general, but there are minimal data on their specific efficacy in TMJ arthritis in children. The purpose of this study was to evaluate the safety and efficacy of arthroscopic synovectomy of the TMJ, in children with JIA and acute synovitis of the TMJ.

MATERIALS AND METHODS: This was a retrospective study of children with JIA, seen at a single center, who were selected based on the presence of severe acute synovitis of the TMJ. All subjects received the intervention, which consisted of a TMJ arthroscopy to perform synovitis electrocoagulation by radiofrequency, under general anesthesia. Primary outcomes assessed in all subjects were the safety of the procedure and efficacy as determined by the change in maximal incisal opening (MIO). Pre and postoperative magnetic resonance imaging of the TMJ permitted analysis of the change in the acute and chronic findings of arthritis in those patients.

RESULTS: Seven patients (6 female/1 male) received unilateral TMJ arthroscopy (5 left/2 right). The mean age at presentation for TMJ arthroscopy was 12,7 (9-20) years. The procedures were well tolerated. In terms of efficacy, the mean MIO increased from 43,57 mm (39-50) to 45 mm (40-50). In addition, changing the unit of analysis to individual joints, in patients who underwent repeat magnetic resonance imaging examination six months after surgery (2 patients), TMJ showed magnetic resonance imaging evidence of complete resolution of TMJ arthritis.

CONCLUSIONS: TMJ arthroscopy is a minimally invasive technique that provides direct vision of synovitis areas and enables its direct electrocoagulation, without increasing morbidity compared to intraarticular corticosteroids injection. Early use of arthroscopic synovectomy in TMJ arthritis may reduce pain, improve jaw function, and prevent irreversible deformities.



4. Head and Neck Oncological Surgery

O-0401

ORAL REHABILITATION WITH OSSEOINTEGRATED IMPLANTS IN IRRADIATED PATIENTS AFTER PRIOR IMPLANT FAILURE: OUR EXPERIENCE.

A. García Sevilla, S. J. Ochandiano Caicoya, C. Navarro Cuéllar, M. A. Tousidonis, C. Maza Muela, A. M. López López, J. A. Ruiz Cruz, C. Navarro Vila

Oral and Maxillofacial Surgery, Gregorio Marañón Hospital, Madrid, Spain

Introduction

Radiotherapy compromises implant osseointegration in oncologic patients. Our department has a wide experience on this matter with a large series involving more than 1400 implants placed in cancer patients. Osseointegration failure could be considered the end of implant treatment due to the risk of osteoradionecrosis

Objective

To describe a subgroup of irradiated patients, success rate and complications, with loaded implants for years who developed progressive loss of osseointegration, implant retrieval and after a healing period a secondary surgical implant placement

Material and Methods

Six oncologic patients reconstructed by means of different flaps: 2 iliac crest, 2 fibula, 1 radial forearm flap, 1 trapezius osseomiotomic pedicled, underwent complementary radiotherapy, delayed implant placement and implant supported dental rehabilitation. During more than ten years of loading progressive loss of osseointegration appears due to different reasons. All the failing or already failed implants were retrieved and after a healing period, without hyperbaric oxygen therapy, we place 35 new implants.

Results

We had three implant failures, success 85.7%. The remaining 32 fixtures achieve stable osseointegration and support a dental prosthesis. No severe complications appear and fully rehabilitated patients appreciate the functional and esthetic outcome.

Conclusion

It is feasible to achieve implant osseointegration in irradiated bone after a previous failure of implants in oncologic patients without major complications.

**O-0402****BROWN'S CLASSIFICATION REVISITED: PRE-OPERATIVE PROGNOSTIC EVALUATION OF MAXILLARY SQUAMOUS-CELL CARCINOMA**

A. Morice, C. Bertolus

Maxillo facial surgery, Hopital Pitié Salpêtrière, Université Pierre et Marie Curie, Paris, France

Aims/Objectives

What are the anatomical criteria influencing the prognosis of maxillary squamous-cell carcinoma (SCC)? We investigated this issue by a retrospective study based on the classification proposed by Brown (Brown 2010) for the reconstruction of midface and maxillary defects after cancer resection.

Materials and Methods

We analyzed retrospectively the data from 60 patients with maxillary SCC (2008-2013). The local extension of the tumour was evaluated using CT-scans and MRIs. Each patient was graded according to Brown (2010), by separating the horizontal and the vertical extension of the defect. The survival rate and the rate of relapse were correlated to the staging. The posterior extension of the tumour was correlated to the presence of positive resection margins.

Results

Tumour size and localization were correlated to poorer prognosis. Posterior extension to the pterygoid processes and to the soft palate was correlated to a higher rate of relapse caused by a higher percentage of patients with positive resection margins after surgery. The rate of enucleation or eye exenteration was correlated to perineural infiltration on pathological examination. Extension to the cribriform plate was associated with a poor prognosis due to the risk of diffusion to the dura.

Discussion/conclusion

Several guidelines for midface and maxillary reconstruction after tumour resection have been proposed, one of them being Brown's grading system. Nevertheless, these guidelines are not focused on the correlations between the regional extension of maxillary SCCs and prognosis.

The precise primary evaluation of the extension and localization of maxillary SCCs should be based on CT-scans and MRIs, especially in case of posterior localizations. We report that higher rates of relapse are significantly associated with positive posterior resection margins. These results indicate that in cases with posterior extension, systematic extemporaneous pathological examination of posterior resection margins may be useful. Based on these results, we propose a new classification for maxillary SCCs tending to establish a link between prognosis and tumour localization.



O-0403

ATYPICAL FACE RESECTIONS

R. Slavchev

Department of Maxillo-Facial Surgery Tokuda Hospital, Sofia, Bulgaria

Goal: To present the possibilities of major facial resections in cases of advanced facial tumors.

Introduction: Unfortunately in the clinical practice of the Maxillo- Facial Surgery we sometimes encounter with tumor processes that for different reasons are in an advanced stage and are defined as un-operable. In some of these cases, based on clinical and laboratory screening, analysis of the risk and lack of any other options we are forced to perform major and atypical resections.

Methods: 2 clinical cases are presented for atypical facial resections of advanced tumors.

A clinical case of giant-cell retinoblastoma in 3- year old child, the tumor weighing 950gr. and extremely exteriorized from the right orbit.

The operating approach is presented by 2 operating accesses: direct and coronary, as well as the post-operative result.

A clinical case of extremely advanced Ackerman' s cancer of the right facial half in 32-year old woman.

The operating approach is presented for hemi-facial resection (right orbit, upper and lower jaws) and radical neck lymph dissection at the same time. The post-operative result is presented 3 years post-surgery.

Conclusion: With some of the patients with advanced tumors, when we are depleted of any other alternatives for treatment, it is possible sometimes an atypical resection to be performed and patients saved and good quality of life ensured. Unfortunately these operating approaches can't be applied for all patients.



O-0404

KERATOCYSTIC ODONTOGENIC TUMOUR: WHICH KIND OF TREATMENT

L Colombo, A Tronchet, C Gervasoni, S Valsecchi, S Spotti, V Palazzolo, A Di Francesco, P Ronchi

UO Chirurgia Maxillofacciale, Azienda Ospedaliera Ospedale Sant'Anna di Como, Como, Italy

AIM

The keratocystic odontogenic tumor (KCOT) is a relatively common oral and maxillofacial lesion with specific characteristics such as rapid growth, extension into the surrounding tissues and high rates of recurrence. Management of KCOT remains controversial owing to multiple different treatment protocols with varying recurrence rates. The aim of this study is to evaluate the different treatment modalities for keratocystic odontogenic tumor (KCOT).

MATERIALS AND METHODS

This study examines the treatment of forty patients with a diagnosis of KCTO, come to our Maxillofacial Surgery Unit of Sant'Anna Hospital in Como in the last ten years. The patients were treated differently based on the characteristics of the tumor: size, location, involvement of teeth or noble structures, involvement of surrounding soft tissue, histological type (parakeratotic/orthokeratotic), recurrence. The surgical techniques used were: enucleation with Carnoy solution, marginal or segmental resection with subsequent reconstruction with bone graft or free flap.

RESULTS

No recurrence was seen in 35 treated patients; 5 patients had radiological recurrence at follow-up; they were then subsequently retreated. To date, they are disease-free.

DISCUSSION AND CONCLUSION

In literature there are considerable controversies about the correct therapeutic KCTO's management. KCTO is now commonly regarded as a tumor lesion, although benign in nature; consequently, surgical treatment chosen, more or less aggressive, must still tend to lower risk of recurrence. The unfavorable prognostic factors that justify a more aggressive surgical treatment are: parakeratotic histological type, infiltration of the soft tissues, the involvement of anatomical noble structures surrounding.



O-0405

INTRALESIONAL METHOTREXATE TREATMENT FOR KERATOACANTHOMA

J.G.A.M. de Visscher¹, R. Blanken², E.H. van der Meij¹

¹ *oral and maxillofacial surgery, Medical Centre Leeuwarden, Leeuwarden, Netherlands*

² *Dermatology, Medical Centre Leeuwarden, Leeuwarden, Netherlands*

Objectives: Keratoacanthoma (KA) is a variant of a well-differentiated squamous cell carcinoma (SCC). The tumor is characterized by spontaneous regression. Clinical and histological differentiation from an invasive SCC may be very difficult. Therefore, treatment of a KA suspected lesion is necessary. Surgical excision is the treatment of choice for solitary KA's. In some cases, this may be difficult because of localization and/or size of the tumor and when cosmetically unacceptable results are expected. Intralesional methotrexate (MTX) may be a potential treatment option for KA's.

Material and methods: 23 patients with a KA suspected lesion based on clinical and histopathological aspects have been treated with intralesional MTX between 2006 and 2013.

Results: Intralesional MTX achieved complete remission in 87%, requiring an average of 2,3 injections with an average of 16 days apart. Three patients had a slight reduction in tumor size where biopsy finally showed a SCC. In these cases, treatment consisted of surgery (2) and radiotherapy (1).

Conclusion: Intralesional treatment with MTX for keratoacanthoma can be an effective and simple treatment. Adequate follow-up is necessary.



O-0406

MANAGEMENT OF ODONTOGENIC TUMORS IN CHILDREN

N. Theologie-Lygidakis, F. Tzerbos, P. Christopoulos, E. Vardas, I. Iatrou

University Department of Oral and Maxillofacial Surgery at the Children's Hospital "A. and P. Kyriakou", Dental School, University of Athens, Greece, Athens, Greece

Objectives: To present the 13 years' experience in treating odontogenic tumors of the jaws in children and adolescents.

Material and Methods: All patients with odontogenic tumors treated under general anaesthesia from 2000 to 2013 were included in the study. Data retrieved from the patients files were demographics, clinical and radiographic appearance, treatment applied, histological diagnosis and follow-up.

Results: 58 patients, from 2 to 16 years old, with 61 tumors in all, were treated. The majority of tumors were odontomas (51.7%) followed by odontogenic keratinocystic tumors (20.7%) and ameloblastomas (10.5%). No malignant tumors were found. Treatment was the surgical removal of the tumors under general anaesthesia whereas large cystic lesions were marsupialised first. In 3 cases of large defects bone graft was used. There were no post-operative implications and all patients were under follow-up until adulthood. There were 2 recurrences (3.4%): one in a case of ameloblastic fibroma and another in a case of keratinocystic tumor.

Discussion and Conclusions: odontogenic tumors most often appear in childhood and adolescence originating from the evolution of the tooth forming apparatus. They may be of epithelial, mesenchymal or mixed origin, benign in their majority although malignant forms also exist. Some types of odontogenic tumors present locally aggressive biologic behavior or increased recurrence rates.

Clinically they may not show any symptom or they may appear as a swelling, covered with healthy oral mucosa. Teeth findings such as dislocation may also exist or pain. Radiographically, depending on their type they may be easily recognized (odontomas) or need to be histologically diagnosed. Their management includes surgical removal and long-lasting follow-up.

Odontogenic tumors of the jaws comprise a separate group of lesions with multimodality in clinical and radiographic appearance, associated with the development of dentition. As they may grow large in size if left untreated or show aggressive behavior, their early recognition and treatment protects young patients from further disturbance in dentition and growth of the jaws.

**O-0407****NASAL GLIOMA IN AN INFANT**

L. Catalfamo, G. Micali, J. Matyasova, C. Freno, F.S. De Ponte

Department of Maxillo-Facial Surgery, University Hospital Messina, Messina, Italy

Congenital midline nasal mass in a newborn, infant or child is rare entity and therefore often poses a diagnostic challenge to the surgeon. The most pressing issue is whether the mass extends intracranially. The development of the frontonasal region or anterior neuropore is complex. Aberrant embryogenesis leads to three main types of anomalies: dermoid, encephalocele and nasal glial heterotopia (nasal glioma). Determination of the presence of a connection between the frontonasal mass and the anterior cranial fossae is crucial in the imaging assessment and clinical management. A rare case of glial heterotopia presenting as a midline nasal mass in a 3-months-old infant is reported. There was no communication between the mass and the cranial cavity on radiological examination. Complete surgical excision of the mass was performed and histological examination of the specimen revealed presence of glial tissue with the final diagnosis of nasal glioma.

**O-0408****FREE MSAP FLAP (MEDIAL SURAL ARTERY PERFORATOR) USED FOR COVERING PROTRUSION OF RECONSTRUCTIVE PLATE AFTER PARTIAL RESECTION OF THE MANDIBLE**

P. Richtr, P. Andrlé, D. Hrusak, I. Treskova, V. Bursa

**Department of Plastic Surgery, Medical Teaching Hospital, Faculty of Medicine in Pilsen, CharlesUniversity in Prague*

***Department of Maxillo-Facial Surgery, Medical Teaching Hospital, Faculty of Medicine in Pilsen, CharlesUniversity in Prague*

In case of 68-years old woman, we present successful cooperation between maxillo-facial and plastic-reconstructive surgery in covering exposure of reconstructive plate after partial resection of the mandible. First, a maxillo-facial surgery was performed in September 2012 as a radical treatment of invasive squamous cell carcinoma of alveolus of the mandible. Neck dissection of lymphatic nodes in areas I, II, III and V was done simultaneously. During the period between November 2012 and January 2013, patient underwent adjuvant radiotherapy. In June 2013, inflammatory complication induced a perforation of the skin and concurrent exposure of the plate. Because of impossibility to use surrounding soft tissue for covering the plate, we decided to apply a free MSAP flap (medial sural artery perforator) from right leg. Microanastomosis was complicated due to atherosclerosis of recipient facial artery and artery of the flap as well. Subsequent perioperative and postoperative course was uncomplicated and the patient was discharged in excellent condition, 4 days after the surgery.



O-0409

OUR EXPERIENCE WITH YU`S FLAP FOR LOWER LIP RECONSTRUCTION.

M. Sánchez- Sánchez, R. Belmonte- Caro,, P. Infante- Cossío, N. Fakihi- Gómez, A. García- Perla, J.L. Gutiérrez- Pérez

Oral and Maxillofacial Surgery Department, Virgen del Rocío University Hospital, Seville, Spain

Introduction: Numerous operations have been devised to correct lip defects after tumor excision. In 1989, Yu designed a new technique for the repair of rather large lower lip defects using a rotation-advancement flap with an optimal functional and cosmetic outcome.

Aim: a systematic evaluation of Yu´s flap in the reconstruction of lip defects after ablative surgery.

Methods: We describe our 11 year experience with the use of this procedure in 48 consecutive patients post-tumor resection. Tumors were located in the lower lip and 46 cases were squamous cell carcinoma, 1 basal cell carcinoma and 1 desmoplastic melanoma. There were 44 men and 4 women, age range 38-90 years. Following resection, the resulting defects ranged from 1 /3 of lip to total lip loss. 38 patients had unilateral Yu`s flap (9 combined with Karapandzic) and 10 bilateral. Median follow-up was 2.3 years. Functional aspects of the reconstruction were assessed in terms of the size of the oral stoma, oral competence and facial expression, in addition to speech, diet and denture usage. The aesthetic outcome was also assessed postoperatively.

Results: In all cases the result was excellent, compared to other techniques such as Karapandzic. There were 4 cases of minor dehiscence, 2 of them due to scratching and manipulation by the patient.

Conclusions: Yu`s flap is an excellent method for the reconstruction of large ,unilateral , total or subtotal lower lip defects. Produces less microstomia, the main adverse effect associated with the Karapandzic technique, re-establishing oral competence and function. Patients and surgeon are highly satisfied with the aesthetic outcome.

**O-0410****RETROSPECTIVE ANALYSIS OF FDG PET-CT AND SENTINEL LYMPH NODE BIOPSY FOR DETECTING LYMPH NODE METASTASIS IN CNO PATIENTS WITH OSCC**

T. Hamakawa¹, H. Goda¹, K. Iwamoto¹, K. Nakashiro¹, M. Miyagawa², H. Hamakawa¹

¹ Department of Oral and Maxillofacial Surgery, Ehime University Graduate School of Medicine, Toon, Ehime, Japan

² Department of Radiology, Ehime University Graduate School of Medicine, Toon, Ehime, Japan

Objectives: Nodal status of the cervical lymph nodes remains an important prognostic factor in oral squamous cell carcinoma (OSCC). Therefore, early detection of the cervical lymph nodes metastasis is expected to further improve survival. Positron emission tomography with computerized tomography (PET-CT), a noninvasive imaging for the detection of regional nodal metastases, has increasingly become of interest. The other side, sentinel node biopsy (SNB) has the advantage of definitive pathological and genetic diagnosis. This study is a direct comparison of PET-CT and SNB in patients with cN0 OSCC.

Material and Methods: We retrospectively analyzed 42 sentinel lymph nodes (SLN) from 26 cN0 patients. The location of SLN was determined by a radioisotope (RI) method with preoperative lymphoscintigraphy and an intraoperative use of a handheld gamma probe and/or a dye method, and evaluated the presence of metastasis by pathological examination and one step nucleic acid amplification analysis method. A cut-off PET-CT maximum standardized uptake value (SUVmax) was set to 4.0, as we previously reported the highest diagnostic accuracy.

Results: Among the 42 cN0 lymph nodes, we detected metastases in 5 lymph nodes from 4 patients. Their copy number of CK19 mRNA ranged from <250 to 25,000. No lymph node metastasis was detected by PET-CT. SUVmax of the 5 metastatic lymph nodes were 2.7, 2.7, 2.7, 1.8, 1.7 and tumor sizes in metastatic lymph nodes were 8 mm, 3 mm, 3 mm, 5 mm, 2 mm, respectively. These all lymph nodes were not corresponding to the metastatic criteria, either size, forms or SUVmax.

Conclusion: SNB is much more sensitive than PET-CT in detecting lymph node metastases. These results suggest that the conventional imaging and PET-CT may have limited accuracy for identifying lymph node metastasis. We strongly recommend the routine use of SNB for identifying lymph node metastasis of OSCC patients.



5. Reconstructive Surgery of Craniofacial Malformations & Cleft Surgery

O-0501

NEW METHOD OF PRESURGICAL ORTHOPEDICS IN CLEFT LIP AND PALATE INFANTS

N. V. Udalova, N.V. Starikova, A.G. Nadtochiy

CRID / Central Research Institute of Dental and Maxillofacial Surgery, Moscow, Russian Federation

Objective

To correct the maxillary fragments displacement and to reduce cleft width in cleft lip and palate infants before lip repair by the use of a new noninvasive method of **presurgical orthopedics (PSO)**.

Methods

35 cleft lip and palate infants of 6 days–7 months served as subjects:

main group – 28 patients (6 days -3 months) were undergone PSO during 3-6 months prior to surgery;

control group – 7 patients (at the same age) haven't been under PSO before surgery.

Impressions of the infant's upper jaw were taken and plaster models were poured in both groups at the beginning and before lip repair. The points for measurement were taken from Dr. Silman's study.

PSO in main group was performed with the use of the sets of sequential splints .

The main steps of splint's manufacturing were: an impression was taken and a 3-D model was made. The 3-D model was used for a simulation of 0.5 mm step movement of maxillary fragments according to the treatment plan. Then a set of sequential splints was made. Each splint has been used during 12-14 days.

Results

In main group the improvement of segmental displacement were shown. Cleft width was reduced by an average of 5 mm. There were no significant changes in the control group. Feeding process in the main group was easier and done with the use of regular nipples. Weight gains were also normal as opposed to control group infants, who had to be fed with the use of special devices and whose weight was in some cases lower than the age norm.

Conclusions

The new method of PSO allows to correct the maxillary fragments displacement and to reduce cleft width and generally improves the quality and efficiency of cleft lip and palate infants treatment.

It's noninvasive and doesn't demand for intraosseous intraoral fixation or extraoral strapping and frequent visits to the doctor.

The feeding process is easier for splint patients because splints served as an artificial palate for the tongue during sucking and swallowing.

**O-0502****CONGENITAL AGENESIS OF NASAL SEPTAL CARTILAGE**

Jin Seok Kang¹, Hwa Young Oh², Seung Min Nam², Chang Yong Choi², Yong Bae Kim¹

¹ *Plastic and Reconstructive Surgery, Soonchunhyang University Hospital, Bucheon, South Korea*

² *Plastic and Reconstructive Surgery, Soonchunhyang University Hospital, Gumi, South Korea*

Objective : The nose includes a framework, supporting system, and external coverage. The framework consists of cartilage and bone, supported and held together by connective tissue and ligaments. The central supporting system of the nose is the septum, which articulates with the perpendicular plate of the ethmoid posteriorly and the vomer inferiorly. The septum articulates caudally with the anterior nasal spine. The congenital agenesis of nasal septal cartilage caused various facial deformity, such as severe nasal deformity, maxillary hypoplasia and hypotelorism. The present report describes the surgical treatment of four patients with congenital agenesis of nasal septal cartilage

Methods : A retrospective review was conducted the medical records and preoperative, postoperative photography of 4 patients who underwent the nasal reconstructive treatment with costal cartilage between June 1991 and August 2011. All of the patients presented with the severe nasal deformity, maxillary hypoplasia and hypotelorism. The nasal septal cartilaginous framework is reconstructed with a costal cartilage, which used the columellar strut graft and cantilever type graft.

Results : The patient ranged in age from 4 to 16 years. All of the patients were female. All patients were operated on using open rhinoplasty approach under general anesthesia. The follow up period ranged from 6 months to 22 years. There was no postoperative complications, such as infection, nasal obstruction and recurrence. During the follow up period, the nasal appearance of the patients were satisfactory with good aesthetic results.

Conclusions : The congenital agenesis of nasal septal cartilage is extremely rare congenital disease. There is no reports that described the surgical treatment of congenital agenesis of nasal septal cartilage. We present a surgical treatment in which the reconstruction of nasal septal cartilage is performed by using costal cartilage. While the surgical results were entirely satisfactory from an aesthetic point of view, the patients' facial appearance have gradually improved as a results of the additional treatments, such as the medial canthopexy, U-shaped osteotomy and orthognathic surgery. Further improvements in surgical treatment will allow good results to be obtained in patients with congenital agenesis of nasal septal cartilage, but for now the challenge remain.



O-0503

ORBITAL DYSMORPHOLOGY IN METOPIC SYNOSTOSIS

P Metzler, H Ezaldein, J Persing, D Steinbacher

Yale University, New Haven, CT, United States

Background:

Metopic synostosis is characterized by trigonocephaly, lateral supraorbital retrusion, and hypotelorism. Most phenotypic evaluations have focused on the forehead without much emphasis on the orbits. The study seeks to explore differences in orbital dysmorphology for metopic and control patients, along with different degrees of metopic synostosis.

Methods:

Demographic and craniometric data were compiled. CT scans were digitized (Materialise) and metopic and control groups were compared. Degree of trigonocephaly was classified into moderate and severe cases based on endocranial bifrontal angle. Orbital plane angle, width, depth, volume, and corneal projection were measured. Statistical two-paired t-tests were used, with significance determined as $p < 0.05$.

Results:

Forty-six CT scans were analyzed (23 affected, 23 controls). Mean ages (6 months metopic, 7 months control) and genders (18 males metopic, 10 males control) were determined. Orbital plane angle measurements showed differences between the metopic and the control ($p = 0.0002$), along with a correlation to trigonocephaly ($p = 0.0097$). Orbital width and height were insignificant between controls and overall metopics, though height was less in severe metopics ($p = 0.046$ left, $p = 0.0337$ right). Orbital Depth was significant between control and metopics ($p = 0.0106$ left, $p = 0.0025$ right), and pronounced in severe cases ($p = 0.0349$ left, $p = 0.0071$ right). Corneal Projection correlates with metopic severity ($p < 0.01$ left, right), while orbital volume showed insignificant change between control and metopic cases.

Conclusions:

Orbital dysmorphology worsens with increasing degree of trigonocephaly, presenting additional functional defects. The true exorbitism most directly correlates with worsening trigonocephaly. Expanding and advancing the lateral orbital wall is a critical treatment element in correction.

**O-0504****PHYSIOLOGICAL APPROACH FOR THE SURGERY OF SECONDARY NASAL DEFORMITY AFTER THE ELIMINATION OF UNILATERAL CLEFT LIP AND PALATE.**

T.Z. Chkadua, L.A. Brusova, L.V. Ageeva, M.D. Ivanova

Department of congenital defects and deformities of maxillo-facial region and ectoprosthesis, Central Research Institute of Dental and Maxillofacial Surgery, Moscow, Russian Federation

Objective – to improve the efficiency and results of surgical treatment of the adult patients having unilateral lip and palate clefts (UCLP) with secondary nasal deformity after the primary operation, by enhancement of the pre-surgery survey, physiological approach for the secondary rhinoplasty surgery and the use of botulinotherapy in the postoperative stage.

Material and method. 11 patients having secondary nasal deformity after the UCLP elimination were treated and supervised in our clinic.

At the preoperative stage we have carried out complex check-up of the patients using MSCT, endoscopy, myography, photometry and microbiological analysis of nasal and oral cavity microflora.

Besides the classical reconstruction and the scar tissue excision, the special emphasis during the surgical treatment was given to the utmost physiological reconstitution of the nasolabial mimic muscle complex anatomical integrity. In addition to that, 9 patients had a significant bone defect of apertura piriformis at the side of the cleft, which was eliminated by osteochondral autograft.

At the postoperative stage conservative therapy was conducted, using specific antibiotics for the microflora of the particular patient. The tone of nasolabial muscles was tested with myography. In all cases the muscle hypertonicity phenomena at the side of the cleft were observed. This lead to asymmetry despite of the performed surgical treatment aimed to the nasolabial mimic muscle complex anatomical integrity rehabilitation. These hipertonicity phenomena were eliminated by botulotoxin injection in dosage 25-40 units, what was myografically proved.

Results. During one year after the surgery no complications have appeared. Control photometry confirms a good lasting result of the treatment. In their interviews the patients notice the life quantity improvement and satisfaction of the treatment that was conducted.

Conclusion: Compliance with the physiological surgery principles together with the botulotoxin impact to the nasolabial muscle hypertonicity, which was formed during many years allows to achieve the maximum favorable outcome after corrective rhinoplasty. It has been proved by myography, photometry and by personal subjective self-appraisal of the patients.

**O-0505****THE THREE-DIMENSIONAL NASOLABIAL APPEARANCE IN PATIENTS WITH COMPLETE UNILATERAL CLEFT LIP AND PALATE**

I. Bagante¹, I. Akota¹, E. Bitans²

¹ *Department of Oral and Maxillofacial Surgery, Riga Stradins University, Institute of Stomatology, Riga, Latvia*

² *Department of Orthodontics, Riga Stradins University, Institute of Stomatology, Riga, Latvia*

Objective: The correction of the nasolabial deformity in patients with complete unilateral cleft lip and palate (UCLP) is challenging. There is no single option for the nasal correction timing and methods. The surgical outcome of the nose is difficult to evaluate, due to three dimensional complexity of its shape. Aim of the study was to evaluate the nasolabial appearance of patients with UCLP from the three- dimensional photos.

Methods: In the cross-sectional study consecutive patients born from 1994-2004 with non-syndromic complete UCLP were included. All patients had their treatment in Riga Cleft Lip and Palate Centre. Out of 35 patients, 17 (9 male, 8 female) came for control at the mean age of 14 years (range 10-18). The nasolabial appearance was evaluated from the three-dimensional photos (3dMD facial scanner). Twenty-five anthropometric landmarks were marked and 18 distances were measured. The lip and nasal symmetry between cleft and non-cleft side were compared. For the statistical analysis Dalberg formula and Wilcoxon signed rank test were used. Statistical significance level of $p < 0.05$ was chosen.

Result: The difference of anthropometric landmarks and distances in red lip, Cupid's bow, white lip length, nostril height between cleft and non-cleft side was not statistically significant. The difference of alar wing length and nostril width between cleft and non-cleft side was statistically significant.

Conclusion: After reconstructive cleft operations, the lip and nose appearance with acceptable symmetry was achieved. Some patients for more symmetry of nose might be considered for additional corrections.

**O-0506****CT ANALYSIS OF ALVEOLAR OSSIFICATION IN UNILATERAL CLEFT LIP AND PALATE PATIENTS AFTER EARLY SECONDARY GINGIVO-ALVEOLO-PLASTY: LONG TERM RESULTS**

L. Autelitano, MC Meazzini, C Tortora, G Rossetti, M Corno, S Milev, F Riva, R Brusati

SAN PAOLO HOSPITAL, MILAN, Italy

Background: The surgical protocol for treatment of UCLP at the Smile House of Milan combines hard palate closure with Early Secondary GingivoAlveoloPlasty (ESGAP) at 18-36 months, in order to avoid the necessity of a subsequent bone graft. The purpose of this study is to evaluate, at long-term and using a 3D method, the quality of the alveolar cleft ossification after ESGAP (Brusati 2000).

Material and methods: The samples consist of CT Dental scans of 58 UCLP in permanent dentition. Average age at the time of assessment was $15 \pm 2,0$ years. Alveolar bridging is assessed using a modified 3D Bergland's scoring system. Alveolar width is measured at three levels on the CT scans. No absolute measurements are used, but ratios of the affected side versus the non-affected one. For evaluating the alveolar thickness, the authors select four levels both on the DS and on the axial dental scan cuts: a high nasal level corresponding to the healthy nasal floor, a gingival level corresponding to the enamel dentinal junction, a level at the mid distance between these two points and, whenever the axial and DS measurement ratios do not coincide, the authors use an average of this two ratios. Ossification, measured from the palatal to the vestibular cortical bone, was classified as: IDEAL 100-80% thickness; GOOD 80-50% (> 5 mm) thickness; MODEST $> 50\%$ (< 4 mm) thickness; INSUFFICIENT, no bridging. Nasal area ossification was sorted, according to the coronal cuts, in four different qualitative categories: IDEAL, for a flat nasal floor, symmetrical in UCLP; GOOD for a slightly notched nasal floor, asymmetrical in UCLP; MODERATE for a notched nasal floor, asymmetrical in UCLP; INSUFFICIENT for a severely notched nasal floor, severely asymmetrical in UCLP.

Results: ESGAP seems to allow an adequate ossification both in the alveolar and in the nasal region with a thickness between 100-80% in over 63% of the samples, while an inadequate ossification (failure) was found in 5%.

Conclusions: the 3D evaluation allows to obtain more detailed information on the alveolar thickness, permits to evaluate the bone availability for implant placement and, retrospectively, suggests the orthodontic protocols.



O-0507

AN ANATOMICAL APPROACH TO ENHANCE THE AESTHETICS OF CLEFT LIP AND NOSE RECONSTRUCTION

N. Nadjmi

Department of Cranio-Maxillofacial Surgery, GH MONICA / University of Antwerp, Antwerp, Belgium

OBJECTIVE :

The method of choice in the primary correction of cleft lip and associated nasal deformity has been the subject of controversy in the past decades. Although the objectives are identical, up to this point of time the cleft surgeons have failed to make a concession on the method of choice.

METHODS :

A modified Millard cleft lip repair together with a primary correction of the nasal tip deformity is discussed.

In this presentation a step-by-step description of the final cleft lip and nose repair is discussed in detail. Our technique is based on a three dimensional anatomical approach, where the displaced anatomical entities are recognized by a detailed 3D imaging. A puzzle consisting of detached and precisely dissected tissue entities are then created and finally reoriented and reconstructed in an anatomical fashion.

RESULTS:

This method proved to guaranty mid long term esthetic and functional results.

CONCLUSIONS:

Although the clinical follow up of our patients shows a promising aesthetic and functional results, the long term influence on the mid facial growth is yet to be seen.

**O-0508****MAXILLARY OUTGROWTH AND RELATED RISK FACTORS IN CLEFT - EVALUATION OF CLEFT TREATMENT PROTOCOL OF ERASMUS MEDICAL CENTER ROTTERDAM**

I.E. Voshol, R. Visser, S.A.J. Kronig, K.G.H. van der Wal, E.B. Wolvius, M.J. Koudstaal

Department of Oral and Maxillofacial Surgery, Erasmus Medical Center, Rotterdam, Netherlands

Objective

The multidisciplinary treatment of cleft patients is often well established, however, there is no consensus regarding the optimal protocol for treatment. Moreover, long-term outcomes of the specific protocols are sparse. One long-term outcome of a certain treatment protocol is the degree of maxillary hypoplasia at full-grown age, which can be translated into an indication for a Le Fort I osteotomy (LFI). The aim of this study was to analyze this indication for a LFI in all types of cleft patients treated according to the protocol used at the Erasmus University Medical Center Rotterdam (EMC) and to study the patient and treatment factors related to the outcome of this protocol, for example type of cleft, previous pharyngeal flap surgery (PFS) and the occurrence of palatal fistula.

Methods

Retrospectively all patient and cleft related data was collected from patient records of 508 consecutive EMC cleft patients born between 1983 and 1992. Exclusion criteria were cleft patients with other congenital deformities, patients who died before reaching maturity, midfacial clefts, previous radio- or chemotherapy, incomplete documentation and exceptions to the protocol.

Results

This study showed an overall frequency of the need of a LFI of 11.2%, with highest frequency found in bilateral CLAP (31.1%). Presence of alveolar cleft, or the surgical procedures related to the alveolar cleft, have a negative influence on the maxillary growth. The frequency of Le Fort I osteotomies was significantly higher in the patients with PFS (19 versus 8%) and although still a preliminary result also in patients with palatal fistula.

Discussion and Conclusions

Risk factors of maxillary hypoplasia i.e. frequency of LFI, are cleft related factors like type and extent and treatment related factors like number of previous surgical procedures or presence of PFS or fistula. Since the presence of alveolar cleft is of major influence on maxillary growth, differentiation between groups with only cleft lip and both lip and alveolus is necessary. However, maxillary outgrowth is not the only determining outcome of cleft treatment solitary. Complete evaluation of cleft treatment takes also other measurements like speech and patient satisfaction into account.



O-0509

20 YEARS PARTNERSHIP IN CLP SURGERY WITH PADHAR HOSPITAL, INDIA

Thomas Kreusch, J. Thomas Lambrecht, Nabil Samman, Martin Sprengel, Alexander Runge, Gabriele von LaRosee, Jörg Wiltfang

Asklepios Klinik Nord Heidberg, Hamburg, Germany

Objective: In India 35.000 children are born annually with CLP. Additionally there are more than 250 000 unoperated clefts in India. Many of them haven't had treatment. In cooperation with local doctors we try to change this situation. The reasons for lack of treatment are multiple, both medical and cultural.

Methods: Since 1994 we conduct an annual CLP camp for 1 or 2 weeks in the Christian Mission Hospital in Padhar, India and perform CLP surgery together with our Indian colleagues. We bring a team of maxillofacial surgeons, anaesthetists, paediatricians and oral surgeons as well as students to this small mission hospital. The Indian counterparts select the patients beforehand so we can immediately start with surgeries the day after we have arrived.

Results: In 20 years we have performed 1635 surgeries on CLP patients; we have trained Indian colleagues to operate on clefts. As standards improved, we introduced bone grafts and nose corrections and even jaw corrections into the portfolio. But as the Indian colleagues do not stay for long in this rural area, the team is changing and training of new people has to continue. Through the years and personal friendships we have been involved in multiple activities of this hospital and support these financially (Neonatal Unit, new OT, Emergency Unit, College of Nursing etc.). Young colleagues from Germany and Switzerland take part in these camps and have the opportunity to learn a great deal about CLP in a short time. The quality of surgery is on par with the level in our home hospitals and in each case supervised by an experienced surgeon.

Conclusions: Longterm partnership with an Indian Mission Hospital has enabled us to build a CLP Center in the middle of rural India. Indian colleagues have been trained to perform high level CLP Surgery. The team can bring colleagues from different countries who, besides performing surgery, benefit from this project in many ways medically, socially and culturally.



6. Evidence Based Medicine

O-0601

HERBAL PREPARATIONS IN HEAD & NECK SURGERY – FRIEND OR FOE?

A.Ujam, A.Jagsi, N.Vig, R.Bhandari, N.Ali

Barts Health, London, United Kingdom

Aims

An estimated 4 billion people throughout the world use over-the-counter (OTC) herbal preparations to treat a range of ailments and illnesses, as well as to maintain general health. Up to 60% of UK patients undergoing elective surgical procedures use herbal preparations and supplements. Patients do not always declare their use and clinicians often ignore them as simply harmless supplements.

We present the results of an extensive literature review of the current evidence regarding herbal and alternative preparations used by patients and warn of the potential risks as well as benefits of their use in maxillofacial surgery.

Material and Methods

We undertook an extensive literature review of NCBI PubMed, Embase and the internet including the following key words: maxillofacial surgery, herbal medications, alternative medicine, Echinacea, herbal supplements and preparations.

Results

Despite the limited published work on this topic, our literature review confirms the high use of herbal preparations within the general public and that cases of serious excessive bleeding in maxillofacial procedures have been reported. We also highlight other case reports of unwanted side-effects from herbal preparation usage, in particular those of drug interactions. The evidence of significant benefit from these preparations is very limited.

Discussion and Conclusions

There are few guidelines on the use of herbal preparations prior to maxillofacial surgery. Our findings demonstrate that their use within the public is high. Commonly, surgeons do not enquire about such preparations when taking a medical history from a patient. However, we present results of your literature review to support the advice that their use should be stopped prior to surgery.

Furthermore, taking a detailed drug history from our patients is crucial and, together, these changes may help to avoid potentially catastrophic outcomes.



O-0602

UPPER LIP DYNAMICS AFTER LE FORT I SURGERY : A PRELIMINARY CADAVER STUDY

H. Jr. Vercruysse¹, L. Van Nassauw¹, S. Stevens², E. Lakiere², G. Van Hemelen², N. Nadjmi², H. Vercruysse²

¹ *Lab of Human Anatomy and Embryology, Faculty of Medicine & Health Sciences, University of Antwerp, Antwerp, Belgium*

² *Department of Cranio-Maxillofacial Surgery, GH MONICA / University of Antwerp, Antwerp, Belgium*

Objective : Gaining surgical access to an osseous structure requires careful soft tissue dissection, which necessitates careful reconstruction to maintain soft tissue function. This is of particular interest for maxillary osteotomies. As modern concepts of orthognathic surgery are oriented towards a predicted static soft tissue outcome, the impact of adequate soft tissue reconstruction during orthognathic surgery on dynamic soft tissue functionality remains unclear, although the post-operative consequences of Le Fort I surgery are well known (flattening of the upper lip with a loss of lip pouth and downturning of the corners of the mouth). In order to set up a research project on the impact of soft tissue management after Le Fort I surgery on dynamic facial 3D-characteristics of the midface, a discussion arose about the fundamental question which facial muscles should be considered to play a role. Over the years, the localisation of the mucosal incision, the submucosal and the subperiosteal dissection underwent major readaptations, which makes literature on this subject outdated.

Purpose : This cadaver study on 10 cases determines the encountered components of facial musculature of a modern Le Fort I incision, combining recent concepts in soft tissue management and a limitation in subperiosteal dissection.

Methods : In all cadavers a unilateral Le Fort I incision was executed and all transected muscle bundles were marked with methylene blue. Subsequently, skin and subcutaneous fat were carefully removed and all individual facial muscles were identified. Bilateral tactile traction testing was used to determine whether a mimic muscle was either transected, released from its origin or was left intact.

Conclusion : This cadaver study concludes that the downturning of the corners of the mouth is caused by an inevitable transection and/or subperiosteal dissection of the origin of M. Levator anguli oris. The transection of the pars transversus of the M. Nasalis and the deep oblique fibers of the M. Orbicularis oris plays an important role in the flattening of the upper lip. The pathophysiologic mechanisms behind these findings will be explained in detail, as well as recommendations towards anatomic soft tissue repair after Le Fort I surgery.



O-0603

DOES THE DIRECTION OF FORCE INFLUENCE BOTH THE FRACTURE PATTERN AND SEVERITY OF HEAD INJURY IN SKULL BASE TRAUMA?

J. Stephens¹, A. Kanzaria², S. Holmes², D. Bulters¹, B. Evans¹

¹ Dept. Oral and Maxillofacial Surgery, University Hospitals Southampton NHS Foundation Trust, Southampton, United Kingdom

² Dept. Oral and Maxillofacial Surgery, Barts Health NHS Trust, London, United Kingdom

Objectives: To assess the relationship between the direction of force, skull base fracture pattern and severity of head injury in a consecutive series of patients who sustained combined injuries to the cranium and face.

Methods: The clinical records and CT images of 81 patients who had sustained fractures of the anterior cranial fossa were assessed. The direction of force was divided into either a predominantly anterior or lateral direction. Three factors were considered when assessing the severity of the head/brain injury:

- First recorded GCS
- Need for intubation
- Need for decompressive craniectomy

In addition the fracture patterns produced by both anterior and lateral impacts were assessed further with regard to their propagation into the middle and posterior cranial fossa.

Results: The median GCS in patients who sustained a lateral impact to the skull base was 5 compared to a GCS of 14 in patients who sustained an anterior impact to the skull base. Furthermore, fracture propagation into the middle and posterior fossae was associated with a more severe head injury irrespective of the predominant direction of impact force.

Conclusions: Our results suggest that the predominant direction of the impact force to the frontal bone can influence the severity of the head injury sustained by the patient. Furthermore, fractures that propagate to the middle and posterior fossae are associated with a severe head injury irrespective of the direction of the impact force.



O-0604

EUROPEAN LAW FOR THE EUROPEAN MAXILLOFACIAL SURGEONS IV

A. Ezsias

Department of Maxillofacial Surgery Homerton University Hospital, London, England

At the Bologna, Bruges and Dubrovnik Congresses 6, 4 and 2 years ago brief summaries were given of the history of the European Union and how medical and dental practices and regulations developed since the Treaty of Rome in 1957.

The original trading block of 6 countries has, over several decades, developed to a quite closely integrated Union of 28 countries of approximately 500 million people.

The concept of free movement of goods, services and people is a fundamental principle of the European Union. Nearly 70 years after the World War 2 none of the leaders has any personal material recollection of the horrors of the war and a large body of the population of the EU has no personal experience of a divided Europe prior to the coming down of the Berlin Wall, where free movements for many was a dream rather than reality.

Slowly emerging from an economic crisis the achievements of the EU are easily forgotten but many of its problems and imperfections are well recognised and experienced millions of people resulting in centrifugal forces in many countries. The potential aims and vision of The Lisbon Treaty have been dogged by severe financial difficulties, high unemployment and inefficiency. Yet the EU treaties and law governing many aspects of medical, dental and related practices, training of professionals, the ethical standard of research, pharmaceutical companies and their products a fact of every facets of daily life in the widest context.

The increasing cooperation in all aspects of medical fields, whether they are research, movements of patients or indeed medical and allied staff, their rights to practice and those conditions in which they are permitted to do so are an essential knowledge for every maxillofacial surgeon who wishes to live and practice in the EU.

The author who is a maxillofacial surgeon as well as a Barrister at the English Bar will give a brief summary and update on the most relevant issues which may well be special interest to colleagues.



O-0605

THE IMPACT OF NUTRITIONAL STATUS ON LONG- TERM OUTCOMES OF PATIENTS GENERAL CONDITION AFTER MAXILLOFACIAL SURGERY

E. Jaworska, Z. Lewandowski, M. Rybicki, M. Jonasz, B. Szczodry, D. Samolczyk- Wanyura

Clinic for Cranio- Maxillofacial Surgery, Oral Surgery and Implantology, Medical University of Warsaw, Warsaw, Poland

Introduction: It is believed that well-nourished patients didn't require nutritional support in perioperative period. Most studies on perioperative malnutrition are limited to early results of nutritional intervention or influence of malnutrition on early outcome. In a few studies severe malnutrition on hospital discharge was connected with higher late mortality.

The aim of the study was to determine the relationship between nutrition status and the following endpoints- inability to work, physical performance and health status.

Methods: A prospective study was conducted between 2008 and 2010. 83 patients were included in the study. Body weight was measured and BMI calculated on admission, 10 days, 60 days and 180 days after surgery. Prediction of health status, physical performance and inability to work after hospital discharge based on loss of body weight and BMI was performed using *Generalized Additive Models* and ANOVA (SAS and S-plus System).

Results: Nutrition status deteriorated during hospitalization and during 60 days after treatment and then returned to normal level. The length of inadequate nutrition after hospital discharge was associated with increased risk of worse status of health (OR 3.16 per 1 month; $p < 0.047$). Decrease of body weight in the first 10 days and during 2 months after hospital discharge was associated with increased risk of prolonged inability to work- odds ratios per 1 kg of weight loss were 1.89 ($p < 0.03$), 1.54 ($p < 0.027$) respectively. Decrease of body weight during 6 months was associated with increased risk of worse status of health and worse physical performance (OR 1.13, $p < 0.015$ and OR 1.09, $p < 0.05$). The age was inversely related to recovery of general health (OR 0.62 per 10 years; $p < 0.001$) and physical performance (OR 0.68; per 10 years, $p < 0.01$).

Conclusion: Short term inadequate nutrition of well-nourished patients in perioperative period has significant influence on delay of health and physical performance recovery and is more common in cancer patients.



O-0606

RANDOMIZED CONTROLLED TRIALS: WHAT ARE WE INVESTIGATING IN ORAL AND MAXILLOFACIAL SURGERY?

V. Duarte^{1, 2, 3}, C. Vidal¹, O. Badillo¹, R. Osben¹, F. Werlinger²

¹ *Department of Maxillofacial Surgery, Hospital Carlos Van Buren, Valparaíso, Chile*

² *Area Salud Pública, Facultad de Odontología, Universidad de Chile, Santiago, Chile*

³ *Facultad de Ciencias, Pontificia Universidad Católica de Valparaíso, Valparaíso, Chile*

Objective

Knowing the frequency and topics of randomized controlled trials published on 2013 in four journals of oral and maxillofacial surgery with highest impact factor.

Methods

Randomized controlled trials (RCT) on humans published on 2013 in four journals of oral and maxillofacial surgery with highest impact factor: The British Journal of Oral and Maxillofacial Surgery, Journal of Oral and Maxillofacial Surgery, International Journal of Oral and Maxillofacial Surgery and Journal of Cranio-Maxillo-Facial Surgery.

The search was conducted on MEDLINE database. The MEDLINE strategy was developed in accordance with the guidelines outlined in the Cochrane Handbook for Systematic Reviews of Interventions. The subject-specific search was combined with the Cochrane Highly Sensitive Search Strategy for identifying randomized trials in MEDLINE.

Two authors, a maxillofacial surgeon (MPH) and epidemiologist (MPH) examined the titles and abstracts, identified in the search, as RCT. The qualitative analysis of selected trials included the assessment of risk of bias using The Cochrane Collaboration's 'Risk of bias' tool, Jadad Score and CONSORT - 2010 check list (Consolidated Standards of Reporting Trials).

Results

To the current date the four journals analyzed have a total of 20.696 published articles, 1.545 (7,5%) on 2013. The search strategy completed on December 2013 identified a total of 2.113 studies (10.2% of all publications to date) and 286 of them were records among january and december 2013 on the following Journals: The British Journal of Oral and Maxillofacial Surgery (40 RCT), Journal of Oral and Maxillofacial Surgery (83 RCT), International Journal of Oral and Maxillofacial Surgery (75 RCT) and Journal of cranio-maxillo-facial Surgery (88 RCT).

Conclusions

A randomized controlled trial involving a series of ethical considerations in the study proposal and a strict methodology to minimize the risk of bias. There are different tools that have been developed to assess the quality of them, the highest risk of bias is represented by the random sequence generation and allocation concealment because commonly the information provided in the publication is insufficient for assessment.



O-0607

CORRELATION BETWEEN FRONTAL SINUS SAGITTAL MORPHOLOGY AND CRANIAL ARCHITECTURE AND MAXILLOMANDIBULAR SKELETAL CLASS

T. Alix^{1, 2, 3, 4}, C. Boutet^{5, 6}, V. Prade^{1, 2, 3}, F. Vassal⁷, F. Cotton^{8, 3}

¹ Maxillo-Facial Surgery, University Hospital of Saint-Etienne, Saint-Etienne, France

² General Surgery - Unit of Reconstructive Surgery, University Hospital of Saint-Etienne, Saint-Etienne, France

³ CREATIS - LRMN, CNRS UMR5220 - INSERM U1044 - INSA Lyon - University of Lyon I, Villeurbanne, France

⁴ SNA-EPIS EA 4607, University of Saint-Etienne, Saint-Etienne, France

⁵ Radiology, University Hospital of Saint-Etienne, Saint-Etienne, France

⁶ Thrombosis Research Group EA3065, University of Saint-Etienne, Saint-Etienne, France

⁷ Neurosurgery, University Hospital of Saint-Etienne, Saint-Etienne, France

⁸ Radiology, University Hospital of Lyon-Sud, Pierre-Bénite, France

Objective

The aim of this work was to seek a correlation between frontal sinus (FS) morphology and some cranial and facial parameters in order to partially predict the morphology of frontal sinus from craniofacial morphology and to form some hypotheses regarding its development.

Methods

One-hundred and fifty computed tomographic (CT) scans from consecutive and non-selected patients from a general hospital were examined. Volume of the FS and cranial cavity posterior to the FS were segmented and a frontal sinus/cranial cavity posteriorly to the frontal sinus index (Rho) was calculated. Cephalograms were reconstructed from CT-scans and the C1/F1 angle of the cranioarchitectural analysis of Delaire was calculated, SNA and ANB angles of the Steiner's analysis and sagittal horizontal and vertical frontal sinus (Gamma and Delta) angles were measured. Multiple linear regressions and Wilcoxon-Mann-Whitney tests were used to find out correlations between all relevant calculated parameters.

Results

Intra-observer reliability was good and Gamma and Delta showed to be good estimators of Rho. Significant correlations were found between Rho and C1/F1 ($p < 0.05$) and between Gamma and C1/F1 and the degree of prognathism ($p < 0.001$).

Conclusions

Our results suggest that cranial architecture (C1/F1), position of the maxilla and degree of prognathism influence frontal sinus morphology.

**O-0608****GIANT JUVENILE OSSIFYING FIBROMA OF THE MANDIBULE: CORRELATION BETWEEN CLINICAL, PATHOLOGICAL, RADIOLOGICAL AND BONE-SCAN ASPECTS**

V.PRADE^{1, 2, 3}, C.DOUCHET⁴, C.BOUTET^{5, 6}, J.AVET⁷, P.SEGUIN¹, T.ALIX^{1, 2, 3, 8}

¹ Maxillo-Facial Surgery, University Hospital of Saint-Etienne, Saint-Etienne, France

² General Surgery - Unit of Reconstructive Surgery, University Hospital of Saint-Etienne, Saint-Etienne, France

³ SNA-EPIS EA4607, University of Saint-Etienne, Saint-Etienne, France

⁴ Pathology, University Hospital of Saint-Etienne, Saint-Etienne, France

⁵ Radiology, University Hospital of Saint-Etienne, Saint-Etienne, France

⁶ Thrombosis Research Group EA3065, University Hospital of Saint-Etienne, Saint-Etienne, France

⁷ Nuclear Medicine, University Hospital of Saint-Etienne, Saint-Etienne, France

⁸ CREATIS-LRMN, CNRS UMR 5220 - INSERM U1044, University of Lyon 1 INSA Lyon, Villeurbanne, France

Objective: Juvenile ossifying fibroma (JOF) is a fibro-osseous tumour, benign but locally aggressive. This is a rare tumour that preferentially affects patients under 15 year-old. It mainly affects the sinuses and in only 10% of cases the tumour is mandibular.

Methods: We report the case of a 19 year-old Angolan patient with such a tumour. The pretreatment assessment included a biopsy, a CT-scan and a bone scan. Pathological examination of the resected specimen was performed.

Results: We found a good match between macroscopical and microscopical features and the CT-scan and bone scan profiles of three distinct parts of the tumour well identifiable clinically and by each additional tests (morphology, specific binding profile, myxoid or more cellular pathological aspects).

Conclusions: Giant JOF is usually not observed in developed countries but in developing countries such as the present case. So being able to perform CT-scan, bone scan and advanced pathological investigation is a rare occurrence. We could show that bone metabolism in this heterogenous tumour is clearly correlated to specific CT-scan aspects and cellularity.



O-0609

CRANIO-MAXILLOFACIAL SURGERY IN THE WORK OF AËTIUS AMIDENUS

A. I. Mylonas^{1, 2}, E. Poulakou-Rebelakou², G. I. Androutsos², E. C. Papadopoulou³

¹ *Department of Oral and Maxillofacial Surgery, "Metropolitan" Hospital, N. Falero, Piraeus., Greece*

² *Department of History and Philosophy of Medicine, School of Medicine, National and Kapodistrian University of Athens, Athens, Greece*

³ *"P. D. Marinopoulos" Pharmacy, "P. D. Marinopoulos" Pharmacy, Athens, Greece*

Introduction

Aëtius Amidenus, a famous Byzantine physician and great surgeon of the 6th Century A.D., who practiced Medicine in Constantinople and served as Chief Physician at the Court of Emperor Justinian, was interested in various subjects of the mouth, jaws, face, and head and neck in general, in the frame of course of his general surgery practice.

Materials and Method

In this study, the original texts of Aëtius Amidenus, written in ancient Greek, as they are preserved in the electronic platform Thesaurus Linguae Graecae, University of California, Irvine, CA, USA, were investigated in relation to Oral and Cranio-maxillofacial Surgery, aiming at identifying opinions, techniques, surgical instruments, pharmacologic treatments, conservative and interventional management referring to the various entities of Oral and Maxillofacial Surgery and Pathology.

Results

Aëtius Amidenus in his work "Iatricorum [Libri Medicinales XVI], liber VIII" reports some dentoalveolar surgical operations, deals with oral and cervicofacial infections [pharmaceutical and surgical management], whereas from the field of surgical pathology of the salivary glands only the management of ranula [pharmaceutical or surgical treatment] is tackled by him. Management of ankyloglossia, congenital or acquired, is the only subject from preprosthetic surgery where Aëtius Amidenus is referred, whereas the dimension of oral pathology is also attractive to him covering its remit in his writings. His surgical talent and innovating abilities are showed by the introduction of a self-invented method of local anesthesia for tooth extraction, as well as a specific surgical instrument (iron file).

Conclusions

Aëtius Amidenus (6th century A.D.), a brilliant physician and surgeon who wrote extensively on almost every section of Medicine covering the spectrum of all specialties as well, was interested in many aspects of Oral and Cranio-maxillofacial Surgery, developing a number of interesting concepts, views and opinions.



7. Orthognathic Surgery

O-0701

ORTHOGNATHIC SURGERY AND IMMEDIATE IMPLANT PLACEMENT IN POSTERIOR EDENTULOUS MANDIBLE- PIEZO VS CONVENTIONAL OSTEOTOMIES

M.Jagielak¹, M.Rahnama¹, M.Rysz², A. Wojtowicz³, P. Roguś⁴, J. Powała⁴

¹ Department of Oral Surgery, Medical University, Lublin, Poland

² Department of Dental Surgery, Medical University of Warsaw, Warsaw, Poland

³ Maria Skłodowska-Curie Institute of Oncology, Maria Skłodowska-Curie Institute of Oncology, Warsaw, Poland

⁴ Ortognatyka, private surgical and orthodontic practice, Raszyn, Poland

Introduction:

Occlusal deformities of the maxillofacial skeleton if not treated in adolescent or growing patients frequently result in the premature loss of teeth with a secondary bone resorption. The common pattern is a middle aged patient with a class II or class III deformity with lateral mandibular defects seeking medical advice mainly due to the loss of teeth. The collected medical history reveals the he or she also presents difficulties in breathing snoring daytime sleepiness, gastric problems, arterial hypertension. These patients should be offered the complex rehabilitation of the dentition and maxillofacial deformity.

Material:

In the years 2004-2013 we have operated 56 patients with various deformities of the maxillofacial skeleton who also presented lateral defects of the mandibular dentition. Since 2006 we have been increasingly utilizing various piezoelectric systems to perform osteotomies and place implants.

Method:

In 38 out of 56 patients we performed Le Fort I osteotomy together with BSSO (27 exclusively by piezo) During all mandibular splits under direct visualisation of the lower mandibular nerve we placed dental implants in the distal fragment usually 2-3 implants each side. The nerve was transpositioned - laterally the new introosseous groove created by rose-burr and the bone segments stabilised by plates.

Results:

In 5 cases the mandible fractured in the line of the implant placement. In 2 cases the bone fractured during the implant insertion in 1 case during plate osteosynthesis in 2 cases 22 and 24 days after the operation. All fractures received plate fixation and wire IMF. In 2 cases during the split performed by traditional method we observed the disruption of the lower alveolar nerve. The disrupted stumps were approximated and sutured. all the patients within 6 months receives prosthetic rehabilitation.

Conclusion:

Combined orthognathic and implantology procedures provide excellent rehabilitation, markedly shorten treatment time. The application of piezosurgery makes the procedure more predictable limits the chance of the inferior alveolar nerve injury and preserves the bone volume.



O-0702

PARTICULATE BONE GRAFT APPPOSITION: A WAY OF PREVENTING GINGIVAL RECESSIONS IN DENTO-ALVEOLAR ANTERIOR DISTRACTION OSTEOGENESIS PROCEDURES

F. Carlini

Department of Surgery - Section of Maxillo-Facial Surgery, Hospital "Villa dei Pini", Civitanova Marche (MC), Italy

Objective

Segmental distraction osteogenesis of the anterior alveolar process has become a common procedure in orthognathic surgery. One of the purposes of this procedure is to respect the periodontal health of the frontal teeth, that usually are extremely crowded.

However, it has been noted in long-term follow-up, that gingival recessions occur on the teeth included in the distracted dento-alveolar segment. Therefore, some orthodontists have become unwilling to address patients to this procedure.

A technique to prevent this undesirable event is reported.

Methods

At the end of the dento-alveolar osteotomy for segmental osteo-distraction, a particulated bone graft, either autologous or homologous, is positioned on the cortical bone that covers the roots of the frontal teeth. A collagen membrane is laid on the graft, in order to maintain it in its position and prevent the soft tissue to grow between it and the cortical bone.

Twenty patients with different surgical indications received the treatment in the last two years.

Results

The procedure was accomplished without problems and required a few minutes in case of using homologous bone, about 15 minutes when autologous particulate bone was harvested from the posterior mandibular buccal plate.

Patients treated with the procedure did not show gingival recessions so far. No complications were registered neither during, nor after the surgery. Radiologically, the thickness of buccal bone was judged to be the same as before the distraction or, in some cases, increased.

Conclusion

Segmental distraction osteogenesis permits to expand the length of the alveolar process and solve situations of extreme dental crowding without extractions, with the aim to respect the periodontal status of the teeth included in the dento-alveolar segment.

Most of the patients candidate to this procedure present already a thin periodontal support on the inferior lower incisors and cuspids. This puts them in a high risk of worsening the gingival situation because of the mechanical stress of the whole distraction and orthodontic treatment.

Thickening the bone volume on the buccal surface of the roots via a bone graft aims at preventing from worsening the periodontal status and developing gingival recessions.



O-0703

MANDIBULAR MIDLINE DISTRACTION, A LONG-TERM FOLLOW UP STUDY.

J.P. de Gijt, A. Gül, K.G.H. van der Wal, E.B. Wolvius, M.J. Koudstaal

Oral and Maxillofacial Surgery, Erasmus Medical Centre Rotterdam, Rotterdam, Netherlands

Aim:

Mandibular midline distraction (MMD) is a very useful surgical technique to correct transverse mandibular discrepancies. Few long-term studies were performed to assess the stability, relapse and the effects on temporomandibular joints of MMD¹. This study presents the first long-term biomechanical effects (skeletal and dental) of MMD using a bone-borne distractor.

Material and Methods:

After approval of the medical ethical committee board a group of patients who underwent MMD with a bone-borne distractor device were invited for the long-term follow-up.

Dental cast models and posterior-anterior cephalograms were made at fixed time points, T1: pre-operation, T2: post-distraction, T3: 1 year follow-up, T4: long-term follow-up. The dental cast analysis included: inter canine distance (ICD), interpremolar distance (IPMD), inter molar distance (IMD) and arch length (AL). The cephalometric analysis included: ramal angle (RA) and intercondyle distance (ID). A mixed model anova analysis was used to assess the statistical significance of the differences between the measurements over time (* = $p < 0.05$).

Results:

17 patients (9 males, 8 females) who underwent mandibular midline distraction with a bone-borne device were included. 9 completed the long-term follow-up with a mean of 6.5 years. Dental cast analysis; mean differences between **T1-T4**: ICD: 2,0; IPMD: 3,0 mm*; IMD: 3,8 mm*; AL: 3,6 mm; and for **T3-T4**: ICD: -0,9 mm; IPMD: -1,9 mm; IMD: 0,9 mm; AL: -1,6 mm. Cephalometric analysis; mean differences between **T1-T4**: RA: 0,1 mm; ID: -0,5 mm; and for **T3-T4**: RA: -1,1 mm; ID: 0,0 mm.

Conclusion | Discussion:

No significant relapse was observed between T3 and T4, in both the dental cast and cephalometric analysis, demonstrating a stable result on the long-term. No significant differences were seen on the skeletal measurements indicating little effect of MMD on the temporomandibular joints.

The sample size for the long-term follow-up was small and cone-beam CT analysis will be used to assess the biomechanical effects in more detail.

1) J. W. King, et al, Long-term skeletal and dental stability of mandibular symphyseal distraction osteogenesis with a hybrid distractor, American journal of orthodontics and dentofacial orthopedics , Volume 141 issue 1, January 2012, Pages 60-70.



O-0704

AIRWAY MORPHOLOGY AND FACIAL SOFT-TISSUES CHANGES AFTER MAXILLO-MANDIBULAR TRANSVERSE DISTRACTION: 3D CT ANALYSIS AND 3D SURFACE LASER SCANNER EVALUATIONS.

F.A. Bianchi¹, G. Gerbino¹, E. Zavattero¹, L. Verzé², M. Corsico³, F. Baietto¹, G. Ramieri¹

¹ *Surgical Sciences, University of Turin, Turin, Italy*

² *Science of Public Health and Pediatrics, University of Turin, Turin, Italy*

³ *Diagnostic Imaging and Radiotherapy, Interventional Neuroradiology, University of Turin, Turin, Italy*

Objective: a surgically assisted rapid maxillary and mandibular expansion (SARMME) is an alternative approach to the traditional treatment of transverse maxillary and mandibular deficiencies and crowding. Besides, SARMME followed by maxillomandibular advancement (MMA) might be an even more effective form of treatment for patients with severe obstructive sleep apnea (OSA) than MMA alone. However, to date the role of the transverse dimension in OSA is not yet fully understood. The aim of this study is to report the effects of SARMME on both the airway and soft tissues morphology.

Methods: In this prospective study, skeletally mature, non-syndromic patients with transverse maxillary and mandibular hypoplasia, who underwent a bimaxillary transverse osteodistraction between 2010 and 2012, were included. Surgical changes were analyzed using CT scans and 3D facial surface data before (T0) and after (T1) surgery.

Results: Sixteen patients (4 male and 12 female; average age: 26.3 years) were enrolled. SARMME produces facial changes in the cheek, paranasal areas, nasal base and chin. These changes are more evident at 6 months and seem stable at 1 year. Facial changes are mostly explained by the underlying skeletal movements, which are essentially represented by the transverse enlargement of both the maxilla and the mandible. Following SARMME, the total airway volume and the lateral dimension of the cross-sectional airway increased significantly.

Conclusions: SARMME is a new technique that allows an increase in both maxillary and mandibular arch perimeters simultaneously by increasing skeletal width. Facial appearance is improved because of the reduction of the buccal corridors and the fullness of the mouth. While SARMME has a definite role in the armamentarium of correction of orthognatic deformities more experience and further long-term follow-up studies are needed to evaluate the efficacy in OSAS patients.

**O-0705****EFFECT OF MONO- AND BIMAXILLARY SURGERY IN SKELETAL CLASS III PATIENTS ON PHARYNGEAL AIRWAY VOLUME: CONE-BEAM COMPUTED TOMOGRAPHY EVALUATION**

N. Hatab¹, B. Milicic¹, J. Mudrak², V. Konstantinovic¹

¹ *Clinic of maxillofacial surgery, University of Belgrade, Faculty of dental medicine, Belgrade, Serbia*

² *Private clinic, Private clinic, Ludwigsau, Germany*

Objectives: To evaluate pharyngeal airway volume changes after orthognathic surgery in class III patients undergoing either mandibular setback surgery, or bimaxillary surgery, using cone-beam computed tomography (CBCT, Scanora 3Dx, Soredex, Finland), and to compare eventual differences of the pharyngeal airway after mandibular setback and bimaxillary surgery.

Material and Methods: CBCT scans were obtained preoperative and at least 3 months postoperative of 15 class III patients. Patients were divided into 2 groups according to the type of orthognathic surgery: group 1, mandibular setback- bilateral sagittal split osteotomy (BSSO), group 2, bimaxillary surgery- maxillary advancement (Le Fort I osteotomy) and mandibular setback (BSSO). The pharyngeal airway was isolated at the pre- and postoperative views and the volume was measured between the posterior border of the vomer and the top of the epiglottis. The pharynx was segmented into three parts; 1. between vomer and the level of the posterior nasal spine (PNS), 2. between PNS and the level of the most inferior point of the soft palate, and 3., between the level of the most inferior point of the soft palate and top of the epiglottis. The volumetric measurements of each of the three segments were obtained. The maximum constriction of the pharynx was determined and the area was measured, as well as the height of level of the maximum constriction, according to the PNS point.

Results: The pharyngeal airway volume as well as the area of maximum constriction decreased statistically significant ($p < 0,05$) after surgery in both groups. The segment between the most inferior point of the soft palate and the top of the epiglottis significantly decreased ($p < 0,01$) after surgery in group 1. There were also significant differences ($p < 0,05$) between the 2 groups.

Conclusion: The pharyngeal airway volume decreased after both, mandibular setback surgery and bimaxillary surgery. The volume of the lower part of the pharyngeal air way decrease in patients underwent isolated mandibular setback surgery.



O-0706

SEVERE FACIAL ASYMMETRIES - OUR 10 YEARS EXPERIENCE.

S.Bran¹, M.Baciu¹, G.Baciu², I.Barbur¹, I.Mitre¹, V.Istoan¹, M.Hedesiu², W. Kretchmer³, F. Onisor²

¹ *Maxillofacial Implantology and Surgery, University of Medicine and Pharmacy "Iuliu Hatieganu" Cluj Napoca, Cluj Napoca, Romania*

² *Maxillofacial Surgery, University of Medicine and Pharmacy "Iuliu Hatieganu", Cluj Napoca, Romania*

³ *Clinic for maxillofacial and reconstructive surgery, Paracelsus Clinic, Ruit, Germany*

Objective: This study presents a synthesis of orthognathic surgery techniques and solutions for complex facial asymmetries in syndromes such as Goldenhar (1 case), Treacher-Collins (3 cases) caused by functional (19 cases) or morphological (32 cases) laterognathia and median cleft palate (2 cases).

Methods: Surgical procedures used were Le Fort I osteotomies, BSSO, genioplasty and osteodistraction. All osteotomy lines were performed with Misonix Bone Scalpel.

Results: The esthetic and functional results were evaluated by CBCT, OPT radiograph and individual patient autoevaluation by means of an esthetic chart.

Conclusions: The conclusion of this study reveals a good correction of the facial skeleton, a partial correction of the facial asymmetry due to the soft tissues and orbits and a positive appreciation in the autoevaluation patients' charts regarding the improvement of the esthetic and functional aspects.



O-0707

COMPARATIVE CHARACTERISTICS OF ACTIVE AND INACTIVE FORMS OF UNILATERAL CONDYLAR HYPERACTIVITY BASED ON 3-DIMENTIONAL CEPHALOMETRIC ANALYSIS

E. G. Sviridov, A.Y. Drobyshev, N.S. Drobysheva, I. I. Yakimenko, D. V. Ermolin

Maxillo-facial surgery, Moscow state university of medicine and dentistry, Moscow, Russian Federation

Objectives

The aim of the study was to compare active and inactive forms of unilateral condylar hyperactivity and to determine cephalometric differences using 3D imaging based cephalometric analysis.

Methods

We performed diagnostics and treatment of 31 patients aged from 14 to 34 years old. 14 of them had inactive form of unilateral condylar hyperactivity, and 17 had active form. We used PET-scan to determine degree of pathological condylar growth activity. All patients underwent CT before and after treatment and 3D imaging based cephalometric analysis.

Results

As the result of our study we found significant ($p < 0.05$) cephalometric differences between active and inactive forms of unilateral condylar hyperactivity. We found statistically significant difference in ratio of condylar height of affected and nonaffected side between groups with active and inactive forms. Statistically significant difference between condylar height on affected and nonaffected side in group with active form was also noted. Nevertheless there was no statistically significant difference or correlation between PET-scan data and age or sex of the patient of research group.

Conclusions

3D evaluation of cephalometric parameters of symmetry on contralateral sides of mandible is high-effective diagnostic tool which allows with high degree of probability diagnose active form of unilateral condylar hyperactivity.

**O-0708****SURGICAL CORRECTION OF FACIAL ASIMETRIES-COMPARISON OF FUNCTIONAL AND AESTHETICAL RESULTS**

Z. Nikolić, D.Jelovac, M.Šabani

Clinic for Maxillofacial Surgery, School of Dental Medicine, University of Belgrade, Serbia

Facial asymmetries are considerably rare deformities requiring comprehensive approach in planning and treatment. The study included 44 patients treated between 2001 and 2010.

Data were collected regarding gender, age, type of surgery. Surgical results were evaluated subjectively and objectively. Patients evaluated the success of surgical correction with the use of numerical scale, and (1) maxillofacial surgeon and (2) residents using a visual analogue scale (VAS). Collected data were statistically analyzed using Spearman's rank correlation coefficient and Pearson correlation coefficient. The age of patients ranged from 7 to 36 years, average 19 years, of which 73.07% man, and 26.93% woman. All patients underwent preoperative and postoperative orthodontic preparation. The most common asymmetry was mandibular laterognathia as a part of prognathism and bimaxillar deformities and the least common are hyperplasia and hypoplasia of the mandibular condyle. In some cases multiple corrections were performed.

Conclusion: This research showed that there is a significant correlation between the aesthetic and functional outcome of surgery. Patients were satisfied with the aesthetic and functional outcome of the operation which led to an increase in their self confidence.

**O-0709****MODIFICATION OF THE TRADITIONAL OBWEGESER- DAL PONT SAGITTAL SPLIT TECHNIQUE OF THE MANDIBLE**

R. Böckmann, J. Meyns, L. Vaassen, P. Kessler

Maastricht University Medical Center, Department of Oral-, Maxillo-, Facial Surgery, Maastricht, Netherlands

Objective

The operation technique invented by H. Obwegeser to split the mandible in a sagittal way (SSO) has been modified several times in the past. The reasons have been better osteogenesis by larger overlapping bone segments (Dal Pont) and the avoidance of the unfavorable split (Hunsack, Epker). Still the damage of the inferior alveolar nerve and a non-perfect splitting result are the most named problems in orthognathic surgery. By adding an osteotomy of the inferior border of the mandible we expect to diminish these complications.

Methods

14 patients underwent a bilateral SSO, whereby one side was osteotomized according to the classical Obwegeser- Dal Pont technique. The other side was split using the Obwegeser- Dal Pont technique with an additional inferior osteotomy of the mandible (split mouth model). The torque needed to split the mandible was recorded and the resulting fracture lines were visualized by conebeam scan.

Results

The mean torque to split the mandible with the Obwegeser- Dal Pont technique was 2,36Nm. We recorded a mean torque of 2,0Nm when using the modified technique (-15%, $p=0,081$) with fracture lines more likely to resemble the classical pattern according to Obwegeser.

Conclusion

Adding an inferior osteotomy to the classical Obwegeser technique reduced the necessary torque to split the mandible. Less atypical fracture lines were seen.

**O-0710****ALVEOLAR NERVE FUNCTION FOLLOWING ORTHOGNATHIC SURGERY OF THE MANDIBLE –COMPARISON BETWEEN THE CLASSIC BILATERAL AND HIGH OBLIQUE SAGITTAL SPLIT OSTEOTOMY**

K. Kansy, J. Hoffmann, R. Seeberger

Department of Oral and Maxillofacial Surgery, Heidelberg University Hospital, Heidelberg, Germany

Objective: The high oblique sagittal split osteotomy (HSSO) has been described by various authors since the beginning of orthognathic surgery. Due to low contact area of bone and demanding positioning of the joint bearing mandibular part this method has vanished. The most frequently used method today is a long, sagittal osteotomy (BSSO) with higher surgical trauma and more frequent lesions of the inferior alveolar nerve.

Patients and methods: We retrospectively analyzed our orthognathic surgery patients regarding documented nerve lesions with damage to the inferior alveolar nerve from 2001 to 2013. From 2001 to 2010, BSSO was performed. 179 patients qualified for analysis. From 2010 on, HSSO has been established as standard surgical procedure in our hospital, 150 patients were included in the HSSO group. Nerve function was tested by blunt-sharp and two-point discrimination on clinical follow-up examinations. Minimal follow-up time was six months.

Results: 179 patients qualified for analysis of neurosensory disturbance of the inferior alveolar nerve following orthognathic surgery with the BSSO procedure. Sensation of the lower lip was constricted in 119 cases. Permanent hypesthesia was present in 59 cases, paresthesia in 23 cases. Three patients had a permanent anesthesia of the lower lip. In the sample of 150 patients with HSSO, we saw three cases of persistent hypesthesia up to six months postoperatively.

Conclusions: Comparison of both techniques with regard to neurosensory disturbance of the inferior alveolar nerve shows relatively high numbers of permanent nerve lesions with the classic BSSO. HSSO seems to produce far less nerve damage. As orthognathic surgeries are highly selective procedures, these findings must be taken into account when individually choosing the right technique for each patient.



O-0711

DO THE PREDICTORS OF DIFFICULT AIRWAY CHANGE FOLLOWING SAGITTAL SPLIT RAMUS OSTEOTOMY IN SKELETAL CLASS III PATIENTS?

S. S. Soydan¹, B. S. Akdeniz², B. Bayram¹, Z. Kayhan³, S. Uçkan¹

¹ Oral and Maxillofacial Surgery, Baskent University, Ankara, Turkey

² Dental Service, Military Hospital of İzmir, İzmir, Turkey

³ Anesthesiology, Baskent University, Ankara, Turkey

Objective: Various preanesthetic evaluation methods are being used for the assessment of intubation difficulty. Mallampati scoring is the most frequently used clinical preanesthetic airway evaluation test. Body-mass index (BMI), thyromental and sternomental distances, and maximal inter-incisal distances can be listed as some other predictors for the difficult airway. The alteration of these predictors caused by surgical mandibular movement is unknown. The aim of this study was to determine the effect of surgical mandibular backwards movement on the predictors of difficult airway.

Methods: Thirty skeletal class III patients (mean age: 24.6 ± 5.8) were included in this study. Mallampati score, BMI, maximal inter-incisal distance, thyromental and sternomental distances of the patients were evaluated preoperatively and sixth month postoperatively. Sagittal split ramus osteotomy without genioplasty was performed to all patients by the same surgical team and anesthesia was provided by the same anesthesiologist using nasotracheal intubation. Preoperative and post-operative results were statistically compared by *Wilcoxon Rank* and *Student's T* test.

Results: The mean mandibular set-back was 6.1 mm. There was not any statistically significant change of BMI and thyromental distance after surgery. The sternomental distance and maximal inter-incisal distance were significantly reduced after mandibular set-back ($p < .05$). A statistically significant increase in Mallampati score was observed at six months post-operative period ($p < .05$).

Conclusion: Increase of Mallampati score, decrease of sternomental distance or restriction of maximal inter-incisal distance following sagittal split ramus osteotomy may lead to difficult intubation or airway obstruction, therefore; both the patient and practitioner should be aware of these situations. Even though it is known that adverse changes in airway are possible results of mandibular set-back, the change in numerical value of Mallampati score was shown for the first time in present study. Approximately 6mm of mandibular set-back resulted in a single rate increment in Mallampati score. The amount of mandibular set-back in skeletal Class III patients with high pre-operative Mallampati score and short neck should be limited, thus prevention of potential postoperative problems in airway should be considered.



8. Embryology and Prenatal Diagnosis of Craniofacial Malformations

O-0801

NEW IMAGING USING 3D ULTRASOUND FOR PRENATAL DIAGNOSIS OF THE UNILATERAL CLEFT LIP AND PALATE SEVERITY: PRELIMINARY RESULT

G Captier¹, JM faure², F Grosjean², JC Doucet¹, M Bigorre¹

¹ Plastic Pediatric Surgery, CHRU Montpellier, Montpellier, France

² Obstetrical and Gynecology, CHRU Montpellier, Montpellier, France

The prenatal diagnosis of cleft lip with or without cleft palate (CL/P) is well developed technic. New technic of ultrasound can be used to achieve an anatomic visualisation of the palate. The aim of this study was to test the hypothesis that the prenatal 3D-ultrasound could recognised the severity of the unilateral CLP according to the postnatal classification.

This retrospective study was conducted in a tertiary centre. The ultrasound volume of the fetal face was acquired by an ultrasound expert during the morphological screening (2nd trimester). The 3D visualisation was conducted using multiplanar reconstruction. The ULCP was classified according to the four classes described by Delestan et al. [1, 2] and was compared to the neonatal plaster cast of the same patient. The concordance was calculated between the prenatal ultrasound classification and the postnatal plaster cast classification.

The study was conducted in 16 UCLP. The 3D-ultrasound and multiplanar reconstruction could visualised the shape of the palate and distinguished the balance UCLP (classes 1 and 2) to the unbalance UCLP (classes 3 and 4). The size of the alveolar cleft distinguished the class 1 from 2. The 3D visualisation of the nasal septum distinguished the class 3 (deviated and curvilinear) from the class 4 (linear). The intra-observer concordance is high (kappa 0.85) for an ultrasound expert and low for a non-expert (kappa 0.25). The inter observer is medium (0.5).

The new developments of the prenatal ultrasound (3D visualisation and multiplanar view) enhance the precision of the prenatal diagnosis of the UCLP. The severity of the UCLP can be appreciated in prenatal and helped the surgeon to explain the protocol treatment to the parents. The improvement of techniques should allow a better prenatal-postnatal concordance.

1. Delestan, C., et al., *New Neonatal Classification of Unilateral Cleft Lip and Palate-Part 1: To Predict Primary Lateral Incisor Agenesis and Inherent Tissue Hypoplasia*. Cleft Palate Craniofac J, 2013.

2. Doucet, J.C., et al., *New Neonatal Classification of Unilateral Cleft Lip and Palate Part 2: To Predict Permanent Lateral Incisor Agenesis and Maxillary Growth*. Cleft Palate Craniofac J, 2013.

**O-0802****IDIOPATHIC CONDYLAR RESORPTION MANAGED WITH BILATERAL, CUSTOM TMJ REPLACEMENT WITH CONCURRENT ORTHOGNATHIC SURGERY UTILISING VIRTUAL SURGICAL PLANNING**

J.Osher, N.S.Matthews

Oral & Maxillofacial Surgery, Kings College Hospital, London, United Kingdom

Background

Idiopathic condylar resorption (ICR) is a poorly understood disease process. It is described as dysfunctional remodelling of the TMJ with progressive resorption of the condyles. This leads to mandibular retrusion and a class II facial profile, malocclusion and an anterior open bite. There is often significant pain during the active disease process.

Current approaches to treating this condition include:

- splints to 'unload' the condyles
- orthodontics and orthognathic surgery (once the condition is in remission)
- TMJ arthroscopy and arthrocentesis
- combined orthognathic and TMJ disc repositioning
- total joint replacement (TJR) : autogenous or alloplastic

We describe a technique of single stage, bilateral, custom total joint replacement +/- orthognathic surgery utilising virtual surgical planning.

Methods

4 patients have been treated using this technique at our centre since 2010. All have undergone one operation. 1 underwent bilateral TJR with concurrent maxillary osteotomy and 3 underwent bilateral TJR alone.

The surgical planning for all patients was carried out virtually and custom made, patient specific implants were fabricated using a computer aided design and manufacturing process by Medical Modelling, Colorado and Biomet, Florida USA respectively.

Results

All patients treated using our contemporary protocol underwent a single procedure with elimination of the disease process and reconstruction of their dentofacial deformity. All have been followed up postoperatively and have had uneventful recoveries with no complications.

Conclusion

This management of ICR provides a predictable and stable outcome giving patients an optimal functional and aesthetic result, while utilising the latest computer assisted technology.Kings Coll

**O-0803****MEDIAL CANTHUS MALPOSITION CORRECTION FOR PATIENTS WITH INCOMPLETE TESSIER NO. 3 FACIAL CLEFT**

J. An, L. Ma, Z. Zhou

Department of Oral and Maxillofacial Surgery, School and Hospital of Stomatology, Peking University, Beijing, China

Objectives: The purpose of this study was to assess primarily the technique of reposition medial canthus ligament to correct medial canthus malposition with incomplete Tessier No 3 oblique facial cleft.

Material and Methods: From 2009 to 2012, 5 male patients with a incomplete Tessier No 3 facial cleft were treated in our department. The age range of the patients was 2-12 years. Preoperative CT examination of each patient was performed and the bony defect was evaluated. In the operation, The medial canthal ligament which was dislocated was found and was free thoroughly until it was tracted to the same level as the contralateral normal medial canthal angle or slightly above. Then the medial canthal ligament was ligated with a steel-wire (0.25mm) and fixed with a then a titanium screw on the medial orbital rim. The alar base was displaced downward. Taking the position and shape of the contralateral nose as a reference, the nasal alar was displaced downwards.

Results: One week after the operation, the sutures were removed and the facial incision healed well. 6-10 months postoperatively, the facial scar was not obvious. The shape of medial canthal angle was acceptable, and the height of the medial canthal angle and the length of the palpebral fissure of both sides were symmetrical. The clinical results were satisfactory. 1 case had persistent postoperative epiphora and need additional examination and treatment.

Conclusions: For the incomplete Tessier No 3 oblique facial cleft, the local bony defect is not severe and often no need bone graft. surgical treatment mainly focus on the deformities of inner canthus and nasal alae. Medial canthal ligament reposition is the key procedure for correction of the medial canthal deformity and the surgical results are stable and reliable.

**O-0804****CLEFT PALATE CAUSED BY CONGENITAL TERATOMA**

H. Bénateau, L. Streit, F. Villedieu, A-S. trentesaux, H. De Facq Regent, A. Veyssi re

Maxillofacial surgery department, Caen, France

Objectives:

Any factor that leads to incorrect palate fusion may induced development of cleft palate. The aim of this case report is to present a rare case of congenital teratoma originating from nasal septum that may have prevent the palatal shelves fusing during embryonic development and may induce cleft palate. Our therapeutic approach is exposed and argued.

Method:

A 40 weeks gestation female infant was born with a complete cleft palate associated with a large central nasopharyngeal tumor. There was no antenatal diagnosis. A computed tomography scan was performed showing a large heterogenous mass arising centrally from nasal septum in direct contact with the clef palate.

Results:

The first surgical procedure was simple biopsy of the tumor under general anesthesia at the age of 5 weeks. The histopathological examination showed a teratoma. Removal was performed at the age of 5 months. Cleft palate reconstruction was performed in two stages as usual in our Cleft Center. With a follow-up of 10 months after removal, there was no sign of local recurrence of the teratoma.

Conclusion:

The diagnosis of nasopharyngeal teratoma is ideally made in utero, but false negatives are commonly described with prenatal ultrasound in palatal area. In severe cases, an early removal may be mandatory for stabilisation of the airway. Most teratomas have benign characters and the prognosis is usually good. But the recurrence is not rare. For these reasons, we consider secondary palate reconstruction following complete excision to be safer. Thus, palate reconstruction is performed at the moment we have definitive results of histology and we can extend the excision if necessary.

Afterthat care must be taken to exclude possibility of teratoma recurrence. Regular multidisciplinary clinical follow-up and computer tomography or magnetic resonance examination may be valuable for these purposes.

**O-0805****PIERRE ROBIN SEQUENCE: MRI EVALUATION OF SWALLOWING.**

P. Papoff¹, E. Basile², D. Angeletti², V. Ramieri², P. Cascone²

¹ *Dipartimento di Pediatria e Neuropsichiatria infantile, Sapienza Università di Roma, Roma, Italy*

² *Dipartimento di Scienze Odontostomatologiche e Maxillo-Facciali, Sapienza Università di Roma, Roma, Italy*

Objective

Currently the evaluation of feeding improvement after Fast and Early Mandibular Osteo Distraction is based on Videofluoroscopic Swallow Study (VFSS), fiberoptic endoscopic evaluation of swallowing (FEES) and esophageal manometry. Our objective is to introduce the use of MRI in the study of swallowing in patients with swallowing abnormalities with the aim to avoid exposure to x-rays and to obtain a higher spatial resolution of the structures involved.

Patients with Pierre Robin Sequence have sucking-swallowing incoordination due to glossoptosis that prevents the forward displacement of the tongue required for sucking. Besides the cleft palate prevents the creation of negative pressure in the oropharynx. The authors propose a MRI protocol to investigate swallowing pattern in these patients.

Methods

We performed MRI in 5 patients who underwent FEMOD aged between 1 and 5 months old. All of them already. The authors carried out the study at the Oral and Maxillo Facial Department of 'Sapienza' University of Rome. All subjects underwent dynamic MRI study of swallowing function using a 3 Tesla magnet. During the examination, the patients were fed with milk with addition of gadolinium by bottle. This technique let a preliminary assessment of the oral cavity, pharynx and laryngeal structures, a morphologic assessment of tongue, soft palate, pharynx, epiglottis and larynx-hyoid bone and a dynamic assessment of swallowing and bolus progression.

Results

The analysis of MRI imaging, performed with the help of radiologists. Preliminary assessment of the anatomical structures showed the absence of glossoptosis and the improvement of airways volume. Dynamic assessment highlighted the improvement of the suction due to forward displacement of the tongue. Then, the pharynx contraction push the bolus into the esophagus. The contrast material was well tolerated and no patient showed reflux bolus and aspiration into the low airways.

Conclusions

The exiguity of the sample represents a major limitation of the study together with the low temporal resolution of the method, nevertheless we think that it could represent an attractive and safe alternative to current methods. Further studies are required with wider samples and healthy controls.



O-0806

PIERRE ROBIN SEQUENCE: AIRWAYS VOLUMETRIC EVALUATION BEFORE AND AFTER FEMOD PROTOCOL.

V. Ramieri, E. Basile, E. Riccardi, D. Angeletti, P. Cascone

Dipartimento di Scienze Odontostomatologiche e Maxillo-Facciali, Sapienza Università di Roma, Roma, Italy

Objective

Fast and early mandibular osteogenetic distraction (F.E.M.O.D.) represents an optimal tool to increase airways in patients affected by Pierre Robin Sequence (PRS). Newborns with PRS present breathing difficulty since the first days of their life because of reduction of airways due to microgenia and glossoptosis.

Our objective is to quantify volumetric changes before and then FEMOD.

Methods

A retrospective assessment of the patients treated for severe PRS at the Oral and Maxillo Facial Department of 'Sapienza' University of Rome, Italy has been performed. 46 patients affected by Pierre Robin Sequence were treated with FEMOD. Out of this sample only 7 satisfied inclusion criteria for completeness of data. CT scan pre and post operation were performed then a volumetric assessment was realized with Dolphin Imaging. Retropalatal and retroglossal, measurements were performed

Results

The comparison between the pre and post operative CT scan data showed a significant increase in volumetric terms in all of the three sections analysed. Retroglossal volume average increase was of 346%, retropalatal volume average increase was 169%.

Conclusion

FEMOD is an efficient method to improve airways involvement in patients affected by PRS. The three dimensional volume rendering represent a useful method to evaluate airways volume and to compare the increase in terms of size before and after surgery.

**O-0807****AUTOSOMAL RECESSIVE CROUZON-LIKE CRANIOSYNOSTOSIS AND PANSYNOSTOSIS ARE CAUSED BY MUTATIONS IN IL11RA**

M. Rachwalski, K. Keupp, Y. Li, I. Vargel, Y. Alanay, E. Mavili, G. Tuncbilek, M. Hammerschmidt, N. Akarsu, B. Wollnik

Department of Craniomaxillofacial Plastic Surgery, University of Cologne, Cologne, Germany

Objectives

Craniosynostosis is the second most common craniofacial malformation and has been attributed to heterozygous substitutions e.g. in *FGFR1-3* and *TWIST1*; however its exact pathomechanism is still not fully understood. A subset of these patients remains mutation-negative, thus strongly suggesting further genetic heterogeneity. We therefore aimed to elucidate the underlying molecular basis of syndromic craniosynostosis in mutation negative patients of our cohort.

Methods

We performed homozygosity mapping in four Turkish individuals, their parents, and unaffected siblings. The identified region on chromosome 9 was targeted by array-based sequence capture followed by next generation sequencing. The likely causative mutation was re-sequenced in independent experiments, tested for co-segregation with the phenotype within the family and then further screened in 100 healthy control individuals from Turkey by restriction digestion. Finally, an extended screen was performed in a cohort of 79 patients with various forms of craniosynostosis in whom causative genes had been previously excluded.

Results

Mutations segregating with the disease were detected in interleukin 11 receptor alpha, encoded by the *IL11RA* gene. These included a homozygous donor splice-site mutation (c.479+6T>G), leading to a high percentage of aberrant *IL11RA* mRNA transcripts and altered mRNA splicing, as was determined by subsequent *in vitro* exon trapping experiments. In a family with pansynostosis compound heterozygous missense mutations (p.Pro200Thr and p.Arg237Pro) were found, and in two further Turkish families with Crouzon-like syndrome, homozygous nonsense mutations (p.Tyr232* and p.Arg292*) could be identified.

Conclusions

In this study, we were able to identify *IL11RA* as causative gene underlying autosomal- recessive Crouzon-like craniosynostosis and pansynostosis. Additional functional studies on *IL11RA* and its downstream molecules will further enhance our understanding of the regulation of cranial suture morphogenesis and fusion and might lead to the development of targeted pharmacologically based therapies in future.



O-0808

EMERGING (MANUFACTURING) BIOENGINEERING TECHNOLOGIES 2: SCAFFOLD DESIGNING EXPERIMENT USING TITANIUM SCAFFOLDS.

P Bujtár^{1, 2}, J Simonovics³, A Koptug⁴, GK Sándor², V Károly³

¹ Maxillofacial Surgery Department, Southern General Hospital, Glasgow, United Kingdom

² Oral and Maxillofacial Surgery Department, University Hospitals of Oulu, Oulu, Finland

³ Department of Machine and Product Design, Faculty of Mechanical Engineering, Budapest University of Technology and Economics, Budapest, Hungary

⁴ Department of Quality Technology, Mechanical Engineering and Mathematics, Mid Sweden University, Östersund, Sweden

Introduction/Aims

Substantial volume defects of the head and neck often require customized solutions to improve quality of life like free flap transfers. Titanium and its alloys are versatile materials providing the feature of osteointegration. The conditions which facilitate the deposition of lamellar bone are under extensive research. Our project aimed to determine whether titanium can function as a scaffold – unlike simple plates – to enhance bone regeneration for load bearing structures. The reaction of stem cells to scaffolds with varying stiffness will be presented.

Materials/Methods

Additive manufacturing were used to produce a variety of scaffolds to optimize titanium structures. Electric beam melting (EBM) manufacturing allowed us to optimize the elastic modulus (Young) of the titanium to match with cadaveric bone from a previous project. Multidirectional mechanical tests were performed on the various designs of titanium cell structures (n=80). Cadaver bone samples as references were also tested in a similar fashion. The predictability and quality of manufacturing was assessed statistically and also with scanning electron microscope (SEM).

Results/Statistics

The results demonstrated structures matching the mechanical properties of bone and even anisotropy as our results suggest 3 GPa elasticity. This allows the possibility to build regenerating bone with predictable properties. The features and perspectives of such a scaffold will be discussed and also compared to the matched cadaver samples.

Conclusions/Clinical Relevance

The benefit that tissue engineering techniques offer is decreased morbidity, relative independence from donor site, with a highly specific and customized shape. Titanium based reconstruction constructs seems to offer an alternative future for bony reconstruction.

**O-0809****TMJ ANKYLOSIS AND CORONOID HYPERPLASIA: SURGICAL AND REHABILITATIVE PROTOCOLS**

G. Elia, M. Galiè, R. Tieghi, L. Clauser

Maxillo-Facial Surgery, Sant Anna Hospital & University, Ferrara (Cona), Italy

Temporomandibular Joint Ankylosis (TMJA) is a severe disorder described as an intracapsular union of the disc-condyle complex to the temporal articular surface with bony fusion.

The causes of ankylosis of the mandible can be classified as congenital, traumatic, inflammatory and neoplastic. Idiopathic forms including enlarged coronoid processes have been considered as causes of restricted mouth opening as a whole.

The management of these disabilities are challenging and rarely based on surgical and rehabilitation protocols.

METHODS

We describe the treatment in two young adults affected by Goldenhar syndrome and Pierre Robin sequence with reankylosis after previous surgical treatments. Moreover three cases of congenital idiopathic ankylosis in severe craniofacial deformities are reported.

Details of intraoperative management and postoperative care are described.

RESULTS

Surgical results in terms of post-operative mouth opening are reported in the different steps of the treatment. Our study also emphasizes the significance of three-dimensional CT techniques for diagnosis and surgical planning, the superiority of coronoidectomy over coronoidotomy and of the

extraoral approach over the intraoral approach, and the importance of dynamic physiotherapy to prevent postoperative scar formation

CONCLUSION

Management of TMJA is difficult as no surgical protocols have been suggested. Failure and reankylosis are common. In pediatric age the aim of surgery is to recover morphology and function with normal growth, appropriate speech development, dental occlusion, and normal development of the facial skeleton.

The best treatment is yet to be found because no consensus in the literature has been established. Surgical treatment must be tailor-made for each patient and adequate post-operative Rehabilitative Physiotherapy Protocol (RPP) is necessary to achieve success.



9. Preprosthetic Surgery and Implantology

O-0901

BACKWARD PLANNING CONCEPT IN TREATMENT OF PATIENTS WITH IMPLANT ANCHORED EAR PROSTHESIS AT SURGICAL AND PROSTHETIC STAGES.

I.Sukharskiy, T.Chkadua, A.Arsenidze

Department of congenital defects and deformities of maxillo-facial region and ectoprosthetics, Central Research Institute of Stomatology and Maxillo-Facial Surgery, Moscow, Russian Federation

Objective – improve predictability of treatment results at patients with primary and secondary anotia with implant anchored prosthesis, using 3D software and CAD\CAM technologies at surgical and prosthetic stages.

Material and method. During 2010-2014 7 patients (2 primary, 5 secondary anotia) underwent implant anchored auricular prosthesis rehabilitation. 2 cases Nobel Branemark Mark III, 5 cases Cochlear Vistafix systems were used. Ectoprosthesis made from Ectosil (siloxane) with intrinsic pigment.

Virtual planning at the surgical stage included:

1. CT and surface scanning of the interest region.
2. Virtual reconstruction of the interest region using mirroring and symmetrisation of the contralateral side, or software accommodation of the "virtual donor"
3. Topographical alignment of implants according to prof. Tjelstrom recommendations, and surgical guide (mixt support) virtual design.

Surgical stage performed according to implant system manufacturer guidelines, using static computer assisted surgery.

Same concept was applied at the prosthetic stage.

1. Surface scanning of interest region (healing caps installed)
2. Virtual alignment of preoperative and postoperative surfaces containing elements to reconstruct.
3. Retention bar localization guide design.
4. Substructure and castable ectoprosthesis model design.

The retention bar was configured on the master model with the aid of stereolitographic guides which determined the localization, length and angulation of the bar. The substructure was printed using ABS plastic according to available space in ectoprosthesis containing cavities for clip attachments. The ectorposthesis model was printed using oligoesthermetacrilate and after clinical adjustment was casted for prosthesis manufacture. Color detection (intrinsic pigment used) was the only stage based on subjective data.

After prosthesis installation, surface scan was performed to determine inaccuracies between planned and obtained shape and localization. At 1-st year postop CT was performed to determine peri-implant status, those data being used to determine the accuracy of implants` installation with the aid of surgical guide.

Results. During follow up period (up to 4 years) no implants were lost. Medium vector deviation of implant position was 0,31mm, angulation 3,12 deg. systemic guide appliance vector deviation 0,3mm.

Conclusion: We consider that backward planning concept team wise static computer assisted technologies is superior to conventional planning approach for its accuracy and planning capabilities.

**O-0902****CT-COMPUTER ASSISTED SURGERY AND IMMEDIATE IMPLANT LOADING IN THE PROSTHETIC REHABILITATION OF A FULL ARCH JAW: A CLINICAL REPORT.**

S. Bordonaba Leiva, JA. Hueto Madrid, C. Bescós Atín, J. Gutiérrez Santamaria, J Masià Gridilla, A. Mogedas Vegara

Oral and Maxillofacial Surgery, Vall Hebron Hospital, BARCELONA, Spain

The purpose of this abstract is to describe and apply our digital protocol for guided surgery in the treatment of a partial jaw edentulie requiring a full arch jaw rehabilitation, and to describe our technical laboratory and prosthetic procedure for the fabrication of the provisional fixed full arch prosthetic restoration, in order to allow immediate implant loading just after performing implant computer-guided surgery.

The complete oral rehabilitation of the jaw is a challenge since the good planification is necessary to allow an accurate placement of a sufficient number of parallel implants to optimize the prosthetic procedure and outcome, combining immediate functionalization with the concept of a high precision guided surgery planning.

This report describes the rehabilitation of a partial edentulous patient applying a postextractive implant placement using a CT-based implant planning with computer assisted surgical design (SimPlant) and simultaneous CAD/CAM fabrication of a surgical template, used for creating a prefabricated fixed complete denture for an immediately load restoration.

Immediate implant loading and the manufacture of the prosthesis using computed guided surgery protocols has demonstrated a predictable good outcome in many situations, and its development allows the placement of endosseous implants and an immediately loaded provisional prosthesis simultaneously, with a high implant survival rate guaranteeing the best esthetic results in all clinical situations, both in the maxilla and in the present case in the jaw.

**O-0903****BONE FORMATION IN A LOCAL DEFECT AROUND IMPLANTS COATED WITH EXTRACELLULAR MATRIX COMPONENTS**

B. Stadlinger, R.M. de Barros, S. Bierbaum, P. Korn, A. Queiroz, A. de Almeida, V. Hintze, D. Scharnweber, A.B. Novaes

Clinic of Cranio-Maxillofacial & Oral Surgery, Zürich, Switzerland

Objective: The coating of implant surfaces by components of the extracellular matrix offers an approach to influence peri-implant bone healing. In this study bone healing around coated implants has been analysed in a peri-implant defect model.

Methods: Eight months after extraction of the premolar teeth, six dogs received 48 implants (8/animal) in the mandible. Implant surfaces were either sandblasted and acid-etched or additionally coated with collagen type II and chondroitin sulfate (coll/CS). On each side of the mandible, implants either had no peri-implant defect (control side) or a vertical defect of 5 mm depth and a width of 0.5, 1.0 or 2.0 mm. Implants healed submerged for eight weeks. Fluorochrome staining, histology and histomorphometry served to analyze implant osseointegration.

Results: Fluorochrome labels showed an increased mineralization around coll/CS coated surfaces at four weeks ($p=0.031$). Histomorphometry generally showed lower vertical and horizontal bone apposition with increasing gap size for both surface states. In non-gap situations and 0.5 mm gaps coll/CS coated implants showed increased bone volume in adjacent areas in comparison to uncoated implants ($p<0.05$).

Conclusions: The width of the peri-implant gap influences peri-implant bone formation. Around both surfaces, a complete filling of all gap sizes by newly formed bone could not be observed. In proximity to the surface, implant surface coating by coll/CS positively influenced bone formation.

**O-0904****ALVEOLAR RIDGE AUGMENTATION USING AUTOLOGOUS PRESS FIT BONE CYLINDERS – CLINICAL EXPERIENCE AND DONOR SITE MORBIDITY**

Ph. Streckbein, M. Meier, Ch. Kähling, J.-F. Wilbrand, R. Streckbein, H.-P. Howaldt

Cranio-Maxillo-Facial Surgery / Justus-Liebig-University Giessen, Giessen, Germany

Objective: The use of autologous block bone grafts for horizontal alveolar ridge augmentation in dental implantology is a common surgical procedure. Typically, bone grafts are individually moulded. The aim of this study is to present our clinical experience with an alternative technique, where the recipient side is adjusted to the graft, not vice versa as in common procedures.

Methods: Adjusted trephine drills were used to harvest partly cylindrical grafts from the retromolar region of the mandible. After preparing the recipient site with accurately fitting grinding drills, the bone grafts were transplanted. The augmented areas were subsequently treated with dental implants. A clinical and radiological follow-up of all our consecutive cases from 2006 till 2013 was performed focusing on the clinical outcome and the donor site morbidity.

Results: Over a period of 6 years and 10 month the clinical and radiological follow-up included 48 patients with a total of 64 cylindrical bone grafts. In all cases a dental implant could be inserted after an average healing period of 4.15 ($\pm$ 1.06) months. A single implant loss, combined with the failure of the bone graft, was observed two weeks after implant insertion. 91.8% of the evaluated patients had no neurological disturbance of the inferior alveolar nerve. A sensitivity impairment of small local areas was observed in 8.2% of the patients. The radiological evaluation showed a delayed reossification of the donor site in only one patient - without clinical relevance.

Conclusion: The presented method proved to be an effective treatment option for horizontal alveolar ridge augmentation prior to single implant placement, a shorter graft healing period and a low donor site morbidity as compared with other methods for local bone repair.



O-0905

PERI-IMPLANT CONDITIONS OF MORE THAN 120 IMPLANTS AFTER THE USE OF A ENDO-DISTRACTOR AFTER AN OBSERVATION PERIOD OF FIVE YEARS

C. Brandtner, C. Steiner, S. Enzinger, F. Borumandi, C. Krenkel, A. Gaggl

University Clinic of Oral and maxillofacial Surgery, Salzburger Landeskliniken, Salzburg, Austria

Objective: Assessment of peri-implant conditions of immediately loaded implants after alveolar ridge augmentation by Standard Mono Endo-Distractor.

Method: In 30 patients the alveolar crest was distracted in the interforaminal region by using the Standard Mono Endo Distractor. All patients received interforaminal dental implants which were immediately loaded. Radiographic bone loss and clinical parameters (pocket probing depth, bleeding on probing) of the peri-implant regions were assessed.

Results: The observation period was at least 5 years after implant insertion. Clinical parameters and five year survival rate of the implants were comparable with the published data. The radiographic marginal bone loss for implants adjacent to the osteotomy lines at the site of Endo-distraction was significantly higher compared to peri-implant bone loss further medial to the osteotomy line.

Conclusion: Interforaminal implants placed in distracted bone show the same biological and mechanical properties compared to implants placed in original bone.

**O-0906****THE COMPARISON OF DONOR SITES MORBIDITY OF MANDIBULAR RAMUS AND SYMPHYSIS WITH/WITHOUT PIEZOSURGERY**

N. Altıparmak, S.S.Soydan, S.Uckan

Oral and Maxillofacial Surgery, Baskent University, Ankara, Turkey

Objective: The Aim of this study was to evaluate the short and long-term morbidity of intraoral bone harvesting from two different donor sites, mandibular symphysis and ramus, for bone augmentation procedures with or without piezosurgery.

Method: Sixty-four consecutive patients (16 males and 48 females) who underwent bone graft operation by the same surgeon were included in this study. Eleven of the patients had bilateral bone graft operation and totally 75 bone graft donor sites were evaluated in this study. The mean age of the patients was 44.8 years (range:17 to 71). Intraoral block bone grafts were harvested randomly from two different recipient sites: the mandibular symphysis (n:44) and the mandibular ramus (n:31). Both of the two donor site groups (ramus and symphises) were divided into two subgroups according to surgical graft harvesting methods (conventional or piezosurgery). Vitality of teeth adjacent to the harvesting sites was investigated by Electric Pulp Test. Soft tissue superficial sensory function was assessed by the Pointed-Blunt Test and the Two-Point-Discrimination Test. Intraoperative and postoperative pain of the patients' was evaluated by Visual Analog Scale (VAS). Postoperative swelling, bleeding, sensorial disturbances or prolonged healing time at donor sites were also recorded. The results of mandibular ramus and symphysis groups were statistically compared.

Results: Out of 290,4 teeth in the symphysis group needed root canal treatment after surgery. The incidence of transient paresthesia in mucosa was significantly higher in symphysis group than ramus ($p=0,004$).

In symphysis group; the incidence of skin and mucosa temporary paresthesia was lower in piezosurgery subgroup than conventional subgroup ($p=0.006$). No permanent anesthesia of any region of the skin was reported both in ramus and symphysis groups. Patient's intra and postoperative VAS scores were low and did not differ between ramus and symphysis harvesting groups or piezosurgery and conventional surgery subgroups.

Conclusion: When the symphysis was chosen as donor site, minor sensorial disturbances of mucosa and teeth were recorded. Use of piezoelectric surgery during intraoral harvesting of bone blocks reduced these complications.

**O-0907****HISTOLOGICAL EVALUATION OF ALVEOLAR BONE QUALITY AT DENTAL IMPLANT SITES USING AN UNDECALCIFIED FROZEN SECTION TECHNIQUE**

Y. Nakagawa¹, Y. Kimura¹, Y. Ito¹, A. Sunano¹, A. Yutaka¹, Y. Tanaka¹, H. Terai¹, Y. Ariyoshi², T. Ueno¹

¹ *Department of Dentistry and Oral Surgery, Division of Medicine for Function and Morphology of Sensory Organs Osaka Medical College, Takatsuki-city, Japan*

² *Department of Dentistry and Oral Surgery, Hirakata City Hospital, Hirakata-city, Japan*

Objectives: The importance of evaluating alveolar bone quality at dental implant treatment is widely understood in the field of oral and maxillofacial surgery. Although the development of radiographic evaluations like cone-beam computed tomography has allowed useful information on alveolar bone at the surgical site to be obtained, limits exist to the precise evaluation of bone quality from radiographic observations. Easy techniques for direct evaluation of alveolar bone would prove helpful for performing implant surgery. The use of cryofilm techniques for quick soft-tissue evaluation has recently been reported (Kawamoto et al., 2003). However, no cryofilm technique for hard tissues like bone and cartilage has been reported. The present study evaluated the efficacy of a cryofilm technique for determining alveolar bone quality at dental implant treatment using human alveolar bone core samples.

Material and Methods: At the time of implant placement, bone core samples were obtained and evaluated histologically. Core samples were immediately frozen in cooled hexanen and cut slowly using a disposable tungsten carbide blade and adhesive cryofilm to collect sliced sections. Staining was performed using hematoxylin and eosin, von Kossa, and toluidine blue for microscopic observations. The study protocol was approved by the medical ethics commission at Osaka Medical College and informed consent was obtained from all patients prior to participation.

Results: All core samples clearly showed bone structure components of cortical bone, bone marrow, blood vessels and bone-related cells.

Discussion and Conclusion: Bone structure in core samples was clearly observed using cryofilm techniques. Preparation of thin histological decalcified sections from hard tissues is very complicated and time-consuming. These results suggest the efficacy of non-decalcified cryofilm techniques for histological observation of surgical implant sites.

**O-0908****LOW INCIDENCE OF PERIMUCOSITIS AND PERIIMPLANTITIS IN 135 PATIENTS**

F.P. Carls, M. Bernasconi, F. Carinci, V. Candotto, M. Lawrence, G. Lewis, J. Wille, P. George, S. Pinkerton, T.J. Lambrecht

Private Practice & University of Zurich, Lugano Pregassona, Switzerland

Objective

To report the incidence of peri-mucositis and peri-implantitis in 135 patients with long time follow up and to report the circumstances which may have contributed to the results.

Methods

135 patients with 287 implants were seen for clinical and radiographical assessment (rectangular periapical digital X-Rays). Patients had been selected before implant treatment on a basis of good oral hygiene with no or successfully treated periodontal disease, smokers were refused.

Surgery had been carried out between 2001 and 2012, with a mean of 6 years ago, by the first author in a private practice in Oxford, United Kingdom. Prosthetic rehabilitation was done by a number of experienced dentists. The patient mean age was 61 years (range 22-88 years), female-male ratio 1:1,3. Autologous bone grafting procedures (local bone graft, mandibular block bone graft and hip bone graft) had been carried out when indicated.

Signs of peri-implantitis and peri-mucositis were recorded on the basis of bleeding on probing, probing depth (assessed at the mid-buccal, mid-oral, mesial and distal aspect of each fixture), purulent exudates, keratinized mucosal assessment (swelling, redness, pain) and bone loss based on radiographic evaluation.

Results

All 287 implants are in situ after a mean time in function of 62.3 months. 13 implants (4.5%) showed signs of peri-mucositis of which 7 are implants in the same patient. 4 implants (1.4%) showed signs of peri-implantitis.

6 patients were found to use Bisphosphonate medication since insertion of the implants and four other patients had become smokers again after they had quit during the treatment time.

The reason for peri-mucositis and peri-implantitis were attributed to low compliance with regards to oral hygiene and check-ups with the dentist/hygienist. Usually the patients had interrupted a previous good compliance. Further reasons were inadequate prosthetic rehabilitation.

The use of autologous bonegrafting seems to be advantageous and refusal to perform implant surgery in smokers may lead as well to the presented low rate of periimplantitis.

Conclusions

Low incidence of peri-mucositis and peri-implantitis seem possible if patients are selected carefully, surgery and prosthetic rehabilitation are carried out respecting all anatomical and physiological rules and augmentation procedures make appropriate use of autologous bone.



O-0909

3-YEARS RESULTS OF A PTERYGOMAXILLARY IMPLANT SERIE: ISOELASTIC PEEK-PERSON-C IMPLANTS TO AVOID MORE INVASIVE PROCEDURES IN ATROPHIC MAXILLAE

F. Spahn

Maxillo-Facial Implantology, Praxis Kosmetische Chirurgie und Implantologie, Hasselt, Belgium

The pterygomaxillary region is a preferred and, as well, disputed region for distal post implantation in fixed implant born bridges. Preferred from those who admire the hard substance bone structures, almost free of spongy tissue, as well as the possibility to surround the anatomical obstacle in the atrophied maxillary, the sinus maxillaris, affected with risks of side effects in case of sinuslifts by a rate of 7 to 15%. Disputed from those who prefer- because easier accessible- to sacrifice the healthy sinus and proceed to sinus-fenestrating, elevation of the sinus floor, introduction of membranes, screws, graft material and to avoid the incertaintness to hurt a blood vessel or to disturb the skull sutures with metall devices.

The reported succes rates for titanium pterygoidean implants are rather high and do not differ from success rates in normal alveolar bone structures (97 %). This presents an advantage on all other technics using more invasive procedures, then, certainly, foreseen with higher failure rates, in the mean, at least, 91,8 (2).

We describe the gentle handling, using drills and osteotensors, PEEK-PERSON method and report about 99 implantations in 54 patients with the PEEK-PERSON-C implant which differs from titanium implantation by its almost isoelasticity ; that is in osteopathic considerations a strong point in the neighbourhood of bone sutures where elastic material could be more advantageous than compressive metal material.

In a period of 3 years in function we lost 2 implants.

Implantation in the pterygomaxillary sphenoid area is a sure and predictable technic if well prepared and using osteotensors. We proved that PEEK is the material of choice , because our study shows that the success rate is not different to metall implant devices but PEEK is easier to handle to model the needed implant configuration and that in preferable monobloc-conditions ; furthermore the isoelasticity of the PEEK-material promisses not to disturb the apophysis-like bone structures, interconnected by strainable cranial sutures and adjacent tissues which are said to be important for regulatory processes in the human being.



O-0910

14 YEARS EXPERIENCE WITH THE COCOON-TECHNIQUE (CONTAINMENT & CONTOURING) – INNOVATIVELY RECONSTRUCTING HORIZONTAL MAXILLARY DEFECTS PRIOR TO DENTAL IMPLANT PLACEMENT

NC Gellrich, H Kokemueller, M Stoetzer, C von See, KH Bormann

Hannover Medical School, Hannover, Germany

Aims/Objectives: Implant dentistry seems to shift more and more away from surgically based specialities. However, in the end it is on bone management and the knowledge of biological adequate concepts, taking the final result into account and managing the individual dimensional needs.

Material and Methods: The author has found a new technique of bone reconstruction using anatomically shaped autogenous bone grafts from the alveolar zygomatic buttress and – by using the lag-screw principle- created the so called Cocoon-technique, which allows to reconstruct either an edentulous or partially edentulous maxilla, mainly indicated for horizontal or combined horizontal and vertical defects.

Results: In a series by far over 500 patients, this method has been developed towards a complete outpatient based bone augmentation treatment including a digitally driven workflow by using especially cone-beam-data sets. The donor site does not necessarily need any additional reconstruction. The technique for single or combined buccal and/ or palatal augmentation is described in detail including video demonstration. The postoperative compromise of the patient is by far reduced in comparison to alternative techniques like retromolar block grafts or even iliac crest bone grafts. Regular bone healing needs 12 weeks before re-entry and allows to achieve a vascularised bone-augmented region. This again results in a less invasive approach to reconstruct, especially horizontal defects of the maxilla.

Conclusion: The Cocoon-technique is a reliable method for a single or multiple teeth replacement. In comparison to other techniques this is the method of choice, especially for the upper jaw, due to the fact that no additional donor site has to be opened but basically the augmentation in the upper jaw is provided by the ipsilateral midface itself.



O-0911

ALL ON ONE IMPLANTOLOGICAL SURGERY

M. Cuesta, B. Duarte, F. Riba, M. Nevado

Department of Oral and Maxillo-Facial Surgery. HGUCR., Ciudad Real, Spain

INTRODUCTION: Using high training of Maxillo-Facial surgeons, when local conditions allowed, the idea is to solve the problem with a single surgery. In this way, avoids trauma and anxiety in patients, decrease complications and reduce cost.

MATERIAL AND METHODS: After 25 years of experience in implantology we have learned many things and we developed and modified some techniques. We present an experience with well-documented cases at least 2 years of follow, with 943 implants in 274 patients, who underwent one or more surgical intervention in addition to implants placement. Most cases were: Extractions with immediate implants with or without immediate loading; Implants with simultaneous sinus and/or nasal elevation; Reconstructions and adaptations of the alveolar bone with biomaterials. In these patients, osseointegration has lasted to 5-6 months.

RESULTS: We compared the overall failure rate of the 934 implants with 618 well-documented patients (2.321 implants) rehabilitated with conventional implantology and least 2 years of follow too. The last ones showed a failure rate of 3.18% (74 implants). From 943 implants in relation to another surgical intervention, 39 (4.13%) was failed; that is 1% more than implants in conventional patients. We found that in the last 15 years, failure rate is less than in early years.

CONCLUSIONS: Maxillo-Facial surgeons must use our training and try to solve the problem in the shortest number of surgeries as possible. In our experience, we demonstrate that several surgical can be done with only intervention, avoiding trauma, complications, time and money for patient.



10. Head and Neck Oncological Surgery

O-1001

ORBITAL EXENTERATIONS: INDICATIONS, SURGICAL TECHNIQUE AND COMPLICATIONS

P. de Leyva¹, L. Díez², M. Picón¹, M. Sales-Sanz², D. Villegas¹, F. Pérez-Flecha¹, F. Almeida¹, J. Núñez¹, J.J. Acero¹

¹ Oral and Maxillofacial Surgery, Ramón y Cajal University Hospital, Madrid, Spain

² Ophthalmology, Ramón y Cajal University Hospital, Madrid, Spain

Objectives: To determine the clinical indications of orbital exenteration in our environment, the surgical procedures used, the possible complications and the recurrence rates.

Methods: Retrospective case review of exenterations performed in our hospital between 1990 and 2012. The indication for exenteration, surgical procedures and reconstructive techniques used, histopathologic diagnosis, complications and recurrences are reviewed.

Results: Fifty patients (29 men and 21 women) underwent orbital exenteration. The mean age at the time of exenteration was 71 years (range 30–92 years). Secondary intraorbital spread of malignant adnexal tumors was the most common indication for exenteration, except for two cases of mucormycosis treated by bilateral exenteration.

Histopathological classification of the neoplasm was squamous cell carcinoma (30%) basal cell carcinoma (22%), conjunctival melanomas (12%), adenoid cystic carcinoma (12%) and others (24%). Lids were the most common site for the primary neoplasm. Exenteration after incomplete previous surgery or recurrences accounted for 47.5% of all cases. A subtotal exenteration was performed in 25.5% of the cases, a total exenteration in 21.3% and extended exenteration in 53.2%. Eight cases required radiotherapy and/or chemotherapy as complementary therapy. Orbital reconstruction using a temporal muscle flap was performed in 62.2% of cases. Other procedures used were free myocutaneous latissimus dorsi flap (3 cases), frontal flap (2 cases) and forearm fasciocutaneous flap (2 cases). The postoperative complications included painful trismus two cases of post-surgical bone pain treated by the pain unit, a persistent conjunctival epithelial cyst surgically removed, cerebrospinal fistula and one case of death due to massive bleeding of the cavernous sinuses on postoperative day 13th. Incomplete tumor resection with positive margins was seen in 5 cases and local tumor recurrence in 6 cases.

Conclusions: Malignant periorbital tumors are the main indication for exenteration in our department, squamous cell carcinoma being the most common. Extended exenteration is the most frequent surgical procedure and temporalis muscle flap with or without skin graft is the most common reconstruction technique. Postoperative complications are uncommon, with low recurrence rate.

**O-1002****CAN THE SUBMANDIBULAR GLAND BE SPARED DURING NECK DISSECTIONS?**

A. Hirschhorn¹, M. Vered², G. Greenberg³, R. Yahalom¹

¹ Oral & Maxillofacial Surgery, Sheba Medical Center, Tel Hashomer, Israel

² Institute of Pathology, Sheba Medical Center, Tel Hashomer, Israel

³ Diagnostic Imaging, Sheba Medical Center, Tel Hashomer, Israel

Objectives: The aim of this study was to investigate the incidence of metastasis to the submandibular gland in patients suffering from squamous cell carcinoma of the oral cavity undergoing neck dissection for detection and treatment of regional metastases.

Material & Methods: We retrospectively evaluated histological reports of neck dissections for oral cavity carcinoma (performed 2011-2012), recording: primary tumor site, tumor-node-metastasis stage, level Ib involvement, previous radiotherapy, perineural invasion, lymphovascular invasion, extracapsular spread, and the presence of malignant disease in the submandibular gland. Inclusion criteria included patients undergoing resection of the malignancy in the primary site and neck dissection for evaluation or treatment (e.g. elective & therapeutic neck dissection) of regional metastases. Presence of tumor was evaluated in all dissected neck levels including the involvement of the submandibular gland (at level IB)

Results: We evaluated 42 cases diagnosed with oral cavity Squamous cell carcinoma and treated in our department between the years 2011 -2012. The most common primary site was the tongue (42 per cent) followed by the Alveolar ridge (14 per cent), Buccal mucosa (13 per cent). Twenty five per cent had cervical lymph node metastasis; none of the patients had submandibular gland involvement.

Conclusions: The submandibular gland is responsible for the majority of unstimulated saliva secretion; extirpation of the gland may result in xerostomia and other adverse effect on oral cavity health among head and neck cancer patients. Neck dissection has evolved during the past decades into a functional operation enabling a better quality of life for operated patients. We found that submandibular gland metastasis from oral cavity squamous cell carcinoma are extremely rare mainly due to the fact that the submandibular gland lacks any intraparenchymal lymph nodes. Preservation of the ipsilateral submandibular gland during neck dissection may be ontologically safe, (except in patients with primary tumor which is closely related to the gland) and may benefit the oncologic patients without jeopardizing survival.

**O-1003****IMAGING ASSESSMENT OF ORAL SQUAMOUS CELL CARCINOMA WITH POTENTIAL MANDIBULAR INVASION**

N. Tabchouri¹, L. Gambotti², M. Salhi Amor³, P. Goudot¹, C. Bertolus¹

¹ Maxillofacial Surgery, Pitié-Salpêtrière Hospital, Paris, France

² Clinical Research Unit, Pitié-Salpêtrière Hospital, Paris, France

³ Neuroradiology, Pitié-Salpêtrière Hospital, Paris, France

Objective: To retrospectively evaluate the capabilities of clinical exam, imaging (CT and MRI), and tumor board decision in predicting mandibular involvement by oral squamous cell carcinoma. The second aim was to establish the incidence of unnecessary segmental resections (over treated patients) and insufficient mandibular resections (under treated patients).

Methods: Ninety-two patients who presented with oral squamous cell carcinoma with potential mandibular invasion underwent surgery between January 1, 2010 and June 1, 2013. After panoramic radiography, MRI and CT examinations, all patients underwent segmental or marginal mandibulectomy. The imaging results and the tumor board decision were compared to the histological findings. Sensitivity, specificity predictive values, and accuracy were calculated for each modality of assessment.

Results: A total of 40 patients underwent marginal resections and 54 underwent segmental resections (61 men and 31 women; mean age, 63,1 years). Histological bone invasion was present in 10 patients in the marginal resection group. Eight patients did not present with bone invasion in the segmental group. The sensitivity, the specificity and the accuracy for mandibular invasion were 77,5%, 93,9% and 84,9% for CT and 66,7%, 91,4% and 77,9% for MR imaging, respectively. An appropriate treatment decision had not been made at multidisciplinary tumor board for almost one out of five patients. 8.7% of all patients were undertreated. The incidence of unnecessary segmental resections was 10.9%. These over treated patients were found to be younger ($p=0.016$) and had less potentially malignant lesions ($p=0.012$).

Conclusions: Preoperative examination methods to predict mandibular invasion are still unreliable. This study underlines the importance of the decisions made at tumor board to avoid unnecessary segmental resections in oral squamous cell carcinoma. Our surgical frame of reference isn't a consensual one. Since there is no investigation that can predict whether tumor has invaded the mandible with 100% reliability, a team approach helps to ensure the best possible surgical treatment strategy and outcome for patients.

**O-1004****THE EXPERIENCE OF CRYOSURGERY AND REHABILITATION OF PATIENTS WITH MAXILLO-FACIAL BONE TUMORS**

A. Nikitin¹, N. Spiridonova¹, V. Andryukhina¹, P. Polupan^{1, 2}

¹ *Maxillo-Facial Surgery Dept., Moscow Region Research Clinical Institute named after M.F.Vladimirsky, Moscow, Russian Federation*

² *Dental Clinic, Advanced Dental Studio, Moscow, Russian Federation*

The vast prevalence of jaw-bone tumors, a large amount of surgical operations and the subsequent permanent function loss and cosmetic defects force us to look for new ways to solve these problems. Currently, the increasingly significant part of dentists worldwide use techniques of dental implantation in purposes of dental rehabilitation. The objectives of our study were to increase the efficiency of the cryosurgical treatment of patients with bone tumors of the maxillofacial region, reducing the duration of treatment and rehabilitation, and improve their quality of life.

Cryodestruction was performed with **standard tips**, as well as developed by us **individually repeating** the shape of the tumor. This significantly reduced the time of treatment and speeded rehabilitation. In the follow-up period of 10 years we have managed to maintain jaw integrity entirety and to eliminate the defect without relapse in 97% of cases.

In terms of rehabilitation of patients **after radical cryosurgical treatment** we examined amenity of **dental implants**, clinically and histologically investigated the condition of bone tissue perceiving the implant, the capabilities and features of the implant surgery to shorten the treatment.

As a result, it was a success to recover chewing function along with aesthetic restoration. Such positive results allow us to successfully expand the indications for use of cryogenic treatment for various diseases of bone tissue of the maxillofacial area and to apply the techniques of dental implantation during the rehabilitation of these patients.



O-1005

DISTRACTION OSTEOGENESIS AND BONE TRANSPORTATION AS AN ALTERNATIVE REPAIR AFTER TUMOUR ABLATION IN MANDIBLE

B.Leno-Dasi, S.Ochandiano-Caicoya, A.Kulyapina, C. Ila, J.I. Salmerón

Oral and Maxillofacial Surgery, Gregorio Marañón Hospital, Madrid, Spain

Introduction:

Distraction osteogenesis and bone transportation are surgical procedures used to reconstruct skeletal deformities and lengthen the long bones of the body. Microsurgical osseous flaps are usually first line when reconstructing large defects involving the mandible, but both DO and bone transportation are proper options for smaller defects, when the donor site morbidity of a microsurgical flap is unacceptable or in situations where the defect is mainly vertical. After benign tumour ablation (thus not requiring radiotherapy) these techniques are good reconstruction options also.

Objectives:

We review both techniques, their indications and their potential advantages and disadvantages compared to other reconstruction options.

Patients and method:

An assessment is made to the patients who have been operated on in our service so far, in a 3 year follow-up period

Results and conclusions:

Distraction osteogenesis and bone transportation are acceptable options when repairing osseous defects (vertical and horizontal, respectively) of the mandible, with better results than bone graft for proper selected patients, and without donor-site morbidity and shorter operating time compared to microvascular flaps. The soft tissues follow the elongation of the underlying bone, obtaining an adequate fixed mucosa. Success depends on patient dexterity and compliance and problems regarding the devices, such as fracture or displacement, are relatively frequent

**O-1006****EVALUATION OF TREATMENT RESULTS AND POSTOPERATIVE QUALITY OF LIFE IN PATIENTS WITH ORAL TONGUE SQUAMOUS CELL CARCINOMA**

M. Czajka, J. Zapala, M. Szuta

Department of Cranio-Maxillo-Facial, Oncological and Reconstructive Surgery UJ CM, Kraków, Poland

Objective: Squamous cell carcinoma (SCC) of oral tongue is one of the most common and aggressive malignant tumour of oral cavity. Despite constant development of treatment methods, overall survival (OS) rate and quality of life in patients with oral tongue SCC remain on unsatisfactory level. The aims of this study were to evaluate treatment results and specify relapse risk factors in SCC of oral tongue. Assessment of patients' postoperative quality of life (QOL) was also conducted.

Method: Of 68 patients with oral tongue SCC treated in Department of Maxillo-Facial Surgery in Cracow between years 1997 – 2008, 34 (50%) individuals were operated on in IVa-b stage, 21 (31%) in III stage and 13 (19%) in I-II stage of disease according to AJCC 2010. In 23 (34%) cases adjuvant radiotherapy was administered. Disease-free (DFS) and OS rates were determined using Kaplan-Meier method. Potential relations between clinical stage, histological features, the extent of surgical removal, administration of adjuvant therapy and treatment results were analyzed using χ^2 test from statistic package R3.0.2. 21 living patients were asked to fill EORTC QLQ-C30 and QLQ-H&N35 questionnaires for QOL evaluation.

Result: In the analyzed group 3-, 5- and 10-years survival rate was 53%, 45.9% , 16.17% respectively. The mean FDS time amounted to 48 months (4 years). Patients with III and IV stage of oral tongue SCC had worse FDS ($\chi^2=6,295$ $p=0,043$) and OS rates ($\chi^2=7,685$ $p=0,021$) in comparison to patients treated in I and II stage of the disease. 5-years OS in patients with N+ feature was 15% whereas in individuals with N0 feature 5-years OS rate amounted to 64%. QOL after the treatment was on the mean level and came to 52.78/100. The most severe problems for patients after the treatment were xerostomia (36/100), speech problems (28/100) and troubles with social eating (26/100).

Conslusions: Despite advances in modern oncological therapy, patient with oral tongue SCC have still relatively low DFS and OS rates. Patients treated in I and II stage of disease have significantly better prognosis. Therefore early detection and instant treatment of oral tongue SCC are crucial for improvement of achieved therapy results.



O-1007

QUALITY OF LIFE OF PATIENTS WITH LATE STAGE HEAD AND NECK MALIGNANT TUMORS

V. Petrescu Seceleanu, I. Fagetan, M. Cernusca Mitariu, S. Ibric Cioranu, V. Ibric Cioranu

ULBS, Sibiu, Romania

Objective: In the last years the authors had in their care a growing number of patients with advanced stage malignant head and neck tumors (T4N₁₋₂M0). This type of patients are often subjected to multiple surgical resection and reconstructions. The authors wanted to find out whether the quality of life for these patients has changed during and after treatment.

Methods: The authors analyzed a group of 19 patients admitted in the OMF surgery Department of Sibiu Academic Hospitals between Jan 2012 and December 2013. All the patients underwent multiple surgical resection and chemo and radiotherapy. The patients presented with recurrences from previous surgeries. 16 patients filled out the UW-QOL v4 questionnaire (Washington University) and the QLQ-H&N35 (EORTC). The questionnaires addressed issues on pain perception, esthetics, taste, saliva, emotion.

Results: Although the prognosis was reserved (under 25%) wide surgical resection were performed. The follow up period was short (5-14 months) but the mortality rate was low (15%). The major improvement the patients mentioned was a decrease of pain after surgery.

Conclusions: Although long term prognosis remains difficult to predict, the quality of life of these patients may be improved with the aid of adequate treatment.



O-1008

TUMOUR DEPTH OF INVASION OF PT1 ORAL TONGUE CARCINOMA AND RISK OF PATHOLOGICALLY DETECTED NECK METASTASES: A MULTI-CENTRE STUDY

M Abu-Serriah¹, K Koo², RJ Banks³, PJ Ameerally⁴, S Gerry⁵, A Fasanmade¹, J Graystone¹, I Martin³, S Bond⁶, D Wiesenfeld²

¹ *Supra-regional Head and Neck Surgery Unit, Churchill Hospital, Oxford, United Kingdom*

² *Head and Neck Oncology, The Royal Melbourne Hospital Melbourne, Australia*

³ *Oral & Facial Surgery, Sunderland Royal Hospital, Sunderland, United Kingdom*

⁴ *Oral and Maxillofacial Surgery, Northampton General Hospital, Northampton, United Kingdom*

⁵ *Department of Statistics in Medicine, Oxford University, Oxford, United Kingdom*

⁶ *Oral & Maxillofacial Surgery, John Radcliffe Hospital, Oxford, United Kingdom*

Background. Management of the neck in T1 SCCs of the oral tongue remains controversial, with some advocating elective neck dissection (END), and others, watchful waiting. The controversy stems from the dilemma in striking a balance between early capture of patients harbouring microscopic neck disease thereby avoiding surgical and prognostic morbidity of subsequent neck salvage surgery, versus unnecessary treatment (surgery or radical radiotherapy to the neck) with its avoidable morbidity. Tumour depth of invasion (TDI) is considered a predictor of pathologically detected neck metastases (PDNM) for squamous cell carcinoma (SCC) of the oral cavity, but different investigators have arrived at different cut-off of TDI. As a result of which the relationship between TDI of pT1 SCC of the oral tongue and PDNM remains unknown.

Method. Retrospective data was collected from the Head and Neck Cancer Database at four different centres (Oxford, Melbourne, Sunderland and Northampton). For each patient: TDI, neurovascular invasion, pattern of invasion, follow-up more than 6 months and presence of PDNM were recorded. Disease pattern among different centres was noted and the relationship between data was studied using logistic regression and ROC methods.

Results. 300 consecutive cases of pT1 SCC of the oral tongue were identified across the 4 centers. Variations in disease pattern between different patient populations are noted. The correlation between TDI were analyzed along with other previously noted microscopic features of the primary tumour and the risk of PDNM is expressed. The accuracy of TDI in predicting the risk of PDNM will also be measured.

Conclusion. Preliminary analysis shows that TDI is not a reliable or accurate predictor of PDNM. Caution should be exercised if it is to be used to decide on the requirement of END.



11. Advanced Imaging and CAD / CAM Technology

O-1101

TOTAL PROSTHETIC RECONSTRUCTION OF TEMPOROMANDIBULAR JOINT IN SEVERE ANKYLOSIS WITH CUSTOM-MADE SYSTEM: PRELIMINARY EXPERIENCE

G. Ramieri, E. Zavattero, F. Bianchi, G. F. Bosco, S. Berrone, G. Gerbino

Surgical Sciences, Division of Maxillofacial Surgery, University of Turin, Turin, Italy

Aim. Alloplastic joint prostheses have been used in the treatment of severe diseases of the temporomandibular joint (TMJ) for many years. Treatment of ankylosis of the TMJ has been difficult, with many surgical approaches being used that traditionally involved multistage procedures, long treatment times, and increasing expense. We report a single stage technique for replacement of ankylosed joint using custom-made prosthesis, and discuss the technical aspects of the technique.

Material and methods. Twelve Lorenz/Biomet custom-made prosthesis were placed in five patients who underwent unilateral or bilateral alloplastic total TMJ replacement. Data collected from the patient' records included age, gender, etiology, number of previous TMJ operations, treated TMJ, hospital stay, complications. Preoperative and follow-up assessment for TMJ pain, diet consistency, and maximal interincisal opening was performed. The minimum follow-up was one year.

Results. The most frequent causes of ankylosis was degenerative joint disease. One patient presented temporary deficit of facial nerve. The prosthetic components used in these cases provided excellent anatomical reconstruction. All patients presented a noticeable improvement in maximal interincisal opening, TMJ pain and diet consistency at follow-up compared to preoperative situation.

Conclusions. This study demonstrated that the Biomet/Lorenz custom-made total joint prosthesis is a viable technique for TMJ reconstruction as a primary procedure and for patients with previous multiple TMJ surgeries and mutilated anatomy of the TMJ even if further studies and long term follow-up data are necessary



O-1102

ABOUT THE STEREOLITHOGRAPHIC MODELS : ARE THEY STILL USEFUL ?

O.DUNAUD, S.TESTELIN, S.DAKPE, L.DOUCIN, A.ALGRIN, C.NEIVA, B. DEVAUCHELLE

Maxillofacial surgery departement, University hospital, Amiens, France

It could be obviously difficult in all cases, to justify economically the stereolithographic (STL) models use but they seemed indispensable in very specific malformative or deformative pathologies.

The authors are routinely used them since more than 20 years from the very beginning of the process with a fundamental basic works with the engineers and through some enlightened European project.

With more than 250 models, it is rather easy to determine the goal of this technology in many fields as soon as there is a need of better understanding the malformation or deformation, a need for an exact defect modelling conception, or skull and facial symetrisation, reconstruction or replacement.

4 main fields of pathology were concerned: craniofacial malformations, severe post-traumatic deformations, complex tumoral defects restoration, functional and morphological sequellae after cancer surgery or irradiation.

The analysis of the serie and models allowed to determine the benefit of this technic to show, to explain, to plan and to manage a more adequate treatment in various pathologies.

The stereolithography also benefit of the new technologies like the computer assisted surgery, the surgical navigation And that way matched with them to help surgeons with guided devices and tools.

Stereolithography is always changing in a good adaptation to obtain better clinical result of our reconstruction.

**O-1103****DEVELOPMENT AND DEMONSTRATION OF A NOVEL PLANNING-SOLUTION FOR PROSTHODONTIC-ORIENTED MANDIBLE RECONSTRUCTION**

M. Rana, H. Essig, H. Kokemueller, N.-C. Gellrich

Department of Craniomaxillofacial Surgery, Hannover Medical School, Hannover, Germany

Abstract

The benefit of computer-assisted planning in mandible reconstruction has been extensively documented over the last decade. These systems are proved to offer a more secure surgical procedure. Meanwhile some of them enable also a virtual planning of dental implant positioning. However, the precise reconstruction of an accurate segmented mandible remains a challenge. Since these systems do not represent a complete 3D planning software they have to be supplemented by additional software tools and hardware devices. In consequence, the handling of these systems is of experimental nature and web-meetings with an engineer are required. The purpose of this work was to demonstrate a novel, user-friendly all in one 3D planning software solution (iPlan 3.0; Brainlab®, Feldkirchen, Germany) for mandible reconstruction procedures based on an advanced autosegmentation algorithm.

Material and Methods

Ten patients with tumors involving the mandible, which included squamous cell carcinoma in the floor of the mouth and keratocystic odontogenic tumor, were treated surgically by hemimandibulectomy. The time needed for preoperative planning including data transfer, dataset alignment, automatic and manual object segmentation, trajectories and additional safety checkups was evaluated. Pre- and postoperative results regarding the intercondylar distance were measured.

Results

In primary alloplastic mandible reconstruction the PSI as well as the resection and drilling guide could be fabricated prior to surgery. High levels of consistency between the fused preoperative plan and intra- as well as postoperative CT data set were seen. In addition, all data and results were transferred back to the planning system for follow-up inspections of the positions of the PSI.

Clinical relevance

This study provides modern treatment strategies for mandibular reconstruction. The backward-planning workflow could help to improve oral rehabilitation.

**O-1104****IMPROVEMENT OF THE DIGITAL WORKFLOW TO CREATE PATIENT SPECIFIC IMPLANTS FOR RECONSTRUCTING POST TRAUMATIC ORBITAL WALL DEFECTS**

NC Gellrich, M Rana, H. Essig, F Tavassol, H Kokemueller

Hannover Medical School, Hannover, Germany

Aims/Objectives: The aim of the presentation is to show the development of orbital reconstruction over the last 25 years: coming from bio-absorbable or soft reconstruction materials towards dimensionally stable, pre-formed and even patient specifically-formed implants in the orbit.

Material and Methods: By using modern ways of fabrication, the export of STL-files allows to put a virtual patient specific model into a realistic form of an orbital implant thus resulting in a highly improved quality of the orbital implant. One way was to modify the form of the pre-formed or non-pre-formed titanium mesh. However, the latest technology is to use the laser-sintering method to print titanium-based patient specific orbital implants of the desired shape and form with additional information for the vector and depth of insertion.

Results: Due to the fact that by means of a complete digitally based workflow the achievement of a patient specific implant is feasible within a week, and can even be created in an "engineer-free-way" this method has entered clinical routine. It took 10 implant design procedures to optimize the final implant design, which now can easily be individualized according to the patient demands.

By computer-based ways of modelling, the design of the orbital implant has now been advanced to a metric-tool that in addition to the function of an orbital implant allows the surgeon to perform a much more straight forward approach together with or without operative imaging and/or navigation.

Discussion and Conclusion: The presentation compares the different methods of achieving orbital implants by using different biomaterials and to demonstrate the benefit of the laser-sintering method which now has become a routine technique for reconstructing especially complex orbital wall defects.

**O-1105****EXPERIMENTALLY-VALIDATED BIOMECHANICAL FRAMEWORK FOR SUBJECT-SPECIFIC ANALYSIS OF THE CRANIOMAXILLOFACIAL SKELETON UNDER MASTICATORY LOADING**

A. Pakdel^{1, 2}, C. Whyne^{1, 2}, J. Fialkov³

¹ *Institute of Biomaterials and Biomedical Engineering, University of Toronto, Toronto, Canada*

² *Orthopaedic Biomechanics Lab, Sunnybrook Research Institute, Toronto, Canada*

³ *Division of Plastic & Reconstructive Surgery, University of Toronto, Toronto, Canada*

Objective: Quantitative biomechanical analysis of the craniofacial skeleton (CFS) can serve as a basis for understanding load transmission patterns and the development of optimal reconstructive strategies. Computational modeling of the CFS is challenging due to its unique structural complexity and intricate network of thin-cortical bones. To date, computational analyses of the CFS have been limited to single-sample finite element (FE) analysis and non-physiological loading conditions. The objective of this study was to demonstrate the ability of subject-specific FE analysis to represent the *in vitro* mechanical behavior of the CFS in a consistent and reproducible manner, serving as a foundation for the study of clinically relevant scenarios.

Methods: Five fresh-frozen human cadaveric specimens were fixated at the maxillary occlusal arch. The left masseter and temporalis muscles were detached from their mandibular insertions, and loaded incrementally through the muscles. Surface strains were recorded via gauges affixed to the left midfacial bones. A mesh of ~2.5 million quadratic tetrahedral elements were generated for each specimen via segmentation of deconvolved clinical CT images. Material properties were calculated from the CT intensity data and assigned on a nodal basis. For validation, the FE models were constrained at the maxillary occlusal arch and loaded through link elements at the masseter and temporalis origins, as in the experimental testing. Utilizing a validated model, the mechanics of the facial skeleton were analyzed under physiological forces representing bilateral molar bite clenching.

Results: The FE strains from all the loadings correlated highly with experimental strain measurements ($r=0.93$, $n=333$, linear slope=0.94, intercept=-8.02 $\mu\epsilon$). The application of bilateral molar bite clenching forces demonstrated the directionality of force transfer, high strain regions at the inferolateral maxilla and the temporal aspect of the zygomatic arch.

Conclusions: Strong correlations with experimental data from multiple subject-specific FE models form a robust platform for systematic analysis of the behavior of the CFS. Application of more complex physiologic loading conditions, as represented by bilateral molar bite clenching, enables quantitative analysis of strain, stress and displacement patterns leading to clarification of load transmission patterns and a biomechanical foundation for evaluating current and novel techniques for CFS reconstruction.



O-1106

THE PRELIMINARY APPLICATION OF COMPUTER-ASSISTED NAVIGATION SURGERY IN MANDIBLE

X Wang, B Li, H Sun, GF Shen, L Zhang

Oral and Craniomaxillofacial Science, Ninth People's Hospital, Shanghai, China

OBJECTIVES: The purpose of this study was to explore the application of mandibular navigation surgery.

METHODS: Twenty nine patients including 9 mandibular condylectomy, 6 mandibular angle reduction, 6 mandibular body recontouring, 3 mandibular body distraction osteogenesis and 5 cases with reconstruction of mandibular defect were enrolled in this study. Titanium screw makers were implanted on the patient's mandible and the point-to-point registration method was used in this study. CT scans were performed and data was saved in DICOM (digital imaging and communications in medicine) format. Prior to the surgery, the osteotomy lines, range of resection, and the reconstruction morphology was precisely designed and simulated in computer assisted surgical design software. All operations were performed guided by the surgical navigation system. The accuracy of navigation was evaluated by comparing the postoperative CT 3D models with preoperative surgical planning.

RESULTS: The systematic registration error checked by computer was within 1 mm. All operations were performed successfully guided by the real-time navigation. The mean error between virtual simulation and surgical results was less than 2 mm. Follow-up evaluation showed that the postoperative function and esthetics improved remarkably.

CONCLUSIONS :With the assistance of preoperative planning, surgical simulation and postoperative prediction, computer-assisted navigation provides great benefits in improving the accuracy of mandibular surgery, reducing operation risk and time. It can be regarded as a valuable technique in these potentially complicated procedures.

**O-1107****ACCURACY, QUALITY AND BENEFIT OF STEREOLITHOGRAPHY PREPARED WITH CONE BEAM CT IN MAXILLOFACIAL SURGERY**

D Durdevic¹, M Stanojevic², M Sljivic², S Vujinovic³

¹ *Clinic of maxillofacial surgery, Clinical center Banja Luka, Banja Luka, Bosnia-Herzegovina*

² *Machine engineering faculty, University of Banja Luka, Banja Luka, Bosnia-Herzegovina*

³ *Department of radiology, Clinical center of Banja Luka, Banja Luka, Bosnia-Herzegovina*

Objective: Stereolithography (STL) is advanced planning possibility in maxillofacial surgery. Mainly computed tomography (CT) is used for preparing of model. In last few years cone beam CT(CBCT) is often used for surgical guide in implantology. Our study is interest to achieve good results of STL using cone beam CT.

Methods and material: In a study is used cone beam CT (SORODEX SCANORA) with a range of 6x8 cm with a regular acquisition and softwear proceeding. Patients with different maxillofacial pathology (jaw tumor, postoperative defects, orthognathic...) were imaged and analyzed. All DICOM files was transferred to adequate software for STL (SIMPLEWEAR – ScanIP). After prepare of STL file models are prepared with three dimensional printer. The analysis of accuracy, quality and benefit of the models was made with comparison with CT and with intraoperative measuring.

Results: In a study there is 21 model made with a different pathology, with cone beam CT and computer tomography. Analysis of accuracy show good matching in dimensions and small deviations in shape. Also it was exact congruence of CBCT with CT. Quality of models show a fragility of CBCT model, mainly because the models are smaller. Preparation time and cost of printing is three times less then with CT.

Conclusion: For a producing of STL there is constant need . Often, medical institution are not in possibility for STL producing . In a smaller defects CBCT is much cheaper, faster and adequate model with a less radiation for patient. But in preparation of files there is need for algorithm of segmentation of images.



O-1108

VIRTUAL MIDFACE RECONSTRUCTION USING REGISTRATION ALGORITHMS IN COMPARISON TO STANDARD PREOPERATIVE PLANNING SOFTWARE

M.E.H. Wagner, D. Lindhorst, J. Lichtenstein, R. Zimmerer, N.-C. Gellrich, H. Essig

Medizinische Hochschule Hannover, Hannover, Germany

Objectives

Computer assisted surgery is used routinely in craniomaxillofacial surgery. Virtual reconstruction with available planning software of complex as well as bilateral midfacial fractures, unfortunately, is very limited and results in a great amount of manual editing. That was the motivation for our group, to develop a registration based algorithm for semiautomatic midface-reconstruction without these limitations. To evaluate our newly developed algorithm we compared the results in simple fractures with a standard planning software used in clinical routine.

Material and Methods

In up-to-date virtual planning software unilateral midfacial fractures are reconstructed via mirroring of the unaffected side. We therefore compared the preoperative virtual planning via iPlan (Brainlab, Feldkirchen, Germany) with our new registration algorithm on different defects of the orbito-zygomatic region (starting with simple fractures of the orbital floor up to complex fractures of the orbito-zygomatic complex). This evaluation was performed on different kinds of skulls (whole skull, without neurocranium, without lower jaw), with and without pathologies, as well as one pediatric skull.

Results

In all 112 scenarios the simulated defect could be successfully virtually reconstructed with our registration-based algorithm. Compared with the original skulls, no significant differences were measured between the results of our algorithm and the used planning software for the reconstructed area, independent of the defect size or the skull configuration.

Discussion and Conclusion

Virtual reconstruction of complex midfacial fractures with the presented registration algorithm is easily possible. For unilateral defects our algorithm is coequal with standard planning software used in clinical routine. Planer-dependent influences, as well as time and cost issues can be minimized. Therefore reliable virtual reconstruction of complex and bilateral midfacial fractures with our registration based method is very likely to be accomplished.

**O-1109****APPLICATION OF INTRAOPERATIVE NAVIGATION IN MAXILLOFACIAL SURGERY: FROM VIRTUAL PLANNING TO POST-OPERATIVE CONTROL**

E. Zavattero, G. Gerbino, F. Bianchi, R. Benech, G. Ramieri

Surgical Sciences, Division of Maxillofacial Surgery, University of Turin, Turin, Italy

Aim. Intraoperative navigation was invented for stereotactic interventions in neurosurgery and has been recently introduced in maxillofacial surgery. It provides the surgeon with updated information on the position of his instruments in relation to critical structures, and to aid the precise transfer of the surgical plan to the operating room. This work reports the authors' early experience with navigation surgery and the outcomes after different surgical procedures

Material and methods. At the maxillofacial department of Turin University Hospital, Italy, surgical planning and treatment with the aid of the Vector-Vision (BrainLAB) intraoperative navigation system were performed in 31 patients with different indication. The indication were orbital fractures, secondary post-traumatic reconstruction, tumor resection, bone remodeling and reconstruction in fibrous dysplasia and foreign body removal. Fiducial markers were used, because marker-less methods of registration, such as surface scanning, are less accurate

Results. In all patients image-guided systems improved preoperative planning and provided a high degree of intraoperative accuracy and precision, especially during the surgical exploration of complex anatomic region. The accuracy of navigation is limited by the accuracies of imaging, registration, and tracking.

Conclusions. Image-guided surgery has the potential to become a routine planning and targeting tool in maxillofacial surgery. Navigation systems increase safety and accuracy permitting the surgeon to localize any instrument or bony landmark precisely. Preoperative planning software permits the creation of virtual models that can be very useful to guide the surgeon.



12. Tissue Engineering and Cell Therapy

O-1201

IMPLANTATION OF OCTACALCIUM PHOSPHATE COLLAGEN COMPOSITES (OCP/COL) AFTER EXTRACTION OF CANINE DECIDUOUS TEETH ATTAINED UNDISTURBED PERMANENT TOOTH ERUPTION

N. Kanda¹, K. Matsui¹, T. Kawai¹, H. Edamatsu¹, O. Suzuki², T. Takahashi¹, S. Kamakura³

¹ Divisions of Oral and Maxillofacial Surgery, Tohoku University Graduate School of Dentistry, Sendai, Japan

² Divisions of Craniofacial Function Engineering, Tohoku University Graduate School of Dentistry, Sendai, Japan

³ Bone Regenerative Engineering Laboratory, Graduate School of Biomedical Engineering, Tohoku University, Sendai, Japan

Objective: Composite of synthetic octacalcium phosphate and porcine atelocollagen (OCP/Col) enhances bone regeneration if implanted into human, canine, and rodent bone defects (J Biomed Mater Res B Appl Biomater: 2006, Int J Oral Maxillofac Surg: 2010, Tissue Eng Part A: 2014). This study was designed to investigate the influence for eruption of permanent successor tooth and bone regeneration in extraction cavities, if OCP/Col were implanted into extraction cavities of canine deciduous teeth.

Methods: Disks of OCP/Col were prepared from synthetic granules (particle size of 300–500 μm) of octacalcium phosphate (OCP) and porcine atelocollagen, and commercially available sintered porous β -tricalcium phosphate (β -TCP) was used as a control. Male beagle dogs in the deciduous dentition period were used. After preparations of implant bed with extraction of canine left lower second and third deciduous premolars, disks of OCP/Col (OCP/Col group: 8 teeth) or granules of β -TCP (β -TCP group: 8 teeth) were implanted. Untreated group (6 teeth) was defined as nothing was implanted into the prepared defect. In addition, Physiological group (18 teeth) was observed without any treatment. Periodical macroscopic and radiographic examinations were performed until the equivalent period in the physiological eruption of permanent successor teeth (P3 and P4). After completion of observation, radiomorphometric and histological examination were accomplished.

Results: Although no unerupted permanent successor teeth were observed among the OCP/Col, Untreated, and Physiological groups, two permanent successor teeth were unerupted in β -TCP group. There was no significant difference of the eruptive position in P3 and P4 was observed among the OCP/Col, Untreated, and Physiological groups. No significant differences of the alveolar heights were observed between OCP/Col and Physiological group, and these two groups were significantly higher than those of β -TCP group. The implanted granules of OCP were not remained in the implanted site, whereas the β -TCP granules were remained above the unerupted teeth with the defects of enamel and dilacerations.

Conclusions: OCP/Col implantation in the alveolar region that included the unerupted permanent successor teeth would occur no disturbance for permanent teeth eruption and preserve the alveolar ridge.

**O-1202****IN VIVO-TRACKING OF HUMAN MESENCHYMAL STEM CELLS IN MAGNETIC RESONANCE IMAGING USING MAGNETIC NANOPARTICLES**

B. J. Siegmund¹, A. Kasten¹, J. Kühn², B. Frerich¹

¹ Department of Maxillofacial and Facial Plastic Surgery, University medicine, Rostock, Germany

² Institute of Diagnostic Radiology und Neuroradiology, Ernst-Moritz-Arndt-University Greifswald, Greifswald, Germany

Objective: Adipose tissue engineering using autologous stem cells from adipose tissue has been advocated for soft tissue augmentation and treatment of soft tissue defects. With a view to strategies improving the efficacy of stem cell transplantation, cell tracking might be a useful tool. Here we report the *in vivo*-tracking of adipose stem cells in a SCID-mouse model of adipose tissue engineering by means of nanoparticle labelling and magnetic resonance imaging (MRI).

Methods: Adipose tissue derived stromal cells (ASC) were isolated from human tissue and labelled with two types of magnetic nanoparticles (MNP). Previous *in vitro*-studies had shown, that internalized MNP had no effect on cell metabolism nor on cell differentiation. The labelled cells were seeded on collagen scaffolds and implanted subcutaneously at the back of SCID mice (n=72). Cell seeded scaffolds without nanoparticles were implanted as a control. MRI scans were performed 24 hours, 4 days, 12 days, 28 days and 4 months after implantation (Bruker Clin Scan 7T). The volume stability of the transplants was measured over the time using Osirix software. After sacrifice the scaffolds were processed for histomorphometric quantification, including berlin blue stain for detection of MNP, analysis of adipocytic differentiation, and immunohistochemical demonstration (anti CD34) of microvessels.

Results: ASC seeded scaffolds were successfully visualized *in vivo*. Compared to the controls, the labelled cells showed high contrast (t2) and a migration of the cells to the edge of the scaffolds. Volume loss was observed in all groups over time. There was a significant difference in the MNP labeled groups after 12d (p=0,001) compared to the control group with a significant volume loss at day 28 (p=0,006). For iron quantification (r2* weighted sequence) the concentration of MNP at the margins of the scaffolds was at least too high as an effect of cell migration. Blood vessel formation was shown in all implants as well as adipocytic differentiation.

Conclusions: Both types of MNP are suitable for *in vivo* cell visualization in MRI. The tracking of mesenchymal stem cells labelled by MNP in MRI is a sensitive and non-invasive method for evaluating the fate of transplanted cells.



O-1203

THE HUMAN DENTAL PULP AS A SOURCE FOR STEM CELLS WITH NEUROGENIC DIFFERENTIATION POTENTIAL

P. Gervois¹, W. Martens¹, T. Struys¹, P. Hilken¹, A. Bronckaers¹, C. Politis^{1, 2}, B. Brône³, I. Lambrichts¹

¹ Morphology, Biomedical Research Institute - Hasselt University, Diepenbeek, Belgium

² OMFS IMPATH Research Group - Department of Imaging and Pathology, Faculty of Medicine, KU Leuven and Oral and Maxillofacial Surgery - University Hospitals Leuven, Leuven, Belgium

³ Physiology, Biomedical Research Institute - Hasselt University, Diepenbeek, Belgium

Objective: Current available therapies are unable to adequately promote functional recovery in patients suffering from neurological disorders such as stroke, which are a major cause of death and permanent disability. As an alternative treatment, cell-based therapies are now emerging. Human neural stem cells are the most promising candidates to induce neuronal repair, but due to ethical and practical considerations, alternative sources of progenitor cells with neuronal differentiation potential are needed. The aim of the present study was to differentiate stem cells that were isolated from the human dental pulp (hDPSCs) towards functionally active neuronal cells *in vitro*.

Methods: hDPSCs were subjected to a two-step protocol. First, neurosphere-formation was used to acquire neuronal induction. Secondly, neuronal maturation was induced, based on cAMP and NT-3 signaling. The ultrastructural characteristics of intra-neurospherical hDPSCs and their microenvironment were determined by means of transmission electron microscopy (TEM). Neurogenic matured hDPSCs (d-hDPSCs) were subjected to immunocytochemical, PCR, ultrastructural and electrophysiological analysis. An Enzyme-Linked Immunosorbent Assay (ELISA) was performed for VEGF, NGF, BDNF and GDNF in order to evaluate the secretome of hDPSCs before and after neurogenic differentiation.

Results: Based on the ultrastructural analysis it was shown that within the neurospheres, intercellular communication was promoted. Moreover, hDPSCs grew out of the neurospheres *in vitro* and established a neurogenic differentiated hDPSC culture (d-hDPSCs) which was characterized by the increased expression of the neuronal markers NeuN, MAP-2 and NCAM compared to the non-differentiated counterpart. Moreover, the secretion of BDNF, VEGF and NGF differed between d-hDPSCs and hDPSCs. Ultrastructurally, d-hDPSCs acquired neuronal features including multiple intercommunicating cytoplasmic extensions and increased vesicular transport. Finally, patch clamp analysis demonstrated the functional activity of d-hDPSCs by the presence of TTX-sensitive voltage-gated sodium and TEA-sensitive potassium channels. A subset of d-hDPSCs was able to fire a single action potential.

Conclusions: Although promising results were achieved, establishing a completely functional d-hDPSC culture remains a challenge. The results in this study demonstrate that hDPSCs are capable of neuronal commitment with distinct features of neuronal cells.

**O-1204****COMPARATIVE STUDY OF A SiO₂ WOUND DRESSING IN SKIN DEFECT OF THE MOUSE**

F.Öri, R. Dietrich, T. Gerber, B.Frerich

University Hospital Rostock, Rostock, Germany

Objective: In reconstructive surgery, there is a high demand for temporary wound dressings that have a positive influence on wound healing and regeneration. Silicon (as SiO₂) in biological systems been shown to support the growth and collagen formation. In this study, the efficiency of a novel SiO₂-based wound dressing was evaluated for tissue regeneration, wound contraction and epithelialization.

Methods: A 10 mm circular defect was set on both sides of the dorsum of the SKH1 - hr mouse (N = 60). The covering of the wounds was performed with a newly developed SiO₂ gel dressing in comparison to a commercially available synthetic material (Sorbion plus) and a blank control. A change of wound dressings was carried out every 3 to 4 days with photo documentation of the wound situation and microbiological smear. After 3, 6, 9, 12 and 15 days, the defect regions were explanted. The wound dressings were examined by electron microscopy and EDX for determining the SiO₂ diffusion. The defects were cut into histological sections and were measured over time by histomorphometry. Furthermore, the expression of CD31, VEGF, CD11 and TGF β was investigated immunohistochemically.

Results: All groups showed a nonirritated defect closure after 12 days. EDX on SiO₂ gel pads showed SiO₂ diffusion into the wound. The histomorphometry revealed for the Silidone gel after 15 days a smaller scar area (8.78 mm², p <0.01) in comparison to the control (23.98 mm²) and Sorbion plus group (15.13 mm²). The re-epithelialization of the wound surface was delayed in comparison to those without. The epidermis under the effects of SiO₂ was in the average broader (61.46 μ m, p <0:06) than the blank control (35.85 μ m) and showed a more pronounced layer structure.

Conclusions: The results indicate that SiO₂ of silicone dressings diffuses into the wound bed and influences wound healing. The SiO₂ wound dressing can counteract scarring and there are indications of suitability as a temporary wound dressing.

**O-1205****IMPLICATIONS OF THE CANCER STEM CELL (CSC) PARADIGM FOR OMFS PATIENTS AND SURGEONS.**

N. Vig, A. Biddle, L. Gammon, H. Emich, I. Mackenzie

Blizard Institute, QMUL, London, United Kingdom

Introduction

Our traditional stochastic understanding of cancer has been challenged by the cancer stem cell model. Maintenance of normal oral tissues depends on subpopulations of somatic stem cells and it has now been shown that the growth of solid cancers, including head and neck squamous cell carcinoma (HNSCC), is similarly driven by subpopulation of stem cells. These cells (a) have the ability to re-initiate tumours if transplanted to mice and (b) show resistance to radiation and therapeutic drugs. Current thinking is that these cells are responsible both for local tumour invasion and for distant metastasis.

Methods and Results

The Mackenzie laboratory has furthered our understanding of how CSCs are involved in HNSCC. It has been shown that altered patterns of expression of the cell surface molecule CD44 (found on both CSCs and normal epithelial stem cells) are highly predictive of metastasis from primary tumours. It has also been demonstrated that CSCs switch between a proliferative epithelial type and a more invasive mesenchymal-like population. Chemo- and radio-therapeutic responses vary significantly between these groups, even within the same cell line, possibly explaining poor responses to therapy. Understanding this in more detail may facilitate the quest for more appropriate therapeutic agents.

We also describe how hypoxia and inflammation act to greatly increase the invasive sub-population of CSCs. The mechanisms controlling this switch have been identified. These developments in cancer stem cell research have not only furthered our fundamental understanding of HNSCC, but have opened up the possibility of more focused treatment strategies.

We discuss what the strategies may be and where further research is needed. CSC research may mean the patient benefits from more targeted therapy, hopefully improving survival outcomes. The role of the surgeon and implications for our field are also discussed: despite advances in understanding the disease, the surgeon is unlikely to be replaced by medical management just yet.

Conclusions

This paper will summarise CSC research to date and describe current areas of our research focus. We will also highlight the implications of CSC behaviour for both patient and surgeon, in terms of potential future treatments.



O-1206

INTRAORAL SOFT TISSUE RECONSTRUCTION WITH AMNIOTIC MEMBRANE

J. Rubio-Palau, A. Ferrer-Fuertes, R. Sieira-Gil, G. Cho-Lee, E. García-Díez, C. Martí-Pagès

HOSPITAL CLÍNIC DE BARCELONA, BARCELONA, Spain

INTRODUCTION

Soft tissue reconstruction after tumor resection is a challenge for the surgeon. Several types of surgeries have been described, since primary closure to intraoral or extraoral local flaps, pedicled flaps or microvascularized flaps and each one has their advantages and disadvantages.

AIMS/OBJECTIVES

The aim of this communication is to expose the use of amniotic membrane to reconstruct intraoral soft tissue defects.

The main objective was to study the behavior of amniotic membrane in the oral cavity, its applicability after soft tissue resection and the impact in the quality of life of the patients.

MATERIALS AND METHODS

A total of three patients were included. One had a hard palate leukoplakia, another a buccal mucosa carcinoma and the last a tongue squamous cell carcinoma. After the resection of the lesions and careful hemostasis the amniotic membrane was placed over the defect and fixed with sutures and with a dressing. Antibiotics, antiinflammatory and chlorhexidine rinses were recommended and after 7-10 days the dressing was removed and periodical controls were done.

RESULTS

The healing of the amniotic membranes was satisfactory and neither complications nor rejections were seen. The pathological study of the hard palate lesion revealed an squamous cell carcinoma and posteriorly a partial maxillectomy was done with the consequent removal of the amniotic membrane.

DISCUSSION and CONCLUSION

The anti-inflammatory properties and the growth factors of the amniotic membrane have been used in ophthalmologic diseases and to promote wound healing like in chronic diabetic foot ulcers but only a few studies have described its application in the oral cavity.

Amniotic membrane avoids morbidity, reproduces correctly the oral mucosa and can be an alternative in a selected group of patients after the excision of soft tissue lesions.

**O-1207****NEURAL CREST STEM CELLS IN HUMAN DENTAL PULP (DP-NCSC) AS A CELL SOURCE FOR NERVE TISSUE ENGINEERING**

H. Al-Zer¹, L. Kluwe², P. Hartjen¹, A. Kolk¹, A. Gröbe², M. Heiland², H. Hanken², W. Eichhorn¹, R. Smeets²

¹ *Department of Oral and Maxillofacial Surgery, Klinikum rechts der Isar, Technische Universität München, Munich, Germany*

² *Department of Oral- and Maxillofacial Surgery, University Medical Center Hamburg-Eppendorf, Hamburg, Germany*

Objectives: To evaluate neural crest stem cells derived from human dental pulp (DP-NCSC) in regenerative therapy of peripheral nerve defects. For this aim, a specific search for a population within the DP-NCSC was done, that can be differentiated into Schwann cells. Textiles have been used as nerve guide channels (moulded fibres) for directing peripheral nerve regeneration.

Methods: DP-NCSC were isolated from dental pulp of extracted wisdom teeth and subsequently cultured. For characterization of the cells, an immunocytochemical analysis was done. After differentiation a cultivation of nerve guides (channels with tubular structure comprising of PDLLA+ calcium phosphate + calcium carbonate with a pore size of 60 - 80 Micrometer) was performed and tested concerning in vivo regeneration of standardized ischiadic nerve defects in Lewis-rats (2cm defect of sciatic nerve).

Results: Neural crest stem cells were successfully cultured in a serum free media for months. Immunocytochemical analysis revealed expression of nestin, CD271 and sox10. A differentiation into mesenchymal lineage (osteoblasts) and ectodermal lineage (melanocytes and Schwann cells) was obtained.

Conclusion: The Schwann cells were cultivated on textile PDLLA tubes and were successfully tested in nerve defects of rats, where a regeneration was seen. The easily accessible DP-NCSC are a feasible alternative for regenerating dental, skeletal and neural tissues, especially when combined with an resorbable biocompatible nerve guide.



O-1208

GENE-ACTIVATED BONE GRAFTS: CHALLENGES AND OPPORTUNITIES FOR MAXILLOFACIAL SURGERY

I. Bozo¹, A. Drobyshev², R. Deev¹, G. Volozhin², S. Rozhkov², R. Anisimov¹, I. Eremin³, V. Komlev⁴, A. Isaev¹

¹ *Researches & Developments, Human Stem Cells Institute, Moscow, Russian Federation*

² *Maxillofacial surgery, A.I. Evdokimov Moscow State University of Medicine and Dentistry, Moscow, Russian Federation*

³ *Center of Biomedical Technologies, State Research Centre - Federal Medical Biophysical Center of FMBA of Russia, Moscow, Russian Federation*

⁴ *Laboratory of Ceramic Composite Materials, A.A. Baikov Institute of Metallurgy and Material Science of the RAS, Moscow, Russian Federation*

Objective. One of the most complicated biomedical approaches in development of effective osteoplastic materials is gene-therapeutic, which implies a compound of scaffolds and gene constructions providing osteoinduction in single medical device named gene-activated bone graft (GABG).

Methods. Basing on long-term wide and successful experience in development of gene drug consisting of plasmid DNA encoding vascular endothelial growth factor and its clinical translation in Russia and Ukraine (it have been approved for treatment of patients with chronic lower limb ischemia 2a-3 stages), we have made several variants of GABGs using different scaffolds (xenogenic bone matrix, collagen with hydroxyapatite, octacalcium phosphate) and plasmid DNA both with *vegf* gene only and double-cassette construction including *vegf* and *sdf-1* genes together under single promoter. Developed GABGs have been evaluated in vivo on the rabbits' model of critical-size bone defects. Implantation of the same scaffolds without plasmid was considered as an objective control. The results were assessed by CT and histological methods at different time points during 4 months. Moreover, there are some challenges in GABG development associated not only with low level of plasmid DNA transfection, but also defined by scaffold and gene construction combining technology, and problems regarding assessment of their quality, especially after sterilization process. To solve these issues we incubated the GABGs and plasmid DNA without scaffolds in vitro with multipotent mesenchymal stromal cells and detected the level of therapeutic genes expression and proteins production.

Results. All GABGs we developed have shown the pronounced osteoinductive potential because of plasmid DNA with therapeutic genes. The most of GABGs particles located even in the center part of defects were surrounded by newly-formed bone tissue, i.e. they could be considered as the sources of bone regenerate. In vitro studies showed the plasmid DNA mode of action which was manifested by increase of therapeutic genes expression levels.

Conclusions. Thus, the basic researches concerning GABGs development were performed: safety and efficacy for bone defects repair have been shown, the gene constructions mode of action which defines a quality of medical devices has been assessed. These results should provide a foundation for successful GABG translation into clinical practice.



13. Prevention of Head and Neck Tumours

O-1301

PRE-SURGICAL CLINICAL DIAGNOSIS ACCURACY IN HEAD AND NECK BCC AND SCC AND ITS EFFECT ON CLINICAL OUTCOME

G. A. Ghaly¹, B. Sisodia², C. W. Harrop²

¹ *Oral and Maxillofacial Surgery, Oxford Deanery, Oxford, United Kingdom*

² *Oral and Maxillofacial Surgery, Kettering General Hospital, Kettering, United Kingdom*

Objectives

Wide local excision is a common treatment choice in the management of cutaneous malignancy in the head and neck region. This is often carried out without formal biopsy based on a clinical diagnosis. We have examined the accuracy of our clinical diagnosis prior to definitive treatment for clinically suspected Basal Cell Carcinomas (BBCs) and 50 Consecutive Squamous Cell Carcinomas (SCCs) in the head and neck region. We aimed to investigate the reliability of clinical diagnosis and what effect it has on clinical outcome.

Methods

Prospective study of 100 consecutive (BBCs) and 50 Consecutive (SCCs). Prior to surgery clinical diagnosis was recorded compared to the final histological diagnosis and clinical outcome.. Clinical diagnosis and treatment was by the same Oral and Maxillofacial Surgery Consultant. 85% of the patients were referred by the local dermatology service. Prospective collection of data was performed using a data collection form prior to surgery and after receiving histology results.

Results

Out of 100 clinically suspected BCCs 90 were confirmed as BCCs (Sensitivity 90%) and 10 showed a variety of other diagnoses. Only 2 required further surgical treatments based on the new diagnoses and 4 may have been managed without wide local excision (Specificity 80%). Of the 50 consecutive clinically suspected SCCs 38 were confirmed as SCCs (74% Sensitivity) and 12 showed other diagnoses. Of these other diagnoses 4 showed pathology that could have been managed without wide local excision (Specificity 66%).

Conclusion

When making decisions regarding performing a wide local excision of head and neck skin lesion it is not practical to biopsy all suspected SCCs and BCCs. This is mainly due to size of lesions and limitations of resources. Relying on clinical diagnosis has been acceptable practice for many of these lesions. The results of our study support the validity of clinical diagnosis as a reliable approach for a majority of the lesions prior to definitive surgery . Clinical diagnosis seems to be more reliable in BCC cases than SCC cases. There remains scope to improve diagnostic accuracy.

**O-1302****PREDICTORS FOR SURVIVAL AND RECURRENCE OF OSCC: A CLINICAL RETROSPECTIVE EVALUATION OF 302 CASES**

A.Otero-Rico¹, N. Carral-Roura¹, I. Vazquez-Mahía¹, J.M. Seoane-Lestón², S. Pita-Fernández³, J.L. López-Cedrún¹

¹ Oral and Maxillofacial surgery, Hospital Universitario A Coruña, A Coruña, Spain

² Oral Surgery, Universidad de Santiago de Compostela, Santiago de Compostela, Spain

³ Unidad de Epidemiología e Investigación, Hospital Universitario A Coruña, A Coruña, Spain

Background and objectives: Squamous cell carcinoma of the oral cavity is one of the ten most frequent cancers in developed countries. It has a tendency to recur locally and regionally after treatment, which makes follow up of patients vital. The purpose of this study was to identify predictors for recurrence.

Methods: Three hundred and two patients were included in an ambispective cohort study. The patients had undergone surgery between the years 1998 to 2008, in all cases with curative intent, and followed up to December 2013. Variables included gender, age, tumor site, macroscopic pattern of the lesion, coexisting disorders, smoking history, alcohol usage, diagnostic delay, degree of differentiation, pathologic TNM stage, type of surgery and margin status. Comorbidity was evaluated using the Charlson Index. Survival times were estimated by Kaplan-Meier curves and differences were examined with log-rank test. The significance level chosen for all tests was $p < 0.05$.

Results: The mean age of the sample was 60 years and 71% were males. The most frequent site was tongue (37,4%) followed by floor of the mouth (24,2%) with an ulcerated pattern in 68.9% of the cases. According to the Charlson comorbidity index the most frequent accompanying diseases were liver disease (12.9%) and COPD (7.9%). Tumor recurrence was 52.5% (25.5% local, 11.7% regional, and 5% distant) and the mean period that had elapsed before recurrence was 16 months. At the end of the follow up period 39.4% of the patients had died due to the tumour and 19,5% of other causes.

Conclusions: Tumor recurrence implies a poor prognosis for patients with oral cancer, with a mortality rate close to 90%, that is why it is very useful to identify early predictors of recurrence at the time of diagnosis. Comorbidity should be used in deciding how aggressively to treat a tumour, and to evaluate whether comorbidities may be so severe that the costs and risks of cancer treatment would outweigh its short-term benefit.

**O-1303****ASSESSMENT OF BLOOD AND LYMPH VESSEL INVASION BY S100/CD31 AND S100/PODOPLANIN DOUBLE IMMUNOSTAINING IN MUCOSAL MELANOMA**

K. Wermker, T. Brauckmann, M. Klein, S. Hassfeld, H-J. Schulze, C. Hallermann

Fachklinik Hornheide, Head and Neck Cancer Centre, Department of Oral and Cranio-Maxillofacial Surgery, Muenster, Germany

Objectives : Mucosal malignant melanomas of the head and neck (HNMM) are uncommon tumors with poor prognosis. Established prognostic factors are rare and controversially discussed. The aim of this study was to present characteristics and outcome of HNMMs and to evaluate the prognostic value of S100/Podoplanin and S100/CD31 double immunostaining.

Materials and Methods : Retrospectively patients with HNMM treated between 1973 and 2008 were analysed regarding tumor characteristics and disease course. S100/Podoplanin and S100/CD31 immunostaining were performed to detect lymph vessel invasion (LVI) and blood vessel invasion (BVI). Predictive parameters for disease specific survival (DSS) were identified using univariate and multivariate (Cox regression) statistics.

Results : In total 42 patients (24 females, 18 males, mean age 66.8 years) with HNMM were included. 3-, 5- and 10-year DSS rates were 59%, 44% and 20%, respectively. In univariate analysis, age above 70 years, occurrence of distant metastasis (DM), LVI and BVI were significantly associated with shorter DSS time ($p < 0.05$). Multivariate analysis revealed again age above 70 years, DM occurrence and LVI as risk factors for shorter DSS time, whereas localization at the conjunctiva showed better outcome.

Conclusion : S100/Podoplanin and S100/CD31 double immunostaining detect reliable LVI and BVI in HNMM and both are associated significantly with worse prognosis.



O-1304

P16 GENETIC AND EPIGENETIC ALTERATIONS IN HEAD AND NECK SQUAMOUS CELL CARCINOMAS (HNSCC)

T. Poli¹, S. Pizzi², T. D'Adda², D. Lanfranco¹, E.M. Silini², E. Sesenna¹

¹ *Maxillofacial Surgery Unit, Department of Biomedical, Biotechnology and Translational Sciences (S.Bi.Bi.T.) & Head and Neck Department, University Hospital of Parma, Parma, Italy*

² *Pathology Unit, Department of Biomedical, Biotechnology and Translational Sciences (S.Bi.Bi.T.), University Hospital of Parma, Parma, Italy*

Background. Though p16 gene inactivation is common in HNSCC, its role in tumorigenesis is still unclear due to the close relationship between p16 protein overexpression and human papillomavirus (HPV) infection. Aim of this work is to clarify the relative involvement of p16 gene loss and/or methylation in distinct subsets of HNSCCs according to site of origin, HPV infection, p16 staining, histologic features and patient survival.

Material and Methods. Analysis was conducted on a retrospective series of 203 SCCs of the oropharynx (36) and oral cavity (167), systematically reviewed according to validated pathological variables (size, depth of invasion, growth pattern, lympho-vascular and perineural invasion, grade of keratinisation, peritumoral lymphoid reaction, basaloid features, nuclear grade, proliferative activity, nodal state and prognostic indices). Immunohistochemical expression of p16 and p53, HPV infection and follow up were also characterized. Normal and tumoral DNA was extracted from archival tissue. Promoter methylation was evaluated by methylation-specific PCR; loss of heterozygosity (LOH) was assessed with microsatellites D9S157 and D9S171.

Results. Globally p16 alterations were found in 87% of cases. LOH was frequent in the oropharynx (65%) and methylation in the oral cavity (75%, $p=0.002$). Presence of both methylation and LOH associated with loss of p16 immunostaining. Methylation and LOH were found to be mutually exclusive in some site (i.e. tongue, cheek). LOH was associated with poor keratinisation ($p=0.01$), high mitotic activity ($p=0.016$) and poor inflammatory reaction ($p<0.001$). Methylation correlated with absence of metastasis ($p=0.004$). Absence of p16 methylation appeared as an independent predictor of reduced survival ($p=0.025$, HR 1.97, CI 1.08- 3.56). Cases without p16 alteration were prevalent in the oropharynx ($p=0.036$), showed no p53 alterations ($p=0.026$) and associated with frequent distant metastasis ($p=0.024$).

Discussion and conclusion. In conclusion, the p16 inactivation profile indicates the presence of heterogeneous pathogenetic mechanisms in HNSCC, with different biological variables defining the clinical outcome of patients.

**O-1305****FUTURE CLINICAL VISION OF NON-INVASIVE MODALITIES IN DIAGNOSIS OF ORAL SQUAMOUS CELL CARCINOMA (OSCC) – LITERATURE REVIEW**

E. Omar

Department of Oral and Maxillofacial Surgery, college of Dentistry, Taibah University, almadinah, Saudi Arabia

Objective: Oral Squamous Cell Carcinoma (OSCC) has a remarkable incidence over the world and a fairly strenuous prognosis, encouraging further research on advanced technologies for non-invasive methods that may make the early diagnosis possibly at primary care setting.

Data sources: A web-based search for all types of articles published was initiated using Medline/Pub Med, with the key words such as diagnostic methods of oral cancer, non-invasive methods. The search was restricted to articles published in English, with no publication date restriction (last update November, 2013).

Review Methods: In this review article, I approach the advanced technologies of non-invasive methods in OSCC diagnosis. I also reviewed available studies of the oral brush biopsy, Optical Biopsy, Saliva-Based Oral Cancer Diagnosis and others.

Results: Toluidine blue is one of the oldest non-invasive methods in diagnosis of OSCC. It is unreliable because of its subjectivity as it is dependent on the experience of the examiner. The oral brush biopsy with Exfoliative cytology based on nano-bio-chip sensor platform for oral cancer detection were recently described in a pilot study with high sensitivity and specificity. One of promising non-invasive technique in OSCC diagnosis is Saliva-Based Oral Cancer Diagnosis which can be an alternative to serum testing. The malignant tissues showed changes in the physical and chemical characteristics due to the sub-cellular Structural changes. These mean that the malignant tissues have different fluorescence characteristics than normal tissues. This can be used for diagnosis of malignancy by technologies of spectroscopy. The spectroscopy can detect changes at sub-cellular level so it conveys information that may not be available from conventional histology.

Conclusion: It is clearly evident that screening and early detection of the cancer and pre-cancerous lesions have the potential to reduce the morbidity and mortality of this disease. Saliva-Based Oral Cancer Diagnosis and optical biopsy are promising Non-invasive methods for diagnosis of OSCC which are easily to perform clinically. They show promising pathways for the future development of more effective prognosis, when are used widely as reliable routine modalities for oral cancer diagnosis at primary care setting.

**O-1306****ASSESSMENT OF THE EXPRESSION OF KI-67, MMP-2, MMP-9, VEGF-C AND VEGF-D AS PREDICTIVE FACTORS IN ORAL SQUAMOUS CELL CARCINOMA**

M. Gontarz, G. Wyszynska - Pawelec, J. Zapała, J. Czopek, A. Lazar, R. Tomaszewska

Department of Cranio-Maxillofacial Surgery, Jagiellonian University Medical College, Cracow, Poland

Objective

The aim of this study was to evaluate the clinical usefulness of the immunohistochemical expression of Ki-67, MMP-2, MMP-9, VEGF-C, VEGF-D in predicting the follow up and the planning of the treatment in patients with squamous cell carcinoma of the tongue and the floor of the mouth.

Methods

A study group consisted of paraffin blocks of formalin-fixed surgical specimens of 60 patients with primary squamous cell carcinoma of the tongue and floor of the mouth treated in the Department of Cranio-Maxillofacial from 2000 to 2011. The relationship between the degree of expression of markers in SCC as well as stage, grade, cervical metastases, 5-year survival, disease free survival (DFS) and distant metastases were assessed. Furthermore, the effectiveness of the adjuvant therapy in patients with different expression markers in surgical specimens was evaluated. All statistical calculations were performed using the Stata 8.0 software.

Results

Analysis of the expression of the individual markers in various tumour stages, grades and nodal metastases did not demonstrate significant differences. Also none of the markers corresponded with the local or locoregional recurrence.

However, high Ki-67 labeling index (LI>25%) was an independent predictor of survival in the study group ($p=0.001$) and the group of patients who did not receive adjuvant radiotherapy ($p=0.004$). Also, high Ki-67 LI correlated with DFS in the study group ($p=0.020$) and locoregional recurrence in patients without adjuvant radiotherapy ($p=0.012$).

Moreover, overexpression of MMP-2 was an independent predictive factor of 5-year survival rate in the study group ($p=0.002$). Also, MMP-2 expression positively correlated with a higher risk of late cervical metastases ($p=0.047$).

In addition, multivariate analysis revealed VEGF-C as an independent predictor of survival in the study group ($p<0.001$) and among patients treated only surgically ($p=0.032$). Overexpression of VEGF-C was also found in patients who developed distant metastases ($p=0.008$) and had worse DFS ($p=0.039$).

Conclusion

High Ki-67 labeling index in SCC of the tongue and the floor of the mouth could be an additional indication for adjuvant radiotherapy. Furthermore, Ki-67, MMP-2 and VEGF-C in multivariate analysis achieved the status of the independent predictive factor of survival.



O-1307

HEAD AND NECK SQUAMOUS CELL CARCINOMA: HOW IS OVERALL SURVIVAL INFLUENCED BY ALTERATIONS IN MOLECULAR ONCOLOGY?

A.Kolk¹, M.Kremer², P.S.Holm¹, K.D.Wolff¹, M.Straub², E.Drecolli¹, M.Kesting¹, K. Mengele², C. Goetz¹

¹ Oral and Maxillofacial Surgery, Technical University Munich, Klinikum r.d. Isar, Munich, Germany

² General Pathology, Klinikum rechts der Isar, Technische Universität München, Munich, Germany

Objective

5-year-overall survival did not increase in the last few decades in Head and Neck Squamous Cell Carcinoma (HNSCC). An explanation for these results could be that adjuvant chemotherapy and radiation are resulting in low response rates in HNSCC. At the moment, resistance of tumor cells is explained by the hallmarks of cancer and especially by the cancer stem cell (CSC) theory. Recently many efforts were achieved by molecular oncology in different entities of carcinomas to support new therapy strategies as oncolytic viro therapy. The revelation of distinct molecular patterns with correlation to survival prognosis in HNSCC is yet not sufficiently done until today. The aim of our investigation was to analyze the regulation of cell growth interacting PDCD4, TWIST, YB-1 and the CSC markers Nanog and CD 44 and to set the latter results into correlation to the clinical outcome of the patients. Studies about the downregulation of tumorsuppressor PDCD 4 and its correlated upregulation of the transcription factors Twist and YB1 are indicating an influence of tumor cell growth, hence supporting bad overall survival.

Methods

We analyzed the expression of the latter markers with immunohistochemistry on a TMA containing 300 HNSCC. We did Western Blot on corresponding carcinoma tissues and on proteins extracted from HNSCC cell lines. We set the laboratory results into correlation with the overall survival of the 300 HNSCC patients, on which the TMA is based.

Results

An inverse correlation was shown by immunohistochemical analysis between the expression of PDCD4, YB-1 and also TWIST expression. In cases where decreased expressions of PDCD 4 were evaluated, overall survival was significantly decreased. The expression of CD 44 and Nanog was significantly associated with worst prognosis if the invasive front of the tumor did strongly express the latter CSC markers. This behaviour of tumor cells is We used Spearman rank correlation and set the p-value on <0.05.

Conclusions

According to the significant results of our investigation, we see the possibility to gain efforts in therapies by focussing on the latter markers. Especially we see high potential in therapies interacting in cell growth regulation with PDCD4 as a main target.

**O-1308****CHROMOSOME INSTABILITY IN TUMOR RESECTION MARGINS OF ORAL CANCERS IS A PREDICTOR OF LOCAL RECURRENCE.**

Damiana D.C.G. Pierssens^{1, 2, 3}, Maarten Borgemeester², Andrea Ruland³, Bernd Kremer², Ernst-Jan M. Speel³, Peter Kessler¹

¹ *Department of Cranio-Maxillofacial Surgery, Maastricht University Medical Center, Maastricht, Netherlands*

² *Department of Otorhinolaryngology, Head & Neck Surgery, Maastricht University Medical Center, Maastricht, Netherlands*

³ *Department of Pathology, Maastricht University Medical Center, Maastricht, Netherlands*

Purposes. Despite considerable efforts to improve adequate ablation in head and neck cancer, local recurrence rates have not decreased significantly. Possible explanations are remains of malignant cells (minimal residual disease), or remains of premalignant cells in the resection margins, which slowly progress into malignant transformation even after more than 10 years, but are not detected by standard histo-pathologic examination. Additionally, histopathology is subjected to inter- and intra-observer variability, especially in premalignant (dysplastic) lesions, which decreases reliability of the evaluation furthermore.

Chromosome instability (CIN) in resection margins is an indication of remaining premalignant cells, according to current literature. Fluorescence in situ hybridization (FISH) is a suitable method for detecting these premalignant cells. Moreover, it is a fast (results within one day), cheap, and efficient method for the detection of CIN in a single tissue section, and is easily implementable in daily practice.

Material and method. 40 patients with oral squamous cell carcinoma (OSCC) radically treated with surgery alone between 1994 and 2003 were included in the study. All resection margins (n=234) were histo-pathologically tumor free (> 5mm) with a follow-up of at least 5 years. The presence of CIN by FISH for chromosomes 1 and 7 was indicated by nuclear detection of imbalances and/or polyploidization. P53 overexpression analysis was performed by immunohistochemistry.

Results. FISH analysis could be performed in 33 out of 40 patients. Of these patients, 11 developed a recurrence within 5 years, of which 9 exhibited CIN in at least one of their resection margins. Of the 16 patients without CIN only 2 developed a recurrence. The relation between CIN and recurrence was significant (p=0.018). Kaplan Meyer analysis showed a significantly worse progression-free survival in patients with CIN (47,1%) compared with patients without CIN (86,7%) (log rank p=0.030). Neither p53 overexpression nor histo-pathology were significant predictors of recurrence.

Conclusion. CIN detection using FISH for chromosomes 1 and 7 in resection margins of OSCCs, even though histologically tumor-free, is a suitable method for daily practice which has the potential to improve the identification of patients at risk for developing a local recurrence and to indicate additional treatment.

**O-1309****NON TUBERCULOUS CERVICOFACIAL LYMPHADENITIS IN CHILDREN**

M. Pezzi, M. Fernandez, R. Sanchez, E. Iglesias

Oral and Maxillofacial Surgery, Hospital Universitario Madrid Monteprincipe, Madrid, Spain

OBJECTIVES

Our objective is to study the special considerations about diagnostic and therapeutic options in children with non-tuberculous cervicofacial lymphadenitis.

MATERIAL AND METHODS

A series of seven pediatric patients who were attended for chronic cervicofacial lymphadenitis caused by non tuberculous mycobacteria is reviewed. The range of ages in our group was from 15 to 32 months. We analyse data relative to initial diagnostic tests, differential diagnosis and therapeutic options. Anatomical findings are also discussed, highlighting the evolutive grade of the adenitis in each patient and the repercussions it has in surgical risks and sequels.

RESULTS

The most frequently affected site was the submandibular region, with the parotid gland in second place. Only one of the seven patients presented bilaterally. All of the patients were surgically treated due to bad response to antimicrobial therapy, which in five of them consisted in a combination of clarytromycin and a second antibiotic (rifabutin or ethambutol). Pathologic findings were the same in all patients (necrotising granulomatous lymphadenitis). Six of the patients were cured after surgery, but one had recurrence and required a reintervention.

DISCUSSION

Non tuberculous (or atypical) mycobacteria cause 10-20 % percent of subacute/chronic cervicofacial lymphadenitis in children. The incidence of this pathology in our country is increasing for yet unknown reasons.

It usually presents as a cervicofacial mass with progressive swelling. The absence of response to routine antimicrobials and cutaneous affection lead to presuntive diagnosis. At this point it is very important to stablish a diferencial diagnosis with tuberculous adenitis. PPD testing has shown variable results. Fine needle aspiration and ecography are recommended to complete the study.

Treatment with specific antimicrobials can be useful. Clarytromycin should always be used, as it seems helpful to control the disease with little side effects and good tolerance. Even so, many cases (most in our experience) progress, with liquifying of the superficial nodes and fistulization.

Surgical excision of all affected lymph nodes is the best therapeutic option, and in most of the series has shown good results with minimal recurrence rates. The main risks of the surgical treatment are facial nerve branches injury and anti-esthetic scarring.



14. Reconstructive Surgery of Craniofacial Malformations & Cleft Surgery

O-1401

OUR EXPERIENCE WITH AUTOLOGOUS MESENCHYMAL STEM CELLS IN ALVEOLAR CLEFT

P. Stanko, J. Mracna, A. Stebel, J. Vojtassak

Dpt. Stomatology and Maxillofacial Surgery, Faculty of Medicine, Comenius University, Bratislava, Slovakia

Objective: answer the question if adult mesenchymal stem cells (MSCs) can improve the final results in closure of oronasal fistulas in alveolar clefts.

Methods: combination of osteoconductive (hydroxyapatite granules, HA), osteoinductive (platelet rich plasma, PRP) and osteogenic (MSCs on collagen membrane scaffold and in suspension) components was used in 14 cleft patients (8 men, 6 women, mean age 37,96 ys, range 17 – 56 ys) with persistent oronasal fistulas. Prosthetic treatment followed after surgery.

Results: uneventful healing was achieved in 7 cases (50 %). Recurrence appeared in 7 cases (50 %) from which 5 cases were treated successfully with biphasic tongue flap, one by use of titanium mesh. Outcome in one patient remained unsuccessful (7,1 %).

Conclusions: MSCs can improve the final results in closure of oronasal fistulas in alveolar clefts but this problem needs further investigation.

**O-1402****TISSUE ENGINEERED BONE GRAFTS USING MESENCHYMAL STROMAL CELLS FOR CLEFT ALVEOLAR OSTEOPLASTY IN A RAT MODEL**

P. Korn, M.C. Schulz, U. Range, G. Lauer, W. Pradel

Department of Oral and Maxillofacial Surgery Faculty of Medicine "Carl Gustav Carus", Technische Universität Dresden, Faculty of Medicine "Carl Gustav Carus", Technische Universität Dresden, Dresden, Germany

Objectives: The development of sufficient tissue engineered bone grafts for secondary alveolar cleft osteoplasty could reduce the necessity of autologous bone grafts and its donor site morbidity. The aim of the study was to evaluate tissue engineered bone grafts in an artificial bone defect.

Methods: Bone grafts were created *in vitro* using a synthetic hydroxyapatite-tricalciumphosphate scaffold (Bonit matrix®). These were colonized with either undifferentiated mesenchymal stromal cells (group 1) or osteogenic differentiated mesenchymal stromal cells (group 2) obtained from the bone marrow of donor rats. Unmodified scaffolds (group 3) and the bone grafts were inserted in artificial maxillary defects of 72 Lewis rats. In the control group (control) the defects remained empty. After one, three and six weeks the rats were sacrificed. The defect was evaluated radiologically using cone-beam computed tomography with regard to the remaining defect volume. Histological sections of each defect were analyzed histomorphologically. Furthermore, the remaining defect diameter was measured. Statistical analysis followed.

Results: The application of tissue engineered bone grafts led to a pronounced bone formation at the defect margin. No complete reunion of the defect within the healing time was observed. After six weeks, the remaining defect volume was $6.86 \pm 3.21 \text{ mm}^3$ (control), $4.08 \pm 1.36 \text{ mm}^3$ (group 1), $5.00 \pm 0.84 \text{ mm}^3$ (group 2) $5.50 \pm 1.05 \text{ mm}^3$ (group 3). The remaining defect diameter measured $2.63 \pm 0.52 \text{ mm}$ (control), $2.39 \pm 0.23 \text{ mm}$ (group 1), $2.53 \pm 0.22 \text{ mm}$ (group 2) and $2.70 \pm 0.66 \text{ mm}$ (group 3). In all experimental groups the defect volume and diameter decreased over time, which was significant for group 1 ($p=0.014$), group 2 ($p=0.025$) and group 3 ($p=0.048$). The defect volume and width was significantly reduced for bone grafts containing undifferentiated cells compared to control ($p=0.035$) or unmodified scaffolds ($p=0.05$).

Conclusion: Tissue engineered bone grafts induce a pronounced bone formation in artificial bone defects compared to empty controls or unmodified scaffolds.



O-1403

PARANASAL AUGMENTATION IN SECONDARY CLEFT LIP NASAL DEFORMITY : AN ALGORITHM

S.M. Nam¹, B.L. Han¹, Y.B. Kim¹, M.S. Kang², C.Y. Choi³

¹ Plastic and reconstructive surgery, Soonchunhyang university bucheon hospital, Bucheon, South Korea

² Plastic surgery, Garosu plastic surgery clinic, Seoul, South Korea

³ Plastic and reconstructive surgery, Soonchunhyang university Gumi hospital, Gumi, South Korea

Objective: Although the primary cleft lip surgery may be successful, the secondary lip nasal deformities leave a certain degree of deformity due to the embryologic structure of the lip and nose. In particular, the deformity of maxilla is typically presented by bone defect and hypoplasia of piriform aperture, this asymmetric development and bone defect around the nasal platform aggravate the asymmetric nature of lip and nasal deformities. This research was conducted to propose a surgical algorithm for paranasal augmentation, by evaluating and classifying patients with secondary lip nasal deformity from a unilateral cleft lip, in accordance with the severity, based on the measurement of the height of the bilateral alar base.

Methods: Study was done on 82 patients through 12 years and categorized the type of depression in to three groups; mild(<2mm), moderate(2<<4), severe(>5mm), as according to the difference of height in the alar base after analyzing the clinical pictures before operation. Grafting of the mild group utilized soft tissue augmentation using fat or scar tissue from the phitral area. The moderate group utilized an alloplastic material such as high-density porous polyethylene(Medpor®) or hydroxyappetite, while the severe group utilized autologous bone graft using the iliac bone. In the moderate, severe group fat graft was also done as needed during surgery.

Results: In a picture analysis 6 months after, all patients showed the difference in alar base height to be decreased to less than 1mm in average ($p<0.05$), and were cosmetically satisfied.

Conclusions: To treat secondary lip nasal deformity, It is important to achieve the symmetry of the nose in order to satisfaction of the patient's expectation and hope. We could obtain good aesthetic result with certain satisfaction by performing paranasal augmentation based on the appropriate classification of patients according to the degree of depression of alar base. The algorithm for paranasal augmentation, proposed in this article, providing the good surgical options of treatment of secondary lip nasal deformity.

**O-1404****SPEECH DISORDERS AND FREQUENCY OF VELOPHARYNGOPLASTY IN CHILDREN WITH SUBMUCOUS CLEFT PALATES.**

J.-H. Lenz, K.K.H. Gundlach, H.-E. Bernd, A. Dieckmann

Department of Oral and Maxillofacial Plastic Surgery, Rostock University, Rostock, Germany

Objective: Acquisition of correctly speaking needs correct morphology and function of the speech producing organs. Origin and orientation, tonicity and effectiveness of velar muscles are deficient in submucous palatal clefts. This leads not only to poor speech performance and dissonant vocal tones but has also consequences regarding primary orofacial functions like breathing, sucking, biting, chewing, and swallowing.

Methods: Retrospective study of 26 children 7-13 y/o with a submucous cleft palate. Typical symptoms and disorders were looked for regarding primary and secondary orofacial functions: Breathing by functional tonometry (acc.to THIELE), swallowing by using the PAYNE technique, speech sounds by using voice samples (acc.to HEIDTMANN) and by the A-I-test (acc.to GUTZMANN) as well as by phonetic hearing evaluation (acc.to BREUER-WEUFFEN). Velopharyngeal competence was controlled endoscopically and Eustachian tube ventilation by otoscopy.

Results: The correct diagnosis had been made only when the children were 2 to 5 years old already (mean 3.5 y/o). Significant findings were: Whilst there was bifid uvula noted in only 52% (13 unoperated patients), there was velar dysfunction in 70% (18 patients), open rhinophonia in 90% (23 patients), Eustachian tube dysfunction in 61% (16 patients), and mouth breathing in 81% (21 patients). Velopharyngoplasty was felt necessary in 16 of these patients.

Conclusions: Early diagnosis is important for patients with submucous clefts. Whilst velopharyngeal incompetence is leading to voice and breathing disorders, the outcome of surgery is important for good functional rehabilitation. Speech therapists should not only look for language acquisition and voice quality but also for the primary functions mentioned above. Interdisciplinary cleft clinics are necessary as soon as possible because when speech therapy will not suffice then surgical repair is necessary.

**O-1405****A COMPARISON OF LOWER-LIP DEFORMITY BETWEEN CLEFT AND NON-CLEFT CLASS III PATIENTS REGARDING ORTHOGNATHIC SURGERY**

JW Choi, HJ Roh, KS Koh, HJ Noh

Department of Plastic Surgery, Seoul Asan Medical Center, Seoul, South Korea

Objective: In terms of the harmonious lips relationship, cleft-related jaw-deformity patients do not receive the same cosmetic benefits as non-cleft class III patients after maxillary advancement and mandible setback. Various possible explanations would be possible. Aim of this study was to analyze and compare the outcomes of orthognathic surgery between cleft and non-cleft class III malocclusion patients focusing on the lip relationship.

Materials and methods: The surgical records of 22 cleft and 22 non-cleft class III malocclusion patients who underwent orthognathic surgeries were retrospectively analyzed. All patients had undergone LeFort I and bilateral sagittal split ramus osteotomies. Lateral cephalometric tracings at three time points, T0, T1, and T2, were superimposed to analyze the horizontal and vertical changes of the soft tissues at seven reference points in the lower face. Changes in soft-tissue thickness between T0 and T2 were measured at the seven soft-tissue reference points: labial superior(Ls),superus media(Sm), inferus media (Im), Labrale inferius(Li), inferior labial sulcus(SLI), soft-tissue pogonion(PG'), and soft-tissue menton (Me) (Fig. 2, red-arrowed lines). The thickness was defined as the shortest distance from the soft-tissue reference point to the bone along a line directed parallel to the VRL or HRL (Fig. 2, black dotted lines). Six of the soft-tissue landmarks were made perpendicular to the VRL: Ls, Sm, Im, Li, SLI, and PG'. The thickness of the Me was measured perpendicular to the HRL.

Results: At preoperation and 6 months postoperation, there were no intergroup differences in SNA ($p=0.365$), SNB ($p=0.712$), and ANB ($p = 0.997$). By constrast, compared with the preoperative lower-lip contours of non-cleft class III patients, cleft patients had a thicker and everted lower lip. In cleft patients, there was a greater degree of postoperative lower-lip disharmony than in non-cleft patients.

Conclusion: This investigation showed us that the lower lip deformity by itself could be the reason of the unsatisfactory achievement of lips relationship in cleft related class III dentofacial deformity after orthognathic surgery while the contribution of the other factors including skeletal location and upper lip tightness seems to be relatively smaller than the pathology of the lower lip itself.



O-1406

COLUMELLAR GROWTH IN BILATERAL CLEFT PATIENTS: AN ANTHROPOMETRIC EVALUATION.

S. Van Roy¹, M. Y. Mommaerts¹, S. G. Reddy², M. Büttner¹

¹ *European Face Centre, UZ Brussels, Brussels, Belgium*

² *GSR Institute of Craniofacial Surgery, GSR Institute of Craniofacial Surgery, Hyderabad A.P., India*

Objectives: The aim of this study was to assess and compare columellar growth after one-stage lip repair in complete non-syndromic bilateral cleft patients.

Methods: We performed a retrospective morpho-analysis of complete non-syndromic bilateral clefts. The population was divided into two subgroups of 19 Belgian patients (11 boys, 8 girls, age 0 months to 15 years) and 45 Indian patients (25 boys, 20 girls, age 3 months to 13 years - sample of Hyderabad). In both groups there were no preoperative corrections like nasoalveolar molding or surgical columella reconstruction. All columellae were evaluated based on a two dimensional photogrammetric analysis.

Results: Overall little growth of the columella was observed. There was difference in growth between the Belgian and Indian patients.

Conclusion: Retrospective photogrammetric growth studies are very difficult to perform due to several confounding factors. An anthropometric prospective multi-centre long-term study would be the solution for adequate evaluation of columellar growth in bilateral non-syndromic cleft patients.

**O-1407****THE APPLICATION OF ANTERIOR MAXILLARY SEGMENTAL DISTRACTION IN CLEFT LIP AND PALATE PATIENTS**

HB Yu, SG Shen, XD Wang, B Fang

Oral and Craniomaxillofacial Science, Ninth People's Hospital, Shanghai Jiao Tong University School of Medicine, Shanghai, China

Objective: Correcting the deformities of patients with CLP with severe maxillary hypoplasia is a great challenge. Conventional maxillary distraction osteogenesis (CMDO) and anterior maxillary segmental distraction (AMSD) were applied in the treatment of severe maxillary hypoplasia secondary to cleft lip and palate (CLP). The aim of this study was to compare the difference between this two osteotomy modalities used in the rigid external distraction (RED).

Patients and methods: Ten patients with severe maxillary hypoplasia secondary to CLP were enrolled in this study. They were randomly divided into two groups. CMDO was performed in 5 patients and AMSD was used in the other 5 cases. Preoperative and postsurgical lateral cephalograms were compared and cephalometric analysis was performed. Independent sample t test was used to evaluate the difference between two groups.

Results: All patients healed uneventfully and the maxillae moved forward satisfactorily. Sella-nasion-point A (SNA) angles, nasion-point A (NA)-Frankfort horizontal plane (FH) angles, overjets and 0-meridian to subnasale (Sn) distances were increased significantly after distraction osteogenesis. There were significant difference about changes of palatal length between two groups ($P < 0.05$). A mean increase of 7.50 mm palatal length was increased in AMSD group. No significant difference about changes of palatopharyngeal depth and soft palatal length was found.

Conclusions: With the ability of increasing palatal and arch length, avoiding changes of palatopharyngeal depth, and preserving palatopharyngeal closure function, AMSD shows its great value in treatment of maxillary hypoplasia secondary to CLP. It is regarded as a promising and valuable technique in this potentially complicated procedure.

Key words: Cleft lip and palate; Maxillary hypoplasia, Distraction osteogenesis; Segmental osteotomy; Velopharyngeal fiction

**O-1408****OPTIMIZATION OF INTEGRATED TREATMENT OF CHILDREN WITH UNILATERAL AND BILATERAL CLEFT LIP**

Y. Stepanova, A. Baindurashvili, M. Tsyplakova

Maxillo-facial and plastic surgery, the Turner Scientific and Research Institute for Children's Orthopedics, Saint-Petersburg, Pushkin, Russian Federation

Objective

Congenital cleft lip and palate is a severe malformation of the maxillofacial area, therefore prevention of postoperative deformations in the treatment of the children with cleft lip is one of the biggest medical problems in pediatric maxillofacial surgery.

Methods

During the period from 2002 to 2012 we treated 756 children with both unilateral and bilateral cleft lip. All the children from the first days of life received preoperative preparation: early orthodontic treatment, massage of the nose and the upper lip.

First surgery - rhinoheiloplasty – is performed on children aged between 2 and 6 months old. Regardless of the type of cleft we carry the surgery out in a single step.

In order to prevent deformations of the nose and lip in the postoperative period we do special massage of the nose and upper lip, carry out orthodontic treatment (to normalize the bite), as well as produce individual custom-made tubes to be inserted in the nasal passage.

Results

Prevention of postoperative deformations in the treatment of children with cleft lip should begin in the preoperative period, eliminating congenital deformity of the upper jaw and improving the condition of the soft tissues. This greatly improves the conditions for initial rhinoheiloplasty. During original surgery should be carried out radical rhinoplasty and eliminated pathological traction of the muscles, created the bottom of the nasal passage and full vestibule of mouth.

Use of massage and practicing mio-gymnastics as well as using individual tubes in the nasal passages during early and late postoperative period not only improves the condition of the postoperative scar, but also stimulates the normal growth of the lip and nose.

The result of using such integrated treatment regimen is that 81% of children with unilateral cleft lip and 50.5% of children with bilateral cleft lip did not require further corrective surgery.

Conclusions

Integrated treatment of children with cleft lips, orthodontic treatment starting from the first days of life to the age when the face is fully formed and conservative measures aimed at preventing rough scarring can significantly improve the results of treatment of children with cleft lip and palate.

**O-1409****SURFACE AREA SCANNING OF CLEFT PALATE DIMENSION – A PREDICTOR OF OUTCOME**

Serryth D Colbert, Helen Extence, David Drake

South Wales and South West Cleft Units, SA6 6NL, United Kingdom

Introduction/Aims – studies investigating risk factors for cleft speech characteristics (CSCs) among patients with cleft palates have been reported. Most focus on surgical technique, demographic factors, or type of palatal cleft. We sought to examine the impact of cleft width on the development of CSCs among patients with cleft palate by scanning the dimension of the cleft palate.

Materials/Methods – We scanned the models of cleft palates repaired in the South Wales Cleft Unit in 2005 and 2006. The ratio of the cleft palate to the surface area of the palate anterior to the inter-tubercular line was calculated. The Cleft Audit Protocol for Speech – augmented (CAPS-A) speech outcomes were recorded at the 5yr audit outcomes on all patients. We investigated for a relationship between speech outcome and cleft palate surface.

Results/Statistics –the relationship between cleft palate surface area and speech outcomes is reported. A critical ratio between cleft palate width to palatal surface is calculated where speech outcome scores were found to change significantly.

Conclusions/Clinical Relevance – this study is the first attempt to specifically quantify cleft width as a risk factor for postoperative speech outcomes. Our novel method of scanning models of cleft palates can be used to predict speech outcomes of palatal surgery, and as such, allow the surgeon to counsel the parents regarding the likely outcome of their child's surgery.



O-1410

STRATEGY OF NASAL RECONSTRUCTION IN ATYPICAL FACIAL CLEFTS

Fouad Ghareeb, Ahmed Tharwat, Dalia Elsakka, Sheref Kashty, Mohamed Megahed, Yaser elskeikh

plastic, burn and craniofacial department, Menoufiya University, Cairo, Egypt

Atypical facial clefts frequently affects the nose leading to either hypoplasia or hyperplasia of structures in this area leading to a central facial deformity which is difficult to treat. Nasal reconstruction involves harmonious cutaneous and skeletal reconstruction. Adequate skin is needed as an external nasal coverage and internal nasal lining and also to create adequate subcutaneous space for bone grafts. Skin reconstruction without placement of an underlying skeletal framework in proper time will eventually lead to skin contracture and inability to achieve nasal projection with bone grafts in a later stage. The literature lacks adequate data about the methodology of skin reconstruction in atypical facial clefts due to rarity of these cases. The author will demonstrate a variety of cases treated by local flaps and tissue expansion and will try to demonstrate the importance of timed bone grafts and skin coverage in these situations.

**O-1411****AN ASSOCIATION BETWEEN NEURODEVELOPMENTAL DELAY AND HEAD SHAPE IN ASIAN INFANTS WITH DEFORMATIONAL PLAGIOCEPHALY.**

Seungchan Kim, Yong Oock Kim

Department of Plastic & reconstructive surgery, Yonsei university college of medicine, Seoul, South Korea

Objective: An association between positional plagiocephaly and developmental problems has previously been noted, but whether existence of the correlation between head shape has not been established. This study aimed to characterize the neurodevelopmental profile of Asian infants with deformational plagiocephaly (DP) and evaluate correlation between head shape and neurodevelopmental delay.

Methods: The study population includes a total of 87 consecutive patients, prospectively followed then retrospectively reviewed. Each infant was assessed using the Bayley Scales of Infant Development-II scoring system. The developmental analysis was categorized as either mental or psychomotor using the mental developmental index or the psychomotor developmental index, respectively. These infants were subcategorized into four groups: accelerated, normal, mild, or severely delayed. The groups were then compared with a standardized Bayley's age-matched population, using chi-square test goodness-of-fit tests. Head shape measurements were done by type of deformity and categorized by side of flattening.

Results: Infants with deformational plagiocephaly were found to have significantly different psychomotor development indexes and mental developmental indexes when compared with the standardized population. With regards to the mental developmental index scores, none of the infants with deformational plagiocephaly were accelerated, 69 % were normal, 26 % were mildly delayed, and 5 % were severely delayed. With regards to the psychomotor development index scores, none of infants were accelerated, 69 % were normal, 31 % were mildly delayed, and 0 % were severely delayed. Distributions of head shape were occipital plagiocephaly (71%) (Right side flattening: 40%, Left side flattening: 31%), brachycephaly (24%), dolichocephaly (5%). Among the delayed developmental performance group 57 % were right side flattening occipital plagiocephaly, 29 % brachycephaly, and 14 % were left side flattening occipital plagiocephaly.

Conclusions: This study indicates neurodevelopmental delay in Asian infants with deformational plagiocephaly more severe than Caucasian infants and right side flattening occipital plagiocephaly showed more severe neurodevelopmental delay tendency.



15. Microsurgical Reconstruction in Head and Neck

O-1501

THE MICROVASCULAR MEDIAL FEMORAL CONDYLE (MFC) FLAP – A NEW TOOL IN MAXILLOFACIAL SURGERY

O.C. Thiele¹, T. Kremer², U. Kneser², R.A. Mischkowski¹

¹ Department of Oral, Maxillofacial and Facial Plastic Surgery, Ludwigshafen Hospital, Ludwigshafen, Germany

² Department of Plastic and Reconstructive Surgery, Burn Center, Trauma Center, BG Ludwigshafen, Ludwigshafen, Germany

Objectives:

The medial femoral condyle flap (MFC) originates from reconstructive hand surgery. In the head and neck area, it provides a new possibility for bone, cartilage and skin reconstruction, with minimal donor site morbidity. The MFC provides a small amount of vascularised bone to reconstruct small to medium size bone defects. Additional harvest of vascularised skin and cartilage is technically possible. The MFC flap can be used as a new flap in the maxillofacial field to bridge the gap between avascular bone transplants and large microvascular bone transplants (fibula, DCIA, scapula).

Materials and Methods:

We use the MFC flap mainly for secondary reconstructions of small to medium size bone defects in highly compromised tissue. We present an analysis of the advantages and disadvantages of the MFC in the maxillofacial area according to our cases. We also discuss the indications for the microvascular MFC in jaw, midface and skull reconstruction.

Results:

The surgical technique of MFC flap raising is relatively easy to acquire. In the head and neck area, a pedicle elongation is usually required to bridge the longer distances to the vascular connections in the neck. The average pedicle length of the descending genicular artery is about 7 cm.

Discussion and Conclusions:

Indications for the MFC in the maxillofacial area could include the reconstruction of the temporo-mandibular joint including the cartilaginous surface, pseudoarthrosis of the jaws, osteonecrosis of jaws and skull and augmentation of bone in irradiated or otherwise compromised tissue. If small bone defects require a safe and reliable osseous, osseochondral or osteocutaneous reconstruction, the MFC can be used as a flap filling the gap between small avascular bone transplants and larger microvascular bone transplant types such as the scapula, fibula or pelvic bone flap (DCIA). If avascular bone transplants have failed, the microvascular MFC can be used to provide a reliable bone reconstruction for small and medium size defects.



O-1502

TEACHING STUDENTS IN CMF - A NECESSARY EVIL OR AN INVESTMENT IN THE FUTURE? PRESENTATION OF A NEW TEACHING CONCEPT

F. Bauer, N. Rommel, N. Rohleder, K. Kreutzer, K.-D. Wolff, J. Weitz, M. Kesting

Department of Oral and Maxillifacial Surgery at the Klinikum rechts der Isar der Technischen Universität München, München, Germany

Objectives

Shortage of young people in medicine will affect many surgical fields in the near future. Especially CMFS is in particular affected; this is due to the requirement of a double qualification which many young physicians deem not attractive. Students are concerned about an excess of theoretical and a lack coherent of practical lessons.

To make students interested in surgery and especially in CMFS, an innovative practice-oriented teaching concept was developed .

Methods

Fourty students were taught neck dissection, skin grafts, RFF, local flaps and microsurgery in eight two-hour sessions.

Each subjects were presented theoretically by surgeons and developed in group work by the students themselves. The practical experience was conveyed by working on pig heads and by active assistance in the operating room.

In the course a newly developed RFF model was used for the first time.

In order to verify the usefulness of this didactically structured course, both a theoretical and a practical examination test with OSCE methods were given at the beginning and the end of the course.

In addition to these tests, at the end of each day of the course the students rated the lecturers, lectures and practical exercises and also provided information about the perceived benefits.

Results

The average range of the theoretical test increased from initially 52% to 80 %. The OSCE results increased from 43 % at the beginning to 97 % at the end of the course.

The result of the student evaluation forms consistently showed positive feedback for the teaching concept. In particular, the students considered its practical elements as a crucial teaching content. Furthermore, the use of the new forearm model was regarded very positively.

Conclusions

The evaluation of the course showed a significant increase in the performance in the written and practical exams. It is noteworthy that complex procedures such as the raising of a RFF could be put across comprehensible mainly through the use of the forearm model. The course concept was able to increase the enthusiasm for the subject among students. This was confirmed by their extremely positive feedbacks.

**O-1503****FACE-LIFT APPROACH FOR MANDIBULAR RESECTION AND RECONSTRUCTION**

A. Ferri, B. Bianchi, S. Ferrari, M. Leporati, D. Lanfranco, E. Contadini, E. Sesenna

University Hospital of Parma, Parma, Italy

Background. Mandibular resection is the mainstay in the treatment of several pathologies involving the jaw, including both malignant and benign lesions. When benign lesions are approached, a limited exposure and less invasive access considering the cosmetic outcome is desirable in order to reduce morbidity and increase the patient's quality of life after surgery. The face-lift approach is widely used for different purposes, including rhytidectomy, parotidectomy, and facial animation procedures, while its use for mandibular resection and reconstruction is not described yet.

Methods. Six patients underwent mandibular resection and reconstruction with free flaps or bone grafts via face-lift approach were retrospectively evaluated with regards to function and cosmesis.

Results. No major complication occurred. No impairment of occlusion or facial nerve function was observed, mouth opening was normal in 4 patient and partially limited in 2. Cosmesis was assessed as excellent by 3 patients and good in the remaining 3.

Conclusions. The face-lift approach is a valid option for resecting and reconstructing benign lesions involving the mandibular ramus, angle, and posterior body.

**O-1504****THE PROBLEM AND SOLUTION OF TWO SYSTEMS FOR MANDIBULAR RECONSTRUCTION USING VASCULARIZED FIBULAR FLAP.**

S. Iwai¹, M. Nakazawa¹, K. Tomita², T. Kubo², R. Hattori³, A. Nishibayashi², M. Fukai², K. Hosakawa², Y. Yura¹

¹ *Department of Oral and Maxillofacial Surgery II, Graduate School of Dentistry, Osaka University, Osaka, Japan*

² *Department of Plastic Surgery, Graduate School of Medicine, Osaka University, Osaka, Japan*

³ *Department of Plastic Surgery, Rinku General Medical Center, Osaka, Japan*

Objective: We have used vascularized fibular flaps frequently for mandibular reconstruction. However, it was difficult to reproduce the morphology appropriate for bone defects including curved regions. To solve these problems, we have been used two systems for mandibular reconstruction, which are 3D-guidance for bone surgery (3D-GBS) and a modified repositioning system (MRS). Here, we compare these two systems and consider the problem and solution of mandibular reconstruction.

Methods: This candidate for study was 45 cases using vascularized fibular flap after mandibulectomy in Osaka University Dental Hospital in the periods from 2004 to 2013. In the periods from 2003 to 2006, MRS was used with seven cases. In the next periods from 2007 to 2010, 3D-GBS was used with 17 cases. And in the recent periods from 2010 to 2013, MRS was used with 21 cases. 3D-GBS is explained briefly below. In the first process it extraction of data of bone surface from 3D-CT. The second process is determination of bone cutting plane by 3D-simulation. The last process is production of Custom made osteotomy template. On the other hand, the details of MRS are published by Int J. Oral Maxillofac. Surg 35:270-273. 2005.

Results: Operation time for 17 cases using 3D-GBS and for 21 cases using MRS have not any differences. The amount of bleeding for cases using MRS tends to be shorter than for cases using 3D-GBS. However, 3D-GBS can make a reproduction of the morphology appropriate for two or more curving points of mandibular bone. Furthermore, at the time of cutting the fibula bone, a template protects the blood vessel stalk of the fibula indirectly. On the other hand, MRS can make a reproduction of the morphology appropriate for one or less curving point of mandibular bone more quickly. MRS is a simple method and so can be used in every hospital.

Conclusion: Since these two methods have the strong point and a demerit respectively, we are going to use according to the kind of case properly. We improve the demerit of 3D-GBS and develop it by pursuing greater accuracy, simplicity, and cost reduction.

**O-1505****CLINICAL APPLICATION OF M. VASTUS LATERALIS FREE FLAP IN HEAD & NECK RECONSTRUCTION**

E. Dedio^{1, 2}

¹ *Department of Maxillofacial Surgery, University Hospital Dubrava, Zagreb, Croatia*

² *School of Medicine, University of Zagreb, Zagreb, Croatia*

Objective: Our aim is to evaluate the clinical application of m. vastus lateralis free flap in head and neck reconstruction.

Methods: We reviewed retrospectively all patients that have been reconstructed with a m. vastus lateralis free flap. All patients were operated in Department of Maxillofacial Surgery, University Hospital Dubrava, Zagreb, Croatia. Age, gender, diagnosis, indication for reconstruction, reconstructed anatomical unit, flap harvesting time, vessels for anastomosis and outcome were extracted from patient documentation.

Results: From January 2011 till December 2013 eight patients were reconstructed with m. vastus lateralis free flap. There were six males and two females with mean age of 63 years (ranging from 34 to 80). In four patients additionally skin of the anterolateral thigh was harvested as well, based on a separate perforator. In other four patients muscle only free flap was raised. All free flaps survived completely. Six patients underwent primary reconstruction and two secondary reconstruction, all defects were after oncologic resections. Most often the reconstruction included hard palate and midface (4), followed by preauricular skin and parotid region (2). Average flap raising time was 1 hour. Total ischemia time was in fact time needed to perform microanastomosis, on average 38 minutes. Arterial anastomosis was performed most frequently on facial artery and venous anastomosis on side branch of internal jugular vein. Donor site healed without consequences, walking was not impaired after harvesting this flap.

Conclusions: Usually all defects required not only epithelial coverage (skin or mucosa) but also additional volume. We have used m. vastus lateralis as an alternative for m. latissimus dorsi free flap. Flap is relatively easy to raise, without donor site complications, there is no need for repositioning of the patient, simultaneous two team approach is possible. If skin is required it can be raised in the same fashion as for ALT flap, on a musculocutaneous or septocutaneous perforator, allowing for almost independent positioning of the skin from the muscle. This flap is very useful for moderate midface defects after maxillectomies or for extensive preauricular defects involving skin, parotid gland, mandibular ramus resection where not only skin coverage is required but also volume.

**O-1506****THE FORGOTTEN ROLE OF TEMPOROPARIETAL FASCIA FLAP IN MAXILLOFACIAL RECONSTRUCTION**

A. Albustanji¹, N. Al-Omari²

¹ *Maxillofacial surgery, Doctors without borders, Amman project for reconstructive surgery, Amman, Jordan*

² *Plastic Surgery, Doctors without borders, Amman project for reconstructive surgery, Amman, Jordan*

Background: despite the fact that Temporoparietal Fascia Flap (T.P.F.F) is a thin but (hard and highly vascular), pliable flap with good arch of rotation that allows it to reach most of the facial and oral sites, and the fact that it can be harvested with hair-bearing skin or as a vascular bed for a bone graft, cartilage or an implant, its utility for oro-facial reconstruction is often overlooked by the maxillofacial surgeons.

Aim: is to report our experience in the versatile use of the (T.P.F.F), its wide spectrum of application in oral and facial reconstruction, and to describe the surgical anatomy of this flap and its harvesting technique.

Patients and method: between 2010 and 2013, ten young patients (mean age 26 year old) with various types of residual maxillofacial deformities due to bullet injuries (four with maxillary, one with palatal, three upper/lower lip, and two with eyebrow defects) underwent reconstructive surgeries for these residual deformities using (T.P.F.F) either as a vascular bed for a bone graft harvested from the ileum for those with maxillary defects or as a hair-bearing skin for the lip and eyebrow deformities.

Results: nine of ten patients gained very satisfactory results regarding the function by closure the communication between the oral cavity with the nose and/or maxillary sinuses and rehabilitating them by dental implants inside the grafted bone in the maxilla, or by achieving more competent lips that prevent saliva drooling and give proper phonation, the patients with eyebrow defects were very satisfied by their appearance after the final revision of the flap at that site. Only one patient with premaxillary defect developed bone graft infection and partial necrosis of the (T.P.F.F), so another (T.P.F.F) was harvested from the other side which developed infection and partial loss despite the aggressive antibiotic therapy.

Conclusion: T.P.F.F flap should be considered by the maxillofacial surgeons in many scenarios in head and neck reconstruction because it is reliable and highly vascular flap and associated with very minimal morbidity of the donor site.

**O-1507****RECONSTRUCTIVE SURGERY OF OROFACIAL DEFECTS**

N.Buric¹, D.Krasic¹, Z.Pesic¹, D.Petrovic¹, M.Buric², G.Jovanovic¹, I.Vuckovic¹

¹ *Oral & Maxillofacial Surgery, University of Nis, Medical faculty and Clinic of Stomatology-, Nis, Serbia*

² *Dep.of orthodontics, Clinic of Stomatology, Nis, Serbia*

Aim: To present the results of application of various techniques and methods in reconstruction of orofacial defects.

Materials and method: a group of 125 patients of both sexes and age ranges from 9 to 74 years have underwent to reconstruction of postoperative defects such as: direct nonsurgical skin adhesion of skin wounds with Dermabond® and Glubran 2® surgical glue (64 patients including CLP postgrafting patients); closure of parotid extraoral salivary fistula with Dermabond surgical glue (4 patients); reconstruction of intraoral mucosal defects by means of buccinator myomucosal arterial flaps (23 patients). Reconstruction of soft and bone tissue with microvascular techniques of the following regions: perinasal region by means of prelaminated submental microvascular flap (1patient); lip reconstruction with microvascular forearm flap(4 patient); chin and lip reconstruction with microvascular prelaminated arm flap(1 patient), tongue reconstruction with free microvascular latissimus dorsi flap after subtotal hemiglossectomy(1 patient); jaws reconstruction with onlay, inlay, free bone grafts (24 patients), maxillary reconstruction with free scapular microvascular graft and mandibular reconstruction with free fibular microvascular grafts (3 patient).

Results: Local infection occurred in 5 patients with mandibular bone reconstruction which is controlled by intense local irrigation and proper antibiotic administration. Partial necrosis occurred in patient with lateral nose reconstruction but without aesthetic and functional significance. In group with surgical glues it's achieved absolute success in primary closure of skin wounds without necrosis, inflammation or hypertrophic scars. Late thrombosis on the 5th post-operative day occurred in 1 patient with microvascular tissue transfer.

Conclusion: It is possible successful reconstruction of lost tissue with the same or similar tissue with minimal morbidity of donor region.



O-1508

AN AESTHETIC RECONSTRUCTION FOR THROUGH AND THROUGH FACIAL DEFECTS (HUNGARIAN PANEL LECTURE)

Lajos Olasz, Gábor Gelencsér, Enikő Orsi, Árpád Szabó, József Szalma

University of Pécs, Pécs, Hungary

The large through and through facial defect can be observed after severe road-traffic accident, gunshot injuries or advanced buccal cancer resection. It is crucial for a surgeon to select the best reconstructive method with the most satisfactory cosmetic and functional results. To close a through and through facial defect, a double or two (internal and external) flaps are necessary.

For a smaller defect the remnant oral mucosa may be sufficient for the internal closure. For larger defect a fasciocutaneous free flap prepared from the forearm was used internally. Externally a platysma-based myocutaneous flap was applied.

The platysma musculocutaneous flap provides good cosmetic and functional results. It covers the substantial facial defect very well and primary closure of the donor site (neck region) is possible.

A novel use of site-limited platysma-based transpositional flap is demonstrated for the reconstruction.

In the literature the use of platysma myocutaneous flap for through and through closure is not discussed.



O-1509

ISCHEMIA INDUCED LESIONS OF MYOCUTANEOUS FLAPS: AN IN VIVO STUDY

W. Eichhorn, M. Wehrmann, R. Smeets, M. Heiland, M. Blessmann, A. Al-Dam, A. Gröbe, L. Kluwe, H. Hanken

University Medical Center Hamburg-Eppendorf, Department of Oral- and Maxillofacial Surgery, Hamburg, Germany

Objective

After four to six hours of global normothermic ischemia, irreversible lesions of muscle, subcutis, dermis and epidermis are found. The aim of this study is to investigate the structures most susceptible to ischemia and to identify structures with the highest ischemic tolerance, respectively.

Methods

Twenty myocutaneous rectus abdominis flaps were harvested bilaterally, varying from 5x10 cm to 5x15 cm in size in an animal model (n=20 flaps in 10 pigs). All flaps were pedicled on the superior epigastric vessels and a global warm ischemia was induced by clamping the artery for 6 hours. On the day of operation, first, third, fifth, seventh and tenth postoperative day biopsies were taken for histomorphometric assessment.

Results

In muscle tissue, two hours after reperfusion evidence of necrosis, such as cell edema, loss of striation and isolated karyolysis was examined. In contrast to these findings, subcutis, dermis and epidermis showed only minimal alterations.

Conclusions

Early ischemic lesions in pedicled transplants can occur beneath an unaltered epidermis. Despite a necrosis of the surrounding muscle tissue, vessel perforators remain intact. The ischemic tolerance of pedicled musculocutaneous transplants is limited by the muscle tissue.



16. Orthognathic Surgery

O-1601

MAXILLARY DISTRACTION IN CLEFT PATIENTS AND EFFECTS ON SKELETAL STABILITY AND SPEECH

M Sjöström¹, J Enfält², Z Flaieh³

¹ Umeå University, Department of Oral and Maxillofacial Surgery, Umeå, Sweden

² Norrland University Hospital, Speech and Language clinic, Umeå, Sweden

³ Umeå University, Tandläkarprogrammet, Umeå, Sweden

Objective: Cleft lip and palate (CLP) can affect appearance, dental arch relationships, facial growth and speech development. The surgical treatment will affect the normal growth of the maxilla. Our aim was to conduct a retrospective pilot study on the effects of intraoral maxillary distraction technique on skeletal stability and speech outcome among five CLP patients.

Methods: Five patients (3 male/2 female) had previously undergone intraoral maxillary distraction (Median age 19 years) for improvement of the occlusion and maxillary hypoplasia. The change in skeletal position for the maxilla were analysed with cephalometric analysis of SNA, ANB, NL/NSL, on lateral cephalograms. Speech, resonance and velopharyngeal function were evaluated before and after the distraction treatment.

Results: The amount of distraction varied between 4.5 mm to 17.5 mm, with a mean value of 9.6 mm. Analysis of the cephalometric values showed significant difference between the pre- and post-distraction measurements in all five patients and a stable sagittal skeletal situation during the post-operative follow up period. Pre- and post-distraction examinations of speech and resonance showed increased hypernasality and normalisation of articulation errors in three patients.

Conclusions: The result from the cephalometric analysis indicates that maxillary distraction with advancement of the maxilla in CLP patients is a skeletal stable and predictable technique. Our results indicate that preoperative evaluations of velopharyngeal function, velopharyngeal insufficiency and speech outcome can predict the risk for postoperative deterioration of these parameters.



O-1602

EVALUATION OF THE EFFECTS OF SURGICAL ASSISTED RAPID MAXILLARY EXPANSION ON NASOPALATINE CANAL

N. Akay, F. Atil, İD.Kocyigit, U. Tekin, S. Kaman

Oral And Maxillofacial Surgery, Kirikkale University Faculty of Dentistry, Kirikkale, Turkey

Nasopalatine canal (NPC) is one of the most important anatomical structures in premaxillary region. Localization and volume of anatomical structures especially NPC changes during the treatment of transverse maxillary deficiency. Preoperative evaluation of NPC's shape, location, variations and nerve tracing should be assessed before maxillary anterior region anesthesia for surgical intervention

The purpose of this study is to evaluate the effects of surgical assisted rapid maxillary expansion on nasopalatine canal (NPC). In the presented study the anatomical changes in canalis incisivus and nerve tracing should be predicted prior to surgery so complications will be guessed and eliminated before surgery.

In this preliminary study, Cone Beam Computed Tomography (CBCT) images were investigated in terms of morphological, dimensional and anatomical changes of NPC prior to surgery and post-operative follow-up. Ten patients were followed up for 3 months. The results will be discussed.

Identification of the NPC with two- and three-dimensional imaging techniques maybe thought to be important in facilitating surgical management and preventing possible complications

**O-1603****FACIAL FEMINIZATION SURGERY: GENDER IN THE BLENDER.**

M. Van Genechten, M. Büttner, M. Mommaerts

European Face Center, University Hospital of Brussels, Brussels, Belgium

Facial feminization surgery (FFS) includes every surgical procedure which aims to change a face with male features into a face with female features. The primary intent of FFS is not to rejuvenate the face or to make a face more beautiful. Although rejuvenation as well as beauty is desirable in this type of facial surgery, the primary goal of FFS is to feminize the face. FFS is most often carried out on transgender individuals.

Objective: To review literature on the different techniques to feminize the face and to review which techniques are most predictive towards feminizing the face.

Methods: Literature was obtained through literature research.

Results: When gender identity or gender expression differs from birth gender, society can put very restrictive boundaries on an individuals walk of life. FFS can put the inside in tune with the outside as well as with the gender norm that is imposed by society. The upper third of face is most likely to be the most important region in gender identification. Since the surgical goal is to create a face that always passes as female, it is important to know which procedures feminize the face most significantly.

Conclusion: We situate the transgender population in history and we discuss the gender-specific facial features and a variety of hard tissue and soft tissue surgical procedures to feminize the face. We identify those procedures that tend to be more predictive in changing the face towards a more feminine appearance.

**O-1604****VALIDATION OF A WEARABLE SYSTEM BASED ON AUGMENTED REALITY FOR MAXILLOFACIAL BONE SURGERY**

G. Badiali¹, V. Ferrari², F. Cutolo², C. Freschi², D. Caramella^{2, 3}, A. Bianchi¹, C. Marchetti¹

¹ Department of Oral and Maxillofacial Surgery, University of Bologna, Bologna, Italy

² EndoCAS, University of Pisa, Pisa, Italy

³ Department of Radiology, University of Pisa, Pisa, Italy

OBJECTIVE

To present a newly designed localizer-free head-mounted wearable system based on Augmented Reality for maxillofacial bone surgery.

METHODS

The head-mounted wearable system for augmented surgery was developed as a stand-alone video-see-through device and the visual features were adapted to maxillofacial bone. The system was designed to show the virtual planning overlaying the real patient. A method to perform wafer-less augmented-reality assisted bone repositioning was implemented. Then, in vitro test was conducted on a physical replica of a human skull, where the augmented reality system was used to perform LeFort1 maxillary repositioning. Accuracy was measured with the aid of an optical navigation system comparing expected to achieved position in a three-dimensional environment. Data were analyzed for three different planning of increasing complexity and for nine different operators with increasing surgical skills.

RESULTS

According to the tests, mean error in mm was 1.70 ± 0.51 . Axial errors were 0.89 ± 0.54 mm on the sagittal axis, 0.60 ± 0.20 mm on the frontal axis and 1.06 ± 0.40 mm on the cranio-caudal axis. The easiest planning had slightly lower mean error (1.58 ± 0.37 mm) compared to the more complex ones (medium: 1.82 ± 0.71 mm; hard: 1.70 ± 0.45 mm). No significant difference was noticed among operators, despite the surgical experience. Feedbacks from the surgeons were acceptable: the tests were all completed within 15 minutes and the tool was reported as a comfortable and feasible system.

CONCLUSION

We used a new localizer-free head-mounted wearable stereoscopic video see-through display and we developed a useful strategy to show the surgeon the augmented reality information. According to our results, the device appears to be an accurate tool for wafer-less maxillary repositioning. On the basis of these results, this method can be potentially extended to many surgical procedures on the facial skeleton. Furthermore, these positive results suggest to proceed with an *in vivo* test to assess system accuracy in real clinical conditions.

**O-1605****EVALUATION OF THE BENIGN PAROXYSMAL POSITIONAL VERTIGO FOLLOWING LE FORT I OSTEOTOMY**

K. Deniz¹, S. S. Soydan¹, A. Ozbal Koc², S. Uckan¹, L. N. Ozluoglu²

¹ Oral and Maxillofacial Surgery, Baskent University, School of Dentistry, Ankara, Turkey

² Department of Otorhinolaryngology Head and Neck Surgery, Baskent University, School of Medicine, Ankara, Turkey

Objective: Orthognathic surgery is widely used to correct congenital and acquired dentofacial deformities. In orthognathic surgery Le Fort I osteotomy is widely used, to correct maxillary hypoplasia, hyperplasia, and in the management of skeletal anterior open bite.

BPPV is a common vestibular end organ disorder characterized by short, often recurrent episodes of vertigo that are triggered by certain head movements mostly in the plane of the posterior semicircular canals. Head trauma is one of the known cause of BPPV.

During the pterygoid osteotomy, the surgical trauma induced by percussion with the surgical mallet and osteotomes, along with hyperextension of the neck, can displace otoliths into the semicircular channel and result in the appearance of benign paroxysmal positional vertigo(BPPV).

The aim of this study was to evaluate the potential risk of BPPV occurrence in individuals who underwent Le Fort I osteotomy

Patients and Methods: A total of 23 patients were studied, with an age range of 18-32 years. Dix-Hallpike manoeuvre, positional tests using VNG and Vestibular Evoked Myogenic Potential(VEMP) tests were performed one week before surgery(t0), one week after surgery(t1) and one month after surgery(t2) and statistically analyzed.

Surgical procedure was Le Fort I osteotomy with advancement(n=11) or combination of advancement and impaction(n=12) with or without mandibular surgeries.

Results: 3 of 23 patients fulfilled the requirements for a diagnosis of BPPV.

Regarding the Dix-Hallpike manoeuvre and positional tests 11 patients had nystagmus during t1 evaluation and 7 had t2 evaluation. The differences between t0 and t1 time was statistically significant(p=0,001). When compared the advancement and advancement with impaction group, no statistically difference was observed in each evaluation period. Regarding the P1 and N1 values of the vemp tests no statistically difference between in each evaluation period.

Conclusions: BPPV is a possible complication of Le Fort I osteotomy. It is most probably due to indirect forces of the osteotomes through the neighboring bones to the inner ear where otoliths are dislodged and move within the semicircular channels, causing vertigo. BPPV should be considered as a diagnosis in patients who underwent Le Fort I osteotomy and surgeons should be aware of this complication.

**O-1606****MODIFIED 3D CEPHALOMETRIC ANALYSIS FOR IMPROVING THE RESULTS OF LE FORT OSTEOTOMY.**

K. Kurakin, A. Drobyshev, E. Lonskaya, N. Drobysheva, A. Glushko, I. Klipa

Oral & Maxillofacial, Moscow State University of Medicine and Dentistry, Moscow, Russian Federation

Introduction: Since computer tomography and especially cone beam computer tomography became affordable to many clinics it is no longer a question to use it in planning of orthognathic surgery. In the last 10 years several 3D cephalometric analyses were invented, all of them are focused on planning of surgical outcome. In our work we have increased the safety and accuracy of performing the Le Fort I osteotomy by inventing four new points which have upgraded 3D analysis.

Materials and methods: For the period of 2013 - 2014 we have observed and treated 40 patients with 2 class of malocclusion. Patients were divided into 2 groups based on face divergence type (24 hyperdivergent and 16 hypodivergent). Examination included standard observation methods with special attention given to CBCT information. We have added 4 new points and 2 linear parameters to existing 3D cephalometric analysis. First two points refer to Alare (left and right) and second two points refer to Palatinum (left and right). Two linear measurements were made between Al and Pal on both sides. These distances determine safe depth of Le Fort I osteotomy and allows to perform it with no risk of damaging descendent palatine arteries.

Results: Total of 80 linear measurements were evaluated and compared. We have defined that there is no statistically significant difference between Al – Pal measurements on the left and right sides in two groups. Distances ranged between 37-38.6 mm on the right side and between 37-38.5 mm on left side. This data allowed us to make a conclusion that the depth of 3 cm is a safe distance for performing Le Fort I osteotomy in adult patients with 2 class of malocclusion.

Conclusion: we recommend to measure Al - Pal parameters in each clinical case in order to perform Le For I osteotomy safely and accurately with no need of using lateral nasal osteotome.

**O-1607****AESTHETIC RESULTS OF ALLOPLASTIC MALAR AUGMENTATION PROCEDURES USED IN CONJUNCTION WITH ORTHOGNATHIC SURGERY**

KM Tekeli, J Tolat, NM Goodger, J McKenzie, CW Hendy

Oral and Maxillo Facial Surgery, East Kent Hospitals University NHS Foundation Trust, Ashford, United Kingdom

Objective:

Treatment of skeletal class III deformities with orthognathic surgery can result in very favourable outcomes. Facial harmony can be optimised depending on the degree of deformity. However, when there is a coexistent malar hypoplasia, addressing the jaw relationship in sagittal plane may not be adequate to provide optimal facial aesthetics. We evaluated the impact of alloplastic malar augmentations simultaneously carried out in conjunction with orthognathic surgical procedures.

Methods:

Retrospective analysis of our facial deformity database revealed series of cases where simultaneous malar augmentation was carried out in conjunction with bimaxillary surgery. Preoperative pre orthodontic pictures were evaluated to assess the degree of malar hypoplasia in addition to two dimensional cephalometric analysis. Following treatment, post orthodontic pictures were assessed for the projection of zygomas and feasibility of using malar augmentation procedures in improving harmony and attractiveness of the face.

Results:

In our case series, we had favourable outcomes in relation to the overall harmony of facial bones. The objective assessment with measurements showed an improvement in malar position and periorbital aesthetics. We preferred to keep the malar augmentation relatively minimal in order avoid disguising the correction of the hypoplastic maxillae by the main orthognathic surgical procedure. We did not have any positional deformity or infection of the alloplastic material in our series. The additional time for surgery was around 30 minutes for bilateral alloplastic augmentation and the additional cost was minimal.

Conclusion:

If cases are selected appropriately, simultaneous malar augmentation can widen the face, improve the overall harmony of facial features and enhance the results after orthognathic surgery. It may result in a youthful energetic appearance and the position of zygomatic bones is closely associated with the attractiveness of the face. Alloplastic augmentation techniques can be very useful in managing facial deformity provided that set surgical protocols are followed to keep complication rates minimal.



O-1608

MANDIBLE REDUCTION

Minbum Kang. M.D.¹, H.S.Lim M.D.², Y.H.Joh M.D.²

¹ *Romian Plastic surgery clinic, 8F, Glass Tower, Seoul, South Korea*

² *Departments of Plastic and Reconstructive Surgery, Ajou University School of Medicine, Suwon, South Korea*

Objective: Recently, Asian person want to have round and small face. so mandible and zygoma reduction for facial contouring are increasing. the author introduce the procedures what have undergone in Korea and cases

Methods: From 2007-2012 years, 588 cases of mandible reduction and were analized. 178cases of mandible reduction with postauricular incision method will be introduce too.

Results:most patients was satisfied with cosmetic results, the author will introduce various mandible reduction techniques including intraoral incision, postauricular incision and endoscopic assisted

Conclusions: various techniques have been tried for facal contouring surgery in Korea.

**O-1609****COMPARISON OF PIEZOSURGERY AND TRADITIONAL SAW IN BIMAXILLARY ORTHOGNATHIC SURGERY**

G. Spinelli, F. Arcuri, D. Rocchetta, M. Conti, T. Agostini

Maxillofacial Surgery, "Careggi-CTO Hospital", Florence, Italy

OBJECTIVE

Piezoelectric device is commonly used in craniomaxillofacial surgery; different procedures have been described by several authors. We have hypothesised that piezoelectric surgical device could permanently replace traditional saws in conventional orthognathic surgery.

METHODS

Twelve consecutive patients who underwent bimaxillary procedures were involved in the study. In six patients the right maxillary and mandible osteotomies were performed using traditional saw, whilst the left osteotomies by piezoosteotomy; in the remaining six patients, the surgical procedures were reversed. Intraoperative blood loss, procedure duration time, incision precision, postoperative swelling and hematoma, and nerve impairment were evaluated to compare the outcomes and costs of these two procedures.

RESULTS

Compare to traditional mechanical surgery, piezoosteotomy showed a significant intraoperative blood loss reduction of 25% ($p=0.0367$), but the mean surgical procedure duration was longer by 35% ($p=0.0018$). Moreover, the use of piezoosteotomy for mandible procedure required more time than for the maxillary surgery ($p=0.0003$). There was a lower incidence of postoperative hematoma and swelling following piezoosteotomy, and a statistically significant reduction in postoperative nerve impairment ($p=0.003$).

CONCLUSION

We believe that piezoelectric device allows surgeons to achieve better results compared to a traditional surgical saw, especially in terms of intraoperative blood loss, postoperative swelling and nerve impairment. This device represents a less aggressive and safer method to perform invasive surgical procedures such as a Le Fort I osteotomy. However, we recommend the use of traditional saw in mandible surgery because it provides more foreseeable outcomes and well controlled osteotomy. Further studies are needed to analyse whether piezoosteotomy could prevent relapse and promote bony union in larger advancements.

**O-1610****ORTHOGNATHIC SURGERY POSSIBILITIES AT PATIENTS WITHOUT PRE-ORTHODONTIC TREATMENT**

Sami Salihu, Mergime Prekazi, Fellanza Gjinolli, Agreta Geci, Nijazi Heta, Enis Gllareva, Leminot Salihu

Department of Maxillofacial Surgery, University Clinical Center of Kosovo, Pristina-KOSOVO, Albania

Aim of the Study: Is to show the possibilities of correction of these deformities only with surgical treatment, without pre- orthodontic treatment.

Material and Methods: We have analyzed 103 patients operated in the Clinic of Maxillofacial Surgery and at ORO-FACE Polyclinic in Ferizaj.

Results: Females were 69% of patients. The interventions most often have been made in mandible in 43% of cases, in the maxilla 22.% and bimaxillary intervention was 35 %. The most common anomaly that has been treated was progenia, aperthognathia, retrognathia, laterogenia, retrogenia, protrusion of maxilla and different bimaxillary anomalies. Overall number of patients 53.4% of them have declared that they have functional problems during chewing food, 20.3% the main problem was speech and 26.2% have said just aesthetic concerns, but the motive for the surgical intervention differ from the real concern of the patients and in the most cases the patients have done the intervention for the aesthetic reason 85.4, due to improvement of chewing function 8.2% and speech problems in 6.2% of the cases. With surgical interventions have been very satisfied 85.4% of patients, partially satisfied were 10.6% and 4% were not satisfied with the intervention. Post-operated complications were: relapse in 6.7% of cases, in 73.7% of cases have had evident enervation of sensibility on n.alveolaris inferior who persisted from 7 days to 3 months after intervention. In 11.6% of the cases have had pain on TMJ that had persisted three weeks to 9 months after opening the mouth. We had one accidental rupture of the N. alveolaris inf. and one case the rupture of N. mantalis.

Conclusion: Orthognatic surgery offers good opportunities for improvement of the functional and aesthetic problems for the patients, but the lack of the pre operative orthodontic treatment may not be compensated always only with surgery.



17. Evidence Based Medicine

O-1701

EFFECTS OF LOW LEVEL LASER THERAPY ON BISPHOSPHONATE-INDUCED OSTEONECROSIS OF THE JAW IN A RAT MODEL.

Á. Janovszky¹, L. Major¹, A. Szabó², D. Garab², M. Boros², J. Piffkó¹

¹ Department of Oral and Maxillofacial Surgery, University of Szeged, Szeged, Hungary

² Institute of Surgical Research, University of Szeged, Szeged, Hungary

Objective: Bisphosphonates (BIS) have many positive effects in patients suffering from osteoporosis and bone metastasis, but BIS-related osteonecrosis of the jaw (BRONJ), a serious adverse reaction with unknown pathomechanism, greatly limits the therapeutic accessibility. Low level laser therapy (LLLT) is a promising clinical approach in the treatment and prevention of BRONJ, but the underlying factors behind its beneficial effects are not fully known. Our present aim was to develop a new experimental rat model of BRONJ and to investigate the mechanism of action of LLLT.

Materials and Methods: Thirty-six 12-week-old male Sprague-Dawley rats were randomly allotted into vehicle- or BIS-treated (i.v. zoledronate, 80 mg/kg once a week, over eight weeks) groups. Extractions of first molars were performed at the right side of the mandible on the third week. This protocol was performed in the presence and absence of local LLLT (GaAlAs diode laser, 3.2 J, 8 times on every second day starting on the day of tooth extraction). Incidence of osteonecrosis was assessed macroscopically and by microCT.

Results: The applied BIS treatment did not cause major disturbances in the development of the rats or spontaneous formation of BRONJ. LLLT alone did not cause any mucosal reactions either. At the tooth extraction sites, however, gingival healing was disturbed in ~80% in the BIS-treated animals, and this was never seen in the vehicle-treated counterparts. These macroscopic changes were also supported by microCT analysis whereas marked deterioration of bone regeneration (evidence of osteonecrosis) was proven in response to BIS treatment. At the contrary, incidence of BRONJ was only ~40% in the BIS+LLLT group at the site of tooth extractions.

Discussion and Conclusion: This animal model offers a good opportunity for investigations of pathological processes of the jaw and the potential effects of LLLT in this scenario. This model may provide a good basis of future studies investigating the underlying mechanisms of LLLT against the development of BRONJ.

Grant support: TÁMOP 4.2.4.A/2-11-1-2012-0001, TÁMOP 4.2.2A-11/1/KONV-2012-0035, TÁMOP 4.2.2A-11/1/KONV-2012-0073, OTKA 109388.

**O-1702****COMPARISON OF HAEMOSTATIC EFFECTS OF SURGICEL AND CHITOSAN USING A MODEL OF EXODONTIA IN PATIENTS WITH CIRRHOSIS**

A. Calis¹, C.Efeoglu¹, E. Cagiran², H. Koca¹, Z. Karasu³, H. Boyacioğlu⁴

¹ Oral Surgery, Ege University, School of Dentistry, İzmir, Turkey

² Anesthesiology Department, School of Medicine, EgeUniversity, İzmir, Turkey

³ Gastroenterology Department, School of Medicine, EgeUniversity, İzmir, Turkey

⁴ Statistics Department, School of Science, İzmir, Turkey

Background and objectives:

The management of patients with cirrhosis requiring dental extractions is complicated, due to increased risk of postoperative bleeding. Topical haemostatic agents are usually required to control bleeding in these cases, as an adjunct to systemic measures of haemostasis.

Surgicel's biocompatibility and potency in controlling bleeding is well documented. Chitosan is a powerful haemostatic agent that can control high volume arterial bleeding. Biocompatibility of chitosan can be a problem in soft tissues due to local side effects in general and cardiovascular surgery, however it is known to be biocompatible and effective as a bone substitute. Therefore utilisation of chitosan for packing extraction sockets to control bleeding can potentially be potentially be a uniquely. However the application of chitosan in extraction sockets to control bleeding is not well studied.

The aim of this randomised prospective clinical study is to compare the haemostatic efficacy of chitosan and surgicel in patients with cirrhosis after tooth extraction.

Methods:

Twenty patients with cirrhosis scheduled for tooth extraction under local anaesthesia, were prospectively included in the study in a randomized fashion. Appropriate inclusion and exclusion criteria were set. Patients were randomly assigned to receive either Surgicel or Celox in their extraction sockets.

Cirrhosis classification, bleeding time (after extraction), trauma score and corrected bleeding time (during post-operative reviews) were recorded. Appropriate statistical evaluations were done.

Results:

Study groups had equal number of teeth extractions (25 teeth each). There were no statistically significant differences between the groups with respect to patient demographics, cirrhosis classification, trauma score, bleeding time and corrected bleeding time. ($p>0.05$).

None of the patients had serious post-operative bleeding requiring hospitalization. No side effects or complications due to study agents were noted.

Conclusion:

Manipulation of Surgicel is easier than Celox and costs less. On the other hand Celox seems to be more effective in controlling diffuse bleeding especially from soft tissues. Both haemostatic agents are effective and safe for use after tooth removal, and an experienced dental surgeon may prefer one over the other depending on the origin of bleeding.

**O-1703****IS MASPIN EXPRESSION ON TUMOR BUDDING ABLE TO BE A PROGNOSTIC FACTOR IN SQUAMOUS CELL CARCINOMA?**

T. Fukawa¹, H. Kajiya², Y. Katsumata¹, Y. Nagaoka¹, M. Sasaki¹, K. Naganuma¹, K. Nagashima¹, T. Ikebe¹, S. Ozeki¹, A. Soltermann³

¹ *Oral and Maxillofacial Surgery, Fukuoka Dental College, Fukuoka, Japan*

² *Cell Biology, Fukuoka Dental College, Fukuoka, Japan*

³ *Clinical Pathology, University Hospital Zurich, Zurich, Switzerland*

Maspin, a non-inhibitory member of the serine protease inhibitor superfamily, which was originally identified as a gene down-regulated in invasive breast cancer has been proposed as a class II tumor suppressor. Generally, early observations suggested a reduced maspin expression has been associated with cancer progression. However, recent review revealed that this correlation was more complicated than was originally proposed. Recent study suggested maspin has a different function on different tumor and the different position of maspin in cytoplasm or its epigenetic modifications may explain the different behavior of the expression of maspin between tumors. However, little significant experimental data support the role of maspin as a tumor suppressor, clinical data regarding the prognostic implications of maspin expression have led to conflicting results. To help resolving this complication we examined relations clinical data with maspin expression on Squamous cell carcinoma (SCC) by using Tissue Micro Array.

Objective: The aim of this study was to analyze the percentage of solid tumor nest, number of tumor budding and construction of stroma per total surface and to elucidate the behavior of maspin expression in these respective compartments in relations EMT markers and its prognostic significance.

Results: Our results indicated that maspin expression on tumor budding could be a poor prognostic factor, on the other hand, maspin expression on solid tumor nest was to be a better prognostic factor in patients with SCC.

Conclusion: This study suggests that maspin may play different roles in the different cell components on SCC.

**O-1704****ORAL SURGERY IN HEMOPHILIA PATIENTS - CAN FACTOR REPLACEMENT THERAPY REPLACE THE SUTURE?**

A. Hirschhorn¹, G. Kenet², A. Lubetsky², N. Givol³

¹ Oral & Maxillofacial surgery, Sheba Medical Center, Tel hashomer, Israel

² National Hemophilia Center, Sheba Medical Center, Tel hashomer, Israel

³ Oral & Maxillofacial surgery, Soroka University Medical Center, Beer-Sheva, Israel

Objective: The risk of bleeding during dental procedures is certainly increased in patients with hemophilia. We aimed to evaluate potential and targeted therapy, correlated with hemophilia severity and procedural risk in order to reduce post-operative bleeding risk.

Methods: Patients with Hemophilia who were treated at the Oral and Maxillofacial surgery clinic at Sheba Medical Center between the years 1996-2012 comprised the study cohort. Data collected included disease history and severity, peri-operative factor concentrates therapy, local hemostatic agents' application, systemic transhexamic acid use and outcome. Bleeding was defined as excessive bleeding during or within 20 days following procedure.

Results: Dental procedures (n=1968) of 125 patients were studied. Patients bleeding risk score was calculated according to severity of hemophilia with or without presence of inhibitor, presence of co-morbid coagulopathy and the type of dental procedure. 98 patients received prophylactic factor replacement transfusions, 5 patients (medium risk) got DDAVP pre-procedure and 72 received systemic transhexamic acid- which was the only systemic therapy for low risk patients, whereas 83 patients were treated by a combination of the above mentioned therapies. Meticulous surgical local hemostasis was applied and fibrin glue added at physician's discretion. 34 patients undergoing a total of 880 procedures suffered 40 post-operative bleeding events that necessitated further dental and/or hematologic intervention. Among risk factors for delayed bleeding the use of fibrin glue was significantly ($p=0.05$) associated with the risk of post procedural bleed. The risk of the procedure (high Vs low risk) was found to be the most significant factor predicting postoperative bleeding.

Conclusions: Patients with hemophilia may be safely treated if meticulous hemostasis is applied, along with fibrin glue and systemic therapy as required. Factor transfusions are not mandatory and should be applied considering the procedure related risk and the patient's calculated hematological risk for bleeding.



O-1705

MANDIBULAR BONE DURING BISPHOSPHONATES TREATMENT: AN EXPERIMENTAL STUDY

L. Catalfamo, M. Runci, J. Matyasova, F.S. De Ponte

Department of Maxillo-Facial Surgery, University Hospital Messina, Messina, Italy

Objective: Bisphosphonates are stable analogues of pyrophosphate with a P-C-P structure and 2 side chains attached to the carbon atom. Intravenous bisphosphonates are primarily used and effective in the management of cancer-related conditions in the context of solid tumors, such as breast cancer, prostate cancer, and lung cancer. Moreover bisphosphonates are subministrated to patients with metabolic bone diseases such as osteoporosis and Paget disease. Bisphosphonate-associated osteonecrosis of the jaws (BONJ) is a really complication of intravenous bisphosphonate therapy in patients with cancer. It is common knowledge that the jaws have a greater blood supply than other bones and a faster bone turnover rate, related both to their daily activity and presence of teeth which mandates daily bone remodeling around the periodontal ligament; moreover bisphosphonates toxicity to epithelial cells has been well documented. On this basis, the aim of this study is to evaluate the pathological changes of the mandibular bone and oral mucosa in patients treated with bisphosphonates, during osteoporosis treatment and during chemotherapy from solid cancer.

Methods: In details we have analyzed, by immunohistochemical and scanning electron microscopic methods, intrasurgical biopsy of mandibular bone and of gingival mucosa in patients treated with bisphosphonates both intravenous and oral via after 24 and 36 months from assumption of drugs.

Results: Our results show in all patients great area demineralization bone mixed to normal bone, moreover in the demineralization bone it's possible to observe numerous micro lacunae. In the correspondence samples of gingival epithelium we observe important lesions of histological structure and the disappearance of protein adhesion system cells to cells and cells to matrix.

Conclusions: On this basis it is intriguing to speculate that the adverse effects of BP on oral epithelium may play a critical role in the initiation of BONJ an "outside-in" hypothesis.



O-1706

THE ASSOCIATION OF CYP2C8 AND RBMS3 POLYMORPHISMS WITH BRONJ IN PATIENTS WITH SOLID TUMORS TREATED WITH ZOLENDRONIC ACID.

F. Tzermpos¹, K. Pliarchopoulou², K. Florou², K. Theologies- Lygidaki ¹, I. Iatrou¹, D. Pectasides²

¹ *Clinic of Oral and Maxillofacial Surgery, National and Kapodistrian University of Athens, Athens, Greece EL*

² *Oncology Unit, 2nd University Department of Internal Medicine, Ippokration General Hospital, Athens, Greece EL*

Introduction: Jaw osteonecrosis is related to intravenous or oral administration of bisphosphonates (BPs). However, not all BP users develop osteonecrosis of the jaw (ONJ) suggesting that environmental and/or genetic variation confer susceptibility or resistance. To date, cytochrome CYP2C8 polymorphism (rs1934951) in multiple myeloma patients and the polymorphism rs17024608 of the RBMS3 gene have been shown to be independent prognostic markers associated with BRONJ.

The aim of this study was to examine the association of CYP2C8 and RBMS3 polymorphisms with BRONJ in a Greek population of cancer patients with solid tumors treated with zoledronic acid.

Materials and Methods: Blood samples were collected from 53 cancer patients with bone metastases who developed BRONJ after treatment with bisphosphonates intravenously. Blood samples were also collected from 50 cancer patients who had been under treatment for at least one year and had not developed BRONJ. Demographic and treatment data were also collected for each patient. The PCR products were evaluated for the presence of the above mentioned polymorphisms and compared between cases and controls (patients with and without BRONJ development).

Results: The majority of the patients were women and the most frequent malignancy was breast cancer (56%). The meantime between the initiation of treatment and BRONJ development was 24 months. The presence of the heterozygous type of CYP2C8 gene was significantly associated with BRONJ development. This was also confirmed in multivariate analysis, where a 2.2 times higher risk of BRONJ development in the heterozygous type patients was demonstrated.

Conclusions: Jaw osteonecrosis is a complication of bisphosphonates treatment and is associated with environmental and genetic factors. The heterozygous type of CYP2C8 gene is associated with 2.2 higher risk of BRONJ development.

**O-1707****SUPER-SELECTIVE TARGETED EMERGENCY ENDOVASCULAR TREATMENT (STEET) OF MAXILLOFACIAL HAEMORRHAGE**

EA Gruber, L Al-Qamachi, F Domah, J Jadun, D Gahir, P Grime

Oral and Maxillofacial Surgery Department, University Hospital of North Staffordshire, Stoke on Trent, United Kingdom

Objective

Super-selective targeted emergency endovascular treatment (STEET) is a rapid and effective strategy for the diagnosis and management of significant bleeding from the head and neck region. This low morbidity procedure has been described as a safe alternative to surgery in a selected group of patients. Embolization therapy may be either in the form of embolization particles or mechanical detachable or non-detachable coils. Our institute employs both forms of STEET to control emergency bleeding from the head and neck region.

The aim of this study was to investigate the uses, efficacy and safety of this therapy.

Methods

Radiology data and patients notes were retrospectively reviewed. Eight patients were treated using this technique over a three year period.

Results

All eight patients presented with significant bleeds, which could not be controlled by conventional, local methods. Four of them had squamous cell carcinoma of the tongue base and required endovascular embolization with multiple coils to occlude branches of the feeding lingual artery. One patient presented with a cutaneous fistula post-radiotherapy that required endovascular occlusion of the common carotid artery. Another patient had a post-surgical pseudo-aneurysm that required endovascular coil embolization. Chemical embolization was performed on a case with nasopharyngeal angiofibroma. The last patient of the series required both chemical and coil embolization for a posterior neck mass with increasing haematoma.

All the aforementioned procedures were successful in controlling the index bleeding. There was no incidence of re-bleeding nor complications related to the procedure. Due to this technique, surgery and its related morbidities were avoided.

Conclusions

In our series, STEET was demonstrated to be a safe and effective option for controlling maxillofacial haemorrhage, due to a variety of causes, in a selected group of patients.



O-1708

BACTERIAL SPECTRUM AND RESISTANCE RATE IN ODONTOGENIC INFECTIONS

A.W. Eckert, Louise Just, Dorothea Wilhelms, Ulrike Schumacher

Department of Oral and Maxillifacial Plastic Surgery, Martin-Luther-University Halle-Wittenberg, Halle (Saale), Germany

Odontogenic infections play a pivotal role in oral and maxillofacial plastic surgery. Increased resistance rates against common antibiotics limit its clinical use. Therefore, it was the aim of the present investigation to evaluate bacterial spectra and resistance rates involved in odontogenic infections.

A total of 46 odontogenic infections was analyzed in a prospective study. Pus samples were collected under sterile conditions and collected into a transport medium [Stuart medium, Copan®, Italy] and transported to the microbiological laboratory within four hours. All samples were microbiologically processed for aerobic and anaerobic bacteria in the laboratory under standardized conditions. The resistance analyses were performed for: Penicillin G/V, Doxycyclin, Erythromycin, Clindamycin and Amoxicillin/Clavunatic acid.

There were 32 men and 14 women. The youngest patient was 18 years, the oldest 82. A total of 158 bacterial strains was detected (3.43 strains per specimen). Aerobe-anaerobe mixed infections dominated, only 3 cases were pure aerobically, 4 pure anaerobically. One pus sample was sterile. The predominant aerobes were: *Streptococcus* [36 isolates] and *Neisseria* [7 isolates]. The most frequent anaerobes were member of the genera *Prevotella* [27 isolates], *Fusobacterium* [18 isolates] and *Peptostreptococcus* [15 isolates]. The resistance rates against aerobes were: Penicillin G 16.7%, Doxycyclin 52.4%, Erythromycin 41.2%, Clindamycin 16.7%. The resistance rates against anaerobes were as follows: Penicillin G 6.1%, Clindamycin 2.17 %. All aerobes and anaerobes were susceptible against Amoxicillin/Clavulanic acid.

The resistance rates rised up in all antibiotics out of Amoxicillin/Clavulanic acid. Penicillin G increased (+10%), Clindamycin (+8%) in aerobic spectrum compared to a former investigation 10 years ago. The resistance rate of Penicillin G decreased in anaerobic spectrum (-2%), whereas clindamycin presented nearly comparable antimicrobial activity (2.17 % to 1.4% in a former investigation). Pigmented *Prevotella* were resistant to Penicillin G and members of the genus *Streptococcus* were resistant to Clindamycin. Based on our present results we recommend Penicillin G, Clindamycin and Amoxicillin-Clavunatic acid as antibiotics of first choice in odontogenic infections.



O-1709

SYPHILIS: A TIMELY REMINDER OF AN OLD EPIDEMIC RESURGENCE IN THE 21TH CENTURY

S. Girgis, P. Lankathilake, E. Ali, R. Qureshi, A. Ezsias

Homerton University Hospital NHS Foundation Trust, London, United Kingdom

Over the last 500 years Syphilis was a common epidemic until the 1950s. It was nearly completely eradicated through antibiotics, with penicillin being its most effective treatment.

Although it is often thought to be a disease of the past, it has recently shown resurgence. Generations of doctors and dentists have hardly seen it, and therefore are unfamiliar with its signs and symptoms. The classical presentation of syphilis is often masked by antibiotics prescribed for other reasons.

Unusual lesions caused by undiagnosed and untreated syphilis are the most common extra-genital signs of infection and present a diagnostic challenge. Syphilis has an ability to imitate different diseases, with numerous and complex manifestations including atypical oral ulcerations. Syphilis has always been known as the "great imitator".

We present second stage syphilis in a 47 year old male with the difficulties to establish a correct diagnosis.

**O-1710****GIANT CELL ARTERITIS REFERRALS TO ORAL AND MAXILLOFACIAL DEPARTMENT; WHEN SHOULD WE BIOPSY THE**

O.Hussain, A.McKay, K.Fairburn, P. Doyle, R. Orr

Oral and Maxillofacial Surgery, Chesterfield Royal Hospital, Chesterfield, United Kingdom

Introduction

Temporal Artery Biopsy (TAB) enables histopathological diagnosis of Giant Cell Arteritis (GCA); it has a specificity of 100% and a sensitivity of 87%. Alternatively, clinical diagnosis utilising the five-point scoring of 1990 American College of Rheumatology (ACR) classification offers a specificity of 91.2% and sensitivity of 93.5%. This study aims to determine if some patients are referred for TAB unnecessarily.

Method

All referrals made to the department of oral and maxillofacial surgery over a 32 month period were retrospectively audited. The ACR classification was used to determine whether the patient had a clinical diagnosis of GCA at referral (ACR score ≥ 3 of 5). This was then compared against the TAB result.

Results

100 referrals were received resulting in 98 TAB procedures - 15 were positive for GCA, with 2 results unavailable. Of those patients with a positive biopsy 87% already had a clinical diagnosis of GCA at referral based upon the ACR classification. Our mean specimen length is 30mm. Our TAB results gave 20% sensitivity (CI: 11 % to 32 %), 95% specificity (CI: 86 % to 99%), 87% positive predictive value and 47% negative predictive value. Reasonable correlation ($r = 0.6$) of higher ACR scoring and positive TAB results is noted.

Conclusion

Given the findings, we recommend indications for TAB to aid diagnosis of GCA. We propose a proforma that prompts the referring physician to consider the need for TAB. Which may improve services, shorten waiting times and in this age of austerity would be a cost saving measure



18. Head and Neck Oncological Surgery

O-1801

THE VERSATILITY OF THE KARAPANDZIC FLAP: A CASE SERIES STUDY

T. A. Teemul, E. Abraham, R. Singh KC, M. R. Telfer

Oral and Maxillofacial Surgery, York Teaching Hospitals NHS Foundation Trust, York, United Kingdom

Objective

The Karapandzic flap is an established technique for reconstruction of large lip defects and in our experience is particularly valuable in repair of defects of the upper lateral lip and those encroaching on the commissures. We present our experience in a case series of 75 patients including assessment of patient reported outcomes.

Method

This is a retrospective study of patients who underwent Karapandzic flap repair for lip defects following cancer resection from 2007 – 2014 in North Yorkshire. A data collection tool was used which incorporated patient demographics, tumour location, histology, complications, resection margins and recurrence. The functional and aesthetic outcomes assessed lip sensation, oral stoma, lip competence, diet/cutlery/denture use, facial expression and speech. Patients were invited for followup where the Patient and Observer Scar Assessment Scale (POSAS) was used to assess outcome.

Results

The clearance rate was >96%. For those with a followup greater than 1 year, the recurrence rate and revision rate was <5%, whilst the most common concern was temporary lip paraesthesia. The mean POSAS scores were low for both patients and observers. Patient reported outcome measures reflected a high satisfaction rate.

Conclusion

The technique of Karapandzic flap reconstruction for defects in both upper and lower lip allows adequate margin clearance with a low level of complications. The advantages of this technique include preservation of both function and, to a great extent, sensation utilising local tissue to allow successful aesthetic outcomes.

**O-1802****PRESERVATION OF IPSILATERAL SUBMANDIBULAR GLAND IS ILL ADVISED IN FLOOR OF MOUTH OR TONGUE CANCER**

M. Lanzer¹, M. Bredell¹, S. Reinisch²

¹ Department of cranio-maxillofacial and oral surgery, University Hospital Zürich, Zürich, Switzerland

² Department of General-Otorhinolaryngology, Head and Neck Surgery, University Hospital Graz, Graz, Austria

Introduction:

Preservation of the submandibular gland (SMG) during a neck dissection is gaining popularity and is showing an increasing tendency. The potential benefit, if the SMG is preserved, can be manifold. Aim of this study is to assess the benefit of preservation of the submandibular gland and its risk of recurrent disease in patients with oropharyngeal or oral cavity squamous cell carcinoma.

Materials and Methods:

168 patients with oral or oropharyngeal squamous cell carcinoma (SCC) with a follow up of at least three years, were analyzed using log-rank statistic, univariate and multivariate data analyzes and p-values, for prediction of excision of SMG on overall and recurrence free survival.

Results:

In patients with floor of the mouth or tongue cancer, lymph node recurrence free survival was highly influenced by the excision of the SMG ($p < 0.001$) with lymph node recurrence occurring in 28.5% of patients if the SMG was preserved. In all other tumor sites of the oral cavity and oropharyngeal region, excision of SMG did not influence lymph node recurrence free survival ($p = 0.455$)

Conclusions:

Patients with a SCC of the oral cavity or the oropharyngeal region will functionally benefit if the ipsilateral submandibular gland can be preserved, however, patients with a SCC of the surrounding tissue nearest to the submandibular gland – the floor of mouth or tongue will face an increased risk for lymph node metastasis. We propagate the removal of the submandibular gland in all neck dissections where the floor of mouth or tongue are the primary tumor sites.

**O-1803****IS THERE A NEED FOR BILATERAL NECK DISSECTION IN PATIENTS WITH UNILATERAL ORAL CANCER? RETROSPECTIVE ANALYSIS FROM 1986 TO 2006**

A. M. Eckardt, G. Wegener, M. Rana, G. Diebler, N.-C. Gellrich

Klinikum Bremerhaven, Bremerhaven, Germany

Objective: Neck metastases in oral cancer are a relevant prognostic factor. Although neck dissection is an accepted surgical procedure there are some controversial discussion whether a bilateral neck dissection might be indicated in unilateral oral cancer.

Methods: The present retrospective data analysis included all patient with unilateral oral cancer (n=1042) diagnosed from 1986 to 2006. A descriptive data analysis was performed, overall survival and tumor-specific survival was calculated according to Kaplan-Meier method. A multivariate Cox regression analysis was performed to assess for possible risk factors.

Results: Overall survival and tumor-specific survival were significantly prolonged in patients without palpable neck nodes and unilateral neck dissection compared to patients with contralateral or bilateral neck dissection ($p=0.040$ / $p=0.029$). Overall survival and tumor-specific survival were significantly prolonged in patients who had ipsilateral neck metastases and bilateral neck dissection compared to unilateral neck dissection alone ($p=0.027$ / $p=0.025$). However, the subsequent multivariate regression analysis could not demonstrate that the surgical procedure of the neck is an independent risk factor.

Conclusion: Analysis of a large patient cohort treated over a period of twenty years demonstrated that patient with ipsilateral neck metastases had an improved outcome if bilateral neck dissection was performed. However, based on the present analysis a general recommendation for bilateral neck dissection in every patient with unilateral oral cancer cannot be made.

**O-1804****INFLUENCE OF PATHOLOGY ON THE MANAGEMENT OF LATE STAGE MAXILLARY MALIGNANT DISEASE.**

J. Murphy¹, A. Isaish², J. Lubek¹, J. Wolf²

¹ *Oral and Maxillofacial Surgery, University of Maryland, Baltimore, United States*

² *Otolaryngology Head and Neck Surgery, University of Maryland, Baltimore, United States*

Objective: Intra-operative frozen sections and final pathology can influence treatment.

Methods: A retrospective study comparing intra-operative frozen sections to final pathology in patients who had total or extended maxillectomies for malignant disease between 2008 and 2013 was performed. The effect pathology had on final reconstruction and adjuvant therapy was assessed.

Results: Twenty five patients (13 female and 12 male) met the inclusion criteria. Mean age was 67.8 years (SD 12.7). Malignant disease recorded were squamous cell carcinoma (14), adenoid cystic carcinoma (4), osteosarcoma (3), mucosal melanoma (2), adenocarcinoma (1), and polymorphous low grade adenocarcinoma (1). As per the American Joint Committee on Cancer staging 76% of patients had stage IV disease. Intra-operative frozen sections were positive in 6 patients (24%). Positive margins were found in 60% on final pathology. Thirteen patients received a free tissue transfer, 11 had an obturator placed and 1 had a regional flap. There was no free flap failure. Analysis of covariance revealed tumor size did not correlate with the reconstructive method chosen ($P=0.32-0.98$, $F=0.02-1.03$) however staging was correlated with the choice of reconstructive method ($P=0.009$, $F=7.97$). Final pathology did not significantly affect the choice of adjuvant therapy ($P>0.05$). Intra-operative frozen sections did not guide therapy in the operating room as further tissue was not removed due to proximity to vital structures. Mean follow up post-operatively was 61 weeks (range 6 – 252 weeks). No relationship was found between final pathology and length of follow up ($P=0.43$).

Conclusion: Intra-operative frozen sections are unreliable in predicting positive margins in patients with late stage maxillary malignancies. In this study final pathology was not correlated with the reconstructive method used or did not significantly influence if patients received adjuvant therapy. Patient choice had a greater influence on this decision. Reconstruction was influenced by the stage of the malignancy.



O-1805

NECK DISSECTION IN METASTATIC CUTANEOUS NON MELANOMA CANCERS: A STUDY HIGHLIGHTING THE NODAL INVOLVEMENT IN NECK DISSECTION

A. Kusanale, Prof V. Ilankovan, P. Ramchandani

Oral and maxillofacial Surgery, Poole Hospital Foundation Trust, Poole, United Kingdom

Introduction: Factors which influence metastatic potential include anatomical site, size, tumour thickness, level of invasion, rate of growth, aetiology, degree of histological differentiation and host immuno-suppression. Traditional tumour staging using AJCC TNM is less distinct. When the cutaneous cancers involve the parotid or neck, neck dissection is indicated. Current practice involves leaving level I contents if they are not involved. Nodal disease decreases survival by at least 50%.

Material and methods: All cutaneous head and neck SCC patients with metastasis in Poole hospital were investigated over 10 years. We looked at this database retrospectively for involvement of submandibular salivary gland and the distribution of nodal metastasis.

Results: This study highlights the involvement of level I contents especially submandibular salivary glands in the range of 9%. This is quite high compared to literature where level I involvement is less than 2-3% for oral squamous cell carcinomas.

Conclusion: We suggest that neck dissection in cutaneous metastasis to the neck should involve level I.



O-1806

MANDIBULAR RESECTION AND RECONSTRUCTION IN THE MANAGEMENT OF EXTENSIVE AMELOBLASTOMA: OUR EXPERIENCE.

S.Ferrari, B. Bianchi, A. Ferri, D. Lanfranco, F.Giovacchini, E.Contadini, E. Sesenna

Head and neck department, Azienda Ospedaliero Universitaria di Parma, PArma, Italy

Objective: To present our experience with the management of 35 extensive mandibular ameloblastomas treated with segmental mandibulectomy, reconstruction with free fibula or iliac crest flap, and rehabilitation with immediate or delayed endosteal dental implants.

Methods: The study sample comprised 33 patients with histologically confirmed mandibular ameloblastomas. Primary ameloblastomas were treated in 24 patients, and recurrent ameloblastomas affected 9 patients. Mandibular defect sizes ranged from 3.5 to 12.5. A free fibula osseous or osteocutaneous flap was used 18 times for reconstruction; in the remaining 15, a free iliac crest osseous or osteomuscular flap was chosen. Dental implants were positioned in 26 patients; implant procedures were performed simultaneously with reconstruction in 22 cases.

Results: All flaps were transplanted successfully, and no major complication occurred postoperatively. Final histologic examinations showed 27 multicystic and 6 unicystic ameloblastomas. Free margins were achieved in all patients. The duration of follow-up was 18 to 120 months (mean, 51.6 months). No patient showed clinical or radiologic signs of recurrence. The dental implant success rate was 100%.

Conclusions: Segmental mandibular resection followed by immediate defect reconstruction with bone-containing free flaps with immediate dental implant placement should be considered as the treatment of choice for extensive mandibular ameloblastomas.



O-1807

SENTINEL NODE BIOPSY IN ORAL SQUAMOUS CELL CARCINOMA. LYMPHOSCINTIGRAPHY ROLE IN THE SURGICAL PLANNING.

E. Argüero, A. Marí, B. Moralejo, C. Arranz, S. Cuscó, M. Melero, A. Morla, G. Gómez, F. Cuesta, A. Monner

Maxillofacial Surgery, Hospital universitari de Bellvitge, Barcelona, Spain

The purpose of this study was to analyze the influence of different lymphatic pathways on surgical planning and the reliability of sentinel lymph node (SLN) biopsy to predict regional recurrence in patients with clinically N0 oral squamous cell carcinoma (OSCC).

METHODS:

Twenty-five patients with cT1/T2 N0 OSCC underwent a lymphoscintigraphy and an SLN biopsy. Elective neck dissection was performed at the validation stage and in patients with metastatic SLN. Scintigraphic and surgical SLN detection, pathologic status of SLN and of elective neck dissection, and regional recurrence in patients with negative SLN (pN0(sn)) were all analyzed.

RESULTS:

Scintigraphic and surgical detection were 96% and 100%, respectively, with 68% of negative SLN. Lymphoscintigraphy modified surgery in 32% of patients. In pN0(sn) patients, the free-of-disease survival rate was 88%.

CONCLUSIONS:

These results support the reliability of sentinel node biopsy in OSCC. Presurgically lymphoscintigraphy is essential, because it can modify the surgical procedure.

**O-1808****COMBINED ENDOVASCULAR AND SURGICAL TREATMENT OF HEAD AND NECK ARTERIOVENOUS MALFORMATIONS**

G. Colletti, F. Allevi, F. Melchiorre, L. Moneghini, F. Biglioli, G. Vercellio, M. Corno, S. Milev, A. Frigerio, J. F. Grimmer

University of Milan, Milan, Italy

Objective

Arteriovenous Malformations (AVMs) are congenital Vascular Malformations in which an aberrant vascular "nidus" progressively recruits arteries and veins ending in a lesion that often causes disfigurement as well as severe functional disturbances. An improper approach can unlock an explosive growth in the AVM and present a very high risk of relapse. Recurrent AVMs are much harder to cure than previously untouched ones. Intraoperative massive bleeding is a tangible risk if AVMs are treated surgically without preparatory endovascular embolization. The objective of this work is to provide the indications and techniques to treat cervicofacial AVMs by extrapolating them from the best available literature and bringing the Authors' personal experience with 14 consecutive cases.

Methods

The most accepted Indications and Techniques concerning Head and Neck AVMs are gathered from a review of the literature and compared to the personal experience of the Authors with 10 AVMs of the soft tissues of the head and neck and 4 AVMs of the facial bones. All patients underwent preoperative endovascular embolization with n-butyl CyanoAcrylate followed by surgical removal of the malformation within 48 hours from the procedure.

Results

One case of AVM of the maxilla was complicated by massive intraoperative hemorrhage despite preoperative embolization. One maxillo-mandibular AVM recurred two years after the treatment. We did not observe recurrences regarding soft tissue AVMs. In all patients an improvement in cosmetic appearance was documented. Smaller AVMs were easier to manage and had the best results.

Conclusions

An aggressive combined endovascular-surgical treatment seems to be the only "curing" strategy for head and neck AVMs. A thoughtful preoperative balance must be made within a multidisciplinary team and clearly discussed with the patient.



19. Surgery for Facial Paralysis / Craniomaxillofacial Traumatology

O-1901

SURGICAL OPTIONS FOR TREATMENT OF FACIAL PARESIS

F. Biglioli, D. Rabbiosi, V. Colombo, F. Giovanditto, M. Latiff, F. Tarabbia

OSPEDALE SAN PAOLO - UNIVERSITA' DI MILANO, SEGRATE (MI), Italy

OBJECTIVES

Facial paresis generally represent a disturbing functional and psychological outcome for many patients previously affected by Bell's palsy. Patients with facial paresis often look for a cosmetic and functional improvement of their aspect at rest but also to achieve a symmetrical smile. In most cases, the partial lack of contraction involve the middle third of the face, causing a mild to moderate impairment during smiling. also the eyelids and the lower lip can be involved.

MATERIAL AND METHODS

Several techniques are nowadays widely used to correct paresis. Between August 2011 and December 2013, 16 patients affected by facial paresis underwent surgical operation to restore the best possible symmetry of the middle third of the face.

Patients underwent several different techniques: a cross-face sural nerve graft anatomized end-to-side over the deficitary branch as proposed by Frey; masseteric to deficitary facial nerve branch end-to-side to potentiate weak muscles; transposition of a mini-latissimus microvascular flap to improve the middle third function. Lower lip deficit was treated by dygastric muscle flap rotation with a cross-face graft, direct neurotization of the mental muscle, mini-latissimus dorsi transposition.

All analyses were done both clinically and by optoelectronic means.

RESULTS

The results obtained by using those surgical techniques were satisfactory. All patients improved the static and dynamic symmetry during smiling in different degrees.

CONCLUSION

Paresis surgery try to reach difficult goals in patients affected by partial deficits. However, in our experience, a surgical operation is indicated when patients ask for an improvement of their morphological and functional aspect. No microsurgical procedure is too much if we consider the optimal results obtainable.

**O-1902****A PROSPECTIVE OBSERVATIONAL STUDY ON FACIAL NERVE WEAKNESS OF 91 CONSECUTIVE PAROTIDECTOMIES BY THE SAME SURGEON. INFLUENCING FACTORS AND CAUSES**

A Ezsias

Department of Maxillofacial Surgery Homerton University Hospital, London, England

Facial nerve weakness following nerve preserving parotidectomies is well known. However, the influencing factors that may cause it, its dynamics and duration are ill-understood. Very few, detailed observational studies have been published on these and none that was carried out prospectively.

91 consecutive parotidectomies carried out by the author, as part of his prospective study, have been assessed. The objective of this detailed study was to correlate and investigate possible causes of facial nerve weakness following nerve preserving parotidectomies.

Prior to the study a reasonably simple, quick, easy and user-friendly facial nerve grading system^[1] was developed to assess separately the weakness of the major branches of the facial nerve at a predetermined time by staff requiring minimal training. Postoperative evaluation of each major facial nerve branch was made separately at the same evening (approximately 4-6 hrs postoperatively), 24 hrs, 7 days, 1 month. The recordings continued on a monthly basis until full recovery or at 3, 6 and 12 months postoperatively up to 5 years.

Apart from the usual demographic data (age, sex, etc) the patient's general medical condition, blood pressure during operation, the intra-operative time taken to identify the trunk of the facial nerve, the number of nerve stimulations, if any, to different branches, the duration of the operation, any postoperative complication were recorded.

The results and possible correlations with factors which may play part in causing postoperative facial nerve weakness will be presented.



O-1903

GRACILIS FREE FLAP MONITORING IN SMILE RECONSTRUCTION

A. Nerobeev¹, A. Dobrodeev², I. Malykhina¹

¹ *Department of Plastic and Maxillofacial Surgery, Russian Medical Academy of Postgraduate Education, Moscow, Russian Federation*

² *Intensive care, Central Resarch Institute of Dental and maxillofacial Surgery, Moscow, Russian Federation*

Objectives. Free gracilis muscle transfer is preferred technique for smile restoration in facial palsy patients on the delayed periods of time. Because of the an external skin monitor paddle absence the visual diagnosis of circulatory failure is complicated. The ideal monitoring tool to evaluate free flap success should be noninvasive, continuous and reliable.

Materials and methods. Somatic oximetry based on near-infrared spectroscopy was evaluated in 7 patients undergoing free gracilis muscle transfer due to smile reconstruction. The flap-monitoring protocol currently in place consisted of the patient spending the first night after surgery in intensive care unit and having the flap monitored clinically every hour. Next 7 days monitoring was carried out every 2-3 hours. Dui to protocol additional measurements were performed in 6 and 12 months.

Results. Online data were compared with contralateral side of the face. The device accurately reflected the hyperemic response after revascularization, gradual decline and the stabilization parameters. There were no flap failures in early postoperative period. There were 2 cases of hematoma in the first hours after surgery. In one case by 20th day postoperatively a hematoma developed as a result of hypertonic crisis. In all three cases of hemorrhagic complications the device registered signal disappearance.

Discussion and conclusion. Based on preliminary analysis of the limited number of patient studied, we feel confident that a tissue oxygen saturation reading of 35% or less required operative correction. Because of the limited experience following tissue O₂ saturation after free gracilis muscle transfer, the variations in the O₂ saturation must be interpreted with the clinical signs.



O-1904

FACIAL ANIMATION IN ESTABLISHED UNILATERAL FACIAL PARALYSIS

V. Poddi, B. Bianchi, A. Ferri, S. Ferrari, E. Contadini, E. Sesenna

Maxillo-Facial Surgery - Head & Neck department, Parma, Italy

INTRODUCTION: Unilateral congenital or acquired facial paralysis causes aesthetic and functional disturbs, represented by facial asymmetry with difficulties in speech and feeding and incomplete eye closure. Progressive ptosis of the soft tissues on the affected side has a great part in impairing patients' appearance, worsening their self-esteem and social interactions.

PATIENTS: 35 patients with unilateral facial palsy underwent microsurgical reconstruction for restoration of hemifacial movement. The contralateral facial nerve was used in 20 procedures, the motor nerve to the masseter muscle was used in 13 patients and 2 patients underwent spinal nerve anastomosis; in all cases we performed a free gracilis muscle transplantation revascularized via the facial vessels.

DISCUSSION: The key point for unilateral facial paralysis is focused on the donor nerve: contralateral facial nerve by means of a cross-facial nerve graft is the first choice granting spontaneity in synchronicity; alternative solutions include ipsilateral nerve to the masseter muscle in patients older than 55 y.o. or with incomplete contralateral palsy and failure of foregoing cross-graft, and spinal nerve in patients affected with syndromic conditions or basicranial resections.

CONCLUSIONS: All the flaps were transplanted successfully, with optimal aesthetical and functional results. The restoration of even a small degree of facial movement can be gratifying in terms of function and verbal and nonverbal communication: we obtained a high degree of patient satisfaction.



O-1905

URGENT AID IN CHILDREN WITH CONCOMITANT MAXILLOFACIAL TRAUMA INJURED IN A CAR ACCIDENT

D. Komelyagin¹, S. Gortchakov², Y. Divilina², I. Burkin³, S. Dubin¹, D. Romanov¹, A. Petuchov¹, A. Dergachenko¹, F. Vladimirov¹, D. Gordeev¹

¹ Maxillofacial surgery, Pediatric st. Vladimir hospital, Moscow, Russian Federation

² Neurosurgery, Children Hospital № 9 G.N. Speranskogo, Moscow, Russian Federation

³ Pediatric surgical stomatology, MNII Pediatrii and Children chirurgii MZ RF, Moscow, Russian Federation

Objective: increase effectiveness of urgent aid in children with concomitant maxillofacial trauma after injured in car accidents.

Materials and methods: since 2008, 163 children observed with concomitant injuries including maxillofacial trauma. Age of patients was 8 months to 17 years. We had divided all patients in three groups according to injury severity. 28 children were with critical injuries (17,1%), 46 (28,2%) with severe injuries and 89 (54,6%) with moderate injuries. Maxillofacial trauma concomitant with brain injury was in 75 (46,2%) children. 25 (15,4%) patients with concomitant maxillofacial and brain injury had also chest and abdominal injuries. 29 (17,9%) patients with concomitant maxillofacial and brain injury had multiple fractures. 34 (20,5%) patients with concomitant maxillofacial and brain injury had chest, abdominal injuries and multiple fractures. CT was applied in all patients. In some complicated cases we have made skull model. We applied next algorithm of treatment: intensive therapy (IT) if necessary; diagnostics, choosing the way of treatment, and surgery; surgery in vital indications; struggling shell-shock; surgery in functional and esthetic indications; postoperative period within department of IT; rehabilitation course. 40 (25%) children with facial fractures without maxillofacial deformity were treated without any surgery. The indications for surgery were — vital, functional and aesthetic. 26 (15,6%) children underwent surgery by vital indications. 19 children in this group had brain injury and 7 - splenic damage and intrabdominal hemorrhagia. 113 (69,3%) children underwent surgery by functional and aesthetic indications in a gap of 3 to 7 days. All patients underwent simultaneous operations. Maxillofacial part of operation, in patients with vital indications, consisted only in wound debridement and temporal fixation of bones. In operations with functional and aesthetic indications maxillofacial part included bones reposition and osteosynthesis. Osteosynthesis was performed using resorbable or titanium plates.

Results: good results were achieved in 141 (87%) cases, satisfactory in 22 (13%). There were no negative results.

Conclusions: terms and volume of surgery depends on concomitant injuries. Inadequate urgent aid leads towards functional and esthetic complications. Operations with functional and esthetic indications must be done in full volume and best terms right after stabilisation of patients.



O-1906

NOVEL TECHNIQUES IN THE MANAGEMENT OF PAEDIATRIC FACIAL LACERATIONS

A.Ujam, A.Siddle, N.Vig, R.Bhandari, N.Ali

The Royal London Hospital, London, UK

Aims

Paediatric facial lacerations represent a large volume of maxillofacial emergency work load and are often dealt by the most junior surgeon. In reality, this group of patients can be very challenging to manage given the variable level of patient co-operation, patient and parent anxiety. Currently in practice, there is variation amongst maxillofacial units with regards to the use of ketamine and other alternatives to general anaesthesia. Traditionally, a general anaesthetic is required but sometimes, paediatric patients can be waiting excessive lengths of time until both a theatre room and a trained paediatric anaesthetist are available. This adds potentially avoidable stress to the patient.

We explore and present the evidence behind novel management techniques for paediatric lacerations, the equipment required and what level of expertise is required to perform them. Furthermore, we explore what the financial implications are for each management option.

Material and Methods

We undertook a literature review using NCBI PubMed, Embase, NICE and researched guidelines from the College of Emergency medicine to identify novel management strategies. We included the keywords: paediatric, facial lacerations, sedation, anaesthesia, management and topical.

Results

We identified numerous new medications and management techniques ranging from the use of audio-visual distraction through to new topical anaesthetics and nasal ketamine. New topical anaesthetic LAT gels (lidocaine, adrenaline, and tetracaine) are becoming increasingly popular and are effective if used appropriately. Ketamine as intravenous, intramuscular or nasal administration appears to be highly effective but there are strict guidelines on who, where and how this may be administered.

Discussion and Conclusion

With the increased workload and the increasing strain on inpatient beds, maxillofacial units should explore and implement where possible the use of alternative ways to manage paediatric facial lacerations, both to improve patient satisfaction and to minimise hospital stay and cost. Furthermore, as these cases can be performed in clinics with appropriate equipment, there is reduced strain on theatre time. These novel techniques are serious alternatives to general anaesthesia that must be welcomed.



O-1907

PAEDIATRIC MAXILLOFACIAL FRACTURES IN SPAIN

D. Garcia Molina, J.M. Muñoz, E. Gomez, M. Martin, J.L. del Castillo, M.J. Nieto

Servicio de Cirugía Oral y Maxilofacial, Hospital Universitario La Paz, Madrid, Spain

Objective: The incidence and prevalence of paediatric maxillofacial fractures is not a common topic in the literature, furthermore we don't have recent Spanish data. The main objective of this study is to determine the epidemiology of maxillofacial fractures in children treated at Hospital Universitario La Paz (Madrid, Spain) and compare it to other studies performed at different countries.

Materials and Methods: A cross-sectional study was conducted between the years 2008 and 2012, recording all fractures in children (< 14 years) treated by the service of Oral and Maxillofacial Surgery at La Paz University Hospital. The following parameters were evaluated: age and sex distribution, aetiology of trauma, incidence and type of fractures, monthly distribution, treatment modality and complications.

Results: In this five-year study there were a total of 114 patients. The mean age was 7,3 years old. The male:female ratio was 1'47:1. The most common fracture was nasal bone fracture (63, 55'26%) followed by dentoalveolar fractures (19, 16'6%) and mandibular fractures (16, 14'03%) and the most common cause were falls (74, 64,91%).

Conclusion: The epidemiology of maxillofacial fractures varies between adults and children, but also is directly in relation with social and economic population level. There are important differences in the treatment between adults and children that every maxillofacial surgeon should know.

**O-1908****BLUNT CAROTID ARTERY INJURY AND MANDIBULAR SUBCONDYLAR FRACTURES IN CRANIOMAXILLOFACIAL TRAUMA.**

G. Munding, N. Vranis, A. Banda, R. Yang, A. Dorafshar, E. Rodriguez

University of Maryland Medical Center, Baltimore, United States

Objectives: Blunt facial trauma often leads to mandibular condylar fractures. Patients with condylar fractures have also been reported to have concomitant blunt carotid artery injuries (BCAI). This relationship is poorly understood. This study aims to identify condylar fracture patterns and BCAI injury relationship, and the associated severity.

Methods: A retrospective cohort study was performed for all patients that presented to the R Adams Cowley Shock Trauma Center (Baltimore, Maryland) with mandibular condylar fractures from 2000 to 2012. Authors reviewed computed tomographic (CT) imaging of identified patients to confirm and further classify these fractures. Other major facial fracture patterns were also identified. Condylar fractures were classified by the Strasbourg Osteosynthesis Research Group (SORG) system: fracture of the condylar head (SORG 1), the condylar neck (SORG 2), and the condylar base (SORG 3). Carotid injuries were confirmed by reviewed CT and magnetic resonance imaging angiography, and were graded by the Biffl scale from 1 (less than 25% vessel intimal stenosis) to 5 (vessel transection). Severe BCAI was defined as a Biffl score greater than 1.

Results: We identified 527 patients with 657 condyle fractures. Of these fractures, 150 (22.8%) were SORG 1, 203 (30.9%) were SORG 2 and 304 (46.3%) were SORG 3. 32 (6.1%) patients concomitantly had 44 BCAI's. 21 (4.0%) patients had severe BCAI (Biffl score 2-5). The severe BCAIs occurred in 17 (5.6%) SORG 3 fractures. Variables accounted for included age, mechanism of injury, and concurrent LeFort I, II and III fractures. Adjusted multivariable regression analysis found that SORG 3 fractures were independently associated with a 4.03 -fold increased risk of severe BCAI (p-value <0.01).

Conclusions: Patients with mandibular condylar base fractures have an increased risk of severe BCAI when compared with condylar head and neck fractures. The authors hypothesize that fractures at the base of the condyle have a longer fractured segment, anatomically increasing the potential for internal carotid artery damage with greater degrees of displacement. The implications of these results may improve vascular injury screening criteria and treatment for craniofacial trauma patients.



20. Temporomandibular Joint Pathology and Surgery

O-2001

TEMPOROMANDIBULAR JOINT ANKYLOSIS. OUR EXPERIENCE.

L. Zamudio Sánchez, M.A. Martínez Navarro, F.Ruiz Delgado, A. J. Acosta Moyano, J.E. Augustin Cordovilla, Y. Aguilar Lizarralde

Oral and Maxillofacial Surgery, Regional Hospital Carlos Haya, Malaga, Spain

Introduction: Temporomandibular joint (TMJ) ankylosis is a pathological condition of the joint that involves fusion of the mandibular condyle to the base of the skull. It is manifested by limitation to total failure of the movement of TMJ.

There are various treatment options for this condition and standardization of a protocol is controversial. In this condition, reankylosis and reoperation is the norm to achieve acceptable aesthetic and functional outcomes.

Material and Methods: We report a series of clinical cases of TMJ ankylosis. Data of epidemiology, aetiology, maximum interincisal opening (MIO) before and after surgery, reankylosis and surgical technique were collected.

Results: From a functional standpoint, a good oral aperture and decrease in dietary restriction was achieved. The maximum interincisal opening increased in all patients and the aesthetic results were satisfactory. An evaluation of the post-operative reviews showed an improvement in facial symmetry and all patients reported satisfaction with the results.

Discussion and Conclusion: The reconstruction of the temporomandibular joint is one of the most complex fields for the maxillofacial surgeon. Several surgical options for treatment of the TMJ ankylosis have been described, none of them capable of preventing reossification and fibrosis of surrounding tissues. Given our experience, it becomes clear that there is no single choice to solve the problem and the need for reoperation will be dictated according to each patient's needs



O-2002

A REVIEW OF CONDYLAR FRACTURE MANAGEMENT TRENDS

N. Khan, A. Estelle, S. Ali, Pinaki Sen

Oral and Maxillofacial Surgery, Norfolk and Norwich University Hospital, Norwich, United Kingdom

Aims - The aim of this study was to review patterns of condylar fractures and treatment outcomes in regards to emerging surgical techniques and recommendations made by the Groningen Consensus.

Patients and Method – A total of 70 cases were reviewed retrospectively, over a 4 year period at a DGH in the UK. Pre-treatment orthopantomograms were analysed and the Strasbourg Osteosynthesis Research Group (SORG) classification was used to determine the anatomical site of fracture. The horizontal and vertical ramus lines as described in the Eckelt paper were used to measure the vertical height discrepancy. The displacement angle was measured by comparing tangents to the angle of the mandible on both sides.

Results - 79% occurred in males, with a mean age of 32 years. 83% of cases were unilateral condylar, of these the majority were sub-condylar (64%), then neck (33%), then head (3%). In contrast, the bilateral condylar fractures were in the majority at the neck (58%), sub-condylar (25%) and head (17%). In the unilateral fracture group, 52% had concomitant fracture of the mandible.

Height change between +3mm and -3mm was considered insignificant and accounted for 59% of cases. 31% of cases showed greater than 3mm vertical height loss and interestingly, 10% of cases measured greater than 3mm in height gain.

Angle of displacement varied between 0degrees to 37 degrees and average 8degrees.

Discussion and Conclusion - Measurements were made on printed OPGs, however the authors found these differed from the idealistic symmetrical diagrams shown in the Eckelt paper. Therefore, a degree of inaccuracy must be anticipated from our measurements. The authors reviewed management of the condylar fracture cases, the majority being either conservative or closed reduction with arch bars. Only 5 % underwent open reduction and internal fixation. Historically, this was in line with the old guidelines. However, trends have changed and the authors wish to see how the management of condylar fractures is being carried out in light of the new recommendations



O-2003

EXTERNAL FIXATION FOR CONDYLAR FRACTURE: A 22-YEARS EXPERIENCE.

P. Cascone¹, F. Spallaccia², P. Arangio¹, V. Valentino¹, M. Gualtieri¹, R. Pucci¹

¹ *Dipartimento di Scienze Odontostomatologiche e Maxillo-Facciali, Sapienza Università di Roma, Roma, Italy*

² *Dipartimento di Chirurgia Maxillo-Facciale, Ospedale "S. Maria", Terni, Italy*

Objective

Condylar fracture is very common, with an incidence of 21% to 49% but its treatment remains controversial and patients between 25 and 34 years old account for one third of all the cases.

The purpose of this study is to evaluate the outcomes after 22-years long-term follow-up of condylar fractures treated with external fixation system.

Methods

A retrospective study was performed to assess the use of external fixator for condyle fractures in patients treated at Dipartimento di Scienze Odontostomatologiche e Maxillo-Facciali, Sapienza Università di Roma from 1990 to 2012.

Data were collected from the medical records of the hospital.

Condyle fractures were classified according to Cascone et al. (2008) in treated patients following radiological findings.

A clinical (MMO, pain and/or articular noises/rumors, chewing and speech difficulties, facial nerve injuries), functional (gnatography) and morpho-structural evaluation (orthopantomography and 3-dimensional CT scans) was performed in the short-term follow-up at 1, 6 and 12 months after surgery and long-term follow-up at 2, 4, 8, 12, 15 and 20 years.

Results

203 patients were treated with external fixator at Maxillo-Facial Surgery Dept. of "Sapienza" Università di Roma from 1990 to 2012.

13 (6,4%) patients were excluded from the sample because complete data were not available.

Among the patients, 121 (63,6%) were male and 69 (36,3%) were female; 47 patients (24,7%) with bi-condylar fracture and 143 (75,2%) with mono-condylar one.

After 1 year 96% of patients presented for follow-up while only 11% at the 20 years follow-up. 94% of treated patients regained their pretrauma occlusion with good functional results (MMO: 100% >30 mm, 85% >35mm, 62% >40mm), temporary paresis of the facial nerve: <6%; infection of the surgical wound: <1%. 14 patients, after 12 and 15 follow-up, exhibited TMJ dysfunction with disc dislocation with reduction but no one dislocation without reduction.

Conclusions

In our experience, the use of external fixation is a safe and effective alternative to Open Reduction and Internal Fixation to reduce condylar fractures, allowing immediate mobility and preserving the condyle-disc unit resulting in a TMJ morpho-functional recovery.



O-2004

CONDYLAR FRACTURES: USE OF A SECOND PLATE IN THE MANDIBULAR POSTERIOR BORDER, IS IT NECESSARY?

R. Osben, C. Vidal, M. Arriola, O. Badillo, V. Duarte

Maxillofacial Surgery Unit, Carlos van Buren Hospital, Valparaíso, Chile

The anatomical unit of the TMJ and condyle constitute one of the vertical anatomical pillars or buttresses of the mandible and craniofacial region. To restore, rebuild and strengthen this unit is one of the basic principles in OTS, preventing collapse or alterations in facial symmetry, as well as other diseases such as ankylosis. Various methods of reduction and fixation have been used, such as wires, pins, lag-screw and plates. The latter being the most used considering its biomechanical behavior. The forces that are under this anatomical unit are in all directions and planes. For this reason it is so important to prevent fractures and / or twists, which is the propose of using a second plate on the rear edge of the mandibular ramus.

Objective: To establish the need for a second plate of OTS in the posterior border of the ramus to improve stability of mandibular function in condylar fractures.

Methods: Five cases are reported with plates in the posterior border of the ramus.

Results: In all patients there was good anatomical restoration , mandibular function and long-term stability.

Conclusions: The use of a second plate on the rear edge of the mandibular ramus could enhance stability and bone healing of these fractures and thus avoid twists and fractures of plates.



O-2005

EXTRA-ACTICULAR ANKYLOSIS OF THE TEMPORO-MANDIBULAR JOINT IN FIBRODYSPLASIA OSSIFICANS PROGRESSIVA: IMAGING, TREATMENT AND HISTOLOGY

P. Nicol, B. Ruhin-Poncet, P. Goudot, C. Bertolus, R. H. Khonsari

Service de chirurgie maxillofaciale et stomatologie, Hôpital de la Pitié-Salpêtrière & Université Pierre-et-Marie-Curie Paris 6, Paris, France

Aims/Objectives

Fibrodysplasia ossificans progressiva (FOP) is a rare congenital disorder characterized by multiple endochondral ectopic ossifications leading to the formation of a second skeleton of ectopic bone. Ectopic ossification in the craniofacial region can result in severe limitation in jaw movement and in TMJ ankylosis. We report a striking case of bilateral ectopic ossifications of the sphenomandibular ligaments treated by surgical excision. We discuss this ectopic ossification in the light of the current knowledge on the evolution of the jaw joint in vertebrates.

Materials and Methods

A CT-scan from a 34 years-old patient with FOP showed bilateral ossifications of the sphenomandibular ligaments. The craniofacial ectopic ossifications were segmented using Mimics 14.0 (Materialise, Leuven, Belgium) and reconstructed in 3D. A control CT-scan was performed after surgery. After surgical excision, ectopic ossification tissue and wisdom teeth were studied using standard histological techniques.

Results

The 3D structure of the ossified ligament was described based on 3D reconstructions. Histology showed ectopic bone formation replacing the normal ligamentary structures. The specific dental lesions of FOP in the pulp were described for the first time.

Discussion and conclusion

Bilateral ossification of the sphenomandibular ligament in FOP is uncommon and leads to severe limitations in jaw movements. Surgical treatment was effective in recovering a satisfactory TMJ function. The anatomical position of this ectopic ossification relates to the articulation of Meckel's cartilage with the skull based in mammalian reptiles. This evolutionary reversion indicates that modulations in the expression of BMP receptors may have been involved in the key steps of mammalian jaw formation during evolution.



O-2006

COMPARISON OF THE RESULTS OF ORTHOGNATHIC CORRECTION PERFORMED IN PATIENTS WITH TMJ ARTICULAR DISK DISPLACEMENT

A. Senyuk, M. Romanovsky, M. Mohirev

Maxillofacial Surgery, Central Research Institute of Dentistry and Maxillofacial Surgery, Moscow, Russian Federation

Objective: On the basis of clinical, cephalometric, MRT and CT data to evaluate the morphological features of soft tissue and skeletal characteristics and stability of the results of orthognathic surgery patients with TMJ internal derangments and having a certain degree of risk of condyloresorption and its occurrence (increasing) performed after treatment.

Materials and Methods: 33 patients (17-35 years) with clinical symptoms of TMJ internal abnormalities, morphological (according to CT) signs of condyloresorption and anterior disc displacement of the TMJ (according to MRI) were the group studied. In the 17 cases, he first step in the surgical correction, either before phase of the orthognathic surgery we performed surgical reposition of the TMJ disk. In other cases, the isolated bimaxillary orthognathic surgery were performed. The data were analyzed and compared on the basis of clinical assessment, CT studies of morphological changes of the condyles, cephalometric stability results and MRT diagnosis of TMJ .

Results: Idiopathic condyloresorption is a factor of complicating the decision to conduct a comprehensive orthodontic - orthognathic correction. When the preoperative diagnosis performed in cases of condyles morphological changes with volume decreasing and concomitant malocclusions in all cases were discover the disregulation in relations between the disk and the head of the TMJ . In the presence of clinically significant symptoms of internal TMJ disorders first stage was performed by open reduction of the TMJ disc. The obtained data were analyzed and compared with a group of patients without TMJ interventions in the past and having only orthodontic - orthognathic treatment phase.

Conclusion: The underestimation in the preoperative period the degree of pathological changes of the TMJ performed may lead after orthognathic surgery the increasing of clinical symptoms of internal TMJ disorders, in some cases leading to a late relapse due to continued condyloserorption. Performed preliminary reposition of TMJ disc improves postoperative clinical symptoms providing a degree of stability of the main surgical treatment. Further detailed assessment is required to obtain more evidence conclusions.



O-2007

PROSTHETIC RECONSTRUCTION OF MANDIBULAR CONDYLES IN HEAD AND NECK PATIENTS

Nugdeep Uppal, Louise Dunphy, Baljeet Nandra, Prav Praveen, Timothy Martin, Satyesh Parmar

Oral and Maxillofacial Department, Queen Elizabeth Hospital, Birmingham, United Kingdom

Objectives: Reconstruction of condyles in benign and malignant disease resections requires thorough planning prior to treatment. The aim is to replace a functional and aesthetic component involved in the complex role of mouth opening, excursive movements and in dentate cases, occlusion. Treatment options include no reconstruction, direct autogenous placement of bone into the glenoid fossa or allogenic prosthesis.

Patients experience multiple morbidities following surgical and radiotherapy treatment. It has been speculated that exposure to radiation therapy following prosthetic reconstruction can result in additional localised complications. As a large majority of the malignant mandible resection cases are subject to either pre or postoperative radiotherapy, we aimed to identify if there were any related adverse outcomes in addition to functional or anatomical limitations.

Methods: This is a retrospective review of all oncology cases reconstructed with a prosthetic condyle following resection. All cases were identified from a head and neck database, theatre and laboratory log books.

Results: 8 patients underwent temporomandibular joint condyle prosthetic reconstruction, preceding or following radiotherapy. During the reconstructive surgery, the titanium condyle was placed in the glenoid fossa without using a prosthetic fossa or any xenografts. Mouth opening, extent of movement, occlusion and any complications were assessed on follow up. Post operatively we found that patients achieved good occlusion, however one case required short term intermaxillary fixation with elastics, to improve a minimal posterior unilateral open bite. Mouth opening was noted as limited in some of these cases. Facial nerve dysfunction was identified in one case however this was not related to the condyle reconstruction.

Conclusions: Radiotherapy does not appear to adversely affect the outcome of the prosthetic reconstruction. We would recommend virtual surgical or 3D model planning prior to treatment to achieve good post-operative occlusion. Long term follow up indicates that the combination of a titanium condyle within the glenoid fossa joint has resulted in successful functional outcomes for all patients treated thus far.



O-2008

TREATMENT OF MANDIBULAR CONDYLAR FRACTURES IN CHILDREN

Ch. Lechner, S. Brunold, H. Marugg, O. Ploder

Oral and Maxillofacial Surgery, LKH Feldkirch, Feldkirch, Austria

Objective: the aim of the study was to present the outcomes of conservative and operative treatment of mandibular condylar fractures in children

Patients and methods: This retrospective study included patients up to 14 years of age who were treated for mandibular condylar fractures between 2004 and 2012 at the Department of Oral and Maxillofacial Surgery Feldkirch. Clinical and radiological parameters were evaluated retrospectively. Statistical evaluation was performed as appropriate. 23 patients with a mean age of 10 years (range from 5 to 14 years) were included in this retrospective study. There were 11 fractures located in the condylar neck (7 conservative treatment and 4 open reduction), 16 in the condyle (14 conservative treatment and 2 open reduction), another 12 fractures were located elsewhere in the mandible. Of the 23 patients 11 were evaluated with a mean follow up of 29,3 months (14 to 56 months). Maximal mouth opening and lateral excursions were measured as well as clicking sounds, pain, deviation, and the Helkimo index. Radiologically, ramus length difference, deformation and signs of arthrosis were evaluated.

Results: Mean mouth opening was 44,3 mm, lateral excursion was 9 mm, deflexion was found in 1 patient, Helkimo index was in 9 patients A0D0, in 1 patient A0D1, and in 1 patient A1D0. There were no clicking sounds and signs of arthrosis. Ramus length difference was 1,9 mm in conservatively treated patients and -1,7 mm in operatively treated patients. A complete healing process leading to a normal condylar process was observed in all patients independently of the treatment concept.

Conclusion: Conservative treatment of condylar fractures in children showed satisfactory clinical results. However, the optimal age from which patients could probably benefit from operative treatment is still unclear.



O-2009

ENDOSCOPIC CONDYLE APPCH.

L.Pisano Gobbi¹, O.Russo¹, O.Ordoñez¹, J.P.Mussi¹, C.A.Voisin²

¹ *Maxillofacial Surgery, Hospital El Cruce, Florencio Varela, Argentina*

² *Maxillofacial Surgery, ULB University Hospital, Brussels, Belgium*

Objective:

The surgical management of the condyle fractures has historically been a challenge and is still controversially discussed. The non-invasive treatment with maxillo-mandibular fixation is an alternative when there is no condyle displacement or luxation. The current priority is to give normal function of TMJ and reestablish previous occlusion. When these objectives are not reached and retreatment is needed, endoscopic approach is a conservative alternative to classical surgical techniques.

Methods:

We present our experience using endoscopic approach in condyle fractures in a case report of a patient with condyle bilateral fracture, who is attended fifteen days post trauma and who presents bad occlusion and both fractures consolidated, both 3rd mandibular molars impacted, hindering the BSSO techniques application.

Results:

The patient was operated on by adopting a bilateral endoscopic intraoral approach, refracturing both condyles (one with a saw and the other with osteotome) followed by intermaxilar fixation with Erich archs with no other external technique or osteosynthesis. Occlusion was reestablished, no complications and more friendly postoperative and outcome.

Conclusions:

The removal of three impacted molars is usually followed by post surgical complications when the orthognatic technique is performed by BSSO to correct bad occlusion. Apart from this, neurological complications could occur.

In the treatment of condyle fractures by preauricular approach, post surgical complications related to facial nerves are reported, like motor paresis , epiphora and corneal damage. Endoscopic techniques by preauricular approach and combined approaches (preauricular-Risdom), leave scars besides the already mentioned complications. The resolution of bad occlusion in post condyle fractures using BSSO may produce aforementioned complications, usual in the technique, adding morbidity. Conservative approaches have begun to be used. The benefits of intraoral endoscopic techniques include small invisible incisions placed in intraoral position, a complete visualization and a magnified and illuminated surgical area. The minimum degree of dissection and tissue manipulation produces less oedema and morbidity, endoscopic approach being the tool with less risk of complications.



O-2010

CLINICAL EXPERIENCE WITH A NEWLY DEVELOPED CONDYLE-PLATE FOR TRANSORAL ENDOSCOPIC-ASSISTED OSTEOSYNTHESIS OF CONDYLAR NECK FRACTURES

H Leonhardt, A Nowak, D Haim, G Lauer

Maxillofacial Surgery, University Clinic Dresden, Dresden, Germany

Objective

The improvement of traumatological treatment of condylar neck fractures is a continuous challenge for us. A newly designed condylar plate was developed to improve and facilitate the intraoral reduction and fixation of these fractures. We report about design, handling and first results of clinical use.

Method

The Condylar Plate (Fa. Martin, Tuttlingen, Germany) is designed in a rhomboid shape. This provides a two-vector-fixation of the condylar neck fracture using one plate only. The cranial part of the plate provides two holes for fixation of the condylar fragment. The lower part has three holes. This enables the surgeon to fix the plate with at least two screws on every side of the fracture even in very slant fractures. In addition, one hole is free for guiding the reduction of the fracture. The surgeon can choose between fixation with usual mini-screws or locking screws for additional stability. The plate is used mostly via an intraoral approach. To facilitate the reduction the operation is performed with endoscopic assistance using an angled screw driver.

Result

We describe the handling of the new plate, using intraoral approach and endoscopic assistance. A considerable advantage of the rhomboid design of the plate is the stable two vector fixation of the fracture with a narrow design. This facilitates the intraoral fixation of the fracture because the posterior border of the mandible is rarely reached via intraoral approach and so the space for the fixation is limited. The intraoral approach prevents scarring of the skin in head and neck area and provides esthetically good results. The endoscope enables the surgeon to check the result of the fractures reduction even in the narrow space of an intraoral approach.

Only a few condylar neck fractures are not suitable for the treatment with new plate via an intraoral approach. The reduction is safe and the fixation stable. We counted only two minor complications using this treatment in 47 cases since Mai 2012.

Conclusion

Using the new plate via an endoscopically assisted intraoral approach is a safe and easy handling treatment of condylar neck fractures providing functionally and esthically good results.



21. Orbital, Paranasal Sinuses and Nasal Cavity Surgery

O-2101

VALIDITY OF NASOSEPTAL CARTILAGINOUS GRAFT IN THE REPAIR OF ORBITAL FLOOR FRACTURES

M M Hamed¹, O A Antar², T A Hamed¹, W S Amer³, M H Eid¹

¹ Oral and maxillofacial surgery, Faculty of Dentistry - Suez Canal University, Ismaillia, Egypt

² Plastic Surgery, Faculty of Medicine - Suez Canal University, Ismaillia, Egypt

³ Oral radiology, Faculty of Dentistry - Suez Canal University, Ismaillia, Egypt

Objective :

The objective of this study was to evaluate clinically and radiodensometrically the repair of orbital floor fractures using nasoseptal cartilaginous graft (NSG)

Patients and methods :

This study was carried out on twenty two patients , eleven of them their orbital floor reconstructed by NSG classified as group (1) and the remaining eleven patients their orbital floor reconstructed by titanium mesh, and classified as group (2)

All the patients were followed up clinically and radiographically at 3, 6 and 12 months postoperatively

The clinical follow-up was based on monitoring the postoperative complications and patient satisfaction. The changes in bone density of the grafted area was monitored by computed tomography software every follow-up .

Results :

Clinical evaluation of the NSG group (group 1) showed a non significant postoperative complications such as respiratory obstruction or abnormal sensory sensations of the infraorbital margin, Meanwhile , quantitative radiographic evaluation revealed no change in NSG density, thus the NSG remained static in place during the follow up period

Conclusion :

The NSG was proved to be effective and reliable in adequately restoring the orbital floor fractures ranging from the small to medium defects with maintaining the normal function and satisfactory esthetic appearance of the globe without distressing limitations



O-2102

SECONDARY CORRECTION OF UNTREATED ZYGOMATIC FRACTURE

D. Debevc¹, Ž. Kovačič², A. Kansky², M. Kočar²

¹ *Department of Otorhinolaryngology and Maxillofacial Surgery, University Clinical Centre Maribor, Maribor, Slovenia*

² *Clinical Department of Maxillofacial Surgery, University Clinical Centre Ljubljana, Ljubljana, Slovenia*

Objective

The purpose of surgical treatment of a zygomatic bone fracture is the restoration of normal functional and aesthetic conditions. In the case of a dislocated fracture the treatment is surgical only. After reposition of bone fragments the osteosynthesis is performed. The consequences of an untreated dislocated fracture depend on its scope. Patients can have changed position of malar prominence. Major dislocations of bone fragments can cause the increase in the orbital volume which leads to enophthalmus. Trapping of the periorbital content causes disturbances in the eyeball motility. Sensibility of the infraorbital nerve can also be affected. In the case of improper treatment of the fracture secondary surgical osteotomy with the reposition of the obtained fragments must be performed.

We present a case of a late secondary correction of zygomatic bone fracture with the method of a zygomatic "sandwich" osteotomy (ZSO).

The presentation of the case: a 19-year-old patient suffered a direct hit in the face in a car crash. In emergency trauma they described the swelling over the left eye. An X-Ray of paranasal sinuses did not reveal typical signs of the skeleton injury, therefore a symptomatic treatment was advised. Four weeks later the patient came to our clinic due to the asymmetry of the malar prominences. On clinical examination we found asymmetry in malar prominences. A CT scan confirmed the clinically suspected zygomatic fracture. After the preoperative planning using Ecliptic EBS, we performed a ZSO and overbridged the bone gap with heterologous bone collagen block. We fixed the changed position of the bone with osteosynthetic plate and achieved good zygomatic symmetry.

Discussion: the technique of ZSO was introduced by Mommaerts and colleagues as an alternative to cheek implants for the treatment of isolated hypo projection of the zygomatic bone. This procedure can be performed in patients with sagittal maxillary hypoplasia and patients with Treacher Collins syndrome. Posttraumatic corrections can also be done in selected cases.

Conclusion: in an inappropriate treatment of fractured zygomatic bone without functional disorders the ZSO has proven to be a safe and appropriate method to ensure the aesthetic requirements.

**O-2103****ORBITAL FLOOR RESTORATION WITH TRACTION OF THE INFRAORBITAL VASCULAR PEDICLE USING A VESSEL LOOP IN POSTERIOR ORBITAL FLOOR FRACTURES**

M.S.S. Choi, J.H. Lee

Department of Plastic and Reconstructive Surgery, Hanyang University Guri Hospital, Guri, South Korea

Objective: The authors propose retraction of the infraorbital nerve (ION) together with the artery using a vessel loop for improved visualization of the posterior portion of the orbital floor. An analysis was performed to evaluate the circumstances, in which traction of the ION was beneficial for orbital floor restoration.

Methods: In a retrospective study on ninety-one patients with orbital floor fractures the following parameters were recorded from computed tomography scans: the location of the fracture according to its position relative to the infraorbital groove, the location of the infraorbital groove from the midpoint of the orbital floor, and involvement of the ION in the fracture site. An analysis of any associations between the traction of ION and the location of the fracture and ION passage was performed.

Results: Traction of the ION was performed during orbital floor restoration in 14 cases, of which 10 cases had involvement of the ION in the fracture site and 4 cases did not. All of them were posterior fractures. In 51 cases with posterior fractures, the ION passage in patients who had ION traction was statistically ($p < 0.05$) located more medially (0.50 ± 1.19 mm) than in patients who did not need traction of the nerve (2.38 ± 1.12 mm).

Conclusions: Retraction of the ION with the infraorbital artery is useful for the reconstruction of orbital floor fractures. The ION may interfere with the exposure of the fracture site in a posterior orbital floor fractures with involvement of the ION in the fracture site and a medially located ION passage.



O-2104

SURGICAL TREATMENT OF ORBITAL TRAUMAS WITH USING COMPUTER MODELING OF THE ORBITAL STRUSTURE

V.A.Stuchilov, A.A.Nikitin, V.I. Demjanov V.A, A.S.Grishin

The Moscow regional researches clinical institute name M.F. Vladimirskogo, Moscow region, Odincovo, Russian Federation

An optimal tactics of surgical treatment of patients with associated ophthalmological pathology with orbital trauma was developed by conducting computer modeling of the anatomic structure of an orbital cavity on the base of processing of computer tomography data in pre-operation period that helped to improve the results of treatment; during surgical correction StealthStation navigation system was used.

Surgical intervention aimed at reposition and osteosynthesis of bone fragments and soft tissue orbital structures with previous formation of individual transplants was performed differentially with taking into consideration the level of injury and displacement, as well as changes in the fat tissue volume, orbital ligamentous apparatus , and oculomotor muscles.

Implementation of the navigation system and differential computer modeling of soft tissue and bone orbital structures is reasonable in cases of interventions in "risk" orbital zones, which are accompanied by significant displacement of optic nerve, oculomotor muscles, fat tissue, and infraorbital nerve.

**O-2105****MAXILLARY SINUS ANATOMY AND FUNCTION AFTER ORTHOGNATHIC SURGERY: RETROSPECTIVE EVALUATION OF 64 CASES**

V. Favero, A. D'Agostino, P. Procacci, P. F. Nocini, L. Trevisiol

Section of Dentistry and Maxillo-Facial Surgery, University of Verona, Verona, Italy

Objective: the aim of the present study is to evaluate the post-operative incidence of rhino-sinusal pathologies in patients undergoing orthognathic surgery for the correction of dentofacial deformities in order to better understand the relationship between orthognathic surgery and anatomical, radiological and functional maxillary sinus modifications.

Methods: a retrospective analysis of maxillary sinus modifications and functional disorders in 64 patients who underwent orthognathic surgical procedures for the correction of dentofacial deformities was performed. Patients were administered SNOT 20 questionnaire for the evaluation of sinusitis symptoms. Patients underwent as well radiographical examination with cone-beam CT both pre-operatively and one year after surgery. The extent of sinus volume modifications, mucosal thickening and iatrogenic anatomical alterations was analyzed.

Results: considering all 64 patients, Overall, mean sinus volume presented with a 19% decrease compared to the preoperative value. As far as the type of surgical procedure is concerned, patients one-piece Le Fort 1 osteotomy showed a 27% sinus volume decrease, whereas patients multisegmented Le Fort 1 osteotomy presented with a 17% sinus volume decrease. Twelve patients reported sinusitis after surgery; 2 patients were symptomatic and 10 had no symptoms. Six patients with preoperative silent sinusitis totally recovered after surgery. The incidence of iatrogenic anatomical damages, such as septal deviation, septal interruption or sinus wall interruption resulted to be 27%.

Conclusions: the findings of the present study indicate that orthognathic surgical procedures may have a deep although still unclear impact of sinusal function. There is not a straightforward correlation between the kind of procedure and the onset of sinusal pathologies, even though the movements of impaction and advancement tend to determine a reduction of the sinus volume. The incidence of post-operative rhinosinusal pathologies and iatrogenic anatomical damages and the evidence of cause-effect relation between the two justify the routine adoption of CBCT and SNOT20 questionnaire for the evaluation and follow-up of patients scheduled for orthognathic surgery.

**O-2106****PEDIATRIC ORBITAL FRACTURES: THE OUTCOME OF 14 YEARS OF EXPERIENCE.**

L. Sánchez Torres, I. García Recuero, A. Fernández García, I. Falguera Uceda, M. Mejía Nieto, M. Redondo Alamillos, G. Sánchez Aniceto

Cirugía Oral y Maxilofacial, Hospital Universitario 12 de Octubre, Madrid, Spain

OBJECTIVES

Orbital fractures are not uncommon injuries and can be limited to the orbit or extend to the adjacent facial bones. In addition, they may be associated with ophthalmologic, neurosurgical and other facial injuries. Proper management is essential to prevent aesthetic and functional defects.

MATERIAL AND METHODS

Reviewing pediatric orbital fractures presented in our centre between 2000 and 2014 was performed. Demographics, associated injuries, computed tomographic scan findings, management and follow-up were collected.

RESULTS

Fifty-six patients were reviewed, averaged age was 8.5 years.

Fractures were presented in our patients as orbital walls, 60.71% (orbital floor 47%); zygomaticomaxillary complex fractures, 28.57%; and craniofacial fractures, 10.71%. The operative rates were 79.41%; 75% and 33.3% respectively.

Patients were routinely performed CT in the emergency department and scanned by an ophthalmologist. The intervention was conducted in the week following the trauma. The mean follow-up was 18 months.

The material used for the osteosynthesis titanium was 39.13% of the patients, and 47.83% of absorbable material in the treated fractures. No significant differences between the two materials ($p < 0.05$) were observed.

Complications included minor enophthalmos in four patients (had been treated surgically); two of them required reoperation for correction.

DISCUSSION AND CONCLUSION

As in adults, the orbit is one of the most commonly fractured regions of the pediatric face. Children younger than 7 years are more likely to develop orbital roof fractures due to the large craniofacial ratio and the extent of pneumatization of the frontal bones in growing children. Later, orbital floor fracture incidence surpasses orbital roof fractures.

Timing of surgical repair of orbital floor fractures continues to evolve, but fractures with clear surgical indications benefit from early treatment.

Either alloplastic or autogenous implants can be used to repair orbital floor. Ultimately, technique and choice of implant are at the discretion and comfort of the surgeon as each has advantages and disadvantages.

Management of pediatric orbital fractures have many unique features that differentiate them from orbital injuries encountered in the adult population. The understanding of the particular anatomic and mechanical properties of pediatric orbital bone and soft tissue helps to explain most of these differences.



22. Obstructive Sleep Apnea

O-2201

MRI IN SOAS ORTHODONTIC TREATMENT PLANNING AND PROGNOSIS IN ADULTS WITH DISTAL OCCLUSION

A.Nadtochiy, N.Khubulava

Central Research Institute of Stomatology and Maxillofacial Surgery, Moscow, Russian Federation

Aim.

Determination of indications and contraindications for the SOAS orthodontic treatment of adults with distal occlusion based on MRI-data.

Materials and Methods.

72 patients (21-58 years old) with distal occlusion were undergone standard clinical examination and MRI before and after SOAS orthodontic treatment. 45 patients without significant occlusion abnormalities and without SOAS were included in control group (Group 1). Group 2 – 35 patients with distal occlusion without SOAS; Group 3 – 37 patients with distal occlusion with SOAS. Following parameters of MRI-data in sagittal plane were analyzed: width (W) and width regularity (WR) of pharynx on soft palate (WP) and radix of tongue (WT) levels.

The orthodontic treatment was applied with FNTA and Damon bracket-system.

Results.

Group 1: range W = 6,0-11,9mm (8,0-9,9mm = 55,6%); WR= 35,6%; WP narrowing = 46,7%, WT narrowing = 17,8%.2;

Group 2: range W = 4,0-7,9mm (6,0-7,9mm = 74,3%); WR= 25,7%; WP narrowing = 34,3%, WT narrowing = 40%;

Group 3: range W = 0-5,9mm (2,0-3,9mm = 45,9%); WR= 16,2%; WP narrowing = 32,4%, WT narrowing = 51,4%.

Correlation between W (WP or WT) narrowing and severity of SOAS (I-II):

W=0-1,9mm (I=44,4%; II=55,6%); W=2,0-3,9mm (I=70,6%; II=29,9%); W=4,0-5,9mm (I=72,2%; II=27,8%).

Correlation between W (WR, WP or WT) narrowing and the effectiveness of SOAS orthodontic treatment (PR-positive result, NR-negative result):

WR: PR=66,7%, NR=33,3%; WP: PR=25%, NR=75%; WT: PR=78,9%, NR=21,1%.

Conclusion.

The effectiveness of SOAS orthodontic treatment of adults with distal occlusion depends on the variant of pharynx narrowing: in cases of WT narrowing it gives 78,9% of positive results. MRI-data gives the possibilities for SOAS orthodontic treatment planning and prognosis.



O-2202

SURGICAL TREATMENT OF CHILDREN WITH OSA DUE TO FACIAL SKELETON HYPOPLASIA

D. Komelyagin, S. Dubin, A. Petuchov, I. Strogonov, N. Zlygareva, N. Micheeva, V. Popov, O. Patches, Ch. Vafina

Pediatric maxillofacial surgery, Pediatric st. Vladimir hospital, Moscow, Russian Federation

Objectives: evaluation of treatment effectiveness of children with OSA due to facial skeleton hypoplasia.

Materials and methods: since 1998, 97 children in age from 4 days to 16 years with OSA underwent surgical treatment at st. Vladimir hospital.

49 children were with Pierre Robin syndrome, 25 - TMJ ankylosys, 8 - defect of mandible, 3 - Crouzon syndrome, 6 - hemifacial microsomia, 1 - Nager s., 1 - Franceschetti s., 1 - Hallermann-Streiff s., 1 - Apert s., 2 - Hanhart s..

46 children (47,4%) were with severe degree of OSA, 29 (29,9%) - with moderate one, 22 (22,7%) - with mild one.

Computer tomography and polysomnography were used for diagnostics. Skull model was made for surgery planning if necessary.

All children underwent distraction osteosynthesis. Surgery was performed to correct facial skeleton hypoplasia, which determined OSAS.

We used external an internal (in majority) distraction devices produced by KONMET (Russia), Martin (Germany), Synthes (USA).

We began distraction on 5-10 day after surgery and continued it until reaching correct aesthetic result. Rhythm of distraction was 4x0,25 mm per day (2x0,25 mm for midface). Duration of distraction was from 15 to 30 days. Symptoms of upper airways obstructions disappeared by 5-10 day of distraction. Nasogastric tube in children with PRS we removed by 10-20 day after distraction beginning.

Retention period was from 3 to 5 months.

Results: good results (criteria - breath index) were obtained in 86 cases, satisfactory - in 7, negative - in 4. One negative result was associated with tongue hypoplasia in patient with Hanhart syndrome (satisfactory final result was obtained after reconstruction of floor of the mouth). 3 negative results were associated with death of patients from congenital cardio-vascular pathology after surgery.

Conclusion: distraction osteosynthesis has proven itself as effective and reliable method of treatment of children with OSA due to facial skeleton hypoplasia. This method allows to reach stable and long-term results.

**O-2203****MAXILLOMANDIBULAR ADVANCEMENT SURGERY FOR OBSTRUCTIVE SLEEP APNOEA: IS THE PRE-OPERATIVE MALLAMPATI CLASSIFICATION A GOOD PREDICTOR OF SURGICAL OUTCOMES?**

S. Islam, I. Ormiston

Leicester University Hospital, Leicester, United Kingdom

Objective: The Mallampati airway classification has been used to help estimate success rate in patients undergoing uvulopalatopharyngoplasty for obstructive sleep apnoea (OSA). The predictive value of Mallampati score in relation to maxillo-mandibular advancement surgery for OSA remains unproven. The aim of this study was to explore the relationship between preoperative Mallampati classification and surgical outcomes following Bi-maxillary advancement surgery for OSA.

Method: We performed a retrospective analysis of patients who underwent maxillofacial surgery for OSA at our institution. Patients were stratified into two groups based on Mallampati scores (High: Class III/IV versus Low: I/II). We compared pre and postoperative apnoea / hypopnea indices (AHI), Epworth sleepiness scores (ESS) and lowest recorded oxygen saturations in both groups.

Results: We identified 50 patients who met the inclusion criteria. We found no statistically significant difference in postoperative values in all three outcome measures when subjects were stratified based on Mallampati classification. The mean AHI pre and postoperatively in the low Mallampati scores group were: AHI: 41 (+/- 19) to 7 (+/-6) and high Mallampati scores group AHI: 42 (+/- 15) to 9 (+/- 7). Comparable surgical 'success' rates (AHI <15 postoperatively) were noted in both low and high score groups ($p>0.05$).

Conclusion: Maxillo-mandibular advancement alleviates obstruction at multiple levels and our study has demonstrated comparable surgical outcomes in both high and low Mallampati groups. The Mallampati score has a role in optimising patient selection for surgeons considering single-level procedures for OSA. Our study shows that the Mallampati classification is less useful to maxillofacial orthognathic surgeons in predicting surgical outcome.



O-2204

EFFECT OF MANDIBULAR DISTRACTION OSTEOGENESIS AND SAGITTAL SPLIT OSTEOTOMY ON THE UPPER RESPIRATORY AIRWAY

Mohamed B Khidr¹, Aly S.Gadala¹, Mohamed M.Osman², Khaled Hassan³

¹*Fayoum University, Egypt*

²*Delta University for Science and Technology, Egypt*

³*Misr International University, Egypt*

Objective: Mandibular retrognathia is the underdeveloped retruded position of the mandible to the maxilla. It might be due to condylar trauma or congenital conditions. Facial deformity and functional disabilities are the main reported complains. Various treatment modalities have been advocated. This study aimed to assess the effect of mandibular distraction osteogenesis and sagittal split osteotomy on the upper respiratory airway.

Methods: In the current study twelve patients (8 females and 4 males) with ages ranging from 18 to 35 years were treated from retrognathic mandible. The patients were divided equally into two groups. In group I mandibular retrognathia was treated by B.S.S.O while D.O. was the treatment of choice in group II. Pre and post operative clinical and radiological examinations, tracing of the upper airway and assessment of skeletal stability were done for all cases.

Results: The results revealed obvious improvements in both functional activities and facial appearance in almost all cases. The patients in B.S.S.O. group showed higher percentage of skeletal relapse and higher airway relapse as well.

Conclusions: The study revealed statistically significant positive correlation between the skeletal and oropharyngeal relapses in both groups.

**O-2205****DIAGNOSTIC-THERAPEUTIC ALGORITHM FOR ADULT PATIENTS WITH OBSTRUCTIVE SLEEP APNEA: TWO-YEARS EXPERIENCE OF A MULTIDISCIPLINARY TEAM.**

G. Gerbino¹, F.A. Bianchi¹, R. Benech¹, E. Zavattero¹, FC Gervasio², E. Piumetto², G. Meinardi², G. Ramieri²

¹ *Surgical Sciences, Division of Maxillofacial Surgery, University of Turin, Turin, Italy*

² *Surgical Sciences, Division of ENT, University of Turin, Turin, Italy*

Objective: The aim of this study is to describe the diagnostic-therapeutic algorithm for obstructive sleep apnea syndrome (OSAS) patients undertaken since 2011 at San Giovanni Battista Hospital, Turin, Italy and to describe the functional outcomes obtained with this multidisciplinary approach.

Methods: In 2011 our multidisciplinary team (MT) constituted by a neurologist, an otolaryngologist, a maxillofacial surgeon and a orthodontist born to decide the best treatment for patients with OSAS. The MT visited adults OSAS patients one a month. All patients underwent clinical evaluation, fiberoptic pharyngoscopy, Müller test, radiological findings. Variables examined include: age, BMI, respiratory disturbance index (RDI), oxygen desaturation index (ODI), hypoapnoea apnoea index (AHI). Patients without compliance with ventilation devices underwent sleep endoscopy. On the basis of these variables and of the patients' desiderata the MT decided the best treatment option for the patients.

Results: between January 2011 and June 2013 the MT visited 163 patients, middle age (range 30-60 years). 48 patients underwent ENT surgery (UPP, tonsillectomy, septoplasty, hyoid suspension), 19 patients underwent maxillofacial surgery (MMA, TPD, maxillary distraction), 16 patients were treated with oral appliances. Eighty patients started or continued to use cPAP. Ninety-four percent of the patients who underwent a surgical approach were cured based on the polysomnographic result. PSG showing a significant decrease in the mean values of RDI, ODI and AHI.

Conclusions: The work of the MT improved the effectiveness of treatment by optimizing the process of preparation and organization, and finally by contributing knowledge and experience in decision-making. His creation resulted in benefits for the patient, his family and the medical staff. Qualification for the most optimal treatment within the MT should be used in all patients with OSAS.



O-2206

GNATO-ORAL-PHARYNGEAL NORMALIZATION: NEW CONCEPT LEADING EXTRAPHARYNGEAL SURGERY IN OSA. 40 CASES EXPERIENCE

F. Laganà, D.S. Rossi, M. Romano, A. Russillo, G.A. Beltramini, A.B. Gianni

Maxillo-Facial Surgery and Odontostomatology, Fondazione IRCCS Ca' Granda - Ospedale Maggiore Policlinico, MILANO, Italy

Objectives

The maxillo-mandibular osteotomy with advancement treatments have proven over the years extremely effectiveness in the OSA treatment, highlighting the primary role of extrapharyngeal surgery than intrapharyngeal.

We present our experience, based on 40 patients among in which we highlight a series of 10 patients, illustrating a therapeutic process that has led us to define the gnato- oral- pharyngeal normalization concept, meaning in the need of balance between different elements that define the volume of the upper airway: individual dental occlusion, soft tissue and maxillo-mandibular skeletal.

Materials and methods

From 2004 to 2010 40 patients were treated with telegnathic maxillo-mandibular advancement. For 10 of these patients has been planned and executed a treatment according to the gnato-oral-pharyngeal normalization concept which provides in a presurgical orthodontic preparation followed by the osteotomy surgery.

Results

The results are encouraging: average of AHI $6,3 \pm 3,6$ and average of Epworth sleepness scale $1,8 \pm 1,8$ confirm the healing ($AHI < 10$) of almost all the treated cases.

Conclusions

The osteotomy surgery success shows how the lack of dynamic equilibrium between the soft tissue and the air duct limited by the maxillo-mandibular skeletal structure, which offers a rigid support to the upper airways, represent the main etiologic factor in OSA.

Patients undergoing gnato-oral-pharyngeal normalization in addition to achieving a clinical healing ($AHI < 10$) had less problems with postoperative occlusion and greater satisfaction from an aesthetic point of view, thanks to the best anthropometric balance obtained with the orthodontic-surgical programming .



O-2207

MAXILLOMANDIBULAR ADVANCEMENT FOR OSAS TREATMENT: LONG TERM RESULTS

A Vignerone¹, E Orset¹, R Tamisier², JL Pepin², G Bettega¹

¹ Plastic and maxillofacial surgery department, Grenoble university hospital, Grenoble, France

² Sleep laboratory, Grenoble university hospital, Grenoble, France

Objective: we evaluated the long term effectiveness of maxillomandibular advancement (MMA) for OSAS treatment

Methods: this retrospective study reviewed the patients treated by MMA for OSAS between 1995 and 2009. They were evaluated by complete polysomnography, teleradiography and quality of life questionnaire. The minimum follow up was 3 years. Success rate was defined by an IAH<10 with at least a 50% reduction.

Results: 88 patients had MMA during this period. 34 accepted the evaluation (28 men, 6 women). Mean age was 52.4±14. Mean follow-up was 12.5 years. Long term success rate was 28% for the entire group, postoperative IAH was reduced between 50 to 80% for all the patients except 1. Success rate was 100% for young patients (< 45), with BMI<25 and IAH<45 and SNB<75° and narrow retrobasinlingual space (<8 mm) and with preoperative orthodontics. Esthetic and sleep results were better with a moderate maxillary advancement and anterior impaction. There was no skeletal relapse. The major postoperative complication was inferior alveolar nerve hypoesthesia.

Conclusions: MMA is an effective and stable treatment of OSAS in selected patients. Preoperative orthodontics is recommended.



O-2208

OUTCOME AND COMPLICATIONS USING EXTERNAL AND INTERNAL DISTRACTION DEVICES IN TREATMENT OF OBSTRUCTIVE SLEEP APNEA

Adi Rachmiel, Saleh Nseir, Omri Emodi, Dror Aizenbud

Rambam medical center, Haifa, Israel

Objectives: Obstructive sleep apnea (OSA) is often associated with craniofacial malformations due to hypoplastic mandible and decreased pharyngeal airway. In this presentation we are going to present the outcome and the complications using external and internal distraction devices for mandibular lengthening in treatment of OSA.

Methods: 39 patients were treated by bilateral mandibular distraction osteogenesis for OSA: 20 with external and 19 with internal distraction devices.

Results: Marked lengthening of the mandible and increase of the pharyngeal airway was obtained in all patients. With external devices the average mandibular elongation was 29mm and 22mm with the internal devices,

The external devices were less comfortable and carried greater risk for pin tract infection and pin loosening than the internal devices .

The internal devices had a precise and predictable vector of lengthening and left less visible scars at the submandibular area and after one year were more stable results. They have major disadvantage of requiring a second operation for device removal and were associated with facial nerve damage in 14.7% of our patients. However in very young children with severe micrognathia, it was impossible to place internal devices, and external devices were used.

Conclusion: In paediatric OSA treatment the internal devices are more comfortable to the patients, with more predictable vector of lengthening, they are less vulnerable to dislodgment and leave reduced scarring, with the great disadvantage of second operation for removal. The external devices should be considered mainly in severe hypoplastic cases where internal devices cannot be inserted.

**O-2209****OSAS IN INFANTS: MANDIBULAR DISTRACTION TO PREVENT OR TO REMOVE TRACHEOSTOMY**

F.Mazzoleni , G. Bocchialini, R. Saez Vigo, G. Novelli, A.Bozzetti

Maxillo Facial Surgery, San Gerardo Hospital, Monza, Italy

OBJECTIVE : Obstruction of the upper airway consequent to mandibular hypoplasia is one of the most common causes of neonatal obstructive sleep apnea syndrome (OSAS).

Tracheotomy in newborn baby is often an effective treatment to prevent an acute respiratory distress but it is associated to severe problems.

This paper reports our experience concerning the treatment of OSAS with mandibular distraction osteogenesis in infant patients.

METHODS : 16 patients (8 males, 8 females) have undergone to seventeen procedure of bilateral mandibular distraction osteogenesis. Four patients were affected by Franceschetti Syndrome, and twelve by Pierre Robin Sequence. Pre operative conditions: three patients with C-PAP, three with tracheotomy and ten intubated patients. The average age at distraction time was 49 days and the age range went from 7 days to 150 days. Expansion of the mandibular framework was analyzed using superimposition of pre and post distraction X Ray cephalogram; The average distraction was 18mm with range from 15 to 25 mm; Timing for stabilization time was 6 /8 weeks.

RESULTS: Three patients removed tracheostomy, all the other ones reached an autonomous respiration except one that remained intubated. The two Franceschetti Syndrome patients died for respiratory distress within the first year of age while another Franceschetti Syndrome patient needed a secondary procedure after 22 months.

CONCLUSIONS : Neonatal mandibular distraction in distress respiratory condition is an effective procedure that can avoid tracheostomy and lead to autonomous respiration in patients with orotracheal tube or C-PAP. The long – term follow up results depends on by initial syndromic diagnosis



23. Preprosthetic Surgery and Implantology

O-2301

ANATOMICAL LIMITS OF THE SINUS LIFT SURGERY IN PARTIALY EDENTULOUS PATIENTS

Maciej Rysz, Bogdan Ciszek, Matylda Rogowska, Romuald Krajewski

Memorial Cancer Center, Head and Neck Cancer Clinic, Warsaw, Poland

Objective: Knowledge of the anatomy of anterior maxillary wall and alveolar process arteries is important for sinus lift procedure. Identification and preservation of these arteries is facilitated when their relationship to fixed anatomical structures can be measured on preoperative imaging studies. The aim of this anatomical study was to analyse localization of anastomoses between the infraorbital and posterior superior alveolar artery.

Material: We measured distance from bone canal of the anastomosis between infraorbital artery and posterior superior alveolar artery to selected bone points on 101 conventional CT scans of the maxillary sinuses (patients aged from 18 to 70 years) at the location of the teeth. In edentulous patients the bone point was lower edge of alveolar process and in dentulous patients it was tooth cervix. Examinations were done on GE Lightspeed 16 machine with a slice thickness of 3.75 mm. Measurements were done independently by 2 observers.

Results: The anastomosis was identified on 44% of CT scans in patients with teeth and in 70% of CT scans in patients without teeth (50% in whole group). When teeth were present the mean distance to anastomosis was 20,4 mm at the I premolar, 18 mm at II premolar and I molar and 20 mm at the II molar. In edentulous patients the distances were 17,4, 16,5, 16 and 19,9 mm respectively. In patients with single gap in dental arch measured distances were 19,8, 17,5, 16,8 and 19,4 mm respectively.

Conclusion: CT scan allows to localize arterial anastomosis in anterior wall of the maxilla in half of patients and to measure distance to it from either the edge of alveolar process or the tooth cervix for precise positioning of antrotomy. When the anastomosis cannot be identified, the anatomical information from this study can be used to reduce risk of damage to the anastomosis. Use of more appropriate bone imaging techniques for pre implant surgery such as CBCT could further improve localization of arteries and should be studied.



O-2302

SOFT TISSUE MANAGEMENT IN THE VICINITY OF DENTAL IMPLANTS

Z.Stajcic, Lj. Stojcev Stajcic, M. Rodic

DENTAL/MEDICAL CENTER FOR MAXILLOFACIAL SURGERY BEOGRAD-CENTAR, Beograd, Serbia

Objective: To present the techniques employed in the management of the soft tissues around dental implants

Methods: The soft tissue surgical procedures (STSP) applied around 278 dental implants by a single surgical team.

Implant neck STSP comprised vestibuloplasty, management of granulation tissue in the alveolar socket prior to implant placement, use of the buccal fat pad or a resorbable membrane to close an oro-antral communication adjacent to the implant neck.

Implant tip STSP was applied for the management of tears of the nasal and the maxillary sinus mucosae simultaneously with implant placement or augmentation. A membrane that was cut to size and placed in such a way that the smooth surface faced the defect was used in most cases. In some cases the sinus mucosa was sutured to the bone prior to insertion of the membrane. Through the opening it was even possible to remove a mucous cyst or a polyp.

Results: A Modified Kazanjian's submucous vestibuloplasty, was performed at four time points: prior to removal of teeth that should be replaced by implants, prior to insertion of implants in an edentulous jaw, simultaneously with implantation, or 1-2 months following placement of implants. Granulation tissue in the alveolar sockets where teeth were previously removed was left *in situ* and incorporated in the mucoperiosteal flap at the time of surgery. This approach allowed maturation of granulation tissue around the implant neck and its transformation into keratinized mucosa. Small-sized oro-antral communications were closed by placing a membrane over the bony defect. Larger defects in the molar region were filled with a buccal fat pad that was approached through the short horizontal incision in the periosteum after the mucoperiosteal flap had been reflected.

Both the buccal fat pad and a membrane were gradually covered by keratinized mucosa within one month postoperatively

Conclusions: STSP proved to be valuable tool in implant dentistry

**O-2303****A NEW TECHNIQUE FOR PRE-IMPLANT BONE GRAFTING IN PATIENTS WITH AN EXTREMELY RESORBED EDENTULOUS MAXILLA.**

M.S. Maningky^{1, 2}, EAJM Schulten², J. Wolff², T. Forouzanfar²

¹ OMF Surgery, Jeroen Bosch Hospital, Den Bosch, Netherlands

² OMF Surgery, VUMC, Amsterdam, Netherlands

Objective: The first objective of this study was to describe a new minimally invasive method of onlay bone augmentation prior to implant placement in patients with an extremely atrophied maxilla using resorbable plates and screws. The second objective was to compare this new technique to the gold standard technique using autogenous block grafts from the iliac crest.

Methods: A total of 35 patients with an extremely resorbed edentulous maxilla were treated using two different onlay augmentation techniques. Eighteen patients were treated using resorbable polylactate sheets Sonicweld® in conjunction with minimally invasively harvested cancellous bone from the iliac crest (SWA) A second group of 17 patients was treated using block grafts (ABG) from the iliac crest. Operating time, hospitalization time, complications, and implant survival were compared.

Results: The mean hospitalization time of patients in the SWA group was 2.17 days compared to 3.0 days in the ABG group. Although the complication rate in both groups was similar, complications in the ABG group at the graft site lead to major adjustments in implant positioning or to failure of placing the implant in five patients. No such complications were noted in the SWA group. Implant survival was not significantly different between the two groups.

Conclusions: Both techniques are reliable methods for bone grafting prior to implant placement in patients with an extremely atrophied maxilla. Within the limitations of this retrospective study, the SWA technique is promising because of the shorter hospitalization time and less postoperative morbidity. More prospective research is needed to confirm these preliminary results.

**O-2304****FUNCTIONAL REHABILITATION WITH IMPLANT-SUPPORTED OVERDENTURES**

Ryuichi Murase, Kozue Shinohara, Tomoki Sumida, Akiko Ishikawa, Youhei Fujita, Emi Matsumoto, Koichi Nakashiro, Hiroyuki Hamakawa

Department of Oral and Maxillofacial Surgery, Toon city, Japan

Objective;

The restorative therapy using implant-supported overdentures is known to improve oral function. The aim of this study was to evaluate the long-term effects of mandibular implant treatment on oral function. We quantified maximum bite force and masticatory performance 3 years after implant treatment. It was hypothesized that these outcome measures would not change in this period.

Methods;

We treated twenty four edentulous patients with overdentures supported by osseointegrated implants, and quantified their maximum bite force and masticatory performance before and after setting ball-socket attachment. Four subjects who underwent mandibular resection were involved in this study.

Results;

The subjects showed significantly better function, 397% increase of maximum bite force (from 131.1 N to 565.5 N, $p < 0.01$) and 123% increase of masticatory performance (from 3.0 to 7.9, $p < 0.01$) after they set overdentures with implant retention, and their oral function was comparable to healthy dentate subjects. While individual changes in maximum bite force showed no significant correlation, those in masticatory performance were negatively-correlated. Four patients who had undergone surgical operation resulting in extremely loss of bone also showed remarkably better function after treatment.

Conclusion;

These results indicate that the use of implant-supported overdentures retained by small number of implants is an effective approach to rehabilitate patients with advanced bone resorption.

**O-2305****TIBIAL CANCELLOUS BONE GRAFTING IN JAW RECONSTRUCTION: 10 YEARS OF EXPERIENCE IN TAIWAN**

EC Ko, CM Chang, P Chang, CC Kao, KJ Chen, IF Wu, MY Chen, K Hoshi

Kaohsiung Medical University, Kaohsiung, Taiwan

Backgrounds:

Use of proximal tibia as a donor site has been applied in jawbone reconstruction since the 1990s. Catone and colleagues described a U-shaped incision made on the iliotibial tract during tibial cancellous bone procurement for maxillofacial reconstruction in 1992. We used a curvilinear incision on the iliotibial tract in lateral approach in our tibial cancellous bone harvesting procedure.

Objectives:

The objectives of this retrospective study are to describe our modified lateral approach for procuring cancellous graft from the proximal tibia and to assess the bone volume, donor site morbidity, and associated complications.

Methods:

Eighty consecutive jawbone reconstructions utilizing autogenous tibial cancellous bone grafts in 78 patients from March 1998 through March 2008 were reviewed. The patient group consisted of 45 males and 33 females, ages 18 to 76 (average age 36.1 ± 12.3). Minimal postoperative follow-up period was 3 months. Unlike the traditional U-shaped trapdoor incision on the iliotibial tract, our curvilinear incision was made almost parallel to the fibers of that tract.

Results:

Only mild complications were observed at donor sites, including temporary paresthesia, gait disturbance, and an unpleasant scar. The average procured graft volume was 17.8 mL. We also present the first case of reconstruction of mandibular continuity defects of up to 6 to 7 cm lengthwise by tibial cancellous bone grafting, which has not previously been reported in the English literature.

Conclusions:

The modified incision on the iliotibial tract allowed access to obtain an equally good bone volume from the lateral aspect of the proximal tibia, and it rendered wound closure much easier than the procuring techniques described in the earlier literature.

**O-2306****"EVALUATION OF THE EFFECTIVENESS OF ONE-STEP CONCEPT IN THE REHABILITATION OF PATIENTS WITH MONOLITH IMPLANTS."**

A. Nikitin, M. Amhadova, A. Frolov, P. Polupan

Maxillofacial Surgery, MRSCRI, Moscow, Russian Federation

Objective:

Nowadays the literature review has shown the fact that the choice of dental implant protocol in the rehabilitation of patients in most cases is made in favor of Two-step concept. The mechanism of such decisions often results from poor coverage of this issue in researches, printed media, scientific conferences reports and practical trainings. Based on the literature data and practical work carried out on the clinical basis of the Department of Maxillofacial Surgery MRSCRI there were defined selection criteria for One-step protocol in the rehabilitation of patients with monolith implants and analyzed their effectiveness in different groups. The aim of this work was to investigate the feasibility of this protocol in daily practice.

Methods:

From September 2006 to December 2011, 897 patients underwent implantation of 2657 monolith Tapered implants in total. Patients were divided into four groups.

Group No.1 - sufficient amount of bone, thick biotype of gums;

Group No.2 - sufficient amount of bone, thin biotype of gums;

Group No.3 – deficient amount of bone, thick biotype of gums;

Group No.4 – deficient amount of bone, thin biotype of gums.

We conducted a comparative assessment of successfully placed and functioning implants in the groups. And calculated the success percentage out of the total number. The criteria of success were the absence of inflammation at the area of the implant proved clinically and radiologically, stability and predictable soft tissue recession.

Results:

Of the total number of implants placed (2657) only 59 were lost (2.07 %) in 8 weeks after the surgery. The lost ones comprised: Group No.1 - 9 implants (15.25 %), Group No.2 -14 (23.72 %), Group No.3 - 14 (23.72 %), Group No.4 - 22 (37.28 %). Further on, during the first year there were lost 7 implants, the third year - 7; the fifth year - 9.

Conclusions:

According to the results of the 7-year postoperative observation only 82 (3.08 %) implants were lost.

There have been achieved the goal to prove the consistency, effectiveness and the perspective of use and development of One-step monolith implant concept.

**O-2307****SALVAGE CONCEPTS IN WORST CASE SCENARIOS OF MULTIPLE PRETREATED IMPLANT PATIENTS**

H. Kokemueller, M. Rana, R. Zimmerer, P.-C. Pott, M. Eisenburger, N.-C. Gellrich

Department of Craniomaxillofacial Surgery, Hannover Medical School, Hannover, Germany

In spite of all advances in dental implant and surgery, there remains a group of patients in which conventional concepts do not lead to enduring success. Especially after previous loss or fracture of dental implants in the endentulous jaw, a detailed error analysis of the masticatory organ is necessary, since inappropriate static relations can evolve due to contrarious atrophy of the lower and upper jaw, which need to be corrected prior to implant surgery.

In worst case scenarios, the mandible often lies in a class III position and the atrophy of the maxilla hardly allows bone augmentation anymore. In some cases, the maxilla is nearly completely resorbed due to implant loss, infection after failed bone augmentation or previous cleft surgeries. By means of three successfully treated worst case scenarios of multiple pretreated implant patients, our institution's salvage concepts shall be exemplarily demonstrated.

In order to optimize the chance for success of further surgical attempts, three-dimensional imaging (e.g. CBCT) should be followed by complex preprosthetic backward planning, taking into account different augmentation techniques as well as possible sagittal split osteotomies of the lower jaw for improvement of the static relationship between mandible and maxilla. In this regard, the use of computer-assisted planning procedures including segmentation devices for simulation of jaw movements and scan-templates for final determination of implant positions have proved to be helpful tools. Furthermore, intraoperative navigation devices should be implemented if zygomatic implants are needed for dental rehabilitation of the upper jaw.

In conclusion, successful salvage concepts in worst case scenarios of multiple pretreated implant patients are based on the following factors: comprehensive error analysis of previous attempts, preprosthetic backward planning including computer-assisted devices, a mixture of different augmentation techniques and preprosthetic orthognathic surgeries, and the involvement of conventional implants as well as zygomatic implants if needed.

**O-2308****ELECTROLESS SYNTHESIZED NANOSILVER COATING IN DENTAL IMPLANTS**

Marisa Dietz^{1, 2}, Falk Adrian Münch³, Nora Prochnow², Joachim Jackowski¹, Ashkan Rashad⁴, Peter Maurer², Wolfgang Ensinger³

¹ *Department of oral surgery and dental emergency care, University of Witten/Herdecke, Witten, Germany*

² *Department of Neuroanatomy and molecular brain research, Ruhr-University Bochum, Bochum, Germany*

³ *Department of Material sciences, Technical University Darmstadt, Darmstadt, Germany*

⁴ *Oral and Maxillofacial Surgery Department, University Medical Center Hamburg-Eppendorf, Hamburg, Germany*

Objectives:

In the last three years, the application of nanosilver particles on dental implants as active surface modifiers showed antibacterial activity at high cell compatibility. Aim of this study was the development of an electroless method to directly synthesize silver nanoparticles on different implant surfaces and materials which can be applied selectively and combined with other coatings.

Methods:

Various dental implants were coated with nanosilver-films in electroless synthesis. The implants were evaluated microbiologically in culture with *Streptococcus aureus* and *Pseudomonas aeruginosa* and in cell culture with MC3T3-E1 cells. Scanning electron microscopy was used to evaluate the surface.

Results:

The antibacterial nanosilver coating is bound properly to different implant surfaces and allows to directly synthesize antibacterial nanosilver-films on dental implants instead of the sole deposition of nanoparticles.

Conclusion:

The electroless synthesis of silver nanofilms on the implant surface allows the antibacterial effects and cell compatibility of silver nanoparticles, but also the selective surface preparation and the combination with other active coatings, such as hydroxyapatite. The coating can be applied selectively to the crestal implant surfaces, where there is most of the bacterial activity. Because of the electroless synthesis, the coating also works on non-metal surfaces such as zirconium dioxide.

**O-2309****PERIOSTEAL BONE FLAP WITH THE INTERPOSITIONAL GRAFT IN THE INTERFORAMINAL SECTOR OF THE LOWER JAW**

Z. Kovacic, D. Debevc, M. Kocar

Department of Maxillofacial and Oral Surgery, University Medical Center Ljubljana, Ljubljana, Slovenia

Introduction: The periosteal bone graft technique (PBG) is being used for the replacement of vertical bone defects in the lower as well as the upper jaw.

Method: Semilunar incision is made in the vestibulum 5 mm below the attached gingiva. At the top of the alveolar ridge mucosa is not released, thus ensuring circulation of the moving segment. We begin the osteotomy with a rotating or ultrasonic blade, completing it with osteotomes. Consequently the lingual periosteum remains intact. We lift the free bone segment that has to be high and wide at least 5 millimeters. Into the blank space we can insert an adapted autogenous, autologous, heterologous or synthetic bone substitute as an interposition graft. Together with the free segment it is stabilized with osteosynthesis.

Clinical example: A fifty-six-year-old female patient was treated for unstable lower total prostheses (TP). In the lower jaw there was a resorption of the alveolar ridge rated E according to Lekholm-Zarb. CB CT showed highly resorbed alveolar ridge of the lower jaw (6 mm). We decided to rehabilitate with the implant-supported mandibular prostheses. The upgrading of the alveolar ridge of the lower jaw was done with the PBG with interposition heterologous collagen graft. At osteotomy we separated the spina mentalis from lingual muscles, and prevented rotation of the free lingual segment. With two mini plates we properly stabilized the segment through the entire period of healing. After six months (height of alveolar ridge was 9-10 mm.) we removed osteosynthetic material and inserted two implants.

Results: Six months later patient received implant-supported mandibular prostheses. Half a year after patient had no clinical problems and RTG showed no resorption of the bone

Discussion, Conclusion: PBG with the interposition graft is a predictable procedure for augmentation of the alveolar ridge, which, however, has limitations in gaining height (up to 10 mm). The main advantages of the procedure are to maintain the vitality of the segment as well as the corresponding three-dimensional acquisition of the bone mass with osteosynthesis and interposition heterologous collagen graft.

**O-2310****DENTAL REHABILITATION IN PATIENTS AFFECTED BY HYPOHIDROTIC ECTODERMAL DYSPLASIA: THERAPEUTIC APPROACHES**

M. Tousidonis, A. García-Sevilla, A. López, C. Maza, J. Ruiz, S. Ochandiano, J. I. Salmerón

Oral and Maxillofacial Surgery, Hospital General Universitario Gregorio Marañón, Madrid, Spain

-Introduction:

Anhidrotic ectodermal dysplasia is the most common form of about 150 types of ectodermal dysplasia in humans. It is estimated to affect at least 1 in 17,000 people worldwide. These disorders result in the abnormal development of structures including the skin, hair, nails, teeth and sweat glands before birth. Clinically it is characterized by hypotrichosis (sparseness of scalp and body hair), hypohidrosis (reduced ability to sweat), and hypodontia (congenital absence or malformation of teeth). And it is associated with distinctive facial features including a prominent forehead, thick lips, and a flattened bridge of the nose.

- Aims/Objectives:

We would like to present three different implant-based approaches for the dental rehabilitation of patients with hypohidrotic ectodermal dysplasia.

- Material and Methods:

Bone deficiency was treated by means of three different therapeutic methods. In the first case, the rehabilitation was carried out using maxillary sinus elevation and onlay iliac crests and calvarian bone grafts in mandible, followed by conventional implant placement. In the second one, dental implants were placed in mandible and zygomatic implants in maxilla. In the third case, we performed an alveolar distraction in mandible and maxillary sinus elevation and implants were placed right after.

- Results:

We discuss advantages and complications of the three different methods: calvarial and iliac crest bone grafts, sinus lift or zygomatic implants and alveolar distraction. Fixed Implant supported and retained dental rehabilitation could be performed in all the patients, improving significantly their quality of life.

- Discussion and Conclusion:

Dental rehabilitation is possible in patients with hypohidrotic ectodermal dysplasia and there are different ways to approach the treatment, which has to be individualized in each case.



O-2311

NEW APPROACH; IMPLANTS PLACEMENT AT ATROPHIC RIDGES IN ONE STAGE WITH BONE AUGMENTATION UTILIZING AUTOGENIC BONE WEDGES AND BONE SUBSTITUTES.

Fares Kablan

Poria hospital, Beit Jann Village, Israel

Objective: Implants insertion requires adequate bone quantity and quality. Bone augmentation therefore is carried out prior to implant insertion to improve bone volume. The aim of this presentation is to introduce a new method for bone augmentation and implant insertion in one stage.

Materials and Methods: Patients with moderate to severe ridge atrophy in different regions of the jaws, with residual bone of 4 to 8mm were treated over 4- years period with bone augmentation and implant insertion at the same surgery. The desired bone block is harvested from the retromolar area, sectioned to multiple thin bone wedges. The implants sites is marked and grooves are prepared at the recipient bed. The implants is then inserted and 2-5 mm of the implants are left exposed, the thin bone wedges are tapped into the grooves creating cortical bone compartments, particulated bone is then used to fill the recipient site of the bone compartments and the implants. Patients were examined every 2 weeks. At 4 months, the patients were referred to rehabilitation.

Results: 18 patients (13 women, 5 men, mean age 47) were followed up to 4-35 months, and simultaneously received 39 implants and bone augmentation. The healing process was uneventful, with minimal morbidity. Implants length was improved by 3-5mm, the bone gain was 3-7mm, and the treating period was reduced to 4 months. At the follow up period the survival of the bone augmentation and the dental implants at the recipient site were satisfied and predictable. Conclusions; this technique helps to insert implants in residual ridge of 3-6 mm with good length at the same stage of the bone augmentation that is required for implants insertion in the atrophic ridge. The treatment period is reduced and less surgical procedures are required.



24. Tissue Engineering and Cell Therapy

O-2401

THE PROS AND CONS OF PLATELET RICH PLASMA USE IN BONE REGENERATION AND RECONSTRUCTIVE MAXILLOFACIAL SURGERY. A META-ANALYSIS.

M. Shahla, D. Dequanter, P. Lothaire, Y. Deniz, C. Aubert, A. Lemaitre, P. Philippart

CHU Vésale, Montigny le Tilleul, Rhode Saint Genese, Belgium

Platelet rich plasma is an autologous source of concentrated platelets, obtained by a 4-5 times concentration of autologous blood, resulting in a high levels of available growth factors shown to be involved in bone matrix formation such as IGF, TGF- β , VEGF and PDGF. PDGF has been detected in early stages of the bone healing process.

High concentrates of platelets and thus growth factors would increase bone healing and decrease bone resorption after tooth extraction, autologous bone grafts and/or heterologous bioactive composite scaffolds.

The use of PRP is well documented in the litterature. The efficacy of the use of PRP in bone healing and regeneration with both autologous bone grafts and bone substitutes in maxillofacial surgery has been widely studied and reported. However the results are somewhat inconsistent in both animal and human models.

We sought to scrutinize all recent studies in both animal and human models and to establish whether there is a commun ground in these studies or are they all somewhat different and furthermore compare these findings with our own experience. To evaluate the causes of inefficacy in some models in contrast with significant amelioration in others. What factors contribute to these differences and what was not done appropriately and mainly what could contribute to bone regenration enhancement with regards to PRP use? Do all animal models comply with a commun methodology in PRP use? How do co-factors contribute to the outcome? What activating factor was used? What method is utilized to evalutate bone regeneration? Inconclusive results in almost all studies show a lack of PRP concentration, heterologous platelets, inadequate scaffolds, insufficient numbers of cases and incocnsistency in the harvesting method. There is the correlation between PRP concentration and platelet count.

Our clinical cases correcting all errors in prior studies demonstrates that sufficient amount of PRP is a reliable reactor for accelerated bone regenration during the first few weeks. This effect weans off gradually. PRP can also be utilized as an activator of the bone marrow to render it a reliable source of human bioreactor with the increase of mesenchymal stems cells.



O-2402

CHARACTERIZATION OF THE OSSEOINTEGRATION OF ALGIPORE® AND ALGIPORE® MODIFIED WITH MINERALISED COLLAGEN TYPE I

M.C. Schulz¹, A. Lode², S. Wittig¹, B. Stadlinger³, E. Kuhlisch⁴, U. Eckelt¹, M. Gelinsky², R. Mai¹

¹ Department of Oral and Maxillofacial Surgery , Medical Faculty "Carl Gustav Carus" Technische Universität Dresden, Dresden, Germany

² Centre for Translational Bone, Joint and Soft Tissue Research, Medical Faculty "Carl Gustav Carus" Technische Universität Dresden, Dresden, Germany

³ Clinic of Cranio-Maxillofacial and Oral Surgery, University of Zurich, Zurich, Switzerland

⁴ Institute for Medical Informatics and Biometry, Medical Faculty "Carl Gustav Carus" Technische Universität Dresden, Dresden, Germany

Objective. Aligpore® is a clinically established bone substitute. The present study evaluated the osseointegrative and resorptive characteristics of Aligpore® modified with collagen type I (ACI).

Methods. Three defects of 10 mm ´ 3 mm were set in the frontal bone of ten adult female minipigs. One cavity was filled with commercially available Aligpore®, the second with ACI. The third cavity was left unfilled and served as reference. After 4 months of healing the animals were sacrificed. Bone formation and resorption characteristics of the substitutes were evaluated histomorphologically and histomorphometrically using Donath's sawing and grinding technique.

Results. Both materials caused no inflammatory reactions. Compared to controls, both substitutes showed significantly higher fractions of trabecular bone (control: 42.2 %; Aligpore®: 58.7 %; (p < 0.001); ACI: 53.6 %; (p = 0.013). After 4 months the remaining fraction of Aligpore® was 42.2 %, the fraction of ACI 47.9% (p = 0.016).

Conclusion. The present study demonstrates that the modification of Aligpore® with collagen I does not show any benefits compared to pure Aligpore® in small calvarial bone defects in minipigs.

**O-2403****THE FEASIBILITY OF GELATIN HYDROGEL AS A CARRIER OF BASIC FIBROBLAST GROWTH FACTOR FOR BONE FORMATION IN RAT MANDIBULAR DISTRACTION**

Atsushi Kimura¹, Yuhji Kabasawa¹, Masaru Sato¹, Namiaki Takahara¹, Kanako Matsumoto¹, Yusuke Higuchi¹, Yasuhiko Tabata², Kazuhiro Aoki³, Keiichi Ohya³, Ken Omura¹

¹ *Oral and Maxillofacial Surgery, Tokyo Medical and Dental University, Tokyo, Japan*

² *Department of Biomaterials, Field of tissue engineering, Institute for frontier medical sciences, Kyoto University, Kyoto, Japan*

³ *Pharmacology, Tokyo Medical and Dental University, Tokyo, Japan*

Objective: Mandibular distraction has been promoted in the laboratory by various growth factors and carriers, which have been used to enhance new bone formation. However, there have been no reports on the use of basic fibroblast growth factor (bFGF) and gelatin hydrogel (GH) as a carrier. In this study, we assessed the efficacy of bFGF in GH to promote mandibular growth in rats.

Methods: After having removed the incisive teeth of 10-week-old male Wistar rats, we cut the bone between the second and third grinding teeth, where we then injected bFGF (50 µg) in GH (experimental group: n = 6). Controls included (1) bFGF only (n = 5), (2) GH only (n = 5), (3) collagen only (n = 6), and (4) bFGF in collagen. We estimated bone growth at 0.6 mm/day. Injections were administered daily for 6 days; after 18 days, the rats were sacrificed and the radiodensities and bone densities of extracted bones were compared by soft tissue radiography, micro-computed tomography, and peripheral quantitative computed tomography. Undecalcified thin slice preparations were stained with von Kossa and tartrate-resistant acid phosphatase for osteomorphometric analysis of new bone formation.

Results: The experimental group showed radiodensity progression and an increase in the bone cortex and growth area ($P < 0.01$). Histology also showed an increase in bone area ($P < 0.05$).

Conclusions: Application of bFGF in GH promoted new bone formation during mandibular bone growth in rats, suggesting bFGF was liberated from GH and promoted bone formation over time.



O-2404

MAXILLARY SINUS LIFT IN MINIPIGS WITH HYDROXYAPATHITE, TRICALCIUM PHOSPHATE AND ADIPOSE STEM CELLS: A STUDY IN AN EXPERIMENTAL MODEL

AM López López, S Ochandiano Caicoya, C Maza Muela, A García Sevilla, C Navarro Cuéllar, C Navarro Vila

Oral and Maxillofacial Surgery Department, Gregorio Marañón Univeristy Hospital, Madrid, Spain

INTRODUCTION

Maxillary sinus lift is a preprosthetic technique used in patients with a severe atrophic maxilla. Through a Cadwell Luc approach, we fill the cavity with different materials (autologous bone, alloplastic materials, ...)
Stem cells have the ability to differentiate into various cell types. In adult organisms, they regenerate and repair body tissues.

MATERIAL AND METHODS

The aim of our study is:

- To validate the behaviour of a new biomaterial, a mixture of 50% of demineralized bovine hydroxyapatite and 50% of beta tricalcium phosphate.
- To analyze bone formation using a mixture of the biomaterial and porcine adipose mesenquimal stem cells.

In the pig, the sinus has a lateral wall of about 3 mm thick and a Schneider membrane similar to human. The study was approved by the ethical animal study committee.

Through an extraoral approach, we raised the membrane and placed the biomaterial alone in the right side of ten minipigs and a mixture of different amount of adipose mesenquimal stem cells (14x10⁶ to 2x10⁶ in 2ml of serum) with the biomaterial inside the left side of the same minipigs.

We sacrificed the pigs at 1 and 4 months. The sample analisis was made by means of micro CT and 2D histomorphometry measuring the amount of new bone formed.

RESULTS

On the right side, biomaterial alone, we found 4 to 6 % of bone formed at 1 month. At 4 months the amount of reossification range between 11 and 34%.

Bovine hydroxyapatite with tricalcium phosphate are a biocompatible material that produce greater bone formation .

The ossification of the maxillary sinus occurs in a centripetal way.

The addition of adipose stem cell has been an obstacle to new bone formation.

CONCLUSIONS

In our experience with minipigs, sinus augmentation with bovine hydroxyapatite biomaterial with tricalcium phosphate produces a larger amount of bone formation .

The addition of adipose stem cell has meant fibrosis without obtaining bone tissue.

Further studies are needed to determine the threshold number of cells for bone formation in sinus augmentation.

The in vitro differentiation into osteoblastic cells could become an additional advantage

**O-2405****COMBINATION OF MULTIPLE DEVITALIZED ENDOCHONDRAL MICROMASSES AND STROMAL VASCULAR PROGENITOR CONCENTRATIONS FOR UPSCALED 'OFF-THE-SHELF' BONE GRAFTS**

M. Kreutz^{1, 2}, A. Barbero², P. Bourguine², C. Scotti², I. Martin², C. Jaquier¹

¹ *Department of Oral and Maxillofacial Surgery, University Hospital Basel, Basel, Switzerland*

² *Institute for Surgical Research and Hospital Management, University Hospital Basel, Basel, Switzerland*

Objective: Current existing strategies to promote bone repair consist in bone substitution materials, in the delivery of osteo-inductive growth factors (BMP) or in the use of autograft. Nevertheless, those strategies highly depend on the healing condition and may not be sufficient to promote a complete and stable bone repair. We recently developed a strategy that, by recapitulating the endochondral ossification route, generates mature and functional bone starting from hypertrophic cartilaginous tissues generated by bone marrow-derived adult Mesenchymal Stromal Cells (hMSC) (Scotti C, 2010; Scotti C, 2013). The aim of this project is to develop and pre-clinically validate an engineered bone substitute material with osteoinductive properties. The graft, generated by adult hMSCs cultured in scaffold-free micromasses, consists of hypertrophic cartilage extracellular matrix (ECM). Once deposited, the matrix was decellularized (for a possible future safe use in clinic as an 'off-the-shelf' product) and "activated" by using stromal/vascular progenitor cells from adipose tissue (SVF).

Methods: MSC were isolated from the bone marrow and expanded. Expanded hMSC were cultured in micromass pellets under conditions promoting hypertrophic differentiation. Cartilaginous pellets were then devitalized using the standard snap freezing procedure and assembled in a fibrin gel (25 pellets/constructs) without (ctr) or with different amounts of SVF cells (i.e., 0.5, 1 or 2 millions). Constructs were then implanted into subcutaneous pockets of nude-mice. After 12 weeks, explants were analysed histologically and by microtomography to assess extent of cartilage remodelling and the amount of newly formed bone tissue.

Results: As compared to ctr tissues, SVF-containing constructs showed larger bone marrow areas and larger Masson trichrome positive bone areas. Microtomography analyses indicated statistically significant larger amounts of bone volumes in the constructs originated with 0.5 and 1 millions of SVF (16% and 47%, respectively). Bone volume in the constructs generated with 2 millions of SVF was highly variable.

Conclusions: We have demonstrated that SVF cells delivered together devitalized hypertrophic cartilage constructs lead to efficient bone formation. The results open the way to the intraoperative enhancement of engineered materials that can be stored off-the-shelf. Ongoing activities are assessing the effectiveness of the strategy in an orthotopic, calvarial bone defect model.



O-2406

THE VALUE OF PRP IN THE TREATMENT OF OSTEONECROSIS OF THE JAW

Victor-Vlad Costan, Mihai Liviu Ciofu, Andrei Nicolau, Eugenia Popescu

UMF "Gr. T. Popa", Iasi, Romania

Osteonecrosis of the jaws, regardless of etiology (bisphosphonates, radiotherapy) is a difficult to treat pathological entity. Platelet Rich Plasma (PRP) opens a new perspective in the treatment of this disease. We wish to present the results achieved so far by using PRP in the treatment of osteonecrosis of the jaw.

Material and method

Between September 2013 and January 2014 we treated a total of 23 patients with osteonecrosis of the jaw (6 induced by radiotherapy and 17 induced by bisphosphonates). In three of the patients, osteoradionecrosis was located on the basilar margin being associated with a submandibular fistula. In all patients sequestrectomy and curettage of necrotic bone was performed, followed by covering of the defect with a mucous-periosteal flap. In this flap and in the periosteum of the affected region PRP was injected. The evaluation was conducted by clinical, radiographic exam, and in three of the patients with osteoradionecrosis, by scintigraphy performed before treatment and at 6 months postoperatively.

Results

In 5 of the patients with bisphosphonate-induced osteonecrosis and one with osteoradionecrosis, a second surgery was required, that was performed following the same protocol as the initial intervention. The Orthopantomography showed a recovery of normal bone structure in the affected region, and the scintigraphic imaging, the disappearance of "warm" areas in the affected regions.

Conclusions

The use of PRP represents a breakthrough in the treatment of osteonecrosis of the jaw, stimulating the activity of the periosteum whose integrity is essential for lasting and quality results.



O-2407

HUMAN ADIPOSE MSC DIFFERENTIATION INTO OSTEOLASTS WITH BMP- 2 OR OSTEOGENIC SOLUTION. AN IN-VITRO STUDY AND CULTURES WITH TITANIUM IMPLANTS.

C. Ila¹, S. Ochandiano¹, M.E Fernández-Santos², J.R. Acebes², V. Plasencia², C. Navarro Cuéllar¹, C. Navarro Vila¹

¹ *Craniomaxillofacial surgery, University Hospital Gregorio Marañón, Madrid, Spain*

² *Celular therapy laboratory, University Hospital Gregorio Marañón, Madrid, Spain*

Introduction:

Tissue engineering is a promising alternative therapy to autologous bone in maxillofacial reconstructive surgery. We present different studies performed at our institution cellular therapy laboratory regarding human adipose mesenchymal stem cells differentiation into osteogenic cellular lineage.

Material and methods. Results:

We isolated MSC from human adipose tissue , expanded during 15 days with subsequent trypsinization, proved to be truly MSC by means of flow cytometry and counted.

Test 1: Once isolated the cells were cultured and stained with three different concentrations of BMP-2 (0,1-0,001- 0,0001 mg/ml) and a fourth group with commercial osteogenic medium (citrate and dexamethasone).

After fourteen days of culture the confluence of cells was 100% and we search for calcium precipitates in the wells by red alizarin staining. A clear calcium deposit was demonstrated within BMP-2 0,1 mg/ml and commercial osteogenic medium cultures. It was less intense in the other two BMP cultures, so both were discharged

Test 2: After 9 weeks of culture and 4 trypsinisations, calcium deposits continue to emerge but it has been observed the gradual loss of calcium deposits, in both cultures.

Test 3: We test the ability of undifferentiated adipose-MSC and differentiated osteoblasts to adhere and proliferate after different times of culture (24-72 hours, 7 days) around titanium commercial dental implants. The surface of the implants was observed with electronic microscopy, searching for adherent cellular aggregates and the deposition of osteoid matrix. Undifferentiated adipose-MSC do not proliferate nor adhere to titanium surface at all. Interestingly adipose –MSC already differentiated into osteoblasts not only could adhere to titanium surface gradually within days, but they were capable to aggregate and produced mineralized matrix along the surface.

Conclusions:

Adipose-MSC are a promising source for bone regeneration once they are correctly differentiated into osteoblasts. The differentiation needs different application of factors along the cultivation process because only one dose at the beginning of the process is not enough to keep a continuous production of bone matrix. Differentiated osteoblasts adhere, proliferate and produce bone matrix when cultured in the surface of commercial dental implants suggesting the possibility of a truly bioactive surface.

**O-2408****MESENCHYMAL STEM CELLS (MSCS) AND PLATELET-RICH PLASMA (PRP) LONG TERM TREATMENT EFFECTS IN BISPHOSPHONATE-RELATED OSTEONECROSIS OF THE JAWS**

L. Czakó¹, D. Hirjak¹, L. Vanko¹, B. Gális¹, J. Lakota², I. Kupcová¹

¹ *Department of oral and maxillofacial surgery, Comenius University, Bratislava, Slovakia*

² *Ústav experimentálnej onkológie, Slovenská akadémia vied, Bratislava, Slovakia*

Treatment modalities and strategies for the patients with, or at risk of bisphosphonate-related osteonecrosis of the jaws (BRONJ) are still controversial and they have been changing over last few years. Effective treatment has still to be developed. Interrupting bisphosphonate therapy does not seem to be beneficial and can be used effectively only in patient with osteoporosis. The purpose of this presentation is to evaluate the long term therapeutical effect of mesenchymal stem cells (MSCs) and platelet-rich plasma (PRP) on bone regeneration in cases with BRONJ after 24 months observation period. Biostimulant effects of PRP and MSCs reduce the healing time and local pain immediately after surgery. They improve the final reparative process of bone and mucosa, increase inorganic matrix of bone and osteoblast mitotic index and stimulate lymphatic and blood capillaries growth in the affected area. MSCs and PRP nowadays appears to be a promising modality of BRONJ treatment, being safe and well tolerated, and it permits the minimally invasive treatment of early stages of the disease.



O-2409

HUMAN AMNIOTIC MEMBRANE FOR GUIDED BONE REGENERATION

F. Gindraux, R. Laurent, L. Wajszczak, N. Zwetyenga, JC. Fricain, A. Nallet, E. Euvrard, C. Meyer

Orthopaedic and Traumatology Surgery Service, University Hospital of Besancon, Besançon, France

Objective:

The human Amniotic Membrane (**hAM**) is known to have a good potential for tissue regeneration because it's a scaffold containing mesenchymal stem cells (**MSC**) and growth factors, with low immunogenicity and anti-microbial, anti-inflammatory, anti-fibrotic and analgesic properties. Several case reports showed its use for oral and maxillofacial surgeries (vestibuloplasty; guided bone regeneration and buccal defects). *Gindraux et al. RPRM 2013*

We aim to use it as a bioactive membrane for guided bone regeneration so, we studied:

- hAM osteogenic potential and the necessity to osteodifferentiate the tissue;
- hAM association with polycaprolactone (PCL) scaffold to allow its handling during the surgery and ideally its osteodifferentiation.

Methods:

hAM from Caesarean delivery was provided by a local tissue bank. A biodegradable nanofiber PCL scaffold (~500 µm thick) was produced using a novel jet spraying technique (Biomedical Tissues, France). hAM was cultured in contact with PCL scaffold in control or osteodifferentiation culture media. These montages (hAM + PCL) were then grafted subcutaneously in mice and explanted after 1, 2, 4 and 8 weeks.

Control studies regarding PCL properties were performed with: **i)** MSC alone cultured on the scaffold and **ii)** hAM grafted alone into mouse.

Cell viability and osteogenic potential phenotype were evaluated for both *in vitro* and *in vivo* studies.

Results:

Results showed that hAM could be osteodifferentiated *in vitro* by an osteogenic medium and presented an osteocyte phenotype. This culture led to structural alterations (mineralization) that act on *in vivo* hAM reduction. Surprising, "not osteodifferentiated hAM" presented an osteoblastic phenotype. Finally, we report that both osteodifferentiated (or not) hAM did not involve *in vivo* allogenic reaction over time, testifying to its good biocompatibility.

Control studies showed that PCL scaffolds supported proliferation, maintained MSC viability and allowed osteogenic differentiation.

Conclusion:

We confirmed hAM *in vitro* osteodifferentiation reported by others and, the osteodifferentiation of the tissue seems very probably beneficial to *in vivo* hAM reduction, but may be not necessary. **Control studies** showed that PCL scaffolds presented osteoinduction properties on isolated MSC. Its specifications are being reviewed to improve its adhesion properties.



25. Advanced Imaging and CAD / CAM Technology

O-2501

MULTICENTRE STUDY ON THE USE OF PATIENT-SPECIFIC CAD/CAM RECONSTRUCTION PLATES FOR MANDIBULAR RECONSTRUCTION

F. Wilde¹, A. Schramm¹, H. Hanken², M. Heiland², F. Probst³, C.-P. Cornelius³

¹ *Department of Oral and Maxillofacial Surgery, Military Hospital Ulm and Academic Hospital Ulm University, Ulm, Germany*

² *Department of Oral and Maxillofacial Surgery, University Hospital Hamburg Eppendorf, Hamburg, Germany*

³ *Department of Oral and Maxillofacial Surgery, Ludwig Maximilians University Hospital of Munich, Munich, Germany*

Objective: Patient-specific mandibular models are nowadays often used in mandibular reconstruction to pre-bend mandibular reconstruction plates. The plates, however, must still be bent manually. This procedure generally leads to shorter surgery times and an improved plate fit, but problems such as plate fractures and unsuitable standard plate sizes remain unresolved. Positioning plates similar to the model situation is usually difficult during surgery, too. For these reasons, reconstruction plates have been developed which are milled from titanium after preoperative, patient-specific computer planning using CAD/CAM procedures. It is no longer necessary to bend such plates. Plate positions are determined by guides during surgery. The guides define not only the planned bone resection margins but also the location of the screw holes, which determine during surgery the planned plate position on the jaw. In addition to the length, shape and thickness of the plate, the number and angulation of the screw holes can be planned individually.

Methods: In a multicentre study at three German medical centres which began in February 2013, 25 patients received such patient-specific mandibular reconstruction plate implants. Indications ranged from stabilisation osteosynthesis and single alloplastic primary reconstruction to complex primary and secondary microvascular reconstruction of the mandible with fibula, iliac crest and scapula flaps.

Results: Initial experiences concerning fit and handling have been very positive and will be presented in detail and discussed critically. Nevertheless, complications like postoperative extraoral plate exposure, graft and flap necrosis or difficulties to position the guides or the plate during surgery occurred.

Conclusions: This new technology provides a number of new opportunities. Apart from the many advantages, costs and the required effort for planning, production and logistics need to be taken into account as well. It is yet unclear whether this technology will someday be routinely used in mandibular reconstruction. Clinical trials and long-term studies are required.



O-2502

MAXILLOFACIAL CONTOUR CORRECTIVE 3D RECONSTRUCTION WITH PEEK- AND TITANIUM IMPLANTS BY USING INDIVIDUALIZED CT DATASETS

T.A. Zrnc^{1, 2}, J. Beinemann², C. Kunz^{1, 2}, C. Leiggenger^{1, 2}, F. Thieringer^{1, 2}, R. Schumacher^{3, 2}, O. Bill^{3, 2}, H.-F. Zeilhofer^{1, 2}, P. Jürgens^{1, 2}

¹ Department of Cranio-Maxillofacial Surgery, University Hospital Basel, University of Basel, Basel, Switzerland

² High-tech Research Center of Cranio-Maxillofacial Surgery, University of Basel, 4031 Basel, Switzerland

³ University of Applied Sciences and Arts, Northwestern Switzerland FHNW, 4132 Muttenz, Basel, Switzerland

Objective:

Computer-based 3D technologies are established and well accepted as an optimal treatment in the clinical routine in modern CMF-surgery. Innovative tools allow a accurate pre-operative planning and simulation even of complex interventions. Especially the reconstruction of bony defects with individually prepared implants e.g. PEEK or generatively created osteosynthesis material require high accuracy. For many indications the procedure of mirroring of the unaffected side to compensate a defect on the contralateral side is sufficient as an option for reconstruction, but vague. Additionally in more complex cases it is essential to use comparative volume data-sets from a patient's database. Furthermore by mathematical optimizations in the planning process customized bone substitutes can be generated, are already provided preoperatively and lead to a remarkable reduction of operating time. Based on a series of different complex cases a new planning workflow for individually shaped peek and titanium implants will be presented.

Material and Methods:

Based on CT-scans of patients presenting posttraumatic and facial microcephalic deformations virtual models were designed with the Materialise-Software. In the database of different patient cases all appropriate relatively same structured shapes are detected. The best matching replacement result after surface registration of both data-sets is used as scaffolding and virtual reconstruction of the defect is realized by mathematical procedures and consecutive optimization of the shape. The approved implant design is transferred via stl-format and facilitates the manufacturing by milling (PEEK) or generative approaches (Titanium Selective Laser Melting).

Results:

The whole process chain from data-acquisition, via virtual model generation, selection of a comparative case from a data-base up to virtual defect reconstruction with mathematical optimization procedures and the final implant design could be established and successfully applied in a series of 3 cases. All patients presented a good clinical outcome in terms of function and aesthetics. Complications, like wound healing problems or loss of implants were not observed. According to our 3D reconstruction protocol good results in especially complex clinical cases are achievable.

Conclusion:

The presented workflow provides a feasible solution for virtual reconstructions of complex craniofacial deformities. In addition different manufacturing procedures are supported to fabricate the implants.



O-2503

SIMОВI PROJECT: DEVELOPMENT OF ORIGINALS METHODS TO ASSESS MIMIC FACIAL MOVEMENTS

S. Dakpé^{1, 2, 3}, C.Neiva^{1, 3}, FR. Sahran^{1, 2, 3}, I. Tekaya⁴, F.Marin², TT.Dao², P.Feissel⁴, S.Testelin^{3, 1}, MCH. Ho Ba Tho², B.Devauchelle^{3, 1}

¹ *Maxillofacial surgery, University Hospital, Amiens, France*

² *Biomechanical and Bioengineers Labs UMR 7338, Technological University of Compiègne, compiègne, France*

³ *Projet Simovi, Facing Faces Institut, Amiens, France*

⁴ *Mechanical Labs, Roberval, UMR 6353, Technological University of Compiègne, Compiègne, France*

Introduction: The question raised is to which extent a facial mimic can be evaluated objectively. In today's clinical practice, we use grading systems based on muscular scale or testing, in order to evaluate a facial muscular disorder. Despite of few morphometric measurement data on mimic facial muscles and expressions provided by anatomical, radiological or 3D studies the routine matter assessment remains an approximate approach. This approach deserves to be better thought to plan a surgical treatment which involves mimic facial muscle (as rehabilitation of facial palsy, cleft palate for example), to monitor the results, and to follow the recovery and progress in physiotherapy care.

Objective: the aim of SIMОВI project is to correlate external soft tissue movement (essentially cutaneous) during facial mimic with internal movement (essentially facial mimic muscle) using qualitative and QUANTITATIVE indicators, and to perform a biomechanical model of selected mimic face's movement using the precedent data.

Material and method: Quantitative indicators are collected among healthy volunteer(s) without mimic facial disorders using different methods, which are currently under specific developments. 5 movements of mimics have been chosen. The specific method development concerns video analysis, MRI, Motion capture, Portable surface scan, Stereocorrelation.

Results: Principal results of SIMОВI project (especially MRI, Motion Capture and Stéréocorrélation) are presented. The morphometric properties (volume, thickness, length, and physiological cross sectional area) of the facial muscles were characterised with MRI data. Several facial mimic muscles were reconstructed in different position. Using these measurements, we can sketch the muscle deformation that occurs during movement. The motion capture of the face were performed by 17 optoelectronic cameras T160 and two Bonita video camera (Vicon^{Ltd}, Oxford, UK) at a frequency of 100Hz. The feasibility to track facial mimics as well as its quantification is possible. The same movements were recorded by stereocorrelation and skin deformations during movement could be obtained using VIC software.

Discussion and Conclusion: The Methodology are compatible. In addition to clinical interest of these measurements, the data collected could be used to realize subject specific biomechanical models using.



O-2504

CUSTOM MADE PRE-BENDED PLATES AND SIMULATION-GUIDED NAVIGATION IN FACIAL ANOMALIES

A. Bianchi, S. Mazzoni, G. Badiali, C. Marchetti

Oral Maxillo Facial Unit, S.Orsola-Malpighi Hospital, Bologna, Italy

To achieve satisfactory occlusal function and facial aesthetics, a high degree of precision and predictability is required in positioning the jawbones and the quality of the result is nowadays still related to the surgeon's ability to reproduce the planned surgery.

The purpose of this study, which is presented in this lecture, was to develop a computer-assisted design and manufacture (CAD-CAM) technique for the fabrication of a surgical cutting guide and a fixation titanium plate to reposition the upper maxillae in the correct planned position. The surgical cutting guide pilot during surgery the osteotomy line preoperative planned at the computer and the custom made fixation titanium plate allows the desired reposition of the maxilla.

The benefits of this technique are that it allows direct operative transfer of virtual surgical plans in the operating room, it is easy to use, relatively inexpensive, and clinically efficient.

To evaluate the benefit of the procedure presented we have evaluated the reproducibility of the surgical plan in a group of patients submitted to orthognathic surgery and we have compared the results with a previously operated sample of similar patients in which the positioning of the maxilla was obtained with a standard surgical intraoperative dental splint and Simulation Guided Navigation procedures.



O-2505

FACIAL MOTION CAPTURE IN ORTHOGNATHIC SURGERY : PRELIMINARY RESULTS AND FUTURE RESEARCH PROJECTS

G. Van Hemelen, H. Jr. Vercruysse

Department of Cranio-Maxillofacial, GH MONICA/ University of Antwerp, Antwerp, Belgium

Objective : As modern concepts of orthognathic surgery are oriented towards a predicted static soft tissue outcome, the impact of adequate soft tissue reconstruction during orthognathic surgery on dynamic soft tissue functionality remains unclear. In case of exclusively mucosal suturing without muscular closure after Le Fort I surgery, the changes in the width of the alar base of the nose in relation to the maxillary movement are well described, as well upper lip flattening and dropping of the corners of the mouth. The expressionless atonic upper lip after Le Fort I surgery is well known to every maxillofacial surgeon but undescribed in literature so far. Recent evolutions in facial motion capture techniques in 3D-gaming industry could be helpful to address the analysis of this entity. Markerless technologies use the features of the face such as nostrils, the corners of the lips and eyes, and wrinkles and then track them.

Purpose : Validation of the technique for orthognathic patients and presentation of preliminary results.

Methods & Conclusion : In contrast to time-consuming and expensive markerbased techniques, we present a markerless technique that can be operated with any conventional 2D-camera or webcam. The reliability and usefulness in orthognathic cases of the technique is proven on 10 patients. The postoperative recovery of soft tissue dynamics is outlined over time, providing a 4-dimensional analysis. This markerless facial motion capture technique can therefore be an essential and cheap tool in the analysis of facial dynamics after orthognathic surgery. Future research projects about the post-operative soft tissue recovery and dynamic changes after orthognathic surgery will be outlined.

**O-2506****3D PLANNING AND CAD-CAM TECHNIQUE IN ONCOLOGICAL RECONSTRUCTIVE SURGERY**

A. Tarsitano, S. Mazzoni, L. Ciocca, R. Scotti, C. Marchetti

Maxillofacial Surgery Unit, University of Bologna, Bologna, Italy

Objective: Modern techniques for jaws reconstruction, such as CAD-CAM, offer new solutions for planning of reconstructive surgery in relation to the aesthetic outcome and the prosthetic rehabilitation. The aim of the present study was to evaluate the accuracy of this technique in reconstructing the mandible with a free vascularized flap using custom-made bone plates and a surgical guide to cut the mandible and fibula.

Methods: CAD-CAM jaws reconstruction procedures using vascularised bone free-flap transfers and surgical guides to cut the jaws and fibula were performed in 20 cases of neoplasms. The 3D planned surgery was used to design and manufacture customised surgical devices.

Results: This surgical protocol was applied in a study group mandibular-reconstructed patients who were compared with a control group treated using the standard pre-plating technique on stereo-lithographic models. The precision of both surgical techniques was evaluated by comparing preoperative and postoperative computed tomographic data and assessment of specific anatomic landmarks. The final position of fibular segments was assessed and compared with pre-surgical 3D planning.

Conclusions: The proposed protocol for mandibular and maxillary reconstruction using computer-aided design/computer-aided manufacturing prosthetically guided maxillofacial surgery to construct custom-made guides and plates may represent a viable method of reproducing the patient's anatomical contour, giving the surgeon better procedural control and reducing procedure time.



O-2507

PILOT A NEW SAFETY SYSTEM FOR IMPLANT PLACEMENT USING 3D HIGH PRECISION ULTRASOUND

A. Ludwig

MGK Medizinische und Gesichtschirurgische Klinik Kassel, Kassel, Germany

Objective: The correct position of implants is absolutely necessary for prosthetic reconstruction and also for safety of the patient. There are different GPS on the market for implant insertion but they are all based on CT-scanner 3D. The maximal accuracy is between 1- 2 mm depending on the system. Therefore it was the goal of the study to test a new navigation system called PILOT, based on 3D ultrasound.

Methods : PILOT based on high precision 3D ultrasound. The picture of the field 3D bone with the ultrasound was taken with cameras real time tracking same time the patient. The preplanning was done at the only first visit of the patients. The sinus maxillary or the alveolarnerv nerve has to be determined by ultrasound scanning. During planning and implantinsertion the patient can see by himself what is happening same time on the screen in 3D. The measurements and imges were automatically stored in the PC.

Results : The minimally opening was leading to post operative minimum swelling and pain. For the first time ever, the picture of the 3D BONE were absolutely guaranteed to be where is the patient as both localization are known same time. The Position of the tool was exact measured in real time. PILOT gives drilling way and site of interest or alarm to the surgeon in real time and 3D. So the operation could taken out with no or minimally open tissue leading to post operative minimum swelling and pain. Tthe implants were inserted with 0,3 mm accuracy. Also a perfect protocoll of the implantatininsertion was available. In all cases no complications with the nerve or the sinus were found.

Conclusions : PILOT do not rely on mathematical statistic so that the accuracy is higher to CT based systems. The system offers an immediate chairside safety and can be used also in emergency. The X-Ray dosis can be maximally reduced.Also for investigations of periimplantitis PILOT could by useful

**O-2508****COMPUTER- ASSISTED CRANIOFACIAL SURGERY – BERLIN EXPERIENCES**

N. Adolphs¹, H. Haberl², B. Hoffmeister¹

¹ *Department for Craniomaxillofacial Surgery, Campus Virchow Klinikum, Universitätsmedizin Charité Berlin, Berlin, Germany*

² *Pediatric Neurosurgery, Campus Virchow Klinikum, Universitätsmedizin Charité Berlin, Berlin, Germany*

Objectives:

Computer assisted technologies are well established in all fields of contemporary surgery. With respect to complex craniofacial corrections computer assisted surgery is also able to support planning, surgical transfer and documentation of operative results. Possibilities and limits of these technologies are demonstrated based on the experiences of the Berlin Centre for Craniofacial Surgery.

Materials and Methods:

Since 2006 computer assisted technologies have been used for the planning of different craniofacial corrections in selected patient cases. Based on preoperative DICOM datasets individual 3d models have been manufactured. In addition virtual simulation of different skeletal displacements were performed and tested. Subsequently surgical cutting guides have been created in order to improve the transfer of the final surgical plan. Postoperative imaging was used for superimposition of pre- and postoperative skeletal situations in order to evaluate the effective surgical result.

Results:

Preoperative workflows have been obviously improved since the first application in 2006. Virtual simulation of different surgical options proved to be helpful in determining the individual treatment plan. Intraoperative transfer was clearly supported by cutting guides that were created according to the virtual surgical planning. Superimposition of pre- and postop skeletal situations offered additional options with respect to assessment, evaluation and documentation of skeletal changes with respect to quality control and surgical teaching.

Conclusion:

Computer assisted technologies can be used for craniofacial surgery and support planning, transfer and evaluation of these complex corrections. Although preoperative workflows have improved additional efforts of cost and time will likely limit the application of these technologies to selected patient cases.



O-2509

CAD/CAM HA CONSTRUCTION FOR CRANIOMAXILLOFACIAL BONE DEFECTS

L. Zhang, S.Y. Shen, G.F. Shen, X.D. Wang

Department of Oral and Cranio-maxillofacial Science, Ninth People's Hospital, Shanghai Jiao Tong University School of Medicine, Shanghai, China

Objective: To investigate the use of HA/EAM compound artificial implant combined with computerized three dimensional reconstruction in craniomaxillofacial surgery.

Methods: Computed tomographic scan, computer-aided design/computer-aided manufacturing three-dimensional reconstruction, and rapid prototyping were conducted on 14 patients from 2008 to 2014. The Individual HA/EAM compound artificial implants were manufactured by selective laser sintering rapid prototyping machine and made into the exact geometric shapes of the defect. The individual HA/EAM compound artificial implants were then implanted during surgical reconstruction. Additional operations such as lipo-injection or genioplasty were also been done simultaneously in some cases.

Results: The HA/EAM compound artificial bone implants were perfectly matched with the facial areas needed for repair. The postoperative aesthetic and functional results were satisfying. No facial nerve weakness or pain was observed at the follow-up appointments. Only one implants had to be removed 2 months after the surgeries owing to severe local infection and all the other patients showed no complications during follow-up.

Conclusion: The HA/EAM compound artificial bone material combined with computerized three-dimensional reconstruction is a good method in craniomaxillofacial surgical practice. Aesthetic results and functional recovery after reconstruction surgery can therefore be effectively improved.

**O-2510****SYNPliciti CUSTOMIZED GUIDE-PLATE SYSTEM: CONTROLLING MAXILLARY REPOSITIONING USING A REVERSE PLANNING PROCESS**

P. Goudot, R. Khonsari, P. Nicol, S. Ketoff, T. Schouman

APHP - Pitie-Salpetriere University Hospital, Paris, France

Objectives

Upper and lower jaw positioning in orthognathic surgery usually relies on the predictions of model surgery performed on plaster casts mounted in an articulator. This method has numerous and inherent sources of non-controllable errors. Advances in 3D printing and surgical planning allow manufacturing customized medical devices through a fully digital workflow. Here we present the first results of the SynpliciTi procedure, a set of bone repositioning devices based on drilling guides and customized plates designed using a reverse planning process.

Methods

CT-scans of plaster casts were used to define the final occlusion. Surgical planning was performed using SimPlant. Screws and plates were designed virtually using surgical planning. The final location of the screws was transferred on the initial preoperative anatomy following a reverse planning approach. Pre-drilling guides were designed accordingly (OBL, Chatillon, France). Postoperative CT-scans were superimposed on the preoperative planning using surface registration in order to quantify the accuracy of the procedure by distance maps.

Results

The application of the SynpliciTy procedure to orthognathic surgery on 39 patients showed a very satisfactory precision and reproducibility. Quantitative evaluation on the upper jaw showed a good superimposition with pre-operative planning. Three cases showed insufficient posterior impaction up to 3 mm due to insufficient bone resection and plate forced to fit in. A quantitative evaluation method for the evaluation of lower jaw positioning is still required.

Conclusions

The SynpliciTi procedure is based on reverse planning: the drilling guide indicates the exact location of the screws corresponding to a customized osteosynthesis plate. The plates convey all the information about optimal bone position resulting from surgical planning. No additional physical or virtual guiding device is then required to obtain the bone position defined using initial surgical planning.

Conflicts of Interest

The author's institutions together with OBL applied for a patent related to the SynpliciTi. T Schouman has a consulting relationship with OBL.

**O-2511****A SINGLE CENTERED, RANDOMIZED, CONTROLLED CLINICAL STUDY TO COMPARE THE ACCURACY OF FREE-HAND IMPLANT PLACEMENT WITH GUIDED IMPLANT PLACEMENT.**

E. Varga, R. Heintz, Zs. Szerényi, É. Vágvölgyi, B. Erdőhelyi, B. Bagó, J. Piffkó

University of Szeged, Szeged, Hungary

AIMS / OBJECTIVES

Computerized treatment planning and guided implant placement has several advantages. The aim of this study is to evaluate the in vivo accuracy of guided implant placement by comparing the 3D positions of the pre-operative plans and the post-operative results, and to compare the accuracy between implant placement by free-hand and using a surgical guide.

MATERIALS AND METHODS

Onehundred-sixty implants were placed in totally and partially edentulous patients. The patients were randomized in two groups. Patients in „group 1” were operated by free-hand and the procedures on patients in „group 2” were performed using surgical guides. Implant positions of both groups were planned using a treatment planning software of a commercially available guided system. Surgical guides were produced for group 2 according to the plan by the manufacturer. Post operative CBCT scans were made to evaluate and compare the accuracy of the pre-operative plans and the post-operative results in group 1, in group 2 and between the two groups.

RESULTS

Onehundred-sixty implants were placed in this study; 40 implants (20 partially edentulous jaws, 10 fully edentulous maxilla and 10 fully edentulous mandible) were placed with free-hand (Group 1) and 120 implants (60 partially edentulous jaws, 30 fully edentulous maxilla and 30 fully edentulous mandible) were operated with surgical guides (Group 2). The pre-operatively planned and post-operative implant positions were then visualized in a professional medical research software. Group 1 showed that mean lateral deviations at the coronal and apical ends of the implants were significantly higher than in group 2. Mean depth deviation in group 1 was also significantly higher than in group 2. Volumetric analysis showed that the overlap of the 3D models were significantly lower in group 1 than in group 2.

DISCUSSION AND CONCLUSION

The following conclusions were made upon this study: 1. Guided surgery ensures better result in accuracy than freehand surgery. This might be very helpful in prosthetic driven implant placement and in anatomically difficult cases. 2. Operations performed with surgical guides were shorter than with free-hand. 3. Computerized treatment planning and guided implant placement improves accuracy, predictability and patient care.



26. Reconstructive Surgery of Craniofacial Malformations & Cleft Surgery

O-2601

OPHTHALMIC CONSIDERATIONS IN PATIENTS WITH FACIAL CLEFTS

P. Sekhon, N.A. McCulloch

Worcestershire Acute NHS Trust, Coventry, United Kingdom

Objective: To document the nature of ocular anomalies associated with isolated cleft lip and/or palate patients as well as in those with syndromic cleft lip and palate from a craniofacial centre in India.

Method: A total of 1623 consecutive patients presenting to a single centre with cleft lip and/or cleft palate treated over a 40-month period. Frequency and nature of associated ocular anomalies recorded prospectively.

Results: A total of 240 (14.8%) patients had associated anomalies of which 75 (17%) patients had ocular anomalies. Strabismus (24%) and eyelid (23%) anomalies which includes colobomas, ptosis, ectropion and epicanthus were the most common accounting for 47% of the total defects. Orbital defects accounted for 9% of the abnormalities followed by dermoids (7%) and blindness (7%). Anomalies of nasolacrimal apparatus (5%), refractive errors (5%), cataracts (4%), anophthalmia (4%) and glaucoma (3%) constituted the rest.

Conclusion: We have described a significant number of cleft patients with associated ocular abnormalities including a series of presentations that are rare in the literature. Neonates born with cleft lip/palate or with facial clefts should be assessed soon after birth by an ophthalmologist with special interest in oculoplastic surgery along with other members of the multidisciplinary team.



O-2602

EARLY MANDIBULAR OSTEOGENESIS IN NEONATES & PEDIATRIC AGE

M.Galiè, R.Tieghi, G.Elia, V.Candotto, LuigiC.Clauser

DEPT CRANIO-MAXILLO-FACIAL SURGERY, ST.ANNA HOSPITAL AND UNIVERSITY, FERRARA, Italy

OBJECTIVE

Distraction osteogenesis has been one of the most innovative concepts in craniomaxillofacial surgery through the last 25 years. Technology has evolved from the first application of external devices to intraoral and hybrid or semiburied techniques. After a quarter of century of extensive use Distraction Osteogenesis has today specific indications for congenital craniofacial and cleft deformities.

METHODS

Seven infants with Craniofacial syndromes and syndromic micrognathia underwent mandibular lengthening in neonatal age or during growth: 3 Pierre Robin Sequences (PRS), 1 Cerebro-Costo-Mandibular Syndrome (CCMS), 1 Auriculo Condylar Syndrome (ACS), 1 Craniofacial Microsomia – Tessier Cleft 7 (CFM), 1 Treacher-Collins Syndrome (TCS). All patients were evaluated by a multidisciplinary Team, included fibroscopic assessment.

RESULTS

Pre-distraction and post- distraction lateral CT scans demonstrated the significative improvement in the airway space. PRS babies were early decannulated after distraction. Improvement in feeding was seen following mandibular distraction and the nasogastric tube was removed. Direct visualization with flexible endoscope demonstrated the airway changes. The baby with CCMS and TMJ ankylosis still has deglutitory problem and tracheostomy for airways protection. The mean advancement of the TCS, OAS and CFM cases was 18mm, with changes in maxillo-mandibular relationships and a slight overcorrection.

CONCLUSIONS

Mandibular distraction osteogenesis in the neonates with PRS is an effective treatment option to safely relieve the upper airway obstruction associated with micrognathia. For selected newborns, mandibular DO will allow for avoidance of a tracheostomy and improved oral feeding. A careful evaluation of the patient's airway and feeding must be performed and evaluated by a multidisciplinary Team approach. In syndromic micrognathia early mandibular distraction seems to be an appropriate indication. Benefits are functional, morphological, aesthetic with consistent psychological and familiar positive effects.

**O-2603****ANATOMICAL STUDY OF THE COURSE OF THE INFERIOR ALVEOLAR NERVE IN CRANIOFACIAL MICROSOMIA USING THREE-DIMENSIONAL COMPUTED TOMOGRAPHY ANALYSIS**

C.NEIVA, S.DAKPE, J.DAVROU, P.-A. Dîner, B.DEVAUCHELLE, M.-P. Vazquez, A.PICARD, N.KADLUB

Maxillo-facial surgery department, Facing Face Institute and APHP, Hospital Necker Enfants Malades, AMIENS AND PARIS, France

Introduction. The course of the inferior alveolar nerve in normal subjects had already been studied; but in craniofacial microsomia the dysmorphogenesis involved in the mandible made this study difficult without real points of references. The aim of our study was to correlate the anatomical description of the course of the inferior alveolar nerve with the Pruzansky classification.

Material and Method. The three-dimensional computed tomography study of 22 mandibles of craniofacial microsomia patients was performed. Measurements of normal and microsomic sides were made between fixed landmarks. The normal sides acted as controls.

Results. Three-dimensional computed tomography allowed us to make an anatomical description and to correlate a common path with the grade of craniofacial microsomia. There is a correlation between the course of the inferior alveolar nerve and the Pruzansky classification.

Discussion. This three-dimensional study could be helpful in order to plan the course of the inferior alveolar nerve and to assist surgeon for mandibular osteotomy or distraction osteogenesis.

Key words: inferior alveolar nerve/ craniofacial microsomia/ anatomy/ three-dimensional imaging

(1) University of Picardie Jules Verne, Amiens, France

(2) University of ParisDescartes, France

(3) University of Pierre and Marie Curie

(4) Maxillo-facial surgery department, CHU Nord, Place Victor Pauchet, 80000 Amiens, France

(5) APHP, Hospital Necker Enfants Malades,

Maxillo-Facial and Plastic department

(6) Facing Face Institute, Amiens, France



O-2604

TREATMENT OUTCOME FOLLOWING FRONTOORBITAL AND OCCIPITAL ADVANCEMENT IN CRANIOSYNOSTOSIS

M. Krimmel, M. Wolff, K. Haas-Lude, S. Kluba, MU. Schuhmann, S. Reinert, B. Will

Department of Oral and Maxillofacial Surgery, Tübingen, Germany

Objectives:

The surgical therapy of craniosynostosis has the aim to correct the deformity aesthetically and functionally. The aim of the present study was to analyze the outcome of frontoorbital and occipital advancement over a period of 10 years.

Patients and Methods:

From 2001 until 2011 46 infants were treated for isolated metopic synostosis (MS 14 cases), lambdoid synostosis (LS 7 cases), coronal synostosis (CS 14 cases, 9 uni-, 5 bilateral) or complex craniosynostosis (cCS 11 cases) at a mean age of 11 months. The children underwent 41 frontoorbital and 12 occipital advancements. We performed a retrospective chart review, an analysis of postoperative photographs and an interview with the parents concerning the results as well as a quality of life questionnaire (KINDL, return rate 50%).

Results:

Children with a cCS had the greatest variability of age at the time of surgery due to increased intracranial pressure or upper airway obstruction (mean 17,1 months), the greatest variability of the length of the procedure (3,5 h – 7.0 h), the highest amount of blood transfusions (mean 302 ml) and the longest time of hospitalisation (9,2d). For singular synostosis the duration of intensive care was 1,1-1,5 d, for cCS it was 2,3 d. In 7 cases with cCS one or two additional procedures were necessary. We had no major complications. The parents rated the aesthetic results with the grade 1.6 in MS, 1.7 in CS and 2.7 in cCS cases. The attending surgeons rated the outcome slightly more favorable with 1.3 – 1.7. The functional results were evaluated via the milestones „sitting“, „walking“ and „speaking 50 words“, which were within the normal range except for speaking (mean 23.2 months).

Discussion and Conclusion:

Frontoorbital and occipital advancement show mostly a very good or good result. The satisfaction with the achieved result is higher in medical doctors than in parents.



O-2605

POSITIONAL CRANIAL DEFORMITY – BURDEN OF CARE AND THE PARENTS' POINT OF VIEW

S. Kluba, W. Kraut, J. Lypke, J.P. Peters, B. Calgeer, K. Haas-Lude, M. Krimmel, S. Reinert

Department of Oral and Maxillofacial Surgery, University Hospital Tuebingen, Tuebingen, Germany

Objective: The parents' point of view to positional cranial deformities and helmet therapy was up to now not in the focus of scientific interest. But acceptance and carer's compliance are key-factors for therapeutic success. We therefore interviewed parents and carers to their perception of the cranial deformity and its therapy.

Methods: Parents of 218 infants with positional cranial deformities were included in the telephone survey. 122 children underwent a helmet-therapy, 96 not. Besides general satisfaction with the outcome, treatment associated problems and stress were investigated with a structured questionnaire. Descriptive analysis was performed.

Results: 90.8% of the caregivers were satisfied with the outcome, independently, if a helmet therapy was applied or not. Retrospectively 76% in the group of infants without helmet would decide again against such a therapy. In 31.9% of helmet- infants therapy had to be interrupted temporarily (27.0%) or definitely (4.9%). This was mainly due to helmet associated problems on the child's side (97.4%). Major problems were sweating (51.1%) and skin lacerations (30.9%). More than 3/4 of the parents indicated a minor (54.9%) or even major (25.4%) personal strain by helmet therapy. Controversies with others (38.5%), worry for the child (30.3%) and financial burden (36.9%) were mentioned most frequently.

Conclusion: Helmet therapy will remain an important and effective treatment option in positional cranial deformities. But medical experts should keep parental problems and burdens in mind, they should critically check the indication when thinking about a helmet and pick up that issue in their informed consent.



O-2606

THE PRE-EPIGLOTTIC PALATAL PLATE FOR UPPER AIRWAY OBSTRUCTION TREATMENT IN PIERRE ROBIN SEQUENCE

A. A. Mueller^{1, 2}, M. Augello^{1, 2}, B.I. Berg-Boerner^{1, 2}, I. Fillipon³, J. Maurer¹, D. Trachsel⁴, J. Hammer⁴, K. Schwenzer-Zimmerer^{1, 2}

¹ Cranio-maxillofacial surgery, University Basel hospital, Basel, Switzerland

² Hightech Research Centre of Cranio-Maxillofacial Surgery, University Basel, Basel, Switzerland

³ Clinic of Orthodontics and Pedodontics, University Basel, Basel, Switzerland

⁴ Intensiv care and Pneumology, University Basel Children's Hospital, Basel, Switzerland

Objectives

The upper airway obstruction in Pierre Robin Sequence (PRS) is an interdisciplinary challenge. We started to use palatal plates with a pre-epiglottic extension as a first-line treatment device for upper airway obstruction in PRS patients. We show our treatment results with this method and explain our system of plate prefabrication.

Material and Methods

Retrospective consecutive case series of 15 PRS patients.

Results

From 15 PRS patients, 4 patients had multiple malformations and 11 patients had an isolated PRS. After delivery, 12 of 15 PRS patients showed episodes of oxygen desaturation in supine position. The first episode of desaturation occurred between 20 minutes to 42 hours after birth. The desaturation episodes were the decisive factor to manufacture palatal plate with pre-epiglottic extension. The palatal impressions were taken on wake patients. Following the principle idea of the plate, as described by Margrit Bacher, we modified the design and manufacturing by using prefabricated components. The prefabrication of average palatal moulds and wires allows for a quick plate assembly within an hour after impression. The wave-line bending of the extension wire allows for bedside fine adjustment of the pre-epiglottic position.

The pre-epiglottic extension had to be placed 12-15 mm distally and 20-25 mm caudally of the posterior hard palate boarder. The correct pre-epiglottic plate position was controlled by fibre-endoscopy. After plate insertion all patients showed relief of desaturation and were discharged under oxygen home-monitoring. As a side effect the pre-epiglottic plate facilitated oral-feeding due to the forward stimulation of the tongue. Two-flap palatoplasty combined with intravelar veloplasty was performed at patient mean age of 5.1 month (SD 1.4). In 2 of 15 patients the pre-epiglottic extension plate was still necessary after palatal surgery for another 3 to 4 weeks to relief upper airway obstruction. No patient had to undergo tracheotomy or mandibular distraction.

Conclusion

The pre-epiglottic palatal plate efficiently relieves the upper airway obstruction, even in cases of severe mandibular hypoplasia. Prefabricated plate components facilitate quick plate completion, by various team members.

**O-2607****ONE STEP REPAIR OF FRONTOETHMOIDAL MENINGOENCEPHALOCELES UNDER CONDITIONS OF A DEVELOPING COUNTRY**

G. Lauer, T. Pinzer, J. Gollogly

Department of Oral & Maxillofacial Surgery, University Hospital Dresden, Technische Universität Dresden, Dresden, Germany

Meningoencephaloceles (MEC) are congenital malformations with a high incidence in Southeast Asia. The most frequent, the frontoethmoidal MEC needs surgical treatment, applying cranio-facial techniques. We have adapted a simple combined neurosurgical-cranio-maxillofacial operation technique which allows for a complete treatment of MEC in one step under third world conditions.

Within 6 periods of together 10 weeks 75 patients with a frontoethmoidal MEC were treated successfully at the Children Surgical Center Kien Khleang, Phnom Penh, Cambodia. The sole approach via bicoronal skin incision a small frontobasal trepanation temporary removal of the nasal/orbital rim (T-Shape-bone) enables the closure of frontal skull base, the resection of cele and the correction of the facial area especially the nasal skeleton, paranasal region and the hypertelorism in one step. In the follow-up of up two years no recurrences of MEC were observed, and good aesthetic results were achieved. Three severe complications occurred and are discussed in detail. Given the limited hygiene and the limited apparative-technical support, the chosen method proved to be reliable outside of an established cranio-facial center in a hospital of a tropical Third World country. The costs are far below an equivalent therapy in a center abroad, thus making a satisfying treatment available for those patients who do not possess any financial funding.



O-2608

GORHAM'S DISEASE AND OSTEOLYSIS OF THE LOWER JAW.

prof O.Topolnickiy¹, prof A.Talalaev ², R. Fedotov¹, N.Medko¹, A.Molova¹

¹ *Pediatric Maxillofacial Surgery, Moscow state university of medicine and Dentistry, Moscow, Russian Federation*

² *Pathological anatomy, Russian state medical University, Moscow, Russian Federation*

Gorham's disease is a rare disorder characterized by proliferation of vascular channels that results in destruction and resorption of osseous matrix.

Etiology of Gorham's disease remains poorly understood and largely unknown. There is no evidence of a malignant, neuropathic, or infectious component involved in the causation of this disorder.

The mechanism of bone resorption is unclear. There are about 200 bewrite cases, but descriptions of this disease in maxilla-facial area are very few. That is why there is no tactics of treatment available.

In the period 2009-2014 we had 2 cases – the boy and the girl with massive osteolysis of the lower jaw. They were investigated thoroughly and they were diagnosed with Gorham's disease.

Before the investigation both children were diagnosed by chronic osteitis and they were treated accordingly but without acceptable results.

The beginning of the disease was marked with pain symptoms in the area of primary teeth which were noticed by parents of these children when the boy was 6 years old and the girl was 2 years old. These teeth in both situations were extracted at local polyclinics. An inflammatory process started then in alveolar sockets. They were revised and treated with antibiotic.

After one year the parents of both children noticed contiguous teeth and fragments of lower jaw removability and increasing deformation. Both children were diagnosed by chronic osteitis and carried out many histological examination.

But clinical and X-ray performances did not already correspond to this diagnosis.

By X-ray the lower jaw structure is looking volume decreasing by thickness and width in "soap smelting" form. Teeth and their primordial are place freely like in space.

These children applied at our Institution about 3 years after the first manifestations of disease. Repeated biopsy were taken. On the basis of clinical, histological, imunohistochemical and X-ray performances the Gorham's disease was diagnosed.

After further investigation no divergences in internals were noticed. Nowadays the boy-13 years old – received the surgery – lower jaw bone defect replacement by titanic reconstruction .

The girl – 5 years old – is under dynamic supervision and she is preparing for reconstructive surgery.

**O-2609****ACHIEVEMENT OF CRANIO-FACIAL SYMMETRY IN ISOLATED UNILATERAL CORONAL SYNOSTOSIS: LONG -TERM PHOTOMETRIC RESULTS**

F.Mazzoleni¹, C. Giussani², V. Basile¹, D. Sozzi ¹, A. Bozzetti¹

¹ *Maxillo Facial Surgery, San Gerardo Hospital, Monza, Italy*

² *Neurosurgery, San Gerardo Hospital, Monza, Italy*

INTRODUCTION. The aim of surgery in isolated unilateral coronal synostosis is to prevent functional problems, if possible, and mainly to obtain a better cranial and facial shape in terms of symmetry of the fronto-orbital area and to normalize overtime the facial twisting. The keys to a successful morphologic result are the amount of hypercorrection, accuracy in modelling and repositioning of bone segments, and their appropriate fixation.

METHODS. A sample of 35 patients affected by plagiocephaly documented with 3D cranial CT-scan were treated at our department from January 2001 to December 2013. The age ranged from 5 to 26 months. Our cranioplasty technique expected disconnection, reshaping and repositioning with titanium plates of the deformed bone segment to achieve a stable fixation aimed to drive a symmetric facial growth. All patients had pre and post op photometric serial pictures with the same projections and magnification. Craniofacial landmarks were provide to establish the degree of fronto-orbital and facial symmetry.

RESULTS. All the patients underwent 18 to 25 mm advancement of the fronto-orbital bandeau on the affected side. The morphologic long-term follow up (range 1-12 years, average 62 month) demonstrated an immediate post-op normalization of the fronto-orbital area and during the growth the achievement of a final facial symmetry in a 4-6 years period.

CONCLUSION. Over the last years several new techniques/material as distraction, springs and reabsorbable plates have been proposed. All the techniques can obtain an effective anterior frontal bone expansion. However, very few long-term studies on the results on facial symmetry in plagiocephaly are available. We think that among the goals of craniofacial surgery in plagiocephaly there is the obtainment of cranio-facial symmetry. In our experience this is reachable with the technique proposed.



27. Microsurgical Reconstruction in Head and Neck

O-2701

STAIR ASCENT AND DESCEND: A DAILY TASK TO INVESTIGATE DONOR SITE MORBIDITY FOLLOWING OSTEOCUTANEOUS FREE FIBULA TRANSFER.

AR. Bolzoni¹, A. Baj¹, N. Lovecchio², A. Russillo¹, AB. Gianni¹, C. Sforza²

¹ *Maxillo-Facial Surgery and Odontostomatology, Fondazione IRCCS Ca' Granda - Ospedale Maggiore Policlinico, Milano, Italy*

² *Functional Anatomy Research Center (FARC), Department of Biomedical Sciences for Health, Università degli Studi di Milano, Milano, Italy*

Objectives

The fibula free flap has been widely used for reconstruction of segmental long bone and head and neck defects. The low rate of severe complications of donor site make the free fibula flap the first choice in reconstructive surgery of head and neck. The reconstruction of the jaws with fibula free flap must satisfy both aesthetic and functional criteria. Despite of its wide use in reconstructive surgery, the recipient - site functional restore has not been studied in detail. The aim of this study was to investigate functional deficits of the donor site after fibular flap harvest, through the analysis of common activities as ascent and discendent stair.

Material and methods

8 patients undergoing free fibular flap surgery for mandible or maxilla reconstruction were included in this study. An optoelectronic three-dimensional motion analyzer (SMART system, E-motion) was used to evaluated ascent and descend stair.

Donor site functional defects was evaluated trough analysis of:

- Temporal gait parameters (stride time, percentage of wing and support phase)
- shifts of Center of Mass (CoM);
- Range of Motion (RoM) of the joint of the lower limb;

The results were compared with a healthy control subject with similar anthropometric data.

Results

The analysis of temporal gait parameters has not found significative differences between healthy and operated limb. No differences were found between patients and control subjects ($p > 0.05$) during ascent and descend phase. The analysis of the CoM data showed only a minimally difference between control and patient group not significant. Significant differences were found in RoM (pelvis inclination) between patients an control subjects.

Conclusion

The functional result was excellent in all 8 patients. The biological cost of free fibula flap harvest is acceptable for a good quality of life.

The surgical treatment reveled a general positive outcome: no gait impairments during stairs negotiation were found. The differences found in pelvis movement during the descend phase, with a small clinically significant difference, could be used to define specific clinical and rehabilitative interventions according to improve the follow-up efficacy.

**O-2702****RECONSTRUCTION OF COMPLEX DEFECTS OF THE PAROTID REGION**

Chiara Copelli¹, Silvano Ferrari², Lazzaro Cassano¹, Aurelio d'Ecclesia¹, Alfonso Manfuso³, Enrico Sesenna², Roberto Cocchi¹

¹ Head Neck Department, Operative Unit of Maxillo-Facial Surgery and Otolaryngology, Hospital Casa Sollievo della Sofferenza, San Giovanni Rotondo (Foggia), Italy

² Head Neck Department, Operative Unit of Maxillo-Facial Surgery, University-Hospital of Parma, Parma, Italy

³ Operative Unit of Maxillo-Facial Surgery, University-Hospital Federico II, Naples, Italy

Objective: Ablative defects of the lateral head region usually include the parotid gland with adjacent composite tissues (skin, ear, temporal area, cheek, mandible, maxilla, lateral skull base). Resection of these structures can cause significant alteration of facial symmetry and contour, which can be devastating both functionally and cosmetically. The objective of the study is to propose a reconstructive algorithm in order to give a guide to clinical practice and to the choice of the proper technique.

Study design and methods: in this paper the Authors report on 73 patients with major ablative defects of the lateral head region treated between 2003 and 2013 at the Operative Unit of Maxillofacial Surgery, University of Parma, and at the Operative Unit of Maxillo-Facial Surgery and Otolaryngology, Hospital Casa Sollievo della Sofferenza, San Giovanni Rotondo (Fg), Italy. The different reconstructive options are analysed and complications and aesthetic and functional results are reviewed.

Results: the reconstruction of the defects was performed using local flaps (cervico-facial flap) (n=14), cervico-pectoral flap (n=3), temporalis (n=3), trapezius flap (n=3), submental flap (n=3), supraclavicular flap (n=8), pectoralis major (n=18) and free flaps: ALT (n=3) and latissimus dorsi (n=2).

Conclusion: the amount of soft tissue required, age, general conditions of the patients and the site of the defects were factors that we have to consider in the reconstructive choice. Loco-regional flaps are indicated for limited-moderate superficial defects. Myocutaneous or fascio-cutaneous free-flaps have flexibility in design and provide well-vascularized tissue coverage with adequate filling of the defects. They are currently the first reconstructive choice for larger massive parotid defects. In elderly or medically compromised patients regional pedicled flaps are indicated thanks to their quick, easy dissection and reliability.



O-2703

IS THE ALT FLAP REALLY AN ALTERNATIVE TO THE RADIAL FOREARM FREE FLAP?

M.Bredell, A. Kruse, J. Obwegeser, I.Lison

Department of Cranio-,Maxillofacial and Oral Surgery, Zürich, Switzerland

Objective

The Anterolateral thigh (ALT) free flap has been coined as the ideal free flap for reconstruction of soft tissue defects but has had slow beginnings in Europe due to anatomical differences and risk of primary flap thinning procedures. The purpose of this study was to establish the indications, success and complications of the ALT Flap in a European head and neck patient cohort compared to use of the Radial forearm free flap (RFFF) to guide future indications.

Methods

Patient records from 2008-2013 were assessed to establish the indications, success and complications of the ALT flap compared to the RFFF in a similar patient cohort of 1998-2009.

Results

In total, 30 patients with defects in the head and neck area were reconstructed with an ALT flap between 2008 and 2013 with 28 patients meeting the inclusion criteria. Twenty four patients had primary or secondary tumors and in 4 plate coverage was the primary indication. Two patients had post operative functional problems due to a bulky ALT Flap and plate coverage in the chin area was unsuccessful. Secondary revision in radiated patients led to two cases of delayed wound healing.. The RFFF group of 81 patients showed no radiation related problems and was used more in smaller tumor areas and in mobile tissue areas like tongue and buccal mucosa. Similar flap survival rates of around 95% were shown in both groups.

Conclusions

The ALT flap can be applied successfully in a wide range of head and neck reconstructions although mobile areas like tongue and buccal mucosa are less popular. ALT Flap coverage of plates in the chin area is not recommended, bulkiness may influence function and secondary revision may lead to poor wound healing in radiated patients There are clear distinctions when compared to the RFFF that is still favored for smaller defects and smaller areas.



O-2704

FLUORESCENT ANGIOGRAPHY FOR PERFORATOR FLAP PLANNING IN RECONSTRUCTIVE SURGERY

G Bettega^{1, 2}, C Ochala¹, M Hitier¹, C Hamou^{1, 2}, S Guillermet³, P Gayet³, JL Coll²

¹ Plastic and maxillofacial surgery department, Grenoble university hospital, Grenoble, France

² INSERM-UJF U823 team 5, Albert Bonniot Institute, Grenoble, France

³ Fluoptics, Fluoptics, Grenoble, France

Objective: we tested fluorescent angiography (FA) in reconstructive surgery using the Fluobeam™ device for free perforator flap planning.

Methods: a cadaveric study allowed validating the ergonomics to transfer this technology for clinical trials. A clinical study including 20 patients validated the relevance of FA for perforator flap planning. We compared it with the surgical dissection and with routine investigation of the flap (Echo-doppler or CT angiography). Reconstruction was planned with one of the 3 following flaps: fibular flap, anterolateral thigh flap (ALT), or deep inferior epigastric flap (DIEP).

Results: perforator vessels localization with FA was accurate in a range of $0.90 \text{ cm} \pm 0.96$, compared to anatomical localization. It was more accurate than echo-Doppler for fibular flaps ($1.28 \text{ cm} \pm 1.01$). But its specificity was poor (48%); because it revealed all the superficial vascularization and not just the perforator vessels useful for surgery. Nevertheless, it was possible to differentiate and to identify the targeted vessels that first lit up in the area where they were supposed to be, according to surgical experience.

Conclusions: this data needs to be confirmed with more patient studies. Nevertheless, FA seems to be an accurate and safe method for perforator localization. It can be used directly by the surgeon, and does not require any irradiation or iodine contrast agent

**O-2705****EXPERIENCE OF AN ENHANCED RECOVERY PROGRAMME IN HEAD AND NECK CANCER PATIENTS UNDERGOING FREE FLAP SURGERY.**

M. Bater¹, W. King², J. Teare², J. D'Souza¹, M. Danford¹

¹ Maxillofacial Unit, Royal Surrey County Hospital, Guildford, United Kingdom

² Anaesthetics, Royal Surrey County Hospital, Guildford, United Kingdom

Objective

Enhanced recovery after surgery (ERAS) programmes have been shown to accelerate recovery, reduce morbidity, and shorten hospital stay across a wide range of surgical specialities.¹ We have established a standardised multimodal ERAS pathway for head and neck patients undergoing free flap surgery, and in this presentation evaluate its benefit.

Methods

Having excluded the requirement for ethics approval, we designed and instituted a multidisciplinary ERAS programme. Pre-operative nutrition was optimised, and peri-operative care standardised to include carbohydrate preload, and goal directed fluid therapy. Early mobilisation and nutrition followed surgery. A prospective observational study of 20 consecutive patients was undertaken. Our primary outcome was hospital length of stay. Secondary outcomes included morbidity, resumption of sustained oral intake, and readmission rate. These were compared with a control group of 20 consecutive patients undergoing free flap surgery before the start of the programme.

Results

Patient demographics were similar for both groups with respect to median age, ASA score, and duration of surgery. Following introduction of the ERAS programme, a statistically significant fall in median (IQR) length of stay was demonstrated: from 13 days (10-19) in the control group, to 10 days (8.5-12) in the ERAS group, $p=0.0048$. The number of patients experiencing major/life-threatening post-operative complications fell from 7 (35%) (control group), to 5 (25%) (ERAS group), although this did not reach statistical significance. Resumption of sustained oral intake, and readmission rate remained unchanged.

Conclusions

ERAS programme is safe and effective for patients undergoing head and neck free flap surgery, potentially reducing both hospital length of stay and morbidity.

References

Kehlet H. Multimodal approach to postoperative recovery. *Current Opinion in Critical Care* 2009; **15**:355-8.

**O-2706****VASCULAR DEPLETED NECK SURGERY**

B. DEVAUCHELLE, J. DAVROU, O.DUNAUD, S.DAKPE, A.ALGRIN, C.RACZ, S.TESTELIN

Maxillofacial departement, University hospital, Amiens, France

Surgery and radiotherapy (and perhaps chemotherapy) for oropharyngeal upper tract cancer are responsible for many vascular depleted neck perhaps in specific local and general status of the patients . Nevertheless those necks without available recipient vessels are usually considered as contraindications for surgical procedure in case of tumoral recurrence, severe bone radionecrosis, oropharyngostomes and fistula, severe functional or morphological disfigurements.

The authors would like to analyse through a short serie of about 20 patients out of a serie of 2000 microvascular reconstructive surgeries performed between 1983-2013 the different rules and possibilities still available in such vascular depleted neck.

There are obviously some previous rules in primary cancer surgery to be followed and of course a great importance of the preoperative evaluation of the patient, of the previous treatment the soft tissue quality ,of the potential comorbidities, of the requested conditions to perform a risky and demanding reconstruction.

In this very specific field, only the illustration through choosen clinical cases could be helpful to explain the benefit of some surgical skills, some specific procedures like vascular loops and bypass, other carrying and complex prefabricated flaps or innovative ones always in the way to bring vascularised tissue in the cervical desert!

We should be very humble and precautious because the failures are always terrible, but the successes always grateful.

**O-2707****MICROSURGERY ON IRRADIATED PATIENTS**

S.TESTELIN, S.DAKPE, J.DAVROU, G.BITAR, J.BETTONI, C. DHAUTHUILLE, B.DEVAUCHELLE

MAXILLOFACIAL SURGERY, UNIVERSITY HOSPITAL, AMIENS, France

For long time ago irradiation is no more a contraindication for surgical procedures on patients after head and neck cancer treatment. First of all, in case of recurrency or second malignancy and secondarily because some functional consequences could occurred and demanding of rehabilitation. Surgery could also be possible because of the more conformational and targeted treatment. Nevertheless, to operate on irradiated patient is never easy even if the revascularisation of the tissue by the autotransplant (free flap) is always benefit for the regional area. The failure rate is always higher (15%) and there are often cicatrisation delay and complications.

In this communication the authors would like to point out the general and specific rules to manage microsurgery in such tissue not only the vascular anastomosis itself (well described in the literature) but step by step: the pre, per and post operative rules and conditions to be respected to be able in the best way to offer improvement to our patient usually painful and depressed . A serie of more than 300 patients will illustrate those propositions

**O-2708****SUPERFICIAL TEMPORAL ARTERY AND VEIN: AN OPTIMAL CHOICE OF RECIPIENT VESSELS FOR MICROVASCULAR HEAD AND NECK RECONSTRUCTION.**

C.RACZ, S.DAKPE, C.NEIVA, G.BITAR, S.LAVAQUERIE, S.TESTELIN, B.DEVAUCHELLE

MAXILLOFACIAL SURGERY DEPARTEMENT, UNIVERSITY HOSPITAL, amiens, France

Background: The selection of recipient vessels for microvascular surgery in the head and neck region is an important factor affecting the surgical outcome. Superficial temporal vessels are often considered suboptimal recipient vessels due to few reports that they are unreliable and prone to spasm. The purpose of this presentation is to report our experience with those vessels in primary or secondary maxillofacial reconstruction.

Methods: A retrospective chart review was performed on all patients with head and neck between 2009 and 2013. A total of 344 free flaps in this indication were performed during this period, and from this, 26 patients underwent microvascular tissue transfer with anastomosis to superficial temporal vessels.

Results: The superficial temporal vessels were used in 26 patients for free flap anastomosis of head and neck region. Donor sites were various with scapular flap (6 patients), fibula (1 patient), serratus (6 patients), gracilis (3 patients), and radial forearm (6 patients). The mean age of patients was about 46 yo [4-77]. 10 patients had a history of radiation therapy. All arterial and venous anastomosis were end-to-end. No vein grafts were used. There were no total flap loss and 3 partial flap failures (11%).

Conclusions: We found that the use of the superficial artery and vein in microsurgery is safe and reliable for free flap transfer. They should be considered as primary recipient vessels for microsurgical reconstruction of upper two-thirds of the face, and not just as reserve recipient vascular option in vessel-depleted neck patients. This means that we need to be conservative, preventing them from any injury in their pretragal course.

Key words: Microsurgery, free tissue flap, temporal artery



28. Head and Neck Oncological Surgery

O-2801

LIP CANCER AND SURGICAL TREATMENT IN OUR MATERIAL

Mergime Prekazi Loxha¹, Sami Salihu¹, Fellanza Gjinolli¹, Zana Agani², Aida Rexhepi², Kaltrina Kryeziu¹, Enis Gllareva¹

¹ Department of Maxillofacial Surgery, Clinical University Center Of Kosova, Prishtina, republic of Kosova, Albania

² Department of Oral Surgery, University Dentistry Clinical Center Of Kosova, Prishtina, Albania

Aims: Squamous cell carcinoma (SCC) of the lower lip is a frequently diagnosed malignant pathology in the maxillofacial region. Aim of work is to present frequency of lip cancer and its treatment in our Department.

Subject: We have analyzed the records of patients with lower lip carcinoma treated in our Department from January 2009 till January 2013.

Results: Over three years in our department, we have treated 163 patients with SCC of the lower lip, the majority of whom were male (90.3%). 72% of patient were in Stage T1 and T2. More than half of our patients (61.3%) were older than 60 year of age. 45.2% of pateints were fieldworkers. 74.2% of patients were smokers. Positive lymph nodes were detected with ultrasound in 41.9% of patients and with lymphoscintigraphy in 67.7% of patients. Sentinel node biopsy was positive in 32.2% of patients. Lip reconstruction with good esthetic result was achived mostly with V and W excision, while stages T3 and T4 were reconstructed with myovascular local flap and neck dissection depending from the stage.

Conclusion: Lower lip carcinoma is a slow-growing cancer, and can be diagnosed and treated easily and effectively; however, early treatment is important because its mortality rate is 10–30%. Our results indicate that, of the methods used to detect positive lymph nodes, the most accurate is LSG. The results also suggest that further study is needed to optimize the treatment protocol in patients with SCC of the lower lip, especially in those with T2 lesions.

**O-2802****SURGICAL TREATMENT AND PROGNOSIS OF SQUAMOCELLULAR CARCINOMA IN MIDFACE OF MAXILLOFACIAL REGION**

A. Jenča, jr., M. Riznič, J. Jenča, A. Jenča

Department of Stomatology and Maxillofacial Surgery, University Pavol Jozef Šafarik, University Hospital of Louis Pasteur, Košice, Slovakia

Objectives:

Oral squamous cell carcinoma (OSCC) is mostly detected between 40 and 80 years of life. Reports on younger patients with an OSCC is increasing. They are thought to have an aggressive biological behaviour and poor prognosis. We investigated the clinical courses and survival of young OSCC.

The midfacial defect secondary to maxillectomy has functional and aesthetic consequences. Reconstruction options are obturators, local and regional flaps, as well as free flaps. The purpose of this presentation is to report a case of reconstruction of the maxillectomy defect with the use of the temporalis osteomuscular flap with full thickness calvarial bone.

Methods:

In retrospective study all patients with OSCC than 60 year were analysed with regard to tumour size, lymph node metastases and survival .48 patients treated in University Hospital with primary surgical resection.

Histological grade, inflammatory infiltration, model of invasion, vascular invasion, perineural invasion and p53 and p16 expression.

Disease – free survival ,metastases, local recurrence and second tumours.

Results:

Eight of 48 patients were younger than 45 years, 9 of 48 patients older than 75 years. Advanced tumours were found in young patients. (T1x2,T2x1, T4x5). In older patients T4x3, T1x4, T2x1 and T3x1were diagnose. Lymph node metastases had 4 patients in both groups. The 5-year survival in young patients was only 87,5%, in the older group more than 75%.

Univariate analysis: p53expression , model of invasion and inflammatory infiltration ere associated with disease - free survival

Multivariable analysis: only p53 expression was significant. We are still analysing the results in relation to p16 expression.

Conclusions:

The frequency of young OSCC patients amounts to currently about 10% of the complete collective. However, two principle different courses can be distinguished: a part of the patients died already in the first 2 years whereas the remaining patients survive 5 or more years. A detailed prognosis in such patients is not possible with by means of TNM system and grading alone and should be completed by immunohistochemical examinations like angiogenesis, adhaesion molecules and tumour hypoxia.

We consider that p53 expression would be useful to determine the prognosis of patients with oral cancer



O-2803

INVADING BASAL CELL CARCINOMA OF THE BONE: SURGICAL AND NON-SURGICAL MANAGEMENT

N. Carral-Roura, V. Chávez-Bonilla, B. Patiño-Seijas, R. Luaces-Rey, F. Gálvez-Prieto, A. González-Mourelle, I. Vázquez-Mahía, A. García-Rozado, J. Ferreras-Granado, J.L. López-Cedrún

A Coruna University Hospital, Spain, A Coruna, Spain

Objective: To clarify therapeutic approaches to giant basal cell carcinoma with bone invasion.

Methods: A literature search regarding on basal cell carcinoma treatment options was conducted, with special emphasis in papers reporting invasion into the bones of the head and neck. We report three cases of bone invasion with different treatment options, one of them presenting with regional lymph node metastasis: mastoid and external auditory meatus, skull (with dura involvement), and midface with complete nasal and orbital destruction.

Results: Patients of our report underwent surgical resection, external radiation, and brachitherapy. These treatment approaches are revised in a literature-based discussion. Aggressive biological behavior of basal cell cancer is related to its extent, location, histological subtype (infiltrating), perineural invasion, intratumoral microvessel density and immunohistochemical markers expression.

Conclusion: Tumor invasion into the bone is associated with a higher rate of recurrences. Complex reconstruction is needed in large tumors with subsequent bone destruction, with the objective of restoring both form and function, which is often a challenging goal.

**O-2804****EXTREMELY RARE PRESENTATIONS OF HEAD AND NECK SARCOMA**

M. Tyndorf, K. Sztychny, M. Kozakiewicz

Clinic of Maxillofacial Surgery Medical University of Lodz, Łódź, Poland

Objective: Soft tissue sarcomas (STS) are very rare neoplasms that account around 1% of all human malignancies, of which only 5% are head and neck STS. Angiosarcoma, fibrosarcoma and unclassified sarcoma are three most common STS of maxillofacial region. Primary malignant tumours of the temporo-mandibular joint are seldom as well. They usually include chondrosarcoma and lesions originating from joint capsule (synovial sarcoma and fibrosarcoma).

The aim of the study is to present two extremely rare cases of sarcoma manifestation.

Methods: First case, never mentioned in literature before: 74 year old male with TMJ low grade fibromyxoid sarcoma. Patient was treated due to arthropathy and underwent TMJ alloplasty. Sarcoma was recognised in surgical specimen pathological examination.

Second case is 72year old male with malignant fibrous histiocytoma of maxilla which presented as a toothache. First radiological examination revealed periapical radiolucency in upper lateral incisor. Root canal treatment was conducted but with no local status improvement and with exacerbation observed. The rapid growth of tumour appeared after tooth extraction. Patient was admitted to hospital and surgical treatment (partial maxillectomy and neck dissection) was administrated.

**O-2805****HOW TO OPTIMIZE THE TREATMENT OF STAGE I ORAL CANCER?**

J. Dunkel¹, S. Vaittinen², I. Kinnunen³, P. Koivunen⁴, J. Laranne⁵, R. Grénman³, H. Irjala³

¹ *Medicity Research Laboratory, Turku University, Turku, Finland*

² *Dept. of Pathology, Turku University Hospital, Turku, Finland*

³ *Dept. of Otorhinolaryngology - Head and Neck Surgery, Turku University Hospital, Turku, Finland*

⁴ *Dept. of Otorhinolaryngology - Head and Neck Surgery, Oulu University Hospital, Oulu, Finland*

⁵ *Dept. of Otorhinolaryngology - Head and Neck Surgery, Tampere University Hospital, Tampere, Finland*

Objective: The nature of Stage I oral cancer is highly variable and thus the treatment has varied from minimal surgery to elective neck dissection and radiation therapy during the years. The objective of this study was to determine prognostic factors for this disease.

Methods: All the 44 oral Stage I carcinoma patients treated primarily in the Turku University Hospital (population of 700 000) during years 2001-2004 were collected and 35 of them were analyzed for p16, Podoplanin, HIF1 α , Ki-67 and CD44.

Results: 11 patients (25%) had a recurrent disease during the 5 year follow-up. High CD44 expression and low expression of hypoxia induced marker HIF1 α were signs for favourable outcome. When combined, these two markers could predict the patient population which did not get local recurrences or metastases.

Conclusions: Outcome of even early oral squamous cell carcinoma can be bad and the treatment should be aggressive when necessary, but on the other hand not unnecessary aggressive to the patients with good prognoses. Basic immunohistochemistry for CD44 and HIF1 α can be used to assess the prognoses for the stage I oral squamous cell carcinoma and help us to choose the right treatment to individual patients.

**O-2806****OUR EXPERIENCE IN THE TREATMENT OF CRANIOMAXILLOFACIAL FIBROUS DYSPLASIA: AN UPDATE**

A. Cassoni, V. Terenzi, A. Anelli, O. Rajabtork Zadeh, I. Raponi, V. Valentini

sapienza university of Rome, Rome, Italy

Aims: Fibrous dysplasia is a benign bone lesion characterized by replacement of normal bone with fibro-osseous connective tissue. Management of this disease can consist in: clinical observation, medical therapy and surgical treatment (conservative or radical). We present an update of our experience focusing on surgical strategies.

Material and Methods: From January of 1980 to December of 2013, 137 patients with fibrous dysplasia located in the craniomaxillofacial area presented to the authors' department. Forty had the polyostotic type (29 percent), 3 had McCune-Albright syndrome (2 percent), and 95 had the monostotic type (69 percent). Of these patients, 85 underwent surgery; among them, 72 had radical excision, 11 received conservative treatment, and 2 patients with mandibular involvement received radical excision and immediate reconstruction with a free fibula flap after a recurrence experienced after primary remodeling surgery. In 6 patients optic nerve decompression was performed (in 5 cases patients were symptomatic).

Results: No disease recurrence was observed in cases treated with complete excision, whereas 2 cases of mandibular involvement treated with remodelling required further surgery. Infection, resolved with antibiotics, and palatal fistula were seen respectively two cases. In one case with cranial base involvement liquorrhea was observed. Between patients who underwent curative optic nerve decompression, visus improvement was observed in 4 cases.

Discussion and Conclusion: In most cases of monostotic or monofocal fibrous dysplasia of the craniofacial region, modern surgical techniques allow an aggressive but definitive treatment with good functional and aesthetic results. Even in case of alveolar ridges' involvement, radical resection and immediate free flap reconstruction leads to a satisfactory aesthetical and functional result. A conservative approach (remodelling) is indicated in case of polyostotic fibrous dysplasia and McCune-Albright syndrome. Optic nerve decompression is indicated only in case of symptomatic patients.

**O-2807****ENHANCED RECOVERY FOR HEAD & NECK ONCOLOGY: THE UK STATUS REPORT**

C.K. Lau^{1, 2}, S.P. Whitley², I. Hutchison², J McCaul³

¹ Head & Neck Surgery, University College Hospital, London, United Kingdom

² Department of Oral & Maxillofacial Surgery, Royal London Hospital, Barts Health NHS Trust, London, United Kingdom

³ Department of Oral & Maxillofacial Surgery, The Royal Marsden Hospital, London, United Kingdom

Introduction: In recent years, Enhanced Recovery Programmes (ERP) have revolutionised patient management in many surgical specialties such as orthopaedics, urology and general surgery. These programme aims to improve patient outcomes and speed up patients' recovery after surgery. It focuses on patient participation in their own recovery process and ensures patients always receive evidence-based care at the right time.

There are four elements to ERPs:

- 1.Pre-operative assessment, planning and preparation before admission
- 2.Reducing the physical stress of the operation
- 3.A structured approach to immediate post-operative and peri-operative management
- 4.Early mobilisation

The adaptation of Enhanced Recovery principles in head and neck oncology patient management is filled with multiple obstacles due to the complexity of these cases.

Material: The authors explore the development of Enhanced Recovery Programmes in head and neck oncology in various UK centers to date. We examine the difficulties in initiating changes within an established practice. The scope for multi-centred research studies will also be discussed.

Conclusion: Enhanced Recovery Programmes have the potential to revolutionise the management of head and neck oncology patients. The development of an agreed standardised treatment pathway would improve the standard of our routine practice across the UK.



O-2808

SALIVARY GLAND PLEOMORPHIC ADENOMA: A 20-YEAR INCIDENCE-STUDY

M.H. Valstar^{1, 2}, M. de Ridder¹, M.L.F. van Velthuisen³, L.I.H. Overbeek⁴, B.A.C. van Dijk^{5, 6}, A.J.M. Balm^{1, 7}, L.E. Smeele^{1, 2}

¹ Department of Head and Neck Oncology and Surgery, The Netherlands Cancer Institute, Antoni van Leeuwenhoek Hospital, Amsterdam, Netherlands

² Department of Oral and Maxillofacial Surgery, Academic Medical Center, Amsterdam, Netherlands

³ Department of Pathology, The Netherlands Cancer Institute, Antoni van Leeuwenhoek Hospital, Amsterdam, Netherlands

⁴ PALGA, The nationwide network and registry of histo- and cytopathology in the Netherlands, Houten, Netherlands

⁵ Department of Epidemiology, University of Groningen, University Medical Center Groningen, Groningen, Netherlands

⁶ Department of Research, Comprehensive Cancer Centre the Netherlands, Utrecht, Netherlands

⁷ Department of Otolaryngology/Head and Neck Surgery, Academic Medical Center, Amsterdam, Netherlands

Background: The incidence of salivary gland pleomorphic adenoma, based on long-term data of a national population has never been determined, because national cancer registries do not register benign neoplasms.

Aim: To determine the 20-year incidence and epidemiological characteristics of histologically proven primary salivary gland pleomorphic adenoma in the Dutch population.

Methods: A search for patients with a primary salivary gland pleomorphic adenoma was conducted in the nationwide network and registry of histo- and cytopathology in the Netherlands (PALGA) in the period 1992-2012. With a 5-year interval, all pathology reports were manually checked. Recurrences, malignancies and non-salivary gland lesions were excluded. The incidence was calculated, using the national population data from the Central Agency of Statistics (CBS). The first 1035 of 3881 patients have been evaluated. Epidemiological characteristics were scored: sex, age at diagnosis and anatomical location. By linear regression analysis, crude reported tumor occurrence was evaluated, without correction for age-structure of the population. Upon completion of evaluation, the European Standardized Rate (ESR) will be calculated and presented in September.

Results: The search resulted in 16.437 reports; around 700 per year, but 7% did not meet the inclusion criteria. After extrapolation to the total of reported tumors, the estimated average crude incidence rate was 4,6 per 100.000 per year. The female/male ratio was 1,0:1,33, with a median age of 48 years (range 8-92). Most tumors occurred in the parotid (79%), followed by the minor (12%) and submandibular gland (10%). The estimated annual percentage change in incidence was +5,4%(p=0.001, 95% CI: 2,3-8,4) in this 21-year period, based on the absolute numbers. For males this is 0,7%(p=0.426, 95% CI: -1,1-2,5), for females 4,7%(p=0.001, 95% CI: 2,4-6,9).

Conclusion: The estimated overall incidence of salivary gland pleomorphic adenoma is 4,6/100.000 per year. Although the incidence seems to increase, this should be evaluated in the light of ESR.

References:

K. Moeller, D. Esser, D. Boeger et al. Parotidectomy and submandibulectomy for benign diseases in Thuringia, Germany: a population-based study on epidemiology and outcome. Eur Arch Otorhinolaryngol (2013) 270:1149–1155



29. Rhinoplasty and Otoplasty / Salivary Glands - Minimal Invasive Surgery and Pathology

O-2901

PIEZZO ASSISTED OTEOTOMIES : A NEW BREAKTHROUGH IN RHINOPLASTY

JP. Meningaud, O. Gerbault

Henri Mondor Hospital, Créteil, France

Aim: Osteotomies are frequently performed during rhinoplasty to treat a wide or asymmetric bony vault, or to balance a reduced nose. Even with very sharp osteotomes, the exact control of the fracture line may be difficult. A new power assisted technology has been applied to bone trimming, rasping and fracture since February 2013. Our purpose is to share our early experience with this very new material.

Methods/Technique: The material per se has changed during the study's duration, as the inserts have been improved in their dimensions, ergonomics, water distribution pattern ... We don't report here a scientific study, but our experience with this evolving innovative material in 35 patients. A whole set of inserts has been developed during 2013-2014 to do all the bone surgery performed during a rhinoplasty. Photos and measurements have been taken at all the post-op follow up consultations.

Results/Complications: The surgeon performs the bone job without the influence of the assistant. Trimming the bone becomes a continuous process. The soft tissues are protected from any type of injury, allowing all the osteotomies to be done safely through a close or open approach. The lining under the bones isn't undermined, which could improve bone stabilization after osteotomies. It allows an accurate bone incision with a very thin and controlled fracture line, and no irradiated fractures. Moreover, transverse osteotomies are done internally. Lateral osteotomies can be done L-L or L-H guided by the protuberances located on the top of the saws. Intermediate osteotomy can be done safely before or after a lateral osteotomy. The bone edge can be easily lowered with a burr or a saw, even after completion of the osteotomies, without risking displacing the bones. The bony septum can also be precisely trimmed without sweeping movements. The learning curve is steep and for beginners, this material should ease the bone reshaping.

Conclusion: This new instrumentation has revolutionized our way of doing and controlling osteotomies. Compared to the existing motors used for osteotomies, this new one protects the soft tissues and cartilages. Compared to the traditional osteotomes, this material allows a very accurate control of the fracture line and avoids irradiated fractures.

**O-2902****DIRECT NASAL TIP SUTURING IN CLOSED(ENDONASAL) RHINOPLASTY**

S.F.POURDANESH, R.TABRIZI

ORAL AND MAXILLOFACIAL SURGERY, SHAHID BEHESHTI UNIVERSITY OF MEDICAL SCIENCES, TEHRAN, Iran

Objectives: It is widely accepted that rhinoplasty is one of the most difficult of all cosmetic procedures. To get the best results, open or closed approach might be in concern both for patient and surgeon. Although open rhinoplasty is improved diagnostic accuracy and give us full access to the entire nasal framework and facilitates to re shaping and suturing under direct vision but the main disadvantage of open technique is a visible scar on the columella. we use modified closed approach to maximally take benefit of the combination of two surgical techniques. the aim of this article is to present outcome of complete delivery technique in closed rhinoplasty.

Methods: 45 patients undergoing modified closed rhinoplasty were included in this study. cleft nose patients and those who need secondary rhinoplasty were excluded respectively. Via extended marginal incision, complete delivery of lower lateral cartilages from one nostril was done. transdomal and interdomal suturing was done under direct vision and also strut and tip grafts were sutured as well.

Results: we performed modified closed rhinoplasty on 45 subjects (14 male and 31 female) with the mean age of 27.5 years (range, 18 to 45 years). The minimum follow-up period was 18 months. We have had no complications of this approach itself and the results are highly satisfactory except in one case who dissatisfied with nose projection.

Conclusion: The modified closed rhinoplasty offers many of the benefits of the open and closed techniques.

Key words: closed rhinoplasty, open rhinoplasty, modified closed rhinoplasty

**O-2903****THE NEW SURGICAL PROTOCOL FOR CORRECTION OF THE HUMP NOSE. REVIEW OF 100 CASES.**

A. Glushko, L. Pavluk-Pavluchenko, A. Drobyshev

Maxillo-Facial Surgery, Moscow State University of Medicine and Dentistry, Moscow, Russian Federation

Overview. There are numerous different surgical technics for correction of the hump nose deformity. All they have their own advantages and disadvantages. In this research we are going to demonstrate another surgical protocol which we named "hump on a pedicle". It is consist of incomplete resection of the hump, remodeling and placing it back to the previous place. Review of 100 cases has been made.

Objective. Identify successfulness of the surgical technique "hump on a pedicle" and to evaluate patient's satisfaction after the rhinoplasty procedure.

Materials and Methods. There are 100 patients (females, age from 18 to 36, mean 24,7) who have undergone aesthetic rhinoplasty using the technique "hump on a pedicle". Same pre-operating and one year post-operating protocols were made for every patient: clinical examination, anterior rhinoscopy, CT and anterior active rhinomanometry. We used intranasal surgical protocol. After the wide exposure of the cartilage and bone parts of the nasal pyramid, using scalpel №11 we performed incision through the cartilage above the internal valve, so here we leave intact soft tissue pedicle. Using straight chisel we made intersection of the cartilage and bone parts of the hump. We made the remodeling of the semi-resected part of the hump and returning it to original position with suturing for the stability. In most cases we used lateral-positioning of the nasal turbinate. Septoplasty and nasal bones osteotomy with reposition was performed in all cases. Careful packing and bandage was applied in order to maintain the surgical result. All data was compared. All clinical results were analyzed one year after surgery. The main data was taken from the clinical examination, CT, anterior active rhinomanometry and patient-doctor's satisfaction.

Results. Patient-doctor's satisfaction result was achieved in 87% (analysis of photos). Anterior active rhinomanometry showed up to 80% normal breathing results comparing with 46% initially. CT data showed that in 95% patients nasal septum was located straightly in the midline or nearly.

Conclusions. Surgical Protocol "hump on a pedicle" is very useful in case of hump nose and can give us an opportunity to achieve excellent aesthetic and functional results.

**O-2904****ALAR-CUMELLAR AND LATERAL NOSTRIL CHANGES FOLLOWING TONGUE-IN-GROOVE RHINOPLASTY**

M Pfaff, A Shah, D Steinbacher

Plastic and Craniomaxillofacial Surgery., Yale University, New Haven, CT, United States

BACKGROUND: Repositioning the medial crura cephalically onto the caudal septum (tongue-in-groove; TIG) allows alteration of the columella, ala, and nasal tip to address alar-columellar disproportion as seen from the lateral view. To date, quantitative analysis following the TIG rhinoplasty technique has not been described. The present study aims to evaluate post-operative lateral morphometric changes following TIG.

METHODS: Pre- and post-operative lateral views of a series of consecutive patients who underwent TIG rhinoplasty were produced from 3D images at multiple time points (≤ 2 weeks, 4 – 10 weeks, and > 10 weeks post-operatively) for analysis. Exposed columellar area, alar-columellar disproportion (divided into superior and inferior heights), and nasolabial angle were calculated and statistically analyzed using a pairwise t-test. A $P \leq 0.05$ was considered statistically significant.

RESULTS: 70 lateral views were analyzed from 12 patients (9 females; median age: 33.5). One patient had a history of current tobacco cigarette use. The median follow-up time was 2.0 months. Columellar show area significantly decreased at ≤ 2 weeks and 4 – 10 weeks post-operatively ($P = 0.005$ and 0.007 , respectively). TIG rhinoplasty was associated with a 19.9%, 23.3%, and 24.8% reduction in columellar show area at ≤ 2 weeks, 4 – 10 weeks, and > 10 weeks, respectively. Alar-columellar disproportion was reduced following TIG all time points. The nasolabial angle significantly increased postoperatively at ≤ 2 weeks, 4 – 10 weeks, and > 10 weeks ($P = 0.009$, 0.001 and 0.03 , respectively).

CONCLUSION: Morphometric analysis reveals reduction in alar-columellar disproportion and lateral nostril show following TIG rhinoplasty. Tip rotation, as a function of nasolabial angle, also increased. Future studies will focus on area and volumetric measurements, and assessment of long-term stability.

**O-2905****NASAL CARTILAGES REMODELING "CD TECHNIQUE": ULTRASTRUCTURAL COMPARATIVE STUDY**

L. Catalfamo, J. Matyasova, A. Calvo, S. Crimi, F.S. De Ponte

Department of Maxillo-Facial Surgery, University Hospital Messina, Messina, Italy

Objective: The purpose of this work is to study and apply a surgical technique option for the management of the nasal cartilaginous structures in congenital malformations and surgical outcomes, reproducible also by a non experienced surgeon. Generally, surgical revision of the nasal cartilages is performed via autologous or alloplastic cartilage grafting. Autologous grafts are taken from other anatomical sites in which the cartilage presents a different functional ultrastructure compared to nasal cartilage (hyaline cartilage). We suppose that the other cartilage histotypes do not allow a movement of expansion and re-entry. The Drill method presents a new type of nasal cartilages remodeling which allows the management of the cartilage avoiding the tissue memory effect and minimizing the use of cartilage grafts and / or alloplastic materials.

Methods: The study was conducted on 10 patients with nasal cartilage malformation, congenital and post-traumatic defects that underwent an open technique rhinoseptoplasty. The nasal cartilages were treated with neurosurgical diamond cutter performing the drill remodeling technique on a group of 5 patients. The other 5 patients were treated with the manual fractures and cartilage grafts. An ultrastructural study with electron microscopy was performed on both groups of patients to verify the presence of post-treatment structural alterations on the residual nasal hyalin cartilage.

Results: The results have shown that the anatomical component has not been subverted by the abrasive insult of the drill remodeling method.

Conclusions: Our technique can be considered as a new opportunity in surgery of the nasal cartilages, also suitable for less experienced surgeons. The low morbidity suggests that this method may reshape the nasal cartilage completely avoiding structural damage and without the need of cartilage and / or alloplastic grafts.

**O-2906****RECURRENCE AND SURVIVAL IN ADENOID CYSTIC CARCINOMA OF SALIVARY GLANDS: A 31 YEAR EXPERIENCE**

L. F. Pinzón¹, V. Villanueva¹, M. A. Rodríguez¹, T. Palazón¹, J. Parra², M. Vallés¹, P. Veiga¹, R. Camacho¹, M. Gutierrez¹, M. González¹

¹ ORAL AND MAXILLOFACIAL SURGERY, HOSPITAL VIRGEN DE LA ARRIXACA, MURCIA, Spain

² ANATOMICAL PATHOLOGY, HOSPITAL VIRGEN DE LA ARRIXACA, MURCIA, Spain

Objectives: This study attempts to identify factors involved in recurrence and survival rates in patients with Adenoid Cystic Carcinoma of Salivary Glands (ACCSG), an infrequent neoplasia characterized by an indolent and slow growth pattern with a relatively high local recurrence and distant metastasis rates.

Methods: A retrospective study including all the patients with a definitive histologic diagnosis of ACCSG at the Hospital Virgen de la Arrixaca of Murcia, Spain, between February 1982 and February 2013 (n = 21). Data was collected using over 26 different variables. Descriptive and comparative statistical analysis were performed.

Results: The average age of the population sample was 57,9 years, 61,9% were women and 38,1% were men. The most frequent locations were parotid gland (57,1%) and submandibular gland (23,8%). The histological grading was: grade I in 10 patients (47,6%), grade II in 6 patients (28,6%) and grade III in 5 patients (23,8%). The surgical resection margins were affected in 12 patients (57,1%) and free of disease in 8 patients (38,1%). Neural invasion was found in 3 patients (14,3%). Recurrence took place in 9 patients (42,9%) and more than a half (55,5%) of them had a distant metastasis. The recurrence rate was increased due to the presence of lymph node metastasis (p: 0,036), distant metastasis (p: 0,05), high TNM stage (p: 0,04), high histological grade (p: 0,007), positive surgical margins (p: 0,001) and neural invasion (p: 0,011).

The overall survival decreased in patients with a high TNM stage (p: 0,027), a high histological grade - mainly in grade III- (p: 0,011), positive surgical margins (p: 0,001), neural invasion (p: 0,010) and recurrences (p: 0,028) mostly if the recurrence was a distant metastasis (p: 0,002).

Conclusions: According with our experience, patients with ACCSG and the presence of lymph metastasis, high TNM stages, high histological grade, positive surgical margins and neural invasion have a higher rate of recurrences. The overall survival of patients with ACCGS is decreased by a high TNM stage, high histological grade, positive surgical margins, neural invasion and the presence of recurrences.



O-2907

SIALENDOSCOPY; A SINGLE SURGEONS EXPERIENCE.

H Katsarelis, DK Dhariwal

Oral and Maxillofacial Surgery, John Radcliffe Hospital, Oxford, United Kingdom

Objective

Sialendoscopy is a well established minimal access treatment for sialolithiasis and duct stenosis. The National Institute for Health and Clinical Excellence (NICE) reviewed the procedure in 2007 and approved its use in the UK. We aimed to review our learning curve of sialendoscopy against the evidence used by NICE guidance and assess the impact of minimal access techniques on our salivary gland service.

Methods

Prospective collection of data on minimal access techniques performed by a single surgeon over a 4 year period in a tertiary referral centre. We assessed patient demographics; relief of symptoms, failure of procedure and subsequent sialadenectomies.

Results

A total of 69 patients underwent sialendoscopy. 88% of patients had relief of obstruction and the procedure failure rate was 8.7%. Persistent symptoms and subsequent sialadenectomy rate was 11.6%, in keeping with published data. Sialadenoscopy has reduced the sialadenectomy rate in these patients from 50% to 38%.

Conclusions

Sialadenoscopy has been validated in studies with large cohorts of patients with parotid and submandibular gland pathology. Our Minimal access procedures had low morbidity and excellent patient acceptance. Evidence suggests that glands can recover well, therefore avoiding unnecessary gland excisions.



O-2908

TREATMENT OF SIGNIFICANT PAROTID DUCTS DEFORMITIES

V. Afanasiev, D. Dubov

Maxillofacial Traumatology Department, Moscow State University of Medicine and Dentistry of A. Evdokimov, Moscow, Russian Federation

Introduction. Congenital ductal deformities of the parotid glands clinically do not manifest during long time, but in the end can cause to the parotid gland abscess or salivary stone. Conservative therapy is difficult in case of exacerbation of chronic parotitis. Phlegmons of parotico-masticatory region often formed during exacerbation.

Even modern methods of conservative treatment do not bring adequate clinical results for long period. Life of the patients become uncomfortable. Permanent swelling leads to the willing to remove salivary gland. But such operation can lead to some serious complications.

In this case, one of the alternative methods is the ligation of the ducts. However, the previously suggested methods often gave relapses and were unreliable.

We have developed the method of surgical correction of congenital deformities of the parotid gland's ducts.

Materials and methods. We observed 16 patients with congenital parotid ducts deformities. Patients suffered frequent exacerbations of chronic parotitis, in some cases leads to emergency hospitalization. Due to several strictures of a very small diameter in parotid duct in all patients, restoration of normal parotid function was impossible.

Results. Patients underwent reconstructive-plastic operations in parotid duct on the method developed by us, aimed at stop of the secretion of the parotid gland in order to avoid subsequent exacerbations process.

Using preauricular approach, we separated parotid duct, sanated by antiseptic solution and ligated together with 1st order ducts. In case parotid duct was significantly dilated, partial excision of its walls was preformed.

Inspection of the patients was carried out in the period up to 4 years. In the postoperative period, 1 patient noted once appeared swollen glands during meals, which disappeared and never reopened. Other patients do not complain, exacerbations of chronic parotitis was absent.

Conclusions. In case of significant parotid ducts deformities (ectasia or stricture) an alternative method of treatment is a reconstructive-plastic operations. If restoration of parotid function is impossible, one should consider interventions for secretion reduction and duct walls excision. It guarantees the absence of complications in the future.



O-2909

ACCESSORY PAROTID GLAND TUMORS: ANALYSIS OF DIAGNOSTIC AND TREATMENT MODALITIES

V. Popovski, A. Benedetti, V. Janevska

University Clinic for Maxillofacial Surgery, Skopje, Macedonia

Objective: Wide spectrum of histopathological appearance, as well as the diversity of its morphological features in different parts of the parotid gland pronounces the peculiarity of the parotid gland tumors. Tumors of the accessory lobe as a midcheek masses are relatively rare but still with intelligible interest about their diagnostic and treatment modalities.

Materials and Methods: Comparative study of 22 consecutive patients with accessory parotid gland tumor surgically treated on our clinic in ten year period. Comparison was created with relevant information concerning patient, disease, diagnostics and treatment distinctiveness. The efficiency of contemporary diagnostic algorithm and surgical treatment, were compared with histology, recurrence and facial nerve morbidity. Rank regression procedure was conducted for analysis of survival in the malignant group.

Results: MRI was superior for exact preoperative planning. The most utilized surgical procedure was extended parotidectomy (rhytidectomy) approach with total facial nerve preservation. Conclusive histological findings included benign tumors in 52% whereas in 48% malignancy of various grade was present. Multivariate analysis on the malignant lesions showed that histology grade ($P < 0.05$), tumor size ($P < 0.1$), and stage ($P < 0.01$) were associated with decreased survival. Postoperative results in our study are quite satisfactory with only 13.5% of transitory facial nerve palsy, only one case of recurrence and affirmative disease-free survival rate. Immunohistochemistry was effective in creating postoperative oncological protocols for the malignant group.

Conclusions: Accessory lobe parotid tumors are uncommon and exact preoperative assessment and careful choice of the operative procedure are necessary for achieving satisfactory postoperative results.



O-2910

SUBMANDIBULAR GLAND BIOPSY FOR EARLY DIAGNOSIS OF PARKINSON DISEASE

L. Pingarron-Martin, J. Rey, L.Llanos, C. Prieto, JR. Ramirez, M. Duran, D. Martinez

UNIVERSITY HOSPITAL REY JUAN CARLOS, MADRID, Spain

Objective: The aim of this clinical research is to describe the histopathology in the peripheral nervous system in Parkinson Disease, and more concretely, the density of Lewy-type alpha-synucleinopathy in submandibular gland. And from these results to study the efficacy of submandibular gland biopsy for the histological diagnosis of PD.

Methods: Inclusion and exclusion criteria for suitable candidates for submandibular gland biopsy searching histological diagnosis of Lewy bodies are described.

Submandibular gland biopsy is performed under local anaesthesia. Volume of 1.5 cm² submandibular gland should be obtained. Segments are fixed in 10% neutral buffered formalin. Sections are stained for alpha-synuclein phosphorylated at serine 129.

Different densities of immunoreactive fibers within the submandibular glands are graded.

Results: Nerve elements immunoreactive for alpha-synuclein phosphorylated at serine 129 are found in 100% of tissue blocks of patients with Parkinson Disease.

Patients are divided according to PD clinical stage and age. Histological results are discussed.

Conclusion: Submandibular gland biopsy is a feasible procedure due to its anatomical location. It may be particularly useful in both PD diagnosis at early stages and in selecting patients suitable for invasive therapies.



30. Bisphosphonate Related Disease of the Jaws

O-3001

BISPHOSPHONATE RELATED OSTEONECROSIS OF A JAW: RADICAL SURGICAL APPROACH

K. Polyakov, U. Medvedev, A. Omelchenko, T. Obratsova

Science Department Of New Technologies In Maxillofacial Surgery, I.M.Sechenov First Moscow State University, Moscow, Russian Federation

Objective

Changes in bone formation and transformation processes due to bisphosphonates may lead to a tremendous destruction of the jaw. Such destructions produce significant morbidity rate in patients who receive bisphosphonate chemotherapy as a part of the cancer treatment. Bisphosphonate-related osteonecrosis of the jaw (BRONJ) severely affects the quality of patients' life. Strategies for management of patients are still unclear though efforts were made to uncover the way these drugs affect the bone and the way a specialist should act before and during chemotherapy using bisphosphonates.

Methods

Over 40 patients with BRONJ using different methods were treated - conservative treatment, block resection with undisturbed jaw continuity and radical resection of the jaw. The routine methods of evaluation were implemented.

Results

All the patients needed a major surgical treatment due to a massive bone destruction with no signs of bone self-remodelling. Initial symptoms included numbness, heaviness, swelling, pain and infection in the jaw, and loosening of the teeth, after which lesions were often persistent and unresponsive to conventional treatments. The majority of patients in our clinic have undergone mandible or maxilla resection. Assessed by CT scan margins of necrotic process were usually enlarged during the surgical procedure. As we were seeking for the unaffected bone with all the true signs of being alive - bleeding from the bone and bone color - the site of resection became much wider. Thus CT scan is of a good diagnostic value but does not make it possible to determine the dimensions of resection accurately.

The majority of wounds were closed with sutures, just 1 patients had a wound dehiscence, and 1 patient did not have any sutures at all.

Conclusion

We used more aggressive approach and primary wound closure rather than just debridement and such approach has shown much better result. The results of our study suggest strong recommendations for chemotherapists to make an overall estimation of patient's oral cavity status. If possible, such evaluation should be made by a maxillo-facial surgeon. If BRONJ occurs aggressive surgical treatment may stop it, and palliative bone debridement has no effect on process.

**O-3002****STAGING OF JAW OSTEONECROSIS REQUIRES COMPUTED TOMOGRAPHY FOR ACCURATE DEFINITION OF BONE DISEASE EXTENT: RESULTS OF THE MISSION STUDY**

A. Bedogni, G. Bettini, S. Fedele, G. Campisi, V. Fusco, G. Bedogni, S. Valsecchi, M. Gabriele, O. Di Fede, G. Saia

Unit of Oral and Maxillofacial Surgery, Department of Surgery, University of Verona, Verona, Italy

Objective. Management of jaw osteonecrosis associated with antiresorptive agents (ONJ) is challenging and outcomes remain unpredictable. Disease severity is the main factor to guide management and can help predicting prognosis. The vast majority of available staging systems for ONJ, including the widely used AAOMS system, classify disease severity on the basis of clinical manifestations and findings at routine dental radiographs. However, clinical inspection and radiography are limited in their ability to identify the extent of necrotic bone disease with respect to computed tomography (CT) imaging.

Methods We performed a large multicentre retrospective study known as MISSION, to investigate the agreement between the AAOMS ONJ staging system and the extent of ONJ disease (focal vs. diffuse bone involvement) as detected by CT.

Results Seven hundred ninety-nine ONJ patients with detailed clinical phenotyping and CT imaging were studied. CT features of diffuse bone disease were identified within all AAOMS stages (20%, 8%, 48% and 24% of all cases of diffuse bone disease occurred in AAOMS stage 0, 1, 2 and 3 individuals respectively). Fifty-seven % of the patients classified under AAOMS stage 0 had diffuse disease on CT scan and approximately one every three individuals with CT evidence of diffuse bone disease was misclassified by AAOMS system as having low stage (stage 0 and 1) ONJ. Also, more than one third (35.1%) of patients with AAOMS stage 2 had focal bone disease at CT.

Conclusions We demonstrated that the AAOMS staging system does not correctly identify the extent of bone disease in ONJ patients.

**O-3003****BISPHOSPHONATE RELATED OSTEONECROSIS OF THE JAW: KNOWLEDGE, AWARENESS, PRACTICES AND ATTITUDES AMONGST ONCOLOGISTS**

A.Attard¹, N.Pattni¹, R.Stevenson², L.Fresco², G.Walton³

¹ *Oral and Maxillofacial Surgery, Queen Elizabeth Hospital, Birmingham, United Kingdom*

² *Department of Oncology, University Hospitals Coventry, Coventry, United Kingdom*

³ *Oral and Maxillofacial Surgery, University Hospitals Coventry, Coventry, United Kingdom*

Objective

Although uncommon, bisphosphonate related osteonecrosis of the jaw (BRONJ) has an significant adverse effect on patient quality of life. It is important those prescribing bisphosphonates aware of the risk of BRONJ and that patients are informed and managed appropriately to reduce the risk prior to and during treatment. The aims of this study are to determine the knowledge and awareness, as well as current practices and attitudes, regarding BRONJ amongst oncologists in the UK.

Methods

A sample of 40 randomly selected consultant oncologists based in the West Midlands, UK were emailed details of an internet based survey. Individuals were informed participation was voluntary and all results would be anonymous. The survey was piloted amongst peers and amended prior to distribution to improve validity.

Results

The response rate was 57.5%. Over 90% of clinicians prescribed bisphosphonates at least once a week and the majority warned patients about BRONJ. Nevertheless within the past year 65.2% of respondents had not come across a case of BRONJ. Over a quarter of clinicians considered BRONJ to be a complication of intravenous bisphosphonates only. A minority felt BRONJ was not a significant complication, although almost all identified BRONJ is difficult to treat medically and/or surgically. Over a quarter do not advise patients to have a dental assessment prior to or immediately after commencing bisphosphonate therapy. Half of clinicians stated dental assessments are prompt and do not delay the start of therapy, whereas the other half state dental assessments are difficult to arrange. Amongst these the majority commenced bisphosphonate therapy irrespectively whereas the minority delayed the commencement of therapy. Just over half of clinicians ask patients on bisphosphonates if they are having regular dental checkups.

Conclusions

The results of this study provide important information regarding current practices and opinions of oncologists in the UK regarding bisphosphonates and BRONJ. Areas of unsatisfactory and inconsistent management of patients prior to or during bisphosphonate therapy are highlighted, demonstrating the need for evidence-based national guidelines.



O-3004

SURGICAL MANAGEMENT OF BISHOSPHONATE RELATED OSTEONECROSIS OF THE JAWS (BRONJ)

C. Efeoglu, H. Koca, T. Seckin

Oral Surgery, Ege University, Izmir, Turkey

Background and objectives:

BRONJ is typically a chronic soft tissue wound exposing the underlying jaw bone, that persists over 8 weeks in patients taking bishosphonates with no history of maxillofacial radiotherapy and other bone related disease. Pathogenesis of the disease, various conservative and surgical treatment modalities are under investigation. In this study surgical treatment of BRONJ undertaken in Department of Oral Surgery, Ege University, School of Dentistry was retrospectively reviewed.

Methods:

Case notes of patients who were diagnosed to have BRONJ over a period of four years (2010-2014) were retrospectively reviewed. Over 50 patients who were treated surgically for BRONJ were included in this study; patients who received medical treatment were excluded. Parameters reviewed and analysed were; 1. Conditions for which bisphosphonates had been used and types of bishosphonates used (oral/injectable); 2. Number and anatomic locations of the sites involved; 3. BRONJ classification; 4. Associated local and systemic risk factors; 5. Surgical technique used; 6. Treatment outcomes.

Results:

Most of the defects showed complete mucosal healing with no sign of recurrent infection. Few patients with persistent infection were re-operated or palliative treatment was commenced. Results and the above mentioned parameters are statistically evaluated.

Conclusion:

Today's clinical guidelines enable successful and predictable treatment of BRONJ. Careful patient selection is a must to avoid unnecessary operations as spontaneous healing with sequester formation might be possible in selected cases.



O-3005

SURGICAL RESECTION IN THE MANAGEMENT OF REFRACTORY BISPHOSPHONATE-RELATED OSTEONECROSIS OF THE JAWS

C. Vladan¹, O.Dinca¹, M.B. Bucur², T. Nita¹, A. Bucur¹

¹ *Oral and Maxillo-Facial Surgery, Carol Davila University of Medicine and Pharmacy, Bucharest, Romania*

² *FMAM, Carol Davila University of Medicine and Pha, Bucharest, Romania*

Refractory bisphosphonate-related osteonecrosis of the jaw (BRONJ) was defined as the occurrence of multiple lesions and severe pain not responding to debridement and sequestrectomy. In the present study, we evaluated the effectiveness of surgical resection of the jaws in patients with (BRONJ). A prospective study was conducted at the Clinic of Oro-Maxillofacial Surgery of Carol Davila University of Bucharest (Romania) between January 2011 and January 2014 to evaluate the long-term effectiveness of surgical resection of the jaws in a group of patients with established BRONJ. Segmental resection of the jawbone was performed in all patients. Bone defects were reconstructed with titanium plates and local soft-tissue flaps. Surgical bone specimens were analyzed by the same pathologist to confirm BRONJ. Our study shows that jawbone surgical resection was highly effective, with little morbidity and good survival, provided that an accurate diagnosis is made pre-operatively.



O-3006

MALIGNANCY MIMICKING BISPHOSPHONATE-ASSOCIATED OSTEONECROSIS OF THE JAW

T.Gander

Cranio-maxillofacial Surgery, University Hospital Zürich, Zürich, Switzerland

Objective: Bisphosphonate-associated osteonecrosis of the jaws (BONJ) is a common complication of oral and intravenous bisphosphonates used in the treatment of patients suffering from osteoporosis, bone metastasis, Paget's disease or multiple myeloma. Although different clinical and radiographical features of BONJ have been described, clinicians must be aware of malignant specimens mimicking BONJ. Very limited data in this respect have been documented in the literature.

Patients and methods: Between December 2004 and July 2012, 121 patients have been treated due to BONJ in our department. All patients received surgical and antibiotic treatment after a drug holiday of at least four weeks, which has been previously discussed with the attending oncologist. Three patients with intravenous long-term treatment for metastatic cancer, respectively multiple myeloma presented with distinctive clinical and radiographical features of BONJ. Surgical treatment consisted of local resection of the affected soft tissue and bone. In all cases histological specimens were taken.

Results: Histological analysis of bone and soft tissue specimen demonstrated necrotic bone with signs of inflammation, but also with cells of underlying malignant disease.

Conclusion: Clinical and radiographical diagnosis of BONJ should be completed by histological analysis in patients suffering from underlying malignant disease not to miss metastatic disease and to ensure best patient management.

**O-3007****CLINICO-ROENTGENOLOGICAL CLASSIFICATION OF MANDIBULAR OSTEONECROSIS IN DRUG ADICTS TO DESOMORPHINE AND PERVITIN**

E. Basin, Yu. Medvedev, N. Serova, D. Ispiryan, A. Korshunova, D. Satueva, A. Babkova, D. Kureshova

I.M.Sechenov First Moscow State Medical University, Moscow, Russian Federation

Introduction.

Rapid increase of "Krokodil"-associated jaw osteonecrosis, and absence of guidelines in diagnostic and treatment of this condition lead us to.

Objective.

Develop a classification of osteonecrosis of the mandible based on clinical and radiological data.

Materials and Methods.

In the period from 2008 to 2014 165 patients were diagnosed with "Toxic phosphorus osteonecrosis" in corresponding bones of the facial skeleton. All patients underwent standard OPG, 107 – computer tomography.

Results.

Classification was proposed based on the division of the jaws into 4 quadrants, 2 of which were from the lower jaw. Each quadrant of the lower jaw was divided into 4 parts: I - genial region of the mandible from central incisor to canine on the corresponding side. II part - mandibular body, III - angle of the mandible formed by the horizontal line passing 2 mm above the mandibular foramen and vertical line extending perpendicularly to the horizontal line along the external oblique line. IV — region formed by condylar and coronoid processes. Each quadrant of the lower jaw was conditionally represented as 100% and divided into 4 parts: I - 15%, II - 40%, III - 30%, IV - 15%. I and II parts were divided into parts equal by percentage ratio - 7.5 and 20%, respectively, by the line drawn 2 mm above the mandibular canal and 2 mm above the apexes of incisors and canine in the gonial section.

Conclusion.

1. Block resection of the mandible was recommended when not more than 27.5% of the mandible was affected.
2. If pathological process was below the line drawn 2 mm above the mandibular canal in the body region and 2 mm below the apexes of the incisors and canine in the genial section - resection of the mandible with the violation of its continuity.
3. If osteonecrosis was noted in the angle and body area of the mandible - resection with violation of mandible continuity. Intraoperative decision was made to perform or not disarticulation, as periosteal changes in the zone of osteonecrosis are usually 1-1.5 cm wider than according to CT data.



O-3008

PROPOSAL FOR PREVENTION OF BISPHOSPHONATE-RELATED MANDIBULAR FRACTURES

V. M. A. Battista, M. Pedrazzoli, J. Flore, A. Tagliaferro, K. Tewfik, R. Bazzacchi, F. Biglioli

Ospedale San Paolo, milano, Italy

Objective:

The evolution of Bisphosphonate Related Osteonecrosis of the mandible may be fracture with big pain, loss of occlusion, swelling, chronic infection and worsening of the patients' quality of life.

We applied a surgical technique to prevent this complication in extended osteonecroses of the mandible.

Methods:

From November 2011 to October 2013 we treated in our Unit 6 patients with extended bisphosphonate related osteonecrosis of the mandible with high risk for fracture.

We arbitrarily considered a residual height equal or inferior to 6 mm. to be at high risk for fracture. Measures are taken on a panoramic radiograph.

A reconstructive locking plate was applied with mono cortical screws in a plane superficial to the platysma muscle with a cutaneous surgical access. Nose and mouth were isolated from the surgical field by a steril-drape. Once the suture was over, that was covered by a second steril-drape and intraoral curettage of mandibular necrosis and sequestri removal were accomplished.

Results:

Follow up ranges between 50 and 4 months, mean 18 months.

We observed an immediate relieve of pain and recovery of masticatory function among those patients who had a sufficient denture.

Individual occlusion and lower face profile was maintained among all patient. No infection of the plate was observed. No mandibular fractures nor plate fractures were observed.

In two cases additional little sequestri removal were accomplished under general anaesthesia.

Conclusions

Prevention of mandibular fracture which is one of the most heavy and painful consequence of bisphosphonate related necrosis is the goal the proposed procedure.

That goal was reached in the studied little case series. More follow-up and more patients are needed to validate the procedure.



O-3009

FLUORESCENCE-GUIDED BONE RESECTION FOR THE TREATMENT OF ANTIRESORPTIVE DRUG INDUCED OSTEONECROSIS OF THE JAW

S. Otto, C. Pache, M. Troeltzsch, M. Ehrenfeld, C. Pautke

Department of Oral and Maxillofacial Surgery, Munich, Germany

Aims/objectives:

Antiresorptive drug induced osteonecrosis of the jaw (ARONJ) has become a well known problem of rising clinical importance. The treatment is exceptionally hard. Fluorescence guided bone resection is a promising technique for the treatment of ARONJ. Therefore, the aim of this study was to evaluate the outcome of fluorescence guided bone resection in the treatment of ARONJ.

Material and methods:

Between 2009 and 2012 34 patients with 41 bisphosphonate induced ONJ lesions as well as 7 patients suffering from osteonecrosis under treatment with denosumab were treated using fluorescence guided bone resection (mainly stage II and III according to AAOMS 2009). The mean age of the 25 female and 16 male patients was 68.8 years (SD 10.6 years). Doxycycline 100 mg 1-0-1 orally was administered for 7-10 days preoperatively. Intra-operatively, vital and necrotic bone areas were visualized using the Velscope system. Plastic wound closure was performed in every case. The treatment outcome was evaluated at the last check up (at least 3 months postoperatively).

Results:

31/34 patients (91.2 %) were free of symptoms and 37/41 (90.2%) of the BRONJ lesions showed complete mucosal healing as well as 6/7 (85.7%) patients suffering from osteonecrosis under treatment with denosumab. In 3/34 (8.8%) patients and 4/41 lesions due to BRONJ developed dehiscence and or bone exposure.

Discussion and conclusion

Fluorescence guided bone resection offers the opportunity to visualize vital and necrotic bone intra-operatively which is of crucial importance in order to remove the necrotic bone parts completely and in order to avoid the resection of vital bone parts. The treatment outcome stresses the value of this innovative technique in the treatment of ARONJ. Even though there are clinical similarities there are also differences in the treatment of osteonecrosis of the jaw due to bisphosphonates and denosumab.

**O-3010****PRINCIPLES OF SURGICAL TREATMENT OF PATIENTS WITH TOXIC PHOSPHORUS OSTEONECROSIS IN THE MIDDLE ZONE OF THE FACIAL SKULL**

D. Ispiryan, Yu. Medvedev, E. Basin, A. Korshunova , E. Diachkova

I.M. Sechenov First Moscow State University, Moscow, Russian Federation

Objective: Increasing the efficiency of surgical treatment of patients with toxic phosphorus osteonecrosis ("Krokodil"-associated) in the middle zone of the facial skull, by improving surgical techniques.

Methods: From December 2007 to January 2014, 50 patients with toxic phosphorus osteonecrosis in the middle zone of the facial skull were treated. At an anamnesis it was established the usage of synthetic narcotic drugs (desomorphine and pervitin) in all patients. In accordance to the affected area and the applied methods of treatment, patients were divided into 3 groups: 1. Patients with lesions of the alveolar process of the maxilla and the lower third of the maxillary sinus, 2. Patients with advanced process on the walls of the maxillary sinus, 3. Patients with advanced process of the zygomatic bone and bottom orbit.

Results: In the 1st group (18 observations) resection of the upper jaw intraoral approach was implemented. During the surgery, the mobilization of flaps in cheeks and palate was conducted. For the extra insulation of the maxilla of the oral cavity, membrane <<Kollost>> was used. For the 2nd group (20 observations) resection of the upper jaw was implemented with the access of Kokher-Weber. During the surgery, the front, lateral wall of the maxillary sinus, the bottom orbit, the skuloalveolyarny crest, the maxillary tuber and the hard palate were resected. In the 3rd group (12 observations) except the volume of the surgery in the 2nd group for eliminating the defect of the oral mucosa, vascularized temporo-fascial graft was used, derived as a result of splitting the superficial plate of the temporalis muscle.

Conclusions: Basic principle of the treatment of the patients with toxic phosphorus osteonecrosis in the middle zone of the facial skull is surgical tactic directed to the radical sanitation of the necrotic tissue, one-step reconstruction of the resected structures with the implementation of vascularized grafts, local tissues and osteoplastic materials in the form of membrane. Given approaches allow to increase the effectiveness of the treatment for the patients of the current group and improve the follow up results and quality of the patients' lives.



31. Temporomandibular Joint Pathology and Surgery

O-3101

PARTICULARLY INVASIVE TREATMENT OF PATIENTS WITH DISORDERS AND DISEASES OF THE TEMPOROMANDIBULAR JOINT.

A.Miterev, A.Drobyshev, D.Shipika, K.Reshtovskaya

OMFS, GBOU Moscow State Medical and Dental University. AI Evdokimov., Moscow, Russian Federation

Relevance: One of the most important problems in modern dentistry is the early treatment of patients with disorders of the temporomandibular joint, which is the frequency of occurrence in third place after caries and periodontal disease. Thus, the high frequency of diseases of the temporomandibular joint, the lack of performance data using various drugs, the comparative features of the changes occurring in the synovial fluid of the joint for the treatment of the diseases of the temporomandibular joint determine the relevance of this study.

PURPOSE: To compare the efficacy of the drug based on hyaluronic acid and PRGF, during surgery Arthrocentesis and lavage in patients with disorders and diseases of the temporomandibular joint.

Materials and Methods: We observed were 15 patients (men and women from 18 to 50 years) with various disorders and diseases of the temporomandibular joint, which during operations Arthrocentesis and lavage were entered into a joint hyaluronic acid and PRGF. All patients underwent CT study, MRI, making tooth aligners tires and clinical examination in the preoperative period. All data were processed and compared. All patients were conducted operations Arthrocentesis and lavage of the standard method with the introduction of the joint cavity of hyaluronic acid in one group of patients and the PRGF in the other group.

Results: All the data obtained during the preoperative examination, intra-operative and post-surgical treatment were compared and analyzed. All patients were found intraoperatively improve mouth opening after the intervention c greater degree of severity in patients entered into the cavity of PRGF.

Conclusions: The changes in the joint cavity after surgery Arthrocentesis and lavage using PRGF, have a greater degree of severity than using products based on hyaluronic acid. Therefore, it is necessary to implement the method of operation Arthrocentesis and lavage using PRGF.



O-3102

NEW REGIMEN FOR REDUCTION ANTERIORLY DISPLACED DISC IN PATIENTS WITH BRUXISM

W.A. Ghanem

Associate professor and chairman of Oral & maxillofacial surgery dept., faculty of dentistry, Suez canal university, Ismailia, Egypt

Aim: This study is aimed to evaluate the efficacy of modified stabilizing splint in reduction anteriorly displaced disc in patients with bruxism.

Patient& Methods: This study was carried out on 26 patients, (14 female & 12 male). Patients complained of severe periauricular pain, inability of eating food, loudly unilateral clicking and severe temporal headache. Tenderness of masseter and temporalis muscles on palpation. All patients underwent unilateral arthrocentesis and delivered with modified stabilizing splint with posterior open bite 6, 4, 2 mm, two weeks for each consecutive posterior open bite. MRI was done for each patient preoperative and 1 month postoperative. Follow up period was one year.

Results: All patients showed relief of periauricular pain, no clicking in (18 patients). Perceptible clicking in (8 patients). MRI revealed recapture of the anteriorly displaced disc on the condyle in closed & opened positions postoperatively, while anteriorly displaced deformed disc remained in position postoperatively in (8 patients).

Conclusion: Arthrocentesis and modified stabilizing splint are effective in recapture of the anteriorly displaced non deformed disc on the condyle in patients with bruxism.



O-3103

SURGICAL TREATMENT OF INTERNAL DERANGEMENT: DISC FIXATION WITH ABSORBABLE MICRO-ANCHOR

F. Spallaccia, G.Giuliani

Maxillo-Facial Surgery, Santa Maria Hospital, Terni, Italy

OBJECTIVE

We describe a surgical technique using a preauricular approach with a high condylectomy to reshape the condylar head. The disc is repositioned and anchored with a bioabsorbable micro anchor (MITEK Microfix QuickAnchor Plus1.3) to the lateral pole of the condylar head. The anchor is linked with a 3.0 Ethibond absorbable suture to fix the posterolateral side of the disc above the condyle.

The aim of all surgery is to alleviate temporomandibular pain, headaches and neck pain and to restore good jaw mobility.

METHODS

Thirtyeight patiens (3 men, 35 women) affected by ADDw/oR , underwent to disc repositioning surgery. This innovative technique was studied in two Hospitals at the department of Maxillo facial surgery: Santo Spirito Hospital in Rome and S. Maria Hospital in Terni, Italy. This tecnique was performed in all 38 patients, in 7 patients bilaterally and in 31 unilaterally from December 2008 to December 2012. In eight of them, perforation of retrodiscal tissue was found, in three perforation of anterior part of the disc and others with a painful anteromedial dislocation of the disc (ADDw/oR).

RESULTS

At the 12 month follow-up all patients shows a good maximal mouth opening (>35 mm) without any significant deviation. The arthroplasty, even if performed with Piezosurgery, lived some metallic dust that often prevents a correct visualizzazione of the disc position on MRI control.

CONCLUSIONS

The surgical treatment of temporomandibular joint dysfunction is widely debated in the literature, with good results reported for both arthroscopic techniques and open surgery. The aim of all surgery is to alleviate temporomandibular pain, headaches and neck pain and restore good jaw mobility. We use an open procedure with an arthroplasty and a reposition and fixation of the luxated disc with the MITEK Microfix QuickAnchor Plus1.3 that is economical and easy to apply. Furthermore, it is small, absorbable and resistant. We haven't still a long term check to demonstrate the stability of the disk during the time but with this evolution of the Wolford disk repositioning technique we hope to obtain his same results without living any metallic devices inside condyle

**O-3104****TEMPOROMANDIBULAR JOINT ARTHROCENTESIS-POSSIBILITIES AND RESULTS**

P. Tvrđý, P. Heinz

Department of Oral and Maxillofacial Surgery, Teaching Hospital, Palacký University, Olomouc, Czech Republic

Objective

Arthrocentesis of the temporomandibular joint (TMJ) is a minimally invasive method of treatment situated between conservative and surgical therapy. It is usually performed under local anaesthesia. Nowadays, arthrocentesis of the TMJ is used not only in cases of acute closed lock but also in the treatment of various TMJ disorders. Thus, it's main indication is an acute anterior displacement of TMJ disc without reduction and/or hypomobility of the joint based on disc adhesions (a stuck disc). Arthrocentesis can be used as a palliative procedure for patients with an acute attack of degenerative or rheumatoid arthritis and also for patients with a painful displacement of the disc with reduction resistant to conservative treatment. The best treatment results are in the cases of acute troubles with a short history. The main objective of arthrocentesis is to wash out inflammatory mediators, release the disc, break adhesions, eliminate pain and improve TMJ mobility. Alternative technique is to use a single-needle technique, inserting only one injection needle into the upper joint space. Compared to the traditional two-needle approach, this method has certain advantages.

Methods

A retrospective study of TMJ arthrocentesis performed in 356 patients (322 females, 34 males) in case of internal derangement and osteoarthritis. Results are presented.

Results

Arthrocentesis is a simple method with a minimal risk of complications. It can be performed repeatedly, special instruments are not necessary. Maximal mouth opening increased and visible algic scale (VAS) decreased. (77% in case of internal derangement and 62 % in case of osteoarthritis).

Conclusion

There are still many questions. Results of all studies estimating outcomes of arthrocentesis in the treatment of internal TMJ disorders have certain limitation: a small size of sample, influence of concomitant use of anti-inflammatory drugs and analgetics, the inability to generalize the results to both parts of human population (significant majority of patients suffering from TMJ dysfunction are women), small size of randomised double blind trials and clinical studies with placebo controls.



O-3105

RELATIONS BETWEEN HISTOLOGICAL TYPE AND CLINICAL SYMPTOMS IN PATIENTS WITH INTERNAL DERANGEMENT , SURGICALLY TREATED

C. Della Rocca¹, P. Arangio², R. Pucci³, G. Elefante¹, L. Santini¹, P. Cascone³

¹ *Dipartimento di scienze radiologiche, oncologiche ed anatomia patologica, Sapienza - università di Roma, Roma, Italy*

² *Reperto di Chirurgia Maxillo Facciale, ASL RM/E Ospedale Villa Betania, Roma, Italy*

³ *Dipartimento di scienze odontostomatologiche e maxillo-facciali, Sapienza - Università di Roma, Roma, Italy*

Objective

Temporomandibular joint disorders is a collective term used to describe a series of pathologic conditions involving temporomandibular joint, masticatory muscles and associated structures. Internal Derangement is characterized by anterior displacement of the disc which causes a slipping backward of the condyles over the disc thus resulting in TMJ discal damage and erosion of the condyle's bone. The aim of our study was to analyze histological features of the surgical specimens obtained from patients with ID ,who had underwent high condylectomy, and to assess the association with clinical findings and imaging.

Materials and Methods

This retrospective study included 50 patients, whose condyles slice were obtained by high condylectomy. All patients received anamnestic evaluation, objective examination, Orthopantomography and electrognathographic analysis, CTScan and RMI and they were classified according the Wilkes Classification . Patients were divided into three groups: Stage III in group 1 , Stage IV in group 2 and Stage V in group 3. On all surgical specimens, removed from condyles, histological analysis has been performed.

Results

We have found a relationship between pathologic findings and Wilkes Classification Stage. Preliminary results show that: in group 1, fibrocartilage is preserved and regular, there are isolated outbreaks of bone resorption and focal sclerosis. In groups 2 and 3 fibrocartilage is irregular and thickness varies widely and sclerosis is more pronounced. No acute inflammation is found, but moderate nonspecific chronic synovitis is always present.

Discussion and Conclusions

Preliminary results show a worsening of the bone reaction and of the fibrocartilage damage; this last component gets thinner and in some cases disappears, mainly into group 2 and 3. Our findings support the physiopathology role of the anteromedial disc displacement as the beginning of symptoms related to persistence of microtrauma in the joints. In fact in patients with stage 3 of Wilkes, where the anteromedial dislocation is reversible, fibrocartilage is often preserved and homogeneous. On the contrary in Stage 4 and 5 of Wilkes there is a worsening of histological features which also correlates with more serious clinical findings. Also we can make a correlation between anatomopathological features and MRI, that supply detailed information about joint.

**O-3106****ANTERIOR DISC DISPLACEMENT WITHOUT REDUCTION AS A POTENTIAL CAUSE OF THE SKELETAL MALOCCLUSIONS DEVELOPMENT**

A. Senyuk, M. Romanovsky

Maxillofacial Surgery, Central Research Institute of Dentistry and Maxillofacial Surgery, Moscow, Russian Federation

Aims: determination of the regularity of clinical signs, radiological and cephalometric characteristics in the group of patients with TMJ anterior disc displacement without reduction.

Materials and Methods: 17 female patients with TMJ anterior disc displacement without reduction were evaluated clinically and with the aid of radiological methods such as CT and lateral head extraoral radiography with subsequent cephalometric analysis. Anterior disc displacement without reduction was confirmed by MRI in all cases. The registration of hinge axis movements of the mandible was also performed in connection with Cadiax Compact® system.

Results: The main complaints were associated with pain in TMJ region during mouth opening and chewing. 4 patients suffered from restricted mouth opening. The maximum oral opening was 38.8 mm on average. CT scans revealed signs of condyle resorption that were evident as altered shape of the bony surfaces. Cephalometric analysis showed increased mandible plane angle, decreased ramus height, strong predominance of class II malocclusion in patients with bilateral condyle resorption, and mandibular asymmetry with deviation to the affected side in patients with unilateral condyle resorption. Severe distortion of hinge axis tracings was observed in the affected joints.

Conclusion: Morphological alterations of bony structures such as decreased ramus height due to condyle resorption were observed in female patients with anterior disc displacement without reduction by means of comprehensive evaluation. The correlation between condyle resorption associated with anterior disc displacement without reduction and development of skeletal malocclusions was suspected. Severe distortion of hinge axis tracings was observed in the TMJs with anterior disc displacement without reduction. A particular plan of surgical orthodontic rehabilitation (open joint disc reposition and bimaxillary orthognathic surgery) of the indicated group of patients was proposed and applied to 7 patients.

**O-3107****CONDYLAR REMODELLING AFTER HIGH CONDYLECTOMY. A RETROSPECTIVE CLINICAL AND RADIOLOGIC STUDY**

O. de la Sen-Corcuera, R. Martín-Granizo, A. Encinas, E. Varela, I. Martínez-Padilla, F. Falahat, A. Berguer

Oral and Maxillofacial Surgery, Hospital Clínico San Carlos, Madrid, Spain

Introduction: Condylar hyperplasia (CH) is a three-dimensional enlargement of the condyle of the affected side causing chin deviation to the unaffected side, asymmetry of the lower mandibular border and cross bite malocclusion. Epidemiological data have suggested that there are similar incidences in both sexes and in all ethnic groups. The aetiology is uncertain, but there are some factors such as hormonal influences, hypervascularity, heredity, infection, or trauma that seem to influence in this pathology. Radiological and scintigraphic methods are commonly used for diagnosis. High condylectomy is an optimal treatment option, as it is expected that the removal of the highest part of the condyle will stop the growth of the mandible.

Objective: To define and classify the different patterns of condylar remodelling after a high condylectomy and to review our patients follow-up in terms of TMJ pain, maximum oral opening, occlusion and laterognathia.

Methods: We have studied 36 patients undergoing unilateral high condylectomy. Women represent 63,9% of the sample. Condylar remodelling has been studied by panoramic radiographs before, 6 months and 1 year after surgery, classifying the condylar morphology in four types and measuring the condylar height. The postoperative follow-up consists in the analysis of pain with VAS (Visual analog scale) and the mouth opening and interincisal deviation, measured in mm. The follow-up period was 12 months, distributed in 4 visits (1, 3, 6, 12 months). All condylectomies were performed using the same surgical technique without opening the superior articular space and no disc repositioning.

Results: We can differentiate four condylar morphologies after a high condylectomy: rounded, flat, sharp and squared. There are no differences in condylar remodelling between 6 months and 1 year. High condylectomy didn't change the mouth opening of the patients and there was no TMJ pain after the surgery.

Conclusion: In our series, there are four different types of condylar remodelling after a high condylectomy and this doesn't appear to influence in terms of TMJ pain or mouth opening. Further studies are necessary to achieve a reliable conclusion about condylar morphology after a condylar shave.



O-3108

A NOVEL TREATMENT FOR TEMPOROMANDIBULAR JOINT INTERNAL DERANGEMENT

M. Elsholkamy, M. Hamed, E. Elsharrawy

Oral & Maxillofacial Surgery, Faculty of Dentistry, Suez Canal University., Ismailia, Egypt

Background: Internal derangement is the most frequent articular cause of temporomandibular joint dysfunction, which involves progressive slipping or displacement of the articular disc. Temporomandibular joint arthrocentesis is considered a successful treatment in TMJ internal derangements.

Objective: The aim of this study was to evaluate the efficacy of ozone application in arthrocentesis of temporomandibular joints with internal derangement.

Methods: Thirty patients were evaluated in this study . They presented with limited movement and pain in the TMJ. They were divided in two groups: group I, was subjected to arthrocentesis using saline solution and group II, subjected to arthrocentesis using ozonized water. Pain scores and maximal mouth opening were assessed preoperatively, 1 month , 3 months, 6 months, and 1 year postoperatively.

Results: Pain levels were significantly decreased in both groups, however the significant decrease in group II was reported postoperatively after first month and one year. Maximal mouth opening for all patients in both groups was improved and the significant increase was reported in group II after first month, six months, and one year postoperatively.

Conclusion: The efficacy of ozonized water as a clinically applicable form of ozone therapy for the temporomandibular joint internal derangement was detected.

**O-3109****NEW ACP PLATE FOR OPEN RIGID INTERNAL FIXATION OF MANDIBLE CONDYLE NECK FRACTURE**

M. Kozakiewicz, J. Swiniarski

Department of Maxillofacial Surgery, Medical University of Lodz, Łódź, Poland

Introduction

Reduction of the fracture is crucial for proper outcome of the treatment. The stability of reduction is closed connected to the method of its fixation. The topic of condylar fracture osteosynthesis still remains highly controversial and challenging. That is why authors decided to propose novel design of the fixating plate and the example of its application. The aim of this study was to present A-shape plate dedicated to rigid fixation of mandible condyle neck fracture.

Material and methods

A-shape condylar plate (ACP) design is prepared of 1.0 mm thick titanium alloy (grade 5) sheet: posterior and anterior bars are reinforced by widening to 2.5 mm and anatomically curved along the compression and traction lines in ramus and condylar neck. Superior three-hole-group has triangular organization and located on the level of condylar head. The inferior extensions of the bars are equipped in three holes located at each of lower tails. Connecting bar (2.0 mm wide) connects the first hole of each lower tails closing upper part of ACP in triangular shape. The connecting bar runs along compression line of condylar neck. Holes in ACP has 2.0 mm diameter for locking or normal screws. Height of ACP is 31mm. The proposed new type of plate was compared by finite element analysis (FEA) to nowadays manufactured 9-hole trapezoid plate as the most similar device. ACP design was evaluated by finite element analysis (FEA) and later applied in patient affected with high condylar neck fracture complicated by fracture of coronoid process.

Results

FEA revealed high strength of ACP and more stabile fixation than trapezoid plate. The result was caused by multipoint fixation at three regions of the plate and reinforced bars supported by semi-horizontal connecting bar. Clinical application of ACP was as versatile as makes possible to simultaneous fixation of high condylar neck and coronoid process fracture.

Conclusion

Application of proposed A-shape condylar plate would be possible in all levels of neck fractures and can be use for stabilization additionally existed coronoid process fracture.



32. Orthognathic Surgery

O-3201

PERI-AND POSTOPERATIVE PROTOCOLS IN ORTHOGNATHIC SURGERY AND THEIR EFFECTS ON POSTOPERATIVE PAIN CONTROL AND OUTCOMES – SOUTHEND EXPERIENCE

V Bhatt, E Breeze, D Ohara, M Pannu, C Lawson

Oral and Maxillofacial Surgery, Southend University Hospital, Westcliff-On-Sea, United Kingdom

Introduction: We present a peri-operative and post-operative regimen for a single surgeon series that favourably influences the patients' in-patient journey and outcomes in orthognathic surgery.

Materials and Methods: 87 consecutive patients who underwent orthognathic surgical procedures over 22 months were included. All patients were anaesthetised and given analgesia using the same protocol of Total Intravenous Anaesthesia (TIVA) with IV NSAIDs, nerve blocks and infiltration with tumescent mixture, post-op elastics and use of soluble oral analgesia (paracetamol, NSAIDs). Oramorph (prescribed prn) usage was recorded as an indirect measure of pain where pain scores were not recorded. Peri-operative antibiotics alone were used. Follow up ranged from 1month to 24 months

Results: Postoperative pain scores suggest effective analgesia with this protocol. Average stay in Hospital was around 36 hours from admission (<24 hours post-op for both single jaw and bimax procedures). Post-operative opioid usage was minimal (pain scores ranged between 0 and 1 in most cases). None (0%) of the patients were readmitted or taken back to theatre. There were 5 cases of established postoperative infection (none required formal drainage) needing antibiotics and 1 patient needed plate removal. Incidence of temporary parasthesia/anaesthesia was at or below published average. No patients needed blood transfusion. There were no intraoperative mishaps.

Conclusion: Careful surgery and strict peri-operative and post-operative regimen of care can improve patient experience and outcomes in orthognathic surgery.

**O-3202****EVALUATING PATIENT EXPECTATIONS AND SATISFACTION, IN ADDITION TO THE PAR INDEX, AS AN ASSESSMENT OF TREATMENT OUTCOME IN ORTHOGNATHIC SURGERY**

E. Galloway, L. Galloway, A. Abbas, A. Cronin

University Hospital of Wales, Cardiff, United Kingdom

Objectives:

Assess outcomes of orthognathic surgery at the University Hospital of Wales by assessing patient expectations and satisfaction, in combination with the PAR (Peer Assessment Rating) index.

Methods:

Retrospective questionnaires assessed pre-operative patient expectations, perceived post-operative outcomes and overall satisfaction. Questionnaires were sent to 60 randomly selected patients who had undergone orthognathic surgery between 2011 and 2013.

PAR index assessed pre- and post-treatment outcomes through analysis of dental casts. PAR scores were awarded to each model accordingly. The PAR score reduction was calculated for each case in order to categorise PAR improvement.

Results:

Questionnaires generated a reasonable response (73%), with high expectations for occlusal (81%) and aesthetic (91%) outcomes. Facial profile outcomes (77%) followed these results in patients' expectations. Expectations were either met or exceeded.

Forty-six percent experienced post-operative residual problems, mostly through sensory impairment related to the branches of the trigeminal nerve. Despite this, patients demonstrated excellent satisfaction with their surgery, with 73% responding "*extremely happy*" and 27% responding "*happy*". Seventy-one percent would "*most definitely*" recommend orthognathic surgery.

An average post-operative PAR score of 4.17 indicated mostly excellent occlusions were achieved, and PAR score reductions averaged 32 PAR points generating greatly improved outcomes. The overall case load PAR reduction was 86.88% for the unit.

Conclusion:

Orthognathic surgery has proven to be effective in the treatment of severe malocclusions. The results from this audit show that the results achieved at University Hospital of Wales are in concordance with providing a good standard of care. the study itself did display limitations in the two methods used in combination to arrive at the conclusion. However, orthognathic surgery is multi-factorial and further studies should consider these in order to assess outcomes in a more holistic manner.



O-3203

IMPORTANT TOOL THAT DIRECTLY AFFECTS THE FACIAL HARMONY: OSSEOS GENIOPLASTIES

M. S. Atac, Y. Kilinc, E. Yucel

Oral and Maxillofacial, Gazi University, ANKARA, Turkey

Important tool that directly affects the facial harmony: Osseos genioplasties:

Objective, The aim of this presentation is to share our experience with the osseos interventions to chin region alone or adjacent to any technique that effects the facial harmony

Methods, the 1a orthognathic, aesthetic, functional and autologous st five year datas belonging to the osseos genioplasty cases were evaluated. They were grouped into their osteotomy technique (sliding, reduction, advancement) and according to their purpose (orthognathic, aesthetic, functional and autologous graft source etc.) as well. The outcomes were also evaluated.

Results, The chin can be manipulated at any direction of the space for any purpose. The neuro-sensory alterations related to the site may occur. Patient should be informed for the complications.

Conclusions, Osseos genioplasty techniques are still play important role as they have additive affects to orthognathic, aesthetic, functional and reconstructive surgeries. A detailed interview with the patient would play a key role to overcome to the possible problems related to surgical intervention before operation. The analyses revealed that for any purpose of intervention modification would be beneficial for the needs of the patients.

**O-3204****UNILATERAL MANDIBULAR HYPOPLASIA IN ADULT PATIENTS: DISTRACTION OSTEOGENESIS AND CONVENTIONAL OSTEOTOMIES IN A STANDARDIZED SEQUENCE.**

G. Gerbino¹, F.A. Bianchi¹, E. Zavattero¹, P. Tosco¹, F. Passalacqua¹, L. Verzé², G. Ramieri¹

¹ *Surgical Sciences, Division of Maxillofacial Surgery, University of Turin, Turin, Italy*

² *Science of Public Health and Pediatrics, University of Turin, Turin, Italy*

Objective: This study analyzed the outcomes of nongrowing patients with unilateral mandibular hypoplasia (UMH) treated according to a specific protocol which combines, in a standardized sequence, distraction osteogenesis, orthodontic treatment and conventional maxillo-mandibular osteotomies.

Methods: Six patients with UMH, who underwent this surgical protocol, were evaluated using aesthetic and dental-periodontal assessment. Patient's satisfaction was assessed by questionnaire. Surgical changes were analyzed using cephalometric data and three-dimensional facial surface data before surgery (T0) and at long-term follow-up (T1).

Results: Four patients (2 female and 2 male; average age: 17.3 years; average follow-up: 36 months, range: 24-49), were included in this study. The normalization of facial proportion and a high increase in symmetry were evident. Residual defects were documented in the postoperative symmetry of the chin. At the questionnaire, all patients gave favorable responses to their facial changes; for the majority of subjective parameters, all patients improved.

Conclusions: A multi-stage treatment protocol which combines ipsilateral distraction osteogenesis, orthodontic phase and conventional osteotomies for correction of facial deformities in patients with UMH is a valid procedure for skeletal and occlusal stability. An evident improvement of the facial appearance is also achieved. However, future studies are needed to enlarge patient population.

**O-3205****COMBINING ORTHOGNATHIC SURGERY WITH FACIAL BONE CONTOURING SURGERY TO ACHIEVE BALANCED FACE IN ASIANS**

MJ. Oh¹, JH. Kim², DK Kim², JM Cho¹, SJ Lee¹

¹ *Regen Plastic Surgery, Regen Medical Group, Seoul, South Korea*

² *Regen Dentistry, Regen Medical Group, Seoul, South Korea*

Introduction:

Conventional orthognathic surgery improves the lateral facial profile of a patient by correcting the relative position of the upper and lower jaws. Orthognathic surgery has evolved to be a very powerful tool in achieving facial attractiveness and has formed a relatively new field of cosmetic surgery in aesthetic two jaw surgery. Facial bone contouring surgery of the mandible and zygoma has also become a powerful tool in achieving an attractive face by improving the proportions of the facial skeleton mainly from the frontal view, compared to the profile improvement of the two jaw surgery. By combining orthognathic surgery and facial bone contouring surgery in a one stage operation, the authors have achieved balanced proportions of the face in the lateral view as well as the frontal and quarter views.

Methods:

Between December 2010 and November 2013, 495 patients aged between 17 and 51 years underwent two jaw orthognathic surgery and facial bone contouring surgery at Regen Plastic Surgery. Patients constituted of 346 women and 149 men, and nationality of the patients was Korean, Chinese, Vietnamese and Japanese.

Results:

Majority of the patients had class III skeletal features with wide, broad and flat facial contours. Two jaw orthognathic surgery was performed for correcting skeletal discrepancies of the upper and lower jaws as well as the asymmetry of the jaws caused by the cant and yaw. Concomitant mandibuloplasty including genioplasty was performed in 457 patients and malarplasty was performed in 121 patients. A clockwise rotation of the upper and lower jaws improved the lateral facial profile as well as aid in reducing the size of the lower face. Concomitant mandibuloplasty achieved a small and narrow jaw line enhancing the facial proportions to achieve a youthful appearance. Also malarplasty improved the contour of the midface by reshaping the flat midface to a more cubic form and reducing the laterally protruding malar prominence to a smoother shape.

Conclusions:

The combination of two jaw surgery, mandibuloplasty and malarplasty is a very powerful tool to change the facial proportions in both the profile and frontal views which achieves a balanced attractive face in Asians.



O-3206

MAXILLARY ADVANCEMENT WITHOUT HORIZONTAL MUCOSAL INCISION BENEATH NOSE AREA TO AVOID ALAR BASE WIDENING; ANALYSIS OF SOFT TISSUE CHANGE

J. Shimada

Division of First Oral and Maxillofacial Surgery, Meikai University School of Dentistry, Sakado, Saitama, Japan

Objective: Alar base widening and nasal tip upward movement are undesirable soft tissue changes taken place after Le Fort I type osteotomy. We developed a modified technique of one without making horizontal vestibular mucosal incision beneath nose area to preserve the soft tissue shape. In this paper, we describe soft tissue changes around nose and upper lip after this modified technique.

Methods: For Le Fort I type osteotomy, horizontal vestibular mucosal incisions from canine to molar area are made in both sides. Osteotomy to move total maxillary alveolar segment is made with PED only in the maxillary anterior and posterior bony wall portion. Down fracture is performed with a pair of separators without a nasal septum osteotomy. The bone fragments can be repositioned without dissecting the nasal septum, and an alar base cinch suture is no need. Pre and Post-operative cephalometric analysis were compared each other.

Results and Conclusions: The soft tissue shape of upper lip and nose is preserved without the use of alar base cinch suture. Maxillary Advancement with Le Fort I osteotomy is able to perform without vestibular horizontal mucosal incision beneath the nose area to avoid alar base widening.

**O-3207****BODY DYSMORPHIC DISORDER CO-OCCURS WITH PSYCHOLOGICAL DISTRESS ORTHOGNATHIC SURGERY PATIENTS**

B. Collins, D. Gonzalez, D. Gaudilliere, S. Girod

Surgery, Stanford University, Stanford, United States

Objective

Body Dysmorphic Disorder (BDD) is a distressing condition involving preoccupation with an imagined or exaggerated deformity. The purpose of our study was to investigate the presence of BDD and its comorbidity with anxiety, depression, and obsessive-compulsive disorder (OCD) in patients undergoing orthognathic surgery (OS).

Methods

This prospective study included 99 patients from the outpatient Oral & Maxillofacial Surgery Clinic at Stanford University who requested OS. The incidence of BDD, depression, anxiety, and OCD was assessed preoperatively using validated self-report measures. To determine the prevalence of Axis I psychological symptomatology among patients, descriptive and bivariate statistics were computed. $P < .05$ was considered significant.

Results

In our sample, 13% ($n=13$) of patients screened positive for BDD. We did not find any significant correlations between the presence of BDD and gender, race, age, or marital status. Depressive symptoms were reported by 42% of the patients, OCD symptoms by 29%, and mild, moderate, and severe anxiety by 14%, 5%, and 4%, respectively. Using Spearman correlations, we found significant correlations between BDD and anxiety, depression, and OCD ($p < 0.01$).

Conclusion

The results of this study suggest that there are high rates of BDD, depression, anxiety, and OCD in patients undergoing OS. Furthermore, there appears to be a strong correlation between BDD, anxiety, OCD, and depression in these patients. Future studies will be necessary to determine post-operative changes in these psychological disorders and whether these changes are affected by having positive BDD screening at baseline.

**O-3208****CHANGES OF MASS AND DIRECTION OF JAW-CLOSING MUSCLES AFTER SURGICAL MANDIBULAR ADVANCEMENT. DO THEY ACCOUNT FOR PROGRESSIVE CONDYLAR RESORPTION?**

G.J. Dicker, J.A. Castelijns, J.H. Koolstra, M. Tuijt, D.B. Tuinzing, P.J.W. Stoelinga

ACTA/ VUmc; Elkerliek Ziekenhuis, Helmond, Netherlands

Objective

This study evaluated whether the changes in cross-sectional area (CSA) and volume (defining muscle strength), the changes of the direction of the masseter (MAS) and medial pterygoid (MPM) muscles and the changes of the position of the proximal segments (condyles) that occur after surgical mandibular advancement could contribute to progressive condylar resorption (PCR), a complication that sometimes arises after these procedures, particularly in young, female long-face (LF) patients.

Methods

CSA and volume were measured in five short-face (SF) and seven (LF) patients (5 males, 7 females). Muscle direction and positional changes of the condyles were calculated in eight SF and eight LF patients (8 males, 8 females). All patients had mandibular retrognathia. SF patients were operated with Bilateral Sagittal Split Osteotomies (BSSO), LF patients with combined BSSO and Le Fort I osteotomies. Rigid internal fixation of the BSSO with position screws was applied in all patients. No intermaxillary fixation was used. The measurements were done on Magnetic Resonance Images (MRI) before and two years after surgery. Static loading of the condyles was calculated in a simple two-dimensional model. A three-dimensional biomechanical computer model was used to estimate the dynamic loading of the condyles.

Results

CSA and volume decreased significantly (mean 18%) in all patients after surgery. Postoperative muscle direction was significantly more vertical (9°) in LF patients. Axial and sagittal rotations of the proximal segments (condyles) were minimal after two years. The estimated increase of the pressure on the condyles owing exclusively to the more vertical direction of the MAS and MPM was minimal in LF patients. Dynamic joint load during mouth opening decreased.

Conclusion

It is unlikely that the postoperative loss of muscle strength owing to the loss of muscle mass was compensated by the minor increase of efficiency caused by the more vertical direction of MAS and MPM.

This study demonstrated that, two years after BSSO advancement surgery, MAS and MPM do not cause increased pressure on the condyles and, therefore, do not account for postoperative PCR.

**O-3209****SIMULTANEOUS ADJUNCTIVE PROCEDURES TO ENHANCE FACIAL AESTHETICS AFTER ORTHOGNATHIC SURGERY.**

E. Lonskaya, A. Drobyshev, K. Kurakin, A. Glushko, N. Drobysheva

Oral & Maxillofacial, Moscow State University of Medicine and Dentistry, Moscow, Russian Federation

Introduction. Orthognathic surgery is the main surgical procedure to correct dento-facial deformities. After undergoing the orthognathic operation patients are awaiting for normal jaws function and overall improval of facial aesthetics. Great aesthetic expectations especially of female-patients have made orthognathic operation a highly demanding procedure. This makes adjunctive cosmetic surgery a frequent need in these patients. We present our experience in performing different adjunctive procedures simultaneously with orthognathic surgery and final results in our hands.

Material and Methods. 75 patients undergone simultaneous operation during the period of 2010-2014. Surgical planning was performed for all patients to achieve correct position of skeletal bases and good aesthetic projection of soft tissues. Adjunctive procedures were planned simultaneously and were performed after jaws movements and fixation. Orthognathic surgery was combined with chin osteotomy (40%), rhinoplasty (20%), bilateral or unilateral zygoma osteotomy (20%) and facial fat grafting (20%). All the patients expressed satisfaction with their postoperative results.

Conclusion. Nowadays patients, especially women, not only demand good functional results, but also seek to obtain a good aesthetic facial outcome. Performing simultaneous operation allows us to solve dento-facial and aesthetic problems of the patients in one procedure. Advantages include single planning, one general anesthesia, one-time recovery, good functional and enhanced aesthetic outcome as well as economic benefits.

Conflict of interest: None declared.



O-3210

3D NASOLABIAL CHANGES FOLLOWING LE FORT I OSTEOTOMY

P. Metzler, E. Geiger, C. Chang, D. Steinbacher

Yale University New, Haven, CT, United States

Introduction: Maxillary manipulation at the Le Fort I level imparts requisite changes to the nasal form and position. Nasolabial changes have been documented using 2D radiographs. The purpose of this study is to three-dimensionally document nasolabial changes following single-piece Le Fort I, multi-piece Le Fort I, and transverse maxillary widening.

Methods: This study was approved by our institutional review committee. Subjects undergoing elective Le Fort I procedures were included. Pre- and postoperative 3D photographs (3D VECTRA) were recorded. Demographic information was tabulated. Peri-operative details were documented. Nasolabial anthropometric measurements were performed using 3D software (Mirror). A follow-up period of at least twelve months was required for final evaluation.

Results: Ninety-two pre- and post-operative 3D photo data sets of patients, who underwent Le Fort I advancement alone or with multi-segmental widening or surgically-assisted maxillary expansion (SAME) were included. Male/ female ratio was 1.2 with a mean age of 16.9 years. The fronto-nasal angle decreased 1-5 degrees ($p < 0.05$) post-operatively in all groups. Nasal tip advancement increased in all cases ($p < 0.05$). Differences were seen in postoperative nasal, columellar, subnasal, and upper lip projections between advancement and SAME. Relative nasal tip projection decreased in advancement groups versus SAME. Subnasal and lateral nasal dimensions widened more in multisegment compared to Le Fort I alone. The nasal width increase was significantly less in SAME compared to both advancement groups.

Changes in nostril dimensions (including nostril height, nostril width, and sill width) and in shape (including soft triangle and lateral alar angles) were significant in all three groups. The columellar width showed no significant ($p > 0.05$) changes in all groups.

Conclusion: This is the first study to objectively analyze 3D nasolabial changes following Le Fort I osteotomy, comparing frequent subtypes of the procedure. Maxillary advancement impacts nasolabial morphology to a greater extent than transverse expansion alone. Concurrent maxillary advancement with widening leads to the most dramatic soft tissue changes. This data suggests that soft-tissue changes within the nasolabial region after Le Fort I advancement occur in a manner more complex than previously described. However, each Le Fort I subtype generates a predictable soft-tissue response.



33. Advanced Imaging and CAD / CAM Technology

O-3301

3D EVALUATION OF THE LINGUAL SPLIT LINE AFTER BILATERAL SAGITTAL SPLIT OSTEOTOMY IN ASYMMETRIC PROGNATHISM

JM Song¹, HK Kim², JY Yoon², CH Kim², TS Kim³, YD Kim³

¹ Oral and Maxillofacial surgery, Pusan National University Hospital, Busan, South Korea

² Dental Anesthesia and Pain Medicine, School of Dentistry, Pusan National University, Yangsan-si, South Korea

³ Oral and Maxillofacial surgery, School of Dentistry, Pusan National University, Yangsan, South Korea

Objectives : The aim of this study was to evaluate the pattern of lingual split line when performing bilateral sagittal split osteotomy (BSSO) in asymmetric prognathism using cone-beam computed tomography (CBCT) and 3-dimensional (3D) software program.

Materials and Methods : The subjects were 40 patients (20 males and 20 females) with asymmetric prognathism who undergone BSSO (80 split, n=80) between January 2012 and June 2013. We observed the pattern of lingual split line using CBCT data and image analysis program, and compared the deviated side to the opposite side in each patient. To analysis the contributing factors on split pattern, we observed the lateral cortical bone cut and measured the thickness of ramus around mandibular lingula.

Results : The lingual split pattern classified 5 types. True 'Hunsuck' line was 60% (n=48), and bad split was 7.5% (n=6). Ramal thickness around lingula were 5.55 ± 1.07 mm (deviated) and 5.66 ± 1.34 (opposite) ($P = 0.409$). The lateral cortical bone cut classified 3 types (A; lingual, B; inferior, C; buccal). Type A was 66.25% (n=53), Type B was 22.5% (n=18) and Type C was 11.25% (n=9).

Conclusion : In asymmetric prognathism patients, there were no difference of ramal thickness between deviated side and opposite side and also lingual split pattern. Lingual split pattern showed correlation with lateral cortical bone cut end. 3D-CT reformation was a useful tool for evaluating the surgical result of BSSO of the mandible.

**O-3302****DIAGNOSIS AND TREATMENT OF PATIENTS WITH ARTERIOVENOUS MALFORMATIONS OF HEAD AND NECK USING 3D MULTISLICE COMPUTER TOMOGRAPHY ANGIOGRAPHY**

S. I. Repina, A. A. Grishin, O. F. Gusev, L. G. Mazur

Department of Maxillofacial Surgery, Moscow State University of Medicine and Dentistry named after A. I. Evdokimov, Moscow, Russian Federation

Objective: Optimization of diagnosis and treatment of patients with arteriovenous malformations (AVMs) of head and neck using 3D Multislice Computer Tomography Angiography (MSCTA)

Methods: 20 patients with AVMs of head and neck aged from 15 to 66 years underwent diagnosis and treatment. Diagnosis included clinical examination, high resolution ultrasonography, 64-slice MSCTA. Digital subtraction angiography (DSA) was performed in 5 cases when preoperative embolization was planned. Treatment was planned and performed based on the individual features of the AVMs obtained by diagnosis. Treatment options included total resection of AVM with or without preoperative embolization in 15 cases, partial resection with afferent vessels ligation in 3 cases of vast AVMs as a part of step-by-step treatment, embolization without surgical stage in 1 case and electrochemical lysis with preoperative embolization in 1 case. Local flap, free split skin flap and free vascularized fasciocutaneous flap techniques were used for immediate defect reconstruction. Patients were observed dynamically up to 5 years after surgery.

Results: Blood flow velocity and direction and sites of turbulence in 35 % cases were determined using ultrasonography. MSCTA provided data concerning volume of the AVM, afferent and efferent vessels and their diameter and involvement of bone structures (25 %) and participation of intracranial vessels in the blood supply of the AVM (20 %). 3D reconstruction was used for detailed planning of the surgical stage, including vessel ligation and immediate reconstruction. 18 patients were treated surgically, with local flap reconstruction in 13 cases, free split skin flap in 4 cases, free vascularized fasciocutaneous flap in 1 case. Clinical examination and ultrasonography was used for follow up. There were no cases of recurrence observed after total resection of AVM. Average blood loss was 230 ml per patient. Additional surgery for cosmesis improvement was performed in 3 cases.

Conclusions: Complementary diagnostic tools allow determining different parameters of AVMs that are necessary for treatment planning. Combined use of ultrasonography and 3D MSCTA provided precise treatment planning and helped to obtain good results.



O-3303

ACUTE TRAUMA AND SURGICAL NAVIGATION: PREOPERATIVE PLANNING AND STRATEGIES

G. Tonellini, G. Novelli, M. Gramegna, A. Bozzetti

Department of Maxillo Facial Surgery, University of Milano – Bicocca, San Gerardo Hospital, Monza, Italy

OBJECTIVES

The patient's registration is the first and the most important step to get a high accuracy for the surgical navigation.

Introducing an error in the patient's registration we will have the same error during the surgery. This error could generate a bad final result.

The aims of this work is to show a protocol of reference points positioning and the preoperative patient's CT scan, all these integrated on the individual preoperative planning.

METHODS

Seventy patients were included into the study treated from January 2010 to December 2013

Inclusion criteria was been: acute trauma with orbital or midface fractures. No maxillary fracture or maxillary mobility.

For pre-surgical planning we used iPlan 3.0 CMF® software and Vector Vision II (BrainLab®) for surgical navigation.

We used three different reference points system, depending on the clinical case:

- a) Dental markers
 - b) Maxillary occlusal splint with five reference points
 - c) Self drilling screws at superior orbital frame or maxilla
- Those methods could be associated.

Often, in case of emergency, the patient's CT scan is acquired before the maxillofacial evaluation and then without the landmarks.

In these cases we do a new CT scan with landmarks only on the maxilla and then we fuse the CT scan with the first one by software iPlan 3.0 CMF®.

We checked the accuracy of the registration measuring the distance between the pointer and landmarks using the navigational system.

RESULTS

Data analysis shows that the average accuracy is 0,7 mm. We didn't have any case with more than 1 mm of error.

CONCLUSIONS

In conclusion the protocol advantages are: simplicity, reproducibility also during emergency, low cost and high accuracy.

The results obtained from our experience are very encouraging and lead us to pursue this path.



O-3304

REPLICA-GUIDED TRAUMA SURGERY (RGTS)

F. Laganà¹, D.S. Rossi², E. Segna², A.R. Bolzoni², A. Spreafico², A.B. Gianni²

¹ *Odontostomatology and Maxillo-Faciale Surgery, IRCCS Azienda Ospedaliera Universitaria San Martino-IST, Genova, Italy, Italy*

² *Maxillo-Facial Surgery and Odontostomatology, Fondazione IRCCS Ca' Granda - Ospedale Maggiore Policlinico, Milano, Italy*

Objective:

The purpose of this study is to present the results obtained from a series of 20 cases and to discuss the potential of a new approach to the surgical treatment of fractures of the middle third of the face.

Methods:

The method proposed is referred to as replica-guided trauma surgery (RGTS) and is based on the creation of synthesis devices containing the geometrical information required for fracture reduction that act as guides for the reduction procedure.

Each surgical procedure was performed by producing an anatomical replica using a SOMOS family resin (which can be sterilised using the Sterrad procedure), to be used in the operating theatre to contour the osteosynthesis devices made of absorbable material before starting the actual procedure.

Discussion:

The part of the skull constituting the bones of the middle third of the face is a complex structure that contains, protects and dissipates the energy of the trauma event.

From a technical point of view, this approach makes it possible to significantly limit surgical access to the fracture focus, with the obvious advantage of creating fewer wounds and reducing the risk of vasculonervous damage, which is particularly high in the head area. In addition, avoiding the need to separate the fractured bone fragments from the periosteal membrane has the double advantage of easier fracture reduction and better bone fragment vascularisation, particularly in the case of comminuted fractures. By implementing the use of absorbable osteosynthesis devices, the proposed method would significantly reduce the biological and economic costs of the surgical treatment of fractures of the middle third of the face.

Conclusions:

Combined use of stereolithographic model technologies and absorbable synthesis devices allows a new surgical approach based on transferring the action from the patient to the model and, using synthesis devices from the model to the patient, overcoming many of the limits of the conventional technique and obtaining fracture reductions whose correctness has been planned and evaluated in advance on the anatomical model.

**O-3305****THE ELIMINATION OF MANDIBLE DEFECTS BY USING INDIVIDUAL POROUS TITANIUM NICKELIDE ENDOPROSTHESIS.**

Yu.A. Medvedev, E.V. Gunter, I.A.Tsvetaev

I.M.Sechenov First Moscow State Medical University, Moscow, Russian Federation

Reconstruction of the lower jaw is one of the topical issues of maxillofacial surgery. Complex anatomic configuration, two condyles, the fact that the biomechanical muscular system is conjugated with a number of life-support systems of the body, lack of optimally effective hardware which may cure defects of the lower jaw require fresh scientific, methodological and technological solutions to the problem. Without adequate reconstruction a defect of the mandible results in serious aesthetic and functional complications, leading to reduced quality of life.

The aim of this research is to raise effectiveness of surgical treatment of patients with defects of the mandible by using individual porous titanium nickelide endoprosthesis.

Materials and methods. A new alloy with a shape memory effect called TiNi was invented in the 1980s in the Mathematics and Mechanics Research Institute (Tomsk, Russia). The material has a number of specific properties: high strength, biocompatibility, flexibility with persistent effect of form stability, ability to be used to correct not only bone defects, but soft tissue defects as well, a high degree of integration in vivo, mechanical parameters and structure close to those of the native bone, non-toxicity and wettability. To date, the Clinic of Maxillofacial Surgery (1st MSMU) has 8 years of experience in eliminating defects of the mandible with titanium nickelide endoprosthesis. We report successful surgical treatment in 34 patients with benign and malignant tumors, gunshot wounds, trauma, osteomyelitis and TMJ ankylosis. Depending on the clinical case, either single-stage replacements which result in elimination of defects of the lower jaw or delayed stentings (the first stage of which includes the use of titanium nickelide mesh implant as prefabrication) have been used.

Results. Reconstructive surgery clinical results have been assessed by the degree of restoration of the relevant functions according to generally accepted standards as well as aesthetic considerations. The results are regarded as satisfactory.

Conclusion. In our opinion, reconstruction of the lower jaw by using individual porous titanium nickelide endoprosthesis is a viable option of treating patients with mandibular defects, because this technique proved its effectiveness in aesthetic and functional rehabilitation of patients.



O-3306

PRELIMINARY ONCOLOGIC OUTCOMES OF TRANSORAL ROBOTIC SURGERY FOR OROPHARYNGEAL SQUAMOUS CELL CARCINOMA: TOWARDS DEVELOPING A PERIOPERATIVE IMMUNOTHERAPY STRATEGY

R. Bell, R. Leidner, M. Crittenden, S. Seung, C. Bifulco, A. Cheng, E. Dierks, H. Hu, A. Weinberg, B. Fox

Providence Oral Head and Neck Cancer Program and Clinic, Providence Cancer Center, Portland, United States

Objective: The purpose of this clinical investigation is to: **I)** evaluate our early experience with transoral robotic surgery (TORS) in the definitive treatment setting for oropharyngeal squamous cell carcinoma (OSCC); **II)** establish an HPV-related OSCC tumor bank from resection specimens; and **III)** determine the feasibility of perioperative immune profiling and modulation in HPV-related disease.

Methods:**I)** The study group consisted of a cohort of 52 consecutive patients with previously untreated, HPV-related T1-T2 OSCC (tonsil or base of tongue) who underwent TORS (with simultaneous neck dissection) followed by risk-adapted adjuvant therapy from February 2011 to December 2013. Demographic and staging information was analyzed and treatment outcomes described using the Kaplan Meier method. **II)** A tumor bank was created from 31 of these patients that consists of cryopreserved, enzymatically isolated viable cells from the primary tumor and metastatic lymph nodes of resection specimens as well as autologous blood samples. We are attempting to develop primary cell lines and isolate tumor-infiltrating lymphocytes (TIL) from these specimens. **III)** Immunohistochemical, flowcytometric and functional analyses of these specimens are being carried and expression of OX40 and other immune modulators, including PD1, CTLA-4, CD103, and B7H3 in OSCC TIL and blood was characterized. In addition, we plan to investigate which antigens are recognized and whether antigens present in a novel autophagosome vaccine that expresses antigens common to OSCC are recognized by TIL.

Results: **(I)** Most patients were treated for pN2 disease (N0=9%; N1=12%; N2a=9%; N2b=53%; N2c=14%; N3=2%) and all but four patients underwent adjuvant radiation therapy with IMRT technique following TORS. Negative resection margins were achieved in 92% of the patients. Extracapsular extension was common, having occurred in about 40% of the cases and, with only 2 exceptions, these patients underwent concomitant chemoradiation. Disease free survival during the study period was 92%. **(II)** Preliminary results have documented consistent staining and potential of the IHC and FACS-based systems to identify infiltrating cells. Two confirmed tumor cell lines are established thus far, with TIL cultures successfully isolated from 29 patients. **III)** There was a significant increase in expression of OX40 ($p<.0001$), PD1 ($p=.0003$), CTLA-4 (intracellular, $p=.0371$), and B7H3 ($p=.0004$) by intratumoral Tregs compared to circulating Tregs.

Conclusion: TORS combined with risk adapted adjuvant therapy for oropharyngeal cancer provides excellent loco-regional control and may provide a feasible platform in which to monitor anti tumor immunity following immunotherapy.

**O-3307****MANDIBULAR RECONSTRUCTION USING DOUBLE-LAYERED CUSTOM-MADE TITANIUM MESH TRAY AND AUTOGENOUS PARTICULATE CANCELLOUS BONE AND MARROW**

Hiroyuki Yamada¹, Kazutoshi Nakaoka¹, Akihiko Basugi¹, Kenichi Kumagai¹, Tomoko Ikawa², Yuko Shigeta², Naohiko Harada³, Noboru Kawamura³, Takumi Ogawa², Yoshiki Hamada¹

¹ *Department of Oral and Maxillofacial Surgery, Tsurumi University School of Dental Medicine, Yokohama, Japan*

² *Department of Fixed Prosthodontics, Tsurumi University School of Dental Medicine, Yokohama, Japan*

³ *Department of Dental Laboratory Technology, Tsurumi University School of Dental Medicine, Yokohama, Japan*

Objectives: To prevent titanium mesh (Ti-mesh) tray fracture, we have fabricated a new tray which is reinforced by double-layered Ti-mesh sheet. The objective of this study is to evaluate usefulness of the new custom-made Ti-mesh tray for mandibular reconstructions.

Patients and methods: Consecutive fourteen patients who underwent mandibular reconstruction were enrolled in this study. They were nine men and five women (mean age: 49.1 years). Segmental mandibular defects were caused by resection of benign tumor in nine patients, lower gingival cancer in four patients, and osteomyelitis in one patient. Virtual reality (VR) simulation was performed by computer software based on the preoperative computed tomography data. Finally, a 3-dimensional (3-D) life-size skull models for each patient were constructed by 3-D printer based on the VR simulation data. A tray was custom-made from a Ti-mesh sheet bent to adapt to the model. From January 2013, a double-layered Ti-mesh tray was introduced into mandibular reconstruction in patients with defect including mentum area to prevent a tray fracture. After particulate cancellous bone and marrow harvesting, the tray was fixed to the host bone. Patients were categorized into three groups: Group I, who was reconstructed using double-layered tray, Group II, who received reconstruction of the defect including mentum area using single-layered tray, Group III, who received reconstruction of the defect excluding mentum area using single-layered tray. New bone formation of the reconstructed mandible was assessed radiologically. Complications were recorded in each patient and compared among three groups.

Results: In five of six patients in Group I, excellent new bone formation was recognized. In one patient, new bone formation was insufficient because of postoperative infection. In two of three patients in Group II, new bone formation was insufficient due to Ti-mesh tray fracture. All five patients in Group III showed excellent new bone formation. However, complication of Ti-mesh exposure in the oral cavity and delayed infection occurred in each one patient.

Conclusion: Although the data are preliminary, our results suggest that the new double-layered custom-made Ti-mesh tray is clinically useful for mandibular reconstructions to prevent Ti-mesh tray fracture in patients with defect including mentum area.



O-3308

AUTOMATED DETECTION OF LANDMARKS IN 3D DATA SETS

H. Essig, P. Schumann, D. Lindhorst, M. Rücker

Universitätsspital Zürich, Zürich, Switzerland

Objective

In cranio-maxillofacial surgery three-dimensional photographs of the face are increasingly used and provide surface information including color and texture. Postoperative changes could be visualized by registration of two 3D images. Evaluation is mostly semi-quantitatively. For quantitative analysis measurement of corresponding landmarks are required. The algorithm presented here allows for automated detection of landmarks and serves as a basis for further objectified measurements.

Methods

This study is based on n=100 facescan data sets (stereophotogrammetry) of healthy participants. Selected cephalometric landmarks are manually annotated in n=60 data sets (training_images) and used for training of the algorithm (discriminative generalized Hough-transformation). Further data sets (n=40) were used for evaluation (test_images).

Results

All cephalometric landmarks could be trained. Landmarks with high reproducibility in manual annotation e.g. medial canthus and nasal tip projection, showed minor deviation in automated detection compared to the manually annotated reference position. Low characteristic landmarks as the malar prominence (zygoma) showed lower accuracy (greater Hough space) in automated detection.

Conclusions

Postoperative quality control should include objective evaluation of three-dimensional image data sets. Until now mainly semi-quantitative measurement is provided. The demonstrated algorithm using discriminative generalized Hough transformation allows for examiner-independent annotation of landmarks and may be used in future for comparative quality measurements based on pre-and post-operative data sets (corresponding landmarks) as well as for quantification of chronological changes and for classification.



O-3309

PRECISION OF COMPUTER ASSISTED FRACTURE REPAIR OF THE MIDFACE

A. Terzic¹, P.A. Pierrefeu¹, D. Courvoisier², P.Scolozzi¹

¹ Maxillo-Facial Surgery, Departement of Surgery, Geneva University Hospitals, Geneva, Switzerland

² Centre of Clinical Research and Division of Clinical Epidemiology, Department of Health and Community Medicine, Geneva University Hospitals, Geneva, Switzerland

Objectives:

To retrospectively investigate the precision of computer assisted fracture repair of the midface using the mirroring technique of the VectorVision® system (BrainLab).

Material and Methods:

We searched hospital notes from October 2008 till June 2013 of our department for patients who underwent above mentioned surgery. Fractures affecting the orbito-zygomatic complex and/or the zygomatic arch were included. We preoperatively established a treatment plan applying the mirroring technique at disposition in the iPlan CMF® (BrainLab) system. We then fused the actual postoperative and the preoperative plan. Once exported in STL format using the freely available Meshlab® software we reduced the data of the plan and the final surgery according to the region of interest by maintaining only the operated zones. With in-house produced software (Maxillo®) we then calculated the differences between the two fused surfaces. Maxillo® produced a colour coded image indicating the differences between the two surfaces, the mean difference of all exported points (135.000 - 585.000 pixels) of the surfaces in millimetres and box-plots of these differences.

Results:

We found 17 patients with orbito-zygomatic complex fractures, 2 with additional Le Fort 1 fractures and 1 patient with a comminuted isolated zygomatic arch fracture. Differences of all pixels of the entire surfaces of ± 2 mm were deemed as clinically not important. The all-over mean difference for all patients was 1.35 mm. Regarding the entire surface, we found excellent results with $>90\%$ of pixels within 2mm in 6 patients, good results (80-90%) in 6, fair results (50-80%) in 7 and insufficient results ($<50\%$) in 1 patient.

Discussion and Conclusion:

The mean difference of 1.35 mm showed good precision values. However it can camouflage unsatisfactory results, because positive and negative errors flatten down the error measurement, especially in rotation errors of the reduced bone. Therefore, an appreciation of errors of all single points of the surface produces more reliable information. It was excellent or good in 60% of all patients. Further, insufficient planning, improper reduction and/or navigation precision errors can affect the result. But to date, the extent of these single contributing errors cannot be measured precisely.

**O-3310****SHAPING THE FIBULA WITHOUT FUMBLING: THE SYNPLICITI CUSTOMIZED GUIDE-PLATE SYSTEM.**

T. Schouman, C. Bertolus, A. Chaîne, G. Murcier, C. Bertoia, P. Goudot

APHP - Pitie-Salpetriere University Hospital, Paris, France

Objective – To assess the suitability and accuracy of 3D virtual planning and guided surgery for fibula flap reconstruction using SynpliciTi customized pre-drilling guides and osteosynthesis plates (OBL, Chatillon, France).

Methods – Virtual planning of the reconstructions were done with Surgicase 5.1 (Materialise, Leuven, Belgium). Osteosynthesis plates were designed onto the virtual planning. The position of the screws was relocated on the virtual fibula prior to conformation and pre-drilling guides were designed accordingly. All the patients who have had a fibula flap using the SynpliciTi were included. Postoperative CT-scans were superimposed onto the preoperative planning by means of surface registration of the remaining jaw. The distances between the two models were measured visually by color scale and numerically by the mean deviation and the distribution of deviations in ranges of 2 mm, 1 mm.

Results – 24 patients were included. The SynpliciTi has been used successfully in all cases and was found very easy to use. One flap failed and one patient died at day 4. The 22 registrations revealed highly accurate and faithful reproduction of the virtual planning.

Conclusions – In this single center series, the SynpliciTi was associated with very satisfactory predictability and accuracy to shape the fibula the closest to virtual planning. The surgical procedure itself was made easier and the shaping and positioning times faster. This is of great interest in these demanding and long procedures, which are often associated with poor predictability when performed hand-free. Though the SynpliciTi requires no specific equipment, the cost-effectiveness of the device must be evaluated. Surgical planning time is also to be considered.

Conflicts of Interest - The author's institutions together with OBL applied for a patent related to the SynpliciTi. T Schouman has a consulting relationship with OBL.



34. Reconstructive Surgery of Craniofacial Malformations & Cleft Surgery

O-3401

CALVARIAL TRANSPORT DISTRACTION OSTEOGENESIS IN AN IRRADIATED FIELD

M Yuhasz, F Koch, C Young, J Clune, D Steinbacher

Yale University, New Haven, CT, United States

Background:

Reconstruction of irradiated calvarial defects is challenging. Radiation causes fibrosis and diminishes healing, making traditional autogenous grafts less effective. Allografts are fraught with extrusion and infection. Free tissue transfer is possible, confers problems with tissue type and contour, with donor morbidity. The purpose of this study is to: a) assess 3-dimensional transport distraction for irradiated cranial defect reconstruction and b) examine concurrent adipose grafting on distraction and overlying wound integrity.

Methods:

This study was approved by Yale IACUC (# 2011-11393). Twenty-three male New Zealand white rabbits (3 months; 3.5kg) were used, ten non-irradiated (8 treatment, 2 control) and twelve irradiated (9 treatment, 4 control). Irradiation entailed a 35Gy fraction. A 16x16mm defect was created abutted by a 10x16mm transport disc five weeks after irradiation. The device was fixated anteroposteriorly. Five animals (4 treatment, 1 control) in the non-irradiated group and six animals (4 treatment, 2 control) in the irradiated group were fat-grafted using 2cc of subdermal intrascapular fat. Latency (1d), active distraction (12-14d) (1.5 mm/day), and consolidation (4wks) followed. Calcein and xylene orange fluorochromes were injected subcutaneously during and post-distraction to mark sites of bone formation. Following sacrifice, osteogenesis was assessed using microCT, fluorescence, and histology.

Results:

The non-irradiated cohort demonstrated osseous regenerate. Conversely, irradiated animals showed dense fibrosis with minimal bone fill. A mean density of 2271.95 mgHA/ccm and 2254.27 mgHA/ccm ($p=0.967$) was seen in the non-irradiated non-fat grafted and fat grafted groups, respectively. Irradiated non-fat grafted and fat grafted animals revealed a mean density of 701.87 mgHA/ccm and 703.23 mgHA/ccm ($p=0.972$), respectively. Animals without fat grafting, bone density measured 701.87 mgHA/ccm and 2271.95 mgHA/ccm in irradiated and non-irradiated animals, respectively. Animals with fat grafting, bone density measured 703.23 mgHA/ccm and 2254.27 mgHA/ccm in irradiated and non-irradiated animals, respectively. Fluorescence showed ossification from dura, periosteum, and transport segment with decreased formation in irradiated animals.

Conclusions:

Osseous closure of cranial defects using transport distraction is possible in the setting of irradiation. However, the osseous fill is significantly diminished compared to the non-irradiated subjects. Adipose grafting enhances wound healing in irradiated wound beds, but does not enhance ossification.



O-3402

POSTERIOR CRANIAL VAULT DISTRACTION AS FIRST STAGE OF SURGERY IN SYNDROMIC CRANIOSYNOSTOSIS

L. Satanin, A. Ivanov, V. Roginsky, A. Sakharov, V. Solonichenko, N. Lemeneva, V. Sorokin

Moscow Burdenko Neurosurgery Institute, Moscow, Russian Federation

In patients with complex syndromic craniosynostosis there is a severe craniocerebral disproportion. The deformation of the skull accompanied with hypoplasia of anterior and posterior portions of the skull. Performing surgery in the volume of fronto-orbital advancement (FOA) cannot achieve an adequate increase in the cranial cavity volume. Performing the fronto-orbital advancement with necessary hypercorrection can produce problems in soft tissue closure intraoperatively and result in severe facial disproportions afterwards. Occipital expansion allows avoidance of these problems.

Material and methods. In Moscow Burdenko Neurosurgery Institute from 2009 to now 26 patients have had posterior cranial vault expansion using distraction osteogenesis. The mean age was 11,5 months (9 – 22 months). Diagnoses of Kleeblattschadel anomaly (5 cases), Pfeiffer (7), Apert (6), Saethre-Chotzen (3), Craniofrontonasal syndrome (2), and unspecified syndrome (3) were present. Arnaud type distractors (KLS Martin) were used in 18 patients and internal distractors (Conmet, Russia) in 18 cases. In 24 cases 4 distractors were used and in 2 case only 2 devices. The latency period was 5 days and distraction rate was 0,5 mm/day. The average advancement was 23 mm (range 17,4 – 27 mm). There was no complication during distraction. Period of consolidation was 6 months. Satisfactory callus formation was found on postoperative CT. Distractors were removed after consolidation period and no any additional fixation were needed. After 6 months FOA were performed as a second stage of treatment.

Results. Measures of quantitative volumetric analysis of changes in intracranial volume after posterior cranial vault expansion revealed significant increase of intracranial volume (mean 174 ml). That differs significantly from changes in intracranial volume after FOA (mean 95 ml). As a result of surgery there were changes in anterior part of skull morphology, with reduction of bulging in anterior fontanelle region, temporal protrusion. The perforated aspect of the skull, appearance of subarachnoid spaces and regression of intracranial hypertension syndrome were improved.

Conclusion. Expansion of the posterior cranial vault using distraction osteogenesis is efficacious method of treatment of complex syndromic deformities of the skull accompanied by hypoplasia of parietal-occipital region.



O-3403

MAXILLARY DISTRACTION STABILITY AND COMPLICATIONS IN CLEFT LIP AND PALATE PATIENTS

V. Lafontaine, B. Morand, V. Lesne, C. Lesne, G. Bettega

Plastic and maxillofacial department, University Hospital, Grenoble, France

Objective

We evaluated complications and stability of maxillary distraction in cleft lip and palate (CLP) patients.

Methods

This retrospective study included 13 patients with 9 male and 4 female, treated between 2000 and 2012. Seven patients presented a bilateral CLP, 4 a unilateral CLP, 1 associated unilateral CLP and cleft palate and 1 a cleft palate. Mean age at surgery was 16 year. Patients had Le Fort I osteotomy with pterygomaxillary disjunction and complete mobilization. The device was an internal distractor except for 2 patients. Mean maxillary advancement was 12.6mm. The average follow-up was 4 years and 3 months. Complications, dental occlusion and bones stability were evaluated clinically and with telerradiography.

Results

Complications were noted in nine patients: device dysfunction, significant pain during activation and labial ulcerations. Dental occlusion was correct 3 months after surgery. The class III relapsed in 50% of cases for young patients after 1 year. The results were stable for adult patients.

Conclusion

Complications after maxillary distraction in CLP patients are frequent. Most of them were due to device's problems. In young patients the maxillary retrusion relapse even if they were overcorrected.

**O-3404****LONG TERM FOLLOW-UP OF LARGE MAXILLARY ADVANCEMENTS WITH DISTRACTION OSTEOGENESIS IN GROWING CLEFT LIP AND PALATE PATIENTS**

M.C.Meazzini^{1, 2}, V. Basile¹, F.Mazzoleni¹, R.Brusati², A.Bozzetti²

¹ *Maxillo Facial Surgery, San Gerardo Hospital, Monza, Italy*

² *Maxillo Facial Surgery, San Paolo Hospital, Milano, Italy*

Background: In children affected by cleft lip - palate and severe maxillary hypoplasia, distraction osteogenesis may be performed during growth. In the literature there are few long term studies with a clear distinction between adult patients and growing patients.

Method: The records of 7 growing patients affected by syndromic cleft lip and palate (4 unilateral cleft lip and palate, 1 facial cleft, 1 Robinow's Syndrome and 1 Binder's Syndrome) , who underwent Le Fort I osteotomy and maxillary distraction with a rigid external distractor (R.E.D.), were reviewed. All patients had pre DO cephalometric records, immediately post DO, 6 -12 months post DO, and long term records. As a control sample, cleft children with a negative overjet not subjected to distraction or any protraction treatment during growth were followed.

Results: The average maxillary advancement in the growing group was 19,79 + 8,26 mm (range: 5 – 32 mm). In growing children had an average 29 % relapse in the first year post DO and additional 14 % relapse in the long term follow up.

Conclusions: This study seems to point out that early Le Fort I DO is followed by relatively high amount of true skeletal relapse in children with cleft lip and palate. Prognosis should be discussed in depth with the family. True aesthetic and psychological needs assessed.



O-3405

MAXILLARY DISTRACTION OSTEOGENESIS IN ADULT CLEFT LIP AND PALATE PATIENTS: LONG TERM FOLLOW-UP

M.C.Meazzini^{1,2}, V.Basile¹, F. Daleffe¹, F.Mazzoleni¹, R.Brusati², A.Bozzetti¹

¹ *Maxillo Facial Surgery, San Gerardo Hospital, Monza, Italy*

² *Maxillo Facial Surgery, San Paolo Hospital, Milano, Italy*

Background: Maxillary distraction osteogenesis (DO) in cleft lip and palate patients has been described by several authors, but few cephalometric long-term follow-up studies are available.

Method: Our sample included a total of 10 adult patients affected by syndromic cleft lip and palate (4 unilateral cleft lip and palate, 4 bilateral cleft lip and palate, 1 facial cleft, 1 holoprosencephalies). Adult patients underwent Le Fort I osteotomy and maxillary distraction with a rigid external distractor (R.E.D.) at a mean age of 21,2 years (range 18 to 27). All patients had pre DO cephalometric records, immediately post DO, 6 -12 months post DO, and long term records with a range of long term follow up of 12 years in the non growing sample.

Results: In adults the mean advancement of A point was 14,93 + 6,59 mm (range: 6 – 25 mm). In the short term and in the long term follow up excellent post-surgical stability was recorded in the adult sample.

Conclusions: this study seems to point out that early Le Fort I DO in adult patients is an extremely stable and reliable procedure.

**O-3406****SECONDARY RE-PUSHBACK PALATOPLASTY TO GET RID OF A SPEECH AID APPLIANCE**

T. Kijima¹, K.Torikai², R. Nagaoka², T.Misawa²

¹ *Oral and Maxillofacial Surgery, Tokyo Nishi Tokushukai Hospital, Akishima, Japan*

² *Esthetic and Plastic Surgery, Fureai Yokohama Hospital, Yokohama, Japan*

Objective; A speech aid appliance is an appliance used for the treatment of congenital velopharyngeal incompetence (VPI) or VPI after primary palatoplasty of cleft palate. Usually, the appliance is used temporarily, but some patients cannot do without it after they have come of age. We report on the operative technique of secondary re-pushback palatoplasty to get rid of a speech aid appliance and its treatment results.

Methods; Case 1: A 46-year-old female. Born with cleft palate, she underwent palatoplasty at age two at another hospital, but oro-nasal fistula remained so that she had been wearing a speech aid appliance since she was ten years old. We performed tongue flap operation to close palatal fistula, and then re-pushback palatoplasty using buccinators musculomucosal flap was performed. Case 2. A 36-year-old male with bilateral cleft lip and palate. He underwent eight operations including cheiloplasty and palatoplasty before the age 2 at another hospital and at the age of 15, he underwent secondary lip repair using Abbe flap. At age 36, he visited our hospital wishing to get rid of a speech aid appliance. First we performed secondary alveolar bone grafting(SBG) and closure of palatal fistula. Marked VPI remained and we performed secondary re-pushback palatoplasty at age 37.

Results; VPI was improved in both patients and they can get rid of speech aid appliance without any complications.

Conclusions; Velopharyngeal flap has been widely used for secondary palatoplasty. But potential disadvantage of the flap is that it will bring about unphysiological morphology. Though technically difficult, it is suggested that re-pushback palatoplasty using buccinators musculomucosal flap is an effective method for improving VPI and getting rid of a speech aid appliance.

**O-3407****CLASSIFICATION OF THE LESIONS OF BLOOD VESSELS IN MAXILLOFACIAL AREA AND NECK**

V. V. Roginskiy, A.G.Nadtochiy, A.S. Grigoryan, Y.Y. Sokolov, Y.L. Soldatskiy, A.I.Nerobeev, V.A.Kovyazin

Central Scientific Research Institute of Maxillofacial Surgery, Moscow, Russian Federation

Objective: to work out a clinical-biological classification of blood vessels lesions based on multidisciplinary approach.

Methods. A chart analysis of 2889 cases was carried out (prospective and retrospective). Patients were of different age (2469 children and 420 adults). They underwent supervision and treatment in the institutional clinics on 1990-2013.

Methods: clinical examination, radiological diagnostics (ultrasound investigation, MRI, CT, angiography), morphological investigation, immunohistochemical method, capillaroscopy.

Results: the lesions of blood vessels might be divided into 3 main groups based on their clinical and biological characteristics: hyperplasia, malformation and tumors.

Hyperplasia (i.e. IH and CH) occur appear at birth or within 2-4 weeks after. Their main morphological characteristic is the proliferation of vascular endothelium and, to the less extent, the increase of volume of other tissues. The main clinical characteristic is involution. It can be complete or incomplete. This type of lesions is defined as IH and CH (RICH and NICH). From our point of view they are different stages of the same process.

Malformation (CM, VM, AVM, CVM etc.) manifests immediately after birth or in a few months or years. It is characterized with quantity disorganization of normal vessels with various hemodynamic disorders. They progress slowly. Never involute. They comprise about 6% of all vascular lesions in newborns.

Tumors may appear either in a prenatal or postnatal period at any age. They are characterized by local, autonomous, unlimited tissue growth. Histological characteristics differ a lot. For a clinician it is necessary to determine if a tumor is benign or malignant. The part of tumors among all vascular lesions is not more than 2%.

Thus, we have worked out the classification of vascular lesions in maxillofacial area and neck.

Conclusion: the classification has been used in several clinics for 3 years and got positive assessment.

**O-3408****TREATMENT OF CHILDREN WITH LYMPHATIC MALFORMATIONS OF HEAD AND NECK**

M. Lomaka, V. Roginsky, A. Nadtochiy, I. Ovchinnikov, E. Gavelya, R. Ryzhov

Department of Child Maxillofacial Surgery, Central Research Institute of Dentistry and Maxillofacial Surgery, Moscow, Russian Federation

Various methods, the effectiveness of which is not always justified and proven, are widely used for treatment of children with lymphatic malformations (LM). LM forms are represented as macrocystic, microcystic and mixed, confirming the hypothesis of LM etiopathogenesis from the lymph nodes (macrocystic) or lymph vessels (microcystic). In case of large LM in addition to soft tissues lesion bones are involved in the pathological process as well. The surgical resection remains the leading technique to treat LM-affected children. Sclerotherapy is widely used.

Purpose: improvement of detection methods and enhancement of efficiency treatment children with head and neck LM.

Materials and methods: analysis of treatment of 227 children with LM of head and neck in the recent 13 years. The patients' age varied from 1 month to 18 years. All patients were subject to ultrasound examination at the primary diagnosis stage, which was repeated in 10-14 days after the surgery as well as in the follow-up intervals 3, 6, and 12 months. MRI was performed for all patients before and 6 months after the treatment. In cases of osseous LM form computer tomography was applied. Surgical specimens from all children who have undergone surgery were examined morphologically.

Results: 209 patients received only surgery. A combination of a surgical resection and ultrasonic destruction with aspiration was applied on 18 patients. Depending on the prevalence and localization of LM patients underwent from 1 to 12 surgical interventions in order to cure the disease and to achieve the good aesthetic result, the average value being from 2 to 5. Tracheostoma was applied for three patients.

Conclusions: a technology of using the ultrasound destruction aspiration-based device in combination with a surgical method significantly increases the treatment efficiency of LM-affected children. The advantage of the tool is that it destroys and aspirates pathological LM tissues without damaging the nervous tissue. The characteristic feature of the device operation in the tongue area is that it ensures lack of edema in the post-surgical period, as well as long-lasting positive effect of the treatment.

**O-3409****MANDIBULAR MIDLINE DISTRACTION USING A TOOTH-BORN DEVICE AND MINIMALLY INVASIVE SURGICAL PROCEDURE**

S. Stevens, R. Van Erum, N. Nadjmi

ZMACK, Department of Cranio-Maxillofacial Surgery, GH MONICA / University of Antwerp, Antwerp, Belgium

INTRODUCTION :

In our population retrognathism and transverse mandibular and maxillary deficiencies are not uncommon, transverse skeletal hypoplasia is reflected in wide lateral vestibula, severe anterior crowding, tipping and impaction of anterior teeth. In orthodontic patients an adequate sagittal and transverse mandibular dimension is an important factor to obtain a stable occlusion.

The surgical treatment of skeletal mandibular deficiency in the sagittal plane has been highly successful using conventional sagittal split procedures. In correcting transverse deficiencies however, orthodontist attempted to treat this by the use of functional appliances and lingual arches. Since the mandibular symphysis fuses at the age of one there is no skeletal widening and it is no surprise that there is a high relapse-rate when such an orthodontic dental compensation is performed. The only alternatives for orthodontists exist in tooth extractions and interproximal enamel reduction.

Ilizarov redescribed distraction osteogenesis in 1954 and ever since this technique gained more popularity. It was not until the 1990's that mandibular midline distraction offered a new treatment option for correcting mandibular transverse hypoplasia.

METHODS & CONCLUSION :

We share our experience in mandibular midline distraction, a powerful tool in orthognathic surgery, with a clinical follow-up of over 100 patients. The use of a tooth-borne distractor and a minimally invasive surgical procedure to perform the midline osteotomy is discussed and illustrated, as well as the long-term outcome. Mandibular midline distraction appears to be a well-tolerated procedure with a stable outcome, that can easily be performed by any maxillofacial surgeon .



35. Craniomaxillofacial Traumatology

O-3501

FUNCTIONAL RECONSTRUCTION AND DENTAL REHABILITATION IN GUNSHOT INJURIES TO THE FACE: TREATMENT PROTOCOL.

I. Abu El Naaj^{1, 2}, M. Peled^{1, 2}, Y. Leiser^{1, 2}

¹ *Department of Oral and Maxillofacial Surgery, Rambam Health Care Campus, Haifa, Israel*

² *Faculty of Medicine, Technion, Haifa, Israel*

Objective: Our aim is to present the treatment protocol and the functional and dental reconstruction of high-velocity/high-energy gunshot injuries to the face.

Methods: Using a protocol based on the experience of a single level I trauma center. A group of 23 injured combat soldiers who sustained bullet and shrapnel injuries to the maxillofacial region during a 3-week regional military conflict were screened for this study.

Results: Nine patients met the inclusion criteria (high-velocity/high-energy injuries) and were included in the study. According to our protocol, upon arrival patients underwent endotracheal intubation and were hemodynamically stabilized in the shock-trauma unit and underwent total-body computed tomography with 3-D reconstruction of the head and neck and computed tomography angiography. All patients underwent maxillofacial surgery upon the day of arrival according to the protocol we present.

Conclusion: In the last 25 years the treatment of facial injuries has evolved in terms of craniofacial surgical approaches and open reduction with rigid internal fixation. The treatments consist of initial assessment of the patient, preservation of air way by intubations or tracheotomy depending on the severity of injuries, followed by hemostasis of hemorrhage and hemodynamic stabilization. This protocol was adapted by our department and hopefully will contribute in establishing better guideline treatment for gunshot injuries to the maxillofacial region. Strict adherence to a well-founded and structured treatment protocol is mandatory in providing efficient, appropriate, and successful treatment to a relatively large group of patients who sustain various degrees of maxillofacial injuries during a short period of time.

**O-3502****THE RECONSTRUCTION OF BIG DEFECTS OF THE FACIAL SKULL WITH MICROVASCULAR GRAFTS AFTER SHOT INJURIES**

L. Gerzanic, H. Kärcher

CranioMaxillofacial Surgery, Medical University Graz, Graz, Austria

OBJECTIVES:

The magnitude of the destruction of soft and hard tissue of the facial skull by shot injuries can be different. The restoration of large defects can be achieved by the introduction of the microsurgical graft primarily or secondarily by a session. Different donator's regions stand at possession.

METHODS:

In the period from 1987 to 2013 nine patients with big and heavy soft tissue defects and osseous defects of the cranial region were reconstructed with participation of the upper jaw and/or lower jaw after shot injuries with a total of 15 microvascular grafts. In a case the reconstruction with a graft occurred during the primary intervention. In all other cases the stabilisation of the patients was carried out after the reconstruction secondarily. The defects occurred 3 patients in the upper jaw, 5 patients in the lower jaw and one patient in the upper jaw and lower jaw. Three scapula-grafts were used for the upper jaw, three scapula-latissimus dorsi grafts and seven iliac crest grafts were used for the lower jaw. For a soft tissue cover a microvascular radialis transfer and one gracilis-graft were used.

RESULTS:

All osseous grafts healed without problems. Only one patient had a partial necrosis of the scapula-skin which had to be removed. The prosthetic care implants had to be put in the osseous grafts and showed a resting time of the longest time of 10 years.

CONCLUSIONS:

In comparison to former methods the possibility explains the reconstruction of very big complete defects by using microvascular grafts. Shot injuries in the oral and craniomaxillofacial surgery demands on an account of big defects and the bad graft bed microsurgical, i.e. vital grafts. The excellent results also with prosthetics restoration arrange us to go off only from this process manner if general-medical reasons prevent this.

**O-3503****SURGICAL TREATMENT OF MANDIBULAR ANGLE AND BODY FRACTURES: COMPLICATIONS AND OUTCOMES.**

A.V. Kopchak

Oral and Maxillo-facial Surgery, National O.Bohomolets Medical University, Kyiv, Ukraine

Objective. To analyze the outcomes and postoperative complication rates in patients with mandibular angle and body fractures treated by open reduction and internal fixation.

Methods. Early and long-term results of surgical treatment for mandibular angle and body fractures were analyzed in 129 patients (mean age 31.9+10 years). The male to female ratio was 6.4:1. Double or multiple fractures were noted in 63.7%. The main causes of injury were assaults 53%, motor vehicle accidents 20% and falls 18%. Most of the patients 81% were operated via intraoral approach. In 65% single miniplate, placed at the superior border of the mandible, was used. In other patients more rigid fixation, including 2 miniplates, reconstructive plates or 3-D mesh plates, was applied. Additional maxillomandibular fixation was used in 61% of cases. Postoperative complications were assessed in terms up to 12 months postoperatively. The data were analyzed using the chi-square test.

Results. Correct reposition with residual displacement less than 2 mm and stabile fixation was achieved in 73% of patients. Infection developed in 11% of cases, hardware failure followed by secondary displacement and development of malocclusion consisted 10%. Signs of non-union of the fragments were observed in 2% of cases. In lineal or biomechanically favorable oblique mandibular angle fractures the use of single miniplate was associated with a similar incidence of complications as two miniplates or 3-D miniplates. There were no significant differences in functional outcomes, at the same time fixation techniques with higher rigidity were associated with increase in mean operation time by 10%. In cases of non-favorable oblique fractures, comminuted fractures or fractures with a bone defect the use of 2 miniplates, reconstructive plates or 3-D plates was associated with significantly lower incidence of secondary displacements ($p<0.05$), but there were no differences in the infection rates.

Conclusions. Mandibular angle and body fractures are associated with high risk of infection and hardware failure. The adequate choice of the fixation technique depends on the type of the fracture: in cases of lineal or favorable oblique angular fractures internal fixation by single miniplate provides satisfactory outcomes. But in cases of biomechanically unfavorable oblique fractures, comminuted fractures or fractures with bone defects the techniques with higher rigidity provides better stability and functional results.



O-3504

PATIENT UNDERSTANDING OF COMMONLY USED ORAL TERMINOLOGY

R. Dua, E. Hayes, E. Yeung, K. Fan

Oral and Maxillofacial Surgery, King's College Hospital, London, United Kingdom

Background: Communication within the doctor-patient relationship is fraught due to a variety of reasons. A clinician's vocabulary may not correspond with a patient's understanding of a given term, resulting in confusion and ill-informed decision making.

Objective: To investigate patients' understanding of commonly used terminology in an oral and maxillofacial setting.

Method: This was a questionnaire-based study conducted in the oral and maxillofacial department out-patients clinic. Age, gender, most fluent language and highest educational level were recorded. The questionnaire includes multiple choice and short answer questions. Terms included blister, ulcer, tumour, cancer, malignant and benign.

Results: Many patients have difficulty in understanding and explaining signs and symptoms. Ulcer and blister are commonly misunderstood and interchanged. 'Tumour' was mistakenly thought of as a malignancy only. Benign is well-understood by many patients. Highest level of education and fluency in English has a bearing on understanding of terminology.

Conclusion: It is essential that all clinicians modify their language appropriately during consultations in order to deliver information in a comprehensive manner, to educate patients on their condition to ensure informed decision making by patients.

**O-3505****RETROSPECTIVE ANALYSIS OF TIMING AND INDICATION FOR REFERRALS FOR SURGICAL TRACHEOSTOMY TO THE ORAL AND MAXILLOFACIAL SURGERY DEPARTMENT IN 2013**

J. Cartwright, J. Haq, C.T. Huppa, K. Fan

King's College Hospital, London, United Kingdom

INTRODUCTION: Tracheostomy is one of the most commonly performed procedures in the Intensive Care setting. The majority are performed by intensivists using a percutaneous technique. Patients requiring surgical tracheostomy are referred to OMFS for management. The indications and timing for tracheostomy remain controversial.

AIMS: To ascertain the frequency of referral and clinical indications for surgical tracheostomy received by OMFS at a London teaching hospital. To determine the timing of referral relative to duration of patient intubation. To establish at what time and on which theatre list the operations are performed.

METHODS: Patients were identified on the OMFS Inpatient Database as having been referred for surgical tracheostomy in 2013. Further information was then retrieved from the patients' case notes.

RESULTS: 67 patients were referred in one year. Of these 51(76%) underwent surgical tracheostomy. 7(43%) of the remaining patients were extubated prior to the planned procedure, 6(38%) died, 2(13%) underwent a percutaneous procedure following review and 1(6%) was deemed an unsuitable candidate for the procedure. By comparison, 120 patients underwent percutaneous tracheostomy within the same time period. The primary reason for referral was an anticipated slow wean from ventilator support (61%). Other indications included poor neurological function, repeatedly failed extubations or problems related to an existing tube. The most common reason for the tracheostomy not being performed percutaneously was due to body habitus/difficult neck anatomy (31%) with cervical spine fracture (10%) and deranged clotting (10%) also key factors. Patients were on average referred at day 9 of intubation however the range was from day 1 to 24. The majority of cases were performed on an elective theatre list (65%) and all except one were performed in hours.

CONCLUSIONS: A significant number of referrals are received for surgical tracheostomy per annum, the majority are indicated by anticipated slow ventilator wean, although a diversity of factors is seen to exist. The majority of patients referred for a surgical tracheostomy undergo the procedure. There is still widespread variation in the timing of referral to the surgical team. Most cases are being managed on existing elective lists within working hours.



O-3506

LONG TERM RESULTS OF SURGICAL MANAGEMENT OF THE FRONTOBASAL FRACTURES

B. Cizmarevic, B. Lanisnik, P. Levart, T. Groseta

Department for ENT-Maxillofacial Surgery, University Medical Center Maribor, Maribor, Slovenia

AIM: To evaluate short and long term results and complications of the open management of the frontobasal fractures.

METHOD: We performed a cohort analysis of all patients with frontobasal fractures with focus on long term results from Jan 1st. 1996 to December 31st. 2003 and midterm complications in patients treated from Jan. 1st. 2004 to Dec 31. 2008. Frontobasal fractures were treated with simple reduction and osteosynthesis, bone reconstructive procedures, endoscopic frontal sinus drainage or frontal sinus cranialisation.

RESULTS: We analyzed 83 patients with frontobasal fractures in a longterm group and 32 patients in midterm. Serious long term complications (after more than 5 years) were as follows: in 2 patients a mucocoele have had formed in the preserved frontal sinus. One patients suffered an episode of a purulent meningitis. In the imminent postop period 1 patient had a brain abscess, one patient had hydrocephalus and two had CSF leak. In the intermediate period (6 months-5 years postop) four patients had sinusitis, three patients had osteitis of the frontal bone and in one developed a carotidocavernous fistula.

CONCLUSION: The main factors determining the management of the frontobasal fractures are: extent of the posterior wall fracture, anteroposterior diameter of the frontal sinus and concomitant intracranial injury .Open management and in cases of comminution of the posterior wall a cranialisation of the frontal sinus is mandatory. Dural defects must be repaired simultaneously with the skeletal framework. Frontal sinus preservation is possible in cases noncomminution of the posterior wall and appropriate anterior to posterior diameter at the level of the frontal beak. The surgical management must start as soon as possible after trauma in a multidisciplinary setting.

**O-3507****A COMPARISON OF DIFFERENT TECHNIQUES OF OSTEOSYNTHESIS FOR FIXATION OF INTERFORAMINARY MANDIBULAR FRACTURES**

J. Hachleitner, D. Singh, P. Leitgeb, C. Brandtner, A. Gaggl

Maxillofacial Surgery, LKH Salzburg, PMU, Salzburg, Austria

Objective:

The purpose of this investigation was to compare outcomes after stabilisation of interforaminary mandibular fractures with different osteosynthesis-systems-with a focus on anchor screws and miniplates.

Methods:

Since more than two decades anchor screws have been used for fixation of anterior mandibular fractures beside miniplates and other osteosynthesis materials. As a modification of conventional lag screws anchor screws show improved biomechanical qualities. An additional biconcave washer prevents screws heads from cracking into spongy bone or causing burst fractures of thin cortical layers when the screw is tightened (as seen with conventional lag screws). Therefore anchor screws can be inserted even at very flat angles to the bony surface which increases the spectrum of their application in fracture treatment.

Results:

Between 2002 and 2011 315 patients with isolated or combined interforaminary mandibular fractures have chiefly been treated with anchor screws (97 patients) or miniplates (93 patients) or combinations of both systems (101 patients) and were assessed for the precision of anatomical restoration, stability and other parameters. Minor complications occurred in 8 patients (2,5%), major complications such as loss of stability or disturbance of occlusion occurred in 10 patients (3,2%). 7 out of these patients needed secondary surgery because of instability, and 3 patients had revision surgery because of an occlusal impairment. Regarding stability we could find a slight superiority for anchor screws. Relating to the level of anatomical restoration clear advantages for anchor screw-osteosynthesis could be identified. This is demonstrated by a special case.

Conclusions:

Biomechanical qualities of anchor screws facilitate a precise osteosynthetic transformation of an exact repositioning in terms of a compression osteosynthesis. This allows primary bone healing. In this way even small fragments in comminuted fractures can be fixed in anatomically correct positions with a small amount of hardware. Exclusive use of miniplates cannot always secure the result of precise repositioning during osteosynthesis -particularly in comminuted fractures. A loss of acuity of reduction might have adverse effects on occlusion and stability. In conclusion anchor screw osteosynthesis allows for a safe and precise fixation of interforaminary mandibular fractures with a small volume of osteosynthesis material and is most helpful in comminuted fractures.



E-poster Session

1. Embryology and Prenatal Diagnosis of Craniofacial Malformations

P-21

EFFECT OF PLATELET RICH PLASMA ON HEALING OF DISTRACTED MANDIBULAR SEGMENT

M. Hamed¹, A. El Swify¹, F. Tantawy², S. El Shennawy³, M. Eltaib²

¹ Oral&Maxillofacial Surgery, Faculty of Dentistry, Suez Canal University, Ismailia, Egypt

² Oral&Maxillofacial Surgery, General Organization of Teaching Hospitals and Institutes, Cairo, Egypt

³ Bacteriology and immunology, General Organization of Teaching Hospitals and Institutes, Cairo, Egypt

Objective: Recent efforts to improve wound healing have focused on autogenous sources of bioactive mediators such as platelet rich plasma (PRP), which offer the potential to enhance the bone healing.

A aim of this work was to study the effect of platelet rich plasma on distraction osteogenesis.

Patients and Methods: Ten patients (7 females and 3 males), their ages ranged from 7 years to 23 years (with a mean of 14.45 years). They presented with bilateral mandibular hypoplasia. All patients were treated with bilateral mandibular distraction osteogenesis, using intra and extra-oral uni-directional distractors. Platelet rich plasma was applied only at left site while the right site acts as a control. The follow-up periods were 3 months, 6 months and one year using panoramic x ray which was analysed by special soft wares to determine the amounts of formed bone and its gray level, also axial computerized tomography was used to measure bone density in Hounsefield units

Results: the gray level at the right site was $101/256 \pm 6.50$ and that of left site was 108.7 ± 7.30 with no significant difference $P < 0.05$: the amount of formed bone at the right site was $294185 \text{ pixels} \pm 1.018$, while that of the left site was $366921.5 \text{ pixels} \pm 1.70$ with no significant difference $P < 0.05$ between the right and left sites . CT density at the right site was $537.9 \text{ HU} \pm 35.32$ and that of left site was $501 \text{ HU} \pm 53.37$ with no significant difference $P > 0.05$.

Conclusion: The platelet rich plasma has no significant role in distraction osteogenesis as regard amount of formed bone and its density.



P-34

TONGUE-TIE: DEVELOPING A STREAMLINED ASSESSMENT TOOL AND TREATMENT GUIDE

S. Girgis, E. Ali, L. Cheng

Oral and Maxillofacial Head and Neck Surgery, Homerton University Hospital NHS Foundation Trust, London, United Kingdom

Background

Tongue-tie (ankyloglossia) is a congenital abnormality of the lingual frenulum. Currently, there is no universally agreed definition or diagnostic criteria. Treatment courts controversy due to the lack of consensus regarding the indications, timing and method of surgical repair.

NICE guidelines only exist for neonates. Amongst our peers, there has yet to be established a definitive point of decision concerning whether treatment is required or appropriate, whilst addressing the post-operative benefits and complications.

In response to the increased number of tongue-tie referrals to our OMFS unit, we have designed a diagnostic tool to encompass both neonates and older children. This enables a systematic assessment approach and serves as a robust guide to treatment planning for both junior and senior clinicians.

It is designed in such a manner as to aid future audit tasks in measuring the efficiency of the assessment tool guide, which can easily be adapted and implemented within the clinical setting.

Conclusion

Tongue-tie is not uncommon with variation in its presentation. The assessment tool is designed in order to assist in streamlining the process of diagnosis, allowing for an appropriate treatment plan to be constructed. Detailed assessment may avoid unnecessary procedures and facilitate advising parents appropriately.

To the best of our knowledge there is not, to date, such a tool for tongue-tie assessment currently available.

**P-43****1306C/T POLYMORPHISM OF THE PROMOTER OF THE MMP2 GENE IN PATIENTS WITH CL/P.**

Zalewska-Ziob M.¹, Adamek B.¹, Lyko D.², Ilczuk-Rypuła D¹, Płachetka A.¹, Rokicki W.³, Liśniewska-Machorowska B.³, Wiczowski A.¹, Machorowska- Pieniążek A², Niedzielska I.²

¹ *Department of General Biology, Medical University of Silesia, Zabrze, Poland*

² *Department of Cranio- Maxillo- Facial and Oral Surgery, Medical University of Silesia, Katowice, Poland*

³ *Department of Temporomandibular Joint Dysfunction and Orthodontics, Medical University of Silesia, Zabrze, Poland*

Objective

Cleft lip with or without cleft palate (CL/P) are among the most frequent birth defects in humans, believed to be result of genetic as well as environmental factors impact. Matrix metalloproteinases (MMPs) due to their role in craniofacial modelling have been implicated to play a role in palatal shelf fusion.

The aim of this study was to determine if the 1306C/T polymorphism in the promoter of the *MMP2* gene is associated with CL/P formation.

Method

In the groups of 151 children diagnosed with CL/P (77M, 74W in the age of 11.03±4.44) and 99 healthy children (41M, 58W in the age of 9.07±3.97) undergoing routine control the oral cavity mucosa swabs were taken. The Amplification Refractory Mutation System - Polymerase Chain Reaction (ARMS-PCR) method was applied for *MMP2* gene promoter single nucleotide polymorphism analysis in rs 243865. Data were analysed with STATISTICA.PL v.10.0 software.

Results

In CL/P group the CC and TT variant homozygotes constitute 56% and 5%, respectively, while CT heterozygotes – 38%. These results in the group of healthy children were as follow: 44%, 4% and 57%. There were no significant differences in CC and TT variant homozygotes as well as CT heterozygotes distribution between group of CL/P and healthy children.

Conclusion

The 1306C/T polymorphism in the promoter of the *MMP2* gene seems not to influence itself the CL/P development, however, this observation should be confirmed in cohort study and analysed together with other factors.



P-82

INTRAOSSEOUS HAEMANGIOMA: A SEMANTIC AND MEDICAL CONFUSION.

N.Kadlub, L.Danaise, A.Coulomb L'Herminé, L.Galmiche, V.Soupre, H.Ducou Lepointe, MP.Vazquez, A.Picard

APHP, Paris, France

Introduction: literature is replete with cases of intra-osseous haemangiomas; most of these cases are actually venous or capillary malformations. To illustrate this confusion in terminology, we present three cases of slow-flow vascular malformations misnamed intraosseous haemangiomas.

Materials and methods: we conducted a retrospective including children diagnosed for a intra-osseous haemangioma. Clinical, radiological data were evaluated. A new pathological examination and immunohistochemical study were conducted by three independent pathologist, to classified the lesion according to the ISSVA and WHO classification.

Results: Three children presented jaw haemangioma. CT-Scan patterns were not specific. All tumours were GLUT-1 negative and D240 negative. Lesions were classified as central haemangioma according to the WHO and slow-flow malformation according to the ISSVA.

Conclusion: the classification of vascular anomalies is based on clinical, radiological, and histological differences between vascular tumours and malformations. Based on this classification, evolution of the lesion can be predicted and adequate treatment applied. The binary ISSVA classification is straightforward and should be applied in all specialities.



P-144

MULTIPLE GIANT CELLS LESION SYNDROME - A DIAGNOSTIC DILEMMA

O. Dinca, T.Nita, C. Vladan, M.B. Bucur, A. Bucur

Oral and Maxillo-Facial Surgery, Carol Davila University of Medicine and Pharmacy, Bucharest, Romania

A 13-year-old girl with facial appearance with asymmetrical swelling of the cheeks was admitted in our service. Clinical and radiographic examinations, biopsy and biochemical investigations were performed. Other symptoms (bone marrow hypoplasia, thrombocytopenia and autoimmune myxoedema) were noticed to be associated with lower face enlargement. Histological examination reported the replacement of the normal bony structure with fibrous tissue containing a reduced number of multinucleated giant cells scattered in a fibrovascular stroma of nuclear spindle-shaped cells. In order to diagnose the case, we correlate clinical degree of the disorder, radiographic and histopathologic findings of the lesion, course of the disease and literature review. Suggestive findings indicated that the case was to be diagnosed with cherubism.



P-214

PROGRESSIVELY BONY RESORPTION IN THE MANDIBLE (GORHAM-STOUT SYNDROME) : CASE REPORT

J.M. Ahn, J.R. Hong, C.S. Kim

Oral and Maxillofacial Surgery, Samsung Medical Center, Seoul, South Korea

Gorham-Stout syndrome, aggressive and massive osteolysis is very rare disease of unknown etiology. As the endothelial cells proliferate, they invade the adjacent bone, presenting as clinical features of haemangioma.

This case is the report about the man(age 13) patient involving progressively bony resorption in the mandible. The patient's chief complain was tooth mobility on mandible. Radiographic examination showed the loss of lamina dura, spreading of radiolucent lesion in the mandible, we performed extraction & bone biopsy, and consult to paediatrician for general evaluation. This is a case report of our experience, and review of literatures about Gorham-stout syndrome.



P-278

A 10 YEAR EXPERIENCE OF PREAURICULAR SINUSES IN A UK HOSPITAL

Dr S Girgis, Dr E. Ali, Mr L. Cheng

Oral and Maxillofacial Head and Neck Surgery, Homerton University Hospital NHS Foundation Trust, London, United Kingdom

Background: Preauricular sinuses (PS) are congenital abnormalities of the preauricular soft tissue which result from incomplete or defective fusion of the auricular trabeculae during embryogenesis. PS are either inherited or sporadic, and are usually unilateral affecting both sexes with a genetic predisposition in 20-50% of bilateral presentations. Due to the low incidence rate, 0.9% in the UK, clinicians may not be familiar with the clinical appearance of PS and are unable to ascertain the diagnosis.

PS are diagnosed by careful history and clinical assessment with treatment outcome dictated by symptomatic presentation of the sinus.

Aim: To reflect the outcome and recurrence rate of cases we have assessed, and treated, in our department.

Method: Retrospective data of 8 cases was collected between the period of 2003-2013. The median age was 25.4yrs (range 0.2-53yrs), with equal male to female ratio (m:f = 1:1). Six patients underwent complete surgical excision using methylene blue dye, magnifying loupes, and lacrimal probe to aid visualisation and delineation of the sinus tract. Dissection was carried down to the temporal fascia leaving the auricular perichondrium intact.

Results: We have not noted any recurrence or complication with the cases treated. Follow-up period was between 3 and 6 months post treatment.

Discussion: Complete surgical excision is advocated for cases of recurrent infection to provide a definitive cure with complete removal of epithelial lining of the PS. Variable recurrence rates have been reported due to the age of PS at presentation and surgical techniques. Incomplete removal of PS results in increased recurrence rate. Improved outcomes are associated with surgical adjuncts namely magnification, methylene blue dye and lacrimal probe.

Conclusion: Careful assessment and good surgical techniques are essential to provide definitive treatment for symptomatic lesions without recurrence.



P-350

BRONCHIOGENIC CYST ON THE NECK

A. Kiralj, M.P.Ilic, N. Vuckovic, B.Markov, I.Mijatov, S.Mijatov, B.Pejakovic

Clinical Centre of Vojvodine, Clinic for Maxillofacial surgery, Novi Sad, Serbia

Objective: A bronchogenic cyst is a congenital malformation of the bronchial tree. It can present as a neck mass that may enlarge and cause local compression. It is also considered the commonest of foregut duplication cysts. When large, mass effect may result in tracheal obstruction leading to air trapping and respiratory distress. An alternative presentation may occur when the cyst becomes infected. Bronchogenic cysts form as a result of abnormal budding of the bronchial tree during embryogenesis, and as such they are lined by secretory respiratory epithelium. They do not usually communicate with the bronchial tree, and are therefore typically not air filled. Rather, they contain fluid. The most common location is the middle mediastinum (60%) and para-tracheal neck area (20%).

Methods: We are presenting a 7 years old child, female, with a tumour mass on the neck, which was diagnosed with CT and MRI.

Results: Typically appear as well circumscribed spherical or ovoid masses of variable attenuation. Surgical treatments was

Conclusion: The choice of treatment is somewhat controversial. Some authors and we also, advocate surgical excision of all cysts given their tendency to become infected or rarely, to undergo malignant transformation. Complications: fistula, cyst wall ulceration, malignant transformation is very rare, but reported.



P-353

NONTUBERCULOUS MYCOBACTERIAL LYMPHADENITIS IN CHILDREN

D. Garcia Molina, M. Martin, J.M. Muñoz, E. Gomez, J. Noguera, M. Burgueño

Servicio de Cirugía Oral y Maxilofacial, Hospital Universitario La Paz, Madrid, Spain

Objective: The main objective of this study is to determine the epidemiology of nontuberculous mycobacterial lymphadenitis in children in La Paz University Hospital (Madrid, Spain) and analyse their treatment and complications.

Material and Methods: A cross-sectional study was conducted between the years 2009 and 2013, 5-year period, recording all nontuberculous mycobacterial lymphadenitis in children. We compared our study with similar studies published.

Results: There were a total of 35 patients who required surgery. The mean age was 3,5 years. Fine needle aspiration of the affected node had a high sensitivity. Cultures were mainly negative. The most common species were *M. avium* and *M. lentiflavum*. Regarding complications there were 14% of cases with temporary facial palsy and 8,5% of cases with keloid scar. All patients were cured 6 months after surgery.

Discussion and Conclusion: The incidence of nontuberculous mycobacterial lymphadenitis in children is increasing in Spain. Surgery is the election treatment modality in most of the cases. Complications should be avoided performing careful surgeries by Head and Neck specialists.



P-393

EVALUATION OF DISTRACTION OSTEOGENESIS FOR BILATERAL ANKYLOSIS OF TEMPOLOMANDIBULAR JOINT

M.Iwata, H.Kasai, T.Nakamura, A.Tanaka, S.Iijima, Y.Sugiyama

Kishiwada Eishinkai Hospital, Sakai, Japan

(Objective) Many cases of bilateral ankylosis of the temporomandibular joint treated by osteoarthrotomy, but in some cases with severe complications – deformity, malocclusion, deviation, mandibular retreat symptom, etc. We have applied distraction osteogenesis for cases of ankylosis after osteosrthrotomy to avoid the complications, particularly mandibular retreat symptom. In this study, we evaluated this new technique.

(Methods) The subjects were 20 patients, ranged in age from 20 to 52 years with the ankylosis of the temporomandibular joint. In all cases we treated by osteoarthrotomy (high operation, gap arthroplasty) using with temporal fascia. About 1 year after osteoarthrotomy, we treated by distraction osteogenesis for mandibular retreat symptom. The L-shape osteotomy of the posterior mandibular ramus designed for this procedure. Active distraction was started after a latency period of 3 days with a rate of 0.5mm twice daily.

(Results) All patients ended with a symmetrical chin position and X-rays. In all cases we achieved improved occlusion, no trismus, face symmetry and no anterior open bite.

(Conclusions) The new surgical treatment–distraction osteogenesis and osteoarthrotomy- for the patients with ankylosis of the temporomandibular joint is useful.

**P-458****FEATURES OF EXPRESSION OF TUMOUR NECROSIS FACTOR IN PATIENTS WITH CHRONIC ODONTOGENIC OSTEOMYELITIS**

M.Sh. Mustafaev, Z.F. Kharaeva, A.M. Nastueva, S.M.Mustafaeva

Medical department, Kabardino-Balkarien State University, Nalchik, Russian Federation

The problem of odontogenic osteomyelitis remains relevant in connection with the severity of pathology, duration of treatment, a high percentage of complications. One of the preconditions for the development of osteomyelitis is a violation of synthesis of mediators involved in the activation of innate and adaptive immunity, which include tumour necrosis factor (TNF).

The aim of the research was to define the features of the expression of gene of tumour necrosis factor alpha (TNF α) in patients with odontogenic osteomyelitis.

Materials and Methods. 32 patients with chronic odontogenic osteomyelitis (14 females, 18 males in age from 26 to 58 years) were studied. The compared groups of study were patients with odontogenic flegmones (54 patients, 30 women, 24 men aged 18 to 59 years) and donors (35 people aged from 18 to 58 years). Assessment of gene expression TNF α in leucocytes of patients was carried out by Real-time PCR. Statistical processing was performed using the software package Statistica for Windows. To confirm the reliability of differences in the expression of genes in the aggregate one of the samples in comparison with other samples of (different groups of patients) used a non-parametric Mann-Whitney criterion. For genes significance of differences between the samples was $p < 0.05$.

The results. Gene expression of TNF α in leukocytes of patients with osteomyelitis was significantly lower than in healthy persons, ($p < 0.001$). At the same time the expression of TNF α in patients with osteomyelitis was lower than in the group of patients with inflammatory masses without infections of bone tissue ($p < 0.05$). Low expression of genes TNF α in the blood cells was accompanied by a low blood concentration of the this immunocytokine.

Conclusions. The results obtained indicate a violation of the expression of regulatory genes TNF α in the blood of patients with osteomyelitis. These changes are accompanied by a deficit TNF α in the blood are one of the causes of complications of the infection process.



P-654

EMERGING COMPUTER BIOENGINEERING TECHNOLOGIES 1: SCANNING (CBCT VERSUS MSCT), MODELLING (BIO-CAD) AND FUNCTIONAL SIMULATION (FEA): STEPS TOWARDS VALIDATION.

P Bujtár^{1, 2}, J Simonovics³, GK Sándor^{2, 4}, K Váradi³, CME Avery⁵, A Szűcs and Zs Fejér^{6, 7}, A Bojtos⁸, OB Wilson⁹, G Zombori¹⁰, J Pan¹¹

¹ Department of Maxillofacial Surgery, Southern General Hospital, Glasgow, United Kingdom

² Department of Oral and Maxillofacial Surgery, University Hospitals of Oulu, Oulu, Finland

³ Department of Machine and Product Design, Faculty of Mechanical Engineering, Budapest University of Technology and Economics, Budapest, Hungary

⁴ Biomeditech, Institute of Biomedical Technology, University of Tampere, Tampere, Finland

⁵ Oral and Maxillofacial Department, University of Leicester, Leicester, United Kingdom

⁶ Department of Oral, Maxillofacial Surgery and Stomatology, Semmelweis University Budapest, Budapest, Hungary

⁷ Department of Human Morphology and Developmental Biology / Department of Anatomy, Histology and Developmental Biology, Semmelweis University Budapest, Budapest, Hungary

⁸ Department of Mechatronics, Optics and Engineering Informatics, Faculty of Mechanical Engineering, University of Technology and Economics, Budapest, Hungary

⁹ Instituto Federal de Educação, e Tecnologia da Bahia, Rua Emidio Santos, SN, Barbalho, Salvador, Bahia, Brazil

¹⁰ Centre for Medical Image Computing (CMIC), University College London, London, United Kingdom

¹¹ Department of Engineering, University of Leicester, Leicester, United Kingdom

Introduction/Aims

The time required from hypothesis to development of an industrial product decreased dramatically during the 21st century. The steps necessary to effectively utilize the principles learned from industry and bioengineering research have been discussed critically. It is important to be familiar with these developmental steps when unique structures are assessed or customized implants designed.

Materials/Methods

A critical review is to be presented which will help with understanding the process of making an informed evaluation. The benefits and limitations of CBCT compared with MSCT are presented based on our cadaver validation study. The issues involved in translating scanned data in to accurate cutting-edge CAD models are reviewed. These factors are important when optimizing volume and contour definition. Finally computer based testing using the finite element analysis FEA technique is presented which is the least invasive approach. The limitations of this technique will be clarified with practical examples – as various mandible segment reconstructions using different systems – and an explanation of the validation process.

Results/Statistics

The pathways utilized for the conversion of CT data in to CAD/FEA models needs to be well understood and supported by experienced clinical judgment in order to optimize the clinical value of these techniques. For these reasons a multiple step validation procedure is important to refine the quality of the simulation.

Conclusions/Clinical Relevance

The clinical relevance of the increasing abundance of analytical techniques based on tomographic imaging and computational models is complemented by sound professional judgment during the model simulation process. Only a multiple-step validation procedure will produce the optimal level of simulation fidelity.



P-940

TONGUE POSITION AND MOTILITY IN FOETUSES WITH CLEFT LIP AND PALATE

A.Nadtochiy¹, N.Starikova², M.Ageeva³, K.Volkova²

¹ *Diagnostics Radiology, Central Research Institute of Stomatology and Maxillofacial Surgery, Moscow, Russian Federation*

² *Hospital orthodonty, Central Research Institute of Stomatology and Maxillofacial Surgery, Moscow, Russian Federation*

³ *Ultrasound Diagnostics, Russian Medical Academy of Postgradual Education, Moscow, Russian Federation*

Aim. The prenatal diagnostics of cleft lip and palate (CL/P) improvement based on evaluation of fetuses tongue position and motility.

Materials and Methods. 37 CL/P fetuses on 19-24 weeks of gestation were undergone ultrasound examination: cleft lip and palate (CLP) fetuses – 29, cleft lip (CL) fetuses – 5, cleft palate (CP) fetuses – 3.

50 fetuses without CL/P formed the control group.

Tongue position and motility of fetuses were the objects of special study.

Results. In comparison with control group all of fetuses with CLP and CP had the abnormal tongue position and motility. All of fetuses with CL had the normal tongue position and motility.

Conclusion. Abnormal tongue position and motility of fetuses on 19-24 weeks of gestation testifies to the CP presence: with or without CL. Normal tongue position and motility in CL fetuses indicates the absence of CP. These findings are the new symptoms in fetuses CL/P ultrasound diagnostics.



P-1031

ANALYSIS OF ORBITAL PLAIN RADIOGRAPHS FOR ORBITAL DEFORMITIES IN NEUROFIBROMATOSIS TYPE 1

R. E. Friedrich, J. Rother, G. Christ, M. Lehmann, C. zu Eulenburg, M. Giese, H. A. Scheuer

Oral and Maxillofacial Surgery, Eppendorf University Hospital, Hamburg, Germany

Abstract: Neurofibromatosis type 1 (NF1) is an autosomal dominant inherited disease. Some stigmata of NF1 occur in the orbital region. The aim of this study was to reveal whether alterations of the orbital rim visible on plain radiographs may indicate the presence of a plexiform neurofibroma (PNF), a tumour almost exclusively diagnosed in NF1.

Material and Methods: The plain orbital radiographs of 73 NF1 patients were investigated for alterations of the orbit (female: N=37, male: N=36). The group was further distinguished according to the presence of orbital plexiform neurofibroma (N=53) and/or sphenoid wing dysplasia (N=30). Radiographs from NF1 patients with exclusion of PNF in the orbitofacial region were used for comparison (N=20). A special cephalometric analysis (Dental Vision™) was adapted to the demands of this study.

Results: NF1 patients not affected by an orbito-facial PNF showed symmetrically orbits. Unilateral increase in orbital height was associated with ipsilateral PNF. The width of orbits affected by a PNF was often slightly increased compared to the non-affected side. The determination of cephalometrically defined angles disclosed an erection of the PNF-affected orbit compared to the medio-sagittal plane.

Discussion: Plain radiographs are often the first diagnostic measure to determine skeletal alterations. This study shows that certain parameters of the orbital rim are useful indicators of a PNF in patients who are unilaterally affected by this lesion in the orbital or orbitotemporal region.



P-1159

ARTERIOVEINOUS MALFORMATION OF MANDIBULA:A CASE REPORT AND LITTERATURE REVIEW

D. Kamal, M.N. El Alami

ENT, Maxillo- facial, Reconstructive and Plastic Surgery Department, Sidi Mohammed Ben Abdellah University, Fez, Morocco

Arterioveinous malformation (AVM) in the mandible is rare. It may present with recurrent episodes of unexplained gingival haemorrhage, bony swelling, tooth mobility or facial asymmetry. We report a case of a 13 year old girl who presented with an asymptomatic mandibular asymmetry, and the diagnosis of AVM of mandible was made by magnetic resonance imaging (MRI) and angiography.

**P-1278****EXIT PROCEDURE IN 2 CASES OF GIANT EPIGNATHUS**

R.Belmonte-Caro, A. García-Perla, F. Iglesias-Martín, V. Prats-Golczer, E. Torres-Carranza, PA. Infante-Cossío

Department of Oral and Maxillofacial Surgery, Virgen del Rocio University Hospital, Sevilla, Spain

Objective

The *ex-utero intrapartum treatment* (EXIT procedure) can be life-saving for foetuses with large Epignathus. We describe two girls with CHAOS (Congenital High Airway Obstruction Syndrome) by a giant oral fetal teratoma (Epignathus), detected by 4D ultrasound *antepartum*; these conditions forced this procedure to ensure the foetuses' airways, and therefore their lives, prior to the removal of Epignathus.

Methods

In one case, being the foetus partially outside of the uterus, and remained alive using placental support, in order to ensure its airway, the fibroscopy-guided intubation, before cutting the umbilical cord, was enough. But in the other case, a twin pregnancy, due to the complete occupation of the oral cavity by the tumour, it was required to deliver the healthy twin first (to ensure its life); and in the second twin (with epignathus) a partial excision of the tumour was needed to perform an intraoperative tracheostomy, prior to the tumour removal.

Hours after the EXIT procedure, some visualitazion testing (MRI and CT) were made to delimit, as accurate as possible, the tumours immediately before its removal.

In one case the tumour came from the upper jaw and anterior palate.

In the other case, which required tracheostomy, it came from the ethmoid at the anterior skull base. After its removal, the tracheostomy was closed and the patient, who was intubated, was taken to the neonatal ICU. Two months later, he had to be operated for a recurrence of the teratoma; and also from the cleft palate induced by the palatal emergence of the tumour, after one year of age.

Results

We saved the lives of both children, and removed completely both epignathus. The children have shown a completely normal development, and no tumour recurrence. Currently, children have 9 months, and 7 years-old.

Conclusions

In both cases, abortion was suggested to the mothers previously as a therapeutic option. The EXIT Procedure, extremely uncommon in CHAOS, requires proper planning and a multidisciplinary team, but it can save the lives of those foetuses with big neck masses and avoid serious damages by connatal encephalopathy or hypoxia, allowing the normal development of these children.

**P-1308****THE COMPARISON OF THE FACIAL DEVELOPMENT OF NORMAL FOETUSES AND THOSE WITH TRISOMY 13 AND 18 – PRELIMINARY DATA.**

R. Franczyk¹, C. Niszczota¹, P. Węgrzyn², A. Koleśnik¹

¹ *Department of Descriptive and Clinical Anatomy, Center of Biostructure Research, Medical University of Warsaw, Warsaw, Poland*

² *1st Department of Obstetrics and Gynecology, Medical University of Warsaw, Warsaw, Poland*

Introduction: The analysis of the foetal face is an important part of the prenatal ultrasound examination. Malformations can be isolated and affect functions of the oral cavity (cleft palate) or can be components of inborn syndromes like trisomies 21, 18 and 13 (Down – t21, Edwards – t18, Patau syndromes – t13). Trisomy 18 and 13 are less frequent than t21 but are associated with the worse prognosis. The aim of this study was to establish values of selected facial parameters used in the anthropology, genetics, orthodontics in normal foetuses and those with chromosomal aberrations.

Material & methods: The study was based on 18 aborted foetuses of both sexes, aged 17-22 weeks (age calculated on the base of the femur length; FL). They were divided into three groups: normal (group I – 11 cases), t18 (group II – 4 cases), t13 (group III – 3 cases). Following parameters were measured: between medial palpebral commissures (MPC); the horizontal and vertical dimensions of orbits with their indexes; Gonion-Gonion; Nasion-Gnathion and Zygion-Zygion. The facial index was calculated. All above diameters were used for calculation of ratios based on FL to eliminate the influence of gestational age on results. Visible facial malformations were noticed.

Results: The MPC/FL ratio was the highest in t18 (0.041-0.048, mean: 0.045 vs. 0.034-0.043, mean: 0.038 in group I and 0.029-0.049, mean: 0.04 in group III). Gonion-Gonion/FL ratio was comparable in normal foetuses and t18, longer in t13 (I – 0.086, 0.071-0.156; II – 0.086, 0.054-0.122; III – 0.104, 0.094-0.117). The orbital index was: I=0.679 ±0.114, II=0.750 ±0.125, III=0.801 ±0.283. Facial indexes were comparable in all groups (I=74.8 ±7, II=75 ±8.5, III=70.9 ±5.8). In two cases of Patau syndrome cleft lip and palate were noticed.

Conclusions: Assessment of facial parameters may be helpful in early diagnosis of its malformations and chromosomal abnormalities. The most complicated malformations occur in trisomy 13. Further studies of normal and pathological cases are necessary to confirm their clinical relevance in diagnosis and to enable a statistical analysis.

**P-1348****FOLLICULAR CYST AS AN ORAL MANIFESTATION IN THE MUCOPOLYSACCHARIDOSIS DISEASE**

Francisco-Alejandro Ramírez-Pérez, Cristina Hernández-Vila, Isidoro Rubio-Correa, Damián Manzano-Solo de Zaldívar, Florencio Monje-Gil

Oral and Maxillofacial Surgery, Infanta Cristina Hospital, Badajoz, Spain

Introduction: Within the usual surgical practice of the oral and maxillofacial surgeon, maxillomandibular radiographic cystic lesions are one of the most frequent pathologies subsidiaries of surgery. Up to 90% of them are corresponded to odontogenic cysts, among which follicular cysts derived from enamel epithelium are common.

Material and methods: A 25 years old patient, presenting a personal history of mucopolysaccharidosis I and a tracheostomy because an airway compromise after a spinal fixation, comes referred by his Dental Practitioners for a painless radiolucent lesion encompassing from baseline to right mandibular ramus in relationship with an horizontal included 48, besides presenting a supernumerary 49.

It was decided to perform a facial CT and incisional biopsy under local anaesthesia.

Results:

The lesion was diagnosed as a follicular cyst. Facial CT shows vestibular mandibular cortical imprint and erosion. Extraction of 48 and 49 was performed, and cystectomy under general anesthesia.

Conclusions:

Most of follicular cysts in the jaw appear during adolescence, although diagnosis may be delayed and be an incidental finding in a control OPG . They are usually solitary, although in association with certain syndromes may be bilateral and multiple. MPS is one of them.

Within the intraoral manifestations of MPS, follicular cysts are one of the most typical OPG findings. Surgical treatment must always include cystectomy, associated or not with the extraction of the associated tooth. Follow-up consultation is necessary because of the risk of bilateral and multiple recurrence in these patients.



2. Reconstructive Surgery of Craniofacial Malformations & Cleft Surgery

P-41

A NOVEL TECHNIQUE FOR REPAIR OF WIDE CLEFT PALATE

Wahid Terro

Beirut Arab University (BAU) - Faculty of Dentistry, Oral and Maxillofacial Surgery Division, Beirut, Lebanon

Background: Cleft palates (CLP) are among the most common severe hereditary anomalies to involve the facial region which can lead to serious medical and simultaneous speech problems, if left untreated. The surgical techniques and timings used to close palate deformities will vary vastly from one surgeon to another.

Objectives: The main objectives behind cleft palate repair are: to produce anatomical closure of the defect, to create an apparatus for development and production of normal speech without considerably interfering with subsequent facial and maxillary growth.

Methods: A new 3 stage technique (first stage: Uvuloplasty, second: Uvuloplasty, third: Uranoplasty) has been created and successfully adopted by the author over the past years. Reconstruction of the uvula (Uvuloplasty) of the soft palate as the first surgical stage is possible between 10-14 months of age.

Results: Short duration of the operation (30-40 minutes), reduction of the skeletal defect (hard palate) to about 25% to 35% of its initial width, no disruption of sutures and minimal scar formation.

Conclusions: The first stage (Uvuloplasty) reconstructs a primary muscle sling which creates the first functional part of the soft palate that facilitates the movement of the uvula as a unit and provides a natural physiological environment for the growth and development of the cleft components.



P-53

COMPUTER- ASSISTED CRANIOFACIAL SURGERY – BERLIN EXPERIENCES

N. Adolphs¹, H. Haberl², B. Hoffmeister¹

¹ *Department for Craniomaxillofacial Surgery, Campus Virchow Klinikum, Universitätsmedizin Charité Berlin, Berlin, Germany*

² *Pediatric Neurosurgery, Campus Virchow Klinikum, Universitätsmedizin Charité Berlin, Berlin, Germany*

Objectives:

Computer assisted technologies are well established in all fields of contemporary surgery. With respect to complex craniofacial corrections computer assisted surgery is also able to support planning, surgical transfer and documentation of operative results. Possibilities and limits of these technologies are demonstrated based on the experiences of the Berlin Centre for Craniofacial Surgery.

Materials and Methods:

Since 2006 computer assisted technologies have been used for the planning of different craniofacial corrections in selected patient cases. Based on preoperative DICOM datasets individual 3d models have been manufactured. In addition virtual simulation of different skeletal displacements were performed and tested. Subsequently surgical cutting guides have been created in order to improve the transfer of the final surgical plan. Postoperative imaging was used for superimposition of pre- and postoperative skeletal situations in order to evaluate the effective surgical result.

Results:

Preoperative workflows have been obviously improved since the first application in 2006. Virtual simulation of different surgical options proved to be helpful in determining the individual treatment plan. Intraoperative transfer was clearly supported by cutting guides that were created according to the virtual surgical planning. Superimposition of pre- and postop skeletal situations offered additional options with respect to assessment, evaluation and documentation of skeletal changes with respect to quality control and surgical teaching.

Conclusion:

Computer assisted technologies can be used for craniofacial surgery and support planning, transfer and evaluation of these complex corrections. Although preoperative workflows have improved additional efforts of cost and time will likely limit the application of these technologies to selected patient cases.



P-80

IS THE CLEFT PALATE LATE REPAIR USEFUL? THE « OPÉRATION SOURIRE » EXPERIENCE IN MADAGASCAR

I. Barthelemy^{1, 2}, N. Pham Dang^{1, 2}, M. Picard¹, JF. Collin¹, C Delbet-Dupas¹, JM Mondié^{1, 2}, M. Brix³

¹ *Department of Oral and Maxillofacial Surgery, NHE - CHU de Clermont-Ferrand, Clermont-Ferrand, France*

² *INSERM UMR 1107, Trigeminal Pain and Migrain, Université d'Auvergne, Clermont-ferrand, France*

³ *Department of Oral, Maxillofacial and Plastic Surgery, CHU Hôpital Central, Nancy, France*

Objective: Closing of the cleft palate is regularly done in developed countries before the first year of age. This early surgery is not regularly done in developing countries. A French humanitarian mission operates in Antananarivo (Madagascar) for the last 8 years (Opération Sourire - Médecins du Monde).

We review the patients who agree to be back for review, at least a year after the cleft palate closure. Our question was: "Is the late repair of the cleft palate useful in developing countries?"

Methods: The surgery was performed when the weight was over 10 kg. The closure was performed following the soft palate Sommerlad technique, associated with mucoperiosteal palatal flap elevation. One hundred patients had this surgery and we reviewed 46 of them. Three patients were excluded (surgical failure). We used an evaluation paper designed by a speech specialist with Malagasy words, sentences and free speech. Some questions were also for the family (school, speech and feeding).

Results: 43 patients were evaluated. They were 5 to 42 year old. Post-operative delay was from one to 6 years. Ages of closure were 2-4 year (25%); 4-12 (50%); >12 years (25%). The improvement was good or very good (nasal air escape, hypernasality absent or weak) for 78% of the patients for the words, 70% for the sentences and 65% for the free speech. Local people had to ask for a speech repetition often in 6% and sometimes in 37%. 76% of the patients were going to school. Taking food was normal for 72% of them. 92% of the families were happy with the results of the surgery.

Conclusion: Velopalatal clefts are unseen but have heavy functional drawbacks. The closure is long and technically demanding. Some post-operative bleeding chances exist and if so, the second look has to be done under general anaesthesia. Results of late velopalatal closure are imperfect, but in developing countries a lot of patients (often with their cleft lip already closed) are seeking closure of the residual velopalatal cleft. Our study shows than even with late closure and without speech therapy, the closure of the cleft palate is functionally useful.



P-95

CLEFT REPAIR IN THE ELDERLY POPULATION – THE SOUTH WALES EXPERIENCE

Serryth D Colbert, Helen Extence, David Drake

South Wales and South West Cleft Units, United Kingdom

Introduction/Aims – Surgical repair of cleft in the elderly population is controversial. Some cleft surgeons are of the opinion that the outcomes of repairing cleft in elderly patients are poor and as such, this group of patients should not be treated surgically. However, there is very little evidence in the medical literature published to support this. We report the outcomes of surgical repair of cleft in a series of elderly patients with unrepaired cleft lip and or palate.

Materials/Methods – We review the South Wales experience of treating elderly patients with unoperated cleft lip and or palate. We document the presence of speech impairment, behavioral problems, depression and low self-esteem due to teasing about their facial appearance and ability to communicate.

Results/Statistics – our results confirm an improvement in speech, quality of life and aesthetic outcomes after surgical repair of cleft in this series of elderly patients with unrepaired cleft lip and or palate.

Conclusions/Clinical Relevance – We advise the cleft team to consider surgical repair of the untreated cleft lip and or palate in the elderly population. Further research is needed to objectively detect the primary aesthetic needs of elderly patients with cleft lip and or palate, which along with the subjective needs defined by the patient, should determine the aim of the planned treatment interventions in this patient group.



P-96

THE EFFECT OF MAXILLARY ADVANCEMENT ON SPEECH OUTCOMES IN PATIENTS WITH CLEFT LIP AND PALATE

Serryth D Colbert, Helen Extence, Adrian Sugar, David Drake

South Wales and South West Cleft Units, United Kingdom

Introduction/Aims – Orthognathic surgery can alter symptoms of velopharyngeal insufficiency in cleft patients. The goal of this study was to evaluate how advancing the maxilla would affect the speech and articulation disorders of these patients.

Materials/Methods - This was a retrospective study in which we evaluated the speech scores on 50 cleft lip and palate patients who underwent maxillary advancement at our unit. The following variables were recorded from both preoperative and postoperative speech evaluations: presence of a pharyngoplasty, nasality, velopharyngeal function assessment, and overall speech score. Preoperative and postoperative changes in the data were analyzed.

Results/Statistics – we report on the competency of velopharyngeal function mechanisms postoperatively in patients with pharyngoplasties and in cases of borderline incompetence preoperatively. Speech scores after surgery are reported using the CAPS – A scoring system in patients with preoperative hypernasality.

Conclusions/Clinical Relevance – our study is compared to previous findings that patients with clefts of the lip and palate or palate alone are predisposed to velopharyngeal function alteration after maxillary advancement, particularly patients with borderline function and / or pharyngoplasty preoperatively.



P-104

TREATMENT OF MAXILLARY CLEFT PALATE: DISTRACTION OSTEOGENESIS V/S ORTHOGNATHIC SURGERY

Adi Rachmiel, Michal Even-Almos , Omri Emodi, Dror Aizenbud

Rambam medical center, Haifa, Israel

Introduction

The purpose of this presentation is to compare the treatment of hypoplastic, retruded maxillary cleft palate using Distraction Osteogenesis v/s Orthognathic Surgery in terms of stability and relapse, growth after distraction, soft tissue profile changes and velopharyngeal changes.

Material and Methods

The patients were divided in two groups of treatment: The first group were treated by Orthognathic Le Fort I osteotomy, and the second group were treated by maxillary distraction osteogenesis. All the distraction cases had a second operation for device removal.

Comparisons of the advantages and disadvantages of both distraction methods (intraoral and extraoral) will be presented.

Results

In distraction group the mean maxillary movement was 16.5mm and in conventional orthognathic group the mean maxillary movement was 8.8mm. In cases of mild maxillary deformities without significant bone deficiency- a one stage orthognathic surgery gave satisfactory results. In moderate or severe maxillary deficiency the distraction methods have been showing advantages over conventional orthognathic surgery in terms of greater maxillary movement better skeletal stability and soft tissue profile changes.

Discussion

In cleft patients after period of growth with mild maxillary deficiency - a one stage orthognathic surgery is preferable. However, in growing cleft palate patients or in patients requiring moderate to large advancements with significant structural deficiencies of the maxilla, the distraction technique is preferred.



P-105

MANGEMENT OF OBSTRUCTIVE SLEEP APNEA IN CHILDREN AND ADULTS

Adi Rachmiel, Dror Aizenbud

Oral and maxillofacial surgery, Rambam medical center, Haifa, Israel

Objectives: Obstructive sleep apnea (OSA) is caused by glossoptosis due to hypoplastic mandible resulting in decreased pharyngeal airway. In this presentation we are going to present our experience in treatment in children and adults.

Methods: The syndromatic young patients were treated by bilateral mandibular distraction osteogenesis using external and internal distraction devices, and adults non syndromatic were treated by maxillo mandibular advancement.

Results: Using distraction osteogenesis in syndromatic patients a marked lengthening of the mandible and increase of the pharyngeal airway was obtained. In adult patient a marked increase in pharyngeal airway occurred. In all the patient there was a improvement in oxygen saturation and eliminating the sign and symptoms of OSA.

The external devices were less comfortable and carried greater risk for pin tract infection and pin loosening than the internal devices .

The internal devices had a precise and predictable vector of lengthening and left less visible scars at the submandibular area and after one year were more stable results. They have major disadvantage of requiring a second operation for device removal.

Conclusion: In syndromatic young patients distraction osteogenesis offer a marked mandibular advancement with increased pharyngeal airway. The internal devices are more comfortable to the patients, with more predictable vector of lengthening, they are less vulnerable to dislodgment and leave reduced scarring, with the great disadvantage of second operation for removal. In adult nonsyndromatic patients maxillomandibular advancement increases the airway eliminating the symptoms of OSA.

**P-163****FREE FIBULA FLAP FOR THE TREATMENT OF HYPOMANDIBULAR FACIOCRANIAL DYSOSTOSIS IN A 7-YEAR-OLD BOY**

H. C. Jacobsen¹, S. G. Hakim¹, T. Trenkle¹, G. Gillessen-Kaesbach², P. Sieg¹

¹ *Maxillofacial Surgery, University of Luebeck, Luebeck, Germany*

² *Institute for Human Genetics, University of Luebeck, Luebeck, Germany*

Objective: We report on a rare case of Hypomandibular Faciocranial Dysostosis. The male child was born in June 2006 and showed apart from the hypoplastic mandible a microstomia and an almost complete aplasia of the lower lip, bifid tongue and a persisting buccopharyngeal membrane. The micro and retrognathia required immediate tracheotomy and feeding gastrostomy. The analysis of our Institute of Genetics classified the symptoms as Hypomandibular Faciocranial Dysostosis and is meanwhile the fifth case described with this specific syndrome.

Methods: Because of the severity of clinical symptoms early osteotomy and distraction was performed at the age of 6 weeks, external distractors were applied. 16 mm of anterior advancement were gained but early relapse of retrognathia occurred. At the age of 10 ½ months a second distraction with an external device was performed with 23 mm achievement but again deficiency of growth was evident in the following months. At the age of 23 months a further operation with the application of two internal distraction devices was carried out and anterior advancement of 25 mm was achieved but a few months later we found again evidence of severe retrognathia. To gain growing bone in the mandible a further operation was performed using free hip-grafts and microplates 3 months later the boy presented with a total collapse of bone grafts. We stopped further surgical treatment at that time. In June 2013 we started a new treatment attempt with a free fibula flap.

Results: Despite the effort of three distraction procedures and one avascular bone transfer within the first three years of life it was impossible to induce stable bone of physiologic growth potential in the jaw of this child. Only the free fibular flap led to stable conditions for more than 8 months. Meanwhile it has been possible to abandon the tracheal cannula during the daytime and start speech therapy for the first time.

Conclusions: Microvascular bone grafts in syndromatic children might be a considerable treatment option. The growth potential of the transferred bone is encouraging but has to be controlled in the future.



P-226

ONE STAGE REPAIR OF UNILATERAL CLEFT LIP AND PALATE: ITS TECHNIQUE AND A CASE REPORT

K.Torikai¹, T. Kijima¹, R.Nagaoka¹, H. Naganishi², E.Fukuyama³

¹ *Esthetic and Plastic Surgery, Fureai Yokohama Hospital, Yokohama, Japan*

² *Plastic and Reconstructive Surgery, Yokohama City University Medical Center, Yokohama, Japan*

³ *Orthodontics, JOY Orthodontic Clinic, Yokohama, Japan*

Objective: Usually, patients with unilateral cleft lip and palate(UCLP) must go through at least five operations before completion of treatment, which includes cheiloplasty, palatoplasty, secondary alveolar bone grafting(SBG) and secondary repair of cleft lip and nose. In some cases, additional operations may be required due to maxillary growth impairment, oronasal fistula or velopharyngeal incompetence. We have developed one stage repair of cleft lip and palate for less burden on the patients and better maxillary growth.

Methods: At first, our one-stage repair included simultaneous repair of cleft lip and palate with alveolar cleft closure by cleft margin flap (CMF). Then we evolved our technique into the latest all-in-one repair. In our latest technique, alveolar closure by cleft margin flap has been replaced by gingivoperiosteoplasty(GPP) or gingivomucoperiosteal flap(GPF) together with primary alveolar bone grafting(PBG) from palatal bone or inferior nasal concha.

Case: A female baby was referred to our hospital for the treatment of left complete UCLP. She was the elder sister of twins and her younger sister was healthy. She underwent one stage repair of UCLP using CMF at the age of four months, and SBG at age 6, and secondary repair of cleft nose using costal cartilage at age 14. Orthodontic treatment had already been completed by then and now she visits her orthodontist's for periodical follow up.

Results: In the case presented above, bone bridge was observed in the area of piriform aperture rim. But bone formation was not enough, because PBG was not performed there being different than the cases by the latest method. So she underwent SBG after consulting her orthodontist. As her maxillary growth is fairly good and her dental occlusion has been completed by her natural teeth alone, there may well be little possibility of her undergoing orthognathic surgery in the future.

Conclusions: Although SBG was required, only three operations were required till treatment completion in the patient. We conclude our one stage repair is effective in the treatment of UCLP from the point of treatment results and burden on the patients.



P-229

FINAL EVALUATION OF BILATERAL CLEFT LIP AND PALATE

K. Torikai¹, T. Kijima¹, R. Nagaoka¹, Y. Ishiwata², T. Fukawa³

¹ *Esthetic and Plastic Surgery, Fureai Yokohama Hospital, Yokohama, Japan*

² *Orthodontics, Ishiwata Orthodontic Office, Ebina, Japan*

³ *Orthodontics, Fukawa Orthodontic Office, Kamakura, Japan*

Objective: Generally, it takes a long time to finish treating the patients with cleft lip and palate and the number of operations to be required is not few at all. Regarding evaluation of treatment results, it is important to evaluate the results after all the treatments have been completed. Above all, the treatment of bilateral cleft lip and palate (BCLP) is extremely difficult and there have been no sophisticated method to evaluate the treatment results of BCLP. We have made a tentative evaluation method and applied it to the BCLP patients treated by palatoplasty using mucosal grafts and flaps (MG method).

Methods:

(1) We set the highest standard as "whether dental occlusion has been established with natural teeth alone and without the need for orthognathic surgery".

(2) As for maxillary growth, we use cephalometric analysis focusing on (i) SNA (ii) SNB (iii) ANB (iv) S'-Ptm' and (v) A'-Ptm'.

(3) Regarding speech, velopharyngeal incompetence (VPI) is regarded as the most negative factor. In addition, articulation disorders such as mis-palatalized articulation, glottal stop, lateral articulation, nasal emission and forward distortion of velar and substitutions are regarded as negative factors.

(4) Development of oro-nasal fistula is also regarded as a negative factor.

(5) The number of operations required till treatment completion is included in the evaluation items. We have applied the evaluation method to the patients with BCLP (male 4 cases, female 1 case) treated by palatoplasty using MG method between February 1984 and February 1990.

Results: Four out of 5 patients (80%) attained their dental occlusion with their natural teeth alone. There have been no patients who needed orthognathic surgery, or developed oro-nasal fistula or VPI.

Conclusion: It is suggested that palatoplasty using MG method for BCLP is a useful method to obtain good treatment results. So far, there have been very few reports on the final evaluation of BCLP. The above mentioned 5 items are considered to be the indispensable items for the final evaluation. Further evaluation method of high-quality including objective evaluation of aesthetic aspects such as symmetrical property of lip and nose and less conspicuous scarring is to be desired.

**P-247****ELIMINATION OF MANDIBLE DEFORMITIES OF TRAUMATIC AND HORMONAL ORIGIN.**

S. Khomich¹, A. Khomich¹, I. Khomich²

¹ *Maxillofacial Surgery, Belarusian State Medical University, Minsk, Belarus*

² *Prosthetic Dentistry, Belarusian Medical Academy of Postgraduate Education, Minsk, Belarus*

Aims

To optimize the surgical approach to the treatment of the mandible deformity after trauma and hormonal changes.

Materials and Methods

A surgery to correct a deformity of the lower edge of the mandible was performed in two patients following injury and experiencing hormonal changes associated with pregnancy and childbirth. During pregnancy, the deformities increased in size and after pregnancy became more pronounced and visible despite the fact that the structure of bone tissue in areas of strain had no pathological changes. Surgeries were performed under general anaesthesia and two different surgical approaches were used. The first patient's mandible was accessed externally through the right submandibular area, and the other patient's through the right lower vestibule of the mouth. Partial ostectomy was carried out in the right lower part of mandibles using piezosurgical unit. Before surgery both patients underwent extensive laboratory and X-ray examination, photo analysis and anthropometric measurements.

Results

Each case was approached individually, surgical access was designed depending on the location and volume of ostectomy to create symmetry of the mandible. During surgeries the soft tissues and periosteum were carefully dissected, neurovascular bundle carefully separated without damaging and moved slightly up from the surgical area towards vestibule of the mouth. A thorough leveling of the edges of the mandible to create correct anatomic correlation of the right and left sides of the body of the mandible with an appropriate amount of soft tissue was carried out. Postoperatively dressings were changed daily, patients were administered antibiotics, symptomatic therapy and local hypothermia. Sutures were removed in 9 days, healing occurred by primary closure to form cosmetic postoperative scar on the skin in one patient and in the mucosa of the mouth vestibule of the other.

Discussion and Conclusion

The analysis of performed operations have shown that it is possible to achieve quite effective aesthetic result using different surgical approaches to correct bone deformities of the same localization. Clinical and X-Ray control stated mandibular symmetry and unaffected function and anatomy of the tissues surrounding the postoperative area.

**P-264****MANDIBULAR VOLUMETRIC INCREASE FOLLOWING DISTRACTION OSTEOGENESIS**

M Pfaff, P Metzler, Y Kim, D Steinbacher

Plastic and Craniomaxillofacial Surgery, Yale University, New Haven, CT, United States of America

Introduction: Mandibular distraction osteogenesis (MDO) for the treatment of Pierre Robin sequence (PRS) enables mandibular lengthening and improves airway and feeding function. It remains unknown how the post-distracted mandibular volume compares to a normal control population. The aim of this study was to analyse mandibular volume and symmetry following bilateral MDO and compare post-distracted measurements to a non-distracted, normal age- and sex-matched control cohort.

Methods: Demographic information and three dimensional-computed tomographic (CT) images were obtained from normal control and distracted PRS patients. Mandibular volume and symmetry indices were calculated and results statistically analysed. P values ≤ 0.05 were considered statistically significant.

Results: 24 CT scans and 48 hemimandibles were analysed (8 control patients: mean age = 5.6 months, 3 females; 8 distracted patients: mean age pre-distracted = 1.8 months, mean age post-distracted = 5.3 months, 3 females). No complications were encountered in the distracted group. The mean pre- and post-distracted volume in the MDO group measured 7238.1 mm^3 and 15360.6 mm^3 , respectively ($P = 0.0003$) and the mean percent increase in mandibular volume following distraction was 113.3%. The mean symmetry index increased after distraction from 0.91 to 0.95 ($P = 0.31$). Matched normal control mandibles measured 13488.6 mm^3 versus post-distracted mandibles at 15360.6 mm^3 ($P = 0.40$). Normal control and post-distracted symmetry indices were 0.99 and 0.95, respectively ($P = 0.68$).

Conclusion: Distraction resulted in a significantly increased mandibular volume and an observed preservation in mandibular symmetry. Post-distracted volume was increased compared to normal controls but remained less symmetrical.

**P-269****TWO METHODS FOR FRONTAL BANDEAU CONSTRUCTION AND REPOSITIONING IN METOPIC SYNSTOSIS**

P Metzler, D Steinbacher

Plastic and Craniomaxillofacial Surgery, Yale University, New Haven, CT, United States of America

Background: Treatment of trigonocephaly typically entails frontoorbital reshaping with rounding of the forehead, increasing the bitemporal dimension, and advancing the lateral orbits. Various techniques have been described to achieve these goals. However, there is no consensus for the optimal approach, especially regarding long-term skull growth. Overcorrection or overexpansion of the forehead dimensions is one strategy to account for diminished growth, and optimize results. Preservation of a vascularized fronto-orbital bar may also influence future growth; though it is as yet unclear whether these “pedicled” techniques allow adequate 3D remodeling. The purpose of this study is to craniomorphologically compare fronto-orbital advancement, using bandeau widening and advancement, to a pedicled “tilt” procedure.

Methods: Demographic and computed tomographic data was recorded. Pre-and postcraniometric measurements were performed for the endocranial bifrontal angle, orbital plane angle, anterior advancement and the interzygomaticofrontal suture distance.

Results: In each group, all craniometric measurements showed a significant improvement postoperatively. The Fronto-orbital advancement group showed a significant higher mean expansion compared to the tilt group, including: the endocranial bifrontal angle (19% vs 11.3 %), the orbital plane angle (19.0 % vs 11.3 %), the anterior advancement (18.5% vs 7.4%) and the interzygomaticofrontal suture distance (9.8% vs 6.2 %), respectively.

Conclusions: Both techniques statistically improve the frontoorbital dimensions, and are suitable for correction of metopic synostosis. In severe trigonocephaly phenotypes, the fronto-orbital advancement allows a greater magnitude of expansion and overcorrection, but at the expense of preserving a vascularized leash. The “tilt” procedure has the benefit of near-anatomic bandeau remodelling, while potentially improving long-term growth.

**P-271****IMMEDIATE FAT GRAFTING IN PRIMARY CLEFT LIP REPAIR**

D Balkin, D Steinbacher

Plastic and Craniomaxillofacial Surgery, Yale University, New Haven, CT, United States of America

Background:

Successful cleft lip repair creates symmetric nasolabial morphology with minimal scar. Fat grafting is used in cosmetic and reconstructive settings to provide contour, condition tissue and aid healing. This study employs immediate fat grafting concurrent with primary cleft nasolabial repair. We hypothesize that simultaneous fat transfer is safe and may optimize the result.

Methods:

This retrospective analysis included a series of consecutive infants who underwent primary cleft lip repair with immediate fat grafting. Demographic and peri-operative details were recorded. Post-operative photographs were analysed by three blinded reviewers.^{1, 2} Kappa statistics were employed to assess inter-rater reliability.^{3, 4}

Results:

20 children, 25 sides (7 left, 8 right, 5 bilateral; 64% complete, 36% incomplete), underwent cleft nasolabial repair with simultaneous fat grafting at Yale between 2011-2012 by the senior author (DMS). Mean age of repair was 3.9 mo (range 1.7-6.4). The modified inferior triangle technique was employed for unilateral repairs. Fat was hand suctioned from the thighs (15 left; 2 right; 3 both) with mean yield of 2.1 cc (range 1-5 cc). An average of 1.4 cc (range 0.5-2.5 cc) was injected to the philtrum, vermillion, piriform and ala. No complications were experienced with lip repair, fat harvest or graft injection. Mean follow-up was 18.3 months (range 12.4-40.7 months). Postoperative photographic assessment revealed minimal residual cleft stigmata with inter-rater reliability.

Conclusions:

Simultaneous fat grafting and cleft lip repair can be performed safely. The augmentation and modulation of scar formation may optimize results. Prospective comparison is necessary to further corroborate our findings.

**P-272****AESTHETIC REHABILITATION OF PATIENTS WITH DISFIGURING FACIAL MALFORMATIONS**

A.Nerobeev, S.Golubeva

Federal State Budgetary Institution "Central Scientific Research Institute of Dentistry and maxillofacial Surgery", Moscow, Russian Federation

The aim of the study was to increase efficiency and improve the functional and aesthetic treatment outcomes in patients with bulky lesions in the maxillofacial region with severe vascular component, such as Venous Malformation, Lymphatic Malformation, Arterio - Venous Malformation, Capillaro - Venous Malformation, Neurofibromatosis.

Materials and methods. Our study was based on analysis of the results of surgical treatment in 28 patients aged from 16 to 56 years old with vascular anomalies and neurofibromatosis.

All patients were divided into 2 groups based on the type of surgery. The first group included patients with vascular malformations and neurofibromatosis, where surgery was performed with preservation of the overlying skin. The second group of patients were those where the preserving of the overlying skin was not possible. Moreover, patients in group 2 were subdivided into 2 smaller groups. The group 2a consisted of the patients with the complete elimination of the malformation. The skin defects were closed with axial or rotational flaps. The group 2b included the patients in which one-stage closure of the defect was not applied because of incomplete removal of the affected tissues and / or danger of necrosis of displaced flaps.

Patients in the first group had removal of affected tissues with interstitial laser coagulation. We used Nd: YAG laser. Optical fiber of Nd: YAG laser under ultrasound control was put in the affected tissue at a depth not less than 6 mm from the surface and placed in parallel to the skin surface. Further, the method of tunneling was conducted with radial interstitial laser coagulation of the total volume of the affected tissues.

Patients in group 2a underwent the removal of affected tissue with simultaneous closure of the defect.

Patients in group 2b underwent the excision of malformation with the overlying skin. The formed skin defect was closed with secondary healing. There were used special hemostatic dressings for 2 - 4 weeks (time dependent on the characteristics of wound healing process, so determined for each patient individually).

Summary and Conclusions.

All patients managed to get acceptable aesthetic results.



P-289

PRE-SURGERY ORTHODONTIC TREATMENT OF CHILDREN WITH BILATERAL CLEFT LIP AND PALATE

Adil Mamedov, Kucherov Urii, Zhirkova Ulia, Olga Nelyubina, Andrei Zhuk, Victoria Kharke, Anastasia MacLennan, Zhanna Blinder, Anna Shegiryay

I.M.Sechenov First Moscow State Medical University, Moscow, Russian Federation

Objective: Cleft lip and palate, one of the most common congenital anomalies, occurs with incidence in the region of 1:750 births in Russia. Treating children with cleft lip and palate demands multidisciplinary approach. In some cases it is less possible to perform a successful surgery on an infant with bilateral cleft lip and palate without primary orthodontic treatment.

Methods: In collaboration with orthodontists, a new approach has been developed at our department, in management of children with Cleft lip and Palate at the age of 2 months. Latham orthodontic appliance was used at the age of 2 months prior to the operation primary cheiloplasty. After 2 weeks, primary single-step bilateral cheiloplasty with partial vomer osteotomy carried out.

Results: Dynamic study of the post-operation results showed a more favourable aesthetic and functional outcome in children with bilateral cleft lip and palate, using pre-surgery orthodontic treatment.

Conclusion: Early orthodontic treatment for children with cleft lip and palate alveolar process is necessary to ensure a secure fit of the orthodontic appliance. This reduces treatment time and create favourable conditions for primary cheiloplasty, postoperative period and prevent development of secondary deformities.

**P-297****TMJ ANKYLOSIS AND CORONOID HYPERPLASIA: SURGICAL AND REHABILITATIVE PROTOCOLS**

G. Elia, M. Galiè, R. Tieghi, L. Clauser

Maxillo-Facial Surgery, Sant Anna Hospital & University, Ferrara (Cona), Italy

Temporomandibular Joint Ankylosis (TMJA) is a severe disorder described as an intracapsular union of the disc-condyle complex to the temporal articular surface with bony fusion.

The causes of ankylosis of the mandible can be classified as congenital, traumatic, inflammatory and neoplastic. Idiopathic forms including enlarged coronoid processes have been considered as causes of restricted mouth opening as a whole.

The management of these disabilities are challenging and rarely based on surgical and rehabilitation protocols.

METHODS

We describe the treatment in two young adults affected by Goldenhar syndrome and Pierre Robin sequence with reankylosis after previous surgical treatments. Moreover three cases of congenital idiopathic ankylosis in severe craniofacial deformities are reported.

Details of intraoperative management and postoperative care are described.

RESULTS

Surgical results in terms of post-operative mouth opening are reported in the different steps of the treatment. Our study also emphasizes the significance of three-dimensional CT techniques for diagnosis and surgical planning, the superiority of coronoidectomy over coronoidotomy and of the extraoral approach over the intraoral approach, and the importance of dynamic physiotherapy to prevent postoperative scar formation

CONCLUSION

Management of TMJA is difficult as no surgical protocols have been suggested. Failure and reankylosis are common. In children the aim of surgery is to recover morphology and function with normal growth, appropriate speech development, dental occlusion, and normal development of the facial skeleton.

The best treatment is yet to be found because no consensus in the literature has been established. Surgical treatment must be tailor-made for each patient and adequate post-operative Rehabilitative Physiotherapy Protocol (RPP) is necessary to achieve success.

**P-310****IS CRANIOFACIAL ASYMMETRY PROGRESSIVE IN UNTREATED CONGENITAL MUSCULAR TORTICOLLIS?**

M.C. Park, I.J.Lee, H.S.Lim, S.Y.Lim, S.J.Seo

Department of Plastic and Reconstructive Surgery, Ajou University Hospital, Suwon, South Korea

Background: Although craniofacial asymmetry is frequently involved in patients with congenital muscular torticollis, it has not been evaluated appropriately. The authors analyzed preoperative craniofacial asymmetry objectively and confirmed the relationship between craniofacial asymmetry and aging in congenital muscular torticollis patients who underwent surgical release.

Methods: The authors retrospectively measured preoperative craniofacial asymmetry using the Cranial Vault Asymmetry Index and intercommissural angle and reviewed preoperative rotational and flexional deficit of neck movement for 123 congenital muscular torticollis patients who underwent surgical release at Ajou Medical Center from February of 2007 to February of 2011.

The relationships among Cranial Vault Asymmetry Index, intercommissural angle, rotational deficit, flexional deficit, and age were analysed. Mean values of dependent variables were compared after patients were grouped by age.

Results: Mean age at operation was 82.5 months (range, 5 to 498 months). Seventy-one percent ($n = 87$) of patients had a significant cranial asymmetry and 87 percent ($n = 107$) had a significant facial asymmetry. In correlation analysis, intercommissural angle increased proportional to age ($r = 0.334$, $p = 0.000$), especially before 3 years ($r = 0.42$, $p = 0.001$). Cranial Vault Asymmetry Index was unrelated to age or rotational or flexional deficit. Rotational deficit decreased proportional to age ($r = -0.229$, $p = 0.032$). By analysis of variance test, intercommissural angle and rotational deficit between the age groups were statistically significantly different ($p < 0.05$).

Conclusions: In congenital muscular torticollis, facial asymmetry is progressive if the contracted sternocleidomastoid muscle is not released, although cranial asymmetry is already determined in those younger than 6 months. Early correction of torticollis should be considered to prevent progression of facial asymmetry in congenital muscular torticollis patients.



P-321

EVALUATION OF THE SECONDARY ALVEOLAR BONE GRAFTING AND THE PALATAL FISTULA REPAIR IN THE BILATERAL CLEFT LIP AND PALATE.

G Captier, C Baumler, M Bigorre

Pediatric Plastic Surgery, CHRU Montpellier, Montpellier, France

Objectives: The repair of the anterior palatal fistulas is difficult in the bilateral cleft lip and palate (BCLP). Their repair can be performed at the same moment that the secondary alveolar bone grafting. The objective was to review the result of this protocol concerning the repair of the fistula and the complications

Methods: Among 330 secondary alveolar bone grafting operated between 2001 and 2013, 73 were BCLP. The operating parameters were the existence of an isolated repair of the fistula or associated with a secondary alveolar bone grafting. The bone graft and the gingivoperiosteoplasty (GPP) were bilateral in every case. The assessment criterion was the rate of the recurrence of the fistula and the complications.

Results: All in all 26 children (35 %) had a surgical repair for the anterior palatal fistulas, of which one complete bilateral cleft lips. On average, there were 1.15 procedures by child (1 to 3) to repair the fistula. The repair of the fistula was made without bone graft in 27 cases with a rate of recurrence of 40 % (11/27). The recurrence was treated at the same time as the secondary bone grafting in 8 cases. The repair of the fistula was associated with the secondary alveolar bone grafting and GPP in 15 cases with a rate of recurrence of 20 % (3/15). No vascular complication of the premaxilla was noted. A complete failure of the graft secondary to infection was seen in 1 case of bone graft with fistula (1/15) and 1 case of bone grafting without fistula.

Conclusions: The bilateral secondary alveolar bone grafting associated with the palatal fistula repair reduces by two the risk of the recurrence of the fistula without risk for the vascularization of the premaxilla. The infectious risk seems increased in the case of the treatment of the fistula at the same time as the bone graft. However, the benefits of the repair at the same moment the bilateral alveolar cleft and the fistula justifies this protocol under the cover of an antibiotic prophylaxis and of a tight closure without tension of the GPP.

**P-326****SURGICAL TREATMENT STRATEGIES FOR PATIENTS WITH MAXILLOFACIAL DEFORMITIES ASSOCIATED WITH MUSCULAR STIFFNESS**

H.G.Kim, Y.D. Kim

Department of Oral and Maxillofacial Surgery, School of Dentistry, Pusan National University, Yang-san city, South Korea

Objective : Maxillofacial deformities are malformations in the bones or soft tissues of the face which may be due to a variety of causes. Skeletal problem by external factors can cause maxillofacial deformities and congenital malformation such as cleft lip and palate, congenital muscular torticollis, such as muscular diseases, severe trauma and tumour surgery, and the like. Congenital muscular torticollis is caused by contraction of unilateral sternocleidomastoid muscle that the neck movement is limited by the shortened sternocleidomastoid muscle, as a result the affected side head is tilted. Muscle stiffness arising from a variety of causes, can result in inhibiting the skeletal growth and deformed facial asymmetry causes. We introduce classification system of maxillofacial deformities associated with muscular stiffness, and will provide the appropriate treatment protocol about the case.

Materials and methods : We studied patients with maxillofacial deformities associated with muscular stiffness. Patient with facial asymmetry and undergrowth due to congenital muscular torticollis were observed, then orthognathic surgery and unilateral sternocleidomastoid muscle resection was performed and case with mandibular deficiency due to suprahyoid muscular stiffness with cleft in mandible were observed then distraction osteogenesis and muscular release technique was performed.

Results : The results of surgical treatment that was performed in this hospital showed a good prognosis and both patients were performed additional rehabilitation. The degree of postoperative improved asymmetry was analyzed by clinical photos and X-ray data.

Conclusion : Treatment of most maxillofacial deformities is complex and functional aspects and psychological aspects should be considered. In order to establish treatment protocols, the hard tissue, and the defect classification is needed for soft tissue symmetry and the amount of defect. Also through careful analysis of preoperative planning, the correct treatment is required.



P-335

TREATMENT OF CHILDREN WITH CLEFT LIP AND PALATE. OWN EXPERIENCE.

S. Dubin, T. Gromova, D. Komelyagin, A. Petuchov, D. Romanov, V. Popov, O. Patches

Maxillofacial surgery, Pediatric st. Vladimir hospital, Moscow, Russian Federation

Objectives: retrospective analysis of patients with cleft lip and palate in st. Vladimir hospital to evaluate effectiveness of treatment tactics.

Materials and methods:

254 children ranging from 4 months to 17 years with cleft lip and palate underwent treatment at st. Vladimir hospital since 1998.

Primary surgery was performed after 4 months of life and included 3 components: cleft lip closure, nose repair and septum reposition (cheilorhinoseptoplasty - own modification).

At 1-1,5 year (at early stage of speech formation) - one-stage uranoplasty (own modification).

At 6-7 years (before school entering) - reconstructive cheilorhinoplasty.

At 12-14 years - alveolar bone grafting using patient's skull model.

At 15-17 years - finishing cheilorhinoplasty (if it is necessary).

Babies with bilateral cleft lip and palate underwent early orthopaedic treatment for decreasing intermaxillary bone protrusion (after 2 months).

During all period of observation every patient underwent active orthodontic treatment.

Conclusion: used tactics, methods and terms of surgeries allow to accelerate social adaptation of children with cleft lip and palate.

**P-344****LEONTIASIS OSSEA, A RARE PRESENTATION OF SEVERE HIPERPATHYROIDISM SECONDARY TO CHRONIC RENAL FAILURE.**

F. Donoso-Hofer^{1, 2}, G. Zamorano², L. Nuñez², L. Álvarez², P. Hernández³, F. Vásquez³, MA. Fernández^{1, 2}, M. Landaeta¹, AV. Ortega²

¹ *Maxillofacial Surgery, San Juan de Dios Hospital, Santiago, Chile*

² *Maxillofacial Surgery, Faculty of Dentistry, University of Chile, Santiago, Chile*

³ *Endocrinology, San Juan de Dios Hospital, Santiago, Chile*

The aim is to present a rare case of hyperparathyroidism secondary to chronic renal failure expressed in maxillary bones as Leontiasis ossea. The problem lies in the decision to operate or wait for the malformations to involve.

The case of a 46 years old female patient with the diagnosis of severe Hiperparathyroidism secondary to chronic renal failure is presented. A marked enlargement of the maxilla and mandible is observed and also an important enlargement of the hard palate which hinders proper ventilation and feeding. The patient had been receiving haemodialysis over the previous 6 years. The complete x ray examination showed marked osteoporotic changes throughout the skeleton. The facial CT showed marked osseous proliferation in the maxilla and the mandible causing severe bony expansion. There was also a loss of normal bony architecture involving the skull and the skull base with obliteration of the maxillary sinus.

The patient was submitted to a total parathyroidectomy 8 months before consultation, but the current laboratory exams confirmed the preliminary condition: PTH 1907.8 pg/mL (12.0-88.0 pg/mL). A Parathyroid scintigram was performed and revealed the presence of an ectopic gland located in the left cervical region. On histologic examination of the maxillary incisional biopsy the final diagnosis was a Hyperparathyroidism brown tumour.

The Leontiasis ossea is a term that can be used to describe the facial and cranial bones hypertrophy and deformation that resembles the face of a lion causing significant aesthetic and functional changes affecting the quality of life. Despite having the possibility of a surgical remodelling of the maxillary bones to restore function and aesthetics of these patients, there are many considerations before deciding to enter the Operation room. In hospitals with limited resources such as ours, there is no possibility to access the intraoperative PTH, so often when facing the presence of an ectopic gland, it is impossible to eradicate the problem and therefore, injuries remain immature preventing its final remodeling and even perpetuating its growth.

**P-361****CHERUBISM WITH ORBITAL INVOLVEMENT: COMPREHENSIVE SURGICAL MANAGEMENT**

P. de Leyva¹, J.M. Eslava¹, M. Sales-Sanz², G. García-Serrano¹, D. Villegas¹, I. Page¹, E. Sánchez-Jáuregui¹, J. González¹, J.J Acero¹

¹ *Oral and Maxillofacial Surgery, Ramón y Cajal University Hospital, Madrid, Spain*

² *Ophthalmology, Ramón y Cajal University Hospital, Madrid, Spain*

Objectives

Cherubism is a hereditary childhood disease of autosomal dominant inheritance. It is more common in males. The penetrance lies at 80%, with variable expressivity. Its main clinical characteristic is a painless symmetrical swelling of the jaws with polycystic destruction of the bone structure. Delayed or missing dentition, dental root resorption and misaligned or impacted teeth are typical findings, causing progressive malocclusion. It is an autolimited disease, and some cases of spontaneous regression have been described. Approximately 250 cases have been reported, but less than 10 had orbital involvement. The authors' aim is to present two new cases of cherubism with orbital involvement making a comprehensive approach of this condition, from the surgical management of the orbits to the restoration of the oral function with dental implants.

Methods

Two clinical cases of cherubism with orbital involvement are presented. A woman with wide involvement of the maxillary bone including the floor of the orbits causing diplopia and visual loss, who also had an abnormal mandible and malocclusion. And a woman with important diplopia and proptosis of the eyes because of a dysplastic fibrous mass growing from the floor of the orbits. For the first patient, the abnormal maxillary bone was remodelled and reshaped. A combined craniofacial approach (bilateral coronal and pterional) allowed the excision of the orbital tumours. The patient underwent preprosthetic surgery and dental rehabilitation years later. For the second patient an upper palpebral fold incision combined with a transconjunctival incision with lateral canthotomy was performed in order to excise the orbital tumours. Dental rehabilitation was performed as well. A review of the most relevant published articles related to cherubism is made.

Results

Surgery resulted in a significantly improved functional and aesthetic outcome for both patients, with no complications and a stable clinical situation on follow-up.

Conclusion

Cherubism is a rare, non neoplastic disease affecting the jaws but also the orbits. Facial deformity, malocclusion and visual impairment set the need for a multidisciplinary team approach in order to get successful outcomes in means of function and aesthetics.



P-369

PROGNOSIS OF DENTAL IMPLANTS IN CLEFT LIP, ALVEOLUS AND PALATE PATIENTS – A SYSTEMATIC REVIEW

K. Wermker¹, S. Jung², T. Annussek², U. Joos³, J. Kleinheinz²

¹*Cranio-Maxillofacial Surgery, Head and Neck Cancer Centre, Fachklinik Hornheide, Muenster, Germany*

² *Cranio-Maxillofacial Surgery, University Hospital Muenster, Muenster, Germany*

³ *CFC CranioFacialCenter, CFC Muenster, Muenster, Germany*

PURPOSE: Missing teeth are a major problem in cleft patients and require specialised prosthetic management, including dental implants. The aim of this review is to investigate the optimal date for implant insertion in patients born with cleft lip and palate after bone grafting and to assess the long-term prognosis of the inserted dental implants.

MATERIAL AND METHODS: A systematic review of current literature electronically in PubMed/Medline, Embase and DIMDI and an additional handsome search was performed. Relevant publications were assessed with regard to their evidence according to the guidelines of the Oxford Centre for Evidence based Medicine.

RESULTS: 49 publications (pro- and retrospective clinical studies, case series and case reports) were included for analysis; but only 18 clinical papers reported survival rates for dental implants (in summary 670 implants in 460 cleft patients). Major evidence levels were 3b (case control studies) and 4 (case series, case reports). Reported 5-year-survival rates for dental implants in clefts ranged from 80 % to 96 % (mean 88.6 %). Implant placement is favoured after completion of growth and mostly recommended within 4 to 6 months after bone grafting.

CONCLUSIONS: Dental implants in patients with cleft lip and palate show high success rates and allow for sufficient oral rehabilitation. Due to lack of enough prospective clinical studies on dental implants in cleft patients, found evidence is low and not sufficient.

**P-371****RESULTS OF SPEECH IMPROVEMENT FOLLOWING DIFFERENT TECHNIQUES OF SURGERY FOR VELOPHARYNGEAL INSUFFICIENCY**

K. Wermker¹, H. Luenenbuerger¹, T. Annussek², U. Joos³, J. Kleinheinz², S. Jung²

¹ *Cranio-Maxillofacial Surgery, Head and Neck Cancer Centre, Fachklinik Hornheide, Muenster, Germany*

² *Cranio-Maxillofacial Surgery, University Hospital Muenster, Muenster, Germany*

³ *CFC CranioFacialCenter, CFC Muenster, Muenster, Germany*

Objective: Velopharyngeal insufficiency (VPI) can be caused by a variety of disorders. The most common cause of VPI is the association with cleft palate. The aim of this study was to evaluate the effectiveness of four different surgical techniques for patients with VPI: 1) velopharyngoplasty with an inferiorly based posterior pharyngeal flap (VPP caudal, Schönborn-Rosenthal), 2) push-back operation (Dorrance), 3) combination of 1 and 2, and 4) levatorplasty (Sader).

Patients and methods: 54 subjects (35 females, 19 males) with VPI were analysed. Hypernasality was judged perceptually and nasalance data were assessed objectively using the NasalView® system preoperative and 6 months postoperative. Additionally, the velopharyngeal closure pattern was evaluated by nasopharyngoscopy preoperative.

Results: Perceptual analysis showed better speech results regarding hypernasality for VPP caudal, push-back, VPP caudal combined with push-back and levatorplasty in 89%, 43%, 88% and 75%. Objective analysis showed a statistically significant reduction of nasalance for VPP caudal and VPP caudal combined with push-back ($p < 0.01$). Concerning the levatorplasty and push-back operation, significant reduction of nasalance was assessed only in some cases ($p < 0.05$). However, there were no statistically significant differences between the four surgical techniques.

Conclusion: Based on our findings, there is a possible advantage for VPP caudal and VPP caudal combined with push-back.

**P-372****ANATOMICAL AND FUNCTIONAL REHABILITATION OF PAEDIATRIC PATIENTS WITH ECTODERMAL DYSPLASIA**

D. Noy, O. Emodi, A. Rachmiel

Rambam Health Care Campus, Haifa, Israel

Background: Paediatric patients with Ectodermal Dysplasia (ED) present a challenge to the cranio-maxillofacial surgeon due to hypoplastic jaws, relative class III relation of the jaws, and hypodontia to a varying degree.

Objective: To retrospectively present and evaluate the surgical techniques and approach in treating 9 paediatric patients with ED.

Materials & Methods: We report the treatment of 9 paediatric ED patients with varying degrees of deformity in regard to atrophic jaws, hypodontia, and bimaxillary relations. The scope of surgical techniques is outlined; One patient was rehabilitated by partial dentures and dental implants, 5 patients had undergone autogenous bone graft implanted for sinus augmentation and mandible reconstruction, 1 patient has had distraction osteogenesis of the upper jaw for correction of the facial deformity and 2 patients had undergone Le Fort I advancement.

Results: Bone graft incorporation was successful in all patients. Skeletal rehabilitation was achieved through orthognathic surgery and distraction osteogenesis. Dental implants were inserted in part of the patients with full osteointegration. There was no evidence of postsurgical complications.

Conclusion: Facial bone reconstruction and dental rehabilitation in paediatric ED patients does not follow the same chronological sequence as in healthy children. Dental implants should be placed as soon as reconstructed bone is available. The challenges for reconstruction are hypoplastic jaws mainly in the antero-posterior and transverse dimensions. The main problem of children with ED is functional and psycho-social. Hypodontia and sometimes anodontia cause a typical elderly edentulous appearance. We show in our study that early bone reconstruction and placing of dental implants will improve quality of life for paediatric ED patients. Surgical technique and age of intervention should be tailored on an individual basis and address both hard and soft tissues deficiency issues. The approach must be multidisciplinary. The armamentarium of surgical techniques to overcome the hypoplastic jawbones comprises LeFort I osteotomy with downgrafting, bilateral sinus augmentation, zygomatic implants, onlay/inlay augmentation, and distraction osteogenesis. Several interventions are usually needed to achieve a satisfactory anatomical and functional result.



P-448

RETROPREMAXILLARY VOMER RESECTION – AN ALTERNATIVE IN MANAGING THE PROTRUSIVE PREMAXILLA IN BILATERAL ANTERIOR CLEFT LIP.

F. Urtila^{1, 2}, H. Urechescu^{1, 2}, H.F. Sailer³, M. Pricop¹, E. Urtila², Patricia Urtila⁴

¹ *Maxillofacial Surgery, University of Medicine and Pharmacy Victor Babes, Timisoara, Romania*

² *"Prof. Dr. Urtila" Medical Center, Cleft Children International CCI, Timisoara, Romania*

³ *Sailer Clinic, Cleft Children International CCI, Zurich, Switzerland*

⁴ *Pediatrics Department, University of Medicine and Pharmacy Victor Babes, Timisoara, Romania*

Introduction and Objectives:

In bilateral cleft lip we often find a protrusive or lateral deviated premaxilla that can be a confounding problem making this kind of patients to be considered among the most difficult regarding surgical correction.

Material and Method:

In these cases, for a correct alignment of the premaxilla we did a triangular vomer resection behind the premaxilla. This approach allowed us to mobilize and secure the premaxilla in the correct desired position. An important aspect we always consider is the correct alignment with the mandibular arch.

Results:

This method allows a good reconstruction of the premaxilla in the correct anatomical position with satisfying results regarding esthetic and functional outcome

Conclusions:

We present the protocol and technique used in management of protrusive premaxilla in bilateral anterior cleft lip in "Prof. Dr. Urtila" Medical Center, Timisoara, Romania.



P-450

PROSPECTS OF INCREASING EFFICIENCY OF RECONSTRUCTIVE RHINOCHEILOPLASTY

V.A.Vissarionov, M.Sh. Mustafaev, Z.F. Kharaeva, S.M.Mustafaeva, D.T. Kuzhonov

Medical department, Kabardino-Balkarian State University, Nalchik, Russian Federation

Reconstructive rhinocheiloplasty is one of the basic surgical procedures in treating congenital upper lip and palate cleft. We developed and improved optimal techniques for unilateral defects - rhinocheiloplastic method consisting of moving flattened nose wing as a "sliding" flap. It includes the mobilized inner one third nose wing with a continuation - a fragment of upper lip scar tissue to fill the occurring defect of mucous membrane of nose vestibule fundus. We produce primary and reconstructive surgery on the upper lip using Millard's method. Having bilateral injury we move flattened nose tip as a "bifurcated" flap including mobile cartilaginous structures of the nose tip and two scar- modified strips of the upper lip.

The aim of this research is analysing the results of treatment of patients with congenital upper lip clefts.

Materials and Methods. We analysed historical data of 3600 patients over the last 25 years and the results of treatment of 220 patients with congenital upper lip cleft. Patients from our own observation group were divided into five age groups: 1) children aged 4 - 6 months, 2) 7 months - 2 years old, 3) 2 - 8, 4) 8 - 16, 5) over 16 years old. We detected the frequency of secondary cicatricial upper lip and nose deformities.

Results. Analysis of archival materials showed that complications like scar tissue retraction of the upper lip and nose end section occurred in 5 % cases. Our own observations showed that more often the first group children (7 %) have pathological scarring after extended mobilization of upper lip tissues, and also the fifth group patients (7 %) after reconstructive operations, during the active hormonal changes. Girls have scar deformations, causing aesthetic and functional abnormality, twice more often than boys.

Conclusions. High percentage of cicatricial deformities requires analysing of general and local causes of hypertrophic or keloid scar formation. The research is necessary to identify the most significant factors affecting the characteristics of scarring process after reconstructive rhinocheiloplasty.

**P-512****BOTULINUM TOXIN IN TREATMENT OF MASSETERIC HYPERTROPHY.**

A. Kulyapina, A. García Sevilla, M. Tousidonis Rial, C. Maza Muela, J. Ruiz Cruz, J. Salmerón Escobar

Maxillofacial Surgery, Gregorio Marañón General University Hospital, Madrid, Spain

INTRODUCTION

Masseteric hypertrophy is an enlargement of one or both masseter muscles. It can be either acquired or congenital. In most cases it represents a work hypertrophy due to clenching, an unconscious habit, bruxing during sleep, constant gum chewing, and mastication of hard foods. It can cause myofascial pain problems and cosmetic alteration that require intervention. Surgical reduction can be accomplished by removing the medial bulk of the muscle by either extraoral or intraoral approach. Surgical reduction of masseter muscle is an invasive treatment which is not exempt from some undesirable consequences. Botulinum toxin type A (BT) injection into the masseter muscle is a novel promising technique in management of masseteric hypertrophy. It is based on the principle that BT causes muscle paralysis by binding to the cholinergic motor end-plates. The muscle becomes functionally denervated, so its atrophy and decreased bulk are produced.

PATIENTS AND METHODS

Six patients with masseteric hypertrophy were studied. The diagnosis was confirmed through physical and radiographic examination (CT or MRI). Botulinum toxin injections were selected as the treatment method. None of the patients had previously received treatment. The limits of the hypertrophic muscle and botulinum toxin injection sites were determined by palpation and observation. After defining four muscle borders a line was drawn from tragus to the mouth angle. Four injections of botulinum toxin were administered beneath this line. The patients received medium of 80 UI of botulinum toxin. Injections were performed in outpatient setting. The effect of BT injections lasted for 4 months. The BT therapy was applied every six months till satisfactory functional and/or aesthetic result obtained.

RESULTS

A satisfactory aesthetic result and regression of masseteric hypertrophy were observed in all cases. Relief of the mild muscular pain was reported in all cases. No side effects were observed. BT injections therapy was accompanied by treatment of parafunctional habits if detected.

CONCLUSIONS

The use of botulinum toxin in masseteric hypertrophy is a relatively novel therapy. It is nontraumatic and can be performed in outpatient setting. It has low rate of side effects and more cost effective than traditional surgical treatment.



P-513

BECKWITH- WIEDEMANN SYNDROME: LONG TERM CHANGES IN OPEN BITE AFTER GLOSSECTOMY.

E. Alonso Rodríguez, E. Gómez, J. Guiñales, P.Losa Muñoz, D. García Molina, M. Burgueño

Hospital Universitario La Paz, Madrid, Spain

OBJECTIVE: Macroglossia causes functional deficits such as airway obstruction, drooling, phonation difficulties and produces a protrusion of dentoalveolar structures resulting in an anterior open bite and a prognathic mandibular apparence. Macroglossia is presented in the majority of patients with Beckwith- Wiedemann syndrome (BWS) and surgical treatment may be indicated.

MATERIAL AND METHODS:A retrospective review was performed including all patients with this syndrome who underwent surgical tongue reduction between 2004 and 2014 in Hospital Universitario La Paz, Madrid.

RESULTS: Among the 24 patients with BWS, 10 surgeries were indicated. Tongue protrusion with open bite was the main indication for surgical treatment. We reduced the size of the tongue performing a glossectomy using the keyhole technique. We analysed the relation between age of surgery and evolution of prognathism. Complications and recurrences were minimal and a satisfactory outcome was observed with a decrease in anterior open bite.

CONCLUSION: This study demonstrates that surgical treatment in patients with BWS and open bite with macroglossia, provides a long-term positive and stable results with a satisfactory outcome in dentoskeletal alterations.

**P-522****SURGICAL CORRECTIO IN CLEFT CASES**

S.Naumovski, D.Monevska-Popovic, A.Ismani, S.Bozovic

Clinic for maxillofacial surgery Skopje, Skopje, Macedonia

The treatment of patients affected by any type of cleft is based on a multistage procedure of surgical and nonsurgical treatments in accordance with the different types of deformity. Labial and nasal deformities have always been a fundamental problem in the treatment of cleft lip, alveolus and palate patients. The anatomical, morphological and functional reconstruction of all upper lip layers and basis of the nose presents the main goal of cheiloplasty.

It is well known that primary cheiloplasty (due to bad timing of the surgical intervention, diastasis of maxillary segments, insufficiently matured tissue, improper method, postoperative dehiscence due to an infection or tension, a surgeon with lack of inspiration) may result in functional and aesthetic parts that necessitate correctional surgical interventions.

These parts usually include the lip, nose, palate, and alveolar process. Each deformation has its own complex structure. The primary surgical treatment of nasolabial area is of paramount importance in order to obtain both an esthetical correction of the deformity and a progressive and a balanced development of mid-face.

Over time, the surgical approach for the correction of a nasal deformity in a cleft lip-cleft palate has changed notably and the protocol of treatment has evolved continuously.

Our interest is focused on the various approaches of surgical solution of newly formed deformations.



P-523

BRACHYCEPHALY; WHAT CAN WE DO?

D. Pinos Galindo, L. Zamudio Sanchez, M. Martinez Navarro, B. Ros López, C. Sánchez Navarro, F. Ruiz Delgado, L. Bermudo Añino, L. Bermudo Añino, L. Bermudo Añino

H.R.U. Carlos Haya, Málaga, Spain

Background:

The fusion of the bilateral coronal fissure produces an alteration of the front aspect of the frontal bone and supraorbital bar, which produces an aesthetical alteration that in the most of the cases is necessary the surgical correction. Many surgical techniques have been described for its solution; we present our experience and many variations of the traditional methods.

Methods:

Patients diagnosed of bilateral coronal synostosis, previously assessment was done by 3-D tomography and the use of steriolithographic models in some of cases. Z-form incision was made, subgaleal dissection, frontal bone flap was taken and a variation of osteotomies was performed individualized for each case with modification of the supraorbital bar.

Results:

Four patients diagnosed of brachycephaly underwent surgery since 2008 to 2013, three female and one male, the mean age of surgery was 13 months, Three 180° rotation was performed of the frontal bone with modification of the supraorbital bar. One case of a complete transposition of the parietal bone was done with superposition on a new supraorbital bar.

Conclusions:

Brachycephaly is a great surgical challenge because each patient has specific aesthetic details that must be considered before the operation is performed, good assessment and planning of the process should be done. A standard surgical process cannot be done; the individualized design of the surgical method is mandatory.



P-542

PLAGIOCEPHALY; A MODIFICATION OF THE SURGICAL TECHNIQUE

D. Pinos Galindo, C. Sanchez Navarro, E. Agustín Navarro, M. Martínez Navarro, A. Acosta Moyano, Y. Aguilar Lizarralde

Oral and Maxillofacial surgery, H.R.U. Carlos Haya, Málaga, Spain

Background: Surgical correction of plagiocephaly means an aesthetic and functional challenge in establishing the ideal technique for each patient. Since the late nineteenth century when the first procedures were described to present day many variants of surgical treatments have been described, we present a variation of the remodelling technique.

Materials and Methods: A 1 year 3 months boy, that in the physical examination presents a deficit in the right aspect of the frontal bone with a compensatory bossing in the left side of the frontal bone, also shows a clockwise rotation around the head circumference. Bicoronal dissection was performed, subperiosteal detachment, frontal craniotomy in one piece and subsequent extraction of a wedge of 2.5 cm. of the frontoparietal bone including left coronal suture, removal of the supraorbital bar, translocation toward left of the frontal bone with out a 180° rotation, transposition of the "slice" of bone removed to the right side and fixation.

Conclusions: The craniofacial remodelling must involve an individualized planning for each patient seeking optimal results, depending on patient age, severity of deformity, contralateral bossing.

**P-552****QUALITY OF LIFE AND SCREENING FOR MENTAL HEALTH ISSUES IN CRANIOPLASTY PATIENTS**

E Yeung¹, R Burgess¹, F Matcham², J Hutton², R Bentley¹, K Fan¹

¹ *Department of Oral and Maxillofacial Surgery, Kings College Hospital, London, United Kingdom*

² *Institute of Psychiatry, Department of Psychological Medicine, King's College London, London, United Kingdom*

Objectives

Cranioplasty is a procedure designed to restore the continuity of the skull. It is primarily a protective procedure but also has aesthetic benefits and some studies suggest that some patients benefit from an improvement in function post-operatively.

A screening tool to identify patients who may benefit from psychological assessment would allow timely referral for patients who suffer from anxiety, depression or post traumatic stress disorder (PTSD) following their brain injury.

Methods

Patients undergoing primary cranioplasty under the oral and maxillofacial department were asked pre-operatively to complete a composite questionnaire comprised of a series of validated questionnaires: Generalised Anxiety Disorder questionnaire (GAD-7), Patient Health Questionnaire (PHQ-9), Quality of Life after Brain Injury (QOLIBRI), Post Traumatic Stress Disorder questionnaire (PTSD-4) and a question asking about their employment status. They were then asked to complete an identical questionnaire at 3-6 months post-operatively. Pathways were put in place for patients who screened positively for further management. This was either via their GP with a recommendation for referral to their local Improving Access to Psychological Therapies (IAPT) service or via referral to a named neuropsychiatrist for patients who screened positively for major depression or PTSD.

Results

8 patients were enrolled over a period of 6 months. 1 patient was excluded following plate removal due to infection. Pre-operatively, 1 patient was identified with anxiety, 1 with anxiety and post-traumatic stress disorder, and 1 patient with moderate depression. The patient who screened positive for anxiety and post-traumatic stress disorder screened negative for both post-operatively. 3 patients were able to resume work post-operatively who previously declared they were unemployed because of ill-health.

Discussion

Cranioplasty is an important procedure for restoring the protective continuity of the skull and may also have functional benefits. As craniectomies for post-infarct management become more common, as well as in cases of trauma, we need to make provision for addressing the psychological impact of sustaining a brain injury. A simply administered screening tool may allow timely referral for patients who would benefit from further psychological assessment. Successful cranioplasty may be a factor in allowing patient to return to work following their brain injury.



P-573

THE RESULTS OF THE LOWER ARCH VESTIBULOPLASTY IN CHILDREN

A. Gurgenadze, O. Koparzova, E. Kuznetsova, O. Loginopulo, A. Klinovskaya

MSMSU named after A.I. Evdokimov, Moscow, Russian Federation

Purpose. To evaluate the surgical treatment effectiveness of the mouth vestibule small lower arch in children. This technique was proposed by the Department of Paediatric Maxillofacial Surgery.

Methods. For the period 2006-2013, 480 children aged 10-11 years with the mouth vestibule small lower arch were operated at the outpatient department. The reason for surgery in the most of children (420 patients - 87%) was therapeutic indications (atrophic gingivitis, gum recession exposing of the neck and/or roots of teeth 31, 41) and orthodontic indications (the impossibility of fixing removable orthodontic appliances in orthodontic treatment) in 60 patients (13%).

Vestibuloplasty was performed according to the method developed by the Associate Professor Vashkevich (DPMS). The optimum age for this operation is 10-11 years to avoid possible injury rudiments in teeth 33, 43. Under the infiltration anaesthesia from the fold in tooth 34, then to the lower lip and to the fold in tooth 44 shaped apron incision was made, mucosal flap from the lower lip to transitional fold was separated by semi dull floor by sharp. The periosteum was incised and the anterior alveolar part of the mandible at the vestibular side was skeletalized and the separated mucosal flap was put on the bare bone and fixed by pressing a saline swab for 2-3 minutes. The stitches were not put.

Due to the simplicity of the proposed method the operation was performed successfully in the outpatient department. All children underwent surgery easily. There were no complications during surgery in 480 children. In the postoperative period, postoperative scar formation was observed in 6 children (1.29 %) but it was eliminated by physiotherapy.

Conclusions. The most prolonged period of observation of the remote results is 7 years. All operated 480 children have positive results. The gum recession is not only stopped, but there is an increase of the attached part of the gingiva in the anterior portion of the alveolar part of the mandible for 1-2 mm; atrophic gingivitis is not marked. This technique can be recommended as a method of successful treatment of mouth vestibule small lower arch in 10-11 years children.



P-593

MANAGEMENT AND LESSONS LEARNT IN TREATING ARTERIOVENOUS MALFORMATIONS IN THE HEAD AND NECK

K. McMillan, L. Dunphy, H. Nishikawa, A. Monaghan

Oral and Maxillofacial Surgery, University Hospitals Birmingham, Birmingham, United Kingdom

Objective:

We present a review of 36 cases of Arteriovenous Malformations (AVMs) in the Head and Neck region treated by embolisation at Queen Elizabeth Hospital Birmingham over a 6 year period.

Method:

We conducted a review of case notes and radiographic records of all patients who received treatment in our Unit. We analysed referral patterns, distribution and severity of lesions, as well as other contributing factors. We assessed our management of these complex lesions and analysed the success of our treatment pathway. We recorded complications and outcomes.

Results:

Our case series using Onyx embolisation is large and provides a great insight into the types of cases that it is useful for. We note our complication rates and discuss the subsets of cases that did not respond to embolisation treatment. We discuss the need to surgery as an early intervention in cases where the AVM is resectable.

Conclusions:

Our experience demonstrates the need for a multidisciplinary approach to the management of AVMs in the head and neck. These complex lesions do not behave predictably and therefore a tailor made approach seems to yield the best outcomes. Onyx embolisation can offer a useful tool to treat these lesions but the complications are potentially severe and the outcome can be unpredictable.



P-609

SOFT PALATE CLOSURE WITH THE IFURLOW TECHNIQUE

K. Nagy

Bruges Centre for Cleft and Craniofacial Surgery, Bruges, Belgium

Objective: Our aim is to describe and demonstrate the feasibility of a new modified Furlow technique in the surgical management of cleft palate.

Material and methods: From January 2012, we have been using a modification of the Furlow double opposing Z-plasty in the Cleft Service of the Ist Department of Paediatrics at the Semmelweis University Budapest. This surgical modification includes the mirroring of the original Furlow flaps orally on the midline and adding a meticulous levator palati muscle identification and alignment, according to Sommerlad.

Results: This surgical technique has been used in 25 cases in the last 2 years. We have treated the 7 bilateral, 8 unilateral cleft lip and palate and 10 cleft palate patients. In all cases, the technique could ensure tension free closure. On the average, 15 minutes more operation time was needed as the conventional Furlow technique.

Conclusion: The inverted Furlow technique with a meticulous intravelar veloplasty is adequate and reliable for closing the soft palate cleft. Its long-term effect on speech development and velopharyngeal insufficiency is to be evaluated.



P-619

CRANIAL BASE SKULL ANATOMY IN HEMIFACIAL MICROSOMIA SYNDROME: IS THE POSITION OF THE TEMPORAL GLENOID FOSSA MODIFIED?

G. Marechal^{1, 2}, J. Davrou^{1, 3, 4, 5, 6, 2}, C. Neiva^{5, 4, 6}, C. Coussens⁷, B. Billotet⁷, P.A. Diner^{2, 1, 3}, N. Kadlub^{1, 3, 2}, M.P. Vazquez^{1, 3, 2}, A. Picard^{1, 3, 2}

¹ Plastic and maxillofacial surgery, Necker-Enfants Malades Hospital, paris, France

² Medicine, Paris Descartes University, Paris, France

³ Centre de Référence Maladies Rares de la Face et de la Cavité Buccale, Necker-Enfants Malades Hospital, paris, France

⁴ Cranio Maxillo Facial and Facial Plastic Surgery Department, Amiens University Hospital, Amiens, France

⁵ Medicine, Jules Verne University, Amiens, France

⁶ Facing Faces Institute, Facing Faces Institute, Amiens, France

⁷ Surgical 3D Imaging, OBL Paris, Chatillon, France

Objective

Hemifacial microsomia syndrome (HFM) is the third most common congenital craniofacial anomaly with an incidence ranging from 1:5,300 to 1:6,000. Its pathophysiology takes place in the early development of the first and the second branchial arches of the embryo, combining condyle and ramus mandibular hypoplasia with many other asymmetric bone anomalies: temporal, zygomatic, maxillary (and sometimes associated microphthalmia). The actual clinical classification of the lesions is based on the mandibular contour (Pruzansky, 1969). To this day, few studies have focused on the anatomy and position of the temporal glenoid fossa, although it represents an important parameter to take in consideration for the surgical planning. This study describes a 3 dimensional analysis of the temporal glenoid fossa position compared to the healthy side.

Methods

Twenty-two patients with hemifacial microsomia syndrome were included between 2000 and 2013 in two centres (Paris and Amiens, France). Fifteen patients were finally analysed in this study after the exclusion of particular associated syndromes and bilateral cases. Patients were divided in different groups based on the Pruzansky classification type. 3D CT scans were treated by the measurement of the distance between the bottom of the temporal glenoid fossa and a virtual plan tangent to the lateral semicircular canals. A statistical analysis was performed.

Results

The position of the temporal glenoid fossa was always not in the same plan that the healthy side one (-4.86 , +9.44 mm in height). No correlation was found between the Pruzansky classification type and the temporal glenoid fossa position on the skull base (p= 0.89).

Discussion

Position and height of the temporal glenoid fossa on the skull base is not correlated to Pruzansky classification type in HFM. However, this position is almost never at the same height than the healthy side one. This finding must be taken under consideration in the surgical planning and the Pruzansky classification is not enough to investigate the whole malformation.



P-637

TREATMENT OF THE INFLAMMATORY-HYPERPLASTIC GINGIVAL LESIONS IN ADOLESCENTS

M. Inglot, A. Bednarczyk, M. Zaleska, D. Uryga

Oral Surgery, Jagiellonian University Medical College, Krakow, Poland

Aim: Presentation of personal experience in and results of treatment of the inflammatory-hyperplastic gingival lesions in adolescents

Material: The analysis includes 13 patients aged under 16, subjected to treatment of inflammatory-hyperplastic lesions of the gingivae in the Department of Oral Surgery. The average age was 11.

Method: The result of biopsy, progression and localisation of the lesion determined the treatment option chosen:

- 1) low-invasive treatment: hygiene instructions and frequent follow-ups with re-motivation – with regard to the lesions that were below 1 cm in diameter, around erupting teeth in the aesthetic zone. The exclusive criterion was the diagnosis of the giant-cell lesion,
- 2) excision of the entire lesion together with the periosteum and subsequent secondary intention healing or covering with a mucosal flap – with regard to the lesions that were located in the non-aesthetic zone,
- 3) total excision of the lesion with subsequent coverage of the site with the muco-periosteal flap - with regard to the lesions that were located in the aesthetic zone and were larger than 1cm, exceeding a muco-gingival junction.

Results: The low-invasive treatment was carried out in a group of 5 patients. In four cases after oral hygiene improvement, total remission was achieved. In one case the partial relapse of the lesion had occurred, which subsequently was excised. Amongst the patients who have undergone the radical treatment no case of recurrence was observed. Results with regard to aesthetics and function were very good (with keratinised gingiva regeneration) or good (lack of the keratinised gingival or shallow buccal sulcus). Very good results were achieved in cases in which the muco-periosteal flap was not formed.

Conclusions:

1. Inflammatory-hyperplastic lesions non responding to the non-invasive treatment require surgical intervention
2. A proper periodontal tissue regeneration can be achieved if the bone base in the operating site is not damaged (genetically determined muco-gingival junction) without local plastic surgery.



P-659

SURGICAL MANAGEMENT OF MULTIPLE FACIAL OSTEOMAS ASSOCIATED WITH GARDENER'S SYNDROME

B. Buahin, N.Berridge, A.Sampson, M.Heliotis

Northwick Park Hospital, Harrow, United Kingdom

Objective;

Gardner's Syndrome is a rare, autosomal dominant syndrome and a variant of familial adenomatosis polyposis (FAP). It comprises a triad of multiple intra colonic polyps, extra colonic tumours of soft and hard tissue and multiple osteomas.

It is important to note that craniomaxillofacial manifestations (osteoma formation, tooth impaction, diffuse opacities in the skull, mandible and maxilla, scalp tumours) usually precede polyposis.

As the polyps of the colon have a risk of malignant transformation, early identification is paramount.

Methods;

We report a case of a 42-year old male patient with known FAP and Gardner's syndrome who was referred to the Maxillofacial Unit by our Gastroenterology colleagues at St Mark's Hospital. He complained of progressive difficulty in mouth opening and multiple bony swellings affecting the lower half of his face. Clinically, the largest lesion affected the left mandible angle but there were also notably smaller lesions around the TMJs, contralateral mandible and skull.

Results;

Surgical planning was initiated after careful evaluation of the facial skeleton on fine cut 3D reconstructed Computer Tomography (CT) scans. The patient underwent surgical resection of the largest lesions and was extremely pleased with the final aesthetic result. He remains under follow-up and no further surgery is deemed necessary.

Conclusions;

We discuss the surgical management of multiple osteomas in a patient diagnosed with Gardner's syndrome. It is important to regularly follow-up such patients to monitor for recurrence, however, the precise timing of surgical intervention remains debatable!

**P-707****FACIAL FEMINIZATION SURGERY: CONTOURING OF THE FOREHEAD AND MANDIBULAR RESHAPING**

S. Nadel, D. Blinder, R. Yahalom

Department of Oral and Maxillofacial Surgery, Sheba Medical Center, Ramat Gan, Israel

Transsexualism is a gender identity disorder in which there is a strong desire to live and be accepted as a member of the opposite sex. In male-to-female transsexuals with strong masculine facial features, facial feminization surgery is performed as part of the gender reassignment.

A strong association between femininity and attractiveness has been attributed to the upper third of the face and the interplay of the glabellar prominence of the forehead. Studies have shown that a certain lower jaw shape is characteristic of males with special attention to the mandibular angle and chin and also suggest that the attractive female jaw is smaller and more pointed at the chin with less prominent alveolar prognathism. Other studies have shown that feminization of the forehead through cranioplasty have the most significant impact in determining the gender of a patient.

Facial feminization surgeries are procedures aimed to change the features of the male face to that of a female face. These include contouring of the forehead, brow lift, mandible angle reduction, genioplasty, rhinoplasty and a variety of soft tissue adjustments.

The purpose of my presentation is to present the surgical procedures and techniques that are being used at our clinic through a case series of transsexual patients.

We perform forehead reshaping combining with brow lift and at the same surgery, mandibular and chin reshaping to match the remodelled upper third of the face. The forehead reshaping is done by cranioplasty. In addition we perform reduction of the glabella area by burring of the frontal bone. After reducing the frontal bossing around the superior orbital rims we manage the soft tissue to achieve the brow lift.

The mandibular reshaping, is performed by intraoral approach and include contouring of the angles by osteotomy for a more round shape (rather than the manly square shape angles) as well as reshaping of the bone in the chin area in order to make it more pointy by removing the lateral parts of the chin and in some cases performing also genioplasty reduction by AP osteotomy.



P-727

TONGUE-TIE RELEASE IN NEWBORN BABIES

M. Ashraf, J. Anang

Oral and maxillofacial surgery, Colchester Hospital University Foundation Trust, Colchester, United Kingdom

Objective

To investigate the benefits of tongue tie release

Methods

Babies under 12 weeks of age who were referred in for tongue-tie release were seen. Data was collected on each child to check if there was any change in weight, what their feeding habits were prior to tongue-tie release, and if they were breast alone or breast and bottle fed.

Post tongue-tie release the mother was encouraged to feed the child in a separate room. A questionnaire was completed by the parents after this time to see if they noticed any changes or if there were any complications. a repeat questionnaire was completed two months after the procedure, to see if any late benefits were noted.

Results

Immediate post tongue-tie release benefits were noted by most mothers, with very few complications.

Discussion

Tongue-tie release is a relatively simple procedure that can be carried out without anaesthetic in newborns under 12 weeks, without any apparent pain. Depending on the degree of tongue-tie, release can be very important in allowing the baby to easily feed. For both mother and baby breastfeeding can build an essential bond at this early stage. It may also be beneficial to release severe tongue-ties on newborns that are bottle feeding.



P-728

OPERATION SMILE'S GLOBAL STANDARDS OF CARE: ITALIAN EXPERIENCES

D. Scopelliti¹, R. Pucci², P. Arangio¹, R. Orsini¹, S. Marrocco¹, O. Cipriani¹, C. Carnevale¹, P. Di Curzio¹

¹ *Maxillo Facial Department, Ospedale Villa Betania ASL RME, Roma, Italy*

² *Dipartimento di Scienze Odontostomatologiche e Maxillo Facciali, Università "Sapienza" di Roma, Roma, Italy*

Objectives: objective of this work is to propose the features of safety standards used in humanitarian missions Operation Smile for the treatment of cleft lip and palate in developing countries.

Methods:

Operation smile's global standards of care can be summarized in 14 points covering all phases of mission starting from patient screening and assessment to minimum patient follow up. Recovery Room, Post Anaesthesia Care Unit and Post-Operative Intensive Care are organized with attention in order to prevent and intervene in all possible complication. Each of our volunteers is extensively interviewed, credentialed and proctored prior to joining an operative team. Skills required from each of our specialists meet or exceed those of his or her core discipline. On-going mentoring, evaluation, performance review and professional growth is central to maintaining a top volunteer corps.

Results:

Operation Smile was the first cleft organization to support the World Health Organization's Safe Surgery Saves Lives initiative, which includes the WHO Surgical Safety Checklist designed to improve the safety of surgical care throughout the world. The organization's Global Standards of Care ensures every patient treated by Operation Smile benefits from the same sophisticated equipment, procedures and highly trained, credentialed medical volunteers, no matter where they receive treatment. Medical volunteers in the United States and internationally are credentialed following Operation Smile standards to guarantee excellence in cleft care.

Conclusions: we believe that the global safety standards are an indispensable tool for the security of any activity carried out with the medical standards of excellence. developing countries where we are going to practice surgery this is even more true and necessary to ensure optimal results and minimize complications early and late.

**P-733****CLINICAL AND IMAGING FINDINGS IN CHILDREN WITH NON-SYNDROMIC LAMBDROID SYNOSTOSIS**

S. Kluba¹, K. Haas-Lude², M. Wolff², B. Will³, B. Bender⁴, S. Reinert¹, M. Krimmel¹

¹ *Department of Oral and Maxillofacial Surgery, University Hospital, Tuebingen, Germany*

² *Department of Pediatric Neurology and Developmental Medicine, University Children's Hospital, Tuebingen, Germany*

³ *Section of Pediatric Neurosurgery, Department of Neurosurgery, University Hospital, Tuebingen, Germany*

⁴ *Department of Diagnostic und Interventional Neuroradiology, University Hospital, Tuebingen, Germany*

Objective:

True lambdoid synostosis is a very rare type of craniosynostosis. Patients present with uni- or bilateral posterior plagiocephaly. The differentiation between simple positional (deformational) posterior plagiocephaly and lambdoid synostosis is not easy and to date subject of controversy. Accurate and early diagnosis is important, because treatment is different: Simple positional plagiocephaly responds to conservative treatment (positioning, physiotherapy or, in case of non-responsiveness, helmet therapy), but craniosynostosis may require neurosurgical intervention. The purpose of this investigation was to find out whether a diagnosis based on clinical inspection in patients with lambdoid synostosis is possible.

Methods:

We analysed 5 patients who underwent craniofacial intervention for unilateral true non-syndromic lambdoid synostosis concerning the frequency of occurrence of 9 different expected clinical findings and imaging.

Results:

4 of 9 clinical criteria were not presented in all cases. The abnormal position of the ears, in the vertical as well as the sagittal direction and a typical trapezoid cranial head shape were inconstant findings. Also the ridging of the lambdoid suture as an important differentiator to positional cranial deformities was only found in 2 cases.

Conclusion:

Diagnosis of lambdoid synostosis is not always possible based on clinical inspection alone in all patients. To confirm the diagnosis high-resolution ultrasound is recommended



P-734

ESTHETIC AND FUNCTIONAL OUTCOME AFTER SECONDARY CLEFT NOSE CORRECTION

N. C. Pausch, A. Hemprich

University hospital Leipzig, Craniomaxillofacial Surgery, Leipzig, Germany

Objectives:

Secondary cleft nose corrections are usually performed after end of growth. Published data occasionally report about aesthetic and functional problems after the secondary surgery. Little is known about the patient's satisfaction related to the surgical result and the accordance of these evaluations to those of a physician's assessment.

Material and Methods:

In the period January 2001 until December 2012, 256 secondary cleft rhinoplasties in adult patients were performed in our unit. We identified 186 patients with unilateral and 70 patients with bilateral cleft (157 male, 99 female). 3 to 6 months after the surgery, the patients were questioned about their satisfaction regarding aesthetic and functional outcome. Possible options were the values "good", "moderate" and "bad". The aesthetic outcome valued by the patients was compared with a physician's vote.

Results:

Two-thirds of the operated patients assessed the result of the correction to be "good", one third of the patients perceived the result to be moderate or bad. The physicians vote was throughout worse than the one of the patients. 80% of the patients reported about an improved nasal function.

Conclusion:

Cleft patients evaluate their result of the cleft rhinoplasty predominantly good. This assessment is more optimistic than the physicians vote.

**P-745****AN ASSESSMENT OF FOUR DIFFERENT TECHNIQUES OF ORBICULARIS ORIS MUSCLE APPROXIMATION IN CLEFT LIP REPAIR**

S. Naidoo, KW. Butow, J. Knips

Department of Maxillofacial and Oral Surgery, University of Pretoria, Pretoria, Gauteng, South Africa

AIMS/ OBJECTIVES:

The enhancement of the philtrum dimple and the philtrum columns are dependent upon the positioning and topography of the underlying approximated orbicularis oris muscle. The aim is to correlate surgical muscle approximation techniques (3 techniques in unilateral cleft lip repair and 2 techniques in bilateral cleft lip repair).

MATERIALS AND METHODS

Unilateral cleft lip reconstruction was performed utilizing the anatomical lipplasty with three variations in muscle approximation. The bilateral cleft lip reconstruction was performed with a modification of the Broadbent technique or Noordhoff-Trott technique with two variations of muscle realignment.

RESULTS:

Direct edge-to-edge muscle approximation in both unilateral and bilateral cleft lip reconstruction results in a flattened lip appearance. Muscle reconstruction can be performed by:

1. Direct approximation of the muscles

- in contact (unilateral and bilateral cleft lip)
- with space to enhance the philtrum dimple (bilateral cleft lip)

2. Vertical mattress suturing in overlapping the muscles to accentuate the "cleft philtrum column" (unilateral cleft lip)

3. Horizontal mattress suturing to eversion of the muscle edges (unilateral cleft lip).

CONCLUSION:

Direct approximation of the muscle edges during cleft lip reconstruction does not result in enhanced aesthetic appearance of the lip. Considerations should be given toward accentuation the "cleft philtrum column" in order to enhance the appearance of the philtrum dimple. Special suturing techniques have to be employed in both unilateral and bilateral cases in order for a superior aesthetic result of the philtrum column and dimple.



P-763

SCAPHOCEPHALY: SUTURECTOMY ASSISTED BY SPRINGS

L. Miragall¹, V. Bordes², G. Perez Herrezuelo¹, E. Lopez³

¹ *Maxillofacial Surgery, Hospital Clínico, Valencia, Spain*

² *Neurosurgery, Hospital Clínico, Valencia, Spain*

³ *Plastic Surgery, Hospital La Fe, Valencia, Spain*

OBJECTIVE: scaphocephaly is the most common type in the craniosynostosis, representing about 50% of cases. Treatment is surgical, mainly for aesthetic reasons as the incidence of functional impairment is very low. We describe a new surgical technique using suturectomy assisted by springs

MATERIAL AND METHODS: this method has been implemented in the Hospital Clinico of Valencia since 2010, based on the use of prestressed wires (springs). We present a series of eight operated children with this technique, aged between 3 and 8 months. In all cases we have made a sagittal suturectomy and placed 1 to 3 spring of different strengths depending on the subtype of scaphocephaly.

RESULTS: in all cases the cephalic index was reversed, disappearing or decreasing the dolicocephalic profile and associated with this change improving frontal and occipital bossing.

CONCLUSIONS: cranioplasty assisted by springs is a cranial remodelling technique that obtains comparable results to the gold standard in scaphocephaly surgery (pi procedure). Avoid the need for orthotics like in endoscopic suturectomy and reduces surgical time, decreases transfusion requirements and hospital stay. The changes associated in the adjacent sutures and the skull base help to improve the final phenotype of the scaphocephalic patient.



P-771

CAGLIARI SMILE HOUSE EXPERIENCE IN CLEFT LIP AND PALATE PATIENTS

L.M.Moricca, M.D.Foresti, F.M.G. Fatone, R.Paracchini, L.Vadilonga, M.Dessy, D.Scopelliti

ASL8 CAGLIARI, Cagliari, Italy

Objectives

The goal of Operation Smile is to heal children's smiles and transform their lives. According to such mission, the authors present first months (07/2013-02/2014) Cagliari's Smile House experience in management (diagnosis, surgery, follow-up and multi-specialistic evaluation) of Cleft lip and palate patients and various other craniofacial malformations.

Material and Methods

The 7th.10.2013 Operation Smile and Asl8 Cagliari signed a bilateral agreement to establish a Comprehensive Care and Training & Treatment Center in Cagliari (Sardinia, Italy) to achieve a gold standard in the treatment of patients affected by cleft lip and palate and other craniofacial malformations. Each patient received multispecialistic evaluation such as speech, dentistry, psychological, ENT, paediatric, genetic and anesthesiological and the relative treatments.

Results

From July 2013, 21 patients (7 females, 14 males, range of age 0-34) have been enrolled in the treatment protocol and 8 have been submitted to surgery. Families have received suitable psychological and logistic supports.

Discussion and Conclusion

Following the successful experience of Milan Smile House established in 2010, Operation Smile and ASL 8 Cagliari agreed to create a new centre of excellence in the middle-Mediterranean area for the treatment of cleft lip and palate patients and other craniofacial anomalies. What differentiate Cagliari Smile House from other centres of treatment are appropriate equipment, laboratory support and trained personnel available to perform comprehensive screening and evaluation in order to properly assess our candidates to surgery and avoid any possible risks of surgery. The Post-Operative Care Program not only facilitates our surgeons' continual education but ensures our patients receive the highest quality of care.

**P-777****APPLICABILITY OF CRANIAL NORM-PERCENTILES DURING THE FIRST TWO YEARS OF LIFE**

D. Tabak¹, P. Streckbein¹, U. Bierther¹, M. Reinges², H.P. Howaldt¹, J.F. Wilbrand¹

¹ Dept. for Cranio-Maxillofacial Surgery, University Hospital Giessen, Giessen, Germany

² Dept. for Neurosurgery, University Hospital Giessen, Giessen, Germany

Objective

Cranial deformities due to positional disorders, Craniosynostoses or syndromal derogation are frequent clinical findings in craniofacial practice. The objective assessment of those deformities, however, is hard to achieve, although reliable measurement protocols exist. A numeric instrument to classify and follow cranial deformity during the individual clinical course is eligible.

Methods

Normative percentiles of anthropometric craniofacial parameters were generated using a reliable measurement protocol based on virtually 800 children between 0 and 24 months of age. Applicability of the developed percentiles for the assessment of different craniofacial deformations was tested using more than 1500 children with non-synostotic head deformity and more than 100 children with various craniosynostoses.

Results

Children clinically assessed as "significantly deformed" for non-synostotic cranial plagiocephaly deviated from the craniofacial normal CVAI (Cranial Vault Asymmetry Index) at baseline and normalized in over 80% of all cases below the 90th percentile after orthotic helmet treatment. Children with non-synostotic Brachycephaly only normalized in 50% of all cases despite helmet therapy. Children with premature craniosynostosis were not classifiable in equal measure. Children with sagittal synostosis showed significant aberrance in cranial length, mostly normal cranial width and aberrance in CI (Cranial Index) at baseline. Other Craniosynostoses showed typical craniofacial signs of Craniosynostosis, but were not distinguishable by the generated percentiles.

Conclusion

Normative percentiles for the first two years of life are a valuable instrument for the treatment control of non-synostotic head-deformities. They are as well suitable for Sagittal synostosis, but feasibility is diminished for other Craniosynostoses.



P-779

TREATMENTS OF FIBROUS DYSPLASIA DEVELOPED IN RIGHT CRANIOFACIAL BONES: A CASE REPORT

Dosup Kim, Yong Dae Kwon, Byung Joon Choi, Joo Young Ohe, Jung Woo Lee, Baek Soo Lee

Dept. of Oral & Maxillofacial surgery, Kyung Hee University School of Dentistry, Seoul, South Korea

Craniofacial fibrous dysplasia has not only aesthetic but functional impact. Surgery is controversial, ranging from conservative to radical. It involves elevated haemorrhage risk, and should be progressive, based on an individual risk/benefit analysis with the aim of improving quality of life.

Two patients (each 40years, 16years) with right craniofacial fibrous dysplasia were treated on 2013, 2014 respectively on our department. All showed severe facial asymmetry and malocclusion.

Surgical treatments all based on the intraoral approach. Because 40-years-old female do not have a dysplasia on her mandible, the sagittal split ramus osteotomy(SSRO) could be performed simultaneously to improve the stability of occlusion. And because 16-years-old female have a dysplasia on both right maxilla and mandible area, we performed broad remodelling resection only.

To perform a surgical procedure, the operator have to consider either the aesthetic and the functional aspect. In our cases we performed through intraoral approach to achieve a minimal invasive procedure. And in the second case, with orthognathic surgery, we could get more functionally improved result.

**P-784****SPRINGS IN CRANIOFACIAL SURGERY: PEARLS AND PITFALLS**

J.F. Wilbrand¹, B. Artzt¹, P. Christophis², H.P. Howaldt¹, M. Reinges²

¹ Dept. for Cranio-Maxillofacial Surgery, University Hospital Giessen, Giessen, Germany

² Dept. for Neurosurgery, University Hospital Giessen, Giessen, Germany

Objective

Spring Surgery for the correction of premature Craniosynostosis nowadays is being commonly used in craniofacial centres worldwide. Although the procedure with springs is supposed to decrease operative time, invasiveness of the intervention and hospitality, some unexpected incidents were documented.

Methods

All patients operated on with springs in order to correct craniosynostosis in our centre were evaluated in this study. Pre- and postoperative anthropometric parameters, operating time, hospital stay, blood-loss and unexpected events were monitored

Results

Operating-time, blood-loss and hospitality decreased significantly after spring surgery in comparison with full-remodelling operations. The need for a second-step operation in order to remove the springs after some months, led to frequent refusal of this technique by parents. Normalization of Cranial Index in children with sagittal synostosis was similar in both procedures. Adverse effects were burying of the spring under the parietal bone, asymmetric correction, one seizure and one postoperative bleeding indigent for a transfusion.

Conclusion

Spring surgery to correct Craniosynostosis is a feasible method, especially for the correction of sagittal synostosis. Adverse effects exist and a second procedure in general anaesthesia is necessary to remove the springs.



P-807

IS FACIAL ASYMMETRY IN CONGENITAL MUSCULAR TORTICOLLIS IMPROVED AFTER SURGICAL RELEASE?

MC Park, SJ Seo, YH Joh, SY Lim

Armed forces hamgyeong hospital, Jeollanam-do, South Korea

Objective

Authors previously reported that facial asymmetry in the severely affected congenital muscular torticollis (CMT) patients is progressive if the contracted sternocleidomastoid (SCM) muscle is not released. Craniofacial asymmetry is improved in CMT after surgical release according to many reports. However, little is known concerning the degree of postoperative improvement of craniofacial asymmetry and the exact association between surgical release and craniofacial asymmetry. This study analysed the influence of surgical timing, head tilt, and functional deficits on improvement of facial asymmetry in CMT patients.

Methods

The 171 patients underwent complete tight fibrous band release and resection of the sternocleidomastoid muscle at the Department of Plastic and Reconstructive Surgery of Ajou University Hospital from February 2007 to February 2011. Records of facial asymmetry, head tilt, and rotational deficit and flexional deficit of neck motion were reviewed for the 45 patients who revisited the outpatient clinic 1-year postoperatively. Inter-commissural angle (ICA), and head tilt angle (HTA) were used to measure facial asymmetry and head tilt, respectively. Mean values of pre- and postoperative ICA were compared between the age groups, after grouping the patients by age (Group 1, surgically treated before the age of 1 year; Group 2, from 1 to 3 years; Group 3, from 3 to 5 years; Group 4, from 5 to 10 years). The relationship between improvement of ICA, postoperative rotational and flexional deficits, postoperative HTA, and age at operation were analyzed using correlation analysis.

Results

Mean age at operation was 35.7 months (range, 5-120 months). Mean follow-up period was 20.6 months (range, 12-53 months). Postoperatively, mean rotational deficit was 1.8 ° and mean flexional deficit was 4.1°. Mean postoperative HTA was 4.0°. In two-tailed paired t test, Mean ICA was improved significantly by 0.62 ° ($P = 0.043$) in Group 1 and 0.65 ° ($P = 0.044$) in Group 2 after operation.

Conclusions

The data indicate that functional problems such as rotational and flexional movement of neck and head tilt can be significantly alleviated in CMT patients after surgical release regardless of age. However, facial asymmetry will be improved significantly when the operation is done before 3-years-of-age.

**P-808****RHINOPLASTY AND LIPOFILLING IN SECONDARY CLEFT LIP AND PALATE PATIENT**

F.M.G. Fatone, M.D.Foresti, L.M.Moricca, R. Paracchini, L. Vadilonga, M.Dessy, D.Scopelliti

ASL8 CAGLIARI, Cagliari, Italy

Objectives

The authors purpose is to describe the surgical technique performed in a secondary cleft lip and palate patient for rhinoplastic correction.

Material and Methods

M.P., 18 years old male, was affected by a rare craniomaxillofacial syndrome characterized by hypertelorism and bilateral cleft lip and palate already treated in the first years of life. The patient came to our observation with a secondary asymmetry and structural deformity of the nose, septal deviation and secondary scar fibrosis of the upper gingival mucosa and upper red lip.

Results

Patient was submitted to surgery consisting in secondary rhinoplasty and lipofilling of the upper red lip. In particular secondary rhinoplasty was performed following the modified Toriumi technique which is a structural surgical procedure based on modelling cartilage grafts and placing spreader grafts that will slightly over correct the width of the middle vault.

Discussion and Conclusion

Complicated rhinoplasties such as those that have been previously operated on, or those damaged due to trauma, frequently require cartilage grafting to repair the deformity.

The authors believe that there is no standard aesthetic goal in rhinoplasty and no required aesthetic standard. However, they prefer a nose that looks good from the frontal view as this is the perspective that one sees when they look into the mirror or while conversing with others.

The technique of rhinoplasty used in this case is a Toriumi's modified technique which emphasizes preservation of nasal structure with minimal excision of supporting tissues. In fact, excessive removal of supporting structures results in an operated look that frequently exhibits a pinched, upturned tip, with nasal obstruction. These problems can be lessened or avoided by minimizing excision of supporting tissues such as the cartilages of the nose.

Furthermore in a secondary (revision) rhinoplasty the Toriumi's technique makes the nose strong and well supported so that it will initially look large then get smaller and better looking as time passes. This is particularly important in younger patients who have a lifetime of healing that will continue to make their nose smaller.



P-821

MAXILLARY GROWTH IN UNILATERAL CLEFT LIP AND PALATE PATIENTS FOLLOWING EARLY ORTHODONTIC TREATMENT BEFORE PRIMARY CHEILOPLASTY

G. Karachunskiy, A. Nikitin, M. Egorova, E. Mail'yan

Maxillofacial surgery, Moscow regional scientific research clinical Institute, Moscow, Russian Federation

Objective

Evaluation of the outcomes of early orthodontic treatment of patients with UCLP before the primary cheiloplasty.

Materials and Methods

32 non-syndromic children with UCLP were included in this study. The children were 2.5-4.5 years old. The first group included 11 children who were treated by non-removable orthodontic devices. The second group included 12 children who were treated by removable orthodontic equipment. 9 children from the third group had no orthodontic treatment. Cheiloplasty was performed using Millard's method at an average age of 157,1 days

Measurement of the dental casts was performed before and after presurgical orthopaedics. At the average 3.5 years measurement of the dental casts was performed too.

The following measurements were made: the total dental arch length (L), anterior and posterior dental archs width (Cr-CI, Er-EI). The reference point were: Incisal point – I, mesio palatal cusps of the second molar (Er,EI), the cusps of the canine (Cr,CI)

Results

The measurement diagnostic casts of patients of first group showed shape recovery of dental arch. The mean values of the anterior (Cr-CI) and posterior arch width (Er-EI) were quite similar in all groups. There were no significant differences of dental arch length in all groups.

**P-824****SECONDARY CLEFT LIP RECONSTRUCTION WITH PEDICLED DE-EPITHELIALIZED SCAR**

N. Nadjmi¹, S. Amadori²

¹ *Department of Maxillofacial Surgery, GH MONICA/University of Antwerp, Antwerp, Belgium*

² *Department of Maxillofacial Surgery, S. Orsola-Malpighi University Hospital, Bologna, Italy*

INTRODUCTION : The philtrum and the Cupid's bow have an important aesthetic significance for normal appearance. The optimal time to create a symmetry in a cleft lip is during the primary repair of the cleft lip. Later on, a secondary effort is even more difficult due to scarring and tissue deficiency of the repaired cleft lip.

A plethora of methods for secondary cleft lip correction have been described, aiming to construct the philtral column and augment the volume. Adding volume can be achieved with autologous temporalis fascia, fat or a plication of the orbicularis muscle. Nevertheless, no single procedure has achieved complete satisfactory results. In addition, the appropriate timing for surgical correction of the philtrum is still debated.

METHODS : We describe a technique for secondary lip reconstruction for unilateral and bilateral cleft patients using the pedicled de-epithelialized cleft scar as an autologous graft to obtain sustainable lip volume. Longevity of the volume graft has been approved on 30 patients.

CONCLUSION : A stepwise hands-on photographic explanation of the technique will be presented, as well as an analysis of the patient population with a focus on timing of the secondary surgical correction and patient satisfaction. We conclude that the technique can be executed at any stage or age. The obtained volume augmentation has proven to be stable in time and leads to an excellent patient satisfaction.



P-829

THE ROLE OF DISTRACTION OSTEOGENESIS IN THE TREATMENT OF MID FACIAL HYPOPLASIA

N. Nadjmi, J. Defrancq, L. Renier, B. Vanassche, J. Van de Perre, G. Van Hemelen, H. Vercruysse

Department of Cranio-Maxillofacial Surgery, GH MONICA / University of Antwerp, Antwerp, Belgium

INTRODUCTION :

In the past two decades the introduction of distraction osteogenesis (DO) into maxillo-facial surgery has revolutionized the treatment of skeletal facial deformities. Not only complex facial skeletal abnormalities are treated with these new procedures, but also DO plays an ultimate role in the modern treatment of dento-facial dysostosis.

Symmetrical and asymmetrical distraction of the maxilla in transversal, sagittal, and vertical dimension are discussed. These procedures were followed by orthodontic treatment as preparation for the final orthognathic surgery.

METHODS & CONCLUSION :

Our treatment planning, and the clinical results are discussed. In this presentation we emphasize the close collaboration between the orthodontist and the Maxillo-facial surgeon in order to achieve the excellence in treatment of dento-facial deformities.

We conclude that, the DO is indispensable in modern practice of orthognathic surgery.



P-837

TRANSORAL ROBOTIC CLEFT PALATE SURGERY (TORCS)

N. Nadjmi

Department of Cranio-Maxillofacial Surgery, GH MONICA / University of Antwerp, Antwerp, Belgium

Objective: To assess the safety and feasibility of transoral robotic surgery in the reconstruction of soft palatal cleft.

Methods: An experimental soft palatal dissection was performed on a cadaver. Application of transoral robotic surgery for soft palate muscle reconstruction was attempted on 10 cleft patients.

The da Vinci Surgical Robot was used on a cadaver and assessed for the optimal positioning of the patient and robot, the introduction of the videoscope and 2 of the 8 mm end effectors of the robotic system as well as the dexterity, precision, and depth perception that it allowed the surgeon during trans-oral soft palate surgery.

The da Vinci Surgical Robot was used through a transoral approach to attempt reconstruction of palatal muscles in ten patients with palatal cleft under general anaesthesia. Procedures were documented with video and still photography.

Results: Use of the surgical robot on cadaver provided great dexterity and precision, delicate tissue handling, excellent 3-dimensional depth perception, and relatively easy transoral suturing. The transoral access proved to be efficient and safe for precise dissection, reorientation and suturing of palatal muscles.

Conclusions: A Surgical robotic approach can be used safely for palatal surgery. We believe that the precise dissection of the palatal muscles provided by robotic system might reduce the chance of damaging vascularization and innervation of these muscles, as well as damage to mucosal surfaces resulting in fistula formation, and might improve palatal function and Eustachian tube function in cleft patients.

**P-854****BOX GENIOPLASTY IN THE MANAGEMENT OF MANDIBULAR CENTRELINE CHIN DEFORMITY**

Rosemary Sykes, Andrew J Sidebottom, Uthaya Selbong, Sunil Sah

Oral and Maxillofacial Surgery, Nottingham University Hospitals - Queens Medical Centre, Nottingham, United Kingdom

Objective

Box genioplasty allows anterior and posterior movements of the genial prominence as well as lateral movements without leaving a step in the lower border of the mandible. It is an alternative technique to conventional sliding genioplasty, which can produce paraesthesia and a notch at the mandibular lower border. It is used in combination with other aesthetic procedures including orthognathic surgery and is particularly useful in centreline correction and setback procedures. Our aim is to describe the box genioplasty technique and to provide evidence of the efficacy of box genioplasty compared to conventional genioplasty.

Methods

We present a cohort of patients treated with box genioplasty for facial asymmetry. The procedure allowed measured correction of the chin point position along with no detachment of the mentalis muscle providing soft tissue stability.

Results

The patients reported no neurosensory deficit. The pre and postoperative facial profiles were studied retrospectively: the labiomental angle and the genial prominence position in relation to the centreline of the face. Our cohort of patients reported a perceived improved profile with centreline correction.

Conclusions

Chin position is a major factor in lower facial aesthetics. Box genioplasty provides the opportunity to correct bony and soft tissue asymmetries with minimal complications. Previous studies have been building blocks for a prospective comparable study of different techniques of conventional sliding genioplasty rather than box genioplasty, therefore there is scope to further study box genioplasty as a technique. These cases also suggest the need for anthropometric studies to assess the variation of chin morphology.



P-866

IS THERE A RELATION BETWEEN THE MALOCCLUSION CLASS AND THE OUTCOME OF THE ALVEOLAR BONE GRAFT IN CLEFT PATIENTS?

B. Stavaru Marinescu¹, B. González Meli², MJ. Cimadevilla Acebo³, F. Lobo Bailón²

¹ *Oral and Maxillofacial Surgery, La Princesa University Hospital, Madrid, Spain*

² *Department of Plastic Surgery, Niño Jesus University Hospital, Niño Jesus University Hospital, Spain*

³ *Department of Orthodontics, Niño Jesus University Hospital, Niño Jesus University Hospital, Spain*

Background: the Goslon Yardstick is a clinical tool that allows categorization of the malocclusion, frequently used in order to assess treatment outcome in cleft patients.

Objectives: to correlate the Goslon Yardstick class malocclusion in unilateral cleft patients with the outcome of the alveolar bone graft.

Material and Methods: we present a retrospective study carried out in the Department of Plastic Surgery of Niño Jesús University Hospital - Madrid Spain. We reviewed the clinical information, X-rays and cast models of 21 patients with unilateral cleft lip and palate patients who were operated of alveolar bone graft between 2006-2013. The techniques of grafting the alveolar cleft with autogenous cancellous iliac bone were used in most cases of this series. When required, orthodontic treatment was performed prior to grafting and was resumed 3 months after the bone grafting. The occlusal level of the newly obtained interdental bone in the alveolar cleft was measured in the orthopantomography and was recorded and categorised according to the Bergland scale. We considered class I and II bone level as favourable results and the class III and IV as unfavourable results. We also recorded the complications observed (need for reoperation, graft exposure, graft loss).

The malocclusion class was evaluated using the Goslon Yardstick. We evaluated the plaster models of the late mixed or early permanent dentition before the surgery (mean age =11 years). Using statistical tests, we tried to correlate the malocclusion class with the outcome of the graft.

Results: 65 % of the bone grafts in this review achieved occlusal bone levels at or greater than three quarters normal height and were therefore categorised as type I or type II Bergland.

In this analysis 35% were considered to have achieved heights less than three quarters normal height type III and IV and were considered desfavorable results. We have not found a positive correlation between the higher malocclusion class and the higher rate of bone graft failure.

Conclusion: In our study the Goslon Yardstick has not proved its usefulness as tool in assessing the outcome of the alveolar bone graft.

**P-867****THROMBOSED ANEURYSM OF THE EXTERNAL JUGULAR VEIN – A RARE CAUSE OF CERVICAL MASS**

T. Neto¹, R. Balhau¹, L. Coelho¹, I. Pinto¹, M. Capelo¹, I. Correia-Sá², Á. Silva²

¹ *Maxillofacial Surgery Unit of Department of Plastic, Reconstructive, Aesthetic Surgery, Maxillofacial Surgery and Burn Unit, CENTRO HOSPITALAR SÃO JOÃO, Porto, Portugal*

² *Department of Plastic, Reconstructive, Aesthetic Surgery, Maxillofacial Surgery and Burn Unit, CENTRO HOSPITALAR SÃO JOÃO, Porto, Portugal*

Objectives

External jugular vein aneurysm is an extremely rare condition with only a few cases described in the literature.

The most important complications include thrombus formation, thrombophlebitis, pulmonary embolism and rupture.

We present a clinical case of thrombosed aneurysm of the external jugular vein and highlight the treatment and controversies in the approach of this rare pathology.

Methods

We report a case of a 47-year-old man presenting with a recurrent swelling on the right side of the neck for the last 4 months. He had no history of medical pathology, trauma to the neck or surgical procedure. Upon examination the swelling was 4x3 cm, tender, painful, mobile, localized to the transition of the III and IV level of the right neck. The CT scan showed a varicose dilatation at the expense of the right external jugular vein, approximately 4 cm, with a large central thrombus.

Results

The patient was submitted to excision and ligation of the venous connections under general anesthesia.

Pathological anatomy confirmed the diagnosis of external jugular vein aneurysm and thrombosis.

The patient was satisfied with the functional and aesthetic result and remained in continuous clinical and imagiological surveillance with no signs or symptoms of recurrence.

Conclusions

Jugular vein aneurysms should be included in the differential diagnosis of any neck soft tissue mass when it can be easily confused with lymphadenopathy, laryngocele, thyroglossal cyst and branchial cyst. Enlargement of neck swelling during Valsalva manoeuvre raises the suspicion of laryngocele or jugular vein aneurysm.

Surgical excision is indicated mostly for cosmetic reasons and symptomatic aneurysms. Surgical resection also eliminates the theoretical risk of thrombophlebitis, rupture, pulmonary embolism and allows for histopathological diagnosis.



P-870

TIP-PLASTY IN SECONDARY UNILATERAL CLEFT PATIENTS

T. Bagatin, D. Bagatin, K. Šakić

Policlinic Bagatin, Zagreb, Croatia

Objectives: Clefts of the lip are followed with different nasal deformities. In unilateral clefts we primary find nasal septum and collumela deviated toward contralateral side of the cleft, tip of the nose deviated toward same side as the cleft characterised by diastasis between domes of the cartilage - ptotic, stretched and rotated alar cartilage on the cleft side, lowered ipsilateral triangular cartilage same as foot of the medial crus and the dome.

Methods: Authors analyse most common deformities of nose in unilateral clefts before and after secondary rhinoplasty and they try to explain importance of the tip shaping to get optimal result in this correction.

Results: : After primary cheiloplasty authors most often found ill-defined and ptotic tip. Results of secondary corrections of nasal deformities show better results after new secondary procedures.

Conclusion: These deformities of nose after surgical correction are connected with different relationship of nasal structures, loss of tissue, deformities of growth and are reflection of primary deformation, selected surgical procedure and patient's reaction to procedure. Authors reconstruction give satisfactory result in secondary procedures.

**P-883****DIFFERENTIAL DIAGNOSIS OF POSTERIOR PLAGIOCEPHALY**

C. Linz¹, U. Müller-Richter¹, P. Meyer-Marcotty², H. Böhm¹, J. Krauß³, H. Collmann³, R.-I. Ernestus⁴, A. C. Kübler¹, T. Schweitzer³

¹ *Department of Oral and Maxillofacial Plastic Surgery, University Hospital of Würzburg, Würzburg, Germany*

² *Department of Orthodontics, University Hospital of Würzburg, Würzburg, Germany*

³ *Department of Neurosurgery, Section of Pediatric Neurosurgery, University Hospital of Würzburg, Würzburg, Germany*

⁴ *Department of Neurosurgery, University Hospital of Würzburg, Würzburg, Germany*

Objective:

The “back to sleep” campaign has led to a significant reduction in sudden infant death syndrome; however, it has also led to an increase in the incidence of positional moulding. It is important to differentiate this frequent type of posterior plagiocephaly from the rare unilateral lambdoid synostosis because the two conditions require different therapeutic approaches.

Methods:

In this prospective observational study, 8 infants under 1 year of age with proven unilateral non-syndromic lambdoid synostosis and 261 children with positional deformity were studied to outline the specific clinical features of both diagnoses. This evaluation enabled us to establish a diagnosis with minimum diagnostic irradiation. After clinical examination, an ultrasound revealed either a closed suture suggesting lambdoid synostosis or a patent lambdoid suture suggesting positional deformity. In synostosis, plain radiographs and MR imaging as well as follow-up examinations were performed. In cases of open sutures no further investigations except follow-ups were performed.

Results:

In all 8 cases of unilateral lambdoid synostosis, the diagnosis could be established by clinical examination alone. In all 261 cases of positional plagiocephaly, the diagnosis was made by a combination of a clinical examination and ultrasonography. MR imaging revealed unilateral tonsillar herniation in 5 of 8 children with lambdoid synostosis and hydrocephalus in one child.

Conclusion:

Our results suggest that clear clinical features can be used to differentiate between the causes of posterior plagiocephaly. It is possible to make the diagnosis using diagnostic techniques, including ultrasound, without using CT scanning. Doing so will minimize harmful radiation exposure.

**P-899****STANDARDIZATION OF SURGICAL PROCEDURE FOR FRONTOETHMOIDAL MENINGOENCEPHALOCELE: AN ONGOING SERIES OF 200 OPERATED CASES**

F. Lauwers, F. Jalbert, A. De Bérail, J. Gollogly, N. Oucheng, R. Soum, F. Roux

Department of maxillofacial surgery, CHU Purpan, Toulouse, France

Objectives. Frontoethmoidal meningoencephaloceles (fMECs) are frequently observed in South-East Asia. The authors describe issues related to the surgical treatment of fMECs in over 10 years' experience

Methods. The authors reviewed 257 cases of fMEC involving patients who presented to their institution, the Children's Surgical Center in Phnom Penh, between 2004 and 2013. They treated 200 of these patients surgically (108 males, 92 females; 89% younger than 18 years) using a "low-cost" management plan with no routine pre- or postoperative investigations. Initially, surgery was performed by visiting foreign surgeons who taught the procedures to resident surgeons. The surgical procedure was inspired by Chula technique.

Results. The nasoethmoidal type was the most frequent fMEC encountered (69%). Many patients had associated ophthalmological issues (46% of cases). Only one familial case was detected. The clinical presentation took many forms and a first classification was proposed to define for each type a standard surgical procedure. Combined neurosurgical and facial procedures were successfully learned by surgeons initially unfamiliar with fMEC management. The neurosurgical step was faster performed than the maxillofacial one by the resident surgeons. A facial incision was needed in 42 cases. The most common postoperative issues were a temporary CSF leak (24 cases [12%]) and/or infection (28 cases [14%]). There were 3 deaths directly related to the operations. Cosmetic results were good in 145 cases, average in 27, poor in 7, and worse than preoperative appearance in 6 patients. Fifteen patients were lost to follow-up.

Conclusions. This experience in fMEC management demonstrates that local surgeons can treat these malformations with limited surgical materials and in a non-specialized infrastructure after principles of treatment have been learned and if they are carefully respected. Surgery for fMEC can thus be more accessible to a larger number of patients in developing countries. Moreover, local treatment facilitates better postoperative and follow-up care.



P-908

PERSPECTIVES OF NON-INVASIVE TECHNIQUES FOR THE TREATMENT OF CHILDREN WITH HYPERPLASIA OF BLOOD VESSELS (INFANTILE HEMANGIOMAS).

E.A. Repina, F.N.Mustafina, V.V. Roginskiy, A.G.Nadtochiy, E.A.Shavlokhova

Maxillofacial Surgery, Central Scientific Research Institute of dentistry and Maxillofacial Surgery, Moscow, Russian Federation

Objective. To evaluate the efficacy of conservative therapy with Timolol maleate and IPL children with hyperplasia of blood vessels (infantile haemangioma).

Methods. Medical records, ultrasound image studies and capillaroscopy videos of patients with head and neck vascular hyperplasia, treated with timolol monotherapy and IPL monotherapy, were reviewed. Data collected included age at treatment initiation, completion of therapy, pre and post therapy vessel size/density and blood flow. Vessel (capillary) density, size were measured by capillaroscopy. The speed of blood flow was measured by ultrasound with Doppler imaging.

Results: 52 patients with focal superficial haemangiomas (median age of treatment initiation - 20 weeks (2-38) were included.

30 patients were treated with timolol 0,5% drops 3-5 times daily, 22 – with IPL-therapy. The duration of treatment was 6 months. The amount of IPL procedures – 6. Time interval between IPL sessions - 1 month.

91,8% of lesions responded to the treatment.

Timolol induced complete resolution in 15 of 30 patients (50,0%). The others had residual manifestations – teleangiectasias, which required further treatment (IPL). Timolol induced the decrease of vessel density from a mean of 35 vessels per field (VPF) (range – 32-38), to a mean of 7 VPF (range – 4-10).

IPL as monotherapy led to complete resolution in 13 patients out of 22 (60,0%). These were the patients with superficial vascular hyperplasia. Patients with a combined (with a deeper component) form of the lesion showed the recurrence within 2 weeks and were introduced to another methods. The positive effect was noticed after the first session in 6 patients (27,27%) with hyperplasia in the stage of active growth or initial involution. In the stages of pronounced involution and residual manifestations the visible effect was seen after the 2 or 3 session. Post treatment vessel density was a mean of 8 VPF (6-10).

Conclusion: non-invasive methods show good effectiveness in treatment of vascular hyperplasia if they are applied in proper indications. They should be considered to be a treatment option in children with superficial vascular hyperplasia. This therapy predictably induced significant changes in IH vessel size and blood flow, which resulted in good clinical outcome.

**P-909****GIANT BRANCHIAL CYST TREATED BY FINOCHIETTO'S TECHNIQUE – A CASE REPORT**

A. Millán, J. Azevedo, J. Esteves, P. Coelho

Cirurgia Maxilofacial, Centro Hospitalar Lisboa Central, E.P.E. (Hospital de São José), Lisbon, Portugal

AIMS

Branchial cleft cyst are benign lesions caused by the altered development of the branchial apparatus during embryogenesis. During the fourth and fifth weeks of development, the branchial arches are formed and the persistence of branchial remnants can lead to the development of cysts, sinuses and fistulas.

The anomalies of the second branchial cleft are the most frequent, 90%, typically with a clinical presentation at second and fourth decades of life as a neck, mobile, painless mass located from the angle of the mandible and along the anterior edge of the sternocleidomastoid

The Finochietto technique is based on two facts: that cyst is non adherent to the surrounding structures (muscles and vasculo-neural structures) and has two separable layers, a fibrous external layer and an epithelial and secretory internal layer with an almost avascular plane in between. The propose of the surgery is the excision of the of the inner layer, responsible for the secretion maintaining the integrity of the surrounding structures.

MATERIAL AND METHODS

Male, 77 years old, with a left latero-cervical swelling with 4 months of evolution. The lesion had an elastic consistence, non-adherent to deep plans and was limited by the angle of the mandible, by the anterior edge of the ECM and inferiorly by the supraclavicular groove. The Ct-Scan revealed a cystic formation, nonvascular of 11x7 cm with intra-thoracic projection.

RESULTS

The exeresis of the cyst was performed by Finochietto's technique, without complications. The histpatologic findings confirmed the diagnosis of branchial cyst.

DISCUSSION AND CONCLUSION

This case report enhances the importance of including branchial cysts n the differential diagnosis in cervical masses, and the option of using Finochietto's technique on the excision of giant cysts as it has showed to be secure and feasible.

**P-924****GROWTH OF THE MAXILLARY ARCH OF UNILATERAL CLEFT LIP AND PALATE PATIENTS.**

M.Soots, S.Akermann, N.Zvereva

Maxillo-facial Surgery, University of Tartu, Tartu, Estonia

Objective: to measure palatal landmarks of the hard palate of patients with unilateral cleft lip and palate after palatoplasty using palatal pedicled flaps and to compare the palatal morphology of non-cleft individuals.

Materials and methods: Thirty four patients with cleft lip and palate enrolled into this retrospective study. Analyses of the development of the maxillary arch and evaluation of palatal morphology were accomplished from plaster casts of the maxilla at the age of 3 and 10 years . At all ages, male and female data did not differ (Student`s test), so the pooled values were considered. Dimensions were compared ages by analyses of variance. Width and symmetry of the maxillary arch were assessed in the canine and molar region and compared both among the cleft groups and the non-cleft group.

Results: Anterior maxillary arch mean width was found to be 23.5 mm on an average in unilateral CLP patients at the age of 3 years. It increased until 25.5 mm at the age of 10 years. Posterior width as well increased from 25.9 mm, mean width at year 3 to 34.5 mm at year 10. Differences in maxillary width changed significantly over time both in the anterior and posterior location . Posterior width was smaller in non cleft patients than in unilateral CLP patients at the age of 10 years, 34.0mm and 34.5mm, respectively.

Conclusions: Between 3 and 10 years of age, palatal width changed and became proportionally larger in the group of patients with unilateral cleft lip and palate. Maxillary width increased both in the anterior and posterior parts but this increase was more significant in the posterior part.



P-928

AN INTERESTING PRESENTATION OF CRANIOFACIAL LANGERHANS CELL HISTIOCYTOSIS

EA Gruber, S Waring, L Al-Qamachi, TJ Malins

Oral and Maxillofacial Surgery Department, University Hospital of North Staffordshire, Stoke on Trent, United Kingdom

Background

Langerhans cell histiocytosis (LCH) is a rare disease involving clonal proliferation of Langerhans cells. Clinically the manifestations range from isolated bone lesions to multisystem disease. The triad of diabetes insipidus (due to pituitary stalk involvement, which occurs in about 50% of cases), exophthalmos and lytic bone lesions is known as the Hand-Schüller-Christian triad and the onset is usually in childhood.

Case report

A 36 year old female patient was referred by the dentist complaining of persistent pain after extraction of LL5. Of relevance, in the past medical history, is the diagnosis of diabetes insipidus 21 years previously, for which the patient remains on supportive hormone treatment.

An initial periapical radiograph showed the presence of a radiolucent 'lytic' lesion in the region of LL5. CT scans of chest, abdomen and pelvis were unremarkable. MRI of the head and neck confirmed concurrent involvement of the left maxilla and maxillary sinus with disease extending into the left lateral orbit and left lateral rectus muscle. There were also changes in the region of the sphenoid sinus, involving the pituitary territory.

Curettage of the lesion confirmed the presence of LCH by histopathology. There was significant bone regeneration in the portion of the mandible where diagnostic curettage was initially carried out. A focus of residual disease beneath two lower left molar teeth resulted in extraction of these teeth at the same time as further curettage with the aim to further control the mandibular disease. The patient has been referred to an endocrine specialist and is commencing a course of systemic chemotherapy.

The case is illustrated with clinical photographs.

Conclusions

Diabetes insipidus is frequently found in patients with LCH. This interesting case highlights the importance of past medical history in making a clinical diagnosis and the multidisciplinary approach to management.

**P-933****MECHANICAL COMPRESSION IN A 2 YEARS OLD CHILD WITH A CERVICO-OCCIPITAL KAPOSIFORM HÉMANGIOENDOTHELIOMA AND A KASABACH MERRITT SYNDROME.**

A. De Berail, F. Jalbert, P. Seniow, F. Boutault, F. Lauwers

Department of maxillofacial surgery, CHU Purpan, Toulouse, France

Objectives: Kaposiform hemangioendothelioma is a rare vascular tumour that could be complicated by Kasabach Merritt syndrome (KMS). This association is well documented in the literature. In 70% cases KMS leads to life-threatening complications without treatment. The authors describe the evolution of the medical management of this disease in a 2 years-old child.

Method: We report the case of a 2 years old male child with a cervico-occipital kaposiform hemangioendothelioma and KMS in therapeutic failure after beta-blockers, ticlopidine/aspirin and vincristine. The child was referred to our centre for surgical evaluation because of vincristine dependance and to avoid expected neurotoxic after effects. Neither embolization nor surgery could easily be performed in this case. An adaptation of Stringel's mechanical compression described in 1984 was proposed in this case using a custom-made gradually compressive helmet.

Results: We obtain a successful clinical and biological result after only 2 months of permanent compression. After one year of follow up, no recurrence of the KMS occurred. We proposed a progressively intermittent helmet use adapted to the craniofacial growth of the patient. This child is actually wearing his helmet only during sleep.

Conclusion: Several medical treatments have been proposed including ticlopidine, corticosteroid, vincristine, sirolimus. Selective embolization has been reported too. However there is no consensual guideline for therapeutic management of KMS. From this experience, involving many medical teams and medical time, we think that mechanical compression needs to be evaluated whatever the localisation of the vascular anomaly.



P-987

EFFECT OF NASO-ALVEOLAR MOLDING ON TREATMENT OUTCOME ON BILATERAL COMPLETE CLEFT LIP AND PALATE FROM BIRTH TILL TWO YEARS

Hassan Moussa

Alexandria University hospital, Egypt, Alexandria, Egypt

Objectives: Study aims to test the hypothesis that naso-alveolar molding (NAM) improves the surgical outcome in severe bilateral complete cleft lip and palate (BCCLP) in the first two years of life.

Material: 30 new born Non-syndromic BCCLP patients with ectopic positioned pre-maxilla (age : 1-3 weeks) were divided into 2 groups. Group A: NAM and post-surgical stenting (13 patients) Group B: Lip adhesion prior to complete closure of nose, lip and palate. (17 patients)

Methods: 4 impressions and casts for nose lip and palate were taken for each patient at T₀ : new born (1-3 weeks) , T₁: Prior to surgery (4-6 months), T₂ : Prior to soft palate closure (12-14 months), T₃: 1 year after palatal closure (24 months)

Results: Comparison of measurements in both groups by T-test for the following measurements:

- Nasal measurements: 1-Base 2- Columella 3- Nasal tip 4- Alar length
- Labial measurements: 1- Prolabium 2- Width
- Palatal measurements: 1- Length 2- Width 3- Symmetry
- T₀: No significant difference between both groups.
- T₁: Significant difference between all measurements was evident.
- T₂: Significant difference was shown in nasal measurements and to a lesser extent in the labial and palatal measurements.
- T₃: Significant difference between both groups in nasal measurements was evident showing various degrees of abnormality in group B while group A was normal.

Prolabial length and palatal width were significantly smaller in group B, while palatal length length was greater in group B were as all measurements in group A were near normal.

Conclusion: NAM improves the surgical outcome in severe BCCLP in the first two years of life and its effect should be followed up further more to detect whether its effect would improve the future growth of the maxilla.

**P-996****TRANSCUTANEOUS RADIOFREQUENCY VASCULAR LESION DESTRUCTION IN MAXILLOFACIAL AREA**

V.V.Roginskiy, A.G.Nadtochiy, I.A.Ovchinnikov, R.V.Ryzhov, E.A.Repina

Central Scientific Research Institute of dentistry and Maxillofacial Surgery, Moscow, Russian Federation

StudyObjective

Development and implementation of the modern low-invasive method of treatment of children with voluminous cavernous and combined malformations of complex anatomic localization with radiofrequency thermal ablation application

Method

The radiofrequency thermal ablation device Cool-tip RF Ablation System was used. Transcutaneous distance ablation was applied for 28 patients, from them 25 – with blood vessel malformations and 3 – with lymphatic malformations. Pathological foci in buccal, auriculomastatory, zygomatic areas, in the areas of the pterygomandibular space, upper, lower lip and tongue were exposed to treatment. Cavernous and macro-cystic types of lesions were represented in all cases. The active electrode 1 mm in diameter and 1 cm of the applied part length was introduced through the skin or the mucous tunic incision in the centre of the pathological focus under ultrasound control. Switching-on of the device brings about vibration of charged particles in the variable magnetic field in the pathological focus due to exposure to the radiofrequency alternating current. These micromovements of intracellular structures heat the cell to the coagulation state. The temperature inside the focus reaches values above 70°C, resulting in coagulation-induced tissue necrosis.

Results

A soft tissue infiltrate is formed inside the pathological focus after exposure to high temperatures, which is preserved during several days. After this the coagulation clot restructuring with fibrous tissue formation occurs in the exposed zone.

Conclusion

The obtained results show the effectiveness of this method for treatment of vascular malformation patients.

**P-1016****MANDIBULAR DISTRACTION: AN APPROACH FOR TREATMENT OF PIERRE ROBIN SEQUENCE**

C. Bailleul, B.C. Brevi, M.L. Anghinoni, E. Sesenna

Maxillo-Facial Surgery, Head & Neck department, Ospedale Maggiore, Parma, Italy

INTRODUCTION: PierreRobin sequence (PRS) is classically described as a triad of micrognathia, glossoptosis, and airway obstruction. Neonates frequently present a hypoplastic mandible and difficulty breathing. The smaller mandible displaces the tongue posteriorly, resulting in obstruction of the airway. PRS is not a syndrome in itself, but rather a sequence of disorders. However, it can be related to several other craniofacial anomalies and may appear in patients with additional complex syndromes. A multidisciplinary team should evaluate all infants with PRS to correctly value the maxillary-mandibular relationship, anatomically define the site of airway obstruction, and identify feeding difficulties. Patients should be evaluated for episodes of desaturation occurring spontaneously, during feeding, or during sleeping. All patients underwent fibroscopic examination of the upper airway and a radiographic imaging and/or computed tomography scans to detect malformations and to confirm that the obstruction was caused by posterior tongue displacement. Approaches for treatment of airway obstruction among neonates with PRS include conservative and non conservative. A proportion of patients do not respond to conservative measures and will require further intervention. Mandibular distraction may be one of several modalities required when other treatments result inadequate and to avoid tracheotomy for such patients.

PATIENTS AND METHODS: Objectives of the study were to determine the success of distraction osteogenesis of the mandible to relieve airway obstruction in children with PRS and to describe the new surgical techniques.

RESULTS: The resolution of symptoms was obtained in all patients, and, when present, tracheotomy was removed without complications.

CONCLUSION: When conservative measures fail, mandibular distraction osteogenesis should be considered to obviate the need for a tracheotomy and can be a safe and effective intervention in neonates with PRS.



P-1029

TREACHER-COLLINS SYNDROME ORBITAL SURGERY: EARLY SOFT TISSUE CORRECTION.

G. Franchi, N.Kadlub, P.A.Diner, M.Bandini, Marie-Paule Vazquez, A.Picard

APHP, Paris, France

Introduction: Orbito-palpebral anomalies in mandibulo-facial dysostosis may be difficult to achieve. Most of the author propose malar bone correction after the age of eight year old. We proposed a new surgical management for periorbital soft tissue defect, associating initial autologous fat and a concentric malar lift associated with a pedicled upper eyelid flap.

Material and method: We conducted a prospective study. Patient underwent in a first step a fat graft transfer in the peri-orbital area, and in a second step a subperiosteal malar lift with lateral canthopexia and pedicled upper eyelid flap if needed. Patients characteristics were evaluated. Pre and postoperative scleral show, antimongoloid palpebral fissures, canthal dystopia, number 6 cleft, skin quality, complications, ophthalmic complications were evaluated by two independent surgeons.

Results: Five patients have been included. Three patients had undergone prior orbital reconstruction. Before surgery, three patients had ophthalmic complications. No postoperative complication was noted. Postoperative evaluation showed an improvement of the scleral show, a correction of the antimongoloid palpebral fissure, an improvement of the canthal dystopia, a correction of the subcutaneous number 6 cleft, a global improvement of the skin quality

Conclusion: The proposed protocol gave satisfying aesthetic and functional results to correct the orbital defect in Treacher-Collins at any age, even in second hand patients. This surgical schedule is now proposed to all mandibulo-facial syndrome patients to achieve the periorbital reconstruction.



P-1030

TREATMENT OF HARD AND SOFT TISSUE IN CRANIO-FACIAL DEFORMITIES: OUR EXPERIENCE.

A. Battisti, G.M. Prucher, D. Bartoli, M. Della Monaca, P. Priore, A. Cardarola, V. Valentini

Maxillo Facial Department, Sapienza University of Rome, Rome, Italy

PURPOSE: Hemifacial Microsomia, Perry Romberg and Goldenhar Syndromes are cranio-facial deformities characterized by facial asymmetry that involves both hard and soft tissues. The treatment of these pathologies employs a combined approach aimed to restore facial eurhythm in order to gain functional and aesthetic improvements. The aim of this study is to suggest our therapeutic protocol for the management of these severe diseases

MATERIALS and METHODS: based on the review of the clinical charts of all the affected patients came to our attention in Maxillo-Facial Surgery Department of Rome "Sapienza" university from 1981 and 2012, we have tried to line out the optimal timing for functional and surgical treatment of these kind of cranio – facial deformities. In order to standardize our protocol, we first graded each patient according to O.M.E.N.S. and Guerrerosantos classifications and to the timeline for treatment of patients with craniofacial microsomia as suggested by the Craniofacial Center at Seattle Children's Hospital. The main criterion in choosing the most appropriate treatment is the type and amount of tissue defects. First of all we evaluated the occlusion in order to administer, if needed, functional orthodontic treatment. Then the patients underwent hard tissue surgical correction. After hard tissue treatment, the soft tissue deficit is managed; lipofilling and/or microsurgical flaps represent in our opinion the best choice in order to restore facial asymmetry and to improve facial volume and contour.

RESULTS: after at least one year of follow – up from the last treatment, all the patients showed an improved facial symmetry with acceptable facial volume and contour.

DISCUSSION and CONCLUSIONS: cranio – facial syndromes involving both hard and soft tissue deficit determine marked and severe face asymmetry, with functional and aesthetic involvement and subsequent psychological distress for the patients. In this cases, facial reconstruction is necessary to restore functionality, and acceptable facial contour and symmetry in order to regain a good quality of life.

Each patient requires an individualized treatment plan, tailored to his or her specific needs, related to the underlying disease, to defect and to patient's compliance.

**P-1068****SURGICAL REPOSITIONING OF EXTREMELY PROTRUDING PREMAXILLA IN PATIENTS WITH BILATERAL CLEFT LIP AND PALATE: FROM SURGICAL CHALLENGE TO SOCIAL INCLUSION**

T. Burnay¹, R. Valença-Filipe², I. Pinto¹, J. Bilhoto¹

¹ *Department of Maxillofacial Surgery, Centro Hospitalar São João, Porto, Portugal*

² *Department of Plastic Surgery, Centro Hospitalar São João, Porto, Portugal*

Objective

To provide an overview of the management (orthodontic preparation and surgical technique) and social, emotional and functional impact of premaxilla repositioning with concomitant autogenous bone grafting on patients with bilateral cleft lip and palate with an extremely protruding premaxilla.

Material and Methods

Two patients with bilateral transforamen cleft lip and palate presented increased mobility of the premaxilla which was vertically overdeveloped and severely protrusive as well as a maxillary transverse deficiency. After achieving a satisfactory transverse maxillary dimension through pre surgical orthodontic treatment, both patients were submitted to surgical repositioning of the premaxilla (retrusion and intrusion) with concomitant bilateral bone grafting. Follow-up examinations were performed by clinical examination and through periapical radiographs and TC scan. Thereafter, the patients were referred for completion of the orthodontic treatment.

Results

The treatment achieved almost total graft integration, filling the osseous defect, with complete closure of the buconasal and palatal fistulas and supporting the alar base, leading to premaxilla stability and a better functional and aesthetical result.

Discussion and Conclusions

After the achievement of adequate transverse maxillary dimensions through pre-surgical orthodontic treatment, bilateral alveolar bone grafting with premaxillary repositioning, seems to be an effective procedure. This procedure is complex and involves risk, but the benefits seem to be worth it. It provides an improvement not only of the functional aspects but also of the psychosocial impairment of these patients, facilitating future orthodontic and surgical treatments, as well as eventual prosthetic rehabilitation. However, the patient's social inclusion, especially at the addressed age group, seems to be the best benefit achieved.

**P-1073****MANDIBULAR DISTRACTION OSTEOGENESIS IN CHILDREN WITH GOLDENHAR'S SYNDROME, IS IT WORTH IT?**

T. Burnay¹, R. Valença- Filipe², I. Pinto¹, J. Bilhoto¹

¹ *Department of Maxillofacial Surgery, Centro Hospitalar São João, Porto, Portugal*

² *Department of Plastic Surgery, Centro Hospitalar São João, Porto, Portugal*

Objective

The aim of this work is to show/discuss the functional, aesthetic, social and emotional advantages of distraction osteogenesis to treat mandibular asymmetry in children with Goldenhar's syndrome also known as hemifacial microsomia.

Material and Methods

Three patients aged 8, 11 and 13, with Goldenhar's syndrome, underwent surgery for placing an external mandibular distractor to correct the mandibular asymmetry. Follow-up was performed by clinical examination and through photographic and radiographic studies. The distraction devices were activated one week after the surgery, twice a day (0,5 + 0,5 mm). After finalizing the distraction, the devices were left in place for at least 2 months in order to stabilize the area.

Results

In the three cases we obtained an overall facial symmetry and balance as well as an improvement of the occlusal plane, through a more rounded facial contour. It was made an intentional over-correction.

Discussion and Conclusions

Distraction osteogenesis is the process of bone formation that occurs during slow separation of the segments of bone after an osteotomy. In these situations, new bone can be generated in deficient areas to restore aesthetic and physiologic functions and to correct alterations in growth. When the distraction is performed before skeletal maturation, since the facial development of the unaffected side proceeds normally, growing more than the distracted side, it is advisable to make an over-correction, as in the clinical cases described. There is no consensus in the literature on when this procedure should be started and some authors defend that the long-term recurrence by genetically determined craniofacial growth patterns is usual, if distraction is performed before skeletal maturation. However, early mandibular reconstruction would allow maxillary and dento-alveolar development to take place, reducing the need for or the amount of later surgery. Furthermore, it improves body image and socialization of the child. Moreover, distraction osteogenesis has unique advantages for these patients once it can be performed in childhood with minimal morbidity. Although there is the possibility of a long term recurrence, the aesthetic and psychological advantages, as well as the need of a future smaller surgical correction seem to justify an earlier intervention.



P-1083

EVOLVED ANTERIOR PLAGIOCEPHALY. A SURGICAL CHALLENGE

E. Gomez¹, F. Carceller², M. Martin¹, M. Burgueño¹

¹ *Oral and maxillofacial Surgery Service, Hospital la Paz, Madrid, Spain*

² *Pediatric Neurosurgery, Hospital La Paz, Madrid, Spain*

Introduction: The treatment of evolved anterior plagiocephaly sets a challenge for the surgeon. Children's brain over 2 years old loses its ability to remodel cranial shape, so a very accurate surgical plan must be designed to get the best aesthetic results.

Material and Methods: We have reviewed the clinical charts of patients treated of anterior plagiocephaly. We have focused our study in those patients older than 2 years old at time of treatment. 4 patients between 3 and 8 years old were included. All of them showed anterior synostotic plagiocephaly. Three dimensional CT scan reconstruction was performed to plan the surgical treatment. Postoperative follow up focused especially in the aesthetic appearance.

Results: Accurate preoperative surgical planning was performed in all patients to avoid critical size bone defects after fronto-orbital and cranial remodelling, due to the decrease bone regeneration. Persin and Marchac principles were applied in the treatment, including floating frontal bone and bilateral orbital bar remodelling. Nasal bones were also treated with bone grafts to improve the previous deviation. Rigid osteosynthesis, including wires, titanium plates and resorbable plates were employed to fix bone pieces.

Satisfactory results were obtained in all patients, in terms of aesthetic appearance. All the results were stable in a long term follow up and the patients were discharged from follow up 3 years after treatment.

Conclusions: Accurate preoperative surgical planning using 3d CT scan allows the surgeon to get a satisfactory aesthetic result in the treatment of older patients affected of anterior plagiocephaly.



P-1116

CURVILINEAR INTRAORAL DISTRACTION OSTEOGENESIS IN COMPLEX MANAGEMENT OF LOWER MICROGNATHIA AND ANTERIOR OPEN BITE IN CHILDREN.

A.L. Ivanov¹, N.V. Staricova², A.G.Nadtochiy³, G.Y. Chikurov¹

¹ *Pediatric Maxillofacial Surgery Department, Central Research Institute of Stomatology and Maxillofacial Surgery, Moscow, Russian Federation*

² *Hospital Orthodontia, Central Research Institute of Stomatology and Maxillofacial Surgery, Moscow, Russian Federation*

³ *Radiological Department, Central Research Institute of Stomatology and Maxillofacial Surgery, Moscow, Russian Federation*

Objective. The combination of lower jaw hypoplasia and anterior open bite is a common combination in children with syndromic and non-syndromic lesions. Respiratory disorders and malocclusion need to be corrected as soon as possible. High morbidity and iatrogenic complications such as scars, malocclusion, marginal branch neuropathy, tooth germs injuries often accompany the conventional multistage procedures and challenge the complete rehabilitation. The aim of this study was to apply an effective treatment protocol with low morbidity for described conditions using curvilinear distractors, intraoral approach and early orthodontic treatment.

Methods. We report 6 patients aged from 2 to 11 years with bilateral mandibular hypoplasia combined with anterior open bite. These patients were characterized by severe malocclusion, esthetic facial deformation and respiratory disorders. The curvilinear intraoral distractors placed with intraoral surgical approach were used in all cases. Three-dimensional computer planning was used to facilitate the vector and osteotomy line choice. After 7 days latency period the distraction started with the average rate 1 mm/day. The callus formation controlled by ultrasound examination led to distraction rate correction in some cases.

Results. The callus from 15 to 25 mm was achieved conforming to distraction period of 15-25 days. Curvilinear vector permitted to achieve the counterclockwise mandible rotation in combination with antero-posterior mandibular growth.

We started the orthodontic treatment as soon as the distraction period was completed. The orthodontic treatment during retention (6 months at least) leads to important functional occlusal improvement in addition to immediate esthetic result. The good bone formation was seen during distractors removal. Respiratory disorders released in all cases.

Conclusion. The sophisticated algorithm is necessary to manage mandibular hypoplasia and anterior open bite in children with primary or mixed dentition. The less traumatic intraoral approach, curvilinear distractors, ultrasound callus formation control and early orthodontic treatment assure the good functional and esthetic result in severe cases facilitating the continuity in complex rehabilitation of growing child.

**P-1117****COMBINED TRANSCRANIAL AND TRANSNASAL ENDOSCOPICALLY ASSISTED APPROACHES FOR ANTERIOR AND BASAL ENCEPHALOCELE SURGICAL TREATMENT IN CHILDREN.**

V.V.Roginsky¹, D.N. Kapitanov², L.A. Satanin², A.V. Sakharov², A.L. Ivanov¹

¹ *Pediatric Maxillofacial Surgery, Central Research Institute of Stomatology and Maxillofacial Surgery, Moscow, Russian Federation*

² *Pediatric Neurosurgery, Burdenko Research Institute of Neurosurgery, Moscow, Russian Federation*

Objectives: Anterior and basal encephaloceles are very rare and most commonly presented with a mass at the glabella or at the root of the nose, orbital hypertelorism, CSF rhinorrhea, recurrent episodes of meningitis or sometimes as a nasal mass. Nasal discharge along with a mass in the nasal cavity is sometimes misdiagnosed as nasal polyp. Biopsy or polypectomy may cause CSF leakage or intracranial hematoma. The computed tomography and magnetic resonance imaging may help in diagnosing this condition and treatment planning.

Material and Method: We report 49 cases of anterior and basal encephaloceles operated by the different approach. 25 were male and 24 were female; their ages ranged from 2 month to 8 years (mean 18 months). 35 patients had anterior, 14 had basal encephaloceles. All of them had been diagnosed fronto-ethmoidal and basal encephaloceles with CT, MRI and nasal endoscopy.

Results: The goal of surgery is the resection of the encephalocele at an early stage, through a transcranial or combined transcranial and transnasal endoscopic approach, without damaging the vital brain tissues and achieving closure of the defect of dura mater and bone. Bifrontal craniotomy was performed. Transcranial basal approach allowed the direct visualization of bone defect and provided a means of large vascularized pericranial flap use. Then encephalocele was resected and skull base reconstruction was performed. The endoscopic endonasal approach was used in conclusion. All patients were discharged home within two weeks. Follow up ranged from 3 months to 12 years. No postoperative complications were observed.

Summary: Basal neurosurgery approach in the treatment of anterior encephaloceles and combined transcranial-transnasal endoscopic approach in treatment of transethmoidal encephalocele is the best in children with this pathology, because during one hospitalization can treat the child, and assure minimal stay in hospital.



P-1121

A CHARITABLE MEDICAL ACTIVITY FOR CLEFT PALATE PATIENTS IN INDONESIA.

Kumiko Fujiwara, Sayaka Inoue, Nagato Natsume, Geniku Kohama, Makoto Noguchi

Japan, Nagoya city, Aichi, Japan

Objective

Our activity supported by Japan Cleft Palate Foundation (JCPF) for cleft children in Indonesia started in 1996. In Indonesia, medical facilities and hospital progressed by economic development and the number of the doctors who can perform a cleft lip and palate operation also increased. On the other hand, the imperfect operation was carried out because the technical education was not enough. We need to consider these problems in order to examine what kind of assistance activities will be required in the future.

Result, Conclusion

1) A total of 17 activities has been performed in various area of Indonesia. The Cleft Center was founded to Bandung in 2006, and it has striven for the improvement in medical technology of the area.

2) The patients had a problem although operation have been finished. Such a patient was accepted not in urban areas but in the small city of the suburbs.

The importance of not only the technique of an operation but postoperative management or the educational activity to a patient is increasing. We would like to adopt such contents to future charitable medical activity.

**P-1131****NI-TI BASED IMPLANTED ACTIVATOR FOR NASAL MEATUS DILATION**

G. Karachunskiy, A. Nikitin, S. Radvanskaya

Maxillo-facial surgery, Moscow regional scientific research clinical Institute, Moscow, Russian Federation

Reconstructive rhinocheiloplasty in cleft lip patients is a difficult surgery due to tissue deficiency or cicatricial defect as a result of earlier performed operations. In postoperative period it is required to use the individual endonasal activator for nasal stenosis prevention.

Objective:

To develop endonasal activator with easy placement to prevent scarring deformities in patients after surgeries.

Materials and methods:

The activator is an oval cylinder frame made of ni-ti wire. The upper part of the frame has a curve positioned to the region of nasal dome.

At temperature less 10°C the device is getting smaller and can be easily installed into the nasal cavity. In contact with body the device gets warm and shapes to its initial form and can hold this form for a long period of time dilatating the walls and preventing stenosis and deformation of meatus.

The wearing period is in average 2-6 months. First 2-3 weeks the device is to be worn permanently, later it can be day- or nighttime regimen. The device is bioinert that makes the visual examination of nasal cavity easy and allows controlling the position. It also keeps the correct form for a long period, pressing the around walls with appropriate force not causing necrosis of tissues.

The construction was used by 47 patients after rhinoheiloplasty. The significant enhancement of clinical results was seen in postoperative period: the surgically constructed form of nasal meatus is being kept at most possible not requesting the volume correction. No deformation is noticed in case of correct maintenance.

**P-1133****HYPOMOBILITY OF THE MANDIBLE CAUSED BY BILATERAL ELONGATION OF THE CORONOID PROCESS**

Z. Raskó, L. Seres, M. Balogh, J. Piffkó

Dept. of Oral- & Maxillofacial Surgery, University of Szeged, Szeged, Hungary

Objectives

Bilateral elongation of the coronoid process is an infrequent reason for hypomobility of the mandible. Other aetiological factors like muscular disorders or temporomandibular joint derangement are more common. The aim of this paper is to present a case of elongated bilateral coronoid processes that resulted in severe restriction of mandibular movements.

Patient and Methods

A 36-year-old man was referred to our department for the removal of the right lower second molar tooth. On examination jaw opening was limited to 5 mms and lateral excursions were minimal. He reported that this condition had developed gradually over the years. His medical history was unremarkable except for a childhood diagnosis of a virus infection. Later on he was explained by his general practitioner that the limited mouth opening was a postinfectious neurological disorder. Clinical examination failed to reveal any possible associated etiological factors. Neurological examination was unremarkable. Orthopantomogram revealed bilateral elongation of the mandibular coronoid processes. CT scans and three-dimensional reconstructions confirmed the diagnosis. Surgical intervention was performed; both coronoid processes were osteotomised from an intraoral approach. Intensive postoperative physiotherapy was started following surgery.

Results

Jaw opening exceeded 40 mm by the 8th postoperative week. The patient is satisfied with the result. Normal eating and chewing function has been restored after more than twenty years.

Conclusions

In the differential diagnosis of mouth opening limitations bilateral elongation of the coronoid processes always has to be considered. Surgery followed by complex physiotherapy is the treatment of choice; this way the mouth opening can be reestablished, and the patient can reach appropriate quality of life.

**P-1137****THE APPLICATION OF BIORESORBABLE PLATES AND PINS IN ALVEOLAR CLEFT BONE GRAFTING.**

S. Nikolaeva, S. Ulyanov, M. Rershina, prof O. Topolnitskiy, N. Borovitskaya, R. Fedotov, S. Yakovlev

Pediatric Maxillofacial Surgery, Moscow State University of Medicine and Dentistry named after A.I. Evdokimov (MSUMD), Moscow, Russian Federation

In our hospital we are using titanium plates and screws for the osteoplasty of cleft alveolar ridge and there were complications in the form of the eruption of titanium construction which later led to a partial loss and the removal of the graft.

Objective: a reason why an application of bioresorbable plates and pins in osteoplasty of cleft alveolar ridge is useful

Material and Methods: Since 2012 the Department of Paediatric Maxillofacial Surgery MSUMD has applied bioresorbable plates (Resorb X platte) and pins (SonicPins Rx) Kls Martin in 20 cases for patients with congenital single and bilateral cleft alveolar ridge. 16 patients had a unilateral and 4 patients had a bilateral cleft of alveolar ridge. Bioresorbable plates and pins have been used in 18 cases of delayed cleft osteoplasty and in 2 cases of recurrent osteoplasty.

Result: The grading of reparative regeneration in area of intervention was based on Bergland system (modified by Brusati R., Mannucci N.), 1986. All patients were invited in the postoperative period to the examination in terms of 1, 3, 6, 12 months for X-ray control of the upper jaw (including orthopantomography, intraoral images, and computed tomography). Thus, there was a result based on Bergland system for different terms of postoperative period: type 1 – 1 case; type 2 – 10; 3 – 6; 4 – 3 cases.

Discussion and Conclusion: During the surgery all patients have received a good primary stability of the bone graft. The postoperative period was uneventful. According to the CT scan performed after surgery, it was noted that the bone graft is firmly fixed to the side fragments of the alveolar process of maxilla. In the late postoperative period 17 patients have obtained a reclaim which is sufficient for rational prosthetics, including dental implants. The application of bioresorbable plates eliminates the need for further removal of titanium structures; SonicWeld Rx system entirely allows to make a stable fixation in the crevasses as mono - and bicortical transplant before the end of the timing of its recovery.



P-1140

ENDOLUMINAL SCLEROSIS OF LOW-FLOW VASCULAR MALFORMATIONS IN HEAD AND NECK WITH A DIODE LASER. SERIES OF CLINICAL CASES.

J. Bara, E. Montané, C. Mazzara, O. González, G. Raspall

Oral and Maxillofacial Surgery, Sagrat Cor University Hospital, Barcelona, Spain

Introduction

Vascular abnormalities are common processes that are located in more than 50 % of cases in the region of the head and neck. Until recently, standard treatments were surgery and chemical sclerosis. Currently, treatment with laser obtained excellent results with low morbidity and especially allows us to treat large tumours in complex anatomical sites with a minimally invasive technique. The laser diode causes photocoagulation sclerosis by intralesional malformations low flow after being applied by an optical fibre.

Aim

Demonstrate that the technique of endoluminal sclerosis 980 nm diode laser in large low-flow vascular malformations get excellent results with low morbidity.

Material and methods

A series of six clinical cases of vascular tumours of low flow in the area of the head and neck are presented and treated with 980 nm laser diode, most of them had not responded to previous treatments of surgery or chemical sclerosis. The technique is described and the results are displayed.

Results

After application of one or more sessions of laser therapy, excellent results are obtained in most cases. The technique can be performed in many cases with local anesthesia in an outpatient setting.

Conclusions

The laser diode is a very good option for treatment of vascular tumours of low flow in the head and neck area. It is a very reliable and simple technique with low morbidity and excellent results.

**P-1195****STAGING OF CRANIOFACIAL PROCEDURES IN CHILDREN WITH SYNDROMAL CRANIOSYNOSTOSIS**

S. A. Yasonov¹, A. V. Lopatin¹, I. G. Vasiliev²

¹ *Cranio-maxillofacial, All-Russian children's hospital, Moscow, Russian Federation*

² *Neurosurgery, All-Russian children's hospital, Moscow, Russian Federation*

Introduction. Common treatment protocol for syndromal craniosynostosis includes Le Fort 3 osteotomy and distraction of facial middle third following cranioplasty. In some cases it is possible to carry out maxillary distraction and cranioplasty simultaneously to reduce intracranial pressure and decrease upper airway volume. However there are few disadvantages in this protocol like skull defects and extremely thin bones after cranioplasty especially in temporoparietal regions. It complicates fixation of distraction devices needed to get appropriate maxilla advancement. Furthermore simultaneous distraction of facial upper and middle third sometimes is very difficult in term of equal advancement of forehead and maxilla because of different degree underdevelopment those regions. In order to resolve this problem we have changed the sequence of surgery procedures for children with syndromal craniosynostosis. First step was LeFort 3 osteotomy with rapid distraction maxillo-orbital complex for 1,5-2 weeks without retention period. Then cranioplasty was performed. During this second stage operation maxillo-orbital complex was fixing to hold it in advanced position. In this way it was possible to bring forward and tilt forehead as good as it was for only this case.

Method. We used this protocol from 2008 to 2013 for treatment of 7 children 4-12 years old. Distraction devices were RED-System's and bone fixation by biodegradable materials were in place.

Results. In all cases we have got satisfactory results moreover we managed to avoid complications like intracranial penetration of distraction device pins, nasal CFS leakage and distortion of zygomatic bone along zygomatico-maxillary suture. Distinct advantage our protocol was reducing time of Red-system wearing.

Conclusion. We consider this staging of surgeries useful for children with Apert and Pfeiffer (type1) syndromes in case of markedly underdevelopment of facial middle third and correction of airway difficulties is mandatory. This protocol can be helpful for Crouzon and Pfeiffer (type2) syndromes when children are older 7-8 years and had no cranioplasty surgeries before.



P-1198

TREATMENT OF SKULL SCOLIOSIS

S. A. Yasonov, A. V. Lopatin, I. G. Vasiliev

Craniomaxillofacial surgery, All-Russian children's hospital, Moscow, Russian Federation

Introduction: Treatment of asymmetrical deformation of craniofacial skeleton is the most difficult surgery task. One of the rare asymmetries is a tilting of skull that we usually can observe in patients with unicoronal synostotic plagiocephaly. This deformation has no distinct name, but in several works they called it "cranial or skull scoliosis" There is no articles where this deformation were discussed, but they are and needed to be resolved. Especially this problem is important for children with Apert and Saethre-Chotzen syndromes and polysynostotic plagiocephaly. Treatment of these patients is very dangerous. Significant shift of skull bones during surgery may damages underlying brain tissue because of huge pressure arising when shape of cranium is changing dramatically.

Method: We operated on 6 children with severe skull scoliosis. For 5 patients common one stage cranioplasty was enough. One child required dynamic cranioplasty. In this case nickel-titanium springs with shape memory was applied. For this reason we use prototype model of patient's skull. Then operation was performed on the model and after fixation all fragments in desire position nickel-titanium springs was customized. These springs were placed on cranium after desire osteotomies were performed. Gradual changing of cranial shape with decreasing of tilting took 2 weeks. Second stage was final cranioplasty with removing springs and rigid fixation of bone fragments.

Results: We got satisfactory results for every case and we did not observe any neurologic complications for the long term.

Conclusion: We consider using of titanium plate and screw fixation for these cases in order to save bones fragments in desire position and avoid any risk of relapse.

**P-1219****GIANT LINGUAL LYMPHANGIOMA: TWO CASES**

J.F. Montes, R. López, R. Belmonte, A. García-Perla, N. Fakihi, E. Torres

Virgen del Rocío University Hospital, SAS, Seville, Spain

OBJECTIVES

We present two cases of giant lingual lymphangioma treated in our hospital in children aged about 4 years old. This is a lymphomatous, macro and microcystic rare malformation, which can benefit with medical and surgical treatment.

MATERIAL AND METHODS

Both patients had significant macroglossia due to malformation, with great difficulty eating and swallowing, phonation, and even for ventilation, repeatedly presenting episodes of major bleeding that forced his hospitalization. In both patients the initial medical attitude was treatment with steroids, but obtained no good answer, after with sclerotherapy treatment, and in one case a CO2 laser surgery, which also did well, so it is surgically intervened, performing a large resection of the tongue (in a case of about a third tongue, and the other nearly 50%). Strict control over the airway and held sacred in the Paediatric ICU during the first 2 postoperative days. In some cases, the big one, besides removing the residual subsequently treated tongue, which still had Microcystic component required CO2 Laser.

RESULTS

In both patients the significant reduction of macroglossia was already apparent in the immediate postoperative period, significantly improving power, phonation and respiration, showing no significant bleeding episode. There were no postoperative short or medium term complications (follow up in one of the cases is 2 years, and the other 9 months)

DISCUSSION

Although classically been treated with some success this type of lymphatic malformations with medical therapy (corticosteroids) and conventional sclerotherapy and / or laser, where the answer is not favorable and functional alterations are very important, it should be noted the surgical treatment. In our cases remains to evaluate the long-term outcome, although so far the results are very favourable.

**P-1243****LEFORT III OSTEOTOMY AND MIDFACE DISTRACTION IN CROUZON SYNDROME.**

A. Garcia-Perla¹, R. Belmonte¹, A. Garcia-Lainez², F. Iglesias¹, P. Infante¹, J.L. Gutierrez¹

¹ *Department of Oral and Maxillofacial Surgery, Hospital Universitario Virgen del Rocío, Sevilla, Spain*

² *Oral and Maxillofacial Surgery, Private Practice, Sevilla, Spain*

Introduction

Crouzon's disease is characterized by the presence of craniosynostosis, exorbitism, maxillary hypoplasia and absence of deformity in the extremities. The inheritance pattern of this disease is autosomal dominant with complete penetrance and variable phenotypic expression, with an incidence of 1/25000 births. The main indications for surgery of the midface are breathlessness and visual disturbances.

We present two cases treated by Lefort III osteotomy and distraction osteogenesis with Halo type external device.

Material and methods.

Two patients diagnosed with Crouzon syndrome with severe exorbitism due to a facial hypoplasia.

In both cases extracranial Lefort III osteotomy was performed with complete mobilization of the midface. External distraction device type Halo (Blue Device. Biomet) with anchorage in the maxilla was placed.

Results

A distraction of 22 mm was made in the first case and 26 mm in the second. The device was removed after 6 months. In both cases, breathing problems and exorbitism resolved. There was also an obvious aesthetic improvement. There was no major complication

After two years of follow-up results are stable with evident improvement

Discussion

Distraction osteogenesis is a surgical technique that can correct several craniofacial deformities . Craniosynostosis and complex clinical expression in the face and skull can be treated using different osteotomies, and then make planned progress with distraction osteogenesis. As distraction is a gradual process, the resistance of the soft tissues to progress easily overcomes achieving breakthroughs anteroposterior till around 40 mm.. The use of external devices allow changing the direction of the advance and allowing further progress. Bone advances are maintained by the bone formed on the lines of osteotomies and aesthetic-functional changes are very satisfactory.



P-1244

SECONDARY CLEFT RHINOPLASTY – EVALUATING PATIENT REPORTING IMPACT ON QUALITY-OF-LIFE AND NASAL FUNCTION

T. Flood, A. Morton, D. Thomas, S. Stagnell, J.Burdett, K.French, K.Tidbury

Oral & Maxillofacial Surgery, Spires Cleft centre, Salisbury District Hospital, Salisbury, Wiltshire, SP2 8BJ, United Kingdom

Background

Rhinoplastic surgery is one of the key surgical episodes in the cleft care pathway. The aim of treatment is to improve function and appearance in order to improve their quality of life (QoL).

Objectives

- 1) Explore the QoL after rhinoplasty in relation to appearance and psycho-social impact.
- 2) Observe symptoms in relation to nasal function after surgery

Methods

We combined 2 separate questionnaires: The ROE(Rhinoplasty Outcome Evaluation) devised by Al-Saraaf et al and the 12-item nasal-symptom questionnaire developed by Fairley. CLP patients who have had rhinoplastic surgery between 2006-2013 were sent questionnaires (n=35), with a second wave sent 3 weeks later. This was followed up by telephone inquiries to improve response rate.

Results

20 (2006-2010) indicate positive outcomes of 85.7% in terms of appearance and 86.3% in terms of function. Cumulative data until 2013 will be presented.



P-1245

RHINOPLASTY IN CLEFT CARE: CLINICIAN ASSESSED AESTHETICS OF THE NOSE FOLLOWING CLEFT RHINOPLASTY

T.Flood, A. Morton, D.Thomas, S.Stagnell, K.French, K.Tidbury, J.Burdett

Oral & maxillofacial surgery, Spires cleft centre, Salisbury District Hospital, Salisbury, Wiltshire, United Kingdom

Background

Rhinoplastic surgery is one of the key surgical episodes in the cleft care pathway for patients. The aim of surgery is to improve function, facial appearance and self confidence. Pre and Post surgical photometric analysis by clinicians, compares these images and is useful in objectively defining improvements in aesthetics achieved.

Objectives

The aim was to assess the postoperative improvement following cleft rhinoplasty using clinical anatomical landmarks such as; alar width, columella height, interdomal width, nasal tip deviation and dome slope.

Methods

This is a retrospective analysis of Rhinoplasty cases, that had an average follow up of 9 - 12 months. Open Rhinoplasty was performed by a single surgeon. Pre-operative and post-operative photometric analysis in frontal & worms eye view.

Results

We plan to present consecutive data on a cohort of 34 patients



P-1255

LATE REACTIVATION OF CHERUBISM IN A PATIENT WITH NEWLY ONSET POLYCYSTIC OVARY SYNDROME

D. Lenouvel, D. Chapireau, R. Bentley

Oral and Maxillofacial Surgery, King's College Hospital, London, United Kingdom

Aims:

To describe a case of cherubism with late progression, after skeletal maturity had been reached, coinciding with a recent diagnosis of polycystic ovary syndrome (PCOS).

Methods:

We reviewed the literature (in EMBase, Scopus and PubMed) and searched for any reported association between cherubism and PCOS. We also reviewed the cases of late reactivation of cherubism .

Results:

This is to our knowledge the first case report of cherubism associated with PCOS.

Discussion/Conclusion:

Cherubism is a very rare disease, which in its normal course becomes quiescent after puberty. Only a few cases of late growth have been reported. The understanding of the condition has evolved in recent years with a better understanding of the underlying genetics, its association with inflammation and treatment timings. However much remains unknown about this rare condition and its variance in severity.

We show a case of cherubism reactivation coinciding with changes seen in PCOS. Interestingly both PCOS and cherubism are associated with low-grade inflammatory state. We discuss the influence PCOS might have in the disease progression.

**P-1259****MIDFACIAL ADVANCEMENT IN PATIENTS AFFECTED BY OBSTRUCTIVE SLEEP APNEA SYNDROME: POLYSOMNOGRAPHIC AND CEPHALOMETRIC EVALUATION**

F. Mazzoleni¹, M.C Meazzini^{1, 2}, L. Ferrari¹, G. Novelli¹, R. Saez Vigo¹, A. Bozzetti¹

¹ *Maxillo Facial Surgery, San Gerardo Hospital, Monza, Italy*

² *Maxillo Facial Surgery, San Paolo Hospital, Milano, Italy*

OBJECTIVES: We evaluated the correlation between the skeletal facial advancement through LeFort III osteotomy and the modification of polysomnographic values in syndromic patients with sleep respiratory disorders affected by craniofacialsynostosis.

METHODS: We selected a sample of 17 syndromic patients with midfacial hypoplasia affected by mild to severe OSAS. One of them had permanent tracheotomy and another one was in CPAP (Continuous Positive Airway Pressure) treatment. All patients underwent a Le Fort III osteotomy between 2004 to 2013. In five cases we used the "classical technique" and in 12 cases distraction osteogenesis. Sleep respiratory disorders were evaluated by pre-op and post-op polysomnography: the parameters used were ODI (oxygen desaturation index) and AHI (apnea-hypopnea index). All patients had pre-op and post-op cephalometric records to measure the midfacial advancement.

RESULTS: The average midface advancement was 16 mm (10-28 mm) measured at A point. The average pre-op polysomnographic records were: ODI 28.6 (8-75), AHI 23.2 (8-50). The average post-op polysomnographic records were: ODI 3.88 (0,3-7), AHI 4.14 (0.2-3). In the tracheostomized patient we removed the tracheostomy and the patient with CPAP stopped the treatment.

CONCLUSIONS: The respiratory disorders in syndromic patients with midfacial hypoplasia have different clinical manifestation: from snoring to acute respiratory distress requiring tracheostomy. Our study demonstrates an improvement of polysomnographic values in all patients, with a shift from severe to mild OSAS or even a complete resolution.

**P-1265****SEGMENTAL OSTEOPLASTY OF THE LESSER SEGMENT. DISTRACTION OSTEOGENESIS TECHNIQUE VS. ONE STEP SEGMENTAL REPOSITIONING.**

O. Emodi¹, D. Noy¹, D. Aizenbud², A. Rachmiel¹

¹ *Departement for Oral and Maxillofacial Surgery, Rambam Health Care Campus, Haifa, Israel*

² *Unit of Orthodontic and Cleft Palate, Rambam Health Care Campus, Haifa, Israel*

Background:

Alveolar bone grafting (ABG) in a wide alveolar cleft is one of the more challenging operations for the craniofacial surgeon. It involves creating large flaps and large amount of bone graft material. Possible pitfalls associated with ABG are increased chance of bone resorption and oro-nasal fistula. The aim of this study is to demonstrate two alternating methods for reducing cleft size prior to or simultaneous with the ABG procedure.

Patients and Methods:

6 patients with unilateral cleft lip & palate after complete resorption of secondary alveolar bone graft underwent segmental osteoplasty of the lesser segment; Two patients underwent transport distraction osteogenesis (DO), and four patients underwent segmental osteoplasty with immediate repositioning (SO). In the DO group, the large cleft palate defect (larger than 15mm) was reconstructed in three dimensions using two-stage DO; Removal of the transport distraction device was accompanied by autogenous bone grafting to the remaining alveolar defect in the medial cleft. In the SO group the lesser segment was transpositioned via Schuchardt technique and fixated as preplanned using a model cast and a pre-fabricated orthodontic appliance. The alveolar ridge was reconstructed simultaneously with iliac crest autogenous bone graft. The appliance was removed 3 months postoperatively.

Results:

Both techniques facilitated closure of the alveolar defect. No other significant complications were noted (including oronasal fistula, infection, and significant bone resorption).

Conclusions:

Both techniques allow closure of a wide alveolar defect. SO usually mandates the transformation of the canine to a lateral incisor with resulting reduction in dental arch span. However, it is a one stage procedure. DO may allow enough space for implant placement, albeit it is a two-stage procedure. Both methods may serve as an excellent solution for wide alveolar clefts and for failed bone grafting in large cleft area.

**P-1284****DISTRACTION OSTEOGENESIS IN NON-SYNDROMIC CRANIOSYNOSTOSIS**

Yong Oock Kim, Myung Chul Lee

Plastic and Reconstructive Surgery, Yonsei University College of Medicine, Seoul, South Korea

Objective

Nonsyndromic craniosynostosis is controversial regarding whether more extensive procedures achieve superior results and if it affects intracranial volume, development of patients. Various surgical designs of craniotomy have been introduced for distraction osteogenesis and cranial vault remodelling. We present a uniform surgical design for distraction osteogenesis in various non-syndromic craniosynostosis and outcomes analyzed.

Methods

One hundred twenty-eight patients with isolated nonsyndromic craniosynostosis underwent cranioplasty with distraction osteogenesis procedures (Sagittal 46, Unicoronal 26, Bicoronal 21, Lambdoid 23, Metopic 12). As for the design of osteotomy, cranium relevant to hemisphere is divided into four quadrants. About two centimetre of calvarial strip is remained just posterior to the site of coronal suture as a buttress. Bone flaps of each quadrant are elevated with craniotomy. Distraction devices are applied according to direction of distraction. 3DCT scan and assessment of developmental index were performed pre and postoperatively. Additionally, intracranial volume and cephalic index were measured for forty-six sagittal synostosis patients.

Results

Average age of patients was 24 months (range 1 month – 10 years). Mean period from the date of application to removal was 3.5 months. All patients attained symmetric and satisfactory cranial shape. 76% showed improvement in developmental index. In case of sagittal synostosis, average cranial index was improved from 74.13 (range 60-88) to 81.27 (range 69-104). Mean intracranial volume increased from 1065.43 ml (range 706.6 ml – 1476.9 ml) to 1193.52 ml (range 754.6 ml – 1603.4 ml).

Conclusions

Uniform surgical design for distraction osteogenesis is applicable in various non-syndromic craniosynostosis. Bone flaps of four quadrants are useful to determine direction and amount of distraction. Certain amount of adjustment is possible during the period of distraction. Cranioplasty with distraction osteogenesis procedures for nonsyndromic craniosynostosis resulted in expansile forces of the growing brain to be distributed. As for the development of patients, positive effectiveness was proved.



P-1285

CHANGES IN THE 3-DIMENSIONAL ANATOMY OF PALATAL SHELVES IN UNILATERAL CLEFT LIP AND PALATE(UCLP) PATIENTS FOLLOWING VOMER FLAP REPAIR

N. Perinparajah, C. Gravenor, D. Drake, S. Colbert

Oral & Maxillofacial Surgery Department, Morriston Hospital, Swansea, Wales, United Kingdom

Aim: To determine the changes in palatal shelf dimensions & angulations following anterior palate vomer flap

Objective: To assess the effects of vomer flap repair on maxillary arch development and soft plate cleft width

Method: 3D-analysis of plaster models from 25 consecutive UCLP patients, who underwent the Oslo technique involving a rotational-advancement flap of the lip and vomer flap repair of their anterior hard palate at 3 months with subsequent soft palate closure at 9 months, was undertaken. The study models were assessed by a single investigator, scanned and re-assessed. Palatal shelf length, angulations and palatal cleft width measurements were recorded along with previously validated Seckel et al's landmarks.

Results: The following significant 3D changes were noted:-

Narrowing of the alveolar cleft width at the anterior border,

Reduction in maxillary arch length from pre-maxillary margin of cleft to tuberosity axis,

Increase in arch length from lateral segment of cleft margin to tuberosity axis,

Anterior Cleft width at canine arch width narrowed,

Posterior Cleft width at tuberosity axis narrowed,

Increased Shelf length bilaterally both along the occlusal plane & along either side

Conclusions: This is the first study in this area to demonstrate that the above changes in palatal shelf length following anterior palate repair with a vomer flap has shown to be significant although the size of the effect is small.

Summary: The clinical relevance of this study is that if the palatal shelves do grow longer, then this helps determine the optimum timing of unilateral cleft lip and palate (UCLP) repair particularly in very wide clefts. In the future, the need to store vast quantities of study models may be obliterated and replaced with three dimensional (3D) imaging tools that provide remote access, increased validity and reliable results.

The repair of a unilateral cleft lip and anterior hard palate is thought to affect the posterior maxillary width and the dimension of the cleft in the soft palate. The narrowing of the posterior cleft can be attributed to a significant increase in bilateral shelf lengths as opposed to a rotational change in shelf angulations.



P-1291

SECONDARY SKULL RECONSTRUCTION WITH AUTOGENOUS SPLIT CALVARIAL BONE GRAFTS VERSUS NON-AUTOGENOUS MATERIALS

Hee Jong Lee, MD, Jong Woo Choi MD, PhD, MMM, In Wook Chung, MD

Department of Plastic Surgery, Asan Medical Center, University of Ulsan, College of Medicine, Seoul, South Korea

Background: Skull reconstructions, which can be required for various reasons, including decompressive craniectomy, trauma and tumours, are challenging issues in the field of plastic surgery. Moreover, obtaining a low complication ratio in secondary skull reconstructions is more difficult than in primary skull reconstructions. Because standardized protocols have not been established, we here compare cranioplasty performance using fresh autogenous split calvarial bone grafts and allogenic or alloplastic materials in secondary revision cases.

Methods: Surgical correction of skull defects was undertaken in 25 patients in our centre between 2005 and 2012. Only secondary cranioplasty cases were reviewed retrospectively. There were 17 men and 8 women, with ages ranging from 8 to 62 years at the time of surgery. The average follow-up was 55.6 months. The surgical procedure in each case was a routine cranioplasty. In most of the cases, a one-piece split calvarial bone graft was used while minimizing the separating of the bone flap into multiple pieces.

Results : In comparison with the skull reconstruction approach using non-autogenous materials, the functional and aesthetic results of skull reconstruction using autogenous calvarial bone grafts were better and more consistent in secondary revision cases. The group that received autogenous calvarial bone grafts showed a reconstruction success rate of 80% without aesthetic and functional complications. In contrast, the group that received non-autogenous materials had a 30% success rate.

Conclusions: Secondary cranial defect reconstructions with autogenous calvarial bone grafts showed better functional and aesthetic results than skull reconstructions with non-autogenous materials.

**P-1298****NON SYNDROMIC CRANIOSYNOSTOSIS: MORPHOLOGICAL AND VOLUMETRIC EVALUATION OF BRAIN BEFORE AND AFTER SURGICAL TREATMENT**

J.Lenzi¹, V. Ramieri², E.Basile², E.Riccardi², F.Caporlingua¹, P.Cascone², G.Iannetti²

¹ *Dipartimento di neurologia, psichiatria, neurochirurgia, "Sapienza" Universita' di Roma, Roma, Italy*

² *Dipartimento di scienze odontostomatologiche e chirurgia maxillo facciale, "Sapienza" Universita' di Roma, Roma, Italy*

Objective: Craniosynostosis consists of a premature fusion of the sutures in an infant skull that restricts skull and brain growth. It can result in an alteration of intracranial pressure and brain development. The cranial sutures are active sites of bone deposition and growth under the pressure of the brain which increase its volume in the first three years of life: therefore the main objective of early surgery is the release of the sutures in order to allow the brain to reshape the cranial vault. Our goal is to evaluate the restoring of brain morphology and to quantify the volumetric changes before and after surgery.

Methods: Analysis of 10 patients affected by non syndromic craniosynostosis and treated at the Oral and Maxillo Facial Department of 'Sapienza' University of Rome, Italy has been performed. The analysed sample is composed by 4 trigonocephaly, 4 scaphocephaly and 2 plagiocephaly. All of them were treated by cranial vault remodelling. Each patient performed CT scan pre and post surgical treatment. Intracranial volumes of these patients before surgery, immediately after and at longest follow up available (mean age 3 years) were analysed with the help of MINT software.

Results: The comparison between the pre and post operative CT scan data showed volume variation and immediate brain remodelling. Brain volume average increase of Trigonocephaly sample was 54,1 %, of scaphocephaly sample was 35,65% and plagiocephaly was 27,65%. We observed each patient resumed the physiological brain growth, reaching normal brain volume.

Conclusions: Early cranial vault remodelling leads volumetric increase of brain to reach physiological value. Above all, this surgical treatment unlocks the remodelling power of brain, ensuring a physiological growth and normal morphology.

**P-1309****SEPTOPLASTY APPROACH TO THE PREMAXILLA OSTEOTOMY IN BILATERAL CLEFT LIP PATIENTS.**

A Ferrer Fuertes¹, E García Díez², R Sieira Gil¹, J Rubio Palau¹, C Martí Pagés¹, GY Cho-Lee¹

¹ *Oral and Maxillofacial Surgery, Clinic Hospital, Barcelona, Spain*

² *Oral and Maxillofacial Surgery, Sant Joan de Déu Hospital, Barcelona, Spain*

Patients with bilateral cleft lip present alterations in the vertical and sagittal dimension of the premaxilla, which can be managed through orthopaedics, orthodontics or premaxilla osteotomy. At Sant Joan de Déu Hospital, premaxilla osteotomy is performed through a septoplasty endonasal approach, avoiding large intraoral flaps that may compromise vascularization. The classic approach is through an intraoral approach, simultaneous or not with alveolar cleft grafting.

A series of 17 osteotomies were performed in 15 patients between November 2007 and January 2014 through a septoplasty approach, followed by osteotomy and impaction of the premaxilla. The osteotomy was then stabilised with a cemented acrylic splint for 2 months. The main aim was to assess the variations of the torque of the teeth at the premaxilla, together with the correction of the sagittal and vertical dimension, and the assessment of the possible complications.

The median age at the time of surgery was 14.1 years old (range: 6-21 years old). Correction of the torque was achieved in most patients, followed by correction of the sagittal dimension. Two patients presented a relapse of the premaxilla: one was due to the absence of bone healing, and the other one due to an unsatisfactory orthodontic management during pubertal growth. In both cases, the osteotomy was later repeated through the same approach, with favourable results. 80% of the patients have already had a successful alveolar bone graft.

Our experience shows that the septoplasty approach can achieve good results in the premaxilla osteotomy, minimizing vascular compromise because the gingiva is not elevated. However, as a minimally invasive surgery, it limits the vision at the time of the osteotomy due to the small incision required. In our hands, alveolar bone grafting is always delayed for a posterior surgery.

**P-1311****MANDIBLE BILATERAL DISTRACTION IN HANHART SYNDROME.**

A Ferrer Fuertes¹, E García Díez², R Sieira Gil¹, C Martí Pagés¹, J Rubio Palau¹, GY Cho-Lee¹

¹ *Maxillofacial Surgery, Clinic Hospital, Barcelona, Spain*

² *Maxillofacial Surgery, Sant Joan de Déu Hospital, Barcelona, Spain*

A 4 year-old patient with Hanhart syndrome consulted at Sant Joan de Déu Hospital with hypoglosia, adactilia and severe retrognathia. The patient had had several surgeries on his left hand, as well as surgery in the neonatal period to remove maxillomandibular bands, to correct a lack of mandibular union at the symphysis and to close a palate cleft. Due to sleep apnoea and total absence of occlusion, a bilateral mandibular distraction was decided, together with bilateral coronoidectomy.

Under general anaesthesia and through a bilateral Risdon incision, a bilateral coronoidectomy was performed, together with the placement of one intraoral KLS-Martin distractor at each mandibular body. Distraction started 5 days later, with 1 mm per day up to a total of 28 mm. This distraction allowed the patient to achieve dental occlusion for the first time. The external pins were removed after the final distraction distance was achieved, to allow good compliance of the patient during consolidation phase. Image controls showed favourable bone growth. The distractors were removed after 3 months.

Hanhart syndrome is an extremely rare disorder characterised by oromandibular anomalies, such as aglosia and retrognathia, together with limb defects such as adactilia or peromelia. Its aetiology is not clear, but it is suspected to be related to intrauterine environmental factors, such as amniotic bands or vascular accidents of the first branchial arch, while other authors suggest its association with teratogenic drugs, persistence of embryonic membranes or genetic defect.

In the case reported, the child was conceived through in vitro fecundation, with an uneventful pregnancy until at week 31 polihidramnios was detected, together with a left hand malformation. Serologic tests were all negative. Birth was uneventful. The newborn showed severe micrognathia, maxillomandibular bands and multiple agenesis in the phalanxes of the hand. Cariotype was normal.

The distraction allowed a dramatic improvement in the airway, improving sleep apnoea. The association of coronoidectomy permitted a successful rehabilitation of the mouth opening, improving the capability to chew.



P-1369

NONSYNDROMIC CRANIOSYNOSTOSIS IN CHILDREN, SURGICAL OUTCOME

M. Tichý¹, J. Kozák¹, M. Vaculík¹, J. Schwab¹, P. Libý¹, H. Krásničanová²

¹ Neurosurgery dept., University Hospital Motol, Prague, Czech Republic

² Pediatric dept., University Hospital Motol, Prague, Czech Republic

Objectives: Children are affected with various type of pathology involving the anterior skull base area, including nonsyndromic craniosynostosis as trigonocephaly, plagiocephaly and brachycephaly. The aim of this report is to summarize the retrospective data in children with nonsyndromic synostosis operated on by different surgical techniques. The indication in all cases was as well cosmetic and preventive. The surgical procedure was based on complete remodeling of the skull in majority of cases, with the bone fixation and cranioplasty using resorbable plates and pins. All procedures were performed by team of neurosurgeon and maxillofacial surgeon.

Material and methods: From 1990 to 2013 there were 150 children with nonsyndromic synostosis involving anterior skull base treated at our centre for craniofacial and reconstructive surgery. The age varied from 2 months to 4 years. The surgical procedures included orbitotomy, fronto-orbital advancement, lateral canthal advancement, medial orbital shift, frontal bone and orbital rim remodeling, bone displacement, temporal debulking and cranial defect reconstruction with bone rafting. The patients were followed up postoperatively including precise quantitative measuring of cephalic index and other anthropometric parameters.

Results: Early postoperative complications were recorded. There were no infection, bleeding or CSF leak, requiring surgical intervention. Local hematomas and subcutaneous swelling were only temporary and resolved spontaneously. We had no postoperative mortality. The cosmetic results were excellent immediately after the surgery. Reoperation rate was very low. In group of trigonocephaly patients 1 of 74, in plagiocephaly group 0 of 7 and in brachycephaly group 3 of 29 respectively.

Conclusion: Our study showed that this type of extensive surgery is performed in pediatric age with no mortality, low complication rate and mostly permanent cosmetic result.



3. Orthognathic Surgery

P-5

COMPARISON IN LOWER LIP HYPOESTHESIA BETWEEN HYBRID FIXATION AND CONVENTIONAL FIXATION FOLLOWING SAGITTAL SPLIT RAMUS OSTEOTOMY

K. Ueki¹, A. Moroi¹, Y. Ishihara¹, M. Sotobori¹, K. Marukawa¹, R. Iguchi¹, A. Kosaka¹, H. Ikawa¹, K. Nakagawa², A. Mukozawa²

¹ Oral and Maxillofacial Surgery, University of Yamanashi, Chuo-shi, Japan

² Oral and Maxillofacial Surgery, Nanto municipal hospital, Nanto, Japan

Objective. The purpose of this study was to compare in recovery period of lower lip hypoesthesia between hybrid fixation and conventional fixation using absorbable plate and screw system following sagittal split ramus osteotomy (SSRO).

Subjects and Methods. The subjects were 66 patients (132 sides) who underwent bilateral SSRO setback surgery. They were divided into hybrid fixation group (66 sides, 1 u-HA/PLLA plate and 4 mono-cortical screws and bi-cortical screw in each side) and conventional fixation group (66 sides, 1 u-HA/PLLA plate and 4 mono-cortical screws in each side). Trigeminal nerve hypoesthesia at the region of the lower lip was assessed bilaterally by the trigeminal somatosensory-evoked potential (TSEP) method. Measurable periods of TSEP were defined as periods before the peaks of N1 (N13), P1(P17), N2(N27) and P2(P36) that were identified clearly as early components of the TSEP wave. Actual data was recorded as the latency period (msec) in each peak.

Results. The mean measurable period and standard deviation were 8.1 ± 10.4 weeks in the hybrid fixation group, 5.1 ± 11.5 weeks in the conventional group, and there was no significant difference. However, maximum in the hybrid fixation group was 27 sides in post-operatively 4 weeks and maximum in the conventional fixation group was 37 sides in post-operatively 1 week, and there was significant difference in distribution of measurable period ($P < 0.0001$). The value in post-operative measurable period were significantly longer than the value in pre-operative period in the latency period in all of N1, P1, N2 and P2 in both groups (the hybrid group, N1; $P = 0.0008$, P1; $P = 0.0003$, N2; $P < 0.0001$, P2; $P = 0.0002$) (the conventional group, N1; $P < 0.0001$, P1; $P < 0.0001$, N2; $P = 0.0002$, P2; $P = 0.0249$).

Conclusion. This study suggested that additional bi-cortical screw could affect the recovery of lower lip hypoesthesia after SSRO with bent absorbable plate fixation.

**P-16****PROPOLIS ACCELERATES CONSOLIDATION PHASE IN DISTRACTION OSTEOGENESIS: AN EXPERIMENTAL STUDY**

C. Bereket¹, F. Özcan², İ. Şener¹, M. Tek², B.Z. Altunkaynak³, S. U. Semirgin⁴, E. Şenel¹, M. Özdermir¹

¹ Oral and Maxillofacial Surger, 19 Mayıs University Faculty of Dentistry, Samsun, Turkey

² Oral and Maxillofacial Surgery, Abant İzzet Baysal University Faculty of Dentistry, Bolu, Turkey

³ Department of Histology and Embriology , Ondokuz Mayıs University Faculty of Medicine, Samsun, Turkey

⁴ Department of Nuclear Medicine , Ondokuz Mayıs University Faculty of Medicine, Samsun, Turkey

Objectives: The aim of this study was to evaluate the effect of propolis on new bone formation after distraction osteogenesis (DO) in rabbit mandibles.

Methods: Twentyone male New Zealand rabbits divided into three groups respectively; Cont (control group, water given to rabbits per day by orally), P100 (propolis given to rabbits as 100mg/kg per day by orally) and P200 (propolis given to rabbits as 200mg/kg per day by orally). 21 rabbits underwent DO on the left side of mandible by osteotomy between first molar and foramen mentale. Propolis was given orally on the first day of the distraction until sacrifice day. Bone mineral content (BMC) and bone mineral density (BMD) were studied by Dual Energy X-ray Absorption (DEXA) at 1st and 4th weeks of consolidation period. The volume of connective tissue, new bone, and the number of capillaries are measured by stereological analysis following the sacrifice on the 4th week.

Results: DEXA showed that BMC and BMD values were found higher in propolis groups than control group at 4th weeks. P200 group values were found higher than other groups in two different time periods. Stereological analysis revealed that there was no statistically significant difference between groups according to connective tissue volume and number of capillaries. On the other hand new bone volume values of P200 found less than other groups.

Conclusion: Propolis accelerates bone formation and could shorten time of consolidation phase in distraction osteogenesis.



P-28

AN AUDIT OF THE QUALITY OF LATERAL CEPHALOGRAMS AND ORTHOPANTOMOGRAMS TAKEN AT UNITED LINCOLNSHIRE HOSPITALS TRUST PRIOR TO ORTHOGNATHIC SURGERY

A.Hindocha, M.Clark

Oral and Maxillofacial Surgery, Lincoln County Hospital, Lincolnshire, United Kingdom

Aims and Objectives:

1. Monitor and improve the diagnostic capability of OPGs and Lateral Cephalograms taken at ULHT to aid the orthodontic and maxillofacial teams in treatment planning their orthognathic cases.
2. Ensure ULHT is meeting the National Radiation Protection Board Gold Standards to ensure safe and effective radiographic exposure to all patients seen in the oral and maxillofacial department

Methods:

50 OPGs and 30 lateral cephalograms from each hospital within the trust (Lincoln, Boston, Louth and Grantham) were examined retrospectively for their quality, and graded accordingly by a single examiner. The patient radiographs selected were 'new patients' seen on the maxillofacial and orthodontic clinics. The radiographs examined on the IMPAX digital system.

The national radiation protection board guidelines on grading radiographic quality were set as the gold standard and are highlighted below:

1. Grade 1 (Excellent-no errors of exposure, positioning or processing) 70% or more radiographs
2. Grade 2 (Diagnostically acceptable-some errors, but these errors do not detract from the diagnostic utility of the radiograph) Less than 20%
3. Grade 3 (Unacceptable-errors present, which render the radiograph diagnostically unusable) Less than 10%

Results:

The vast majority of radiographs were a grade 2. Grantham Hospital was the only site to exceed the Grade 3 threshold of 10%. None of sites met the 70% and above target for grade 1 radiographs. None of the sites produced grade 1 Lateral cephalograms due to a lack of cranial collimation. Common errors included positioning errors, lack of cranial collimation and a failure to remove jewellery.

Conclusion:

The audit clearly highlights a need for cranial collimation for all patients exposed for lateral cephalograms. It also highlights a need to improve the quality of radiographs in order to improve safety of patients by avoiding excessive or repeat exposures. The outcomes of this audit were disseminated to all orthodontic, oral and maxillofacial and radiology teams across ULHT. These teams were educated regarding the gold standards in patient positioning and cranial collimation. A re audit is planned to review if the education provided has been sufficient to ensure gold standards are being met.

**P-33****CHANGES IN OCCLUSAL FUNCTION AFTER ORTHOGNATHIC SURGERY IN MANDIBULAR PROGNATHISM WITH AND WITHOUT ASYMMETRY**

A. Moroi, Y. Ishihara, M. Sotobori, R. Iguchi, A. Kosaka, H. Ikawa, R. Nakazawa, M. Higuchi, K. Marukawa, K. Ueki

Oral and maxillofacial surgery, Graduate school of medical and engineering, University of yamanashi, 1110 shimokato, Chuo, Yamanashi, Japan

Objective: Occlusion function changes dramatically before and after the surgery. There is no reports to investigate the change of the occlusal function after surgery in the asymmetric case. The purpose of this study was to compare the course of postoperative masticatory function in Le Fort I (LI) osteotomy and sagittal split ramus osteotomy (SSRO) in jaw deformity with or without asymmetry.

Methods: Thirty female patients who underwent SSRO with LI were the subjects. They were divided into symmetry and asymmetry groups based on the cephalogram analysis before surgery. Bite force, occlusal contact area, and right –left balance of bite force (bite force balance) were measured preoperatively and at 1, 3, 6, and 12 months postsurgery with pressure-sensitive sheets(Dental Prescale; Fuji Photo Film Co., Tokyo, Japan). Differences between the symmetry and asymmetry group were examined statistically.

Results: In both groups, bite force and occlusal contact area were the lowest at 1 month after surgery and improved gradually thereafter. Bite force balance tended to decrease in both groups. Regarding time-dependent changes in bite force balance, bite force, and occlusal contact area, no significant differences were found in the symmetry group. In the asymmetry group, significant differences were founded preoperative (0.0353), 1m (0.0003), and 3m (0.0034) between 1y and 1m between 6m (0.0486) in bite force. 1m (P=0.0323), 3m (P=0.0384) between 1y in contact area. Regarding bite force balance, bite force, and occlusal contact area there were no significant differences at each observation time point.

Conclusion: The findings showed that the asymmetry patients had significantly improved bite force and moreover, contact area and occlusal balance tended to show improvement after LI with SSRO surgery. However, their healing period was extended more than that of the symmetry patients. Furthermore, LI with SSRO produced improvement in balance of bite force as well as bite force and contact area in symmetry and asymmetry patients.



P-51

CLINICAL FEATURES OF MYLOHYOID NERVE DISTURBANCE AS AN ADDITIONAL QUALITY TEST AFTER TRAUNER-OBWEGESER OSTEOTOMY OF THE MANDIBLE

O. Bedyk, S. Shuvalov

Department of Oral and Maxillofacial Surgery, Vinnitsa National Medical University named after N.I.Pirogov, Vinnitsa, Ukraine

The mylohyoid nerve like any motor nerve can also carry sensory innervation.

Objective. The aim of this paper was to study the area of sensitive innervation of the mylohyoid nerve in the chin region and its clinical meaning after osteotomy of the mandible.

Methods. In the clinic we have observed the isolated injury of the mylohyoid nerve in 7 patients after orthognathic operations - Trauner-Obwegeser osteotomy of the mandible. It was seen the disturbance of sensitivity of a small area of the chin skin (4x3 cm) that remained for 3-4 month, while the sensitivity of the lower lip was recovered in a shorter time. It can be supposed that the mylohyoid nerve becomes injured by the internal part of the split mandibular ramus during its shifting backwards. We have observed the similar clinical picture in some patients with the accidental fracture of the mandibular ramus.

The dissection of 6 pig heads and 5 calf heads was performed for the comparative anatomical study of the directions of the nerves in animals and humans.

Results. We found that mylohyoid nerves submerge under the mandible and innervate the tissue of the so called "sensitive pad" and sensory tactile hair on the skin in the area of the frontal part of the mandible. This area enables the animals to sense the ground and plants, and in humans it presents as an oval area of innervation on the skin of the chin. The zone of mylohyoid nerve innervation on the skin of the chin is most likely a formation derived from animals that has lost its original purpose.

Conclusions: soft tissues of the chin receive additional sensitive innervation from the mylohyoid nerve. The zone of mylohyoid nerve innervation on the skin of the chin is most likely a formation derived from animals. Recovery time of the sensitivity of the lower lip and chin is different, what can serve as an additional criterion for evaluation of traumatic sequelae of Trauner-Obwegeser osteotomy.



P-71

IS THE ORTHOGNATHIC SURGERY SAFE AND PREDICTABLE? A SYSTEMATIC REVIEW OF COMPLICATIONS AND PRECAUTIONS DURING PREOPERATIVE, INTRAOPERATIVE AND POSTOPERATIVE PERIOD.

M. Jędrzejewski, T. Smektała, K. Sporniak-Tutak, R. Olszewski

Chair and Department of dental surgery, Pomeranian Medical University in Szczecin, Szczecin, Poland

Objective: The aim of this study was to determine whether orthognathic surgery is associated with any complications. How can we deal with complications which occurred, and what are the possible precautions to avoid such complications in future?

Methods: Data were obtained using PubMed (MEDLINE), ISI web of knowledge, Ovid, Cochrane Library, Embase Library and additional hand search. Titles and abstracts of the electronic search were screened and evaluated by two observers for eligibility according to the inclusion and exclusion criteria. The final number of retained articles was 183. Prisma diagram flowchart presents a selection scheme. For the purpose of this study the Cochrane data extraction form was modified. One review author extracted data from included studies and the second author checked all the forms. The hierarchy of evidence classification from UK NHS Centre for Reviews and Dissemination was used in order to assess the level of evidence for retrieved studies.

Results: Evaluation of obtained studies show that there exist a large amount of various complications including death associated with orthognathic surgery procedures. In discussion we offer a guidelines and precautions for each stage of orthognathic treatment.

Conclusions: In conclusion we suggest that oral and maxillofacial surgeon, orthodontist and his/her team need to prevent such complications during preoperative, intraoperative, and postoperative time to increase the safety of orthognathic surgery procedures.



P-74

ACCESSORY INFRA-ORBITAL NERVES – AN IMPORTANT ANATOMICAL LESSON

Miss Parisa Zarringhalam (SHO OMFS), Mr Alan Parbhoo (SpR OMFS), Mr Derek Von Arx (Consultant OMFS)

Oral and Maxillofacial Surgery, Luton and Dunstable University Hospital, UK, Luton, United Kingdom

Introduction

Anatomy in the human body is not always constant. Knowledge of the anatomical variations possible is important for a surgeon to be able to modify technique and to prevent inadvertent damage to vital structures. Knowledge of anatomical variants in the mid-face is important for surgery under local and general anaesthetic, particularly orthognathic, trauma and skin surgery. Bifid nerves supply different dermatomes and awareness of their existence is important when operating under local anaesthesia.

Materials and Methods

We present the case of a patient undergoing a Le Fort I osteotomy who was noted to have bifid infra-orbital foramina and neurovascular bundles bilaterally during surgical exposure of the maxilla. Surgical retraction technique had to be modified to prevent traumatic neurapraxia.

Results

The osteotomy was performed without complication and the patient made a full recovery from her surgery. She has no ongoing sensory disturbance of the maxillary division of the trigeminal nerve.

Conclusion

Accessory infra-orbital foramina are not uncommon and can occur in up to 19% of humans. Up to 4 foramina have been reported and accessory foramina can be present unilaterally or bilaterally. Bilaterally bifid nerves are rare (2%). Inadvertent damage of the nerves is easy due to their aberrant position and modification of surgical technique is required to prevent neurapraxia or neurotmesis when degloving the mid-face.

**P-106****IS LENGTH AN ISSUE? THE MEDIAL RAMUS CUT IN MANDIBULAR OSTEOTOMIES**

J. Gunn, N. Rutherford

Maxillofacial Surgery Unit, Austin Health, Melbourne, Australia

Background:

The sagittal split mandibular osteotomy is a routine orthognathic surgical procedure. It includes an osteotomy made on the medial aspect of the mandibular ramus. The lingual and inferior alveolar nerves are at risk of injury, and surgical access with direct vision is difficult in this location. An inadequate or injudicious osteotomy at this site may result in a 'bad split' or nerve injury.

Surgeons use different devices to perform the medial ramus osteotomy. These include a variety of commercially available handpieces, burs or saw blades. There are no published studies on the extent of the osteotomy possible using different cutting instruments.

Objective:

To measure and compare the posterior extent of the medial ramus osteotomy that is achievable using the most commonly employed surgical cutting devices and burs.

Methods:

Standardised models were constructed using a dentate human skull with an articulated mandible. Five commonly used cutting attachments and four surgical handpieces were trialled in two clinical models, the posterior extent of the osteotomy created was measured. Results were collated and analysed and factors influencing osteotomy extent were identified.

Principal Findings:

Mean osteotomy length varied from 20.1mm when using a 202 bur loaded in the Hall Surgairtome Two handpiece, to 26.8mm for a medium trapezoidal blade in the Hall Reciprocating saw handpiece. The difference in length of an osteotomy made by saw blade compared to that made by a bur was statistically significant. There was no difference in distances reached on the left or right sides and no significant difference between clinical models. Factors including bur guard and handpiece shape and mandibular ramus anatomy were observed to influence osteotomy length.

Conclusion:

Different handpieces, burs and blades achieve different distances for the medial mandibular osteotomy. Saw blades reach a significantly greater distance than burs. All commonly used devices achieve the minimum required distances.

**P-137****DIFFERENCES IN THREE-DIMENSIONAL SOFT TISSUE CHANGES AFTER UPPER, LOWER OR BOTH JAW ORTHOGNATHIC SURGERIES IN SKELETAL CLASS III PATIENTS**

M. Verdenik, N. Ihan Hren

Clinical Department of Maxillofacial and Oral Surgery, University Clinical Centre Ljubljana, Ljubljana, Slovenia

The decision which orthognathic procedure is best for a good aesthetic result in correction of skeletal Class III deformity is not always straightforward. Three-dimensional imaging brings clear benefits in accurate measurements of facial morphology.

Aims: The aim of this prospective study was to verify objectively whether post-operative changes occur in regions not directly affected with surgical movements of the underlying jaw bones.

Material/Methods: The study included 83 young adults with skeletal Class III deformity. According to the type of surgery- BSSO set-back of the mandible, Le Fort I advancement of maxilla or a combination of both, they were classified into three groups. The pre- and post-operative optical scans were registered with regional best-fit on the area of forehead and both orbits. Shell to shell differences was measured and average distance between the observed regions calculated.

Results: In the nose, cheek and upper lip area the greatest changes are in LeFort I and BIMAX group, but a small surprise were soft tissue changes in these two regions after BSSO. On the contrary, in the lower lip and chin region the soft tissue changes are observed in the BSSO and BIMAX group, while they are also registered in the LeFort I group. The submandibular region is the reference for changes in vertical dimension. We found them greater in the BIMAX group than in the BSSO group, but it can be also noticed in the LeFort I group. The greatest changes are observed in central regions, probably due to the direction of skeletal movements, which are mostly in sagittal and vertical direction. Regardless of this, changes are found also in the side areas confirming the effect of orthognathic surgery on transverse dimensions.

Discussion/Conclusion: According to the expectations, changes were the greatest in the regions where the underlying bones were moved, but regardless of the operation performed, changes were found over the whole face. Changes in the nose, cheek and upper lip region in BSSO group, in the lower lip and chin region in Le Fort I group confirm the concept of the facial soft tissue mask acting as one unit.



P-139

USE OF A NEW FIXATION TECHNIQUE THAT EMPLOYS ABSORBENT PLATES DURING GENIOPLASTY

Aya Mukozawa¹, Koichiro Ueki², Akinori Moroi², Kiyomasa Nakagawa¹

¹ *Oral and Maxillofacial Surgery, Nanto-city Hospital, Nanto-city, Japan*

² *Oral and Maxillofacial Surgery, University of Yamanashi, Chuo-city, Japan*

Genioplasty is a surgical technique used to make 3-dimensional improvements to the chin area, such as correction of anteroposterior and vertical abnormalities or those based on left-right symmetry. Genioplasty employs materials such as titanium and absorbent plates to anchor bone fragments after osteotomy. The bone fragments encountered during genioplasty are highly mobile; therefore, highly operational and strong titanium plates are used. However, use of titanium plates can lead to maxillary growth disorders or aesthetic problems, and in some cases, plate removal becomes essential. In this study, we report a new fixation technique that uses absorbent plates developed for the highly mobile bone fragments encountered during genioplasty.

**P-148****ASSESSMENT OF THE LATERAL PTERYGOID PLATE FRACTURES DURING LE FORT I OSTEOTOMIES REGARDING THE ANGULATION OF THE OSTEOTOME**

Aydin GULSES¹, Hasan Ayberk ALTUG², Cenk KILIC³, Metin SENCIMEN²

¹ *Centre for Oral Health and Dentistry, Ankara Mevki Military Hospital, Ankara, Turkey*

² *Oral and Maxillofacial Surgery, Gulhane Military Medical Academy, Ankara, Turkey*

³ *Anatomy, Gulhane Military Medical Academy, Ankara, Turkey*

Objective: This study aimed to clarify the relation between the angulation of the curved osteotome and fracture of the pterygoid plate during Le Fort I osteotomy.

Material and methods: Twenty-one specimens of hemisectioned Turkish skulls were used for the study. The maxilla was sectioned transversely on the floor of the pyriform aperture and posteriorly to the lateral pterygoid plate with a mechanical saw. The pterygomaxillary junction was separated with a curved osteotome by angulating the osteotome with, 0 ° and -30 ° to the occlusal plane. The undesired fractures of the lateral pterygoid plate were determined. Among 21 specimens, 7 pterygomaxillary junctions were separated with an angle of +30 °, 7 with 0 ° and 7 with -30 ° to the occlusal plane.

Results: In group +30 °, the undesired fracture occurred in 6 of the cases. In group -30 °, the undesired fracture was determined in one case. In cases where the separation was performed by placing the osteotome parallel to the occlusal plane all plates remained safe.

Conclusion: Within the limited knowledge of the current study it can be concluded that the osteotome should be placed parallel to the occlusal plane.

Keywords: pterygoid plate, LeFort I, osteotome



P-151

CHANGES OF THE NOSE PROFILE AFTER ORTHOGNATHIC SURGERY

A. Glushko, A. Drobyshev, N. Drobysheva, G. Gordina, I. Klipa, K. Kurakin, E. Lonskaya

Maxillo-Facial Surgery, Moscow State University of Medicine and Dentistry, Moscow, Russian Federation

Overview. It is important to correlate functional and aesthetic results of the surgical treatment of the patients with dentofacial anomalies. All of us know about postoperative changes in the nasal shape and how it is important for successful outcome, especially for patients. In this work we have tried to analyse nose changes in sagittal plane.

Objective. Identify changes of the nose profile after surgical treatment of the patients with dentofacial anomalies.

Materials and Methods. There were 50 patients (female 41, male 9) with mean age 26,4 (from 18 to 45) with medial and distal type of malocclusion, who underwent orthognathic surgery only (38 patients) and one-stage orthognathic surgery and rhinoplasty (12 patients). In all patients orthognathic protocol consisted of the Le Fort I osteotomy, BSSO and genioplasty in case of necessity and only in 12 patients was rhinoplasty added. All the patients regarding visual appearance of their profile nose shape were divided in five groups: patients with significantly hump nose (1), hump (2), straight (3), saddle (4) and significantly saddle (5). Head CT for all patients was made before and six month after the surgery. All data regarding nose shape were correlated and analysed using CT data.

Results. In the 1st group before surgery were 3 (6%) patients and after 1 (2%); in the 2nd group before surgery were 23 (46%) patients and after 7 (14%); in the 3rd group before surgery were 19 (38%) patients and after 36 (72%); in the 4th group before surgery were 5 (10%) patients and after 5 (10%) and in the 5th group before surgery were 0 patients and after 1 (2%). Of course, remarkable changes in the nose profile were made in patients who has undergone one-stage orthognathic surgery and rhinoplasty. In patients who has undergone only orthognathic surgery nasal profile changes were slight with improving and worsening in different cases.

Conclusions. In case of orthognathic surgery, nasal profile changes always occur and it is hard to suppose their severity and direction. For achieving optimal functional and aesthetic results we advise one-stage orthognathic surgery and rhinoplasty.



P-161

ZYGOMA REDUCTION

MinbumKang. M.D

Romian plastic surgery clinic, 2F/8F Glass tower, 460 Gangnam daero, Seoul, South Korea

Background: A broad face in Asia looks stubborn and strong, unattractive . Because men want a small zygoma, many surgeons have tried zygoma reduction in different surgical methods. Surgical method can be divided three categories ; the first, rotation of the zygoma arch with osteotome or green stick fracture, the second, rasping or grinding of the zygoma body and arch, the last, ostectomy and fixation with plates and screws or wiring. Although many different techniques have been developed , surgeons are unsure what technique is the best

Methods: From 2007 to 2013, 221 Korean patients (39 men, 182 women) had undergone zygoma reduction with this technique. The authors choose the intraoral and preauricular incision for opening, small L-shaped ostectomy and fixation with miniplates and screws.

Results: all patient were satisfied with the cosmetic results with no cheek drooping.

Conclusion: For decades, many techniques for reducing zygoma have been tried , my technique have advantages

1. Bone moving into forward, inward and upward don't make cheek drooping
2. With ostectomized bone regulation, asymmetry cases was corrected
3. Bone rigid fixation showed no relapse, nonunion or malunion



P-218

QUALITY OF LIFE ASSESSMENT IN PATIENTS WITH SKELETAL CLASSIII BEFORE AND AFTER ORTHOGNATHIC SURGERY

J.Gačnik DMD, Prof. N. Ihan Hren, MD, PhD

Clinical department of maxillofacial and oral surgery, University clinical center, Ljubljana, Slovenia

Orthognathic surgery is recognized as the mainstay of treatment for skeletal ClassIII (SCIII) deformity. Surgical corrections improve the functions and esthetic but also affects quality of life of treated patients.

The aim of our study was to estimate the difference in satisfaction from quality of life aspects in Slovenian SCIII patients before and after orthognathic surgery.

50 patients that underwent orthognathic surgery had filled out the Oral Health Impact Profile (OHIP) questionnaire before and in average 1 year after orthognathic treatment. Standardized OHIP questionnaire contains 7 groups of questions estimating functional limitation, physical pain, psychical discomfort, psychological disability, body disability, social disability and handicap.

Patients that underwent orthognathic surgery report statistically significant ($p < 0,01$) improvements in appearance, chewing function, comfort, speech and psychological domain. The biggest change was in the aesthetics and psychical discomfort domain.

The conclusion is that orthognathic surgery results in improved quality of life in most aspects of quality of life.

**P-231****VITAL STAINING OF THE PALATAL SOFT TISSUE IN HORSESHOE LE FORT I OSTEOTOMY FOR SUPERIOR REPOSITIONING OF THE MAXILLA**

T. Iwai, S. Omura, K. Honda, N. Shibutani, K. Fujita, Y. Yamashita, H. Takasu, S. Murata, I. Tohnai

Yokohama City University, Yokohama, Japan

Objective: In maxillary orthognathic surgery, superior repositioning of the maxilla is sometimes difficult, and the removal of the bony interference, especially around the descending palatine artery, is very time-consuming in severe maxillary impaction cases. As useful method in superior repositioning of the maxilla, horseshoe-shaped osoteotomy combined with Le Fort I osteotomy (horseshoe Le Fort I ostetomy) has been introduced. However, injury of the palatal soft tissue during horseshoe-shaped ostetomy may cause aseptic complication of the maxilla. Therefore, a safe method is required to prevent injury of the palatal soft tissue with potential risk of aseptic necrosis. We describe here vital staining of the palatal soft tissue in horseshoe Le Fort I osteotomy for superior repositioning of the maxilla.

Methods: A 1.8 ml cartridge of dental local anesthetic is prepared, and then dental local anesthetic is replaced with indigocarmine (20mg/5mL; Daiichi Sankyo, Tokyo, Japan). After conventional Le Fort I osteotomy and downfracture, 3.6 ml indigocarmine is injected using dental syringe into the palatal soft tissue of horseshoe palatal osteotomy site. Transverse palatal osteotomy in the premolar region is made through the anterior nasal floor into the oral cavity, and then bilateral sagittal osteotomies are performed through the maxillary sinus into the oral cavity from the maxillary tuberosity anteriorly to the transeverse palatal osteotomy site. These osteotomies can be performed safely using a round bur until achieving exposure of the blue dyeing palatal soft tissue during bone removal. Piezoelectric bone device is often useful for complete bone removal without any palatal soft tissue injury after most of horseshoe-shaped osteotomy was made by round bur and the blue dyeing palatal soft tissue can be seen through the thin residual bone.

Conclusions: We recommend our simple and safe method to prevent injury of the palatal soft tissue in horseshoe Le Fort I osteotomy. This method also useful in maxillary anterior segmental osteotomy or multisegmental Le Fort I osteotomy as well as horseshoe Le Fort I osteotomy.



P-240

"BEAUTYFULL" FACE APPROACH IN ORTHOGNATHIC SURGERY.

S. Pelo, S. Torres Farr, T. Marianetti, D. Cervelli

Universit  Cattolica del Sacro Cuore, Rome, Italy

Objectives:

Facial recontouring foresees a modification of the facial elements in a manner that generates better attributes and creates attractiveness.

Orthognathic surgery gives the possibility of creating beauty in the lower third of the face, improving facial balance. Nevertheless, this single operation is insufficient in many cases where facial imbalance requires considering other facial districts, making the final result incomplete. This aspect grows in importance considering the fact that facial aesthetics improvement is the main goal in this patient setting.

Facial complementary techniques, allow to expand our aesthetic result to the whole face and to obtain an overall better results with higher patient and surgeon satisfaction.

Methods

We present our experience regarding the combination of orthognathic and complementary surgeries to obtain an overall "beautyfull" face effect. Cases and vision are presented, discussed explained in detail.

Results

Patients exposed to the "beautyfull" face approach share our goals and philosophy and maintain optimum compliance to treatment and controls with higher overall satisfaction and low complication incidence.

Conclusions

"Beautyfull" face approach is rewarding both for the surgeon and patient and should be tempted whenever the facial dimorphism requires a global correction.

Technical skills in the complementary surgeries are as important as the main surgery and accuracy and speed are important aspects to master by the orthognathic surgery team to be able to combine them on a regular basis.



P-245

MAXILLARY PLATING SYSTEMS AFTER BSSO OF THE MANDIBLE.

M.Jagielak¹, M.Rahnama¹, M. Rysz², P.Roguś³, J. Powała³

¹ *Department of Oral Surgery, Medical University of Lublin, Lublin, Poland*

² *Maria Skłodowska-Curie Institute of Oncology, Maria Skłodowska-Curie Institute of Oncology, Warsaw, Poland*

³ *Private surgical and orthodontic practice, Ortognatyka, Raszyn, Poland*

In our study we evaluate the modified osteosynthesis after BSSO. The companies constantly introduce, new more sophisticated system of osteosynthesis in orthognathic surgery. The design of plates provides almost ideal adjustment for the surgically gained shape of the maxillo facial skeleton together with excellent bone stability. The plates with their shape are exclusively developed to suit different anatomical areas of the osteotomized maxilla and mandible. The authors having reasonable experience in orthognathic surgery (over 2000 cases) used different plating systems to stabilize segments after BSSO. Usually it was straight six or five whole plate intraoperatively cut and adjusted before fixation. The authors noticed that individually adjusted straight plates resemble the shape of the plates designed for the zygomatic alveolar crest in the maxilla ("open L"). The individual adjustment of the straight plate (bending) decreases its strength which may compromise the final result. The maxillary L plate 1 mm thick suits perfectly for the new shape of the mandible and gives good primary stability according to the AO principles .

The authors present the surgical application of the palate analyse the results in 157 cases vesrus typical plating systems.

Conclusion

The atypical application of the maxillary "L" plates on the mandible provided excellent stabilization, shortened operation time. It proved very useful in class III and class II cases where rotation of the maxillo mandibular complex was intended



P-249

THE DECREASE OF THE POSTERIOR NASAL AIRWAY DURING MAXILLARY IMPACTION HOW TO PRESENT IT?

M. Jagielak¹, M. Rahnema¹, M. Rysz², A. Wojtowicz³

¹ *Department of Oral Surgery, Medical University of Lublin, Lublin, Poland*

² *Maria Skłodowska-Curie Institute of Oncology, Maria Skłodowska-Curie Institute of Oncology, Warsaw, Poland*

³ *Department of Dental Surgery, Medical University, Warsaw, Poland*

Introduction

Lefort I osteotomy is one of the work horses of contemporary orthognathic surgery. It also carries the risk of many possible complication. One of them is like narrowing of the posterior nasal space (airway which is a non-desired consequence of the posterior maxillary impaction)

Material:

In the years 1998-2013 the authors performed 1208 maxillary osteotomies out of this number 473 required a different degree of the posterior maxillary impaction. In most cases the maxillary osteotomy was performed together with various mandibular procedures. Initial assessment of the post surgical results revealed the narrowing of the nasal cavity caused by elevation of the hard palate. Our patients reported troubles in nasal breathing and "uncomfortable" step at the palate.

Method:

As prevention of this phenomenon the authors introduced some modification e.g. segmental osteotomy, of the hard palate. The range of the osteotomy was determined by the initial fracture pattern during maxillary mobilisation. The introduction of the piezosurgical devices in 2006 in our practice made this osteotomies safe and predictable with very limited complications.

Results

The obligatory palate mobilisation during every maxillary impaction resulted in the prevention of the and narrowing in majority of cases in enlargement of the posterior nasal air way which was documented by lateral cephalometrix and during last 4 years by CB-CT. The patients reported improved breathing after these procedures. The data obtained from 267 patients confirmed the advantage of this method.

Conclusion

Osteotomy of the hard palate during Lefort impaction procedures sufficiently prevents the decrease of the nasal airway. This procedure has become relatively easy and predictable with the introduction of the piezosurgical saws.



P-253

USING OF MODIFIED MENTALIS MUSCLE FIXATION TECHNIQUE TO IMPROVE AESTHETIC RESULTS OF SLIDING CHIN OSTEOTOMY.

K. Kurakin, A. Drobyshev, E. Lonskaya, A. Glushko, N. Drobysheva

Oral & Maxillofacial, Moscow State University of Medicine and Dentistry, Moscow, Russian Federation

Introduction: Chin can be described as one of the most important face structures determining its attractiveness. In order to change its shape, position and size we perform sliding osteotomy. Despite we can accurately predict position of bone structures of the chin the possibility to predict soft tissues changes in the chin area is limited. Especially in cases when there is a need of reducing chin height and its backward movement. There are several technics to prevent unfavourable soft tissue changes in the chin area (maintaining chin muscles below lower mandible border, wound suture in several layers, compressive dressing during early postoperative period). But despite using above listed technique we used to have patients with soft tissue sagging in submental area in 12-16 months after chin osteotomy. As a result of our work we have modified the technique of fixation periosteum and mentalis muscles to its new position by anchoring it to the bone surface. This technique is approved to be a new authorized method, patent received.

Material and methods: In the period of 2012 - 2013, we observed and treated 20 patients with III Class of malocclusion, mandibular and chin hyperplasia. Their treatment plan included modified muscle fixating technique. Second group consisted of 7 female patients treated without introduced technique. Anthropometry, photometry and cephalometry were performed. All patients received Le Fort I osteotomy, BSSO and chin osteotomy with decreasing its height. To get and to compare measurement results between groups after surgery, photometry evaluation was used (11 to 13 months after surgery). Our analysis included two angular parameters, values of LLi-B'-Pog' and Pog'-Gn'-Me' angles.

Results: After control CBCT and photo examination both groups showed planned and stable results of bony points Pog, Gn, Me. There were no relapse observed. All the changes in the 2nd group occurred due to sagging of mentalis muscle. LLi-B'-Pog' value in 2nd group was 107 (control group 107), Pog'-Gn'-Me' - 134 (control group 144.2).

Conclusion: Our modified muscle fixating technique has proved to be predictable and stable instrument in controlling the position of soft tissues of the chin area and particularly mentalis muscles.

**P-275****FACE OR OCCLUSION?**

Z. Nicolaou, C. Laspos, P. Kokkinos

Private Clinic, Limassol, Cyprus

Orthodontists around the globe are trained to treat every individual to an ideal Class I occlusion. The use of new biomaterials combined with advanced technology offer a considerable armamentarium to facilitate almost every case in the desired occlusion. Individuals with skeletal discrepancies, however, constitute cases requiring good judgment, critical evaluation, as well as an individualized treatment plan from both the orthodontist and the oral and maxillofacial surgeon in order to achieve good results.

We will present four cases, which in spite of the fact that they were orthodontically treated in a nice class I occlusion, the face and the skeletal discrepancy were overlooked by the orthodontist. These four patients were referred to our clinic after the completion of the orthodontic treatment complaining about the esthetic outcome. This presentation illustrates very clearly: a) The failure of the orthodontist to understand the real major complaint of the patient or b) The inability of the orthodontist to present the option of surgical correction to the patient, either because of lack of experience or due to inadequate knowledge or personal beliefs regarding surgical orthodontic approaches. A second treatment was necessary in all four cases. The extra cost and the extra time involved are issues which illustrate the lack of good judgment initially. The new treatment approach that focuses equally on the occlusion and the face, as well as the results, will be presented with emphasis on the cooperation between the orthodontist and the oral and maxillofacial surgeon.

**P-283****USEFULNESS OF CAD/CAM OPERATING EQUIPMENT INCLUDING FACEBOW AND DENTAL IMAGERY IN ORTHOGNATHIC SURGERY**

Jae Won Lee, Moon Key Kim, Sang Hoon Kang

Oral and Maxillofacial Surgery, National Health Insurance Corporation Ilsan Hospital, GoYang, South Korea

1. Objective: The aim of this study was to introduce a method that more accurately reproduces and reduces the error in maxilla location which can occur during surgery, using a wafer combined with the equipment facebow and CAD/CAM as an accurate 3-dimensional method for locating the maxilla during surgery.

2. Methods: Transition and rotation were performed on 3 axes on 10 maxillary bone RP models separated from the cranium to move the maxilla. The subjects were divided into a RP group that reproduced the maxilla location with 3D simulation and a group that determined the maxilla location with equipment that combined the wafer and facebow. 3D computer tomography was performed twice for each model, for a total of 20 times, and comparative analysis was performed on the collected data.

3. Results: The group that determined the maxilla location with the equipment combining the facebow and wafer set before surgery and the group that reproduced the RP model with 3D simulation were analyzed with CT. The results show that the first method had a smaller error value, but there was a difference according to the surgical method used on the maxilla.

4. Conclusions: A recent trend in orthognathic surgery has been performing diagnosis and treatment with computers, and this is developing into a more effective and accurate method. However, the errors that can occur during surgery in the stages of deciding the location of the mandible condyle, the measuring method during surgery, and intermaxillary fixation cannot be ignored because they still exist as in traditional orthognathic surgery. Therefore, although there may be a difference according to the operating method, using a non-invasive facebow could be clinically useful because there is no need for intermaxillary fixation, and it can solve the problem of inaccuracy when determining the location of the mandible condyle.

**P-286****CLEIDOCRANIAL DYSPLASIA (CCD) - CASE REPORT**

D. Uryga¹, M. Zaleska¹, P. Stępień¹, A. Nowak²

¹ Department of Oral Surgery, Jagiellonian University Medical College, Krakow, Poland

² Department of Orthodontics, Specialist District Outpatient Clinic Zbigniew Zak Memorial, Krakow, Poland

Introduction

CCD is a rare genetic autosomal dominant hereditary disease, which occurs in 1/1000000 individuals with no specified sex predilection. It is caused mainly by gene RUNX2 mutation and it's responsible for osteoblast differentiation and bone structures development. Common features are: low growth, brachycephaly, prominent frontal eminence and/or parietal eminence, delayed ossification of fontanelles and open skull sutures, hypoplasia of the middle section of the face and underdevelopment or absent of one or both collarbones. Oral abnormalities may include delayed loss of primary teeth, impacted teeth and supernumerary teeth. Often other symptoms may occur and clinical manifestation of single disease syndrome may differ with its intensification of single symptoms - even with the same family.

Aim

The purpose of this study was to present current knowledge of Cleidocranial dysplasia and presentation of clinical case.

Clinical report

Patient, 21 y.o. was sent to Department of Oral Surgery Jagiellonian University Medical College by his orthodontist for treatment of oral abnormalities which have been one of CCD syndromes. Diagnosis and initial treatment have been made in other Medical College but due to patients change of residence the therapy haven't been continued.

Patient in good general health, properly intellectually developed, low height. Extraoral examination revealed regular symmetry of the skull, shortened lower section of the face, profile showed hypoplasia of the middle section of the face manifested by flattening the infraorbital and infranasal areas. Intraoral examination revealed narrowing of the upper and lower dental arch in terms of median plane, additionally shortened lower dental arch in terms of infraorbital plane. There were many persistent and missing teeth. Pantomographic x-ray followed by CBCT showed impacted teeth in maxilla and mandible, no germ of 48,35,38 teeth and six supernumerary teeth.

Therapeutic plan included staged extractions of persistent and supernumerary teeth and interposition of the impacted teeth with regular anatomy into dental arches.

Summary

CCD characterizes by aesthetic morphologic and functional dysfunction of skeleton. The most common symptoms are easy to diagnose with physical and radiological examination supplemented with genetic tests. Correct and fast diagnose allows to initiate proper prophylactic and therapeutic procedures.

**P-294****WHAT DO PATIENTS WANT TO KNOW BEFORE ORTHOGNATHIC SURGERY?
A QUALITATIVE STUDY**

S. O'Connell, N.Pattni, R. Williams

Oral and Maxillofacial surgery, Queen Elizabeth Hospital, Birmingham, United Kingdom

Objective

The patient experience of orthognathic surgery is complex. Informing patients adequately is essential for managing patient expectations, the provision of services and undertaking informed consent. The objective of this study was to explore patients' expectations and experiences of orthognathic surgery using qualitative research methods.

Method

Purposive sampling was undertaken focused on a homogenous group who had undergone orthognathic surgery within the past 6-12 months by a single surgeon at a single institution (Queen Elizabeth Hospital, Birmingham, UK). Exclusion criteria were patients who had previously received orthognathic treatment, who were younger than 16 years, and those with congenital craniofacial anomalies or acquired defects. A focus group was conducted, recorded, transcribed, and analysed using content analysis. As key themes began to emerge, this directed further discussion, allowing exploration and validation of participants experiences. When new themes ceased to arise, it was assumed that data saturation was reached.

Results

A total of 7 patients (3 male and 4 female) with an average age of 25 years participated in the focus group. The majority were Caucasian and had undergone bimaxillary surgery. Following analysis of the data several main themes were identified: pre-admission, day of surgery, post operative care in hospital, home care and outpatient follow up. Within these themes participants identified areas where further information would have improved their experiences and overall satisfaction.

Conclusion

Although participants experiences of orthognathic surgery were generally favourable, areas were highlighted where improved information is required prior to undergoing treatment. The areas highlighted through qualitative research methods will enable development of a patient-centred, evidence-based pre-operative orthognathic surgery patient information tool.



P-304

UNILATERAL CONDYLAR HYPERPLASIA: ORTHOGNATHIC SURGERY WITHOUT ORTHODONTIC TREATMENT

A. Carboni, C. Taglia, G. Cerulli

Maxillo-Facial Department, Hospital of "Belcolle", Viterbo, Italy

Objective

Our goal is to demonstrate that in some facial malformation cases needing orthognathic surgery, it is possible to achieve a good functional and aesthetic result even if you use a non standard patient preparation for surgery.

Methods

Authors examined a case of a young woman presenting with facial asymmetry, shifting of the chin midline, right fullness midface and left flattening midface. The intraoral examination showed a left mandibular lateral deviation, right dental-skeletal angle III, right scissor bite and a left cross bite. Orthopantomography showed an enlarged right condyle, an elongated condylar neck and a ramus downward growth. We diagnosed unilateral right condylar hyperplasia. The patient presented several functional problems, especially related to the abnormal occlusion, and an unaesthetic face appearance. For economic problems the patient could not have been treated orthodontically, but after a check of the dentall models, we decided for the operation. We did a surgical planning and then we performed a Le Fort I osteotomy, a mandibular sagittal split osteotomy.

Results

We achieved a quiet good, stable occlusion with an improvement of the masticatory problem and an excellent aesthetic result.

Conclusions

Presurgical orthodontic treatment is an essential condition in orthognathic surgery, but in particular socioeconomic conditions and in selected patients, surgical treatment alone can have an indication making a clinical and aesthetic improvement

**P-308****EFFECTIVENESS OF PIEZOELECTRIC SURGERY IN REDUCING SURGICAL COMPLICATIONS AFTER BILATERAL SAGITTAL SPLIT OSTEOTOMY**

Y. Kurihara¹, T. Shiota¹, T. Kamatani¹, S. Kondo¹, T. Yamaguchi², H. Ogura³, K. Maki²

¹ *Department of Oral and Maxillofacial Surgery, Showa University, Tokyo, Japan*

² *Department of Orthodontics, Showa University, Tokyo, Japan*

³ *Department of Information Science, Showa University, Yamanashi, Japan*

Our aim was to investigate the effectiveness of piezoelectric surgery, where the osteotomy is made using ultrasonic vibration, in reducing surgical complications after bilateral sagittal split osteotomy (BSSO). Fifty-nine patients with skeletal mandibular prognathism who had mandibular setback with BSSO between January 2009 and April 2011 were included in the study. Piezosurgery was used in 29 cases, and the bone was split using a separator. In the remaining 30 cases, a Lindeman bur was used for the osteotomy and a chisel was used to split the bone. The amount of intraoperative bleeding and the Semmes Weinstein test scores were used as objective variables to evaluate the degree of neurosensory disturbance, and sex, age, use of piezosurgery, degree of setback, operating time, and method of fixation were used as explanatory variables. We used analysis of covariance (ANCOVA) to assess the significance of differences. Intraoperative bleeding was significantly less with age ($p = 0.003$), and longer when operating time was prolonged ($p = 0.017$), and was not influenced by the use of piezosurgery. The Semmes Weinstein test score significantly increased with age ($p = 0.01$), and was significantly greater when piezoelectric surgery was used ($p = 0.008$), and at 3 months, there were signs of more neurosensory disturbance in older patients and those who had had piezoelectric surgery. In this retrospective non-random study piezoelectric surgery reduced neither blood loss nor the incidence of neurosensory disturbance in BSSO.



P-319

EVALUATION OF DENTAL AND SKELETAL STABILITY AFTER YAW CORRECTION IN FACIAL ASYMMETRIC PATIENTS USING CBCT

Y.D. Kim¹, M.S. Kang¹, J.S.Seo¹, D.S. Hwang²

¹ *Department of Oral and maxillofacial surgery, School of Dentistry, Pusan National University, Yangsan, South Korea*

² *Department of Oral and maxillofacial surgery, School of Dentistry, Pusan National University, Busan, South Korea*

Objective : The study was performed to evaluate dental and skeletal change in facial asymmetric patients who treated with 2 jaw surgery via maxillary yaw correction.

Methods : This study includes 15 patients who underwent 2 jaw surgery for facial asymmetry. The subjects included for evaluating dental and skeletal change. All of the patients were assessed by cone-beam computed tomography images in the pre-surgery, immediate after surgery, and 6 months follow-up. CBCT images including 3-dimensional images were referenced to assess dental and skeletal change.

Results : Of all the variables tested, UIE to midmaxillary plane and Mx. dental yaw showed a statistically significant surgical movement ($p \leq 0.05$) while its post-surgical relapse was not obvious. Maxillary bony yawing was not obvious in surgical movement, but considerable ($p = 0.11$). Post surgical relapse showed no statistically significant change.

Conclusions : To achieve the optimum facial symmetry, in facial asymmetry patients, clinicians should be sure to remember the yaw correction before the 2- jaw surgery. We could expect to get better results for patient with facial asymmetry via 3- dimensional movement, such as yaw



P-324

DISTRACTION TECHNIQUES IN MAXILLOFACIAL SURGERY IN RELATION WITH THE NEW CONCEPT OF FACIAL BEAUTY.

A. Cortese, G. Savastano, C. Boschetti, R. Apicella, G. Pantaleo, M. Amato

University of Salerno, Naples, Italy

Introduction

Because the standards of facial beauty are changed, indications for maxillary expansion procedures are increasing. Also symmetry is an important element of facial harmony, because it is related to the expression of a correct genetic asset of each individual. Moreover a wide smile without black lateral corridors, small amount of gingival exposure of upper dental arch is accepted as young nice appearance. Also a bi-protrusive cephalometric pattern with a good skin tension is important to obtain a young and nice appearance. Distraction techniques are the main procedures for facial skeleton expansion gaining bone volume stable over time and similar to the native patient bone for histological features.

Also histiodistraction is achieved by distractions techniques gaining soft tissue amount when needed.

Aim

The purpose of this work is to report about some orthognathic cases showing maxillary or mandible insufficiency respectively treated by a new palatal distraction device and a mandible distractor to correct facial deformities in relation with the new concept of facial beauty.

Methods and patients

Four case with maxillary constriction were treated by LFI-DO bone-rigid (Cortese), a new procedure to perform a Le Fort I osteotomy with down fracture, three-dimensional maxillary repositioning and distraction osteogenesis by a rigid bone borne device in one surgical step.

Palatal distractor had an intrinsic rigidity by a jack-screw and 8 anchor points on the horizontal plane: 4 on the hard palate in the paramedian area at the septum foot and 4 other points on the teeth.

In the reported case with mandibular insufficiency, mandibular distraction was performed by an intraoral three-dimensional distractor device.

Results

By the LFI-DO bone-rigid technique bodily maxillary expansion is achieved with good comfort for patients, easy removal of the device and without any bone defect of the palate anchorage site

Other advantages are no need of a second surgery for maxillary repositioning, improvement in orthodontic treatment by bone anchorage, possibility of further expansion in case of lower molars buccal torque.

Mandibular distraction with intraoral three-dimensional distractor allowed large mandibular advancement (15mm.) preserving condylar safety and obtaining a nice lower border contour for impressive enhancement of facial beauty.

**P-325****ASSESSMENT OF BONY INTERFERENCE BETWEEN MANDIBULAR SEGMENTS DEPENDING ON DIFFERENT MAXILLARY MOVEMENTS IN 3 DIMENSIONAL VIRTUAL SIMULATIONS OF TWO-JAW SURGERY**

S.Y.Yoon, Y.D. Kim

Department of Oral and Maxillofacial Surgery, School of Dentistry, Pusan National University, Yang-san city, South Korea

Objective : During two-jaw orthognathic surgery for the correction of dentofacial deformity, maxillary movement have significant influences on positioning of mandibular segments. The purpose of this study was to evaluate, using 3 dimensional(3D) virtual simulation of two-jaw surgery, bony interference between proximal and distal segments of the mandible depending on different maxillary movements.

Materials and Methods : We randomized 3D Cone Beam Computed Tomography(CBCT) images of patients with craniofacial deformity. The preoperative 3D CBCT data were recomposed to 3D image and simulated two-jaw surgery by the virtual surgery software program(Simplant Pro Crystal). Le Fort I osteotomy was conducted in maxilla. According to patterns and directions, maxillary movements were classified into 8 categories : Advancement, Setback, Lateral sliding, Vertical reduction, Pitch(clockwise, counter-clockwise), Roll, Yaw. Bilateral sagittal split ramus osteotomies was conducted in mandible. Distal segment was changed to maintain previous occlusion and proximal segments were repositioned to minimize displacements of both condyles. After migration of maxilla and mandible, various patterns of bony interference between proximal and distal segments of mandible and condylar displacements were evaluated.

Results : Maxillary rotation demonstrated more interference between proximal and distal segments of the mandible than maxillary translation. Lateral sliding had the most interference, followed by setback, advancement and vertical reduction in translation. In yaw and roll, non-deviated side had interspace and Deviated side had gross interference. Clockwise pitch showed less interference than yaw and roll, and there is no bony interference in counter-clockwise pitch. These patterns intensified with increasing the degrees of rotation.

Conclusions: Preoperative anticipation of bony interferences between mandibular segments depending on maxillary movements will help surgical planning to minimize displacements of condyles. And the maxillary yaw, roll, and sliding that can induce much condylar dislocation must be seriously considered and minimized in procedure for surgical planning.

**P-366****CHANGES IN FACIAL SYMMETRY AND SOFT TISSUE PROFILE AFTER ORTHOGNATHIC SURGERY**

K. Wermker¹, J. Kleinheinz², T. Annussek², S. Jung², D. Dirksen³

¹ *Cranio-Maxillofacial Surgery, Fachklinik Hornheide, Muenster, Germany*

² *Cranio-Maxillofacial Surgery, University Hospital Muenster, Muenster, Germany*

³ *Prosthetic Dentistry and Biomaterials, University Hospital Muenster, Muenster, Germany*

Objective: In orthognathic surgery aesthetic issues and facial symmetry are vital parameters in surgical planning. Aim of this investigation was to document and analyse the results of orthognathic surgery on the base of a three dimensional photogrammetric assessment, to assess the soft tissue response related to the skeletal shift and the alterations in facial symmetry after orthognathic surgery.

Patients and Methods: In this prospective clinical trial from January 2010 to June 2011, 104 patients were examined who underwent orthognathic surgery due to mono- or bimaxillary dysgnathia. The standardized measurements, based on optical 3D face scans, took place one day before orthognathic surgery (T1) and one day before removal of osteosynthesis material (T2).

Results: Soft tissue changes after procedures involving the mandible showed significant positive correlations and strong soft tissue response ($p < 0.05$). The midfacial soft tissue response after maxillary advancement was only of minor extent ($p > 0.05$). The facial surfaces became more symmetric and harmonic with the exception of surgical maxillary expansion, but improvement of facial symmetry revealed no statistical significance.

Conclusion: Soft tissue response after orthognathic surgery and symmetry are only partially predictable, especially in the maxillary and midfacial region. Computer programs predicting soft tissue changes are not safely reliable until today and should not be used or with caution to demonstrate a patient potential outcome of surgery.



P-409

TRANVERSE DENTAL ANOMALIES IN JAW DEFORMITY PATIENTS WITH FACIAL ASYMMETRY

S.U.Yun, B.S.Lee, Y.D.Kwon, B.J.Choi, J.Y.Ohe

Kyung Hee University of dental college, Seoul, South Korea

Patients with severe facial asymmetry are generally treated with a combination of orthodontic and orthognathic surgical therapies, not only to improve their occlusion, but also to improve facial esthetic.

However, in patients with jaw deformities accompanied by facial asymmetry, satisfactory facial symmetry cannot be achieved in some case, even when properly reconstructing occlusion and matching the centre of the maxillary and mandibular dentitions to the facial midline following orthognathic surgery.

The reason for this may include asymmetry in the frontal morphology of the mandibular body; asymmetry in the buccolingual inclination of the molar region; improper positioning of the mandible due to tilt of the occlusal plane in relation to the frontal plane; and asymmetry in soft tissue volume, including muscle tissue.

Dental compensation in the molar region does not allow the midline of the mandible to be in a symmetric position.

In this study, based on computed tomography scans were examined to clarify asymmetry in the buccolingual tooth axis of molars and the frontal-plane skeletal morphology of the mandible in jaw deformity complicated by facial asymmetry



P-422

SUCCESSFULLY MANAGING CASES IN ORTHOGNATHIC SURGERY BY SUPERSEDING THE TRADITIONAL PROTOCOL

G. Khachatryan, E. Karapetyan, H. Harutyunyan, A. Vardanyan, L. Khachatryan, L. Torosyan, K. Mkrtchyan, A. Nandan

Maxillo-facial surgery department, "Aramyants" Medical Centre, Yerevan, Armenia

Objective: Treatment of patients with jaw deformities in some cases will require preoperative orthodontic treatment. Often for the duration of preoperative orthodontic phase, patients refuse the orthodontic treatment or request to first conduct surgical phase of treatment with orthodontic treatment at a later stage.

Methods: We were faced with such a problem, with a patient named I. 29 years old, with retro-micrognathia of the upper jaw, which was scheduled for operation osteotomy of the upper and lower jaws and genioplasty, after preoperative orthodontic treatment. Because of the inconsistency of the dental arches in constructive occlusion, based on the obtained gypsum models, it was decided not only to undertake the upper jaw osteotomy through Le Fort I, but also the osteotomy of palatal suture along the middle of the alveolar process and to expand the dental arch of the upper jaw to receive orthognathic bite. In preoperative phase, an orthodontic device was made, which was inserted during surgery after osteotomy of the maxilla through Le Fort I and sagittal osteotomy of the middle palatine suture and the alveolar process, which helped to fix the dental arch to the desired width .

Result: Stable occlusion was achieved after orthognathic surgery. And now, for the correction of malposed teeth, the orthodontic phase of treatment has already been started.

Conclusion: So, the traditional protocol of orthodontic treatment-surgery-orthodontic treatment in some cases can be superseded.



P-425

PEER ASSESSMENT RATING (PAR) INDEX OUTCOMES FOR ORTHOGNATHIC PATIENTS TREATED BY A SINGLE ORTHODONTIST SURGEON TEAM IN SOUTHEND ON SEA.

V Bhatt, C Lawson, S Nute

OMFS, Southend University Hospital, Essex, United Kingdom

Background: The Peer Assessment Rating (PAR) index is commonly used to evaluate the outcome and improvement in patients treated with a combined orthodontic and orthognathic approach. SouthendHospital houses orthodontic and OMFS centres which helps to provide a close multidisciplinary approach to patient care in correcting malocclusions.

Objectives: To evaluate the standard of care given by an in-house multidisciplinary team by measuring occlusal outcomes for patients who underwent combined orthodontic surgical correction of malocclusions.

Materials and Methods: We compared PAR outcomes of all patients who had completed combined orthodontic and surgical treatment delivered by a single surgeon orthodontist team over a period of 20 months from 2012-2014. 50 cases were debonded and placed in retention in this period. A patient-centered questionnaire was used to examine patients' perceptions of the benefits of orthognathic treatment.

Results: Class II mean PAR score before treatment was 39(10-68), after treatment was 3(0-8), with a mean improvement of 91%. Class III mean PAR score before treatment was 42(16-54), after treatment was 3 (1-7), with a mean improvement of 92%. Total PAR scores improved by a mean of 91.5% after treatment, indicating that results are above those in the published literature.

Conclusions: A high quality occlusal outcome is important for patients as good intercuspation at the end of treatment is thought to improve stability. Most orthognathic patients reported improvements in their dental and facial appearance and thought that the treatment had been beneficial.



P-429

VALIDITY OF A COMPUTED SOFT TISSUE PROFILE PREDICTION METHOD FOLLOWING MAXILLO-MANDIBULAR SURGERY

A. Benech, M. Giarda, M. Brucoli, M. Nicolotti, M. Caka, A. Gatti, S. Ferreri, E. Broccardo, F. Moreschini

Maxillo Facial Division, Azienda Ospedaliero-Universitaria Maggiore della Carità, Novara, Italy

OBJECTIVE: The aim of this study was to determine the validity of computed cephalometric method (Dolphin Imaging Software) used for predicting the post operative soft tissue profile of patients who underwent maxillo-mandibular surgery.

METHODS: Fifty patients (28 women and 22 men) who required double jaw orthognathic correction were evaluated by using Dolphin Imagin Software. Treatment plans and prediction tracings produced by computed software were transferred to models and finally to operation. Six months postoperatively, the changes in profile obtained in the soft tissue were cephalometrically assessed and compared with the prediction tracings. T student's test was used for stastical analysis

RESULTS: Statistical analysis of prediction and real soft tissue tracings data showed no statistically significant differences in both horizontal and vertical plane for subnasal (Sn), point A, upper lip (UL), pogonion (Pg) and menton (Me). Statistically significant differences in the horizontal plane but not in the vertical were found for lower lip (LL).

CONCLUSIONS: The aim of orthognathic surgery is to correct the dental malocclusion and to improve facial aesthetics harmonizing the facial profile, in fact alterations of the jaws can influence both patient's self-confidence and his interpersonal relationships. Therefore, it is important to be able to predict the soft tissue changes resulting from hard tissue alterations. The prediction of the final profile of the facial soft tissues play important roles in planning the orthognathic treatment. Computer-aided treatment planning has become more common in the recent years. Our experience revealed that computed cephalometry is a feasible standard for evaluating and predicting outcomes in routine orthognathic surgery cases.

**P-437****PATIENT EXPERIENCE OF ORTHOGNATHIC TREATMENT JOURNEY AT SOUTHEND UNIVERSITY HOSPITAL**

V Bhatt, S Mubeen, A Singh, S Nute, C Lawson, R Lythcott

Oral and Maxillofacial Surgery, Southend University Hospital, Westcliff-On-Sea, United Kingdom

Aims: Our aims were to look at patient perceived benefits pre and post orthognathic surgery. We assessed if there were any differences in experience that were linked to single jaw or bimaxillary surgery. We also wanted to assess their experience in the hospital. Our overall aim was to use our findings to improve the service we deliver to this group of patients.

Materials and methods: A patient-centred questionnaire was used to examine patient's perceptions of the benefits of orthognathic treatment. All patients that had combined orthodontic-orthognathic treatment and had completed the course of treatment over a 22 month period were included. The survey looked 5 domains; reasons for treatment, information given, benefits of treatment, hospital stay and the patients recovery.

Results: 40 surveys were returned. Out of these 57.5%(23) had single jaw surgery and 42.5% (17) had bi-maxillary surgery. The top 3 reasons for patients wanting surgery were straighten their teeth 87.5% (35) improve their smile 80% (32) and to improve their self confidence 77.5%(31). After treatment 92.5% (37) of patients felt they had improved facial appearance, 92.5% (37) felt their teeth were straightened and 90%(36) felt their smile had improved. In regards to their ward experience 20% (8) patients felt that the food given to them was not appropriate.

Conclusion: Overall patient expectations were met, indicating patients were satisfied with the service provided by OMFS and orthodontics. Inpatient experience can be improved. Ward staff are being educated in peri-op protocols.



P-546

ADAPTATION OF A BODY DYSMORPHIC DISORDER SCREENING QUESTIONNAIRE FROM COSMETIC TO ORTHOGNATHIC SURGERY

E Yeung¹, D Veale^{2,3}, J Hutton², M Collins⁴, G Mack⁴, E O'Higgins⁴, K Fan¹

¹ Department of Oral and Maxillofacial Surgery, Kings College Hospital, London, United Kingdom

² Institute of Psychiatry, Kings College London, London, United Kingdom

³ NIHR Specialist Biomedical Research Centre for Mental Health, South London and Maudsley NHS Foundation Trust, London, United Kingdom

⁴ Dental Institute, King's College Hospital, London, United Kingdom

Objectives

Orthognathic surgery is a functional surgery that may have a significant affect on facial aesthetics. Studies have shown that patients seeking facial cosmetic surgeries, including orthognathic surgery, have a higher likelihood of suffering from body dysmorphic disorder (BDD) (7-15%) than the general population (0.7-3%). Patients suffering from BDD are less likely to be satisfied with the results of their surgery even when clinicians rate the outcome as "good". NICE recommends that patients are screened for BDD prior to undergoing any procedure but up to 80% of clinicians felt they had no training in psychological assessment and 50% made no referrals for further psychological assessment with 30.5% citing "no-one to refer to". Early identification of patients with BDD would enable clinicians to make timely referrals for patients who may benefit from psychological assessment and improve post-operative patient satisfaction. This study was a pilot to determine the feasibility of introducing BDD screening to the orthognathic clinic and quantifying the likely number of patients that may require referral to allow for service planning.

Methods

All new patients were asked to complete a 9-item validated Cosmetic Procedure Screening Questionnaire (COPS) in the orthognathic clinic. The results were then analysed.

Results

11 patients from orthognathic clinic completed the questionnaire. The patients were aged 16-40yrs, 9 were female and 2 male. 36% (n=4) of patients, all female, who participated scored 40 or more indicating that they would benefit from referral for further psychological assessment (range=8-52, mean=31.3). The questionnaire was easy for staff to administer.

Discussion

Our findings of 36% were higher than other studies for prevalence of BDD in orthognathic patients, but our sample size is small. The COPS was simple and easy to use screening tool for BDD and will now be utilised for new patients in a larger study. The introduction of screening for BDD in the orthognathic clinic is in line with current NICE guidelines and by quantifying the likely numbers of patients who would need further psychological assessment allows for service provision planning. Sufficient numbers may justify the training of clinic staff to perform psychological assessments "in house" and minimise delays.



P-553

LE FORT II OSTEOTOMY FOR HYPOPLASIA OF THE MIDFACE-NOSE: A CASE REPORT

M Kodama, B Hell, K Tominaga

Department of Oral and Maxillofacial Surgery, Kyushu Dental University, Kitakyushu, Japan

Background: Le Fort osteotomies have 3 types of surgeries. Although Le Fort I osteotomy is most frequently used for jaw deformity correction, Le Fort III osteotomy is used in cases of widespread deficiency involving malar complexes, orbit, maxilla and syndromes related to craniofacial malformations, while Le Fort II osteotomy is relatively used less. This time, we report a case successfully treated by LeFort II osteotomy in the midface-nose hypoplasia patient with a skeletal class III malocclusion.

Case presentation: An 18-year-old female presented to Diakoine Klinikum Jung-Stilling with a chief complaint of midface concavity and malocclusion. We diagnosed the case with midface-nose hypoplasia with a skeletal class III malocclusion. After pre-operative orthodontics treatment, Le Fort II osteotomy and bilateral sagittal split ramus osteotomy was performed. The surgical access of Le Fort II osteotomy was via a combination of coronal flap and midfacial degloving approach while avoiding infraorbital incisions. The maxillary segment was advanced 5mm and the defect at radix nasi was transposed with the bone from mandibular ramus and fixed with micro plate.

Results: Sixteen months has passed since the procedure, there are no complications. Both the facial profile and occlusion has significantly improved by this surgical-orthodontic treatment and is stable.

Conclusions: The Le Fort II Osteotomy is an effective surgical method for patient with midface-nose hypoplasia associated with a skeletal class III malocclusion. Using these accesses, we had a secure control of the midfacial osteotomies and avoided any facial skin incisions.



P-557

PATIENT PERCEPTION OF CHANGES TO NASAL FUNCTION AND NASAL AESTHETICS FOLLOWING LE FORT 1 OSTEOTOMY.

A.Ujam, A.Comerford, N.Ali

Barts Health, London, United Kingdom

Aim

Since the time of the first Le fort 1 osteotomy almost 150 years ago by surgeon David Cheever, much has been written on the functional and cosmetic benefits of this procedure. The effect on nasal breathing and nasal anatomy has been published widely with variable conclusions.

Patients will be made aware of the potential changes to their facial profile and occlusion pre-operatively, but the changes to nasal shape and function can be just as significant and a source of medico-legal dispute and patient dissatisfaction.

We undertook a patient survey to establish whether patients subjectively appreciate changes to 3 important parameters following Le Fort 1 osteotomy: Nasal aesthetics, breathing and snoring. Furthermore, we examined closely the association between certain maxillary movements and these three nasal parameters.

Material and Method

30 patients were asked to complete a baseline questionnaire pre-operatively and then 4 months post-operatively. Pre-operative photographs were shown to patients after their surgery to allow them to judge nasal aesthetic changes. All patients were operated on by the same surgeon with the same surgical techniques used to prevent nasal septal deviation and unwanted alar base width changes.

Results

80% of patients described a positive change in nasal aesthetics, 50% of patients described improved nasal breathing. Only 2 patients noted a change to snoring. As expected, large advancements were associated with higher rates of improved nasal breathing.

Discussion and Conclusion

These findings reinforce the positive impact of Lefort 1 osteotomies on nasal aesthetics and function and can help support the consenting process for potential patients. Furthermore, such additional benefits of surgery will improve patient's satisfaction and their overall sense of well-being.



P-582

CONDYLAR HYPERPLASIA. CLINICAL AND RADIOLOGICAL FINDINGS AND SURGICAL OUTCOMES

Maria Jose Nieto¹, Daniel Garcia¹, Alberto Berjón², Miguel Burgueño¹, Jose Luis Del Castillo¹, Borja Apellaniz¹

¹ *Oral and Maxillofacial Surgery, University Hospital La Paz, Madrid, Spain*

² *Anatomopathology, Hospital Universitario La Paz, Madrid, Spain*

Introduction: Condylar hyperplasia is a relatively common disorder that causes excessive growth and enlargement of the mandibular condyle. There are many suggested aetiologies, including neoplasia, trauma, infection, abnormal condylar loading and aberrant growth factors.

This condition can adversely affect the size and morphology of the mandible, and even affect the maxilla, causing malocclusion, asymmetry and development or worsening of dentofacial deformity.

Adequate diagnosis and treatment is important to prevent and minimize this sequelae.

Material and methods: We retrospectively review all cases treated with condylectomy at University Hospital La Paz from January 2008 until October 2013.

Results: From January 2008 until October 2013 17 condylectomies have been performed. Condylar Hyperplasia was diagnosed in 11 patients. Clinical and radiological findings are reported. Surgical outcomes and need for orthognathic treatment are also analysed.

Conclusion: Clinical and radiological findings are very constant in patients affected with condylar hyperplasia. Condylectomy is a safe procedure that solves the problem in all cases with little sequelae. Orthognathic surgery represents a complementary and essential treatment in most cases.



P-616

SKELETAL RELAPSE AFTER BILATERAL SAGITTAL SPLIT OSTEOTOMY: A SYSTEMATIC REVIEW

E. F. Lamberts, W. Reich, J. Schubert, A. W. Eckert

Martin-Luther-University Halle-Wittenberg, University hospital for Oral and Plastic Maxillofacial Surgery, Halle / Saale, Germany

Objectives

Long term stability of functional and aesthetic improvement in orthodontic and maxillofacial surgery is essential. Focusing on skeletal relapse in mandibular advancement possible factors are discussed: soft tissue tension, instability in the area of osteotomy, changes of the condyle position (postoperative settling, resorption). The purpose of this study was to systematically review the available evidence in studies concerning stability after mandibular advancement of Angle class II deformity.

Methods

A systematic search of literature was performed in the databases of PubMed, Cochrane and EMBASE. The primary outcome measures were the frequency and risk factors associated with a skeletal relapse (horizontal relapse of at least 2 mm), furthermore the effectiveness of preventive methods was analysed. First the quality of the study (evidence level I-IV), the number of patients, presence of systematic follow up, standardized treatment protocol, cephalometric analysis were assessed. Then the methodological (study design, treatment) and patient specific heterogeneity was evaluated. In each group the mean of relapse frequency and 95%-CI were calculated and for each risk factor the statistical consistence identified (Cochrane's χ^2 -Test).

Results

Out of 3622 articles 52 studies were included: n=10 studies of maxillomandibular and n=42 studies of mandibular operations, mostly being of evidence level III-IV. The relapse frequency in mandibular advancement procedure with rigid internal fixation only was 20% (n= 485patients) and in combined maxillomandibular operation 14% (n=120 patients). From 29 potentially relevant risk factors the following 4 factors were statistically significant: amount of mandibular advancement, preoperative mandibular plane angle, method of fixation and age.

Conclusions

Despite rigid internal fixation in orthognathic mandibular advancement a relapse of at least 2 mm is not a rarity. In future studies there is a need of improved descriptive and methodological quality with an emphasis on validity to achieve most successful results.



P-624

MAXILLARY EXPANSION WITH DIFFERENT DEVICES

A.Kolk¹, O.Bissinger¹, K.D.Wolff¹, C.Goetz¹, H.Winsauer², O.Ploder³

¹ Oral and Maxillofacial Surgery, Technical University of Munich, Klinikum r.d.Isar, Munich, Germany

² Private Practice for Orthodontics, Private Practice Bregenz, Bregenz, Austria

³ Oral and Maxillofacial Surgery, Landeskrankenhaus Feldkirch, Feldkirch, Austria

Objective:

For transverse maxillary expansion, various methods exist. The long-term stability of the segments is the goal of any method of palatal expansion. Different treatment modalities should be compared in the context of a longitudinal study under the aspect of long-term stability, recurrence and complication rate.

Methods:

At three centres, 47 patients were surgically treated by different methods: (sarpe = surgically rapid palate expansion, n = 29, dental-borne (G1) or n = 18 bone-borne (G2)), while 18 adult patients without surgery underwent a novel method (mini anchor bolts = MAS apparatus (G3)).

Preoperatively, immediate after consolidation (T1) and 1-year postoperatively (T2) impressions and radiographs were analysed. Radiologically, the distraction gaps were measured and possible complications such as apical resorption or periodontal damage investigated. In the models, the generated transverse width was evaluated.

Results:

There were significant differences between the dental- (G1) and bone borne device (G2) when expansion and recurrence were compared at the respective time points ($p < 0.05$). Within the osseous collective (G2 and G3), the differences between the time points were low, while G1 showed significant differences between T1 and T2, ($p < 0.05$) with respect to the stability of the maximum gained expansion. However, tooth-borne distractors showed fewer complications than bone-borne devices (loosening of the device). In the novel subgroup G3 complication and recurrence were lowest, but also the maximum achievable expansion result was significantly lower than those of the other two groups G1 and G2.

Conclusions:

Compared to tooth-borne distractors bone-supported devices had more apparatus-associated complications. With regard to the qualitative and quantitative results differences were significant in the maximum expansion and in the rate of recurrence. Treatment within G1 is less invasive to the patient and economically efficient for the surgeon, so that generally tooth-borne devices should be given preference. Contraindications for G1 are given in case of PA-damaged patients. In situations with low transversal deficit the MAS apparatus can be used with minimum complication rate, but requires a high degree of compliance.



P-627

CHANGES IN TRANSVERSE TOOTH AND BONE DIMENSIONS USING A DEVICE INSTALLED ON A BONE FOR MAXILLARY HYPOPLASIA TREATMENT

Krzysztof Dowgierd

University Childrens Hospital, Olsztyn, Poland

A transverse maxillary hypoplasia is a deformation often observed in orthodontic patients. Various techniques are used slow orthodontic expansion, rapid palatal expansion. The advantage of SARME is gradual expansion of the cut bone and soft tissues. The aim is to present results of transversal maxillary hypoplasia treatment with a device installed on bones using transpalatal distraction osteogenesis. A retrospective analysis 27 patients (9 female and 18 male), age from 17 to 26 years (17 ± 2.6). Dental casts were made in T1 period, and T2. Xray were performed in the T1 and T2 periods. On the casts, points on cusp points of maxillary canines (3-3), first maxillary premolars (4-4) and first maxillary molars (6-6) were determined. Angles and distances were measured on standard P-A images. PA_nosebase_PRE/POST-, 6-6_buctub_PRE/POST- distance between first premolars before treatment, Crest_PRE/POST- distance between zygomaticoalveolar crests before and after treatment, 6-6_ang_PRE/POST – angle between anterior nasal spine and first premolars before and after treatment. At the cusps level of 3-3, 4-4, and 6-6 teeth, the statistical test showed a statistically significant change. At the 3-3 level, the average expansion was 5.8 mm, at the 4-4 level, the average expansion was 7.3 mm, the level of 6-6 palatal cusps the average expansion was 6.11mm. Measurements in the PAX-ray were performed at the nasal cavity, PA nosebase_PRE/POST, with the average dimensions being 29.03 mm before treatment, and 31.95 mm post-treatment. The angle was measured between first molars, 6-6_ang, and the anterior nasal spine before and after treatment, with a significant change in that angle from 98.93° on average to 102.89° after distraction. The largest average expansion at the 3-3 level was achieved in the class III disorder group. The largest maximum expansion was achieved in the maxillary hypoplasia group. At the 6-6 level, the largest range and the largest maximum expansion was achieved in the class II group. 1. Use of maxillary distraction osteogenesis in maxillary expansion is an effective treatment method. 2. Maxillary expansion results in increase of the nasal cavity bottom. 3. Used distractor is easy to operate and helps to maintain correct oral hygiene



P-629

AP UPPER INCISOR POSITION: A REFERENCE FOR DIAGNOSIS AND PLANNING IN ORTHOGNATHIC SURGERY

A. Encinas Bascones¹, J. Sanchez Gutierrez¹, M. Hernandez², O.De la Sen¹, E. Varela¹, I. Martinez¹, A. Berguer¹

¹ Oral and Maxillofacial Surgery Department, Hospital Clinico San Carlos, Madrid, Spain

² Ortomax, Orthodontist exclusively, Madrid, Spain

Introduction:

Planning in orthognathic surgery has been always a variable challenge. Good facial harmony exists within a wide range of cephalometric values: the upper incisor position in the sagittal plane varies with the cephalometric analysis applied. Proper tridimensional upper incision position is a key factor for any malocclusion diagnostic and treatment.

Aims:

To provide a new reference for diagnosis and planning in dentofacial deformities, related to upper incisor sagittal positioning, depending on the forehead in adults, according to Andrews *Second Element of Orofacial Harmony*.

Material and Methods:

We create a control sample consisted of 20 photographic images of adult white females collected from our office, with a pleasing appearance in profile, good facial harmony and normal occlusion. We ask for a lateral skull radiograph too. We use the Dolphing 3D imaging software to resized and rotated to upright head position, and to position the landmarks points in the forehead described by Andrews: trichion, superion, glabella and Frontal point. We explain Andrews protocol to locate the different references lines to assess the anteroposterior position of the upper incisor. The AP relationship of upper incisor to the forehead is measured. We present other 20 patients seeking for dentofacial deformity correction with orthognathic surgery and we use the same lines protocol as the control sample. We explain orthognathic planning with Andrews upper incisor position protocol, to determine the maxillary 3D position in the surgery.

Results:

In the control sample, the majority of our patients had maxillary central incisors positioned between the Frontal point and glabella. In the study sample, the majority had them positioned posterior to Frontal point.

Conclusion:

The Frontal Andrews line is going to determine the upper incision position, with the vestibular surface of this tooth matching this line. This protocol is an easy, useful and reliable diagnostic and planning tool in orthodontic and surgical management of dentofacial deformities.

**P-631****ULTRASONIC BONE SCALPEL FOR ORTHOGNATHIC SURGERY: OUR EXPERIENCE.**

A. Encinas Bascones, R. Martin-Granizo, O. De la Sen, E. Varela, I. Martínez, A. Berguer

Oral and Maxillofacial Surgery, Hospital Clinico San Carlos, Madrid, Spain

Introduction:

The use of ultrasonic bone scalpel in Oral and Maxillofacial surgery is widespread in dental and pre-prosthetic surgery, because of its ability to maintain soft tissues. However, it has a limited capacity of cutting hard bones and the O.R. time is increased.

We present a novel ultrasonic bone scalpel used in Neurosurgery (Misonix) able to cut hard bones and to reduce O.R times. Its main features are tissue specific osteotomy, clean osseous cut, minimal bone loss, atraumatic to soft tissues, absence of gyroscopic effects and reduction OR time. This scalpel engages the bone through sequential impacts from longitudinal oscillations with a frequency of 22.5 kHz, allowing an effortless cutting of bone. High precision osteotomies are obtained with 0.5 mm thickness blades. It has direct irrigation too.

Aims:

To evaluate features and benefits of the ultrasonic bone scalpel in patients undergoing orthognathic surgery.

Material and Methods:

We present a series of 8 patients with dentofacial deformities, operated in our Oral and Maxillofacial department, between 2011-2013, with the Misonix Ultrasonic bone scalpel device (BoneScapel, Misonix, Dismeval S.L. Spain). We performed Le fort I, Obwegesser and genioplasty osteotomies with this device in every case.

We evaluate OR time, degree of postoperative hypoesthesia and facial postoperative swelling.

Results:

We observed a decrease bone resection time up to 60 minutes in global time. 2 post operatives hypoesthesia were found, probably related to genioplasty procedure. We obtain similar swelling results compared to oscillating bone saws. Non soft tissue damages were found.

Conclusion:

This device is a rapid, safe and precise scalpel for mandibular and maxillary osteotomies. It allows to reduce operative time and to perform perfect linear incisions with high degree of irrigation to prevent bone necrosis. Unless it's high price device and it has single use blades, we recommend it in facial osteotomies.



P-639

THE ETNA® EFFECT IN THE NEUROSENSORY DISORDER RECOVERING AFTER SAGITTAL OSTEOTOMY OF THE MANDIBULAR RAMUS.

J. R. Laureano Filho, C. L. Vieira, F. Godoy, B.C.E. Vasconcelos

Oral and Maxillofacial Surgery, University of Pernambuco, Recife, Brazil

Title: The ETNA® effect in the neurosensory disorder recovering after sagittal osteotomy of the mandibular ramus.

Objective: evaluate the effects of the ETNA® (cytidine-5-monophosphate and uridine-5'-triphosphate) medication in the neurosensory disorders recovery after sagittal osteotomy of the mandibular ramus.

Material and Methods: This study is a randomized double-blind placebo-controlled clinical trial. The sample size was comprised 24 sagittal osteotomies of the mandibular ramus (12 patients) that were performed by a single oral and maxillofacial surgeon using a standardized surgical technique. The sample was subsequently divided into two groups (experimental and control). In the experimental group the patients received the ETNA® according to the following posology: 1 ampoule intramuscular once a day during 3 days, followed by 1 capsule 3 times a day during 60 days. In the patients of the control group were given a placebo medication (composed for 5 mg of starch) prepared solely for this study at the same posology employed in the experimental group. All patients underwent to neurosensory tests (subjective e objective) in the pre operator and post operator (24 hours, 1 month, 3 months e 6 months). The statistical analysis was performed through SPSS software version 17.0 (SPSS, Inc., Chicago, IL). The categorical variables were compared through the Pearson's chi-squared test (χ^2) or the Fisher exact test when indicated. The Kolmogorov-Smirnov test was used to verify the normal distribution of the continuous variables. The t test was used to compare the two groups or the Mann-Whitney test for parametrically or not parametrically distributed data.

Resultados: After the statistical analysis, the objective and subjective tests showed a significant improvement of the patients in both groups over time ($p > 0,01$). Although the differences inter-groups were not statistically significant in the objective and subjective tests.

Conclusão: In the present study there was not significant differences between the control and experimental group, make us to conclude that the ETNA® did not influenced in the neurosesorial disorders recovering.

**P-645****A PROSPECTIVE AUDIT OF WEIGHT LOSS IN ORTHOGNATHIC PATIENTS TO EVALUATE IF NUTRITIONAL SUPPORT MAY BE BENEFICIAL POST OPERATIVELY**

M C Fullarton¹, K Fleming²

¹ *Oral and Maxillofacial Surgery, Countess of Chester Hospital, Chester, United Kingdom*

² *Oral and Maxillofacial Surgery, University Hospital Aintree, Liverpool, United Kingdom*

Aim/Objective

A prospective audit of weight loss in orthognathic patients to determine if this group may benefit from nutritional support in the immediate post operative period.

The National Institute for Health and Care Excellence (NICE) guidelines state that nutritional support is required in patients with unintentional weight loss greater than 10% or in patients with a BMI <20 kg/m² and weight loss greater than 5%.

Material and methods

A prospective audit of all orthognathic patients from the Countess of Chester Hospital undergoing surgery between September 2013 and August 2014 was undertaken. Patients underwent either a Le Fort I (LFI), bilateral sagittal split (BSSO) or bimaxillary osteotomy. Patients were weighed pre operatively and at weekly intervals post operatively for the four to six weeks until they were allowed to return to a normal diet.

Usual practice is for all patients to be given dietary counselling in the lead up to surgery by the operative team; the importance of a nutritious, high calorie liquidized or pureed diet is emphasised and meal ideas suggested. However, there is no input from the hospital dieticians and no nutritional supplements are prescribed.

None of the patients are placed into intermaxillary fixation; most will wear light elastic intermaxillary traction only postoperatively which allows opening.

Results

To date:

100% of patients lost weight in the immediate post operative period. At week 1 post operative mean weight loss was 2.8% (range 1-5.9%) and at week 3 post operative mean weight loss was 3.8% (range 1.3-6.4). No patients at present fulfil the criteria for nutritional support

Discussion/Conclusion

Weight loss in this group of surgical patients is a well recognised complication. However, we have not found that this is high enough to routinely prescribe nutritional supplements. Patients' weights should be monitored so nutritional support can be provided to those few cases that do lose enough to fulfil the recommended clinical guidelines in this area.

**P-663****REHABILITATION OF THE HYPOPLASTIC MAXILLA WITH CUSTOM MADE SILICONE IMPLANTS USING A 3D STEREOLITHOGRAPHIC MODEL**

A. Sampson, N. Berridge, B. Buahin, M.Heliotis

Oral & Maxillofacial Surgery, Northwick Park Hospital, Harrow, United Kingdom

Objectives;

Facial skeletal augmentation is one of a number of surgical techniques used to improve facial aesthetics. Previously, reconstructing facial skeletal deformities posed multiple challenges as 2D imaging and medical photographs provided limited detailed information needed for diagnosis and treatment planning. With recent advances in technology, 3D Computer Tomography (CT) has enabled the facial surgeon to 'prototype' the patients' unique anatomy and by using custom made implants successfully to camouflage 'contour' defects.

Methods;

We describe the case of a 23-year old male patient who was referred by his GDP to the Maxillofacial Unit for severe maxillary hypoplasia and a malocclusion. The dento-facial deformity was addressed with orthognathic surgery, a LeFort 1 Advancement Osteotomy and Bilateral Sagittal Split Osteotomy to setback the mandible to Class 1 occlusion.

Results;

Despite an objective good surgical outcome in terms of facial appearance and function, the patient remained unhappy with the perceived hollowness bilaterally beneath his eyes. Fine cut 3D CT scans were requested and used to fabricate a 3D stereolithographic model. Custom hand made silicone malar implants were constructed, inserted and fixed with screws as a second procedure under General Anaesthesia. The patient was pleased with his new facial profile.

Conclusions;

In the past, invasive devices such as facemasks and rigid external distractors were used to treat maxillary hypoplasia after LeFort 1 osteotomy. Our case highlights the 'camouflage' technique, which may be cheaper and far less invasive than conventional methods thereby reducing morbidity and enhancing patient post-operative satisfaction.

**P-668****A NOVEL APPROACH TO STANDARDISE NATIONWIDE ORTHOGNATHIC SURGERY DATA; IMPLEMENTATION OF A CARE PATHWAY BOOKLET AND DATABASE.**

N.Berridge, A.Ahmed, B.Buahin, A.Sampson, M.Heliotis

Northwick Park Hospital, Harrow, United Kingdom

Objectives;

Currently, there remains limited standardised regional data on Orthognathic Surgery within the UK National Health Service. The 'Minimum Dataset' for Orthognathic Surgery devised by BAOMS/BOS suggests guidelines to standardise the documentation of clinical records. However, the dataset is limited and does not allow for detailed analysis of all aspects of Orthodontic-Surgical Care.

We introduced a comprehensive Orthognathic Care Pathway Booklet and Database to allow surgeons to share their experience in terms of reasons for treatment, clinical measurements, surgery performed, and outcomes at various times after surgery.

Methods;

Our booklet was designed to allow for data to be collected efficiently irrespective of grade of doctor. We have completed 'x' booklets for those undergoing surgery at Northwick Park Hospital. The captured data represents a continuum in management from first visit pre-operatively to final visit post-operatively.

Results;

We achieved >90% satisfactory completion rate, with accompanying positive comments regarding the booklet's logical format. The booklet is now routine practice within our Department. Following this success, Vantage Diagnostics have created a software package to function as an electronic database. Data can be entered onto this secure Central Server and allow for safe 'paperless' storage.

Conclusions;

We believe our standardized paper and electronic format exceeds that of the current Minimum Dataset guidelines. At any given point in time, our data can be retrieved and analysed for medico-legal, audit and research purposes.

We aim to expand our database to incorporate data from other Maxillofacial Sub-Specialities. This unified 'Repository' could prove a powerful tool storing data on all aspects of modern Maxillofacial Surgical Practice.

**P-666****A 5-YEAR AUDIT EVALUATING PATIENT SATISFACTION FOLLOWING ORTHOGNATHIC SURGERY; AND IMPLICATIONS FOR THE FUTURE!**

N.Berridge, N.Vig, A.Sampson, B.Buahin, M.Heliotis

Northwick Park Hospital, Harrow, United Kingdom

Objectives;

Orthognathic Surgery can have a substantial impact on a patient's facial appearance, function, psychology and quality of life. We evaluate 5 years' of data on patients' perception of their 'Orthognathic Surgery' experience using a standardised questionnaire. To our knowledge, we are the first Orthognathic Unit in the United Kingdom to provide long-term data on patient-centred outcomes following surgery.

Methods;

In total, 103 patients who had undergone Orthognathic Surgery at Northwick Park Hospital between 2008 and 2013 were included in our 5-year audit. At the start of our audit, patients were invited to complete a 'paper' version of the questionnaire in the Unit. However, the questionnaire has since been added to Survey Monkey to improve compliance. Our questionnaire addressed 53 parameters of care subdivided into 7 sections of the patient journey.

Results;

Overall, the response rate averaged 70% per year. The majority of patients noted appearance as the most important motive for surgery. The psychological implications are unmistakable; nearly all patients report an improvement in facial appearance and self-esteem (95%). Significantly, there has been an increase in post-operative dietician support, management of pain and satisfaction with clinical staff. Post-operative surgical complications (e.g. sensory dysfunction) have also been explored.

The overall satisfaction was very high (96%), the same percentage of patients 'recommending' the Unit.

Conclusions;

Our patient satisfaction survey has proved a useful tool for assessing aspects of clinical practice at Northwick Park Hospital. Evaluation of our data shows that great improvements continue to be made. We have introduced user-friendly patient 'Pamphlet' that is now part of our routine practice.

**P-682****DEVELOPING AN ANIMAL MODEL FOR BENCH TRAINING IN ORAL AND MAXILLOFACIAL SURGERY**

KM Tekeli, M Patel, NM Goodger, JM McKenzie, CW Hendy

East Kent Hospitals University NHS Foundation Trust, Ashford, United Kingdom

Objective:

Despite the recent advances in simulation training, an animal model is still necessary to learn the basic skills in surgical specialties. In Oral and Maxillo-Facial Surgery, core skills in hard tissue surgery need to be improved before starting complex procedures on humans. We assessed the feasibility of using this animal model for training core skills.

Methods:

Porcine cadaver mandibles were sourced from the local abattoir. The clinical skills centre based at the education centre at Kent and Canterbury Hospital was utilised for the purpose of assessment and training. Porcine mandibles were assessed for training in wisdom teeth extractions, apicectomies, segmental osteotomies, sagittal split osteotomy cuts and vertical subsigmoid osteotomy cuts. All above procedures were carried out to assess the feasibility of using porcine mandibles as training models. Initially, dentoalveolar surgical procedures were tested on a group of trainees. In the second stage, osteotomy skills and complex hard tissue skills were assessed.

Results:

With the hard tissue training in porcine mandibles, trainees manual dexterity skills were improved. Using it as a model for osteotomy cuts were feasible. Inferior dental nerve was more sizeable compared to human. However, trainees carrying out sagittal split cuts came to realise the importance of the depth of cuts and the common pitfalls leading to unfavourable splits.

Conclusion:

Clinical skills in training in porcine mandibles can be a valuable addition to the bench training in oral and maxillofacial surgery. The initial trainee feedback was very positive. However further objective assessment is planned as the initial feasibility study was concluded as successful.

**P-684****EVALUATION OF SKELETAL CLASS III MALOCCLUSION PATIENTS TREATED WITH BSSRO IN SURGERY-FIRST APPROACH**

Jh. Lee, Je Uk Park, Young Wook Kwon, Jong Ho Lee

Department of Oral & Maxillofacial Surgery, Seoul St.Mary's Dental Hospital, The Catholic University of Korea, Seoul, South Korea

Purpose: Surgical-orthodontic treatment that eliminates or minimizes presurgical orthodontics, known as Surgery First Approach(SFA), has lately been gaining popularity in East Asian countries. However, its efficacy has yet been thoroughly proven in the literature. The purpose of this study is to evaluate treatment results of skeletal class III malocclusion patients treated with BSSRO in SFA.

Patients and methods: 30 skeletal class III patients who had BSSRO in SFA were included in the study. Lateral cephalometric radiography was taken preoperatively and 1 month and 6 month postoperatively. Pogonion(Pog) and B point(B) were marked as skeletal landmarks and soft tissue pogonion(Pog'), soft tissue B point(B') and Lower lip(LL) were marked as soft tissue landmarks. Overjet, overbite and lower incisor axis angle(L1 axis) were measured to assess dental relationship. To test for significance between measurements from each time period, a repeated-measured analysis of variance (ANOVA) was performed. When significant, post-hoc tests with the Bonferroni correction were done($\alpha=0.05$).

Results: Pogonion and B point showed significant posterior movement in 1 month postsurgery. Vertically, Pogonion moved superiorly after surgery and B point moved superiorly during postoperative orthodontic treatment period. All the soft tissue landmarks moved posteriorly. Overjet and overbite were changed to be within norm. Lower incisor showed labial inclination during postoperative orthodontic treatment period.

Conclusions: After the surgery, all the skeletal and soft tissue landmark measurement changes were coherent with the treatment objectives. Also, the treatment results were stable throughout postoperative orthodontics period. Overjet and overbite were normalized and lower incisor angle were changed to be more labially inclined.

**P-685****DIFFERENT APPROACHES FOR TREATMENT PLANNING IN ORTHOGNATHIC PATIENTS.**

Andrey Andreishchev, Mikhail Solov'ev, Roman Fadeev

First Saint-Peterburg state medical university, Saint-Peterburg, Russian Federation

Currently problems of rehabilitation of patients with malocclusions are the subject of discussion. Lack of co-ordination between surgeons and orthodontists can result in poor outcomes and unhappy patients. One solution for this problem is a different approach for orthodontic and surgical treatment planning.

We have operated on 515 patients with malocclusions.

There are 5 groups:

- 1- three stages plan (ortho-surgery-ortho) - 318 (61,55%)patients;
- 2- three stages segmental arch-wires by Arnett (ortho-surgery-ortho) - 83 (16,11%);
- 3- surgery first (surgery - ortho) - 44 (8,54%)patients.
- 4 - surgical-prosthetic treatment (surgery-orthopaedic) - 53 (10,29%) patients;
- 5- surgical treatment (just surgery) - 19(3,69%) patients.

Two main factors for separation thought protocol - periodontal stability at surgical stage and occlusal adaptation after operation. The most active periodontal tissues reparation in patient with "surgery first" protocol. In these patients all orthodontic treatment is after operation.

The classic three-stages protocol with straight wire technical orthodontic preparation has more stability and less reparation in periodontal tissues.

Segmental surgery and orthodontic preparation with segmental wires include 2 month-retention period before operation and 4 month after. Minimal teeth moving at the last stage is compensated by orthodontic correction teeth position in dental arch before operation and surgical segment adaptation. Surgical and surgical-prosthetic protocols don't include orthodontic preparation. Parodontal tissues are stable. There are fine occlusal contacts in constructive jaw position in first case (limited group). New occlusal relationships are achieved by prosthesis in the second case. Each protocol has good results if we use strict indication and contraindications for every case. We've found some differences between all protocols, described indications for each and given practical recommendations for surgeons and orthodontists.

**P-687****APPLICATION VIDEOFIBEROSCOPY IN AIRWAYS OBSTRUCTION LEVEL DIAGNOSTICS IN SLEEP APNEA SYNDROM.**

K.Walerzak

Medical University of Warsaw, Warszawa, Poland

Objective: Sleep apnoea is a commonly diagnosed disease. 20% of general population may be involved. It is associated with of cardiac disturbances, arterial hypertention, hyperthyroidism, diabetes and other sicknesses conducive to death. It result from either a decrease of pharyngeal and bottom of oral cavity muscles tension or morphology causing upper airways obstruction. It could be result of laryngeal factors such as: deviation of nasal septum, polyps, adenal hypertrophy or maxillo-facial causes: backward mandible position connected with facial skeleton malformation or dental insufficiencies.

Sleep apnoea ascertainment using polysomnography to confirm the diagnostics of obstruction causing air flow impairment may to be controversial. Clinical inspection together with radiological tests (lateral cephalograms, CBCT) do not always give the answer as to what is the real reason of obstruction. Videofiberscopy of upper arways under general anaesthesia can be used to show collapsing part of the patients nosopharynx in a supine body position

We discuss the of usability videofiberscopy in assessing upper airways obstruction level in sleep apnoea patients.

Material: 38 patients treated in Deparment of Cranio-Maxillo-Facial Surgery, Oral Surgery and Implantology Medical University of Warsaw between 2010-2013 with diagnosed sleep apnoea .

Methods: Epworth scale, radiology: panoramic picture, lateral cephalometry, CBCT. Functional estimation with polysomnography and portable Watch-Pad device were used for sick unit confirmation.

Results: In every case videofiberscopy gaveclear image of certain pharyngeal tissue collapsing.

Conclusions: Videofiberscopy is useful tool in detecting the obstruction level in obstructive sleep apnoea patients, especially in soft palate and tongue region to discriminate the reason of obturation.



P-705

3D FACE SCANNER EVALUATION OF THE FACIAL SOFT TISSUE CHANGES ON SMILING

Won-Bae Chun^{1, 2}, Kyung-Pil Park¹, Jeong-Hyan Kim¹, Joon-Young Kim³, Dong-Whan Shin^{1, 2}, Ho Lee^{1, 2}

¹ Oral and Maxillofacial Surgery, SMG-SNU Boramae Medical Center, Seoul, South Korea

² Oral and Maxillofacial Surgery, School of Dentistry, Seoul National University, Seoul, South Korea

³ Oral and Maxillofacial Surgery, Bundang CHA general hospital, Bundang, South Korea

Objective : In orthognathic surgery with orthodontic treatment, it is important to recover occlusion and pronunciation, and at the same time aesthetic results are important through a combination of facial muscle. In order to achieve this purpose, the function of the soft tissues of the face muscle changes is to be considered. Most of the existing research is only 2D photos or CT soft tissue data were used. In this study, facial soft tissue with smiling was measured by 3D face scanner.

Methods : The total of 30 subjects, 15 male and 15 female, were included in this study. In rest and smiling position, 3D facial scan was taken with 3D face scanner and program(Morpheus 3D, Morpheus, Seoul, Korea). 19 landmarks were placed and the movements of the landmarks were evaluated at the rest and smiling position. Paired t test, simple linear regression analysis, correlation analysiss were used for the evaluation of the soft tissue changes statistically.

Results : Cheilion, Pre-angle point, Medial point of lower cheek are showed significant changes in the x, y, z axes, Upper point of lower face, Labrale inferius, Lateral point of lower cheek are showed significant changes in the y and z axis. Landmark points which showed significant changes are not linear correlation between amount of x,y,z change. Subnasale and Pronasale are showed no significant change. Medial point of upper cheek, Midpoint of upper cheek, Zygomatic point are small change and only significant change in y-axes. In smiling position, Cheilion Pre-angle point, Medial point of lower cheek are showed correlation change each other. Lowerface landmarks are more significant change than midface landmarks, and near mouth corner landmarks are more significant change than outer landmarks.

Conclusions : Mouth corner showed the most distant movement on smile, and more closer soft tissue landmark with mouth corner brings with more change. These results may be used in the soft tissue references for the treatment planning of the dentofacial deformity patients, and be able to get the more esthetic results.



P-739

REMOVAL OF BICORTICAL FIXATION SCREWS AFTER BILATERAL SAGITTAL SPLIT OSTEOTOMY.

JPR van Merkesteyn¹, JP Verweij¹, PNWJ Houppermans¹, G Mensink²

¹ *Oral and Maxillofacial Surgery, Leiden University Medical Center, Leiden, Netherlands*

² *Oral and Maxillofacial Surgery, Amphia Hospital, Breda, Netherlands*

In most of the bilateral sagittal split osteotomies (BSSO), nowadays rigid fixation is used to stabilize the proximal and distal segments of the mandible. The fixation is done with either bicortical screws or monocortical miniplates and the superiority of these methods respectively is under debate. One of the possible complications of the techniques is the need to remove the screws or plates due to infection or clinical complaints.

The aim of this study was to analyse the incidence of symptomatic removal of osteosynthesis material after BSSO.

A group of 251 patients with a mean follow-up of 432 days was studied retrospectively. The incidence of screw removal was 2.9%/site. No association was recorded between removal of osteosynthesis material and patient's age, sex, removal of third molars or bad splits. In the literature, reported incidences of removal of osteosynthesis material varied between 3.1-7.2%/site for bicortical screws and 6.5-22.2%/site for monocortical plate fixation.

These findings suggest that bicortical screw fixation, compared to plate fixation, after BSSO results in less symptomatic removal of osteosynthesis material.

**P-740****ASSESSMENT OF FUNCTIONAL DISORDERS OF THE TEMPOROMANDIBULAR JOINT IN PATIENTS TREATED SURGICALLY BECAUSE OF THE MORPHOLOGICAL MALOCCLUSIONS.**

B.Szczodry, M.Kotlarski, M.Rybicki, M.Jonasz, E.Jaworska, D.Samolczyk-Wanyura

Clinic for Cranio-Maxillofacial Surgery, Oral Surgery and Implantology., Medical University of Warsaw, Warsaw, Poland

OBJECTIVE:

Epidemiological study shows that morphological malocclusions are relatively common and are a serious problem for people who have incorrect setting of the jaws causes functional disorders . Some forms of morphological malocclusions (class III skeletal , overbite , open bite ,) are clearly associated with the occurrence dysfunction of the masticatory organ . A relatively large number of patients undergoing orthognathic surgery are people with existing temporomandibular joint (TMJ) disorders . One of the methods for the objective study of the masticatory system are physical examination of the patient and assess the activities of TMJ through a graphical recording of movements of the condylar process (condylography).

METHODS :

The paper presents the results of 40 patients treated at the Clinic for Cranio-Maxillofacial Surgery, Oral Surgery and Implantology in Warsaw because of morphological defects of the facial part of the skull . The clinical examination supplemented by medical history (questionnaire) and a clinical electronic condylography.

RESULTS :

In the group of patients, 32 % of them were found to have TMJ dysfunction of varying severity and clinical symptoms . TMJ dysfunction is more common in women. There were no significant changes in the TMJ function in patients before and after orthognathic treatment .

CONCLUSIONS :

A study of patients treated for morphological defects of the facial part of the skull , supplemented by specific additional examinations allows you to get information on: the impact of treatment on TMJ function , the scope of the changes that it made . Further research is needed , which in the future will allow for the development of treatment protocol and planning surgery .



P-752

ORTHOGNATHIC TREATMENTS PLANNING FOR PATIENTS WITH FACIAL ASYMMETRY, II AND III SKELETAL CLASS USING 3D SOFTWARE.

M.Rybicki, E.Jaworska, B.Szczodry, M.Jonasz, D.Samolczyk-Wanyura

Clinic for Cranio-Maxillofacial Surgery, Oral Surgery and Implantology., Medical University of Warsaw, Warsaw, Poland

OBJECTIVE:

Computer three-dimensional treatment planning for orthognathic surgery allows for accurate visualization and analysis of disorders of the stomatognathic system , particularly in patients with facial asymmetry .The aim of the paper is to present methods for virtual treatment planning and fabrication of a surgical splint for asymmetric patients .

METHODS:

The paper presents the process of the virtual treatment planning for orthognathic surgery, which allows for precise execution treatment. Presented 6 patients whose treatment was based an analysis of the conical beam tomography, virtual treatment planning and plates fabrication .

RESULTS :

Virtual planning eliminates the necessity of plaster models and gives a much more accurate mandible and maxilla positioning, compared with models placed in the articulator .

CONCLUSIONS:

The whole procedure reduces the number of visits, patient discomfort associated with the collection of impressions and accelerates the step of preparing for surgery.

**P-760****POSTOPERATIVE RADIOGRAPHS IN ORTHOGNATHIC SURGERY – A MULTICENTRE AUDIT OF COMPLIANCE WITH NATIONAL GUIDELINES**

J. Begum¹, C. Fowell¹, S. Shetty¹, L. Bruzual², N. Knapp²

¹ OMFS, New Cross Hospital, Wolverhampton, United Kingdom

² OMFS, Russells Hall Hospital, Dudley, United Kingdom

Introduction

Postoperative radiographs are an essential tool in orthognathic surgery, allowing patient progress and outcomes to be monitored. The potential negative impact of excessive radiation has been well described through the United Kingdom Ionising Radiation (Medical Exposure) Regulations 2000 (IRMER). Subsequently, the British Association of Oral & Maxillofacial Surgeons (BAOMS) and British Orthodontic Society (BOS) have published guidelines on the recommended use of perioperative investigations.

The aim of the study was to study compliance with BAOMS/BOS minimum dataset guidelines, highlighting trends in clinical practice, unnecessary investigations and potential patient harm.

Materials & Methods

BAOMS/BOS guidelines state orthopantomogram is the only radiograph required in the immediate postoperative period. Retrospective analysis of patient records was undertaken of patients undergoing orthognathic surgery at New Cross Hospital, Wolverhampton, Manor Hospital, Walsall and Russell's Hall Hospital, Dudley between 2011 to 2013.

Results

A total of 105 patients underwent orthognathic surgery at both sites (male=36, female= 69, mean age 22.1). 96% of patients had an orthopantomogram taken in the immediate postoperative period. A lateral cephalogram was taken in 76 % of patients and a poster-anterior mandible view taken in 50% of patients.

Discussion

Guidelines recommend lateral cephalograms are not necessary in the immediate postoperative period as patient's ability to bite into full occlusion may be hindered by swelling. Our study highlights 98% of patients in Dudley, 77% of Wolverhampton patients and 74% of Walsall patients had apparently unnecessary radiographs undertaken.

Following these surprising and worrying results, immediate teaching of all grades of staff from both OMFS and Orthodontic departments has been undertaken with presentation of current guidelines. Prospective re-audit continues at both centres.

Conclusions

Compliance with national guidelines was grossly unsatisfactory at all three centres, highlighting lack of knowledge of current guidelines and potential patient harm. Immediate steps to prevent further unnecessary radiographs have been instituted.

**P-775****A SEVEN-YEAR ANALYSIS OF ORTHOGNATHIC SURGICAL PROCEDURE**

Abdullah Tugrul Coskun¹, Metin Sencimen¹, Hasan Ayberk Altug¹, Tamer Zerener¹, Sencer Secer¹, Handan Altug²

¹ *Oral and Maxillofacial Surgery, Gulhane Military Medical Academy, Ankara, Turkey*

² *Orthodontics, Gulhane Military Medical Academy, Ankara, Turkey*

Objectives: The aim of this retrospective study was to present correlation with age, sex of orthognathic surgical procedure.

Material and Methods: Patients treated at the Gulhane Military Medical Academy, Department of Oral and Maxillofacial Surgery, Ankara, Turkey over a 7-year period. The medical records of patients, who were applied between 2008 and 2014, were analysed retrospectively. Data collected from case records of patients included age, sex, anatomic site of surgery, and types of treatment.

Results: A total of 42 patients who had orthodontic problem were treated in our clinic between 2008 and 2014. Orthognathic surgical procedures were applied in the age group of 16-38 years. These procedures included Le fort I Osteotomy, sagittal split osteotomy, genioplasty, rapid palatal expansion, distraction osteogenesis and rectangular body ostectomy. The most frequent surgical technique was sagittal splint osteotomy (n=23) The main region of surgery was the mandible (n=30) The most common cause of the orthodontic problem was mandibular prognathism (n=23).

Discussion and Conclusions: Orthognathic surgery has been used often in the treatment of dentofacial deformities. Maximum functional and aesthetic results are aimed with this surgery. Good results with treatment are related to several factors. These factors are type of fixation, surgical technique, and pre-postoperative orthodontics. We have obtained good results with this procedure between 2008 and 2014. We didn't encounter any complications in our clinic.

**P-827****THE EVALUATION OF AWARENESS, EXPECTATIONS AND SATISFACTION OF PATIENTS UNDERGOING ORTHOGNATHIC SURGERIES.**

Samolczyk-Wanyura D., Miękus.K., Walerzak.K

Department of Craniomaxillofacial Surgery, Oral Surgery and Implantology, Medical University of Warsaw, Warsaw, Poland

Objective: Assessment of patients' knowledge about treatment process, their expectations and subsequent satisfaction. It was determined how these factors are mutually correlated.

Methods: The research included 35 patients treated in the Department of Craniomaxillofacial Surgery, Oral Surgery and Implantology, Medical University of Warsaw who underwent orthognathic surgery: bilateral sagittal split osteotomy as a single procedure or combined with Le Fort I osteotomy. Patients were asked to fill in first questionnaire (PRE) before surgery at the day of admission to the unit. The questions concerned patients' knowledge about their individual dentofacial defect, course of surgery, postoperative care, recovery period, expectations and attitude to the treatment process. Doctors' approach towards explaining details regarding therapy was also analysed. The second part of questionnaire (POST) was held 14 days and 3 months after the surgery, evaluating general satisfaction and determining whether the expectations matched real course of the treatment and the final effect.

Results: 91% of patients were properly informed about course of surgery and type of skeletal deformity. Statistically significant group emphasized the high efficacy of computed 3D reconstruction of expected morphological facial changes and surgery methods. However the awareness of some aspects of recovery process, especially difficulties in everyday life and duration of treatment, was unsatisfying. Nonetheless, the emotional approach of 86% of the patients was optimistic and confident. 93% of them were satisfied with the attained effect.

Conclusions: Detailed information to the patient about the entire treatment process, including possible risk and complications, seems to be crucial for the results of surgery. Clarifying the treatment clearly and extensively improve patients' cooperation, acceptance of possible inconveniences and faster recovery. Application of novel digital visualization methods, treatment simulations, models and phantoms significantly increase communication with patients.



P-834

RESHAPING THE FACE TO MIRROR THE VITALITY OF THE SOUL

N. Nadjmi

Department of Cranio-Maxillofacial Surgery, GH MONICA / University of Antwerp, Antwerp, Belgium

The aim of all surgical procedures presented, is purely to reverse the effects of facial aging and to give the patient a more relax and youthful appearance. Our definite goal is to achieve an, as much as possible, natural facial appearance. Patients should look better after the surgery but definitely not be changed. Our philosophy is to restore the effects of aging of the face without changing the individual facial expressions. Successful facial plastic surgery is a result of good understanding between patient and surgeon.

The problems encountered in correcting the facial rejuvenation are as follows.

1. The dermal component which is dependent on intrinsic and extrinsic aging process (dermal elastosis).
2. Descending of the facial fat, with causes jowling and deep nasolabial groove.
3. Facial deflation.

Each individual patient asking for the facial rejuvenation shows different degree of the above mentioned problems at the time of consultation. The specific need of each patient lies at the basis of the correction of the above mentioned components. In this presentation we discuss our experience in facial rejuvenation using "Extended SMAS Facelift" in combination with "Endoscopic Brow lifting".

**P-842****ORTHOGNATHIC SURGERY ,CHOOSING THE RIGHT PATIENT IN TIRANA OMF SURGERY**

I Isufi,DMD¹, R Isufi,Ph D,DMD², G Shtino,Asc Ph D,DMD², A Isufi,DMD²

¹ *Orthodonty, Private Practice, Tirana, Albania*

² *OMF Surgery, "Mother Theresa",University Hospital Center, Tirane, Albania*

Introduction: Orthognathic surgery has been part of OMF surgery in Albania this last decade. The number of patients seeking this surgery increased through the years . Unfortunately many patients come to the OMF surgeon without any orthodontic consultation and preparation before.

Objective: To define some criteria for the patients who seek orthognathic surgery in Albania OMF surgery services.

Material and methods: 120 patients ,78 female and 42 male presented in the OMF surgery during the period of time 2010-2013. Examinations intraoral and extraoral ,panoramic ,lateral and antero - posterior radiography , 2 pairs of study models casts, cephalometric analyses and facial esthetic analyses were made for all the patients. Also psychosocial evaluation was made for all the patients.

Results : Females (65%)seek more orthognathic surgery than males (35%) in Albania OMF surgery service .Skeletal class III patients who seek orthognathic surgery were 45%,facial asymmetries 21 %,class II 19% and open bite were 15%.Only 28 patients underwent orthognathic surgery. 68 were sent to the orthodontist for alignment and arch leveling,8 patients had unrealistic demand from surgery,10 patients did not agree to the proposed surgery and 6 hadn't surgery for different matters.

Conclusion: Define the proper criteria for orthognathic surgery is the key for success in this surgery.

**P-868****EFFECT OF MANDIBULAR CHANGE ON TMJ MOVEMENT IN PATIENTS WITH FACIAL ASYMMETRY AFTER ORTHOGNATHIC SURGERY: 3D SIMULATION STUDY**

JJ Han¹, DS Kim^{2, 3}, WJ Yi^{2, 3}, SJ Hwang¹

¹ *Department of Oral and Maxillofacial Surgery, Seoul National University, Seoul, South Korea*

² *Interdisciplinary Program in Radiation Applied Life Science Major, Seoul National University, Seoul, South Korea*

³ *Department of Oral and Maxillofacial Radiology, Seoul National University, Seoul, South Korea*

Objective: The aim of this study was to analyse the effect of mandibular changes on TMJ movement in patients with facial asymmetry after orthognathic surgery by using 3-dimensional (3D) simulation.

Methods: 22 patients (male:10, female:12) who underwent orthognathic surgery with bilateral sagittal split ramus osteotomy were evaluated. The surgical changes of the mandible were measured from the 3D facial CT images taken before and three months after surgery. The morphological parameters of the mandible were the length of the mandible, mandibular body, ramus and condyle and the midline deviation of the menton and infradentale. To analyse condylar movement, the mandibular movement was obtained during mouth opening and closing by position tracking system and the 3D movements of four defined landmarks (both condylons, infradentale and pogonion) were reproduced and compared between pre- and post-operatively. We also evaluated the 3D coordination of both condylar movements.

Results: After surgery, the mandible showed more symmetrical movement on x-, y- and z-axis during mouth opening and closing. However, there is no significant correlation between the change of the mandibular movement and the surgical change of the mandible. In regard to coordination of both condylar movements, the time interval between the movements of each condyles decreased and showed the symmetrical maximum mouth opening in 15 patients (68.2%).

Conclusions: The change of the mandibular movement was not correlated with the morphological changes of the mandible. The time interval between each condyles reached the maximal mouth opening was affected after orthognathic surgery in the facial asymmetry, and both condyles showed more harmonized and balanced movements. Therefore, orthognathic surgery could improve TMD problems via more balanced condylar movement.



P-882

SKELETAL EFFECTS TO THE MAXILLA AFTER TRANSPALATAL DISTRACTION ASSESSED WITH COMPUTER TOMOGRAPHY – CASE REPORT

E.Zawiślak, R.Nowak, Sz.Przywitowski, M.Kubiak, M.Gara-Rucińska

Maxillofacial Surgery, University Clinical Hospital, Wrocław, Poland

Objective: To presents changes in maxillo-facial complex rated on the basis of selected axial computed tomography (CT) scans before and after transpalatal distraction treatment in 29-yers-old women with severe maxillary constriction.

Methods: Selected two axial computer tomography (CT) scans were analysed at T1 (preteratment) and at T2 (post active treatment). The study included transverse measurements on dentoalveolar structures and maxillary base. Treated subjects underwent tanspalatal distraction with UniSmile distractor (Titamed, Belgium) with 2 turns a day (0.25 mm per turn) until the expansion screw reached 7,5mm (about 15 days)

Results: In transverse dimension, a V-shaped opening of the suture are shown. The greatest amount of opening was anteriorly directed on the axial computer tomography scans.

Conclusions: Computer tomography should be the method of choice in the case of quantitative assessment of skeletal and dental changes taking place during transpalatal distraction treatment.



P-885

THE IMPACT OF ORTHOGNATHIC SURGERY IN PATIENTS WITH PREVIOUS TMJ PATHOLOGY - A PRESENTATION OF FIVE CASE SERIES

B. Stavaru Marinescu, J. Sastre Perez, M.F. Muñoz Guerra

Oral and Maxillofacial surgery, La Princesa University Hospital, Madrid, Spain

Objectives: to assess the impact of orthognathic surgery in the evolution of the patients with previous condylar reabsorption and the degree in which the presence of the TMJ pathology can affect the outcome of the surgery during follow-up.

Material and Methods: This is a retrospective study in which we included five consecutive patients diagnosed with condylar reabsorption, who were later operated of orthognathic surgery in order to correct a concurrent dento-maxillary anomaly. We assessed various functional and anatomical parameters: measurement of TMJ pain score, mouth opening, occlusal parameters (type of anomaly, presence of open bite etc), radiological findings (height of the mandibular ramus, degree of condylar reabsorption etc), trying to appreciate any interference between the existence of the previous TMJ pathology and the performance of the surgery and also to evaluate a possible impact of the intervention over the evolution of the TMJ pathology.

Results: of the five patients presented, three showed mild improvement of the TMJ function and the other two maintained the same TMJ functional scores as before surgery. No alterations of the mandibular ramus height were observed. Several complications occurred (need for reoperation in one patient, failure to comply with aesthetic expectations, need for prolonged orthodontic treatment etc) , but we could not find a direct link with the condylar pathology.

Results: comparing the values of the parameters presented we have observed that the main surgical goals were accomplished and the surgery performed overall did not worsen the TMJ symptoms. That is why we consider that condylar reabsorption in stable phase is not a contraindication of the orthognathic surgery.



P-886

CONDYLECTOMY FOR THE TREATMENT OF CONDYLAR HYPERPLASIA

V. Ramieri, R. Pucci, C. Bianca, P. Cascone

Dipartimento di Scienze Odontostomatologiche e Maxillo-Facciali, Sapienza, Università di Roma, Roma, Italy

Objective:

Condylar Hyperplasia is represented by a wide spectrum of different clinical conditions characterized by the unilateral overgrowth of mandibular condyle. There many attempt of classifying these pathological overgrowth of the condyle. According to Nitzan there are vertical and transversal pattern of growth. Sometimes there are mixed conditions. The aim of this work is to present a diagnostic and surgical protocol for the treatment of condylar hyperplasia.

Materials and methods:

We performed cephalometric and clinical analysis of patients who underwent condylectomy alone or in association with orthognathic surgery. Pre and postoperative results are analysed and discussed.

Results:

Condylectomy alone, produces a three-dimensional repositioning of the mandible hardly achievable with the traditional procedures of orthognathic surgery.

Discussion and Conclusion:

It's our opinion that condylectomy represents the elective surgery in patients in growing phase with active condylar growth. Adults might require orthognathic surgery in association with condylectomy for the correction of major asymmetries.

**P-888****ACCURACY OF ANTICIPATED SOFT AND HARD TISSUE CHANGES IN ORTHOGNATHIC SURGERY**

A J Adams, S Narayan, H Dehkordy, D G Starr

Oral and Maxillofacial Surgery, Hull and East Yorkshire Hospitals NHS Trust, Hull, United Kingdom

Objective

Accurate prediction of the soft tissue profile resulting from orthognathic surgery is important but challenging. Numerous studies exist for single jaw and bimaxillary surgery assessing both the relationship between movements of the hard and soft tissues and the accuracy of the predicted movements. Various methods have been employed to assess the soft tissue profile including computer tomography and optical laser surface scanning as well as the more traditional lateral cephalogram for 2 dimensional analysis. In most of the studies, the sample sizes have been small (typically 20-30 patients), with several clinicians and differing planning and surgical methods employed.

We wished to evaluate the accuracy of the predicted hard and soft tissue movements following orthognathic surgery for both bimaxillary and single jaw surgery for a large series of orthognathic patients.

Materials and Methods

We analysed data for 5 years of orthognathic procedures carried out by a single surgeon at our regional centre. Plans for orthognathic movements had been made according to a recognised technique (Tunizing) using tracing on cephalograms taken at the end of presurgical orthodontics. Pre and post treatment cephalograms were digitised using Dolphin software and the predicted movements entered into the system. Pre and post-surgical cephalograms were superimposed. Soft and hard tissue landmarks were used to ascertain the differences in linear movement between the surgeon generated predictions and the actual results. The correlation between predicted and actual hard and soft tissue movements was analysed.

Results

Data for over 50 patients was collected. Preliminary data shows that the correlation between predicted and actual movements of corresponding soft and hard tissue landmarks was reasonably linear though less so at the lip.

Conclusions

The methods applied in our region for a large series of patients yield clinically good predictions of hard and soft tissue profile. Further research is warranted into whether patient satisfaction with the outcome of orthognathic treatment is related to how accurately we predict the resulting soft tissue profile.



P-980

FACIAL ASYMETRY - DIFFERENT TREATMENT CONCEPTS

M.Karas'

Al Qassimi Hospital, Dubai, United Arab Emirates

Objective:

analysis of facial asymmetry cases in the attempt to determine aetiopathogenesis

Methods:

comparison of treatment protocols in different age groups

Results:

comparison of the results of the treatment in different age groups

Conclusion:

facial asymmetry appears to be caused in vast majority of cases by asymmetrical growth of the mandible, resulting from condylar trauma in childhood. In certain cases however, the reason for facial deformity/asymmetry could not be determined. Distraction osteogenesis should be considered a treatment of choice in children. Older patients / adults needs more complex surgeries, multi-staged treatment is often necessary to achieve satisfactory results.

**P-1018****SYMPTOMS AND PREVALENCE OF THE TEMPOROMANDIBULAR DISORDERS BEFORE AND AFTER ORTHOGNATHIC SURGERY**

U. Garagiola¹, G. Szabò², A. Fodor², G. Farronato¹

¹ *Biomedical Surgical and Dental Sciences Department, Fondazione IRCCS Cà Granda, University of Milan, Milan, Italy*

² *Department of Oral and Maxillofacial Surgery, Semmelweis University, Budapest, Hungary*

Aim: The aim of this study was to evaluate temporomandibular joint (TMJ) symptoms, the functional and neuromuscular changes after surgical-orthodontic treatment of orofacial deformities with temporomandibular dysfunction (TMD).

Material and Methods: The study was based on a group of 400 dysgnathic patients. Were evaluated skeletal and dental malocclusion type, TMJ symptoms, headache, cervical and neck pain, otovestibular symptoms. Electromyography and kinesiography were used to assess the muscular activity and the mandibular movements.

Results: TMJ symptoms in low and normal angle mandibular retrognathism patients have improved ($p < 0,01$). The post-treatment results showed that almost all craniomandibular symptoms were significantly reduced postoperatively above all muscular spasms (93%) and headache (62%), ($P < 0,01$); mandibular kinesiology (84%) was improved ($P < 0,01$). Also cervical pain, otovestibular and postural symptoms seem to benefit from treatment. Even if preoperatively asymptomatic, patients with TMJ problems after surgery (8,8%) have resulted ($P < 0,1$). In preoperatively asymptomatic patients who developed TMJ symptoms after surgery, the highest incidence was found in high angle patients with severe mandibular retrognathism, treated by bimaxillary surgery.

Conclusion: The combined surgical-orthodontic treatment may be of a great benefit in the correction of discrepancies in occlusion and maxillo-mandibular relationship in the severe orofacial deformities associated to temporomandibular disorders. Conversely orthognathic surgery can produce TMJ symptoms by changing the position of the mandible and the maxilla with regard to each other and therefore the position of the condyle in the glenoid fossa. Mandibular ramus, osteotomies have a direct influence on this position, whilst in maxillary osteotomies the influence is indirect because of autorotation.



P-1021

NATURAL HEAD POSTURE (NHP) IN ORTHODONTIC AND ORTOGNATHIC TREATMENT PLANNING

F. Juhasz¹, B. Nemes¹, G. Fabian¹, K. Nagy²

¹ Department of Pedodontics and Orthodontics, Semmelweis University, Budapest, Hungary

² Centre for Cleft and Craniofacial Surgery, AZ Sint Jan, Bruges, Belgium

Objectives

Intracranial reference lines are used in most cephalometric analyses, however they show high variability according to diversity of head posture and they are less reproducible. Thus using an extracranial reference line, the Natural Head Posture could be necessary, as it uses true vertical and true horizontal planes.

Methods

150 patients were examined at the Semmelweis University Department of Paedodontics and Orthodontics; their intracranial reference lines were compared to the true horizontal. All subjects were healthy, free of craniomaxillofacial discrepancy and have not been treated orthopedically earlier. Photos with the true vertical axis and horizontal lines in the background and cephalograms were superimposed in Adobe Photoshop. We measured the angle between the intracranial reference planes (Sella-Nasion Line and Frankfurt horizontal) and the true horizontal plane.

Results

The mean angle between the SN line and the true horizontal line was 6.97° with a standard deviation of 5.74°. The lowest angle was -5.3° and the highest 17.8°, thus the range of variation was 23.1°. The mean angle between the Frankfurt horizontal and the true horizontal line was -2.28° with a standard deviation of 4.68°. The lowest angle was -13.4° while the highest was 7.4°, which gives 20.8° range of variability.

Conclusions

The number of software products that make not only the cephalometric and photo analyses and the documentation possible, but enable resizing and superimposing photos and cephalometric x-rays is increasing. With the visual indication of the true horizontal or vertical lines the natural head posture gives a real reference plane to the orthodontic or orthognathic treatment planning. By this increased sample size it becomes possible to measure the relation of the NHP and the different facial types.



P-1032

PREPROSTHETIC BIMAXILLARY ORTHOGNATHIC SURGERY ON THE EDENTULOUS PATIENT

T. Neto¹, R. Balhau¹, L. Coelho¹, I. Pinto¹, M. Capelo¹, I. Correia-Sá², Á. Silva²

¹ *Maxillofacial Surgery Unit of Department of Plastic, Reconstructive, Aesthetic Surgery, Maxillofacial Surgery and Burn Unit, CENTRO HOSPITALAR SÃO JOÃO, Porto, Portugal*

² *Department of Plastic, Reconstructive, Aesthetic Surgery, Maxillofacial Surgery and Burn Unit, CENTRO HOSPITALAR SÃO JOÃO, Porto, Portugal*

Objectives

Orthognathic surgery is a common practice in Maxillofacial Surgery, most commonly performed on young adults with full complement of teeth that have been orthodontically prepared prior to surgery. However orthognathic surgery can be a precious tool in many other scenarios, like in the older, edentulous patient, for a complete functional and aesthetic rehabilitation.

We report a case of bimaxillary orthognathic surgery in a severe classe III edentulous patient and discuss our experience, pitfalls and recommendations in the challenging and rewarding treatment of this patients.

Methods

A 55-year-old female patient was referred to our Department for a surgical consultation regarding correction of a maxillomandibular jaw discrepancy before a planned prosthodontic rehabilitation. The patient's main complaint was the inability to chew with the existing dentures, and unhappy with her facial appearance. The patient presented a marked skeletal class III malocclusion, with mandibular asymmetry, mandibular bowing and chin deviation. Intraorally, marked bone resorption was evident in both jaws, leaving her with an anteroposterior discrepancy of 20 mm.

Results

The patient underwent a bimaxillary orthognathic surgery with 6 mm advancement LeFort I osteotomy and 7 mm mandibular setback with rotation to correct the mandibular asymmetry. During the bilateral sagittal split a bad split of the high left ramus required a retromandibular approach to perform the osteosynthesis. New dentures were fabricated postoperatively.

The patient was very satisfied with a marked improvement in both aesthetics and function.

Conclusions

Orthognathic surgery can be performed on the edentulous patient to correct discrepancies between the jaws, followed by the placement of new implant-supported or removable complete dentures, correcting an unfavourable intermaxillary relationship and improving facial esthetics.

Orthognathic surgery in this patients is technically demanding, may require some technical modifications and have a higher incidence of complications such as bad splits, fractures of the maxilla and avascular necrosis.

Nevertheless orthognathic surgery in this patients is both a challenging and rewarding treatment option



P-1035

PSEUDOARTHROSIS IN BILATERAL SPLIT SAGITTAL OSTEOTOMY (BSSO).

T. García-Jiménez, A. Encinas-Bascones, C. Colmenero-Ruiz, S. Roson, R Jiménez-Bellinga

Dep. of Maxillofacial Surg. University "Hospital de la Princesa", Madrid, Spain

Introduction

Pseudarthrosis is defined as a lack of consolidation between two bone fragments after a fracture, generally after 6-8 month. Micro motions and biological factors may be the main triggers. Nonunion in orthognathic surgery is uncommon. No publications have been found in literature regarding pseudoarthrosis after bilateral split surgical osteotomy (BSSO).

Objective

The aim of this retrospective clinical study is to describe the incidence, causes and treatment protocol of mandibular pseudarthrosis after BSSO.

Patients/Methods

We present a series of seven patients who underwent BSSO, presenting a lack of consolidation in the late postoperative period (6-8 months). In all patients, the following information was collected: Angle class, type of fixation (miniplates, bicortical screws or both), type of mandibular movement, measured in mm gap intraosseous radiological exams, clinical manifestations (signs of infection, amended occlusion, fragments mobility). To verify nonunion fracture, panoramic radiographs were performed.

The same treatment protocol was applied to each patient: intraoral approach with exposure of the osteotomy area, removal of fibrotic material, curettage of bone edges. Occlusion and centric relation were checked. Maxillo-mandibular fixation and condylar positioning were performed. Iliac crest bone grafts were fixed in the osteotomy gap. We used rigid fixation and MMF was maintained during 15 days.

Results

All patients in which nonunion was found, were Angle class II. The main anatomical alterations were: Clockwise rotation of the distal fragment, tendency to open bite, step on bone fragments and mobility. Four patients had recurrent local infections. After performing surgery, all patients became Class I dentoskeletal and the bone consolidation was stable for a long period of time . Three patients presented aesthetic deformation in mandibular contour and we performed lipofilling to improve their profile.

Conclusions

Nonunion after mandibular sagittal osteotomy is uncommon, only a few cases have being reported. The most common cause is an inadequate consolidation of bone fragments. In our series, all patients were class II Angle, requiring a forward movement and therefore a greater fixation. The treatment protocol presented by our Department of Maxillofacial Surgery appears to be adequate in the treatment of nonunion of mandibular BSSO.

**P-1040****EVALUATING PATIENT EXPECTATIONS AND SATISFACTION, IN ADDITION TO THE PAR INDEX, AS AN ASSESSMENT OF TREATMENT OUTCOME IN ORTHOGNATHIC SURGERY**

E. Gallaway, L. Galloway, A. Cronin

Oral and Maxillofacial Surgery, University Hospital Wales, Cardiff, United Kingdom

Objectives:

Assess outcomes of orthognathic surgery at the University Hospital of Wales by assessing patient expectations and satisfaction, in combination with the PAR (Peer Assessment Rating) index.

Methods:

Retrospective questionnaires assessed pre-operative patient expectations, perceived post-operative outcomes and overall satisfaction. Questionnaires were sent to 60 randomly selected patients who had undergone orthognathic surgery between 2011 and 2013.

PAR index assessed pre- and post-treatment outcomes through analysis of dental casts. PAR scores were awarded to each model accordingly. The PAR score reduction was calculated for each case in order to categorise PAR improvement.

Results:

Questionnaires generated a reasonable response (73%), with high expectations for occlusal (81%) and aesthetic (91%) outcomes. Facial profile outcomes (77%) followed these results in patients' expectations. Expectations were either met or exceeded.

Forty-six percent experienced post-operative residual problems, mostly through sensory impairment related to the branches of the trigeminal nerve. Despite this, patients demonstrated excellent satisfaction with their surgery, with 73% responding "*extremely happy*" and 27% responding "*happy*". Seventy-one percent would "*most definitely*" recommend orthognathic surgery.

An average post-operative PAR score of 4.17 indicated mostly excellent occlusions were achieved, and PAR score reductions averaged 32 PAR points generating greatly improved outcomes. The overall case load PAR reduction was 86.88% for the unit.

Conclusion:

Orthognathic surgery has proven to be effective in the treatment of severe malocclusions. The results from this audit show that the results achieved at University Hospital of Wales are in concordance with providing a good standard of care. the study itself did display limitations in the two methods used in combination to arrive at the conclusion. However, orthoganathic surgery is multi-factorial and further studies should consider these in order to assess outcomes in a more holistic manner.



P-1057

CO₂-MONITORING IN THE SOAS DIAGNOSIS IN PATIENTS WITH CLASS II MALOCCLUSION

Kotov I.I.

Central Research Institute of Dental and Maxillofacial Surgery, Moscow, Russian Federation

Objectives. Sleep apnoea obstructive syndrome (SOAS) is not uncommon condition in patients jaw deformities, particularly in patients with distal type of dysocclusion (due to Class II malocclusion). Despite of the polysomnography, some other techniques are needed to identify the real cause of SOAS. Capnometry in addition to polysomnography turned to be very useful in diagnosis of SOAS in orthognathic patients.

Materials and methods. Using polysomnography in combination with capnometry we investigated 17 patients with Class II malocclusion. While defining SOAS we registered the end-tidal CO₂ preoperatively and in 3 month postoperatively.

Results. Polysomnography has registered SOAS in all 17 patients with Class II malocclusion. Preoperatively SOAS was combined with hypercapnia in 12 patients from 17 (71%). Postoperatively hypercapnia was registered only in 7 patients of 17 (41%), who suffered from bimaxillar orthognathic operation. Thus we conclude that orthognathic procedures proved to be sufficient at least in 41% of SOAS, associated with hypercapnia.

**P-1078****ORTHOGNATHIC SURGERY OUTSIDE THE BOX**

T. Neto¹, R. Balhau¹, L. Coelho¹, I. Pinto¹, M. Capelo¹, I. Correia-Sá², Á. Silva²

¹ *Maxillofacial Surgery Unit of Department of Plastic, Reconstructive, Aesthetic Surgery, Maxillofacial Surgery and Burn Unit, CENTRO HOSPITALAR SÃO JOÃO, Porto, Portugal*

² *Department of Plastic, Reconstructive, Aesthetic Surgery, Maxillofacial Surgery and Burn Unit, CENTRO HOSPITALAR SÃO JOÃO, Porto, Portugal*

Objectives

Nowadays orthognathic surgery may seem common practice in Maxillofacial Surgery, with three procedures: the bilateral sagittal split osteotomy, LeFort I osteotomy and genioplasty, solving most of dentofacial deformities we treat in young adults with full complement of teeth that have been orthodontically prepared for surgery.

Methods

In this work we retrospectively review some of our most challenging and "off the beaten track" cases in orthognathic surgery, discussing our experience and pitfalls.

Results

We discuss our learning in planning and model surgery in the patients without orthodontic preparation and in the atypical candidate for orthognathic surgery.

We review and highlight our cases of orthognathic surgery in the obstructive sleep apnoea (OSA) syndrome, preprosthetic cases, post-traumatic malocclusion, cleft patients, surgery first and surgery only cases.

Conclusions

Orthognathic surgery stands in the shoulders of the giants who came before us, but still remains a passionate field of daily challenge and innovation. Historically orthognathic is used to correct dentofacial deformities in young adults with full complement of teeth that have been orthodontically prepared for surgery but can be precious and rewarding tool in many other scenarios and patients.



P-1091

SURGICAL TREATMENT OF CLASS II MALOCCLUSIONS WITH THE USE OF HERBST HINGES AS ORTHODONTICAL SUPPORT IN PERIOPERATIVE PERIOD, SELF EXPERIENCE.

Roman Sadowski¹, Alina Strzałkowska²

¹ *Maxillo-Facial Surgery, State Medical Center, Opole, Poland*

² *Orthosmile, Private Orthodontical Clinic, Wrocław, Poland*

The authors are presenting their own experience in treatment of patients with congenital class II malocclusions. Basing on a group of more than 50 cases of mandibular retrognathism they describe benefits of applying Herbst hinges in perioperative period as an exceptional support in training and adaptation of mandibular muscles before operation as well as an additional frontal stabilization of distal osteotomized fragment both during BSSO procedure and early post-surgical period.



P-1108

UNCONVENTIONAL OSTEOTOMIES IN ORTHOGNATHIC SURGERY

Z. Stajcic, LJ. Stojcev Stajcic, M. Rodic

DENTAL/MEDICAL CENTER FOR MAXILLOFACIAL SURGERY BEOGRAD-CENTAR, Beograd, Serbia

Objective: to present unusual orthognathic cases in whom either unconventional osteotomies, a combination of different osteotomy cuts or additional oral surgical interventions were incorporated in a single orthognathic surgical procedure.

Methods: The procedures were summarized in six examples and these are as follows.

Apicoectomies or removal of upper wisdom teeth performed during the LeFort I maxillary osteotomy.

Piezoelectric device used for the disjunction of the pterygoid plates in the LeFort I maxillary osteotomy or to produce precise bone cuts in segmental osteotomies.

Bilateral sagittal split osteotomy of the mandibular body with advancement combined with chin bone grafts of the gaps for the treatment of Class II malocclusion.

An oblique osteotomy of the mandibular body and the sagittal split osteotomy of the ramus of the contralateral side for the correction of facial asymmetry as a result from malunion of the mandibular fractures.

Bilateral vertical subsigmoid osteotomies with chin bone grafts via an extraoral approach for the treatment of the anterior open bite as a result of a failure of previous orthognathic surgery.

A sagittal split osteotomy of the mandibular ramus on one side, costochondral graft on the contralateral side and a genioplasty with mandibular advancement combined with the LeFort I maxillary osteotomy with levelling and additional rib cartilage grafts for the correction of facial asymmetry resulting from ankylosis of the temporomandibular joint.

Results: In all cases it was possible to achieve satisfactory results and remarkable improvement in those with severe malformations.

It is concluded that unconventional osteotomies are sometimes required in otherwise routine orthognathic surgical procedures in order to accomplish a full facial balance.

**P-1118****ORTHOGNATHIC SURGERY VS CAMOUFLAGE ORTHODONTIC TREATMENT OF JAWS GROWTH DISORDERS IN CLEFT PATIENTS.**

A.L. Ivanov¹, N.V. Staricova²

¹ *Pediatric Maxillofacial Surgery, Central Research Institute of Stomatology, Moscow, Russian Federation*

² *Hospital Orthodontia, Central Research Institute of Stomatology, Moscow, Russian Federation*

Objective.

Cleft lip and palate patients require complex multistage treatment. It is common for such patients to develop dentofacial deformities like midface retrusion and combined deformity of mandible which demand orthognathic surgery in 25-30%. Orthognathic surgery in cleft patients presents additional challenges during planning of time and type of procedure. Multiple previous surgeries on maxilla lead to extensive scarring limiting its possible anterior movement and demand particular surgical technique. The analysis of efficacy of orthognathic surgery versus orthodontic compensation only is presented in this study.

Material and Methods.

Twenty four cleft patients with developed jaws discrepancies were observed. The maxillary retrusion was a case in 12% of patients, combined two-jaws deformation in 88%. Sixty percent present asymmetry. In all cases lateral cephalometric analysis was performed using cephalometric radiographs and CT scans (3D-cephalometry) to diagnose skeletal deformity. The model surgery and splint fabrication were used. Surgery performed on patients not younger than 14 years old. Surgical technique were standard LeFort I procedure of upper jaw osteotomy and bilateral sagittal split osteotomy for lower jaw with titanium screws and plates fixation.

Results.

Two-jaws surgery performed in 83%, only upper jaw osteotomy – in 12%, genioplasty – 5% of cases. Preparatory bone grafting before orthognathic surgery was performed in 97% uni- or bilaterally. The satisfactory results achieved in all cases. The maxillary advancement achieved from 3 to 6 mm, mandibular retrusion from 5 to 8 mm. There were not severe speech changes noted after surgery observed in 1 case.

Conclusion.

Patients with skeletal deformity developed after cleft lip and palate treatment requires orthognathic surgery to correct esthetics and achieve stable functional occlusion. Orthognathic surgery in cleft patients is a safe procedure permitting to correct dentofacial deformities without the risk of worsening speech outcome. The non-complete esthetical satisfaction was observed in patient treated with camouflage orthodontic treatment with good functional results.

**P-1163****LONG-TERM EXPERIENCES OF MAXILO-FACIAL SKELETAL ANOMALIES TREATMENT BY USING BIMAXILARY METHODS**

A. Jenča, M. Eötvöšová, M. Bereš, J. Jenčová, A. Jenča, jr.

Department of Stomatology and Maxillofacial Surgery, University of Pavol Jozef Šafárik, University Hospital of Louis Pasteur, Košice, Slovakia

Objectives

As bimaxillary methods in correction of maxillo-facial skeletal anomalies are often used possible adjustments of maxilla to mandible or mandible to maxilla depending on the skeletal analysis

The scientific literature and the clinical experience seem to suggest that the maxilla first-sequence is more accurate and predictable than mandible-first. Aim of these paper is to demonstrate that the mandible-first sequence in bimaxillary surgery could be more predictable and accurate than maxilla-first.

Methods

Patients for the study group were selected from those which were cured at our clinic by orthodontist. Patients chosen by orthodontic analysis were cured by methods using bimaxillary surgery. The total number of patients treated by this method in last ten years is 356, from those were 113 men and 243 women. There were done LeFort I osteotomy and sagittal osteotomies of mandible by Obwegesser. The procedure for mandible-first sequence requires making a digital cephalometric surgical treatment objective because it allows the surgeon at the end to open the mandible on the hinge axis, obtaining a trace with mandible opened enough to do the model surgery.

Results

After LeFort I osteotomy done in sagittal fracture of column mandibulae, healing of the bone defects were 100%. In two cases the fixating material went partially loose but did not caused an purulent inflammation. In the area of osteotomy bone grafts of alloplastic type were healed and rebuilt in the area of LeFort I line. According the authors in bimaxillary orthognathic surgery the mandible-first sequence is more accurate than manila first for the following main reasons: 1, it does not matters if the wax-bite is not in centric relation, 2, no need to open articulator for splint fabrication 3, it is easier to fit the midlines on, particularly in class IIb patients, 4, surgery comes easier in case of multisegmental LeFort I.

Conclusion

The main results of bimaxillary procedures in treating maxillofacial anomalies are the skeletal corrections. Soft tissue of the facial region require a long term rehabilitation. We presume positive functional changes after creating new topographically-anatomical conditions also using 3D reconstruction image, functional examination of soft tissue – electromyogram.

**P-1201****A 'COOL' STUDY - A TRIAL OF A NOVEL COOLING SYSTEM IN ORTHOGNATHIC SURGERY**

N Cronin, R Burgess, K Fan

Oral and Maxillofacial Surgery, King's College Hospital, LONDON, United Kingdom

Objective

Patients undergoing orthognathic surgery are informed of the possible side effects of post-operative pain, swelling and the need for time off work. Cryotherapy is a long established post-operative tool. The Hilotherm® system allows temperature controlled cooled fluid to be delivered directly to the target area using a pre-shaped anatomically appropriate mask. The trial of hilotherapy assessed the patients experience, acceptability and the nursing perspective.

Method

Patients undergoing orthognathic surgery were given the option of using the hilotherapy system post-operatively. Following its use a user-satisfaction questionnaire was completed by the patient to establish quality outcome measures, including comfort, fit and noise disturbance. A further questionnaire was given to the staffs that were involved in the application assessing ease of use and compared to traditional cooling methods. Data regarding analgesia during admission and length of stay was collected.

Results

22 patients used the hilotherm system. Average length of stay was 27.8hrs. Quality outcome measure showed 100 % of patients found the system comfortable (n=13). 92% of patients reported the anatomical mask to be close fitting. 7.7% found the noise to be disturbing, though did not impair sleep. All staff found the hilotherapy system easy to use.

Conclusion

Post-operative comfort is essential to ensure a satisfactory post-operative experience by the patient, faster discharge/return to work and the associated socio-economic benefit. All patients found the hilotherapy system comfortable and importantly the nursing staff found the system easy to apply, essential, as the health care team needs to motivate and educate patients. The hilotherm is acceptable to the patient, due to the precise temperature control, avoiding the extreme cold of the traditional ice pack and close fitting mask. Quality improvement processes are fundamental in patient care; this integrates a novel system with focused cooling in a user-friendly application.

**P-1206****RETROSPECTIVE ANALYSIS OF PREOPERATIVE AUTOLOGOUS BLOOD DONATION IN BIMAXILLARY ORTHOGNATHIC SURGERY**

K. Seo¹, A. Oh², G. Lee¹, H. Kim¹

¹ *Department of Dental Anesthesiology, School of Dentistry, Seoul National University, Seoul, South Korea*

² *Department of Anesthesiology and Pain Medicine, Seoul National University Bundang Hospital, Seongnam, South Korea*

Objective: This study evaluated the efficacy of preoperative autologous blood donation (PABD) according to patients' preoperative haemoglobin value and tried to find if it could reduce the chance of allogenic blood transfusion in bimaxillary orthognathic surgery.

Methods: We reviewed the records of 295 patients who had bimaxillary orthognathic surgery at Seoul National University Dental Hospital over a 1-year period (from July 2007 to August 2008). The records of autologous blood donation, intraoperative transfusion, and related laboratory studies were evaluated. The transfusion trigger used during this period was haemoglobin value lower than 10 g/dL.

Results: During this period, 189 patients(64.1%) did PABD and 106 patients(35.9%) did not. The intraoperative estimated blood loss and postoperative haemoglobin value were not different between the groups (1,568 ml vs. 1,457 ml, 10.6 g/dL vs. 10.8 g/dL). The incidence of allogenic blood transfusion was significantly lower in PABD group compared to no PABD group (15.9% vs. 29.2%, $P = 0.007$). The difference was larger in patients with preoperative haemoglobin value lower than 14 g/dL (20.3% vs. 62.5%, $P < 0.001$) and no difference was found in patients with Hb value of 14 g/dL or more (13.3% vs. 14.9%, $P = 0.832$).

Conclusion: PABD could reduce the incidence of allogenic blood transfusion in bimaxillary orthognathic surgery, especially in patients with preoperative haemoglobin value lower than 14 g/dL. PABD could be considered as one of the methods to reduce intraoperative allogenic transfusion in these patients.



P-1207

SURGICAL APPROACH IN A CASE OF SEVERE OPEN-BITE ASSOCIATED WITH MACROGLOSSIA

I. Pinto, T. Neto, M. Capelo, T. Burnay, L. Coelho, R. Balhau, D. Monteiro, Á. Silva

Maxillofacial Unit of Plastic and Maxillofacial Department, Hospital São João, Porto, Portugal

Objective: We discuss a surgical approach to a patient with a severe open-bite associated with macroglossia.

Methods: We report a case of a 31-year-old woman with previous Class I occlusion that came in for a consultation due to a severe open-bite which developed in one year. Physical examination suggested a mild macroglossia confirmed with incisional biopsy. A partial glossectomy was performed followed by mandibular orthognathic surgery with re-establishment of occlusion.

Results: Good functional and aesthetic results were obtained. No relapse was observed at 1 year post-op.

Conclusions: Diagnosing macroglossia might be difficult and sometimes its etiology remains unclear. However, partial glossectomy is an adjunctive procedure in orthognathic surgery with specific indications, as exemplified in the reported clinical case.



P-1214

REDUCTION MALARPLASTY BY THE BIDIRECTIONAL WEDGE OSTECTOMY OR TWO PERCUTANEOUS OSTEOTOMY ACCORDING TO THE ZYGOMA PROTRUSION TYPE

HS. Yoo¹, JM. Kim¹, SW. Choi¹, TS. Roh², YS. Kim², JW. Hong², DH. Lew²

¹ Plastic and reconstructive surgery, TL plastic surgery, Seoul, South Korea

² Plastic and reconstructive surgery, Institute for Human Tissue Restoration, Yonsei University College of Medicine, Seoul, South Korea

Objective

Reduction malarplasty to correct prominent malar complex is popular in Asians. Despite the popularity of reduction malarplasty, most of surgical methods have not been applied according to the individual character of zygoma protrusion. In this study, we analyzed effectiveness of two different surgical procedures to clarify appropriate procedure depending on zygoma type.

Methods

One of our procedures is "the bidirectional wedge ostectomy" - bidirectional wedge shape bone fragment is removed from zygomatic body via oral incision and oblique complete osteotomy on zygomatic arch via sideburn incision. Another is "the quick osteotomy" - a greenstick osteotomy on the zygomatic body and complete osteotomy on the zygomatic arch via two skin incision. We have classified zygoma protrusion into the following two categories: (1) zygomatic body and arch protrusion (group 1), and (2) only zygomatic arch (group 2).

Results

The patients' cross sectional areas of the most prominent malar region was decreased by 9.4 ± 2.5 mm laterally (zygion-to-zygion), and 2.9 ± 0.8 mm obliquely (average of center-to-right and left maxillozygion) after "the ostectomy". However, the patients, who underwent "the osteotomy", decreased by 10.9 ± 2.7 mm laterally, but not obliquely. Thirty nine patients (83.0%) in group 1 underwent the ostectomy, but 8 (17.0%) underwent the osteotomy. In group 2, 73.2% (n=30) underwent the osteotomy.

Conclusions

We could find the more appropriate procedure depending on zygoma protrusion type with outcome analysis. With these results, we could assume that if each procedure will be performed according to this classification, we can achieve more favourable aesthetic results in zygoma reduction.



P-1218

SURGERY-FIRST APPROACH FOR SKELETAL CLASS III CORRECTION

Kim Jin Hong

Oral and maxillofacial surgery, Medical battalion, The 1th infantry division, ROK Army, Munsan-eup, Paju-si, Gyeonggi-do, Korea, South Korea

Recently, Surgery-First approach(SFA) is proposed for several advantages in comparison with conventional treatment. (Early relief of patient's chief complaint, efficient decompensation, and shortened treatment time)

In SFA, it is hard to predict the result of preoperative orthodontic treatment. But we could get more accurate results by using 3-Dimensional Simulation(3DS).

For SFA, we got 3D LASER scan data of the initial cast (A). After superimposing it to 3D CT image, we simulated teeth movement 3-dimensionally to the position of right before surgery (B) and tried surgery simulation. After that we changed (B) to (A) again. Finally, we got a wafer by a rapid prototyping method.

Right after the real surgery, soft tissue profile was improved as the patient wanted and overbite/overjet became normal.

It needs to be evaluated the differences between 3DS and actual teeth movement, but we overcame existing limitations in SFA by 3DS and got satisfactory outcomes.

**P-1263****ACCURACY OF Y-SPLINT AS A CAD/CAM-ENGINEERED WAFER ASSEMBLY DURING ORTHOGNATHIC MAXILLARY REPOSITIONING**

JY. Kim¹, GS. Yeo¹, EJ. Kwak¹, HJ. Park², SH. Lee¹

¹ *Oral and Maxillofacial Surgery, College of Dentistry, Yonsei University, Seoul, South Korea*

² *Advanced general dentistry, College of Dentistry, Yonsei University, Seoul, South Korea*

Objective. In orthognathic surgery, classic interocclusal splint is used frequently and very important for a successful orthognathic surgical outcome. Preoperative simulation using computer-assisted design and manufacturing (CAD/CAM) is very helpful for making surgical splint in nowadays. Also, three-dimensional (3D) printing accelerates this new technology. This study compared the accuracy and feasibility of Y-splints, a computer-assisted design and manufacturing (CAD/CAM-engineered wafer assembly), and the classic intermediate splints

Methods. The clinical protocol consisted of 3D computerized tomography, surface scanning of dental cast, and superimposition of these two data. Diagnosis and simulation surgery was performed with 3D software. Then Y-splint, a CAD/CAM-engineered wafer assembly which combines the conventional interocclusal splint with a Y-shaped bar structure for maxillary repositioning was manufactured. A Y-shaped bar can be attached this interocclusal splint, and then designed to contact the immobile cranial portion. And we used maxillary cutting guide, which is also a CAD/CAM-engineered, to provide convenience and increase a accuracy of the surgical results. Accuracy of the maxillary reposition was evaluated with 3D volumetric data and analysed using hard and soft tissue parameter. Superimposition and registration was performed, too.

Results. Accuracy of the maxillary reposition was observed with Y-splint used patients is clinically acceptable and have a more reliable result than conventional interocclusal splint.

Conclusion. Y-splint and cutting guide, CAD/CAM-engineered wafer assembly, provides more accuracy in maxillary repositioning than conventional interocclusal splint. Providing a reliable and precise, these computer-assisted 3-dimensional planning and computed-generated splint can be an alternate method to the use of conventional 2-dimensional planning and splint with during orthognathic surgery.

**P-1318****ORTHOGNATHIC SURGERY IN CRANIOFACIAL SYNDROMES.**

L. Sánchez Torres, I. García Recuero, A. Fernández García, A. Romance García, I. Falguera Uceda, A. Rivero Calle, G. Sánchez Aniceto

Cirugía Oral y Maxilofacial, Hospital Universitario 12 de Octubre, Madrid, Spain

AIM

Craniofacial syndromes have skeletal abnormalities such as asymmetry, compressions, and maxillary, malar and mandibular hypoplasia; too severe open bite and dental crowding. The final stage of the treatment of these patients after completing complex craniofacial procedures is orthognathic surgery to achieve greater harmonization, functionality and possible facial aesthetics.

MATERIAL AND METHODS

Two cases treated in our centre, a patient presented with Crouzon syndrome and other patient with Treacher Collins syndrome.

The case of Crouzon had midface elongation with excess after two midface distraction, and bimaxillary orthognathic surgery performed at the age of 15 years with maxillary impaction and bilateral sagittal splint osteotomy (BSSO) of centering and antero-rotation.

The patient affected with Treacher-Collins presented severe microretrognathia. He was operated at 19 years old. There was used the BSSO asymmetric advancement, segmental LeFort I forward and drop, and forward mentoplasty.

RESULTS

In the case of Crouzon syndrome after 18 months of follow-up, results have remained stable, requiring only soft tissue midface lipoinfiltration.

The patient with Treacher-Collins presented open bite during the period of a year after the operation. Treated then with BSSO advancement and antero-rotation, segmental LeFort I with posterior impaction and advancement genioplasty. The stability has been maintained for 2 years of follow-up.

DISCUSSION AND CONCLUSIONS

Orthognathic surgery is an useful tool to provide occlusal stability and facial harmony to these patients, but it also helps to improve self obstructive respiratory symptoms of the craniofacial syndromes, increasing the volume of the upper airway.

Previous treatments, genetic condition of these patients and the difficulty of skeletal movements required to complete it, make orthognathic surgery in syndromic patients a technique highly complex but stable with long-term results.



P-1333

TRANSPALATINAL DISTRACTION, A THREE-DIMENSIONAL PROSPECTIVE STUDY

S.Stevens, G. Van Hemelen

ZMACK, Department of Cranio-Maxillofacial Surgery, GH MONICA / University of Antwerp, Antwerp, Belgium

In this presentation the results of a 3D prospective study on maxillary midline distraction with a bone borne device (smile, titamed, belgium) will be discussed. Preoperative measurements are compared to the situation 6 months postoperative (2 weeks preoperative and 6 months postoperative dental- and parodontal parameters are measured and a conebeam-CT is analysed to obtain the dental and bony three dimensional parameters). Our surgical technique and experience with the 3-piece distractor is discussed and the results of this study on 20 patients show the proportionate bony widening of the maxilla in patients with transverse maxillary hypoplasia.

**P-1357****TITANIUM ALLERGY, A MISLEADING DIAGNOSIS**

H. Marques¹, J. P. Marcelino², D. Sanz², M. Mesquita², T. Lopes², R. Saleiro¹, F. Pimentel¹, A. Ferreira²

¹ *Cirurgia Maxilofacial, Centro Hospitalar Porto, Porto, Portugal*

² *Cirurgia Maxilofacial, Centro Hospitalar Universitário de Coimbra, Coimbra, Portugal*

Objectives: Immune response to implants is commonly reported in the literature and can include hypersensitivity related to pacemakers, dental implants, and orthopedic devices. Hypersensitivity to titanium has been reported only rarely. Metal sensitivity is also correlated with osteolysis and aseptic loosening of implanted metal hardware. However, statistical reviews of cases involving adverse reactions after implantation of metal hardware demonstrate that metal sensitivity can be proven causative in less than 0.1% of cases in which sensitivity reactions exist. Therefore, the clinical significance of metal sensitization remains a question.

Results: We report on a 28 year-old female who underwent LeFort I osteotomy with advancement and impaction. The post-operative period was normal and the patient was discharged. 18 months after surgery her orthodontist noted mobility of the maxilla. The patient was otherwise asymptomatic. An orthopantomogram was obtained as well as a Cone Beam Computed Tomography. The CBCT suggested an extensive bone resorption along all the maxilla including the osteosynthesis plates areas. She was referred to the Maxillofacial surgery department and a CT was requested as well as an immunoallergology consultation. She performed a skin patch test that revealed allergy to titanium. However, the CT revealed that the bone resorption was limited to the osteotomy line and the most likely diagnosis is pseudarthrosis.

Conclusions: Traditionally, skin patch testing has been the standard screening test for metal hypersensitivity. This method is limited by the fact that a positive result is not indicative of a true hypersensitivity but must be considered in the context of a patient's medical history and physical findings. More sensitive tests include the Lymphocyte transformation test and the Lymphokine migration inhibition factor test but they are not performed in our institution.

The CBCT results should be interpreted carefully as they don't have the same characteristics as a conventional CT.



P-1374

SKELETAL STABILITY OF ADVANCEMENT CHIN OSTEOTOMY – COMPARISON BETWEEN FIXATION WITH POSITIONING SCREWS AND PRE-SHAPED PLATES

L. A. R. Righesso, C. Heitz, R. B. de Oliveira

Oral & Maxillofacial Surgery Department, Pontifícia Universidade Católica do Rio Grande do Sul, Porto Alegre, Brazil

Objective: Even though the horizontal sliding chin osteotomy (HSCO) is considered a very stable technique, several factors can influence its stability, such as osteosynthesis performed. Several methods have been described for fixation of this osteotomy, being two positioning screws and one pre-shaped plate the most used nowadays. This retrospective study aims to compare these two methods with regard to skeletal stability after advancement HSCO.

Methods: Cephalometric records from 26 fully grown, not consecutive patients, who were submitted to HSCO, associated or not to other facial osteotomies were selected from the files of a University Hospital. Eight of these patients had the osteotomy fixated with two positioning screws, while the other 18 had the osteotomy fixated with one pre-shaped plate. Immediate and 6-month postoperative cephalometric radiographs were taken and inserted into Dolphin Imaging 11.7 for digital cephalometric analysis. Stability of the osteotomy was assessed through tracings superimposition and observation of differences in the vertical position of Menton and horizontal position of Pogonion.

Results: The two groups did not differ statistically, neither in Pg horizontal position ($p=0.470$), nor in Me vertical position ($p=0.040$).

Conclusion: The fact that few patients had a complete documentation may have influenced the result. Further research with bigger samples is required.

**P-1380****SEGMENTAL OSTEOTOMIES IN BIMAXILLARY PROCEDURES FOR ACCELERATION OF ORTHODONTIC TREATMENT**

K. Wangerin, W Kretschmer

Department of Maxillofacial and Reconstructive Surgery, Paracelsus-Krankenhaus Ruit, Ostfildern, Germany

The combined treatment of severe dentofacial deformities normally of at least three steps, the pre- and postoperative orthodontic treatment and the treatment between surgical correction. The accuracy of the operation planning and especially the surgery itself are responsible for the duration of the post-operative orthodontic treatment. Main indicator for segmentation of the jaws is the acceleration of orthodontic treatment.

In our study of 195 bimaxillary cases from the last 3 years, we have observed the following indications for segmentation of the maxilla:

- Frontal open bite,
- Protrusion or retrusion of the incisors,
- Bolton discrepancies,
- Asymmetry of the dental arch.

During LeFort I osteotomy we performed the partition in two, three or four pieces.

We noticed the following indications for segmentation of the mandible:

- Gap closure in incomplete dental arches
- Transversal discrepancies
- Asymmetry of the dental arch
- Protrusion or retrusion of the lower incisors often occur in combination with chin hypoplasia.

Beside BSSO we have conducted median osteotomies for both transversal widening and reduction of the wideness. Segmental osteotomies for the correction of protrusion and retrusion of the incisors were indicated very often, sometimes with additional distraction procedures. Oftentimes we combined the procedure with a correction of the chin by sliding genioplasty, anterior bloc rotation or chin wing.

These corrections facilitated the orthodontics and reduced the postoperative treatment time. In cases of exact postoperative intercuspitation there was merely dental retention necessary.



P-1389

DESCRIPTIVE STUDY OF THE USE OF PIEZOELECTRIC DEVICE IN PATIENTS UNDERGOING SURGERY OF DENTOFACIAL DEFORMITIES

F. Mayorga Jiménez, M. A. Juliá Martínez, A. Tofé Povedano, A. Rollón Mayordomo

Department of Oral and Maxillofacial Surgery, Virgen Macarena University Hospital, Seville, Spain

Objectives: orthognathic surgery involves selective osteotomies in the maxillo- mandibular complex, then osteosynthesis, in order to achieve good occlusion and facial harmony. The piezoelectric device consists of a system for cutting hard tissues such as bone, based on some crystals possessing ability to convert a current to a high frequency vibration, it is this effect that allows the benefits of this tool.

Materials and methods: We present a descriptive study of the use of Piezo after 15 months in our Department at Virgen Macarena University Hospital (Seville, Spain). Highlighting the benefits that we have seen in our experience and disadvantages for this type of surgery.

Results: 28 cases of orthognathic surgery fully performed with the use of Piezoelectric Device *Mectron Touch Starter ®* from December 2011 to February 2014.

Conclusion: In our experience the Piezoelectric device is a very useful tool for Orthognathic Surgery.



4. Head and Neck Oncological Surgery

P-30

THE SURGICAL VS. THE COMBINED MEDICAL AND SURGICAL PROTOCOLS FOR THE TREATMENT OF THE AGGRESSIVE CENTRAL GIANT CELL GRANULOMA.

R. Nashef¹, R. Zeltser¹, M. Winetraub², J. Abu-tair¹

¹ Oral and Maxillofacial Surgery, Hadassah Medical Center, Jerusalem, Israel

² Department of Pediatric Hematology - Oncology and Bone Marrow Transplantation, Hadassah Medical Center, Jerusalem, Israel

Objective: Aggressive type of Central Giant Cell Granuloma of the jaw is treated either with surgical or a combination of surgical and medical interventions. Interferon alpha is antiangiogenic drug used for this purpose. The combined treatment protocol consists of enucleation, with preservation of vital structures, followed by daily subcutaneous injection of the drug. The purpose of this report is to review the advantages of the latter protocol and to compare the morbidity, length of treatment and expenses between both the surgical and the combined methods by reviewing two cases of similar age group patients, each treated with a different protocol.

Methods: Two patients of the same age were diagnosed with aggressive type of CGCG. The first was treated with the conventional surgical protocol while the second was treated with a combined surgical enucleation of the lesion followed by injections of sub-cutaneous Interferon alpha.

Results: The patient treated with the conventional surgical treatment underwent marginal mandibulectomy followed by late reconstruction of the bone defect and later dental implants placement and prosthodontic rehabilitation. Her treatment and rehabilitation lasted 6 years, in the course of which she was admitted to hospital 3 times and went through 5 surgical procedures. The other patient had the lesion enucleated under general anaesthesia followed by subcutaneous injection of interferon for 6 months. She had only one surgical intervention and admission to the hospital with a shorter post-operative recovery period and no additional surgical or rehabilitation procedures. The treatment's costs were also cheaper using the combined protocol.

Conclusion: The conventional surgical treatment of the aggressive type of CGCG requires a longer post-operative admission and post-operative recovery period, rehabilitation and reconstruction, thereby making its expenses higher compared to the combined surgical and medical treatment protocol



P-40

THE USE OF RHOMBIC AND VERMILION MYOMUCOSAL FLAPS FOR RECONSTRUCTION OF THE ORAL COMMISSURE CARCINOMA.

S. Benazzou, M. Boulaadas, L. Essakalli

Department of ENT and Maxillofacial surgery, Avicenne University Medical Centre,, Rabat, Morocco

BACKGROUND: The oral commissure carcinoma can enlarge and involve adjacent structures. Surgical treatment may cause significant damage of the functional balance of facial muscles. The repair should achieve appropriate aesthetic quality and restore labial function.

METHODS: The authors presented three cases of oral commissure carcinoma, which were treated by a surgical excision and reconstructed by using a rhombic flap for the reconstruction of the jugal defect and the vermilion myomucosal flap technique for the restoration of the sphincteric integrity of the orbicularis oris.

RESULTS: All the patients were satisfied of the aesthetic and functional results of the labial reconstruction.

CONCLUSION: The advantages of this technique are to maintain maximum oral aperture, lip mobility and sensation, oral competence and to maximize cosmesis.



P-44

AESTHETIC NECK DISSECTION USING ENDOSCOPE VIA RETROAURICULAR INCISION: REPORT OF TWO CASES AND A LITERATURE REVIEW

Jae-Young Kim, Hoon Cho, In-Ho Cha, Woong Nam

Department of Oral and Maxillofacial Surgery, Yonsei University dental college, Seoul, South Korea

Objective : To propose an endoscopic neck dissection as an alternative method for robotic surgery and discuss about its dvantages and disadvantages

Methods : Two cases of endoscopic neck dissection via retroauricular incision

Results : Endoscopic neck dissection provides minimal invasive surgery with unremarkable post-operative scar. Cost-benefit effectiveness is also favourable compared with robotic surgery. However, it is not proper for unskilled operator whohas less experience in using endoscope or is unfamiliar with surgical anatomy

Conclusion : Although it is difficult technique for beginner surgeon due to its limited operation view, we suppose it as an alternative method for robotic surgery.

**P-72****TITANIUM MESH TO PREVENT THE DEFORMITY OF THE TEMPORAL FOSSA AFTER TEMPORALIS MYOFASCIAL FLAP TRANSPOSITION**

JJ. Haro Luna, M. Acosta Feria, B. Ramos Medina, A. Gómez Poveda, S. García Álvarez

Department of Oral and Maxillofacial Surgery, Cartagena, Spain

INTRODUCTION

The temporalis muscle flap (TMF) is a versatile technique for different purposes (reanimation of facial paralysis, mass defect fill at the orbit and midface, and reconstructions of the oral cavity, palate and skull base). One of its limitations is the resulting facial deformity due to secondary depression at the donor site. For correcting this subsequent deformity, alloplastic materials (acrylic materials, porous polyethylene implants, surgical cements) are often used, being their main potential problems infection, mobilization and/or extrusion of the implant.

We report 2 of the 32 cases treated in our department from 2010 to 2014 whose surgical defects were reconstructed with the use of the TMF, and immediate primary reconstruction of the temporal fossa contour with a titanium mesh anchored at the calvarium, outer wall of orbit and zygomatic arch.

CASES

CASE 1: 61 years old man with a polymorphous low-grade adenocarcinoma (T2N0M0) of the left side of the soft palate.

CASE 2: 82 year old woman with a well-differentiated squamous cell carcinoma (T3N0M0) of the left maxillary alveolar ridge and hard palate.

1. SURGERY:a) Ablative surgery.b) TMF raising and sectioning.c) Titanium mesh fixation.
2. POSTOPERATIVE: Uncomplicated, with good aesthetics of the temporal region and no evidence of locoregional recurrence of the disease.

DISCUSSION AND CONCLUSIONS.

The TMF is widely established for reconstruction of cranio-maxillofacial defects due to the ease of harvesting, size, versatility and low complication rates. However, the aesthetic defect at the donor site leads to an apparent collapse in the absence of reconstruction. Various alloplastic materials have been usually used, whose main complications include secondary infection, mobilization and/or extrusion of the material.

In our series, none of the 32 cases had immediate or delayed complications, with good aesthetics of the temporal fossa contour. Only in one case there was collapse of the mesh because of an intense direct trauma as the result of a traffic accident.

The immediate reconstruction of the temporal defect after TMF transposition with the use of a titanium mesh is an easy and safe method (probably also useful for secondary correction), presenting excellent long-term aesthetic results.



P-73

THE MYOFASCIOCUTANEOUS INFRAHYOID FLAP FOR THE RECONSTRUCTION AFTER EXCISION OF ORAL CARCINOMAS.

JJ. Haro Luna, M. Acosta Feria, B. Ramos Medina, S. García Álvarez, A. Gómez Poveda

Department of Oral and Maxillofacial Surgery, Cartagena, Spain

INTRODUCTION.

For the oral cancer reconstruction we must consider the balance between healing, morbidity and quality of life. The classic reconstructive techniques include cutaneous-myocutaneous local and regional pedicled flaps. Furthermore, the microvascular reconstruction techniques have been taking a growing importance, which differ in the incidence of complications but have a high level of viability.

The myofasciocutaneous infrahyoid flap is a useful locoregional flap for oral-oropharyngeal reconstruction compared to classic regional flaps and microsurgical reconstruction.

MATERIALS AND METHODS.

We developed the surgical technique for harvesting the myofasciocutaneous infrahyoid flap.

We also present 3 cases of patients with carcinomas of tongue–floor of mouth, T₄ N₀ M₀ stage, where the removal of the tumour and a functional neck dissection were performed, and the infrahyoid flap was used for the reconstruction of the defects.

The flap was viable in all the cases, without local or regional complications, except partial necrosis of the cutaneous component in one case, which presented a good healing by secondary intention.

DISCUSSION AND CONCLUSIONS.

The infrahyoid flap is a very versatile locoregional flap for the oral-oropharyngeal reconstruction, due to its characteristics of vascular pedicle, cutaneous paddle and myofascial component.

Attached to this are its easiness and short time of dissection and the resulting low morbidity at the donor site, so it is a very good alternative to consider in selected patients versus other locoregional flaps and microsurgical reconstruction.



P-86

GHOST CELL ODONTOGENIC CARCINOMA: CASE REPORT AND REVIEW OF LITERATURE

M. Martos Fernández¹, M. Alberola Ferranti², JA. Hueto Madrid¹, C. Bescos Atin¹

¹ ORAL AND MAXILLOFACIAL SURGERY, HOSPITAL VALL D'HEBRON, BARCELONA, Spain

² PATHOLOGY, HOSPITAL VALL D'HEBRON, BARCELONA, Spain

OBJECTIVE

Ghost cell odontogenic carcinoma is a rare condition characterized by ameloblastic-like islands of epithelial cells with aberrant keratinisation in the form of Ghost cell with varying amounts of dysplastic dentine.

METHOD

We report a case of a 70 year-old woman with a rapid onset of painful swelling right maxillary tumour. Magnetic resonance showed a huge tumour dependent on the right half of the right hard palate with invasion of the pterygoid process and focally to the second branch of the trigeminal. Radiological stage was T4N0. The patient underwent a right subtotal maxillectomy with clear margins. Adjuvant radiotherapy was given. The patient was free of residual or recurrent disease 9 months after surgery.

RESULTS

Grossly the tumour measured 3,9 on its greater diameter. It was spongy and whitish gray. Microscopically the tumour was arranged in nets and trabeculae, occasionally forming palisade. Tumoural cells had clear cytoplasm with vesicular nuclei. There was atipia and mitosi with vascular and perineural invasion.

CONCLUSIONS

The Ghost cell carcinoma is a rare odontogenic carcinoma. Its course is unpredictable, from locally invasive tumours of slow growing to highly aggressive and infiltrative. Wide surgical excision is the treatment of choice although its combination with postoperative radiation therapy, with or without chemotherapy, remains controversial.

**P-91****PROGNOSTIC RELEVANCE OF CIRCULATING AND DISSEMINATED TUMOUR CELLS OF PATIENTS WITH SQUAMOUS CELL CARCINOMA OF THE ORAL CAVITY**

A. Gröbe, H. Hanken, R.E. Friedrich, B. Riecke, R. Smeets, G. Schön, S. Riethdorf, K. Pantel, M. Heiland, M. Blessmann

University Medical Center Hamburg-Eppendorf, Hamburg, Germany

OBJECTIVES: Current staging methods for squamous cell carcinomas of the oral cavity (OSCC) need to be improved to predict the risk of individual patients. Since haematogenous tumour cell dissemination is a key event in tumour progression we assessed the prognostic significance of disseminated tumour cells (DTCs) in bone marrow (BM) and circulating tumour cells (CTCs) in peripheral blood (PB) from OSCC patients.

MATERIALS AND METHODS: From 110 patients with OSCC, tumours were surgically resected (R0) without neoadjuvant therapy. The CellSearch[®]-system was used to enumerate CTCs. BM was aspirated from the iliac crest, and mononuclear cells (MNCs) were enriched by Ficoll density gradient centrifugation. To detect DTCs, MNCs were immunostained with the pan-keratin antibody A45-B/B3. Results were correlated with clinicopathological parameters and clinical outcome such as recurrence and death during follow up time (mean 916 days).

RESULTS: Ten/80 patients (12.5%) harbored CTCs in PB whereas in 18/90 patients (20.0%) DTCs in BM could be detected. Surprisingly, in only two patients (1.8%) CTCs and DTCs were detected simultaneously. Significant correlations could be found regarding CTCs and tumour size ($p=0.04$), nodal status and DTCs ($p=0.02$), and distant metastasis with CTCs ($p=0.004$) and DTCs ($p=0.005$). Univariate and multivariate analyses revealed that CTCs and DTCs were significant and independent predictors of recurrence-free survival ($p<0.001$).

CONCLUSION: Both DTCs and CTCs are independent prognostic markers in OSCC patients, predicting relapse with higher sensitivity at various disease stages than routine staging procedures. Bone marrow might be an interesting target organ for future therapeutic interventions.



P-99

SHOULD TP3 FORM PART OF THE SURGICAL ALGORITHM FOR TREATMENT OF CHYLE LEAKS IN THE NECK?

C. Miller, C. Lau, L. Cheng

The Royal London Hospital, London, United Kingdom

Introduction

Chylous leakage is not an uncommon complication after neck dissection. It occurs in 1% to 2.5% of radical neck dissection, with the majority (75-92%) on the left side. There is currently no recognised surgical algorithm for the treatment of chyle leak in the neck. Conservative treatment protocols have been established and include closed vacuum drainage, nutrition modification and somatostatin analog. We present a case of right sided chyle leak treated successfully with a sternocleidomastoid muscle flap and tp3.

Case History

A 57 year old female with SCC was treated with right sided partial glossectomy, mandibulotomy, unilateral selective neck dissection and radial forearm free flap reconstruction. A right sides neck swelling was noted 12 days post operatively. Radiological investigation revealed an 8x3cm heterogenous noncompressible collection with no signs of infection. This swelling gradually increased in size over the next 48 hours. Therefore, the decision was made for surgical exploration and a right sided chylous leak was found but there was no obvious source of leakage.

TP3 was used in conjunction to a sternocleidomastoid muscle flap to help tissue adhesion. The chylous leak was successfully treated through this surgical approach with dietary modification without compromising the viability of her original free flap reconstruction.

Conclusions

The use of tp3 forms to form an air/ blood and fluid tight barrier can assist the muscle flap in containing a chylous leak. The authors will use intra surgical and radiological imaging to illustrate the surgical usage of TP3. We would recommend TP3 to be used an adjunct in the surgical algorithm in the treatment of such conditions.



P-100

USING TP3DS AS A SURGICAL ADJUNCT IN ORAL AND MAXILLOFACIAL SURGERY

C. Miller, C. lau, L. Cheng

The Royal London Hospital, London, United Kingdom

Introduction

The use of tp3 forms to form an air/ blood and fluid tight barrier that can assist in reduction of serous-sanguineous, chylous and blood secretions after surgery. We have collected data from 15 patients undergoing glandular surgery in the head and neck region.

Methods

The authors collected data via proforma at the time of surgery and then on postoperative ward rounds. Data was collected on the ease of use of TP3, the amount of fluid drained, presence of hematoma and time to discharge.

Results

We show that the average amount drained 24 hours post surgery was 50mls, that all patients could be discharged the day the drain was removed. There was no sign of surgical site hematoma, and that TP3DS was easy to use, achieving a 5/5 on ease of use.

Conclusion

The use of TP3DS may be a valuable asset in the field of oral and maxillofacial surgery. We propose that a random controlled trail be instigated at The Royal London hospital and its satellite hospitals into its use in parotid and thyroid surgery. The exclusion criteria for both would be patients who need an associated neck dissection and that cannot be closed primarily.



P-101

NUTRITIONAL STATUS IN HEAD AND NECK CANCER PATIENTS

A. Schrey

Turku University Hospital, Turku, Finland

Objective was to determine the nutritional status within the group of patients with cancer of the head & neck .

Methods: Thirty patients with head and neck cancer who were referred for radiotherapy (RT) and/or surgery were evaluated by laboratory tests, by a Bioelectrical Impedance body composition analysis device (Quadscan 4000), and Nutritional intake (determined by Simplified nutritional appetite questionnaire (SNAQ)) and status (determined by Ottery's Subjective Global Assessment), and Nutritional Risk Screening (NRS 2002) were evaluated at baseline, and at 12 months when available during this pilot study.

Results: Prior therapy nutritional status concluded mild malnutrition in 27% (8/30), moderate malnutrition in 3.3% (1/30) and severe malnutrition as well in 3.3% (1/30) of this group of head and neck cancer patients.

Conclusions: The nutritional status was evaluated prior therapy and at least 12 months post treatment. The results are presented in the study and suggest that careful consideration of nutritional status is of utmost importance in treating patients of head and neck cancer to achieve optimal short and long-term results in these challenging patients and thus possibly providing better QOL for these patients.



P-108

THE USE OF POLYPROPYLENE MESH IN RECONSTRUCTIVE SURGERY

I. Niedzielska, M. Nowinski, D.Lyko

Department of Cranio- Maxillo- Facial and Oral Surgery, Medical University of Silesia, Katowice, Poland

Objective: One of the most frequent complications during the mandible reconstruction procedure using the reconstruction 2.4/2.5 plate is exposure of the operation region. The reason may be the construction of the plate. Attempts have been made to use polypropylene mesh which is popular in general surgery, because of its possibility of surrounding soft tissue ingrowth.

Methods: We reported a case series of 5 patients, who underwent mandible surgery reconstruction - 2.4/2.5 reconstruction plate, covered with propylene mesh (Opto Mesh) using the holes in the reconstruction plate. Patients were followed up for six-months.

Results: All patients showed good healing of the post-operative wound, without inflammation. In one case the plate and the polypropylene mesh got exposed in the length of 1.5 cm, which subsided after repeat surgical suture. 4 out of 5 patients are currently in the process of radiotherapy.

Conclusions: The use of polypropylene mesh to cover reconstructive plates reduces the chances of its exposure.

**P-119****TUMOUR DEPTH OF INVASION OF PT1 CARCINOMA OF THE ORAL TONGUE AND RISK OF PATHOLOGICALLY DETECTED NECK METASTASES:**

M Abu-Serriah¹, K Shah², R Rajamanohara³, A Fasanmade¹, j Graystone¹, S Gerry⁴, S Bond³

¹ *Supra-regional Head and Neck Unit, Churchill Hospital, Oxford, United Kingdom*

² *Cellular Pathology, Oxford University Hospitals NHS Trust, Oxford, United Kingdom*

³ *Oral & Maxillofacial Surgery, John Radcliffe Hospital, Oxford, United Kingdom*

⁴ *Department of Statistics in Medicine, Oxford University, Oxford, United Kingdom*

Introduction: Tumour depth of invasion (TDI) is considered a predictor of pathologically detected neck metastases (PDNM) for squamous cell carcinoma (SCC) of the oral cavity. The relationship between TDI of pT1 SCC of the oral tongue and PDNM remains unknown.

Aims: To determine the prevalence of pT1 SCC of the oral tongue in Oxford patient population, to assess the incidence of PDNM in pT1 SCC of the oral tongue, and to investigate the association between TDI and PDNM for patients with pT1 SCC of the oral tongue.

Methods: Retrospective data was collected for 127 patients with pT1SCC of the oral tongue between August 2000 and August 2013. For each patient: TDI, neurovascular invasion, pattern of invasion and presence of PDNM were recorded. The relationship between data was studied using logistic regression and ROC methods.

Results: Univariate analysis showed that TDI had no a statistically significant association with PDNM (OR:1.16; 95% CI: 1.04-1.3, p-value = 0.008) but not extracapsular spread (OR:1.05;95% CI:0.92-1.21, p-value = 0.458). TDI also had poor accuracy (66% using ROC analysis) in predicting PDNM.

Conclusion: TDI is not a reliable or accurate and cannot be used as predictor of PDNM in patients with pT1 SCC of the tongue.

**P-120****A NOVEL APPROACH TO CLASSIFYING DEFECTS OF THE MIDFACE: THE SECOND MAPZ® SYSTEM**

M Abu-Serriah¹, L Wong², S Richardson², A Fasanmade¹, D Wiesenfeld³, IC Martin⁴

¹ *Supra-regional Head and Neck Surgery Unit, Churchill Hospital, Oxford, United Kingdom*

² *Oral & Maxillofacial Surgery, John Radcliffe Hospital, Oxford, United Kingdom*

³ *Head and Neck Oncology, The Royal Melbourne Hospital, Melbourne, United Kingdom*

⁴ *Oral and Facial Surgery, Sunderland Royal Hospital, Sunderland, United Kingdom*

Defects of the midface can be complex due to the proximity of many important structures. Whilst there are several existing classifications of midfacial defects, none have gained universal agreement. The urgent need for a new approach to mapping midfacial defects does not stem from a simple philosophical concept or a trivial academic argument, but from logical, scientific, and strategic oncological principles. Current systems have serious drawbacks, which prevent rigorous outcome comparisons, and thus, impede research and development in this field. Modern surgical practice must be evidence based, and the lack of a simple and agreeable classification system of midfacial oncology jeopardises the opportunity of gathering and reaching such evidence.

We propose a novel approach to classifying defects of the midface, which may potentially revolutionise methods of recording, communication and outcome reporting worldwide. The SECOND MAPZ® system overcomes many of the problems associated with current classifications. SECOND MAPZ® is a simple, concise, logical, and memorable classification that will allow more accurate reporting of disease patterns, defect extent, and treatment outcomes.

The system may transform and facilitate communication amongst various members of the Head and Neck Oncology multidisciplinary team and enable the development of evidence-based midfacial oncological practice through precise and consistent data reporting and outcome comparisons, hence fostering a suitable environment for the development of evidence-based midfacial oncological practice.



P-122

VIRTUAL SURGICAL PLANNING IN THE ERA OF ROBOTIC SURGERY

Jae-Young Kim¹, Won-Shik Kim², Eun Chang Choi², Woong Nam¹

¹ *Oral and Maxillofacial Surgery, Yonsei University College of Dentistry, Seoul, South Korea*

² *Otorhinolaryngology, Yonsei University College of Medicine, Seoul, South Korea*

Objective : To discuss about efficacy of virtual surgical planning (VSP) in the era of robotic surgery

Methods : Two mandibular reconstruction cases after robotic neck dissection using the conventional method and virtual surgical planning (VSP), respectively.

Results : We found the conventional method limits surgical scope, restricts access to the defect area, and consumes considerable time.

Conclusions : The authors consider VSP far more viable in the era of robotic surgery.

**P-124****SURGICAL TREATMENT FOR LOCALLY ADVANCED RECURRENT CANCER OF THE EXTERNAL EAR. A CLINICAL NOTE**

A. Badalyan, A. Mudunov

Department of Head and Neck Cancer, Research Institute of Clinical Oncology, N.N. Blokhin Russian Cancer Research Center, Russian Academy of Medical Sciences, Moscow, Russian Federation

Introduction.

Basal-cell carcinoma (BCC) takes first place and makes 70-75 % among malignant neoplasms of skin. BCC is characterised by locally invasive growth and metastasizes extremely rarely.

Recurrent forms can involve subject soft tissues, damage nerves, great vessels and the bone. At such extension of the process in cases when all other methods of treatment have been already exhausted the only possible method is surgical.

Campbell et al. in 1951, and later H. Parsons and J.S. Lewis for the first time described the technique of block-resection of petrosal bone. At total or subtotal block-resection of petrosal bone in its classical version large dissection of temporal fossa and the neck with or without auricle preservation is performed.

Clinical case

Patient A, 54 years, turned to RCRC in December 2011. The anamnesis: for the first time diagnose «Basal-cell carcinoma » was set in 2005 concerning a new growth on right ear. Radiation therapy (SFD 60 Gr) on the area of right external ear was administered. In January 2007 - recurrence. Operation - removal the right auricle with resection of external auditory meatus was performed. December 2009 - repeated recurrence. Operation - electroexcision of external auditory meatus. In November 2011 - repeated recurrence.

According to MRI and CT scan of the facial skeleton the following was defined: massive ulcerous-infiltrative growth in the parotid - masticatory area, destruction of the mastoid process of the right temporal bone.

Operation was performed: resection of skin and soft tissues in right parotid - masticatory area, also of petrosal bone. Implantation grafting with inclusion m. SCM was made.

Results

Histology: tumoural growth has not been revealed within resection edges which is evidence of efficacy of surgical procedure. The patient is alive without recurrence for 22 months.

Conclusions

Application of grafts with furnished circulation on the basis of the pectoral mayor and m.SCM allows not only to close retentively considerable in their sizes defects of skull base, but also to correct rough deficiency of parotid - masticatory area.

Thus immediate and remote results of the executed work testify to efficiency of such surgical interventions.



P-130

ROLE OF THE SKIN INGUINAL FREE FLAPS IN ONCOLOGY SURGERY

I. Niedzielska¹, M. Wrzol², D.Lyko^{1, 2}

¹ *Department of Cranio- Maxillo- Facial and Oral Surgery, Medical University of Silesia, Katowice, Poland*

² *Doctoral Study, School of Medicine with the Division of Dentistry in Zabrze, Medical University of Silesia, Katowice, Poland*

Objective:

Life quality after tumour resection in the oral region is unsatisfactory. The aim of this study was to evaluate the use of skin inguinal flap in oncology surgery.

Method:

The study included 15 patients, who underwent tumour resection in oral region between January 2011 to December 2012, with the single- stage use of skin inguinal free flap. Dimension of the resected tumour, skin flap, healing process (flap color- Vertex ThermoSens, flap excretion), time, complications, the influence of radiotherapy were assessed. Survey was conducted, including questions about the quality of life after tumour operation. Patients who underwent the tumour resection surgery without using the inguinal flap represented the control subject.

Results:

Good healing process depends on the dimension of the free flap and type of the covered tissue. It does not depend on the coexisting disorders and the stage of tumour advancement. Pain, function of the mucosa, comfort during the prosthesis preparation were markedly higher compared with the control group.

Conclusion:

The use of skin inguinal free flaps improves the quality of life.



P-134

FACIAL TISSUES REIMPLANTING IN SURGICAL TREATMENT FOR MAXILLARY SINUS CANCER

I. Reshetov, M. Ratushnyy, A. Polyakov, N. Babaskina

P.A. Herten Moscow Cancer Research Institute, Moscow, Russia

Objective: the complexity of maxillary sinus cancer treatment is determined by repeating recurrence and in most cases relatively high resistance to radio- and chemotherapy. At present, good oncological and functional results are achieved after extended surgical treatment combined with radio- and chemotherapy.

Methods: treating experience of P.A. Herten Moscow Cancer Research Institute covers 5 cases of patients with malignant tumours of maxillary sinuses with facial tissue reimplanting. During operation bitemporal coronal skin incision is performed and extended in front of the ears. Soft tissues of frontal region are separated and moved down providing a versatile surgical approach to orbital structures, nasal cavity and maxillary sinuses. Facial nerve trunk is cut while soft tissues are separated, that reveals structures of facial bone affected by cancer and enables its radical removal. Microsurgical technics are used to repair facial nerve after removal part of surgical procedure, after that facial soft tissues flap is moved to initial position and sutured.

Results: all 5 patients that have undergone surgical procedures with facial reimplanting are currently alive, receive follow-up care and show no signs or symptoms of cancer recurrence.

Conclusion: this surgical procedure provides radical tumour removal, satisfactory cosmetic results and preserves functionality of facial soft tissues.

**P-155****MODIFIED FOLDING RADIAL FOREARM FLAP IN SOFT PALATE AND TONSILLAR FOSSA RECONSTRUCTION**

Y.H. Joh, M.C. Park, S.J. Seo, S.Y. Yim, I.J. Lee

Department of Plastic and Reconstructive Surgery, Ajou University Hospital, Suwon, South Korea

Objective :

Wide excision of cancer arising from the tonsillar fossa and soft palate has several functional sequelae (e.g., speech, swallowing, chewing, and breathing) that require surgical restoration of the pharyngeo-palatal structure and optimal velopharyngeal function. For this purpose, several kinds of surgical procedures have been introduced. Our method to reconstruct the tonsillar fossa and soft palate entails folding the flaps and reconstructions at the same time as the oral and nasal planes, with some modifications.

Methods :

Patient 1 was a 64-year-old man with left soft palate cancer. After wide excision of the tumour, the defect size of the nasal floor was 3 x 3 cm, and that of soft palate and tonsillar fossa was 8 x 5 cm.

Patient 2 was a 49-year-old man with left tonsil cancer. The defect size of the nasal floor was 3 x 3 cm, and that of left lateral wall of the tonsillar fossa was 8 x 3 cm. For reconstruction of oral, nasal, and tonsillar plane, we designed the flap fit to the defect site, especially cutting of the edge of the square plane of the flap to a round shape.

Results and conclusions :

Both patients achieved good functional recovery without surgical complications. The average speech intelligibility score in the 2 patients was 10. Swallowing functional score was 4 in both patients. Creative reconstruction with modified radial forearm free flap for tonsillar and soft palate area makes it possible to restore velopharyngeal function to levels close to the preoperative condition.

**P-170****PLASMABLASTIC LYMPHOMA IN AN ELDERLY IMMUNOCOMPETENT PATIENT**

LM. Gonzalez-Perez, N. Fakh-Gomez, M. Sanchez-Sanchez

Virgen del Rocio University University Hospital, Seville, Spain

Objective:

Plasmablastic lymphoma is an aggressive variant of a diffuse large B-cell lymphoma. Recognition of plasmablastic lymphoma, confined mostly to the oral cavity, is important to avoid confusion with other tumoural lesions. The authors analyse a case of an elderly immunocompetent patient who seemed to pose a diagnostic dilemma.

Methods:

A 73-year-old man was referred with a painless lesion in the oral cavity. The patient reported that the left mandibular second premolar had been extracted two months earlier, but the area had been slow to heal. Physical examination revealed a large exophytic lobulated mass, in the left mandibular vestibular aspect extending from the first premolar area to the retromolar trigone and sublingual regions. There was no evidence of palpable cervical lymphadenopathy. A panoramic radiograph revealed a poorly defined radiopaque area underlying and posterior to edentulous area, with no mandibular erosion. Computed tomography only revealed an expansive lesion in the vestibular oral mucosa. Positron emission tomography with F18-FDG showed a hypermetabolic left mandibular lesion (SUV 8.7). Surgical excision of tumoural mass was performed with extirpation of the entire lesion in a single block. Neoplastic cells were large, showed plasmablastic features and immunostain for CD138. A diagnosis of plasmablastic lymphoma was made. A bone marrow aspiration and core biopsy were obtained and revealed no lymphoma involvement (stage I-E).

Results:

The patient received 6 cycles of chemotherapy with high doses of cyclophosphamide, doxorubicin, vincristine, and prednisone and tolerated treatment well. His clinical course showed complete pathologic remission confirming negative radiographic findings. Two and a half years, from the time of his initial presentation, he was completely devoid of any symptoms with no evidence of recurrence.

Conclusions:

There have been less than ten of previously reported cases of HIV-negative oral PBL, with a majority of these cases arising in an immunosuppressed state. Only a small subset of reported cases have occurred in immunocompetent patients. The authors report here an unusual case of PBL of the oral mucosa in a immunocompetent patient with a stage IE disease and a durable clinical, pathologic and radiographic remission with surgical excision and aggressive chemotherapy.

**P-173****CERVICAL PLEOMORPHIC LIPOMA MIMICKING LIPOSARCOMA**

N. Fakh-Gomez, LM. Gonzalez-Perez, JF. Montes Carmona, M. Sanchez-Sanchez

Department of Maxillofacial Surgery, Virgen del Rocio University Hospital, Seville, Spain

Objectives:

Lipoma are the most common soft tissue tumours, with an annual incidence of 1/1000. Generally lipomatous tumours are excised if they are symptomatic, grow or are malignant. The authors present a case of solitary pleomorphic lipoma arising in the neck region, which seemed to pose a diagnostic dilemma.

Methods:

A 65-year-old man presented with a subcutaneous 6-cm right posterior neck mass. The lesion had remained stable in size and did not drain any fluid. The patient was asymptomatic. On physical examination, a mobile mass was palpable in the right posterior occipital area and neck movements were unrestricted. Clinically, it was diagnosed as a lipoma vs. liposarcoma. At the time of surgical excision, the lesion was found to be freely mobile and was easily resected in its entirety.

Results:

The excised mass measured 7x5x6 cm and was entirely encapsulated. Histopathological examination revealed a tumour consisting of a bland spindle cell proliferation within a myxoid stroma containing brightly eosinophilic, coarse collagen bundles and mature adipocytes. On higher magnification, hyperchromatic multinucleated giant cells were seen scattered throughout the tumour. Overall, the histopathological and immunohistochemical findings were consistent with the diagnosis of a pleomorphic lipoma. The prominent myxoid component in this tumour raised the differential diagnosis of myxoid liposarcoma; however, the characteristic plexiform vascular network found in these malignant tumours was absent in this study.

Conclusion:

The pleomorphic lipoma, despite its benign clinical course, displays a distinct histological appearance, which can lead to its misdiagnosis as a malignant liposarcoma. Histologic examination is important for diagnostic confirmation. Fine needle aspirations of pleomorphic lipomas may pose a diagnostic challenge, as the cells that make up the neoplasm may appear malignant under cytological study. Although aspiration is quick and simple in initially evaluating a palpable mass, tissue diagnosis through histologic examination is crucial for confirmation. When approaching lipomatous tumours, the maxillofacial surgeon should be mindful of their clinical course, physical characteristics, and histologic appearances. It is important to correctly identify a pleomorphic lipoma and distinguish it from a liposarcoma.

**P-178****NEUROMONITORING ASSISTANCE DURING SURGERY ON BENIGN PAROTID LESIONS**

A. Beliaeva¹, Yu.A. Medvedev¹, A.I. Shaykhaliev², K.A. Polyakov¹, K.V. Balasanova¹, N.M. Zolotopup¹, A.S. Omelchenko², T.A. Obratsova², A.V. Korshunova²

¹ *Department of New Technologies in Maxillofacial Surgery, I.M. Sechenov First Moscow State Medical University, Moscow, Russian Federation*

² *Oral and Maxillofacial surgery, I.M. Sechenov First Moscow State Medical University, Moscow, Russian Federation*

Objectives. We performed a retrospective analysis of 7 patients, who underwent surgical procedures at the Department of Oral and Maxillofacial Surgery, I.M. Sechenov First Moscow State Medical University in period from August 2013 to November 2013. The diversity of diagnoses was as follows: 3 cases of pleomorphic adenomas of the parotid, 4 cases of Warthin's tumour.

Methods. The stated number of procedures were performed with a support of intraoperative neuromonitoring technique NIM- Neuro 3.0. The NIM nerve monitoring systems monitor electromyographic (EMG) activity from multiple muscles during a surgical procedure. NIM nerve monitoring needle or surface electrodes are placed in the appropriate muscle locations in the patient for the procedure being performed. The information of the according anatomical structures was displayed as electromyogram and specific audio signal at NIM nerve monitoring system screen.

Results. Despite the fact, that the intraoperative neuromonitoring is quite a routine method, it contributes to decrease in postoperative complications. The incidence rate of postoperative facial nerve paresis could be considered as zero. None case of Frey syndrome was revealed.

Conclusion. Overall, intraoperative neuromonitoring is an up-to-date method of treatment which helps to facilitate surgical procedures in maxillofacial region. It also indicates localization of the main trunk and branches of the facial nerve, thus permitting a surgeon to determine a dissection approach. Moreover, intraoperative neuromonitoring could be a paramount appliance for young, less experienced surgeons, providing distinct anatomy of nerves and vessels and accelerating the surgery.



P-185

RECONSTRUCTION OF POSTERIOR TONGUE DEFECT WITH SLIDING ANTERIOR HEMITONGUE FLAP

M. Acosta-Feria, JJ. Haro-Luna, A. Gomez-Poveda , S Garcia-Alvarez, B. Ramos Medina

Oral and Maxillofacial surgeon, Cartagena, Spain

Objective: Reconstruction of surgical defects arising after oncological resections, is one of the biggest challenges that oral and maxillofacial surgeons. For this we use local, regional or microvascular flaps, always trying to recover both anatomically and functionally treated structures. We present our experience in reconstruction of posterior defects of the tongue in patients with T1 and T2 squamous cell carcinomas using a sliding anterior hemitongue flap.

Methods: A 31 year old woman with squamous cell carcinoma in the left border T2N0M0 and 54 year old man with squamous cell carcinoma T2N0M0 in the right border, situated both in the posterior third of the tongue , with two months of evolution. Was performed in both cases the tumour excision with 1,5 cm margin of normal tissue and ipsilateral elective neck dissection, and posterior reconstruction of the surgical defect using a sliding anterior hemitongue flap.

Results: Both patients recovered without complications after surgery. There was no flap necrosis. During the first 5 months in both cases there was a deviation of the tongue towards the operated side and altered sensation in the reconstructed area, who recovered from completely. There was virtually no change in speech and swallowing mechanism in both patients.

Conclusions: The sliding anterior hemitongue flap is a good flap for reconstruction of defects of the posterior third of tongue squamous cell carcinomas in patients with T1 and T2. It is easy to perform, safe and allows functions of swallowing and phonation not be jeopardized after cancer treatment for our patients.

**P-186****FACIAL SKIN BASAL CELL CARCINOMA - SURGICAL ASPECTS**

A.W. Eckert, W. Reich, K. Scheller

Department of Oral and Maxillifacial Plastic Surgery, Martin-Luther-University Halle-Wittenberg, Halle (Saale), Germany

Basal cell carcinoma is the most frequent human malignancy. Surgical therapy is the common gold standard. The inhibitor of Hedgehog signaling pathway Vismodegib [Erivedge®] has recently been approved also in Germany. Therefore, the classic surgical therapy is controversially discussed.

Based on the clinical courses of more than 7 centuries we evaluated the recurrence rates in facial skin basal cell carcinomas. We included more than 1800 primary basal cell carcinomas divide into three different studies. We analysed the risk to develop a recurrence as a function of tumour size, histological subtype and R-status.

The recurrence rate of all primary basal cell carcinomas was 4%. The predisposing factors for developing a recurrence were tumour localization, tumour size and histological subtype, respectively. Significant more recurrences were observed in tumour diameters more than 14 mm. On the other hand, also histological subtype had an influence. Solid forms showed a recurrence of only 1.9%, whereas sclerodermiformic basal cell carcinoma and metatypic subtype had an increased risk of 4.3% and 7.4%.

As a consequence, more than 97% of all primary basal cell carcinoma can be treated by surgical removal without any recurrence. The following safety distances for successful surgical resection should be considered: 5 mm to remove solid types and 10 mm for surgical removal of sclerodermiformic/metatypic basal cell carcinoma, large or recurrent tumours.

We recommend the surgical removal of basal cell carcinoma and direct closure of the defect instead of the more cost-effective micrographic surgery. Vismodegib [Erivedge®] is a non-surgical alternative in order to decrease the morbidity and should be preferred in basal cell carcinomas to progress into locally invasive or resistant disease.

**P-199****PROGNOSTIC SIGNIFICANCE OF EGFR-EXPRESSION IN ORAL SQUAMOUS CELL CARCINOMA**

A.W. Eckert, K.Dauter, M. Schwabe, M. Kappler

Department of Oral and Maxillifacial Plastic Surgery, Martin-Luther-University Halle-Wittenberg, Halle (Saale), Germany

Oral Squamous Cell Carcinoma [OSCC] is among the ten most frequent human malignancies worldwide. Despite some progress in diagnosis and treatment the 5-year-overall-survival stagnates up to only 40-55%. The aim of the present investigation was to evaluate the expression of Epithelial Growth Factor Receptor [EGFR] in OSCC.

A total of 45 patients suffering from an OSCC were included in a pilot study. Immunohistochemical staining for EGFR were performed at paraffin samples in accordance to manufacture's protocol. All samples were evaluated light-microscopically by two independent investigators and collected to an immunoreactive score (IRS, 0-2 negative, 3-4 weak, 6-8 moderate and 9-12 strong). The staining intensities were correlated to the clinical courses (data bank SPSS 20). The Cox's regression hazard model was used to estimate a correlation between EGFR overexpression and the overall survival of OSCC patients. The model was adjusted for the prognostic effects of covariates (tumour stage and tumour grade). A probability (p) of <0.05 was defined as significant and the relative risk (RR) was calculated.

There were 24 men and 11 women with an OSCC. The membranous and cytoplasmatic EGFR-expression was evaluated. Patients, whose tumours showed a cytoplasmatic overexpression of EGFR had a 3.0-fold increased risk of tumour-related death (Cox-regression-hazard model, $RR=3.0$, $p=0.031$). On the other hand, the membranous EGFR-expression had only limited effect on prognosis: Patients with a membranous EGFR-overexpression showed an only 1.5-fold increased risk of tumour-related death (Cox-regression-hazard model, $RR=1.5$, $p=0.31$).

In this study, we found by Cox's regression analysis that increased cytoplasmatic EGFR level are independent negative prognostic markers for overall survival in OSCC patients. Moreover, this analysis depicts the prognostic impact of cytoplasmatic EGFR in OSCC. Cytoplasmatic EGFR plays a pivotal role in tumour progression due to its influence on proliferation and limited radioresistance. Altogether, cytoplasmatic EGFR-status should complete diagnostic regime at the beginning.

**P-205****RESULTS OF THE TREATMENT OF BASAL CELL CARCINOMA OF THE HEAD AND NECK IN LATVIAN ONCOLOGICAL CENTER.**

E. Kornevs¹, J. Tars², G. Lauskis¹, A. Kazanceva², K. Pastars², B. Paulina², A. Krastina²

¹ *Department of Oral and Maxillofacial Surgery Riga Stradins University*

² *Riga East University Hospital, Department of Head and Neck Surgery*

Objective. BCC is often observed in head and neck areas, especially the eyelid and nose. BCC differs from squamous cell carcinoma and mostly is defined as locally invasive, slowly spreading tumour which rarely metastasizes. Despite this some cutaneous basal cell carcinomas have a significant potential to recur, disfigure and metastasize. To achieve a favourable outcome, it is important to identify the anatomic locations that can increase the risk of spread, recognize the histological subtypes, other factors which could indicate the higher risk for recurrence and depending on it select the most effective modality of the treatment.

Methods. A review of 617 patients who were diagnosed BCC in Latvian Oncological Center of Riga East University Hospital from 2006 to 2010 was undertaken, to analyse the epidemiological data, to compare the results of surgical treatment and evaluate long term follow –up. Based on the histological type of lesion, its size and location, patient age, medical condition of the patient, treatment availability, the surgical excisions were performed with various types of reconstructions using local flaps (in 437 cases), full or partial thickness skin grafts (in 84 cases) and microsurgical reconstruction (in 7 cases) or without primary close of the defect (89 cases).

Results. Recurrences after 3 year follow – up were observed in 34 patients (5,5%). Most frequently recurrences appeared after treatment of BCC of the nose (20 cases – 12,9%), followed by medial canthal region (4 cases – 10,8%). Recurrences appeared also after excisions of BCC of lower lid (3 cases – 7,6%), the ear (5 cases -8,9%), forehead (1 – 1,7%) and the cheek (1 – 1,3%). According to hystological type recurrences were observed in 10,6% cases of infiltrating type, in 11,9% cases of superficial type, in 14,2% cases of morpheaform BCC.

Conclusions. Histologic subtype, location of the tumour and size of tumour are factors which place patients at risk for persistent or recurrent carcinoma.

**P-207****PRIMARY DIFFUSE MALIGNANT B CELL LYMPHOMA OF THE SUBMANDIBULAR SALIVARY GLAND IN 84 YEARS OLD WOMEN-CASE REPORT**

A.Benedetti¹, V.Popovski¹, D.Popovich Monevska¹, A.Kirkov¹, G.Panchevski¹, S.Bozovic¹, A.Iliev¹, P.Serafimovski¹, S.Banev²

¹ *University Clinic for Maxillofacial Surgery Skopje, Macedonia*

² *Biposija private institution*

Lymphoma of the salivary gland accounts for 5% of cases of extra nodal lymphoma and historically, they comprise 1.7% to 3.1% of malignant salivary gland tumours. Most primary salivary gland lymphomas are non-Hodgkin's B marginal zone lymphomas arising on a background of sialadenitis associated with autoimmune disorders such as Sjorgen's syndrome. Primary B cell lymphomas of the major salivary glands are uncommon.

A 84year-old woman sought medical attention for a large submandibular mass with right position late February 2012 at the Clinic for Maxillofacial Surgery in Skopje. The painless mass had gradually increased in size over a period in excess of 3 month with unusual growth history. Physical examination, FNA biopsy and imaging modalities including CT revealed a left submandibular gland tumour with benign components on FNA biopsy. It was solitary, firm mass attached to the deeper submandibular structures but painless. The overlying skin was with inflammation in appearance. The tumour was subsequently excised for biopsy under general anaesthesia along with total extirpation of the salivary submandibular gland with preservation of nearby bone structures. One week post-operatively patient recover fully. The definitive diagnosis was made histopathologically and microscopically with immunotyping and it was diffuse large B cell malignant lymphoma. Microscopically analysis show a heterogenic population with predominant large lymphocytes with mitosis and infiltration of tumour and destruction of minor salivary glands. Immunotyping show positive CD20, CD79a and CD57 in some cells.

**P-250****AMELOBLASTIC CARCINOMA: REPORT OF A NEW CASE IN THE NASO-ORBITAL AREA**

K. Sagüillo¹, G. García-Serrano¹, D. Villegas¹, P. De Leyva¹, F. Pérez-Flecha¹, I. Page¹, F. Almeida¹, R. Carrillo², J. Acero¹

¹ *Oral and Maxillofacial Surgery Department, Ramón y Cajal University Hospital, Madrid, Spain*

² *Histopathology department, Ramón y Cajal University Hospital, Madrid, Spain*

AIM: Ameloblastic carcinoma is a rare odontogenic malignant tumour. It combines morphologic features of ameloblastoma and carcinoma, regardless of the presence or absence of metastasis. The ameloblastic carcinoma may arise as either a primary malignant ameloblastoma which is not preceded by an ordinary ameloblastoma (de novo carcinoma) or as a result of malignant change in a pre-existing benign ameloblastoma (carcinoma ex ameloblastoma). Histology demonstrates cytological malignancy with hypercellularity, hyperchromatic nuclei, cellular and nuclear pleomorphism, increased mitotic figures, focal areas of necrosis and vascular and perineural invasion. A combination of these features and immunohistochemical analysis should be used to diagnose ameloblastic carcinoma.

MATERIAL AND METHODS: A 70 year old man presented a lesion in the left naso-orbital area compatible clinically and histopathology with an aggressive basocellular carcinoma. Extensive surgical resection was carried out including left orbital exenteration and resection of the left naso-ethmoidal area. The defect was reconstructed with a temporal flap.

RESULTS: The patient did not present complications during the treatment. Definitive histopathology showed ameloblastic carcinoma with a probably nasal origin. It was managed with postoperative radiation therapy. After 2 years of follow-up our, the patient continues to remain free of local, regional or distant metastatic disease.

DISCUSSION AND CONCLUSIONS: Ameloblastic carcinoma is a rare disease and its incidence has been reported as 1-3%. The clinical symptoms of ameloblastic carcinoma are variable, such as rapid growth of mass, cortex perforation, pain and paresthesia. Radical surgery with wide surgical margins is the treatment of choice for these lesions; some cases are managed with postoperative radiation therapy and rarely chemotherapy for primary disease. Differential diagnosis of ameloblastoma and ameloblastic carcinoma is controversial. Therefore, the findings of hypercellularity, hyperchromatic nuclei, cellular and nuclear pleomorphism, increased mitotic figures, focal areas of necrosis, vascular and perineural invasion, and immunohistochemical analysis for p53 and Ki-67 might be the key to differentiate the two.

**P-259****PERCUTANEOUS ENDOSCOPIC GASTOSTOMY (PEG) USAGE AND THEIR COMPLICATIONS IN HEAD AND NECK ONCOLOGY PATIENTS**

G. A. Ghaly¹, C. Eaton², Eva Muñoz Aguilera³, P. J. Ameerally²

¹ *Oral and Maxillofacial Surgery, Oxford Deanery, Oxford, United Kingdom*

² *Oral and Maxillofacial Surgery, Northampton General Hospital, Northampton, United Kingdom*

³ *Oral and Maxillofacial Surgery, Kettering General Hospital, Kettering, United Kingdom*

Objectives

Using Percutaneous Endoscopic Gastostomy (PEG) in feeding Head and Neck Oncology patients is practiced in many centres. We aim to identify indications, length of PEG usage or not being used despite its placement and complications of PEG tubes insertion. We looked into other alternative to PEGs and whether a non-surgical alternative would have provided same nutrition support based on duration of usage.

Methods

Retrospective study of head and neck oncology patients who had a PEG inserted at two hospitals in the UK between October 2011 and October 2013. Data collected on patient's age, tumour site, stage of tumour, grade of the person inserting the PEG, type of surgery undertaken, length of PEG tube usage, length of PEG tube in situ and PEG insertion complications.

Results

160 patients were identified and first stage of our study included case notes for 36 of them. Mean age 57.6 years. Tongue malignancy was the most common (47%) and most common tumour stage was T2 N0 M0 (21%). Mean time for a PEG being in-situ 196.87 days (84 – 392). Mean length of time a PEG not used 78.16 days. PEG complications post-operative pain and discomfort, skin infection (14%) and one patient (3%) had leakage leading to death from abdominal complications. Usage of a naso-gastric tube for feeding patients is usually acceptable for two weeks duration. Nearly one third of the patients who had a PEG tube inserted used it in feeding for less than two weeks.

Conclusion

Complications of PEG tube insertion can be serious and life threatening in some cases. Almost one third of head and neck oncology patients in our study could have had their nutrition needs met by a naso-gastric tube. PEG insertion remains useful in supporting nutritional needs for head and neck oncology patients but should only be performed when a need is certain and its usage is likely to exceed three weeks duration.



P-285

MAXILLARY RECONSTRUCTION WITH NASOLABIAL FLAPS –OUR EXPERIENCE

G. Mihalache, S. Bhatia

Oral and Maxillofacial Surgery, Shrewsbury and Telford Hospitals NHS Trust, Shrewsbury, United Kingdom

Objective

There are various surgical options for reconstruction of intraoral defects following resection of maxillary SCC. Options are limited when the general condition of the patient is altered. In this cases a useful option and simple alternative to pedicled and free flaps is the nasolabial flap, which can cover small, medium and even large maxillary defects.

Methods

We presenting a patient diagnosed with maxillary SCC and multiple comorbidities which had a medium to large defect from tumour ablation and reconstruction with bilateral nasolabial flaps.

Results

Maxilla closure was remarkable with patient recovery of speech and swallowing. Good functional result with social integration of the patient. Unfortunately patient passed away from distant metastasis.

Conclusions

The nasolabial flap is a viable and valuable alternative for reconstruction of various maxillary defects, even larger, regarding patients with many comorbidities.

**P-291****SOFT ODONTOME OF THE MAXILLARY INCISIVE REGION- CASE REPORT.**

K. Marszał¹, M. Zaleska¹, M. Hejnold², D. Adamek²

¹ *Department of Oral Surgery, Jagiellonian University Medical College, Krakow, Poland*

² *Chair of Pathomorphology, Jagiellonian University Medical College, Krakow, Poland*

AIM:

This study demonstrates a case of soft odontome of the maxillary incisive region in a 7-year-old male.

MATERIAL:

Physical examination of the child, qualified for orthodontic treatment, revealed a painless tumour with blurred boundaries, located in periapical palatal region of teeth 11 and 21. Pulp vitality of the upper incisors was normal. In addition, child had teeth crowding of both dental arches with divergent diastema. Orthopantomogram (OPG) did not elucidate the cause of elevation. CBCT scan (cone beam computed tomography) revealed a regular, oval 6 x 8mm lesion, causing loss of alveolar bone structure of palatal tooth 21. One calcified "odontoid" structure, 2 x 3mm in size, was visible inside the lesion. Under local anaesthesia, cutting through the gingival pocket of the tooth 21 from the palatal midline and avoiding the incisive papilla allowed the formation of a mucoperiosteal flap . When mobilized, a soft cystic formation was visualized. After enucleation the wound was sutured.

RESULTS:

Histopathological examination found a few minor "microodontoids" present in the wall of cystic structures; diagnosed as composite odontome. Due to cohesiveness it was classified as a soft odontome.

CONCLUSION:

As in the case described, thorough physical examination and diagnostic imaging often allows to diagnose an early stage of odontome development. Removing it at this stage does not lead to malocclusion and eventual loss of pulp vitality of adjacent teeth. The high value of CBCT imaging should also be pointed out, which allows to accurately determine the location of a lesion and to design a surgical approach.



P-300

CAUSE OF DEATH IN PATIENTS AFTER MAJOR HEAD AND NECK SURGERY

M. Shahla, D.Dequanter, C.Aubert, Y.Deniz, P.Lothaire

CHU Charleroi, Montigny le tilleul, Belgium

Objective: The goal of this study was to analyse the mortality date following major head and neck surgery and determine the risk factors.

Methods: The hospital mortality records were analysed from 138 patients who underwent major head and neck surgery. A case control study analysed risk factors of death during the first 3 postoperative days. Overall Adult Comorbidity Evaluation (ACE 27) severity score was calculated. The predictive value of the American Society of Anesthesiologists(ASA) classification was investigated.

Results: The mortality incidence were 1,4 % and 5,7 % respectively during the first 3 and the first 30 postoperative days. They were more likely to be alcoholic with liver cirrhosis. Sudden death which mechanisms remains unclear occurred mostly during the first 3 postoperative days. In the most of the patients who died after the third postoperative day, death was related to a postoperative complication.

Conclusions: Careful follow-up of these patients during the early postoperative days should be performed to reduce the mortality risk by shortening the delay of care.

**P-302****INTRACRANIAL TRIGEMINAL SCHWANNOMA INVOLVING PTERYGOPALATINE FOSSA AND ORBIT**

F. Pérez-Flecha, D.García-Serrano, P. de Leyva, D. Villegas, K. Sagüillo, I. Page, M. Picón, F. Almeida, J. Nuñez, J. Acero

Maxilofacial and Oral Surgery, Hospital Universitario Ramón y Cajal, MADRID, Spain

INTRODUCTION

Schwannomas are the most common types of benign nerve sheath tumours arising from the Schwann cells. They account 8 to 10% of all intracranial tumours and most originate at the vestibular root of VIII cranial nerve. Schwannomas arising from the peripheral distal branches of the Trigeminal Nerve with extracranial invasion to the Pterygopalatine Fossa and Orbit are extremely rare. Magnetic resonance (MR) imaging allows the preoperative knowledge of the location and extension pattern of Trigeminal Schwannoma for its complete and safe removal.

METHODS

We report a case surgically treated in our service with paucity symptoms for a long time as facial pain, hyposthesia of the second division of V PC and ocular proptosis.

Computed tomographic and magnetic resonance imaging scans demonstrated a dumbbell-shaped hypodense mass extending into the Pterygopalatine Fossa and Orbit from the middle temporal fossa via the foramen rotundum.

The tumour was totally removed following a temporal craniotomy combined with an orbitozygomatic lateral osteotomy to approach the infratemporal fossa and orbital cavity and reconstruction of the orbit floor.

CONCLUSION

Intracranial trigeminal schwannomas involving the Pterygopalatine fossa and Orbit are uncommon entities that usually do not become clinically evident during a long time. The malignant degeneration or the association of Trigeminal schwannomas with neurofibromatosis has been considered to be rare.

The tumour require surgical excision and the choice of craniofacial approach represents the main therapeutic difficult for its complete removal. In the case reported, we performed a lateral preauricular temporal craniotomy with the section of the coronoid process at its base, and elevating upward the temporal muscle to approach the intracranial cavity and the infratemporal fossa allowing the complete removal of the tumour.

**P-328****BENIGN TUMOUR RESECTION IN ACCESSORY PAROTID GLAND WITH ENDOSCOPIC ASSISTANCE**

X Wang, B Li, L Zhang, GF Shen

Dept Oral and Craniomaxillofacial Science, Ninth People's Hospital, Shanghai, China

Objectives: The most common conventional approach for resection of benign tumour in accessory parotid gland is performed via modified standard parotidectomy incision or face lift incision. The scars left by these incisions may severely affect post-operative aesthetics. Endoscope-assisted approach offers a more aesthetic technique and has been previously reported. However, it still may leave a visible pre-auricular scar which reaches the length of 4-5 cm. This study aimed to demonstrate the feasibility of an update endoscope-assisted approach for benign tumour resection in accessory parotid gland, which was undertaken with shorter incisions and resulted in satisfying post-operative aesthetics.

Methods: From November 2011 to March 2013, 7 patients with benign tumour in the accessory parotid glands were selected into this clinical study. The endoscope-assisted accessory parotid gland neoplasm resections were performed on 6 of them, the patient left chose the conventional surgical approach on her own will.

Results: All the endoscope assisted resections were successfully accomplished. The average operative time was 112.5 min (range 90-130 min). The post-operative scars were concealed and aesthetically satisfactory. Facial paralysis, salivary fistula, and recurrence were not found in the short-term follow-up periods.

Conclusions: Endoscope-assisted surgical resection can completely accomplish the remove of benign tumours in the accessory parotid gland and obtain better aesthetic results. Our update endoscopic approach could be successfully undertaken with shorter and more concealed incisions, which could be kept in mind as a valuable alternative.

**P-329****EVALUATION OF MANDIBULAR OSTEOSARCOMA AT NANOSTRUCTURE LEVEL**

M.B. Khidr¹, M.R. Tolba², Hamdy A. Marzook³

¹*Oral and Maxillofacial Surgery, Fayoum University, Egypt*

²*Dept of Zoology, Faculty of Science, Zagazig University, Egypt*

³*Oral and Maxillofacial Surgery, Al-Mansoura University, Egypt*

Objective: The first choice as therapeutic modality for most oral and maxillofacial cancer is Surgery. Mandibular osteosarcoma is associated with significant rates of recurrence so, early detection and radical surgical excision of such cases at an earlier stage is crucial. Images play an important role in Surgery, it mostly the guide line for most oral and maxillofacial cancer. The advances of the medical and biological sciences over recent years, and the growing importance of determining the relationships between structure and function, have made imaging an increasingly important discipline. The tremendous development of digital technology has made images an essential part from nanotechnology to astronomy. The current study was performed to assess the potential of using image processing and numerical analysis as a technique to clarify the local occult extension of mandibular osteosarcoma in order to surgically eradicate such cases.

Methods: 12 cases with mandibular osteosarcoma (7 males and 5 females with age ranged between 19 and 54) were included in this study.

Results: Results of all patients were uneventful.

Conclusions: The authors concluded that numerical analysis and digital image processing techniques at nanostructure level is crucial both for an early diagnosis of mandibular osteosarcoma and for accurate planning of the extent of surgery.

**P-336****INTEGRATED APPROACH TO VENOUS MALFORMATIONS OF THE HEAD AND NECK**

G. Colletti, F. Allevi, F. Melchiorre, L. Moneghini, F. Biglioli, G. Vercellio, J. Flore, G. Barbera, A. Frigerio, J. F. Grimmer

University of Milan, Milan, Italy

Objective

Venous Malformations (MVs) are the most commonly encountered vascular malformation of the cervico-facial region. Despite the fact that a significant body in the literature exists regarding their classification and nomenclature, VMs are still frequently wrongly named (more often they are called cavernous haemangiomas). Their clinical spectrum is extremely variable as they can present as single lesions (often well confined within muscle fasciae) to huge infiltrating ones. At times they can be part of a syndrome as it happens with Bean Syndrome or in Cutaneous Mucosal Venous Malformation Syndrome, among other. The objective of the present work is to discuss the best available literature and the personal experience of the Authors with 32 consecutive cases. The indications for treatment and a multidisciplinary step-ladder protocol is proposed to successfully manage cervicofacial VMs.

Methods

A review of the pertinent literature was performed to provide the common indications and techniques to treat head and neck VMs. 32 consecutive cases of VMs have been treated by the Authors by means of endovascular sclerotherapy with Sodium Tetradecyl Sulphate (STS), surgery, or both. Only patients with intraosseous VMs (8 total) were treated by surgery alone. Three large, unresectable cervicofacial VMs were treated by means of "the strangling technique".

Results

Good to very good aesthetic and functional results were obtained in all 32 patients. All 24 patients who underwent sclerotherapy experienced significant swelling. 4 cases of skin or mucosal ulcerations were noted. No damage to the facial nerve was observed. 5 patients affected by larger VMs showed partial recanalization/recurrence of the malformation.

Conclusions

Cervicofacial VMs have to be managed by an experienced, multidisciplinary team. A protocol with increasing invasiveness is proposed to maximize results after their treatment.



P-339

EXPERIENCE OF TREATMENT OF EMBRYONAL RHABDOMYOSARCOMA IN PATIENT WITH DIASTROPHIC DYSPLASIA OF CONNECTIVE TISSUE.

D. Komelyagin¹, E. Olchova¹, S. Dubin¹, A. Petuchov¹, D. Romanov¹, F. Vladimirov¹, S. Gorbatic², M. Livshits³, E. Andreeva², A. Shakhin¹

¹ Maxillofacial surgery, Pediatric st. Vladimir hospital, Moscow, Russian Federation

² Gematology and oncology, Morozovskaya children Hospital, Moscow, Russian Federation

³ Pediatric maxillofacial surgery, The first Moscow state medical University named after I.M.Sechenov, Moscow, Russian Federation

Objectives: we represent a case of high technology application in treatment of embryonal rhabdomyosarcoma in patient with diastrophic dysplasia of connective tissue.

Material and methods: patient with embryonal rhabdomyosarcoma of mandible (T3bN1M0), which germinated to sphenopalatina, subtemporalis areas, middle skull fossa underwent treatment at st. Vladimir Hospital. This patient underwent 9 courses of chemotherapy: Iphosfamide (3000 mg/m²), Doxorubicin (3000 mg/m²), Vincristine (1,0 mg), Cosmegen (2 mg/m²), Actinomycin D (0,7 mg); 1 course of radiotherapy (50 Gr). Size of tumour decreased from 91 to 9 cm³. Skull model of ABS-plastic was made on 3D-printer BFB-3000 for surgery planning. Half resection of mandible was performed with replacement of defect by individual titanium prosthesis with joint fossa made of hirulen. Divergence of sutures in the oral cavity with baring of mandibular prosthesis from outside and with inflammation around prosthesis occurred by 7th day after surgery due to tissue tension. Inflammation has been stopped by applying Meropenem, Vancomycin, Cefotaxime, local antiseptics. Than revision of prosthesis with covering it by local tissue was performed. However, re-divergence of suture in oral cavity with defect 2x1 cm and 3 cm of depth occurred again (prosthesis was the bottom of defect). Daily wound lavage by antiseptics with putting of iodoform tampon in wound carried out. Every 2-3 days wound was filled with platelet rich blood plasma made in centrifuge EBA-20 for 2 weeks. After appearance of granulation we daily put Alvogyl in the wound, which has healed in 1 month. In 6 month after surgery CT and scintigraphy have shown no signs of tumour.

Results: result of treatment is complete cure of tumour with the replacement of defect by individual titanium prosthesis with joint fossa. Intensive general and local therapy of postoperative complication has helped save the prosthesis, avoid aesthetic deformations, save mandible function and ensure social adaptation of patient.

Conclusion: application of modern materials and technologies, methods of diagnostic and treatment have helped to cure and rehabilitate the patient with embryonal rhabdomyosarcoma of mandible and to reach optimal functional and aesthetic results in short time.



P-356

ODONTOAMELOBLASTOMA: A CASE REPORT AND LITERATURE REVIEW

N.Pattni, R.Orr, P.Doyle

Oral and Maxillofacial Surgery, Chesterfield Royal Hospital, Chesterfield, United Kingdom

The odontoameloblastoma is an extremely rare odontogenic neoplasm that combines features of an ameloblastoma and odontome. Sporadic case reports are the only source of information for this tumour, with only 19 cases reported to date that fulfil the WHO histological criteria. The development of carcinomatous change in pleomorphic adenoma is uncommon and change to adenoid cystic carcinoma is extremely rare with only a few cases with sufficient details reported. We describe a unique case of a patient with odontoameloblastoma of the maxilla and synchronous adenoid cystic carcinoma ex pleomorphic adenoma of the submandibular gland. The literature is reviewed with regards to the clinical features, diagnosis and management of these separate clinical entities.



P-367

UPPER EYELID METASTASIS: AN UNUSUAL PRESENTATION OF BREAST-CARCINOMA. REPORT OF A CASE AND REVIEW OF THE LITERATURE

N. Roknic¹, M. Klein¹, C. Hallermann², K. Wermker¹

¹ *Cranio-Maxillofacial Surgery, Head and Neck Cancer Centre, Fachklinik Hornheide, Muenster, Germany*

² *Dermatology and Histopathology, Skin Cancer Centre, Fachklinik Hornheide, Muenster, Germany*

We present a case of a 72 year old caucasian female who was referred to our clinic with histological confirmed metastasis of a breast-adenocarcinoma metastasis to the left upper eyelid and to the left ear and periauricular region. Fourteen years ago the patient was suffering from a lobular breast carcinoma (pT1c pN0 cM0, G1, ER pos., Her2 neg).

Surgical treatment consisted of nearly total upper eyelid resection and extended resection of the auricle, followed by reconstruction of the upper eyelid using the Cutler-Beard-technique and application of an implant-borne ear epithesis / prosthesis.

Adenocarcinoma of the breast is the second common diagnosed cancer in females. Typical dissemination is into the locoregional lymph nodes, especially into the axilla and along the A. thoracica interna. A haematogenous spread is often seen in lung, bones, liver and brain ; but distant metastases may spread to almost any region of the body.

A systematic review of the literature resulted that in general a metastatic involvement of the eyelids in cancer is rarely diagnosed. Breast cancer seems to account for the majority of these rare cases.



P-374

LYMPH NODE METASTASIS IN CUTANEOUS SQUAMOUS CELL CARCINOMA (CSCC) OF THE EXTERNAL EAR : A PREDICTIVE RISK SCORE

K. Wermker¹, J. Kluwig¹, S. Schipmann², M. Klein¹, H-J. Schulze³, C. Hallermann³

¹ *Cranio-Maxillofacial Surger, Head and Neck Cancer Centre, Fachklinik Hornheide, Muenster, Germany*

² *Neurosurgery, University Hospital Muenster, Muenster, Germany*

³ *Dermatology and Histopathology, Skin Cancer Centre, Fachklinik Hornheide, Muenster, Germany*

Aims : In cutaneous squamous cell carcinoma (cSCC) of the ear occurrence of lymph node metastasis (LNM) is more frequent than in other head and neck cSCC's. Nodal dissemination is associated with a significantly worse prognosis concerning disease specific survival (DSS). The aim of this study was to establish a prediction model for LNM in ear cSCC.

Material and Methods : Tumour characteristics of 353 patients with ear cSCC were analysed to assess differences between LNM-group and controls and to calculate a prediction score.

Results : In 10.5 % regional LNM occurred. 5-year DSS survival was significantly decreased to 59% in LNM compared to 99% in patients without LNM ($p < 0.001$). Recurrence number, invasion of cartilage, tumour depth and grading were extracted as most important predictors for LNM with correct prediction of LNM in 94.0 %. Our prediction score stratified patients into high and low risk groups precisely ($p < 0.001$) with a sensitivity of 89.2%, a specificity of 94.6% and an overall accuracy of 94.1%.

Conclusion : Our new prediction model was able to identify patients with high risk of LNM in ear cancer precisely and reliable to augment clinical decision concerning elective lymph node surgery.

**P-375****PREDICTION MODEL OF RISK FOR LYMPH NODE METASTASIS IN LIP CANCER AND CLINICAL IMPLICATIONS**

K. Wermker¹, F. Belok¹, S. Schipmann², M. Klein¹, H-J. Schulze³, C. Hallermann³

¹ *Cranio-Maxillofacial Surgery, Head and Neck Cancer Centre, Fachklinik Hornheide, Muenster, Germany*

² *Neurosurgery, University Hospital Muenster, Muenster, Germany*

³ *Dermatology and Histopathology, Skin Cancer Centre, Fachklinik Hornheide, Muenster, Germany*

Background : In patients with squamous cell carcinoma (SCC) of the lip occurrence of lymph node metastasis (LNM) is more frequent than in other cutaneous head and neck SCC's. Prognostic factors and need for prophylactic neck dissection are discussed controversially. The aim of this study was to identify predictive factors for LNM in SCC of the lip and to establish a prediction model identifying patients at high LNM risk.

Materials and Methods : Tumour characteristics of 326 patients with lip SCC were analysed retrospectively to assess differences between LNM-group and controls. Using binary logistic regression analysis (BLR) a prediction model for LNM was calculated.

Results : In 26 (8 %) patients locoregional LNM occurred. Significant differences were found concerning various parameters. BLR revealed extent of the tumour, tumour depth and grading as most important factors with correct prediction of LNM in 93.9 % of all cases. An easy prediction model taking tumour depth and grading into account stratified patients into high and low risk collectives, showing excellent distinction between both groups (Odds Ratio 43.4 , $p < 0.001$).

Conclusions : Our new prediction model was able to identify patients with high risk of LNM in lip cancer precisely and more reliable than stratification according to TNM-oder AJCC- stage. This enables an algorithm easy to apply for the use of elective and selective lymph node dissection in SCC of the lip.



P-380

FIRST RECORDED CASE OF PROGRESSION OF BIZARRE PAROSTEAL OSTEOCHONDROMATOUS PROLIFERATION (BPOP) TO SARCOMA

N.Vig, E.Tiong, N.Berridge, M.Kumar

Dept of Maxillofacial Surgery, NWLH NHS Trust, London, United Kingdom

Introduction

Bizarre parosteal osteochondromatous proliferation (BPOP) is a rare benign lesion that tends to occur within the bones of the hands and feet. Described first in 1983, only 3 cases have been reported in the head and neck region. It can be confused with other bony lesions, and has a high rate (up to 50%) of recurrence when resected. Aetiology is unclear and diagnosis is made on specific radiological and histopathological features. No reported cases have given rise to malignancy.

Results and Discussion

We describe a complete case history, with photographs and radiography, of one of the 3 patients diagnosed with BPOP of the head-neck region. In 2007, a 31-year old male presented with an eight-month history of an asymptomatic, slow growing lump on the right zygoma. A diagnosis of BPOP was made following CT and biopsy. He was monitored and, in 2010, CT revealed extension of the tumour into the temporal fossa, masseter and lateral wall of the orbit. A moderate resection was performed and he was stable until follow-up in 2012 when recurrence was suspected. A more complete resection was performed in 2013, followed by reconstruction of the zygomatic region with a polyetheretherketone (PEEK) implant.

However, despite the success of the surgery, histopathology confirmed the lesion to now be parosteal osteosarcoma, not the benign process previously seen.

Conclusions

This transformation has not yet been described in the literature. We further discuss management and the disease process involved, with the awareness that this may change the management of all BPOP cases in the future.



P-391

RECURRENCE OF AMELOBLASTOMA TREATED WITH CUSTOMIZED RECONSTRUCTION PLATE

Y. Aguilar-Lizarralde, F. Galeas-Anaya, C. Sanchez Navarro

ORAL AND MAXILLOFACIAL SURGERY, HOSPITAL REGIONAL UNIVERSITARIO CARLOS HAYA, Málaga, Spain

Objective: Description of a case of recurrent ameloblastoma affecting the right hemimandible in a patient 95 years old. The great size of the tumour produces pain and swelling. The treatment we proposed was performing a hemimandibulectomy including the condyle and reconstruction with a preformed reconstruction plate based on CTscan images.

Methods: patient 95 years old with giant ameloblastoma in the right mandible treated surgically and reconstructed with a plate performed.

Results: The plate and the fossa were adapted on the glenoid fossa and mandible directly without bending, so the time of surgery was reduced and the aesthetic result was acceptable. Regarding to the functional results, the patient has a mouth opening up 25 mm with mild deviation and pain has disappeared.

Conclusions: ameloblastomas are benign tumours but aggressive locally that must be treated as if they are malignant lesions because of recurrences can occur. The reconstruction with a customized plate based on CTscan images help us in surgical planning and save on surgical time. We consider the treatment of choice in patients that are not candidates for microsurgical procedures.



P-406

PATIENT SATISFACTION WITH ANAESTHETIC CARE DURING SURGICAL PROCEDURES FOR THE TREATMENT OF HEAD AND NECK SKIN CANCER

O. Aziz, L. Jamieson, R. Banks, J. Ryan, A. Burns, M. Kennedy, M. Nugent

Oral and Facial Surgery, Sunderland Royal Hospital, Sunderland, United Kingdom

Objective

Assessment of the satisfaction of patients undergoing procedures for treatment of head and neck skin cancers with Local anaesthetic (LA) or LA and intravenous (IV) sedation.

Method

This was a prospective audit. A validated patient satisfaction with anaesthesia survey was identified - the Iowa satisfaction with anaesthetic scale (ISAS). ISAS was developed in 1997 by Dexter *et al*. The questionnaire was made up of 11 statements using the original wording. Patients were asked to complete the questionnaire after completion of treatment in the cases which were managed with LA alone on the day of surgery. In cases managed with LA and IV sedation the survey was completed at the post-operative follow up appointment.

Results

Fifty patients completed the survey. Twenty six had LA alone, 24 LA and IV sedation.

No patients were dissatisfied with their analgesia. There was a greater percentage of totally satisfied patients in the LA and IV sedation group than in the LA alone group. (92% vs 85%).

Conclusions

Satisfaction levels are high in both groups. There is a statistically significant trend towards patients having IV sedation being more satisfied than patients who only had LA. In particular, patients treated with LA alone were less satisfied with pain control and were less inclined to have the same anaesthesia again than the LA and IV sedation patients. Our finding of high satisfaction levels is comparable with published surveys. Possibly room for improvement by identifying those patients with a greater degree of anxiety and guiding them towards sedation

**P-414****INTEGRATED APPROACH TO MANAGEMENT OF VENOUS MALFORMATIONS OF HEAD AND NECK**

A. A. Grishin, S. N. Smirnov, I. A. Mayskij, A. N. Kulikova

Department of Maxillofacial Surgery, Moscow State University of Medicine and Dentistry named after A. I. Evdokimov, Moscow, Russian Federation

Objective: Optimization of managing patients with venous malformations (VM) of head and neck using sclerotherapy, electrochemical lysis and laser obliteration methods.

Methods: 238 patients with VM of head and neck were treated since 2000 to 2013, which constitutes 67% of all patients with vascular malformations of this area. The age of patients ranged from 16 to 72 years. The diagnosis was established on the basis of clinical examination, ultrasonography and puncture results. The size and volume of VM was determined. All VM were divided into large (over 25 cm³), middle-sized (less than 20-25 cm³) and small (less than 1-2 cm³) according to their size. VM was treated with the use of different methods: sclerotherapy with 70% ethanol, with 3% Ethoxysclerol, including foam form, electrochemical lysis or laser obliteration. Electrochemical lysis was accomplished using ECU-300 (Soring) with the following parameters for each electrode: charge 100 coulomb, current strength 25-50 mA, voltage 6-14 V. Laser obliteration was performed using D15 Ceralis laser system with wavelength 0.98 µm, power 3,5 – 5 Wt.

Results: 149 patients with large and middle-sized VM were treated using sclerotherapy. The treatment was multistage, with 2 to 7 procedures necessary to gain satisfactory result including decrease of VM size and growth cessation. 42 patients were treated by electrochemical lysis. As a result, VM was replaced by fibro-modified tissue and good results were achieved. Laser obliteration was performed in 47 patients. The method was effective in small VM and allowed full VM elimination after 1 procedure with good cosmetic results.

Conclusions: Described methods of treating patients with VM of head and neck are minimally invasive and are not concerned with risk of intraoperative haemorrhage. Sclerotherapy continues to be the most effective method for managing large VM. Electrochemical lysis is the method of choice for treatment of large and middle-sized VM. Laser obliteration is the most effective method of treatment for small VM nowadays.



P-443

SURGICAL APPROACH TO THE METASTASIS OF THE PHYLLODES TUMOUR IN THE INFRATEMPORAL FOSSA- CASE REPORT

T. Dovsak, V. Didanovic

Maxillofacial Surgery Ljubljana, University Medical Center Ljubljana, Ljubljana, Slovenia

Objective: To present a case of a rare tumour metastasing to the infratemporal fossa together with diagnostic workup, treatment and outcome.

Method: A 49-year-old woman that was referred to our centre because of poorly localised toothache and swelling of her left palate. The patient's history revealed that she had a mastectomy two years ago because of a malignant phyllodes tumour of the breast. MRI revealed a tumour of 5 cm in diameter in her left infratemporal fossa extending to the level of the palate and without obvious signs of intracranial extension. Biopsy confirmed metastasis of phyllodes tumour in her left infratemporal fossa. Patient refused surgical treatment so she received 53 Gy to the region of the tumour but radiotherapy was unsuccessful. Tumour was then surgically removed via a preauricular approach with sectioning of the facial nerve, segmental mandibulectomy and maxillectomy. The defect was reconstructed with a latissimus dorsi myocutaneous free flap and the facial nerve was reconstructed with microsuturing the greater auricular nerve graft end-to-end to the facial nerve stumps.

Results: Patient is free of disease 30 months after the surgery, with a good function of the facial nerve- House- Brackmann score III.

Conclusion: Tumours of infratemporal fossa require an extensive approach which is usually tailored according to tumour extension. Preauricular transcondylar approach offers a good control of the tumour and with repair of facial nerve with microsutures we can expect a good return of facial nerve function.

**P-453****BILATERAL MANDIBULAR MESENCHYMAL TUMOUR AS THE FIRST MANIFESTATION OF GARDNER SYNDROME**

S. Arbel, R. Yahalom, G. Greenberg, M. Vered

1The Chaim Sheba Medical Centre, Tel Hashomer, Israel , Department Of Oral And Maxillofacial Surgery , Tel-Aviv, Israel

Objectives: The aim of this presentation is to describe a rare case of bilateral mandibular extra-abdominal desmoid fibromatosis (EADF), in a 16-year-old boy, which led to the diagnosis of Gardner syndrome; to describe the surgical treatment for this aggressive tumour, and to analyse the literature on bilateral EADF as a manifestation of Gardner syndrome.

Materials and methods: A 16-year old boy was evaluated for bilateral swelling at the angles of the mandible for unknown duration. Incisional biopsy revealed only connective tissue with rich vascular network. The patient was scheduled for routine follow up protocol. Four months postoperatively the patient presented with gigantic swellings at both mandibular angles.

Results: Computed tomography revealed bilateral subcortical lytic lesions which erode the bony cortex and invaded the periosteum. The clinical and radiological features were compatible with an aggressive tumour or even a malignant tumour. The treatment dilemma was whether to subject the patient to an immediate radical treatment by performing a resection or to follow a more conservative approach via peripheral resection until final diagnosis is made. Due to the patient's young age, and the need to minimize morbidity, to permit jaw function and to enable uninterrupted facial growth, we have decided to begin with a conservative approach. Under general anaesthesia peripheral resection was performed via the Risdon approach. Microscopically the lesion was diagnosed as a benign spindle cell mesenchymal tumour consistent with extra-abdominal fibromatosis. Genetic screening revealed a mutation in APC tumour suppressor gene which verified the diagnosis of Gardner syndrome.

Conclusion: Desmoid fibromatosis is a locally aggressive slow growing tumour, which most commonly develop intra-abdominally and may be the first manifestation of Gardner syndrome. This is the first case in the literature describing the presentation of bilateral mandibular extra-abdominal fibromatosis that led to the diagnosis of Gardner syndrome.



P-465

RECCURENT JUVENILE OSSIFYING FIBROMA WITH SECONDARY ANEURYSMAL BONE CYST

D. Hirjak, L. Czakó, B. Gális

Department of oral and maxilofacial surgery, Comenius University, Bratislava, Slovakia

We report the clinical course of a 15- year old girl with a large recurrent aggressive ossifying fibroma with secondary aneurysmal bone cyst. Surgical treatment was performed as radical partial resection of mandibular body with one-stage reconstruction using reconstruction plate. Histopathological examination revealed aggressive ossifying fibroma with secondary aneurysmal bone cyst and confirmed free borders. Despite of the radical primary surgery 10 months postoperatively we registered recurrence of the pathologic process in both bone stumps confirmed on CT scans. Aggressive growth, clinical symptoms and recurrence were the reason for the second radical surgery, left hemi-mandibulectomy with disarticulation of the left condyle. No recurrence has been noticed for 6 months

**P-511****LOWER LIP RECONSTRUCTION: A NOVEL TECHNIQUE WITH BILATERAL ADVANCEMENT FLAPS**

A. Kulyapina, J. Lopez de Atalaya, C. Ila, B. Leno Dasi, C. Navarro Cuéllar, C. Navarro Vila

Maxillofacial Surgery, Gregorio Marañón General University Hospital, Madrid, Spain

INTRODUCTION

The lips are among the most important organs that contribute for eating and speaking functions. Anatomical defects of the lower lip due to tissue loss can potentially cause serious problems for the patient when speaking, eating, and drinking. Primary closure is a commonly approved techniques for repairing one-third of the lower lip, defects larger than two-thirds of the lip are generally reconstructed using distant flaps or free flaps, defects between one-third and two-thirds of the lower lip are subject to be reconstructed with local flaps. The adequate planning of these local flaps is still challenging as functional reconstruction is sought. Oral competence, muscle function, lip sensation, and oral gape are the goals to be achieved for the execution of normal oral functions. We report a novel surgical technique for functional reconstruction of lower lip defects between 30 and 70 %.

SURGICAL TECHNIQUE

The patient, 53 year old man, presented basocelular carcinoma in the mentolabial crease. The patient was referred by dermatology department. Previously the patient underwent Mohs surgery: the deep surgical margin was affected and vermilion retraction due to scarring occurred. CT confirmed the absence of underlying mandibular bone affection. The widening of positive surgical margin with local flap reconstruction was performed. Rhomboid excision was performed allowing either excision of deep positive surgical margin or release of vermilion retraction. Bilateral neuromuscular advancement triangular flaps were raised following the natural mental skin creases in order to reconstruct the defect.

RESULTS

The patient had acceptable functional and aesthetic result and healed without complication. Clear surgical margins were achieved.

CONCLUSIONS

Bilateral neuromuscular advancement flaps in combination with rhomboid excision provides good functional and aesthetic results. The flap preserves the integrities of the depressor muscle and mental nerve and follows natural mental skin crease, which results in practically invisible mentolabial scar. Therefore, this flap can be recommended for reconstruction of inferior lip defects between 30 and 70% of tissue loss. It is suitable for defects located in the mentolabial crease and for inferior lip retractions.

**P-543****INVASIVE CARCINOMA EX PLEOMORPHIC ADENOMA OF THE PAROTID GLAND. CASE REPORT OF AN INTRACRANIAL PROGRESSION**

L. Zamudio Sánchez, D. Pinos Galindo, J.L. Salinas Sánchez, A. J. Acosta Moyano, Y. Aguilar Lizarralde

Oral and Maxillofacial Surgery, Regional Hospital Carlos Haya, Malaga, Spain

Introduction: Carcinoma ex pleomorphic adenoma (Ca Ex PA) that is a carcinoma arising from a primary or recurrent benign pleomorphic adenoma constitutes nearly 3.6% of all salivary gland malignancies. Treatment for those tumours often involves an ablative surgical procedure which may or may not be followed by reconstructive surgery. The prognosis of Ca Ex PA depends on pathological staging parameters like the level of invasion, lymph node involvement, and local or distant metastasis.

Material and Methods: We report a case of a 67 years old female diagnosed of pleomorphic adenoma of the left parotid gland that was removed surgically 10 years ago. Subsequently, there were three recurrences. The first local recurrence was not treated because of the patient's own decision until five years after, when the patient came to our department with swallowing difficulty due to a big mass in the parapharyngeal space. The tumour was completely removed and two months later suffered a new recurrence with nodal metastasis. A new surgical approach was done. Immunohistochemically, the neoplastic cells were positive for S100, pancytokeratin and focally for smooth muscle actin. A diagnosis of myoepithelial carcinoma arising in a recurrent pleomorphic adenoma was given. Six months after adjuvant radiotherapy there was a new recurrence that involved the temporal fossa.

Discussion: According to recent publications there are different variants for Ca Ex PA with different grades of malignancy. Those of myoepithelial lineage are poorly documented, often associated with low-grade tumours and have a better prognosis than the others. Myoepithelial carcinoma is characterized nearly by exclusive myoepithelial differentiation and evidence of malignancy, usually in the form of infiltration of surrounding tissues. These tumours can recur and may also lead to nodal and/or distant metastases.

In our particular case, unlike that reported in the literature, the myoepithelial carcinoma has been behaving like a highly aggressive malignant tumour with an infiltrative behaviour not found described in the literature.

**P-544****OSSIFYING LIPOMA PRESENTING AS A SUBMANDIBULAR MASS: A RARE PRESENTATION**

M.S. García, B. Ramos, J.J. Haro, M. Acosta, A. Gomez

Oral and Maxillofacial Surgery, Santa Lucia University Hospital, Cartagena, Spain

Objective: Lipomas are the most common benign soft tissue tumours composed of only mature adipose cells without cellular atypia. However, other mesenchymal elements such as smooth muscle, fibrous, chondral or osseous tissue may occasionally be found in addition to adipocytes. Ossifying lipoma is an extremely rare histologic variant of lipoma that contains mature lamellar bone within the tumour and most of them are connected with bone. Ossifying lipoma independent of bone tissue has been reported in very few cases, only five cases of this rare type of lipoma presented as neck masses and only three in the submandibular area. Our objective is to present a new case of ossifying lipoma independent of bone in the submandibular area.

Methods: a 67 years old female was referred for evaluation of an asymptomatic mass in the right submandibular area. The mass has been slowly growing without causing pain, paresthesia or dysphagia. The physical exploration revealed a firm, non-tender and mobile mass in the left submandibular area, approximately 4 cm in its largest diameter with no changes in the overlying skin. The Contrast Enhanced Computerised Tomography demonstrated a 3.8 x 3.3 cm well-circumscribed mass in the IIa level with fatty capsule containing heterogeneous calcifications.

Results: surgical excision was performed under general anaesthesia, a transverse cervicotomy was made and the mass was easily separated from the internal jugular vein and primitive carotid. The microscopic examination revealed a shell of lamellar bone without dysplasia within mature adipose tissue. No complications or recurrence were observed until now.

Discussion: Ossifying lipomas are rare tumours, particularly in the head and neck region. Findings of hypodense areas of fat with surrounding hyperdense layers of calcification on computerized tomography should cause one to suspect ossifying lipoma. Definitive diagnosis can easily be done with histopathological examination. It has a same prognosis as simple lipoma and surgical excision is the recommended treatment. Although ossifying lipomas are very rare, it is important to keep them in mind when a lesion with adipose tissue in combination with ossification is encountered.



P-558

CHONDROSARCOMA IN A PAEDIATRIC PATIENT, A CASE REPORT.

D. Pinos Galindo, E. Augustin Cordovilla, C. Sanchez Navarro, F. Granados Colacho, A. Acosta Moyano, Y. Aguilar Lizarralde, A. Valiente Alvarez

Oral And Maxillofacial Unit, H.R.U. Carlos Haya, Málaga, Spain

Introduction: Chondrosarcoma is a rare malignant tumour slowly growing, locally aggressive and rarely metastasize. They represent 0.1% of head and neck tumours, usually develops from long bones and pelvis, and in less than 10% of cases originating level of craniofacial structures.

Methods: We report the case of a 2 year old girl with 3 months left progressive exophthalmos evolution. On examination, facial asymmetry is displayed with left hemifacial swelling, nasal endoscopy in the tumour at the left nostril, which moves towards the septum to the contralateral fossa. In TAC large calcified mass expansive 5.7 x 4.2 cm occupying the entire left maxillary sinus with invasion of pterygoid fossa, ethmoidal left sinus, and intraorbital invasion producing proptosis.

Results: Pathologic result is Grade II chondrosarcoma. After treatment with chemotherapy without reducing tumour size, resection was performed on the tumour block using Weber-Ferguson approach with subciliary extension. Postoperative pathology report confirmed grade III chondrosarcoma.

Conclusion: There are three histologic grades according to the degree of cellularity in craniofacial, bone tumours are usually low grade. When affect young individuals have a worse prognosis. They are radio and chemoresistant tumours, the treatment of choice remains radical resection.

**P-623****MYXOFIBROSARCOMA IN THE HEAD AND NECK REGION**

K. Lewis, M. Faulkner, J. Herold

Oral and Maxillofacial Surgery Department, Royal Sussex County Hospital, Brighton, United Kingdom

Introduction:

Myxofibrosarcoma is one of the most aggressive types of soft tissue neoplasms. It is common in the extremities of older patients but actually very rare in the head and neck region. They are composed of cells sharing fibroblastic and histiocytic features. They exhibit a high local recurrence and potential for metastasis.

Case:

An 86 year old female was referred to the Oral and Maxillofacial surgery department with a three week history of an enlarging right neck swelling. This was painless and there was no associated neurological deficit. Past medical history included Atrial fibrillation, Myocardial Infarction, SCC left tongue treated with left partial glossectomy and neck dissection 6 years previously, SCC Right mandibular alveolus treated right rim resection mandible 3 years previously, recurrence left tongue SCC managed with a left hemiglossectomy 4 months prior to this presentation.

Clinical examination revealed large 6cm firm mass in the right level 2 region. Initial FNA was non-diagnostic. Staging CT neck and thorax revealed a large mass obliterating right Internal jugular vein, invading sternocleidomastoid and encroaching the right carotid. There were also lung metastases noted as well. Ultrasound guided core biopsy was arranged to confirm the suspected diagnosis of metastatic SCC. The final histology of the neck mass core biopsies showed a myxoid spindle cell lesion with a multinodular growth pattern and incomplete fibrous septae. The stroma is myxoid and contains variably cellular non-cohesive plump spindled and stellate tumour cells associated with eosinophilic cytoplasm. This was consistent with high grade myxofibrosarcoma and confirmed on immunohistochemistry with vimentin and SMA stains positive.

The patient was not medically fit for extensive surgical resection or radiotherapy, thus palliation was the only feasible option. The patient died five weeks post- diagnosis.

Conclusion:

Myxofibrosarcoma is the most common soft tissue malignancy in adults. It is however rare in the head and neck region. MFS is associated with a 60% local recurrence rate. The high grade in this patient is associated with significant potential for metastasis.

**P-630****INTRAPAROTID MULTILOCULAR CYSTIC LYMPHANGIOMA: REPORT OF A CASE**

D. Villegas, F. Perez-Flecha, K. Sagullo, G. García-Serrano, P. de Leyva, I. Page, F. Almeida, J. Nuñez, M. Picón, J. Acero

Oral and Maxillofacial Surgery Department, ramon y Cajal university hospital, Ramon y Cajal University Hospital, Madrid, Spain

OBJECTIVE

Cystic lymphangioma is a rare, benign tumour with a marked predilection for the head and neck region. More than two thirds of the lymphangiomas are apparent at birth. Approximately 100 adult cases have been reported in the literature. The etiopathogenesis is unclear. Lymphangiomas may be classified on the basis of sizes of their cysts as microcystic (less than 2cm), macrocystic (more than 2cm) and mixed or as unilocular or multilocular as our case.

METHODS

We report a case of 24 year old woman, was referred to the Department of Oral and Maxillofacial Surgery of the University hospital Ramon y Cajal, Madrid (Spain). The patient had noted a progressive increasing swelling on left side of the face and neck, which was there since birth and had gradually increased in size. Clinical examination showed a large mass about 9 cm in length in the parotid region and left lateral neck area. The CT showed a large, multi lobulated, soft-tissue lesion, that was into parotid gland and the superior deep cervical. We performed a dissection of the cyst through total parotidectomy respecting anatomical structure. Complete surgical excision of the lesion was achieved, without damaging any vital structures.

RESULTS

The report of histopathological was Multilocular cystic lymphangioma.

A follow-up at twelve months after his surgery showed a cosmetically acceptable scar and no recurrence was noted.

DISCUSSION

Cystic lymphangioma is an uncommon benign tumour of lymphatic origin. The clinical significance of this entity depends on the size and localization of the tumour. Although lymphangiomas are benign tumours with no malignant potential, they usually increase in size, progress and relapse (especially after prior incomplete excision), or are complicated by infections. Complete surgical excision is the treatment of choice in symptomatic patients in function of localisation. Some authors are in favor of non-surgical methods, such as percutaneous sclerotherapy, which they claim offer the most promising results.

CONCLUSIONS

In our experience, totally excision of the mass was the treatment of choice in multilocular lymphangioma, in tumours that permit its completely extirpation. It should not be forgotten that lymphangioma is a benign condition and treatment should, affect vital structures.



P-635

LI-FRAUMENI SYNDROME

M.P.Ilic¹, A.Kiralj¹, B.Markov¹, I.Mijatov¹, S.Mijatov¹, N.Vuckovic²

¹ *Clinic for Maxillofacial & Oral Surgery, Clinical Centre of Vojvodina, Novi Sad, Serbia*

² *Centre for Pathology, Clinical Centre of Vojvodina, Novi Sad, Serbia*

Introduction. Li-Fraumenov syndrome (LFS) is a rare familial disease with a predisposition to the development of malignant tumours, such as osteosarcoma, breast cancer, brain neoplasm, leukemia, and adrenal tumours. Inheritance is autosomal dominant and is caused by heterozygous mutations in the p53 gene. Diagnosis is based on clinical criteria: a person under the age of 45 years suffering from sarcoma, the closest relative younger than 45 years diagnosed with cancer and a relative of the first or second degree, which is up to 45 was diagnosed with cancer and was diagnosed with sarcoma at any age.

Case report. We present a family in which three members diagnosed a malignant disease typical for LFS. 24-year-old man was diagnosed and treated for osteosarcoma of the maxilla and died in the first year. His younger brother is 3 years after surgery osteosarcoma of the mandible, and a year later in his 24 year with no signs of locoregional recurrence. Their mother was operated on in 1996 from glioblastoma multiforme brain cancer and ductal carcinoma. She died two years later at 32 age.

Conclusion. This case highlights the need for careful examination, inspection and notification of the risks of family members of patients with tumours that are associated with LFS.



P-638

TRANS-CERVICAL APPROACH WITH VERTICAL SUBSIGMOID OSTEOTOMY AND MANDIBULOMY ANTERIOR TO THE MENTAL FORAMEN TO REMOVE PARAPHARYNGEAL TUMOURS

JJ. Haro Luna, M. Acosta Feria, B. Ramos Medina, A. Gómez Poveda, S. García Álvarez

Department of Oral and Maxillofacial Surgery, Cartagena, Spain

INTRODUCTION.

The large tumours in the parapharyngeal space are rare and cause difficulties in its surgical management.

We report a large "de novo" pleomorphic adenoma arising from the parapharyngeal space and discuss the approach and surgical management of this kind of tumours.

CASE REPORT.

A 47-year-old male presented with a giant de novo pleomorphic adenoma arising from the parapharyngeal space. The patient was asymptomatic, but he consulted because he had discovered a mass in the right side of the neck. We find the mass referred by the patient and, in the intra-oral examination, a great mass in the right side of the oropharynx and soft palate.

By MRI the tumour measured $7.7 \times 6.5 \times 4.8$ cm, located in the pre-styloid and retro-styloid spaces, arising from the deep lobe of the parotid gland. A fine needle aspiration was made, with the diagnosis of benign pleomorphic adenoma.

We made a total parotidectomy and the removal of the tumour using only an external preauricular and trans-cervical approach with a vertical subsigmoid osteotomy and a mandibulotomy anterior to the mental foramen.

DISCUSSION AND CONCLUSIONS

Parapharyngeal space tumours cause nonspecific symptoms and may be difficult to diagnose, which can allow the tumours to become very large and cause obstructive and compressive symptoms in this anatomically difficult area.

Several approaches, as trans-cervical approach, trans-oral approach and combined approaches can be used to safely perform the resection of this tumours. The approach used by us, is a safe approach which provides a good exposure of the parapharyngeal tumours and doesn't yield significant sequelae.

**P-640****TRANSFACIAL APPROACH FOR SKULL BASE TUMOURS**

T.Mašić, D.Dizdarević, I.Lincender, A.Dervišević, B.Bejtović

Maksilofacijalna hirurgija KCU Sarajevo, BiH, Sarajevo, Bosnia-Herzegovina

OBJECTIVE The superior group of paranasal sinuses (frontal, ethmoid and sphenoid) form the central part of the floor of the anterior cranial fossa. The tumours in this region, without adequate treatment, have poor survival rate (8% overall at 5 years). The mortality is caused primarily by uncontrolled local disease, with only 10% dying as a result of metastasis. Conservative surgery in these areas results with local recurrence at the skull base. Surgical procedure of transfacial translocation is one of procedures that ensure the best approach and visualization of the whole medial and lateral region of the middle third of the face, base of calvaria and rhinopharynx, sphenoid sinus, pterygomaxillary fossa, odontoid process and clivus.

PATIENT AND METHODS: In 50 patients using transfacial approach, the tumours of base of calvaria and subbasal space were removed. There were 26 nasopharyngeal squamous cell carcinomas, 10 osteosarcomas of basal space, 5 chondrosarcoma, 5 adenoid cystic carcinoma, 2 juvenile angiofibroma and two tumours with endocranial origin. We analysed following parameters; the location of tumour, used surgical procedures, results and complications.

RESULTS: This approach allowed resection of bone part of base of calvaria and subbasal space in middle and lower third of skull. The bone defect was replaced by iliac and parietal bone grafts. There were no cases of graft rejection. In three patient bones defect was repaired with titanium mesh covered by pericranial flap. In one patient necrosis of nasal bone occurred and defect was repaired with titanium mesh. There was no dehiscence of wound either on skin or oral mucosa. Three to five months after operation there were no facial aesthetic problems. Functional disturbances were found in two patients with infraorbital hypoaesthesia at the side where flap was rotated.

CONCLUSION: Middle face translocation technique ensure good surgical approach to base of skull and subbasal space with good visualization and comfort with good outcome for patient. Until today, we have over than 50% survival rate for those undergoing craniofacial resections for malignant diseases in this region.

**P-641****SIALADENOMA PAPILLIFERUM OF THE ORAL CAVITY: REPORT OF A CASE**

D. Villegas, K. Saguillo, P. de Leyva, F. Perez Flecha, G. García- Serrano, I. Page, J. Nuñez, F. Almeida, M. Picón, J. Acero

*Oral and Maxilofacial Surgery Department - Ramon y Cajal University Hospital. Madrid – Spain.,
Ramon y Cajal University Hospital . Madrid – Spain., Madrid, Spain*

OBJECTIVE

Sialadenoma Papilliferum is a rare benign and exophytic tumour of salivary gland origin, accounting for less than 1% minor salivary gland tumours. Since the lesion was first described, only 47 cases have been reported in the literature. The prognosis is exceptionally good.

MATERIALS AND METHODS

We report a case of 73 year old man, was referred to the Department of Oral and Maxillofacial Surgery of the University Hospital Ramon y Cajal, Madrid (Spain) for evaluation of an exophytic intraoral lesion. The patient had noted a slow-growing lesion present for the past 36 months. Clinical examination showed a tumour 20mm in diameter on left posterior buccal mucosa opposite the mandibular second and third molars.

RESULTS

The biopsy of the tumour was made under local anaesthesia, with a suspected clinical diagnosis of Verrucous carcinoma. 2 weeks later, under general anesthesia, we performed the tumour resection with clinical margins, and the reconstruction was made with buccal myomucosal island flap. The report of histopathological examination was Sialoadenoma Papilliferum. The patient was followed up at regular intervals and no evidence of recurrence was noted.

DISCUSSION

Sialadenoma papilliferum was first described by Abrams and Finck in 1969; subsequent reports, including our case, bring the total number of cases to 48. In different series of minor salivary gland neoplasms found the incidence of sialadenoma papilliferum to be 0.8%¹⁰ and 1.2%.

It usually occurs in males older than 50. The majority of the lesions occurred on the palate (81%), Buccal mucosa (11%) was the second most common site.

The lesion is mostly asymptomatic, slowly growing, and well circumscribed. It presents clinically as an exophytic papillary mass. The lesion may be broad based, like the present case, or pedunculated. As in our case, sialadenoma papilliferum was similar clinically as squamous papilloma or verrucous carcinoma.

SUMMARY

The Sialadenoma papilliferum is a rare tumour of the salivary gland ducts presenting most often on the hard palate, followed by buccal mucosa, of older men. It is a benign tumour, which can be cured by local excision. Recurrence is not expected.

**P-646****OUTCOME OF INCOMPLETELY EXCISED NON MELANOMA SKIN CANCERS IN ONE UNIT**

A Kusanale, S Parneetheran, N Baheerathan, V Ilankovan

Oral and maxillofacial surgery, Poole hospital Foundation Trust, Poole, United Kingdom

Introduction

Complete surgical excision is the gold standard for the treatment of basal and Squamous cell Carcinomas. The excision margins are determined by the British association of dermatology guidelines in UK. There are difficulties in achieving these margins due to anatomical constraints on the face. For incomplete excision the surgical options include Re-excision and Moh's surgery. Our Unit has defined excision parameters using loupe magnification. All cutaneous malignancy excisions in one unit were studied over one year.

Patient- methods

355 patients had 577 surgical excisions of non melanoma skin cancer in 12 months period. 77% were males and 23% females.

28 (5%) patients' reports were of incomplete margins, 24 being BCC and 4 SCC. 80% had peripheral margin involved and rest were deep. Cheek and Temporal regions (29&25% respectively) were highest common sites for incomplete margins for BCC and Scalp (30%) for the SCC. The 28 patients underwent re-excision after MDT discussion. Of these only 9 (25%) patients who had involved margins in category of BCC were positive for Residual tumour, whereas (75%) of SCC re-excisions were positive for residual tumour. The commonest sites were medial eyebrow, supra-orbital ridge and Nasal sites.

3 patients were subjected to Moh's surgery and only one patient needed flap reconstruction and other two were closed primarily.

Conclusion

Surgical excision under loupe magnification technique resulted in higher rate of complete excisions . Our incomplete margins of Head and neck non-Melanoma skin cancers were below the published data in similar category.

Further Excision and tumour clearance was feasible in nearly 98% of patients.



P-662

THE VALUE OF EXAMINATION UNDER ANAESTHESIA IN THE TREATMENT PLANNING OF ORAL SCC

R Banks, W Thompson, S Endersby, A Burns, M Nugent

Oral & Facial Surgery, Sunderland Royal Hospital, Sunderland, United Kingdom

Objective

In order to comprehensively treat the patient with squamous cell carcinoma of the head and neck as much information as possible should be available to the treating clinician and multi-disciplinary team (MDT) in order to make an informed decision with the patient. As part of this work up, an examination under anaesthesia (EUA) and panendoscopy has a number of advantages, whilst adding to the burden of theatre usage. We present the initial results of a pilot study into the usefulness of EUA as part of the work up in cases of Oral SCC

Methods

A proforma was developed with a view to a prospective study into how EUA and panendoscopy may alter the management plan of patients with oral SCC. In order to help develop the proforma, analysis was undertaken of 100 consecutive cases of oral SCC presented at our Head & Neck MDT

Results

The results illustrate the percentage of cases where all other investigations were available prior to EUA, and how the EUA did or did not change the treatment options already formulated.

Conclusions

This study found a lower than reported incidence of secondary aero-digestive tract malignancies in this patient population. The availability of biopsy results, imaging, and blood investigations at the time of EUA is also presented. The rare occurrence where there were unexpected findings at the time of EUA which would be a cause of concern when contemplating prolonged resection and reconstruction suggest there is considerable value in continuing with the planned prospective trial

**P-670****A CASE REPORT OF RESIDUAL EPIDERMAL CYST LINING TRANSFORMATION TO SQUAMOUS CELL CARCINOMA**

MLT Lo¹, N Meara¹, KL Fleming^{1, 2}

¹ *Oral and Maxillofacial Surgery Department, Countess of Chester Hospital NHS Foundation Trust, Chester, United Kingdom*

² *Regional Maxillofacial Unit, University Hospital Aintree, Liverpool, United Kingdom*

Epidermal cysts are benign saclike structures that most often arise from swollen hair follicles, most commonly on the head, neck or trunk. They usually develop from ectodermal tissue. Skin trauma may be one of the causes that may induce a cyst to form into which keratin is secreted. Reported rates of malignant transformation of an epidermal cyst into cutaneous squamous cell carcinoma range from 0.011 to 0.045%, 42.1% of which affect the head and neck region.

We report a rare case of a 71 year old female who presented with a sinus on her left cheek in November 2007 for which she underwent excision. Histology confirmed an inflamed epidermal cyst with incomplete excision of the cyst lining. Complete excision was deferred as she was asymptomatic, there appeared to be no residual cyst formation or infection clinically and the surgical site was in the facial nerve territory.

In December 2009 she developed a repeat swelling at the same site. She had another excisional biopsy; histology reported a squamous cell carcinoma. A complete excision of lesion was performed in March 2010 without complication.

There are limited reported cases of epidermal cyst transformation to squamous cell carcinoma and we were unable to find any reports of residual fragments of cyst lining transforming in this way.

In the UK, many health authorities do not fund for excision of epidermal cysts unless they are symptomatic and infected. We wish to highlight this case to remind clinicians to have a high index of suspicion when they see patients with epidermal cysts that are behaving unusually that very rarely these cysts may undergo malignant changes.



P-696

THE COMPARATIVE EPIDEMIOLOGICAL ANALYSIS OF FACIAL SKIN LESIONS TREATED IN CLINIC OF MEDICAL UNIVERSITY OF LODZ AND HOSPITAL IN LASK

M. Tyndorf, A. Strzalka, M. Kozakiewicz

Maxillofacial Surgery, Medical University of Lodz, Lodz, Poland

Skin cancer (melanoma and non-melanoma) is most common human neoplasm. Despite malignant melanoma, most of tumours are not very aggressive but according to anatomical area, even small lesion could influence aesthetics and function of face.

The aim of the study was to analyse epidemiologic data of two groups of patients – treated in University Clinic and small hospital in rural area.

Material and method: Retrospective analysis was done. 80 patients from the University Hospital and 80 patients from Lask Hospital were included into the study. Demographic data as sex, age, place of living were retrospectively analysed. Aesthetic unit of face, way of treatment and outcome were noted as well.

Results: Age and sex distribution of the groups were nearly the same. There were no differences in histological types of tumours in both groups. According to treatment strategies free skin grafts were much often used in University Clinic and local flaps in Lask Hospital. Major surgeries in University Clinic and Lask Hospital were conducted in local anaesthesia, but monitoring of anaesthesiologist was more often in Lask. The main differences between groups were: place of living and size of tumour in time of admission.

Conclusions: education and extended prophylaxis among people living in rural area is necessary and can help to avoid aesthetic and functional disturbances due to surgery of high diameter lesions.

**P-751****WORLDWIDE SECOND CASE OF PRIMARY SMALL CELL CARCINOMA OF THE PALATE.**

A. Kozak¹, R. Kordek², J. Kozak³, M. Kozakiewicz¹

¹ *Department of Maxillofacial Surgery, Medical University of Lodz, Lodz, Poland*

² *Department of Pathology, Medical University of Lodz, Lodz, Poland*

³ *Department of Thoracic Surgery and Respiratory Rehabilitation, Medical University of Lodz, Lodz, Poland*

CASE REPORT

51 year-old woman was admitted to Department of Maxillofacial Surgery with hard palate tumour. A CT scan revealed destruction of the hard palate, neck lymphadenopathy and small tumour in the left lung. PET-CT revealed tumour in the left lung. No further metastases were found. Biopsy of the palate tumour revealed small-cell carcinoma(SCC) confirmed by immunohistochemical staining. Partial maxillectomy with fasciomuscular temporal flap reconstruction of the palate and selective neck dissection was performed. Postoperatively SCC was confirmed and pulmonary origin was suspected. In the Department of Thoracic Surgery and Respiratory Rehabilitation wedge resection and intraoperative frozen section examination was done. The examination of the lung tumour showed no malignancy. Extrathoracic location of SCC was established and patient was referred to the Department of Oncology, where adjuvant chemo – radiotherapy typical for SCC was performed. After 1 year follow-up no recurrence was observed.

DISCUSSION

There is no standard guideline for extrapulmonary SCC(EPSCC) treatment. The prognosis is poor, 5-year survival rate is 11-13%. The most common sites for distant metastases are lungs, liver and bones. Brain metastases are less common in EPSCC compared to SCC and use of palliative brain irradiation is rarely recommended except in patients with primary location in head and neck region. Because of high tendency of local recurrence and metastatic spread multimodality therapy is increasingly applied. Radical surgery play main role in those cases where a complete resection can be achieved with minimal morbidity. The chemotherapeutic regimens are similar to those used in SCC (response rate 69%). Radiotherapy also has effective role. Despite treatment, the median of survived is of 8-16 months.

CONCLUSIONS

Primary palate SCC is extremely rare. Complete excision and chemo-radiotherapy is recommended.

**P-755****THE PREVALENCE OF HUMAN PAPILLOMA VIRUS (HPV) INFECTIONS IN ORAL SQUAMOUS CELL CARCINOMAS: A RETROSPECTIVE ANALYSIS OF 88 PATIENTS**

M. Krüger¹, A. Pabst¹, C. Walter¹, C. Günther¹, S. Blatt¹, K. Weise², B. Al-Nawas¹, T. Ziebart¹

¹ *Department of Oral- and Maxillofacial Surgery- Plastic Surgery, University Medical Center, Mainz, Germany*

² *Department of Virology, University Medical Center, Mainz, Germany*

Aims/Objectives: Beside the main risk factors of tobacco and alcohol consumption for oral squamous cell carcinoma (OSCC), recent studies revealed infections with human papilloma virus (HPV) as an additional risk factor for oral carcinogenesis. For oropharyngeal cancer (OC) prevalence rates of HPV infection ranges in different studies up to 84%. While HPV infection is discussed as an independent risk factor in the oropharyngeal region, its distinct role in carcinogenesis of squamous cell cancer localized to the oral cavity remains still uncertain.

Material and Methods: In this study, HPV status in 88 subsequent patients with OSCCs localized anterior of the palatoglossal arch who were treated in the Department of Oral and Maxillofacial Surgery at the University Medical Center Mainz was analysed. Analysis of HPV status has been performed using DNA-PCR and immunostaining of p16 protein.

Results: In the presented collective prevalence of HPV positive OSCCs was about 7% (6 patients). HPV subtypes 16/18 were found in 4 patients. No significant differences between the HPV positive and negative patients regarding age, gender, smoking and alcohol consumption, localization and TNM level could be detected.

Discussion and Conclusion: Contrary to studies focusing on cancers of the lingual and palatine tonsil and larynx, the prevalence of HPV infections was much lower in the oral cavity. We conclude, that in our patient collective HPV infection plays a minor role in oral carcinogenesis. To elucidate the distinct role of HPV in oral cavity cancer, further studies need to be done.

**P-796****TOPHACEOUS PSEUDOGOUT OF THE INFRATEMPORAL FOSSA: A CASE REPORT**

A Tronchet¹, S Valsecchi¹, V Palazzolo¹, S Spotti¹, C Gervasoni¹, S Riccio², W Fontanella², L Colombo¹, A Di Francesco¹, P Ronchi¹

¹ *U.O. Chirurgia Maxillofacciale, Azienda Ospedaliera Ospedale Sant'Anna di Como, Como, Italy*

² *UOC di Otorinolaringoiatria IRCCS, Istituto Nazionale dei Tumori, Milano, Italy*

AIM

Tophaceous pseudogout is one of the rarest forms of crystal deposition disease which is characterized by the presence of calcium pyrophosphate dihydrate (CPPD) crystals in the intraarticular and periarticular tissue. Principally affects the knee and wrist joints; the aim of this study is presenting a rare case involvement the infratemporal fossa.

METHODS AND MATERIALS

We present a case of 60-years-old woman who presented with a two to three month history of progressive left-sides facial fullness, discomfort and intermittent facial swelling without pain, trismus, paresthesias or swallowing difficulties. An OPG demonstrated an irregular left condyle with some calcifications of TM joint and soft tissues. A CT scan showed an ossified mass in the left temporomandibular joint with sclerosis of the articular eminence and mandibular condyle, no evidence of gross bone destruction. She underwent a surgical biopsy of the mass, which revealed a pseudogout deposit. Laboratory evaluation revealed normal levels of serum calcium, ionized calcium, parathyroid hormone, phosphate level and serum uric acid. Under general anesthesia was used an extended preauricular incision and was found a tumour consisting of a white, firm gritty material.

RESULTS

At 6 month of follow-up, there was no recurrence of disease on CT, and there was no facial nerve empiement.

DISCUSSION

The complex pathogenesis of pseudogout is unclear; there may be an association with hypercalcemia or hiperparathyroidism, but a single aetiological factor cannot be identified on a routine basis. The differential diagnosis includes rheumatoid, osteo and suppurative arthritis, salivary neoplasm (pleomorphic adenoma, mucoepidermoid carcinoma, ecc.), connective tissue neoplasm (chondroma, fibrosarcoma, osteosarcoma, ecc.), vascular neoplasm (haemangioma, angiosarcoma, ecc.), lymphoma, metastases, ecc. is not possible to make a diagnosis using only clinical and/or radiological findings.



P-813

VOLUMINOUS MAXILLARY PSEUDOTUMOUR. REPORT OF AN IMPRESSIVE CASE.

D. Igoumenakis¹, E. Parara¹, S. Athanasiou¹, A. Kotouzas², C. Mourouzis¹, G. Rallis¹

¹ *Oral and Maxillofacial Surgery Department, KAT GENERAL HOSPITAL, ATTICA, GREECE, ATHENS, Greece*

² *Anaesthesiology, KAT GENERAL HOSPITAL, ATTICA, GREECE, ATHENS, Greece*

Aim

Aim of the present work is to present an interesting case of a maxillary inflammatory pseudotumour.

Material and method

Clinical and imaging data were recovered from the file of the patient.

Results

A 71-year-old woman presented at our outpatient department, due to a swelling in her left cheek since two years, which enlarged over the last two months. The patient was afebrile, had an otherwise free medical history and recalled no injuries in the face. Clinical examination showed a mass in the left posterior maxilla. The mass was palpable extra- as well as intraorally. Also it was elastic, mobile, non-tender and non-fluctuant. The overlying skin and mucosa were normal. Panoramic and Water's radiographs were non-contributory. The lesion was further investigated with a computed tomography scan, depicting a non-enhancing and well circumscribed mass of soft tissue, with diameter of four centimeters. The mass projected into the maxillary antrum, yet exhibited no other infiltrative features. An intraoral biopsy of the lesion was undertaken under local anaesthesia. Nevertheless, the pathologists failed to establish a diagnosis, because of the histological complexity of the sample. Therefore, they recommended excisional biopsy. So, the mass was removed under general anaesthesia. The histological diagnosis was inflammatory pseudotumour. No further treatment was required. The patient is on follow-up and after a year there is no sign of recurrence.

Conclusion

We present an impressive case of a maxillary inflammatory pseudotumour, which was excised and no adjunctive treatment was required.



P-844

EXPRESSION OF MAGE-A ANTIGENS AT INVASIVE TUMOUR FRONT AND CENTER IN ORAL SQUAMOUS CELL CARCINOMA

M. Brisam, S. Hartmann, C. Linz, R. Brands, S. Rauthe, H. Böhm, A. Rosenwald, A. C. Kübler, U. D. A. Müller-Richter

Dpt. of Oral and Maxillofacial Plastic Surgery, University Hospital Würzburg, Würzburg, Germany

Objective: MAGE-A-proteins are suggested to be expressed in oral squamous cell carcinoma in high rates and they already have been shown to be promising targets for cancer immunotherapy. The study aimed to examine whether MAGE-A-expression in oral squamous cell carcinoma (OSCC) is related to poor prognosis, regarding each MAGE-A-type and different localization within the tumour lesion- therefore expression of MAGE-A1-12 was investigated separately for tumour center and tumour invasive front.

Methods: 68 Oral squamous cell carcinomas were examined regarding the expression-rate for each of the MAGE-A-type A1-12 under comparison of tumour invasive front and center, which is claimed to be the central mass. 1-µm-slides of tissue microarrays with a diameter of 0,6mm were prepared, lead to immunohistochemical staining and subsequently were investigated microscopically. Finally the findings were correlated to clinical parameters of the patients.

Results: Highest allover expression within the certain subtypes MAGE-A1-12 regarding both sites of the tumour could be investigated for MAGE-A2, A3, A10 and A12. Higher Expression in the tumour center was shown for MAGE-A1, A5, A6, A8, A9, A10, A11 and A12 (significant for MAGE-A1, A5, A6, A9, A12, $p < 0,05$) compared to the invasive front. MAGE-A2 and A3 showed a contrary behavior (not statistically significant, $p > 0,05$). The parameters Age, Tumour size, Grading and Time of survival did not show association to expression of certain MAGE-A-antigens. Regarding the expression in the whole tumour tissue (center combined with invasive front) only MAGE-A1 showed significant higher rate in male patients ($p = 0,034$). At the tumour invasive front MAGE-A9-Expression and UICC-Stage showed significant correlation ($p = 0,0263$) and MAGE-A6 and UICC a trend ($p = 0,0596$). Expression of MAGE-A3, A4, A5, A9, A11 was significantly associated to appearance of lymph node metastasis, here of MAGE-A4 in all tested regions of the tumours (invasive front, center and front).

Conclusions: OSCC have a higher expression of MAGE-A-antigens at the tumour center than in the tumour invasive front. Mostly 5 to 6 antigens are expressed simultaneously in the same tumour. In this study-group MAGE-A2, A3, A4, A10, A12 were expressed most frequently. Regarding statistical significance MAGE-A3, A4, A9 and A11 seem to be of further interest.

**P-855****BILATERAL LABIOMENTAL FAN FLAP; AN ALTERNATIVE TECHNIQUE FOR ONE-STAGE TOTAL LOWER LIP RECONSTRUCTION**

N.Berridge, C.Magopoulos, M.Heliotis, R. Mahul

Oral & Maxillofacial Surgery, Northwick Park Hospital, Harrow, United Kingdom

Objective;

Lower lip reconstruction poses a particular challenge to the Maxillofacial Surgeon. As the major expressive component of the lower third of the face, preservation of both aesthetics and function is imperative. The most challenging reconstruction techniques involve major defects of >80% of the lower lip.

There are many reconstructive techniques described using the remaining lip and local flaps to restore the lower lip dependent upon the size of the defect. Furthermore, no single technique has emerged as the 'accepted standard' and numerous modifications to existing surgical techniques continue to be documented in the literature.

This case report describes the use of a novel one-stage bilateral labiomentall fan flap for total lower lip reconstruction.

Methods;

The authors applied their new reconstructive technique to an 81 year-old male with an extensive lower lip defect following excision of a fungating squamous cell carcinoma. Bilateral full thickness labiomentall flaps were advanced and rotated to close the lower lip. A combination of mucosal advancement and free mucosal grafting was employed to reconstruct the lower vermillion.

The advantages of our technique compared to the previously described techniques are as follows;

- (1) Total preservation of upper lip anatomy (orbicularis oris and associated neurovascular structures)
- (2) Preservation of lower lip anguli muscles and the use of well vascularized tissues thereby providing a recreating the oral sphincter, restoring oral competence and minimizing microstomia

To our knowledge, this full thickness bilateral labiomentall fan flap has not been described in the literature previously.

Results;

The functional and aesthetic results following this flap reconstruction are acceptable. At 4 weeks post-operatively, our patient had good lower lip movement and sensation, near-normal mouth opening and function, total re-epithelization of the mucosal deficit and is extremely pleased with the aesthetic outcome. No further corrective surgery is deemed necessary.

Conclusion;

The authors conclude that this is a simple and easy to perform, one-stage technique that is associated with minimal morbidity and achieves acceptable outcomes for total lower lip reconstruction.



P-859

DIAGNOSTIC ACCURACY OF CONE-BEAM CT IN ASSESMENT OF BONE INVASION BY MALIGNANCIES IN MAXILLOFACIAL REGION

D. Jelovac¹, V. Konstantinović¹, J. Mudrak², S. Anić³, Z. Tepavčević⁴

¹ Clinic for Maxillofacial surgery, School of Dental Medicine, Universtiy of Belgrade, Serbia

² Oral Surgery, SOREDEX Oy, Freiburg, Germany

³ Department for Radiology, School of Dental Medicine, University of Belgrade, Serbia

⁴ Department for Pathology, School of Dental Medicine, University of Belgrade, Serbia

One of the most important aspects of preoperative staging in head and neck surgery is the determination of malignancies' local bone invasion, because the prediction of the extent of the surgical procedure is very important for optimal outcome.

Objective: The hypothesis of this research is that cone-beam CT could be accurate enough to evaluate the presence or absence of bone invasion. Thus, the purpose of this study was to determine accuracy of cone-beam CT for assessment of bone invasion by malignancies in maxillofacial region and to compare it with computer tomography (CT).

Patients and methods: This prospective study included 25 patients with tumours of maxillofacial region with suspect bone invasion. Patients with histologically proven malignancies of the oral cavity were presurgically evaluated by CBCT and CT imaging of the head and neck. Data were obtained with specially designed individualized protocol. The following parameters were included: gender (male female), age (years), personal history, clinical findings, histopathology, radiological assessment. Evaluation of the sensitivity (S), specificity (Sp), positive predictive value (PPV), negative predictive value (NPV), and accuracy (ACC) for CBCT and CT was performed according to the protocol type. In order to achieve accuracy of CBCT and CT, direct comparison between preoperative CBCT, CT and histopathological findings as golden standard in the assessment of malignant osseous invasion in maxillofacial region was done. The preoperative assessment of mandibular bone invasion by oral malignancies was especially highlighted.

Results: The average age (18 males and 7 females) of patients was 61.9 years. Out of 25 patients, 19 had intraoral tumour manifestation, while in 4 patients extraoral presentation of tumour was noticed. The sensitivity, specificity, positive predictive value, and negative predictive value were: for CBCT 0.92, 1.00, 1.00, 0.6; MSCT 0.83, 1.0, 1.0, 0.6 respectively. The accuracy (ACC) for CBCT and MSCT were 0.92 and 0.87 respectively.

Conclusion: It could be concluded that CBCT is accurate in predicting bone involvement and can compete with MSCT in detecting bone invasion in patients with malignancies in maxillofacial region

**P-875****ORAL CANCER: THE IMPORTANCE OF THE EVALUATION OF P53 AS A PROGNOSTIC FACTOR IN THE SURGICAL AND MULTIDISCIPLINARY TREATMENT.**

T.Cutilli, P.Leocata, V.Dolo, E.Altobelli, P.Cargini, S.Scarsella

University of L'Aquila Maxillofacial Surgery Dpt of Life, Health & Environmental Sciences, L'Aquila, Italy

Objective - We have analysed concentrations of the p53 protein in advanced oral carcinomas immunohistochemically and genetically to detect the percentage of overexpression of this antioncogene that indicates a high probability of mutation. This would point to it being a useful prognostic factor, if we consider the importance of the relation between genetic alterations of p53 and poor overall survival.

Methods - Seventy-five non-consecutive patients with oral squamous cell carcinoma and metastatic nodes were enrolled if there was homogeneity in histopathological grading (G2) of their tumours, and they were treated according to a multidisciplinary treatment plan (neoadjuvant chemotherapy, surgery, and postoperative radiotherapy). They were 57 men and 18 women (mean age 67, range 57-72 years) who were selected from a total of 420 patients with oral cancer who were under observation from January 1992 to January 2012. Monoclonal antibodies, extraction of DNA, and amplification of the polymerase chain reaction (PCR) were used for the immunohistochemical and genetic analyses.

Results - There was a significant inverse correlation between p53 overexpression and response to chemotherapy and a stronger association between high P53 overexpression (%) and a genetic mutation of p53 ($p = 0.0001$). More than 50% overexpression indicated a strong probability of genetic mutation. There was a significant correlation between sex and site of tumour ($p < 0.001$). Three prognostic factors were significantly related to prognosis: site of tumour ($p = 0.01$), response to chemotherapy ($p = 0.002$), and immuno p53 ($p = 0.0001$).

Conclusions - Our research addresses the need for improved understanding of the prognostic value of p53 in oral SCC. We can verify that in our group 50% of linked p53-antibodies in histopathological specimens seem to indicate a cut-off point. A tumour that is characterised by p53 overexpression of more than 50% indicates a poor prognosis. The oncogenic pattern supplies important elements for diagnostic and prognostic evaluation, in addition to classic screening. These elements are important considering that oral SCC is often at an advanced stage when they are diagnosed and require a multidisciplinary approach to treatment.

**P-890****SOLITARY FIBROUS TUMOUR OF THE MENTOLABIAL REGION. A CASE REPORT.**

V. Chávez-Bonilla, R. Luaces-Rey, I. Vázquez-Mahía, F. Lorenzo, M. Pombo, A. Mourelle, F. Gálvez-Prieto, J.L. López-Cedrún

Oral and Maxillofacial Surgery, University Hospital of A Coruña, A Coruña, Spain

Introduction:

Solitary fibrous tumours (SFTs) are uncommon spindle-cell neoplasms that usually arise within serosal surfaces. These types of tumours were first associated with the pleural areolar tissue by Klemper and Rabin in 1931. Since then, this entity has been described in a variety of anatomic sites. SFT usually presents as a slow-growing neoplasm that can be successfully treated by complete excision. However, a rare malignant counterpart has also been described.

Case Report:

A 54 year-old female presented with a slow-growing, asymptomatic mass located in the right mentolabial region. Computed tomography imaging demonstrated a 25mm well circumscribed mass that extended through the platysma muscle. FNA biopsy of the mass showed no malignant cells.

The tumour was exposed through an intraoral approach. At surgery, the tumour was a well-limited ovoid mass of an elastic consistency. Histological analysis revealed spindle-cell proliferation in a collagen-rich background, but it exhibited regional variations. Immunohistochemical analysis demonstrated positive staining for vimentin, with progesterone and the cellular proliferation index (MIB1) was low (less than 2%). The tumour displayed no positive staining for muscular markers (actin, calponin, desmin and myosin), c-kit, glut-1 and S-100.

Discussion:

SFTs of the maxillofacial region are a rare entity. Wider use of immunohistochemical techniques will enable to collect real data regarding the incidence of these tumours. Larger series and longer follow-up periods will allow conclusions to be drawn regarding therapeutical strategies and prognosis.

**P-903****REVASCULARIZATION OF LOWER JAW OSTEORADIONECROSIS USING LATERAL ARM PERIOSTEAL FREE FLAP**

S. Ketoff, R. H. Khonsari, P. Goudot, T. Schouman

Hôpital de la Pitié-Salpetriere, Paris, France

Objectives

Free bone transfer is a recommended technique after failure of iterative curettage in jaw osteoradionecrosis (ORN). Periosteal free flaps are known to induce new bone formation and could be an alternative option for the revascularization of irradiated jaws. We describe a lateral arm periosteal free flap for the management of lower jaw ORN and report on four cases.

Methods

All patients with free periosteal transfer in our department were screened for age, gender, time of bone exposure, procedures before free flap, pain, length of hospital stay, and mucosal healing. Radiological evaluation was based on OPG.

Results

Four patients with persistent bone exposure were included. One patient presented with fracture at the time of the surgery. Three patients were treated by curettage and free periosteal transfer, associated with osteosynthesis in one patient. One flap failed due to compression on the pedicle and early thrombosis. The three other patients showed satisfactory intraoral healing and evidence of new bone formation on OPG at three months.

Discussion

ORN of the lower jaw is often treated by free bone transfer. In case of contralateral recurrence, treatment options are limited by the number of donor sites. In our short series, lateral arm periosteal free flaps are associated with very low morbidity, spare bone donor sites and provide a valuable option for the early treatment of ORN.



P-904

VALIDATING ULTRASOUND ACCURACY IN THE ASSESSMENT OF TONGUE TUMOUR DEPTH

P. Drury¹, L. Locurcio², C. Hopper^{2, 1}, T. Beale³, S. Morley³

¹ Head and Neck Surgery, University College Hospital London, London, United Kingdom

² Oral Surgery, Eastman Dental Hospital, London, United Kingdom

³ Department of Radiology, University College Hospital London, London, United Kingdom

Objective:

Survival rates from tongue squamous cell carcinomas are dramatically reduced by increased tumour thickness, local recurrence and neck metastasis. It is therefore important to identify cancer depth to avoid underestimation of neoplasm size and to perform the correct resection. The aim of this retrospective study is to determine whether ultrasound imaging is accurate in predicting the thickness of tongue carcinomas.

Methods:

We identified a series of 20 patients with tongue carcinomas from a London Head and Neck Oncology department who had undergone both pre-operative ultrasound analysis of tumour depth, as well as a surgical resection. The sonographic thickness was compared with the histopathological measurements. Data was collected from 2011 to 2013.

Results:

Empirically, there is a strong, positive relationship between the ultrasound measurement and histopathological depth. In a sample size of 20, there was a correlation coefficient of 0.93 between the two series.

In a simple regression it was shown that ultrasound measurement was statistically significant in determining histopathological depth.

Conclusion:

Ultrasound imaging of tongue carcinomas is a useful and non-invasive way of determining tumour depth. This can therefore guide the choice of surgical operation and reduce the rate of local and regional recurrence. Factors such as time between imaging and surgery, as well as the shrinkage factor following specimen processing must be taken into account.



P-905

GIANT CELL TUMOUR IN TEMPORAL BONE. A CASE REPORT.

F.Rehberger Bescós, J. Blasco Palacio., D. López Gordillo, L. Bermejo Abascal., S. Lazuén Fernández., S. Sánchez Santolino., F. García Reija., T. González Terán., B. García Montesinos., R. Saiz Bustillo

HUMV, Santander, Spain

Giant cell tumours represent 4 to 9.5% of all primary bone tumours and 18 to 23% of benign bone tumours. These lesions are more common in young women, especially in those whose lesions involve the spine and craniofacial skeleton. The peak prevalence of this entity is in the third decade of life. They should be differentiated from other giant cell lesions of bone, mainly reparative granulomas. A case with a very huge giant cell tumour of the temporal bone, greater wing of the sphenoid and temporal muscle has been presented. Clinically the patient presented a tumour in the temporal region without pain or any other symptoms.

Because of their tendency for recurrence, total removal is the treatment of choice for these tumours.

Microscopically, GCT consists of plump spindle shaped or ovoid cells with admixed multinucleated, cytologically benign giant cells.

The nuclei are generally hypochromatic with inconspicuous nucleoli and mitotic figures are uncommon.

A follow-up of 6 months revealed no evidence of tumour recurrence.

**P-915****RESECTION OF CRANIOMAXILLOFACIAL TUMOURS GUIDED BY COMPUTER-ASSISTED SURGERY AND NAVIGATION.**

A Dean, FJ Alamillos, S Heredero, A Candau, B García-García

Oral and Maxillofacial Surgery, University Hospital "Reina Sofía", Córdoba, Spain

Introduction:

Computer-assisted navigation technology for tumour resection have become almost routine in neurosurgery; however, in maxillofacial surgery, navigation systems have not yet been widely used. Complete resection and analysis of resection margins are fundamental in surgical oncology. Preoperative planning aims to simulate resection margins and preserve vital structures. Navigation techniques define resection margins more accurately.

Objective:

To show our experience with the use of computer planning, computer design of the resection margins (virtual surgery) and intraoperative navigation in craniomaxillofacial tumours.

Material and methods:

Seven patients with craniomaxillofacial tumours were included in this study. Selecting the tumour on CT images carried out virtual tumour delimitation. Applying the software tool "enlarged" on the object "tumour", the software creates a new object "tumour and resection margins" that will define the appropriate margins of resection and will provide information on the reconstructive needs. The resection will be done with the navigation system according to the established plan.

Results:

It was possible to preoperatively outline safety margins. In all patients the navigation allowed an appropriate margin of resection and offered a useful guide during the ablative surgery. The advantages were a better preoperative planning, appreciation of anatomy, location and safety surgery.

Conclusions: Computer planning, virtual surgery and intraoperative navigation can make craniomaxillofacial tumours surgery more reliable with correct safety surgical resection margins and protecting vital structures.

Key words: computer-assisted surgery, navigation, virtual surgery, craniomaxillofacial tumours, resection margins.



P-942

PILOMATRIXOMA OF THE PRE-AURICULAR REGION - TWO CASES IN CHILDREN

M. Mesquita¹, T. Lopes¹, T. Burnay², H. Marques³, L. Barroso¹, F. Heitor⁴, A. Ferreira¹

¹ *Maxillofacial department, Centro Hospitalar e Universitário de Coimbra, Coimbra, Portugal*

² *Plastic, reconstructive and maxillofacial surgery, Hospital de São João, Oporto, Portugal*

³ *Maxillofacial surgery, Centro Hospitalar do Porto, Oporto, Portugal*

⁴ *Pediatric Oncology, Centro Hospitalar e Universitário de Coimbra, Coimbra, Portugal*

Objective:

Pilomatrixoma is a benign tumour of the hair matrix, more common in women in the first two decades of life and on the face. It is asymptomatic, mobile, hard, and most measure up to 30 mm in diameter. Recurrence is rare if excision is complete

The authors present two clinical cases of pilomatrixoma of the pre-auricular region in children: clinical presentation, diagnosis and treatment.

Methods:

Case I: male, 2 years old, right pre-auricular nodular formation detected at 16 months in the context of otitis, interpreted, at the time, as a reactive adenopathy. Referred to our department at 26 months presenting a nodular formation of about 15 mm of diameter, hard, irregular, mobile, with overlying skin of a purplish tone.

Ultrasound showed an oval formation, solid, heterogeneous, 14 mm of highest diameter with micro calcifications, not compatible with ganglion.

CT scan showed in the subcutaneous tissue, an oval formation, of about 14 x 14 x 8 mm, of well defined contour, presenting soft tissue density with calcifications on the interior and discrete contrast enhancement.

The patient underwent surgery under general anaesthesia: enucleation of the tumour. Histology revealed a Pilomatrixoma with complete excision.

Case II: female, 6 years old, referred to us presenting a right pre-auricular nodular formation with 14 months evolution, slow growth on the last 9 months. Lesion was hard, mobile, about 2 cm of diameter.

MR showed, in the subcutaneous tissue, superficial to the masseter, nodular formation, oval, of about 21 x 21 x 13 mm, with lobulated, well defined contour.

The patient underwent surgery under general anaesthesia: enucleation of the tumour. Histology revealed a pilomatrixoma with complete excision.

Results:

Both tumours were completely excised and no recurrence was registered

Conclusions:

We present two cases of pilomatrixoma in children of 2 and 6 years old, in the pre-auricular region, submitted to surgery (enucleation), with no recurrence.

**P-943****EPITHELIAL-MYOEPITHELIAL CARCINOMA OF THE PAROTID GLAND – AN UNUSUAL ENTITY**

T. Neto¹, R. Balhau¹, L. Coelho¹, I. Pinto¹, M. Capelo¹, I. Correia-Sá², Á. Silva²

¹ *Maxillofacial Surgery Unit of Department of Plastic, Reconstructive, Aesthetic Surgery, Maxillofacial Surgery and Burn Unit, CENTRO HOSPITALAR SÃO JOÃO, Porto, Portugal*

² *Department of Plastic, Reconstructive, Aesthetic Surgery, Maxillofacial Surgery and Burn Unit, CENTRO HOSPITALAR SÃO JOÃO, Porto, Portugal*

Objectives

Epithelial-Myoepithelial Carcinoma (EMC) is a rare type of malignant tumour of salivary gland, accounting for about 1% of all salivary neoplasms. Differential diagnosis of this tumour is complicated, especially by cytological examinations.

We present one case of EMC of the parotid gland treated with total parotidectomy followed by radiotherapy. We review the literature and discuss the treatment, challenges and controversies in the approach of this rare entity.

Methods

An 53-year-old male, presented to our Department with a painful bulky lesion behind his left mandible angle, with fast growing in the last 2 months. On examination a 3 cm firm tumour mass was palpable in the deep parotid gland with moderately firm consistency and fixity to neighboring tissues. The patient underwent fine needle aspiration cytology (FNAC) that was inconclusive. MRI showed an 22x28 mm infiltrative lesion of the deep parotid lobe with invasion of the pterygoid muscles.

Results

The patient underwent left total parotidectomy with identification and preservation of the facial nerve using a Blair approach. A superiorly based sternocleidomastoid (SCM) muscle flap was used to correct the contour deformity.

Histologically the tumour was characterized by a biphasic cell population represented by myoepithelial and ductal cells. A diagnosis of T2N0 EMC was made.

The patient underwent postoperative radiotherapy and remains in continuous clinical and imagiologic surveillance with no signs or symptoms of recurrence, no facial palsy, good aesthetic result and a mild xerostomy.

Conclusions

EMC, first described in 1972 by Donath, is a rare biphasic tumour of the salivary glands typically arising in the parotid. FNAC widely used in the initial investigation of salivary gland swellings, may misdiagnose the typical pattern of a central ductular structure surrounded by clear myoepithelial cells. It is a low grade malignancy, and despite its tendency to local recurrence with low metastatic potential, rare cases may have and aggressive behaviour with distant metastasis.

Treatment consists primarily of complete surgical resection whenever possible followed by radiotherapy (RT) in an attempt to prevent local recurrence.

**P-950****HEAD AND NECK SARCOMAS. OUR EXPERIENCE.**

V. Chávez-Bonilla, R. Luaces-Rey, B. Patiño-Seijas, A. García-Rozado, J. Ferreras, J. Collado-López, N. Carral-Roura, J.L. López-Cedrún

Oral and Maxillofacial Surgery, University Hospital of A Coruña, A Coruña, Spain

Aims/Objectives

Sarcomas of the head and neck are rare. They account for approximately 1% for all head and neck malignancies and 5%-15% of all sarcomas. There are many papers regarding management and treatment strategies of this entity in more typical locations, but there is less information available when we focus on the maxillofacial region. We share our experience, present our results and evaluate treatment modalities.

Patients and Methods

The patients were treated at the department of Oral and Maxillofacial Surgery of the University Hospital of A Coruña between 1999 and 2013. The data were collected retrospectively going through patients' records. We report a total of 16 cases of which 12 were female. Ages at presentation ranged from 7 to 90 years old.

Results

We describe histologic subtype, location and presenting symptoms. Our group of patients contains both hard and soft tissue sarcomas. The most frequent subtype was osteosarcoma (43.8%), followed by chondrosarcoma (12,5%), angiosarcoma (12.5%) and leiomyosarcoma (12.5%). When of bone or cartilage lineage the tumour was usually located in mandible (55,6%) or maxilla (33,3%). Other locations in the series include orbit, frontal, retroauricular and preauricular regions. All, except for one patient, were first treated with radical surgery and 25% of the defects were reconstructed with microsurgical free flaps. We also revise the neoadjuvant and adjuvant treatments that were used in the context of each histologic subtype.

Conclusions

Sarcomas have a mesenchymal origin and may arise from different tissues. Being a heterogeneous group of tumours of diverse origins makes pathologic classification key in diagnosis and critical in determining treatment strategies. It is important to further study peculiarities of sarcomas when located in the maxillofacial region in order to avoid extrapolating traditional management for typical locations. There is clearly a need for reliable data and further studies in order to achieve consensus about management, especially regarding the role of chemotherapy.

**P-956****"SYNCHRONOUS MALIGNANCY": CONCURRENCE OF METASTASIS FROM INVASIVE BUCCAL SCC AND NON-HODGKIN LYMPHOMA, IN LEVEL II ADJACENT CERVICAL LYMPH NODES.**

C. Georgiou, K. Kontos, M. Lazaridou, I. Astreidis, F. Patakiouta, S. Barbanis, D. Mangoudi

ANTICANCER HOSPITAL of THESSALONIKI "THEAGENEIO", THESSALONIKI, Greece

Objective

Cervical lymph node metastases from squamous cell carcinomas represent routine in clinical practice. On the other hand, B – cell Lymphomas in the head and neck distribution can often be found especially in patients with immune disorders. However, diagnosis of two distinct oncological disease entities in the same or adjacent lymph nodes is an extremely rare phenomenon (cancer-to-cancer metastasis).

The purpose of this poster is to present a rare case of concurrence of a metastasis from invasive buccal SCC and diffuse B- cell Non -Hodgkin Lymphoma, in level II adjacent cervical lymph nodes.

Our patient came to Anticancer Hospital of Thessaloniki "Theageneio" with a right buccal lesion and lymphadenopathy. CT scan demonstrated presence of a hypointense cervical lymph node in level II with central fusion.

Methods

The patient was submitted to *en block* surgical excision of the lesion of the right cheek and parotid gland, as well as with modified radical neck dissection (MRND I).

Results

Histopathological examination revealed invasive squamous cell carcinoma. From the cervical lymph nodes that were assessed, one was infiltrated from this SCC. The interesting finding was that a microscopically adjacent lymph node was infiltrated by diffuse lymphoid cells. Immunohistochemical examination revealed diffuse B-cell non – Hodgkin lymphoma.

Conclusions

Concurrence of two distinct neoplasms can be attributed to immunodeficiency, disturbances due to antineoplastic therapies or interactions between neoplastic cells.

**P-958****CRANIOFACIAL FIBROUS DYSPLASIA: INDICATIONS FOR RADICAL RESECTION, STUDY OF 23 CASES**

M. Hasan Osman

Assiut university-Egypt, Assiut, Egypt

Objectives: Despite recent advances in the understanding of the natural history and molecular abnormalities, many questions remain surrounding the progression and management of fibrous dysplasia. We aimed to describe the clinical, radiological findings and management in a consecutive series of patients diagnosed with fibrous dysplasia of the craniofacial bones.

Patients and methods: A prospective and retrospective analysis of collected data for 23 patients with histopathologically confirmed fibrous dysplasia involving the skull and facial bones managed at the Maxillofacial and Neurosurgical department between 1999-2010. The demographic data, clinical presentation, radiographic characteristics, and the management of these patients were reviewed.

Result: Age of patients ranged from 7-55 years with higher predilection in female (16 patients, 70%). In the current study, the most common affected facial bones were maxilla (7 patients), mandible (3 patients). As regarding the cranial bones, the frontal and temporal bones were affected in 5 patients. Sphenoidal bone was affected in 3 patients. Most of the patients presented by facial painless swelling or deformity (17 patients) while 6 patients presented by swelling and proptosis. Conservative surgical procedures (shaving) were performed in 15 cases while resection and reconstruction were performed in 8 cases. Reconstruction with mesh was used in 7 patients while reconstruction with bone graft was used in one patient. All patients were followed up for more than 6 months by clinical examination, X ray and CT scanning. The frequency of follow up was tailored according to disease aggressiveness, optic nerve involvement and type of intervention performed. Marked improvement in the aesthetic aspect in most cases. 3 of the patients who were treated by shaving required further creation, and one patient required 3 sittings to reach acceptable results.

Conclusions: Each patient may present with variable symptoms and clinical findings, thus the care of these patients must be customized to their needs and sites of involvement. Radical resection is indicated to: treat or to avoid proptosis, treat or to avoid optic nerve compression and to correct hypertelorism

**P-962****LOCOREGIONAL FLAPS FOR ORAL DEFECTS RECONSTRUCTION**

E. Alonso Rodríguez, J. Guiñales Díaz de Cevallos, J.L. Cebrián, P. Losa Muñoz, J. Noguera, M. Burgueño

Cirugía Oral y Maxilofacial, Hospital Universitario La Paz, Madrid, Spain

INTRODUCTION

Oral mucosa defects secondary to oncological surgery can be repaired in different ways attending to their size and location. Reconstructive alternatives, in order of increasing complexity, encompass: second intention healing, primary closure, local flaps of the oral mucosa, regional flaps and microvascular free flaps. Currently, microvascular flaps are considered the reference option for the reconstruction of medium and large-sized defects of the oral mucosa, by offering the best aesthetic and functional results. However, they present a number of disadvantages including: the morbidity of the donor site, the increase time and complexity of the surgical procedure, the reconstruction of intraoral defects with histologically different tissues and the possibility of leading to an increase of the intraoral volume, especially in small and medium-sized defects that could interfere with the functional outcome.

Locoregional flaps postulate as an alternative therapy for the reconstruction of small and medium-sized defects of the oral mucosa, especially in advanced aged and pluri-pathological patients in which the microsurgical reconstruction is not feasible.

MATERIALS AND METHODS

We present a selection of 9 patients with secondary defects to oncological extirpations, which were reconstructed each with one of the major locoregional reconstructive options for oral cavity defects, including: buccinator flap, lingual mucosa flap, palatine flap, Bichat's buccal fat pad, facial artery musculomucosal flap, nasolabial, sternocleidomastoid flap, temporal muscle flap and submentonian flap.

RESULTS

Adequate coverage of the defects was achieved in all cases with good aesthetic and functional results. The main complications of these procedures are partial necrosis flap and infection, which in any case had prevented a proper healing of the defect.

CONCLUSIONS

Locoregional flaps, as an alternative to microsurgery reconstruction for oral mucosa defects, represent a valid option with excellent outcomes especially for small and medium-sized defects and in non-candidate patients to more complex procedures.



P-967

WAITING FOR SKIN CANCER?

C. Sanapala, M. Foo

Oral and Maxillofacial, Royal Gwent Hospital, Newport, United Kingdom

There are 2 types of skin cancer: malignant melanoma of the skin (MM) and non-melanoma skin cancer (NMSC).

Skin cancer is an extremely preventable disease. With survival rates high when diagnosed and treated early; the main focus of research and practice continues to be on prevention and earlier diagnosis.

In Wales patients referred via the 2-week urgent primary care referral route must start their definitive treatment within 6 weeks of receipt of referral for malignant melanoma and within 2 months of receipt of referral for squamous cell carcinoma. Patients with Basal cell carcinoma should be treated with 5 months of the referral.

We audited the waiting time targets for the 118 patients who were treated in the maxillofacial department over a 12 month period, to assess if the recommendations were adhered to, and if this impacted on the treatment the patients received.



P-981

LOCO-REGIONAL FLAP TECHNIQUES FOR THE RECONSTRUCTION OF SMALL AND MEDIUM SIZED DEFECTS OF THE ORAL CAVITY

J. E. Azevedo, I. Beleca, J.M. Esteves, P.V. Coelho

Maxillofacial Surgery, Centro Hospitalar Lisboa Central, Lisbon, Portugal

Introduction

In recent years, the use of microvascular free flaps for the reconstruction of oral defects has proved to be increasingly useful. However, myocutaneous regional flaps still hold their value, particularly in small and medium sized defect situations.

Methods

The authors share their surgical experience by presenting a series of case reports and discussing the outcome of a variety of loco-regional flap techniques, namely myocutaneous platysma, buccinator myomucosal island and nasolabial random flaps, for the reconstruction of small and medium sized defects of the anterior floor of mouth following ablative surgery.

Results and conclusions

These approaches allow satisfactory results from both an aesthetical and functional standpoint, while preserving distant donor sites, and remain valuable in the present day.



P-1007

RECONSTRUCTION OF A NASAL ALAR DEFECT AFTER SKIN CANCER RESECTION: A CASE REPORT

I. Correia-Sá^{1, 2}, T. Neto¹, M. Marques^{1, 3}, Á. Silva¹

¹ *Department of Plastic and Reconstructive Surgery, Maxillofacial Surgery and Burn Unit, Centro Hospitalar S. João, Porto, Portugal*

² *Department of Pharmacology & Therapeutics, Faculty of Medicine, University of Oporto, Porto, Portugal*

³ *Department of Plastic and Reconstructive Surgery, Faculty of Medicine, University of Oporto, Porto, Portugal*

Aims and objectives: Nasal reconstruction after tumour extirpation is a necessity. The aim of the current study was to present our experience with one challenging patient submitted to nose reconstruction.

Materials and Methods: A 36-year-old man was referred for treatment of a biopsy-proven basal cell carcinoma of the nose. The lesion was removed and the resulting surgical defect involved the full thickness of the nasal skin and the underlying alar cartilage. The authors performed a reconstruction of a surgical defect using a nasogenian flap and cartilage grafts.

All scars were camouflaged in the natural facial boundaries and the surgical reconstruction was performed in two stages.

Results: The final nasal contour, symmetry and function were still good when the patient was seen 1 year after surgery.

Discussion and Conclusion: The choice of reconstruction method of nasal alar defect depends primarily on the size and depth of the defect. Staged local flaps and the use of cartilage reinforcement grafts are key elements for achieving optimal aesthetic and functional results.



P-1009

WHO IS TOO OLD FOR (ONCOLOGICAL) SURGERY ?

M.Karas'

Al Qassimi Hospital, Dubai, United Arab Emirates

Objective : to discuss approach to orofacial malignancies in elderly

Methods : analysis of the treatment problems in elderly patients

Results : comparison of the results of surgical treatment of orofacial malignancy in adult and elderly patients

Conclusion :

With a number of cancer cases steadily on the rise, the age of our patients also increases. Quite obviously, in older patients we face a number of problems, which are risk factors in case of surgery/general anaesthesia/recovery.

Diabetes, hypertension, ischemic heart disease are the most common in this list. Cases of different degree of dementia and resulting communication problems apparently are seen more often, than few decades ago. Number of survivors of cerebrovascular incidents is also much higher, than ever before. Lack of understanding and cooperation in these patients could be a serious problem for treating them physician.

Quite fortunately, with remarkable progress in anesthesiology, intraoperative risk in elderly had been minimised. Careful medical preparation allow us to operate on these patients, and (surprisingly for many) in majority of cases we see proper, uneventful recovery and healing. It is to be remembered, that of all treatment methods in oncology, surgery is the easiest for senile patient to survive.

Nobody is too old for (oncological) surgery

**P-1011****LEVEL IIB NODAL INVOLVEMENT IN ORAL SQUAMOUS CELL CARCINOMA**

V. Terenzi, A. Cassoni, G. Rendine, M. Della Monaca, O. Rajabtork Zadeh, I. Raponi, V. Valentini

Maxillo Facial Department, Sapienza University of Rome, Rome, Italy

Aims: Neck dissections have become the standard of care in all but the earliest stage lesions for oral squamous cell carcinoma. Lymph node metastases from squamous carcinomas of the oral cavity cancer tend to exhibit a typical pattern of spread, most frequently to levels I, II, and III. The lymph node levels removed with a selective neck dissection are typically based on this pattern of nodal metastases. Although metastases to these levels are well demonstrated, there is debate about the frequency of metastases to the level IIB subsite of level II. Dissecting level IIB, skeletonization and manipulation of the XI nerve can result in devascularization, ischemia, and neuropraxia, leading to temporary and occasionally permanent shoulder dysfunction. We evaluated several potential risk factors for metastatic disease in the IIB level (T and N stage, grading, subsite)

Material and Methods: Data about neck dissection for previously untreated oral cavity squamous cell carcinoma performed at our Department from October 2009 to October 2013 have been collected. During neck dissection, all levels were processed separately. Cases in which oropharyngeal involvement was present were excluded. All dissections were performed by the same surgeon.

Results: Ninety-nine neck dissections for oral cavity carcinoma responding to inclusion criteria have been performed at our Department. In only 3/99 specimens (3%) nodal metastases to level IIB were identified, and in cases of advanced disease (pN2).

Discussion and Conclusion: Even if level IIB nodal metastases are relatively uncommon in previously untreated SCC of the oral cavity, we think, according to literature, that dissection of level IIB remain the standard of care in oral cavity squamous cell cancer. Further studies, in order to investigate the effective damage to XI c.n. after level IIB dissection, are mandatory.



P-1089

EFFECTIVENESS OF THE COMBINATION THERAPY OF TYROSINE KINASE INHIBITORS, AND 5-FLUOROURACIL IN THE TREATMENT OF ORAL SQUAMOUS CELL CARCINOMA

R.C. Brands, S. Hartmann, C. Linz, H. Boehm, U. Klammert, A.C. Kübler, U.D.A. Müller-Richter

Würzburg University, Würzburg, Germany

Introduction

Dysregulated tyrosine kinases often play a key role in the formation of tumours. The effect of tyrosine kinase inhibitors consists in inhibition of intracellular proliferation signals mediated by membrane receptors and control of the growth, metastasis and apoptosis behavior of malignant cells. Tyrosine kinase inhibitors are considered drugs of the future, as they have a very specific spectrum of side effects as conventional cytotoxic agents.

Materials and methods

Five established cell lines of human oral squamous cell carcinomas of different TNM stages were treated with the tyrosine kinase inhibitors nilotinib, imatinib, erlotinib and dovitinib in vitro. The determination of the rate of apoptosis was performed by real time cell analysis and crystal violet assay.

Results

The cell lines show a differentiated responsiveness to the tyrosine kinase inhibitors used. In its response dovitinib and imatinib appear to have a significantly greater antineoplastic effect as erlotinib and nilotinib. The combination with 5 -FU appears to have an additional antineoplastic effect.

Discussion

Of the five cell lines represented tyrosine kinase inhibitors are an effective and promising option or additive way of combination therapy of oral squamous cell carcinoma. Other combinations with established chemotherapeutics are the current focus of our research.

**P-1094****WHEN SHOULD/COULD WE DO A TRANS-PALATAL APPROACH TO REMOVE A PLEOMORPHIC ADENOMA OF THE DEEP LOBE OF PAROTID?**

T. Burnay¹, R. Valença-Filipe², I. Pinto¹, J. Bilhoto¹

¹ *Department of Maxillofacial Surgery, Centro Hospitalar São João, Porto, Portugal*

² *Department of Plastic Surgery, Centro Hospitalar São João, Porto, Portugal*

Objective

The aim of this report is to debate when we should or could do a trans-palatal approach to remove a pleomorphic adenoma of the deep lobe of parotid.

Material and Methods

We present a 58 years old female with a swelling on the left side of the soft palate. The MRI showed a mass bulging of the posterior wall of the nasopharynx with achievement of the soft palate to the left. Patient underwent surgery: it was made a midline incision to the level of the soft palate extending to the left tonsillar pillar and the posterior wall of the nasopharynx, dissection by planes to the plane of the tumour capsule, excision of the tumour and reconstruction of the soft palate with local flaps, sutured in layers.

Results

In the immediate postoperative and 9 months later, patient has no facial lesions and no surgical scars dehiscence or nasal escape and is disease-free.

Discussion and Conclusions

Pleomorphic adenoma is the most frequent parotid gland tumour. Due to the few symptoms complains by the patient and the possibility of extension into a hidden site, such as the parapharyngeal space, they can grow for a long time before being diagnosed. The surgical removal of these tumours is the best treatment. Surgical resection techniques described in the literature are trans-palatal, transcervical, transparotid-transcervical, transcervical-transmandibular or infratemporal and the correct choice between them depends upon the accurate information on mass size and location, its relationship with the surrounding vessels and nerves and its nature. Trans-palatal approach to remove a pleomorphic adenoma of the deep lobe of parotid can be a safe approach when, due to its deep location, creates ballooning on the soft palate avoiding mandibular osteotomies and any of the complications associated with this procedure described on literature such as hemorrhage, fistulas, dehiscence and nerve damage. It is an approach with aesthetic benefits and low morbidity, keeping transparotid approach for tumours located higher and laterally. A good pre-operative study with MRI and fine needle aspiration biopsy is essential for planning the right approach.

**P-1106****AGGRESSIVE BEHAVIOR PAPILLARY THYROID MICROCARCINOMA: UNUSUAL DEBUT AND UNUSUAL EVOLUTION.**

M. Valles-Bergada, M. Gonzalez-Garcia, V. Villanueva-San Vicente, F. Pinzon-Rodriguez, P. Veiga-San Roman, MG. Cortez-Lede, MA. Rodríguez-González "

Hospital Universitario Virgen de la Arrixaca, Murcia, Spain

Case report:

25-years-old woman came to our service submitted by ENT service presenting a big left submandibular adenopathy. She had received radiotherapy during childhood because of an angioma. She had been operated two years before of a tonsil tumour, being the histological result a pleomorphic adenoma.

The cervical adenopathy was then excised with a histopathological result of a pleomorphic adenoma. Later on in the follow-up a tumour appeared in the thyroid gland and a thyroidectomy was performed confirming a papillary thyroid carcinoma. Because of these results, previous histological samples were reviewed and metastasis of papillary thyroid carcinoma were found. Three months later she presented new left submandibular adenopathies and tonsil recurrence which were treated surgically. She underwent strict controls and imaging test with no malignant evidence.

After 2 years and for the next 20 years, she has been showing tumour metastasis in mandibular gingiva, left pterigoid fossa, parotid gland, cavum and paratracheal mediastinum, all of them treated by surgery and radiotherapy.

Currently aged 54 years the patient is alive but still fighting against her metastasis disease.

Discusion:

Papillary thyroid carcinoma affects mostly young women, with a survival rate of 95-97% in 5 years time. Typically they develop a slow growth and they appear as an isolated tumour in the thyroid gland. Metastasis are rare and when they exist they are regional. Literature describes some aggressive cases of papillary thyroid tumour, like this case, but this has also an uncommon evolution. Radiotherapy during childhood is probably the main cause of the disease and its rare behaviour.



P-1112

A PILOMATRIXOMA OF THE CHEEK IN A CHILD WITH POST TRAUMATIC STRESS DISORDER (PTSD)

A. Sanalla, F. Ryba, K. Fan

Oral and Maxillofacial Surgery, King's College Hospital, London, United Kingdom

Objectives:

Pilomatrixomas are benign, slow-growing skin tumours of hair follicle origin. They are most commonly found in the head and neck region in children under the age of seven and are more common in females than in males.

A ten year old boy with PTSD was referred from a psychiatric hospital, in which he was an inpatient, for a progressively enlarging lesion on the right cheek over a 3 week period. We discuss this unusual case with a literature review.

Methods:

On examination, there was a well-defined 3cm palpable, mobile mass within the right malar/infraorbital subcutaneous soft tissue. An ultrasound was performed and confirmed the presence of a very well defined heterogenous, echogenic, ovoid mass within the soft tissues of the right cheek. Appearances were representative of a pilomatrixoma with a likely capsule. An urgent MRI excluded a malignant cause and demonstrated a deep extension to abut and indent the facial expression musculature (zygomaticus major).

Results:

An excisional biopsy of the mass was subsequently performed. The lesion was well encapsulated within a small cuff of muscle. Histological analysis diagnosed the lesion as pilomatrixoma.

Conclusion:

Pilomatrixomas have long been considered rare tumours more common in children than in adults. This case highlights the difficulties in managing an uncommon benign tumour in a child with complex mental health problems and demonstrates the importance of a holistic approach to successful surgical management.

**P-1124****USE OF PROPRANOLOL FOR THE TREATMENT INFANTILE HEMANGIOMAS IN THE MAXILLOFACIAL REGION**

Sadykov R.R.

Tashkent Medical Academy, Tashkent, Uzbekistan

Propranolol has been used successfully in a limited number of children with infantile hemangiomas (IHs). This study describes the efficacy and adverse effects of propranolol in IH. Seventy-one infants with IHs were treated with oral propranolol, administered at a dose of 2 mg/kg/day, for at least 12 weeks. A photograph-based severity scoring assessment was performed by five observers to evaluate efficacy, utilizing a score of 10 as the original IHs before treatment and 0 as completely normal skin. The mean of the five independent measurements was used in the analysis. Propranolol was a rapid and effective treatment for IHs at 4 weeks ($P < 0.001$), at 8 weeks ($P < 0.001$ compared with the value at 4 weeks), at 12 weeks ($P < 0.05$ compared with the value at 8 weeks), and thereafter up to 32 weeks ($P < 0.01$ compared with the value at 16 weeks). The response of IHs to propranolol was similar regardless of gender, age at the onset of treatment, type of involvement (local and extended), facial segments affected, special locations (eyelid, nasal tip, and parotid regions), ulceration, and depth of IHs. In the series of patients in this study, oral propranolol at a dosage of 2 mg/kg/day was a well-tolerated and effective treatment for IHs.



P-1126

LEFORT I APPROACH FOR MIDLINE TUMOURS OF THE PALATE

J. Guiñales, J.L. Cebrian, D. García, B. Apellaniz, M.A. Burgueño

Oral and Maxillofacial Surgery, University Hospital La Paz, Madrid, Spain

Midline tumours of the palate may represent a challenge for the Maxillofacial surgeon. Their resection and immediate reconstruction could be hindered when a simply intraoral approach is selected.

The LeFort I downfracture approach represents an ideal technique for the management of this tumours simplifying their resection, ensuring a free-tumour margin and allowing their reconstruction with a temporal muscle flap.

A review of this procedure is presented, highlighting the technical keys and its principal advantages.



P-1146

PERSONALIZED INTRAORAL CYST DECOMPRESSION DEVICE

D. Garcia Molina, E. Gómez, G. Vincent, J. Gonzalez, J.L. del Castillo, M. Burgueño

Servicio de Cirugía Oral y Maxilofacial, Hospital Universitario La Paz, Madrid, Spain

INTRODUCTION: Multiple devices have been published in the literature since cyst decompression technique was described. Most of them are very uncomfortable, so the patient stops the treatment.

MATERIAL AND METHODS: We describe the use of a personalized intraoral cyst decompression device. It's made from mould of a nasopharyngeal tube, which measures the exact diameter of the fenestration. It's diabolo shaped for avoiding extrusion and the need of stiches for fixation. It's made of silicone, a soft and flexible material which makes the treatment easy and painless. We present a retrospective study of 6 cases treated by this method.

RESULTS: After 6 months of treatment there was a significant reduction of the cyst's size. The patients had a good oral hygiene and the treatment was comfortable and painless. All the patients fulfilled the treatment.

CONCLUSION: The personalized decompression device doesn't have the inconveniece of other intraoral devices. It increases patient's comfort and that guarantees the completion of the treatment.

**P-1164****CARCINOMA OF TONGUE - A 30 YEARS RETROSPECTIVE STUDY**

A. Jenča, M. Riznič, A. Jenča, jr.

Department of Stomatology and Maxillofacial Surgery, University of Pavol Jozef Šafárik, University Hospital of Louis Pasteur, Košice, Slovakia

Objectives

Lingual cancer is one of the frequent malignancies in orofacial region. The incidence of this malignancy is growing in our region, and no preventive program seems effective.

Tongue carcinoma has specific position between OSCC in oromaxillofacial area. Metastatic process to regional lymphatic nodes can lead to masked progression. In the period of last 10 years diagnostics methods specify view of diagnostic, treatment and prognosis of life prolongation.

Methods

Non-homogeneous group of patients of both sex, but with strong majority of males are presented. For set consists of the patients in the age 28-92 year, had malignant tumour of the tongue, were treated at our clinic in the period of last 30 years.

Results

The authors show they worked on a group of 564 patients who had been ascertained to have malignant tumour of the tongue. Only 34% of cases the size of tumour is smaller than 3 cm in diameter. In the majority of patients the cervical lymphatic nodes were involved. If the size and topographical localization of the tumour were salutary the operation was performed as a first choice of the therapy with possible postoperative radiochemical therapy intervention. If the surgical procedure was not possible as a first choice therapy combination of concomitant radio and chemotherapy was performed firstly and after that the evaluation of possibility of surgical intervention.

Prevalence between males and females is 11:2. The most frequent group was 37-54 years. Survival Of the patients: I-II clinical stadium 72% and III-IV clinical stadium 50,1%.

Conclusion

A 30 years follow up patients can afford complex view on tongue carcinoma. During treatment it was necessary to use individual treatment caused by comorbidities. Is important that local radicality, permanent post therapeutic treatment by follow up and preventive patient recall must be strictly observed.

The authors presented the group of 564 patients with ascertained carcinoma of the tongue. They recommend to perform the surgical therapy as first choice in cases when the size of tumour allows it and if there is a possibility to assure negative margins of the resected tissue.



P-1173

ADENOID CYSTIC CARCINOMA OF SALIVARY GLANDS – A CASE SERIES OF 23 PATIENTS WITH LONG-TERM FOLLOW-UP

L. Hauer¹, P. Andrlé¹, D. Hrusak¹, L. Hosticka¹, A. Skalova², O. Sebera³, J. Jambura¹, P. Posta¹

¹ *Department of Maxillofacial Surgery, University Hospital and Faculty of Medicine in Pilsen, Charles University in Prague, Pilsen, Czech Republic*

² *Síkl's Department of Pathology, University Hospital and Faculty of Medicine in Pilsen, Charles University in Prague, Pilsen, Czech Republic*

³ *ENT Clinic, University Hospital and Faculty of Medicine in Pilsen, Charles University in Prague, Pilsen, Czech Republic*

Objectives: Adenoid cystic carcinoma (AdCC) accounts for 20% of all malignant salivary gland tumours making it the 2nd most common salivary gland malignancy. AdCC is a slow-growing tumour occurring predominantly in minor salivary glands and representing also the most common malignant tumour affecting the submandibular gland. Distant metastases are relatively common in contrast to the regional lymph node involvement. The 5 - year survival rate is reported to be 75% but 15- year survival rate is only 25%. The aim of this study is to evaluate the clinical behavior and prognosis of this salivary gland cancer.

Material and Method: The retrospective medical records review (Jan 1986 - Jan 2014) of patients with AdCC treated in the department of maxillofacial surgery and ENT clinic in Pilsen was performed. Only patients with follow-up longer than 6 months were included in this study.

Results: 23 patients with AdCC who fulfilled the criteria were identified. Patients mean age was 55.1 years (standard deviation 16.9 years, range 24 - 84 years). The male to female ratio was 1 : 1.9. AdCC affected parotid and submandibular gland each in 26.1%, sublingual gland in 13% and minor salivary glands in 34.8% of cases. At presentation, stage I was diagnosed in 30.4%, stage II in 17.4%, stage III in 30.4% and stage IV in 21.7% of cases. The mean follow-up was 77.0 months (standard deviation 65.5 months, range 7 – 287 months). The tumour grading, treatment modalities (surgical, oncological) and the clinical course of the disease is also presented. Regional lymph node and distant metastases (lung, liver, bone) were each diagnosed in 26.1% of cases. Treatment outcomes: 60.9% of patients had no evidence of disease, 26.1% died because of AdCC and 13% of patients were alive with disease.

Conclusion: The salivary AdCC often lead to fatality because of uncontrolled locoregional disease and/or distant metastases. Metastases of AdCC to regional lymph nodes may occur more common than previously thought.

**P-1187****SURGICAL RECONSTRUCTION OF HEAD AND NECK REGION AFTER MELANOMA AND CARCINOMA RADICAL SURGERY**

A.J.Racic

Plastic & reconstructive surgery, clinical center of serbia, belgrade, Serbia

According to the relevant researches during past decade there is a great increase of malignant skin tumours, especially of head and neck region. This research included 591 patient with carcinomas (plan cell and bas cell) and melanomas that we surgically treated at clinic from 2006 to 2013. 540 of patient had carcinomas and 51 of them had melanomas. Almost all of them asked for difficult reconstructive surgery after radical excision and in some cases even surgical dissection of the regional glands, mostly by different neck dissections. This work showed some cases where we forced to do various reconstructive surgery, very difficult in some cases especially because the malignant tumours stadium. This research clearly showed permanent increase of malignant skin tumours. Also the history showed bad promotion process of this tumours prevention in past decade. This research clearly showed the surgical differences in approach to the treatment of the patients with melanoma and carcinoma, since patients with melanoma asked for more radical surgery, but also that successful promotion process of malignant skin tumours asks more aggressive



P-1204

EFFECTIVENESS OF ELECTIVE NECK DISSECTION IN EARLY (STAGE I, II) ORAL SQUAMOUS CELL CARCINOMA PATIENTS.

Dong Wook Kim, Ba-Da Lee, Sung Hwa Lee, Seo Yeon Jung, Jung Hwan Lim, Jung Hyun Park, Jae Young Kim, Woong Nam, Hyung Jun Kim, In-Ho Cha

Department of Oral & Maxillofacial Surgery, Yonsei University, College of Dentistry, Seoul, South Korea

The presence of regional lymph node metastasis is known to be the most important prognostic factor in oral squamous cell carcinoma. Since 1906, when Crile reported simultaneous neck dissection and wide excision for treatment of oral squamous cell carcinoma, neck dissection had been a routine treatment, and having been modified.

However, the effectiveness of elective neck dissection on patients with clinically N0 oral cavity squamous cell carcinoma yet remains controversial. This is because the occult metastasis rate of clinically negative neck node is about 20~40% and because neck dissection can cause complications and loss of shoulder function, aesthetic problems increase in morbidity.

To evaluate the results of elective neck dissection in the surgical treatment of clinical stage I, II squamous cell carcinoma of oral cavity, and to suggest proper treatment methods, we compared the prognoses of the patients who underwent elective neck dissection and the patients who did not receive neck dissection.

**P-1211****CYTOKERATIN STAINING AS ADJUNCTS TO HEMATOXYLIN-EOSIN IS EFFECTIVE FOR A DIAGNOSIS OF THE LYMPH-NODE METASTASIS OF ORAL SQUAMOUS CELL CARCINOMA**

Shoko Yoshida, Koji Kishimoto, Akira Sasaki

Department of Oral and Maxillofacial Surgery, Okayama University Graduate School of Medicine, Dentistry and Pharmaceutical Sciences, Okayama, Japan

Objectives

Cytokeratins (CKs) are proteins expressed in epithelial and epithelium-derived cells.

According to the UICC TNM classification of breast cancer, the tumour sizes and cell numbers of isolated tumour cells (ITCs) and micrometastasis are defined. Such definitions of metastasis have also been introduced for other carcinomas.

Thus, in the present study, we examined whether the diagnostic accuracy of micrometastasis and ITCs in the cervical lymph node metastasis of oral squamous cell carcinoma (OSCC) could be improved by CK staining as adjuncts to hematoxylin-eosin (H-E) staining.

Materials and Methods

Of the primary cases of OSCC referred to our hospital, 12 patients were diagnosed preoperatively as positive for cervical lymph node metastasis and underwent neck dissection, and were subsequently diagnosed as negative by histopathological examination with H-E staining. In the present study, 150 lymph nodes from these patients were investigated. Semi-serial sections were prepared from the lymph nodes at 200µm intervals. Expression of CK AE1/AE3 in lymph node metastasis of OSCC sections was investigated using immunohistochemistry as adjuncts to H-E staining.

Results

Metastasis was additionally detected in two cases (16.7%) and three lymph nodes (2.0%).

In Case 1, CK AE1/AE3-positive ITCs were detected in each one of submandibular and internal jugular vein lymph nodes. Similar cells were detected by H-E staining, but were too small to be diagnosed as metastatic tumour cells by H-E staining alone.

In Case 2, CK AE1/AE3-positive micrometastasis was detected in a single internal jugular vein lymph node. A similar cell mass was detected by H-E staining. A metastatic tumour cell mass was also detected by H-E staining.

Conclusion

Micrometastasis and ITCs could be detected in the cervical lymph node metastasis of OSCC by CK staining as adjuncts to H-E staining, demonstrating the improved accuracy of histopathological diagnosis.

**P-1216****SURGICAL MANAGEMENT OF ACCESSORY PAROTID GLAND TUMOURS**

I. Luksic¹, P. Sutton², V. Zubcic³

¹ *Department of Maxillofacial Surgery, University of Zagreb School of Medicine, University Hospital Dubrava, Zagreb, Croatia*

² *Department of Oncology, University Hospital Center "Sisters of Mercy", University Hospital for Tumours, Zagreb, Croatia*

³ *Department of Maxillofacial Surgery, University Hospital Center Osijek, Osijek, Croatia*

Objective: The accessory parotid gland (APG) has been described as salivary tissue that is anterior and anatomically separate from the main body of the parotid gland and adjacent to Stensen's duct by way of one or multiple secondary connections. Although the APG is a common anatomical variation, APG tumours are extremely rare, with a reported incidence of 1 to 7.7% of all parotid gland tumours, and a malignancy rate from 26 to 50%. We report on 6 patients having APG tumours with emphasis on diagnosis and clinical features, as well as the indications and rationale for different treatment approaches.

Materials and Methods: The medical records of patients who were surgically treated for APG tumours were reviewed. Follow-up intervals were calculated in months from the date of first treatment at our Department to the date of last follow-up or death.

Results: During the 24-year period, 488 patients with primary parotid tumours underwent surgical treatment. APG tumours comprised 1.23% of overall parotid tumours (6/488) and had a malignancy rate of 33.3% (2/6). There were three males and three females with a mean age of 39 years (range, 14-70). Histologically, of the 6 APG tumours, there were three pleomorphic adenomas, one myoepithelioma, one adenoid cystic carcinoma and one high-grade mucoepidermoid carcinoma. Two patients with malignant disease underwent adjuvant postoperative radiotherapy. A total of 5 out of 6 parotidectomies entailed a superficial lobectomy, while one was a total parotidectomy with composite resection of the masseter muscle in case of high-grade mucoepidermoid carcinoma. Lymphadenectomies were electively performed in suspicious cases, though they yielded negative neck nodes. No postoperative complications were detected. At 5 years disease-free survival was 83.3%. Mean follow-up was 161 months (range, 14-253).

Conclusion: Although nonsalivary diagnoses frequently occur in the buccal area, APG tumours should be considered in every differential diagnosis in patients presenting with a mid-cheek mass. Surgical resection remains the mainstay of treatment for both parotid and APG tumours. From oncosurgical, cosmetic, and functional standpoints, treatment by facelift parotidectomy approach or "S-incision" with concomitant superficial lobectomy is the recommended surgical approach, while a high-grade histological appearance requires total parotidectomy.

**P-1222****TREATMENT FOR KERATOCYSTIC ODONTOGENIC TUMOUR**

Shosuke Morita¹, Tomio Iseki¹, Teruyoshi Hayashi¹, Kaname Tsuji¹, Koji Yamada¹, Hiroaki Yoshida¹, Kazuhiro Matsumoto¹, Hideo Shimizu²

¹ *First Department of Oral and Maxillofacial Surgery, Osaka Dental University, Osaka, Japan*

² *Department of Nutritional Science for Well-being, Kansai University of Welfare Science, Kashiwara, Osaka, Japan*

Objectives: We assessed the conservative surgical treatment for keratocystic odontogenic tumour (KCOT).

Material and Methods: We reviewed 66 KCOT patients (primary; 54 cases, secondary; 12 cases) who were treated in the First Department of Oral and Maxillofacial Surgery of Osaka Dental University between January 2000 and December 2009, and assessed the tumour characteristics and treatment methods based on the 2005 WHO Histological Classification of Odontogenic Tumours.

Results: In 54 primary cases (male 31, female 23), and age at initial visit ranged from 11 to 80 with average age of 41.5 years old. 44 cases were in the mandible, 10 cases in the maxilla. Initial treatment for these cases, enucleation followed by curettage was in twenty-one, marsupialization in 18, simple enucleation in 13, and marginal resection of the mandible in one, and enucleation followed by cryosurgery in one. In eighteen marsupialization cases, 14 cases treated by enucleation followed by curettage and 4 cases enucleation. All most cases were treated by conservative surgical treatment. Recurrence was found in four cases out of primary 54 cases, and duration of recurrence from operation was 2 years in two cases, 5 years in two cases. In 12 secondary cases, age at initial visit ranged from 21 to 77 with average age of 46.6 years old. Duration of recurrence from operation ranged from five to thirty-six years, and nine cases recurred within 5 to ten years. Furthermore recurrence was 2 cases in secondary cases.

Conclusions: The recommended treatment modality for KCOT is conservative surgical method.

**P-1236****THE USE OF CARNOY'S SOLUTION FOLLOWING ENUCLEATION OF AMELOBLASTOMA: TEN YEARS EXPERIENCE**

J Haq, S Siddiqui, M McGurk

Oral and Maxillofacial Surgery, Guy's Hospital, London, United Kingdom

Aims/Objectives:

Ameloblastoma is a rare, benign odontogenic tumour which more commonly affects the mandible than the maxilla. Treatment of ameloblastoma is controversial, and may depend upon radiological appearance, and histological subtype at biopsy. One option is resection and complex reconstruction. In this series we present a more conservative approach to management of not only unicystic, but also solid/multicystic subtypes.

The purpose of our study is to determine the outcome following the treatment of ameloblastomas with enucleation and application of Carnoy's solution.

Material and Methods:

Patients were identified through a search of all ameloblastoma samples within the hospital histology database. Case notes were retrieved of one surgeon to include all operations performed with the aid of Carnoy's solution. Information collected included demographics, histological subtype and variant, operation and extraction of any teeth, lengths of post-operative follow up and whether any recurrence had occurred.

Results:

22 patients (12 female) underwent enucleation of ameloblastoma and application of Carnoy's solution from 2005-2014. Mean age was 41 years (range 12 to 79 years).

14 patients had concurrent extraction of teeth. In all cases Carnoy's solution was applied for 2, 3 minute periods to the bare cyst cavity and then thorough washing with saline was performed.

With regard to subtype and histology, 15 (65%) were solid/multicystic with an overall predominance of the follicular and/or plexiform variant.

Mean length of follow up was 22 months (range 6 – 83), excluding one patient who died from another condition within the follow up period, and one patient who failed to attend. To date, one recurrence is noted three years post-operatively. In this case, repeat enucleation and Carnoy's was performed, with extraction of teeth, and no recurrence is manifest currently.

Discussion and Conclusion:

This case series demonstrates the potential benefits of conservative surgery and sterilisation of the ameloblastoma cyst cavity with Carnoy's solution. The recurrence rate is very low, and with vigilant surveillance, a similar repeat procedure for recurrence has been shown to be effective if necessary. Such management is not limited only to unicystic lesions, but also solid and multi/cystic subtypes which have historically been managed more radically.



P-1249

IMPACT OF CORE BIOPSIES IN A NECK LUMP CLINIC

F. Ryba, A. Kalia, A. Sanalla, K. Burgess, K. George

Oral and maxillofacial surgery, King's College Hospital, London, United Kingdom

Aims/Objectives

The multidisciplinary one-stop neck lump clinic at King's College Hospital has been operational for just under two years. It is resourced with an oral and maxillofacial surgeon, a haematologist, a radiologist, a cytologist and a specialist nurse. This allows rapid diagnosis due to in-clinic ultrasonography, fine needle aspiration cytology (FNAC) and more recently core biopsies (CB). This audit assesses the impact of core biopsies on the number of open lymph node biopsies and the time to diagnosis.

Methods

Outcome data was collected prospectively from 235 patients seen in the neck lump clinic between April 2012 and February 2014. CBs were introduced in April 2013 and the impact of this on the number of open biopsies and the time to diagnosis was assessed.

Results

In 2012/13; 80 patients were seen, 75% had neck lumps, and 58% had FNAs. 28% of patient required open lymph node biopsies for final diagnosis.

In 2013/14; 155 patients were seen, 84% had neck lumps, and 46% had FNAs. 20% of patients had core biopsies, and 15% required open lymph node biopsies. 65% of CBs provided final diagnosis.

Time to diagnosis for open lymph node biopsies was 48 days compared to 29 days for those diagnosed from CB. The most common diagnosis from FNAs was reactive node and tuberculosis followed by benign salivary disease. The most common diagnosis from CBs was haematological malignancies.

Discussion

The introduction of CBs reduced the number of patient requiring open biopsies by 13%. There was also a shift of the most common diagnosis from open lymph node biopsies from haematological malignancies to reactive and infective causes. Therefore, CBs appear to have the most benefit on haematological malignancies by allowing quicker diagnosis and avoiding further invasive procedures.

Conclusion

Our experience confirms that ultrasound guided core biopsies are a valuable minimally invasive diagnostic tool that can be carried out in clinic without complications. They provide faster diagnosis and reduce the need for open lymph node biopsy. This benefits not only the patient but also should translate to cost savings by reducing hospital admissions and theatre operating.

**P-1256****REFINEMENTS IN ENDOSCOPIC TEMPORALIS MUSCLE FLAP DISSECTION**

R.Girotto, E.Lupi, M.Messi, P.Balercia

Chirurgia Maxillo-Facciale, Ospedali Riuniti, Ancona, Italy

In the last years we have adopted the endoscopic technique to elevate the temporalis muscle flap both for orbital and maxillary reconstruction. Two skin incision allow to dissect the adequate space which is necessary to see first and then to elevate the muscular flap in a safe manner. The keypoint of the procedure is to position the lower surgical incision just 1-2 cm above the zygomatic arch and the upper one 1 cm above the superior temporal crest in the parietal region.

This was the past surgical technique but now we have outlined a new approach just with one 1,5 cm skin incision to introduce both the endoscope and the instruments. It is crucial to position this incision in the right place i.e. the lower temporal region just above the zygomatic arch and to dissect properly the deep temporal fascia which is representing our deep limit. The superficial temporal fascia contain the fascial nerve and thus, preserving this layer, the nerve is left intact and without any functional impairment.

With this approach we have observed a quicker recovery, less swelling and less infection of the surgical field. No facial impairment had been observed. Next purpose of the future is to develop materials or prosthesis which can bridge the temporal defect.



P-1271

IMPACT OF HARMONIC SCALPEL IN HEAD AND NECK ONCOLOGIC SURGERY

A. Wilson, Lancashire Teaching Hospitals NHS Trust

Oral and Maxillofacial Surgery, Lancashire teaching hospitals NHS Trust, Preston, United Kingdom

OBJECTIVES/HYPOTHESIS

The Ultracision focus Harmonic scalpel (HS) has been used in head and neck surgery as an alternative to conventional (CT) cold steel surgical instruments, electrocautery and hand-tied ligation for haemostasis. We intended to investigate the impact of the harmonic scalpel on blood loss, transfusion rates, operating time and length of inpatient stay in neck dissections and tumour resections for head and neck squamous cell carcinoma.

METHOD

Fifty four patients who underwent tumour resection and neck dissection with primary head and neck cancer were enrolled in this study. The following variables were analysed.

Haemoglobin and haematocrit preop, day 1 post op and day 7 postop.

Length of inpatient stay and operating time.

The results were analysed using the student t test.

RESULT

The drop in haemoglobin on day 7 postoperative day with the use of the HS on average was 2.833 compared to an average of 2.648 in the conventional group ($P < 0.675$) and there was not much difference in the haematocrit between the HS group than the CT group (0.0782 vs. 0.0749 $P < 0.785$). There was an average reduction of an hour in total operating time and reduction of 6 days of inpatient surgical stay.

CONCLUSIONS

The HS is a relatively safe and effective alternative method to electrocautery and hand-tie ligation in ND. The HS did not significantly reduce the blood loss or transfusion rates in our group of patients that underwent surgical treatment for primary head and neck squamous cell carcinoma. However in our group of patients it did show a reduction in operating time and length of inpatient.



P-1272

AN AUDIT TO ASSESS THE QUALITY AND ACCURACY OF INFORMATION PROVIDED ON NON MELANOMA SKIN CANCER HISTOPATHOLOGY REQUEST FORMS.

A.Wilson

Oral and Maxillofacial Surgery, Pennine acute Hospitals NHS Trust, Manchester, United Kingdom

AIMS and Objectives

Communication between medical professionals is an essential component of delivering safe and effective health care. We aim to assess the quality and accuracy of data provided in histopathology request form and operation notes for non-melanoma skin cancer.

METHOD

Histopathology forms were identified by coding from the histopathology department to identify the patients treated by the OMFS department at Pennine acute Hospitals NHS Trust. A total of 94 patients were identified over a three-month period (January 2013 to April 2013). For each of the patients, their operation notes on Surginote. The gold standard used was the Draft UK National Histopathology Request form for skin biopsies proposed in collaboration with the National cancer intelligence network and Royal college of Pathologists.

RESULTS

Our findings show that the information routinely captured on the pathology request form is often minimal. Often the clinical diagnosis, procedure, surgical clinical margin, surgical marker stitch were not documented.

This audit identified that, in less than 10% of the sample, the histopathologist was not provided with any clinical information on the size of the lesion, to help in the diagnostic process. It was also noted that there was variable accuracy of recording of core data between histopathology request form and Surginote operation note. Only 36% of the core data recorded on histopathology forms and operation notes correlated.

Conclusion

An online form that populates information from surginote would be of great benefit, as it will improve accuracy of data recorded, making sure that the data we record correlates with the data we send to the pathologists. We plan to prospectively re-audit the skin histopathology forms for the next 90 patients to complete the audit cycle.



P-1276

PATHOLOGICAL AND IMMUNOHISTOCHEMICAL PREDICTORS OF REGIONAL METASTASIS IN OSCC: A RETROSPECTIVE STUDY ON A SERIES TREATED WITH SENTINEL NODE BIOPSY.

T. Poli¹, E.M. Silini², T. D'Adda², N. Campanini², D. Lanfranco¹, E. Sesenna¹

¹ *Maxillofacial Surgery Unit, Department of Biomedical, Biotechnology and Traslational Sciences (S.Bi.Bi.T.) & Head and Neck Department, University Hospital of Parma, Parma, Italy*

² *Pathology Unit, Department of Biomedical, Biotechnology and Traslational Sciences (S.Bi.Bi.T.) , University of Parma, Parma, Italy*

Background/Aim:

In patients affected by oral squamous cell carcinoma (OSCC) loco-regional recurrence rates following treatment have been reported in the range of 25-48%. They represent the most common cause of death for these patients and have an important impact on aesthetic and function. No specific markers are currently available to predict disease progression. We tested a panel of pathological and immunohistochemical parameters in formalin-fixed paraffin-embedded (FFPE) pathological specimens of a series of OSCCs undergoing sentinel node biopsy (SNB) (alone or in association with neck dissection (ND)) to assess the potential contribution of these markers to the prediction and detection of lymph node metastases.

Materials and Methods:

The study is based on a retrospective series of 32 patients affected by OSCC and surgically treated with resection of the primary tumour and SNB alone or associated with ND. A panel of pathological (Tumoursite; maximum diameter; thickness; depth of invasion; level of invasion; pattern of invasion; basaloid features; lympho-plasmacytic reaction; lympho-vascular invasion; perineural invasion; degree of cell keratinisation; nuclear pleomorphism; number of mitoses per 10 HPF; grade of differentiation; pTNM ; surgical margins; Martinez-Gimeno score; Anneroth's mod. Score) and immunohistochemical variables (p53, p16ink4a, EGFR, Ki67, D2-40, Cyclin D1, VEGF-C, P-cadherin, E-cadherin immunostains) were evaluated for each case. The results were compared with the presence and the number of lymph node metastases and the clinical outcomes.

Results:

The results of the study are presented

Conclusion:

Control of loco-regional disease (neck and primary site) is of paramount importance in patients affected by OSCC and the status of regional lymph nodes represents the main independent prognostic variable. SNB is a minimally invasive surgical technique able to disclose occult metastasis. Its accuracy can be assessed by the proportion of SNBs containing metastases compared to that of that of radical NDs (20-30%, depending on patient population and tumour size). Since none of the classic parameters is in itself sufficient to predict the outcome of patients affected by OSCC, the integration of pathological and immunohistochemical parameters with clinical, radiological and genomic data might provide risk stratification of patients at baseline improving the diagnostic value of SNB.



P-1279

RISK STRATIFICATION AND PREDICTION OF LOCOREGIONAL RECURRENCE IN OSCC: THE ORAMARK PROJECT UP-DATES AND REFINES THE NEOMARK PROJECT RESULTS.

T. Poli¹, D. Lanfranco¹, R. Perris², E.M. Silini³, N. Bertani², S. Rossi², C. Azzoni³, L. Bottarelli³, A. Ferri¹, E. Sesenna¹

¹ *Maxillofacial Surgery Unit, Department of Biomedical, Biotechnology and Translational Sciences), Head and Neck Department & Center for Molecular and Translational Oncology (COMT) & University Hospital of Parma, Parma, Italy*

² *Center for Molecular and Translational Oncology (COMT), University of Parma, Parma, Italy*

³ *Pathology Unit, Department of Biomedical, Biotechnology and Translational Sciences), University Hospital of Parma, Parma, Italy*

Background

In patients affected by oral squamous cell carcinoma (OSCC) locoregional recurrence following treatment (25-48%) represents the most common cause of death for patients and has an important impact on physical appearance and function.

Aims

The OraMod project (ICT VPH based predictive model for oral cancer reoccurrence in the clinical practice, Seventh Framework Program, CE) focuses on the implementation of 'omics'-based predictive systems from the lab bench to the bed side using risk models on basis of clinical, histological, imaging and genomic markers to help clinicians to predict oral cancer reoccurrence. The project continues the research conducted by previous FP7-EC-funded NeoMark project, which produced a set of prognostic biomarkers and a gene expression signature significant for reoccurrence of oral cavity tumours, a disease more and more frequent and with a very high mortality rate. The OraMod project will ultimately result in a software tool based on the risk model for each individual patient to identify the patients at highest risk for disease reoccurrence at baseline, for whom personalized and specific therapeutic approaches could be adopted in a future scenario.

Materials and Methods

Gene sets have been identified within the previous NeoMark project and will be updated and reanalysed for OraMod. In this project the array technology will be replaced by an RT-PCR "lab-on-chip" system for most predicting genes. The RT-PCR set-up will be trained, verified in existing independent retrospective cohorts, and validated in a multicenter prospective trial. The validated gene sets will be combined with imaging predictors, histological and clinical parameters to build a risk model. Three university hospitals (VU University Medical Center in Amsterdam, Heinrich-Heine University Clinic in Dusseldorf and the Maxillofacial Surgery Unit of the University Hospital of Parma), will prospective enrol patients in the present study.

Results:

The preliminary results of the OraMod Project will be presented.

**P-1286****MALIGNANT AMELOBLASTOMA OF MANDIBLE RECONSTRUCTED BY USE OF ALATISSIMUS DORSI MUSCULOCUTANEOUS FLAP WITH SCAPULAR BONE**

Fumie Tanaka¹, Kiwako Izumi¹, Yoshihiko Okamoto¹, Mina Sasaki¹, Yuri Katsumata¹, Teruhisa Fukawa¹, Hashimoto Kenichiro¹, Yoshihiro Yamashita², Tetsuro Ikebe¹, Satoru Oozeki¹

¹*Department of Oral & Maxillofacial Surgery, Fukuoka Dental College*

²*Department of Oral & Maxillofacial Surgery, Miyazaki University*

Abstract: Ameloblastoma is slow growing benign tumour of the jaw. In case of large ameloblastoma we perform tissue biopsy and marsupialization to minimize the mass lesion and provide complete excision safely. We present a case of mandible ameloblastoma that showed a transformed ameloblastic carcinoma. The case was performed hemi-mandibulectomy and mandibular reconstruction using angular branch artery pedicled scapular bone flaps (SBF) combined with latissimus dorsi musculocutaneous flap (LDMF) and dental implants to restore function and appearance.

Case report: A 21-years-old female patient, a chief complaint of the painless swelling gum in the right 3rd molar lesion since past 1 month. Panoramic X-ray showing cystic mass causing expansion of the ramus and angle of the right mandible. We did biopsy and fenestration under the local anaesthesia that resulted in ameloblastoma of the mandible. The biopsy result is ameloblastoma. 1 month later, tumour growth, so we biopsy again. Its result is malignant ameloblastoma of the mandible. CT scan showing tumour causing body of the right mandible expansion of the right ramus of the mandible. PET-CT showing no metastasis. Treatment chose hemimandibulectomy with reconstruction by use of a latissimus dorsi musculocutaneous flap with scapular bone, lymph node dissection.

Result: The patient has been under observation for one year, without signs of recurrence.



P-1316

GIANT PLEOMORPHIC ADENOMA OF PALATE

I. Vila, S. Aboul-Hosn, P. Rodriguez, A. Pradillos, S. Gómez

Department of oral and maxillofacial surgery, Plató hospital, Barcelona, Spain

Introduction: Pleomorphic adenoma is the most common benign neoplasm of major and minor salivary glands, although malignant tumours are more frequent in the last ones. The most common intraoral site of minor salivary glands tumours is the palate.

Material and methods: We report the case of a 59 year old male who presented in our department with a painless slow growing swelling of palate over the last 20 years. CT showed a big expansive lesion, with an approximate maximum diameter of 4.7 cm. and its epicenter in the middle right of the soft palate. Successive fine aspiration cytology finds a lot of myoepithelial cells and supported the diagnosis of minor salivary gland neoplasm.

Results: Patient underwent surgery and the entire hard and soft palate tumour was excised with safety margins. The neoplastic defect was reconstructed with a pedicled miofascial temporal flap, with its way to the buccal cavity supported by the zygomatic arch osteotomy. Histopathological examination confirmed diagnosis of a pleomorphic adenoma of minor salivary palatal glands. After six months of the surgery, there has been no recurrence of the lesion and the flap has made an excellent metaplasia.

Discussion: Mixed tumour of the minor salivary glands affects mostly patients in their fourth to sixth decades, with no clear sex predominance. Clinically it's typically a firm or rubbery submucosal mass without ulceration of the surrounding mucosa. The primary goal of excision is the complete removal of the mass decreasing the risk of recurrence and malignant transformation.

Conclusions: Although pleomorphic adenoma is a benign entity, the close clinical, radiological and pathological examination is obligated to prevent its malignant and recurrent potential.

**P-1320****OROFACIAL RHABDOMYOSARCOMA IN CHILDHOOD: THE ROLE OF RADIOLOGY IN PAEDIATRIC SOFT TISSUE TUMOURS.**

D.P. López Gordillo, J.C. Blasco Palacio, F.J. Rehberger Bescos, L. Bermejo Abascal, S. Lazuen Fernandez, S. Sanchez Santolino, B. García-Montesino Perea, M.F. García Reija, T. Gonzalez Terán, R.C. Saiz Bustillo

Oral and Maxillofacial Surgery, Hospital Universitario Marqués de Valdecilla, Santander, Spain

Rhabdomyosarcoma (RMS) is the most common soft-tissue sarcoma in the head and neck and represents 5% of all childhood cancers. The most common affected site in the oral cavity is the tongue followed by the soft palate, hard palate, and buccal mucosa.

RMS are associated with high rates of recurrence and generalized metastases through haematogenic and/or lymphatic dissemination. The diagnosis is generally made by microscopic analysis. Imaging techniques play an essential role at the time of presentation, both as tool for diagnosis and also to assess tumour size, relation to or involvement of adjacent structures and looking for evidence of local and distant spread.

RMS of the head and neck grows insidiously and often invades the intracranial space through the numerous foramina reaching the brain. MRI is mandatory because of its capacity of assessing local and intracranial extension. The masses are also typically isointense or near isointense to muscle on T1 images, consequently, they are easily distinguished from benign lesions in the head and neck of children, which are generally of lower intensity than muscle on T1 images.

We present a case of orofacial RMS in a 11 year old girl with delay in the diagnosis, she was referred to our department of oral and maxillofacial surgery in May 2013 for the investigation of painful swelling in her right cheek with rapid and progressive growth. Her parents reported that the symptoms had started 10 days before and received oral and parenteral antibiotics, but the treatment was ineffective.

The ultrasound suggested a subcutaneous abscess of the cellular tissue. She received oral antibiotics again. Two months later, patients came to our department referring tumour growth and limitation to open her mouth. Urgent magnetic resonance imaging showed a large preauricular lesion over muscle masseter, isointense to muscle on T1, an incisional biopsy was made, and the histological examination showed embryonal RMS.

We conclude that in children, any swelling should be carefully examined and treatment outcomes should be regularly followed up. High degree of suspicion, early diagnosis, and a multidisciplinary approach would be helpful in the management of these cases.



P-1324

PATTERN NODE METASTASIS IN SQUAMOUS CELL CARCINOMA OF MAXILLARY SINUS.

D.P.López Gordillo, J.C.Blasco Palalcio, F.J.Rehberger Bescos, L.Bermejo Abascal, S. Lazuen Fernandez, M.F.García Reija, B.García-Montesinos Perea, T.Gonzalez Terán., S.Sanchez Santolino, R.C. Saiz Bustillo

Oral and Maxillofacial Surgery, Hospital Universitario Marqués de valdecilla, Santander, Spain

Cancer of the paranasal sinuses is relatively uncommon, accounting for about 1% of all malignant tumours and about 3% of all head and neck cancers. Squamous cell carcinoma constitutes over 80% of all malignancies that arise in the nasal cavity and paranasal sinuses. Approximately 70% occurs in the maxillary sinus, 12% in the nasal cavity, and the remainder in the nasal vestibule and remaining sinuses.

The common early symptomatology of paranasal sinus cancer is identical to the symptomatology observed in benign conditions, thus-therefore the majority of patients present with advanced local disease at diagnosis, resulting in poor local control and survival.

The incidence of cervical lymph node metastases at the initial diagnosis has been reported as ranging from 3% to 33%. The most common sites of initial nodal spread and nodal relapse occurred in the ipsilateral level Ib and IIa neck nodes. Retropharyngeal lymph node metastases incidence has rarely been reported, although some authors refer it may has a strong correlation with poor prognosis.

In an attempt to explore clinical significance of lymph node metastasis in patients with squamous cell carcinoma of maxillary sinus, we analyse patterns of cervical lymph node in eight patients diagnosed in our service oral and maxillofacial surgery in the last 10 years, and discuss the role neck treatment of squamous cell carcinoma of maxillary sinus with a clinically negative neck.

**P-1328****SINGLE LARGE ROTATION FLAP FOR SCALP SCC EXCISION**

F. Pimentel¹, R. A. Nunes², H. M. Marques¹, R. Saleiro¹, I. O. Santos¹, M. A. Vilares³, J. R. Santos³

¹ *Craniomaxillofacial Surgery, Centro Hospitalar do Porto, Porto, Portugal*

² *Maxillofacial Surgery, Centro Hospitalar do Tâmega e Vouga - H. São Teotónio, Viseu, Portugal*

³ *Head & Neck Surgery, Instituto Português de Oncologia Francisco Gentil - Lisboa, Lisboa, Portugal*

Squamous Cell Carcinoma (SCC) is the second most prevalent skin malignancy, and is most frequent on the head and neck regions, likely due to increased radiation exposure. There is a smaller incidence in the scalp region as the skin is usually covered by hair.

We report a case of a 75 year-old male with significant alopecia who presented a large ulcerated lesion of the parietal region of the scalp, and was thus submitted to radical surgical excision with margins (≈ 10 cm wide). During surgery, dermis and bone invasion were verified, requiring parietal osteotomy with deep dissection and exposure of the dura. As a consequence of such broad tissue defect, a broad rotation flap was designed, requiring dissection of approximately the entire scalp and scoring of the flap's periosteum/aponeurosis to allow broader flap expansion, and thus allowing primary closure, covering the entire exposed bone.

Patient recovery on post-op was uneventful. Histologic exam revealed a low-differentiation SCC.

This represents a low-morbidity and relatively simple solution for scalp reconstruction, with excellent aesthetic result. Although other more advanced and complex alternatives have been developed, this flap proved to be reliable and with almost unrivalled match, nevertheless without compromising other potential reconstructive alternatives. "Keeping it simple" appeared to attain the best surgical result, as our case illustrates.

**P-1336****ULTRASOUND GUIDED INTRALESIONAL LASER TREATMENT OF VASCULAR MALFORMATIONS AND DEEP HEMANGIOMAS BY 1470 NM LASER**

R. Smucler^{1, 2}, Z. Ott¹, P. Andrlé²

¹ Vascular surgery, ASKLEPION-Lasercentrum Prague, Prague, Czech Republic

² Faculty of Medicine in Pilsen, Dpt. of Dentistry and Maxillofacial Surgery, Charles University, Pilsen, Czech Republic

Backgrounds and Objectives: Vascular malformations in head and neck region remains challenging pathology with significant morbidity. They are many treatment options but without single really effective modality. Laser coagulation with fiber inserted directly into tumour is one of them. But without navigation it seems to be adventurous surgery in complicated anatomy of face and it is very difficult to replicate. Some authors promote MRI or CT as perfect tools for planning and control but protocols are complicated not speaking about economy. Ultrasound with modern guiding seems to be more accessible for daily praxis. Majority of papers are written about Nd:YAG laser which we see as potentially dangerous because of large zone of irreversible thermal damage. Modern 1470 nm diode laser seems to be more precise, safe and technologically simple. Aim of this work is to validate effectiveness of this tool in one-year study.

Study Design/Materials and Method: 30 verified vascular malformations. We provided intravascular application of 1470 nm laser light into tumour under control of ultrasound in whole volume with power ranging from 5-10 W. Patients were monitored every month; in case of recurrence we indicated additional treatment. Blinded, independent evaluator, ultrasound controls.

Results: All tumours were eliminated or smaller under 25% of original size; with perfect control from sensitive anatomical structures (bone, nerves) in average 2,1 sessions. Complete tumour removal was achieved in only 21 cases after 3 treatments (70%).

Conclusion: Ultrasound guided intralesional coagulation of vascular malformations seems to be at least one of most effective methods with low level of complications, acceptable economy and little side-effects. Complete elimination of tumour is difficult to promise, because of coagulation near to sensitive structures like n. facialis, bones or facial muscles. Control of tumour, which is leading to stabilization of disease, is nearly guaranteed.



P-1341

INCIDENTAL CERVICAL LYMPHNODES METASTASES OF THYROID CARCINOMA IN HEAD AND NECK SQUAMOUS CELL CARCINOMA PATIENTS

B. Moralejo, A. Marí, E. Argüero, C. Arranz, S. Cuscó, M. Melero, A. Morla, F. Cuesta, D. Bohorquez

MAXILLOFACIAL SURGERY, HOSPITAL UNIVERSITARI DE BELLVITGE, L'HOSPITALET DE LLOBREGAT, Spain

-Purpose: the incidental association of thyroid carcinoma as a second primary tumour with head and neck cancer is an unusual development. Management and significance of these patients lead to controversy as reported in literature for two main reasons: some authors reported that some thyroid tissue found in cervical lymph nodes could be explain as heterotopic thyroid inclusions in lymph tissue as a consequence of an aberrant migration. Other ones consider that all thyroid tissue found in lateral neck nodes represents lymph nodes metastases from a thyroid carcinoma. However it is questionable whether all occult thyroid cancer have to be treated surgically.

-Material and methods: we retrospectively studied patients with head and neck squamous cell carcinoma treated in our hospital between the period from 2000 to 2013, in which simultaneous finding of papillary thyroid cancer and squamous head and neck cancer were discovered during neck dissection.

-Discussion: we reviewed all cases with collision of both kind of carcinomas and calculated the frequency of the simultaneous occurrence, histopathological examination, diagnostic imaging techniques and management of thyroid cancer.



P-1349

OSTEOBLASTOMA OF THE MAXILLOFACIAL REGION, REPORT OF TWO CASES

H. Marques¹, L. Barroso², D. Sanz², A. Ferreira², F. Pimentel¹, R. Saleiro¹, M. Mesquita², T. Burnay²

¹ *Cirurgia Maxilofacial, Centro Hospitalar do Porto, Porto, Portugal*

² *Cirurgia Maxilofacial, Centro Hospitalar Universitário de Coimbra, Coimbra, Portugal*

Objective: Osteoblastoma is a rare benign tumour that accounts for less than 1% of all bone tumours and most commonly involves long bones, the spine and sacrum. Less than 10% of these type of tumours are located at the maxillofacial region. Histologically, they are characterized by osteoid and woven bone deposition and abundant osteoblasts that are frequently in close association with newly formed bone.

Results: We report on two cases, a 54 years-old female with a maxillary mass and a 24 years-old female with an mandibular mass. The main complaint of both patients was swelling and pain at the mass location. Both were treated with surgery under general anesthesia in which we performed excision of the lesions and peripheral ostectomy with a bur. In a 6 months follow-up period they present with no signs of recurrence and are symptom free.

Conclusions: Benign osteoblastoma involving jaw bones is a rare tumour. Surgical excision is the adequate treatment, giving these patients a good prognosis. A long-term follow-up is recommended.



P-1353

REVERSE YU'S FLAP FOR UPPER LIP RECONSTRUCTION AFTER RESECTION OF ADENOID CYSTIC CARCINOMA: REPORT OF TWO CASES.

M. Sánchez- Sánchez, R. Lozano- Rosado, P. Infante- Cossío, R. Belmonte- Caro, J. Montes- Carmona, JL Gutiérrez- Pérez

Oral and Maxillofacial Surgery Department., Virgen del Rocio University Hospital, Seville, Spain

Functional competence and optimal aesthetic results are the objectives of upper lip reconstruction. Many different methods have been described in the literature to treat defects after a tumour excision, indicating that there is no ideal procedure. In 2010, a modification of Yu's flap for upper lip reconstruction was reported.

In this study, we present two cases of adenoid cystic carcinoma (ACC) of the upper lip, a rare salivary gland malignancy, which were treated by the combination of wide excision and reconstruction with a reverse Yu's flap.

METHODS

A 80- year -old woman presented with a ACC of the upper lip. The tumour was excised with a wide margin involving the oral commissure. A 51 -year-old man presented with a painless, 1 cm in diameter, submucosal nodule on the upper lip. There was difficulty in establishing a clinical diagnosis, but it was thought to be a benign tumour and was removed. After resection, the histological diagnosis was ACC. Treatment was completed with re- excision of margins.

The two cases were reconstructed with reverse Yu`s flap.

RESULTS

After one- year follow up no local recurrence or distant metastasis have been observed. A good aesthetic and functional result was obtained in both cases.

CONCLUSIONS

Reverse Yu's flap is a reliable technique that offers good functional and aesthetic outcomes in reconstruction of upper lip defects. We have not found in the literature the use of this flap for the reconstruction of upper lip defects after resection of this uncommon tumour of the head and neck. We discuss different aspects of this malignancy and this surgical procedure.



P-1359

A RARE CASE OF OSTEOARCOMA IN MANDIBLE-CASE PRESENTATION

A. Ismani¹, J. Naumoski¹, A. Rexhepi²

¹ *Department of Maxillofacial surgery , University dental clinical centre, Skopje, Macedonia*

² *Department of Orthodontics, University dental clinical centre, Skopje, Macedonia*

Objective: To present the clinic and pathology of OS in retro molar region of lower jaw.

Aim: A case report of osteosarcoma of the mandible, which was initially diagnosed as epulis in the basis of the clinical examination. This mucosal proliferation was showed after extraction of tooth 48, radiograph, computed tomography (CT) and histopathological findings is presented.

Material and method: From general dental practitioner a 34 year old male referred in Clinic for maxillofacial surgeon, for expert management. The clinical presentation of the case was classic, with minimal for such a small lesion, and mucosal proliferation in the left side of the mandible. The mucosal changes were localized in the retro molar area and they showed one months after extraction of tooth 48. The radiograph showed more lesion in the jaw bone, also proliferative granulation tissue was seen in the histopathology. Extracting of 47 and removal of the epulis were performed

Two weeks after surgery, the histopathology picture showed proliferative granulation tissue. The radical surgery preferred after CT and histopathology findings. The pathology showed a high-grade osteo sarcoma (OS).

The resection of a part of tongue and hemi resection of mandible were done.

Results: A post operative period of rehabilitation was continued with radiology accompanied with chemotherapy and multi drugs for normalized the patient OS symptoms. A predictable result and healthy condition were achieved.

Conclusion: We concluded that panoramic radiographs were very important for investigation of jaw pathology changes, where CT scanning is more useful for detailed diagnosis. The radical resection of mandible and the part of the tongue affected with this kind of tumour, is the best solution to continue normal patient rehabilitation..



P-1368

PAEDIATRIC BENIGN TUMOURS OF THE SKULL BASE

J. Kozak¹, M. Tichy¹, Z. Kabelka²

¹ Neurosurgery dpt., University Hospital Motol, Prague, Czech Republic

² ENT dpt., University Hospital Motol, Prague, Czech Republic

Skull base pathology in children is very rare. Many approaches used in resection of these tumours involve large bone resections, which can influence development of skull and face in very severe way. This can seriously change the patient overall development. When the transfacial approach is necessary, it is important to localize position of tooth buds in children and plan further reconstruction after surgery. For surgery itself the complex multidisciplinary team is mandatory.

Materials and Methods

Authors demonstrate their experience with teratoma, neurofibroma, angiofibroma, fibrous osteodysplasia. All demonstrated patients were operated with combined extra and intracranial approach.

Results

Regard to complexity of these cases the results cannot be generalized. Every patient demands individual solution. In our cohort we did not encounter severe long-term complication. The patient with angiofibroma suffered temporary facial palsy, which disappeared completely in several months. In the case of neurofibroma an orbital exenteration was necessary. In the same case a recurrence was observed. In case of fibrous osteodysplasia radical resection was not achieved and the residuum is observed. Despite of proximity of nasal cavity and paranasal sinusitis we did not observe any infectious complication. Patients with angiofibroma and teratoma required repeated blood transfer.

Discussion and Conclusion

In the category of children and youth the healing process is, despite of large resection and reconstruction, very favourable. Functional and cosmetic results are surprisingly very good. Further growth and development of these individuals is going on normally.



P-1373

THE USE OF A CO2 LASER IN REMOVING BENIGN FACIAL NAEVI

S.Stevens, G. Van Hemelen

ZMACK, Department of Cranio-Maxillofacial Surgery, GH MONICA / University of Antwerp, Antwerp, Belgium

From 2011 up till now 40 patients were treated at our clinic for undesirable benign facial naevi using the Luxar-Novapulse® CO2-laser.

After surgical shaving of the naevi, the deeper dermal base of the naevus is lasered and upon complete removal an antibacterial ointment is applied for 3 days. Further healing of the wound is supported by the use of Calendula-cream.

The technique for the scarless removal of these benign lesions will be discussed and a number of cases will be demonstrated during the presentation.



P-1375

MULTIDISCIPLINARY TREATMENT OF MANDIBLE DEVIATION-CASE REPORT

A. Rexhepi¹, A. Ismani², S. Rexhepi³

¹ *Orthodontics, University dental clinical centre, Skopje, Macedonia*

² *Maxillo facial surgery, University dental clinical centre, Skopje, Macedonia*

³ *Private Practice, Private Practice, Skopje, Macedonia*

Aim: The aim of this paper is to show the successful combined orthodontic-surgical treatment of a female with mandible deviation.

Subject and method: Female 18 year-old, diagnosed with deviation of mandible toward the right. Intraoral clinical examination, intra-extra oral photos, a radiograph (PA) and study model, showed: Class III molar relationships on the left side and Class II on the right side, dental midline in mandible was deviated 3 mm toward the right. The mandible angle was larger than the norm.

Fixed orthodontic appliance is order to placed for balanced relationship between the dental and jaws bases.

With osteotomy surgery of the mandible was displaced 4mm on the left side and forward 1.5 mm on the right side. Between two jaws was placed inter maxillary fixation for six weeks to achieved stabile occlusion.

Results: The end of the treatment resulted with normal inter jaw relationship and Class I dental relationship.

Conclusion: Surgery and orthodontics must be coordinated to create at the patient excellent facial appearance and perfect functional occlusion.

**P-1382****RECURRENT GIANT MANDIBULAR AMELOBLASTOMA IN YOUNG ADULTS**

H. D. Koumoullis, A. Gravvanis, D. Anterriotis, N. Katsikeris, D. Tsoutsos

Plastic Surgery Department; Oral & Maxillofacial Surgery Department, General State Hospital of Athens, "G. Gennimatas", Athens, Greece

Purpose: Giant Mandibular Ameloblastoma (GMA) is a rare benign odontogenic tumor with marked tendency for recurrence. The purpose of the study is to define the most appropriate management of this locally aggressive tumor in young adults.

Methods: A retrospective study was performed on patients with GMA less than 30 years old, treated from 2009 to 2012. The data collected included initial treatment, tumor margins, reconstruction and follow-up. Patient self-evaluated speech, chewing, swallowing (Functional Intraoral Glasgow Scale) and Facial Appearance (University of Washington Quality of Life Questionnaire for Head and Neck) following definitive treatment.

Results: Thirteen patients (mean age 26) were identified with recurrent solid/multicystic disease requiring further treatment. Primary surgery involved enucleation in 7-patients, marginal mandibulectomy in 3-patients and box osteotomy in 3-patients. The average free margins were 0.35 cm (ranging from 0.1 to 0.6) and the average number of recurrences was 1.5 (ranging from 1 to 3). Definitive treatment involved segmental mandibulectomy and reconstruction with vascularized fibular flap, in all patients. Mandibular resection was planned at least 2 cm beyond the radiological limit, and free margins (1.4 cm in average) were achieved in all patients. All flaps were transplanted successfully, and no major complication occurred postoperatively. Seven patients had immediate reconstruction (group-A) and 6 secondary (group-B). The average bone defect was 7,2 cm in group-A and 7 cm in group-B ($p > 0.05$). The mean follow-up was 17 months (10-34), and no patient showed clinical or radiologic signs of recurrence. In group-A, Functional score was 13.7/15 and Facial Appearance score was 4.5/5, whilst in group-B were 11.5/15 and 3.3/5 respectively (both $p < 0.05$).

Conclusion: Considering the frequent recurrences of the disease in young adults and the high success of the fibular flap, aggressive resection of the mandibular ameloblastoma and immediate reconstruction is strongly advised.



P-1385

A RARE CONGENITAL DISEASE

S. Georgiev¹, P. Lozanova², L. Miteva²

¹ *Specialized Hospital for Maxillo-facial Surgery, Medical University, Sofia, Bulgaria*

² *Department of Dermatology and Venereology; Dermatological surgery unit, Medical University, Sofia, Bulgaria*

The Brooke-Spiegler syndrome is an uncommon autosomal dominant genetic condition associated with a high penetration of the CYLD gene. The disorder is characterized by the development of adnexial tumors. Lesions typically appears in the 2nd and 3rd decade of life and is characterized by the development of multiple skin appendage tumors- trichoepitheliomas, cylindromas, spiradenomas. The tumors are generally benign, but occasionally may become malignant. There are cases of association with malignant tumors of the salivary glands.

We present a 73-years old male patient with multiple skin cancers of the maxillo-facial region, clinically and histologically diagnosed as trichoepitheliomas, basal cell carcinomas and bilateral adenoid cystic carcinomas of the parotid glands. The patient underwent series of surgical excisions , including bilateral total parotidectomy.

Key words: syndroma Brooke-Spiegler, multiple tumors, trichoepithelioma, adenoid cystic carcinoma, basal cell carcinoma.

**P-1388****HIGH GRADE SALIVARY DUCT CARCINOMA WITH METASTASIS**

K. Malá¹, J. Borovec¹, M. Čegan², N. Harmash², V. Bobek^{3, 4}

¹ Department of Oral and Maxillofacial Surgery, Masaryk's hospital in Usti nad Labem, Krajska zdravotni a.s., Usti nad Labem, Czech Republic

² Department of Pathology, Masaryk's hospital in Usti nad Labem, Krajska zdravotni a.s., Usti nad Labem, Czech Republic

³ Department of Laboratory Genetics, University Hospital Kralovske Vinohrady, Prague, Czech Republic

⁴ Department of Histology and Embryology, Wroclaw Medical University, Wroclaw, Poland

Objectives: We report a case of 39 years old male with slowly growing mass in the upper part of the left parotid region with neurological symptoms including left lower lid hypomobility, lagophtalmos resulting in conjunctivitis and hyperlacrimation.

Materials and methods: The physical examination and MRI examination of the head and neck, radical parotidectomy as a surgical treatment of choice with saving of buccal, mandibular and cervical branches of the left facial nerve and resection of the temporal and zygomatic branches of the left facial nerv. Histopathologically examination and immunohistochemical study. The postoperative recovery period and following an adjuvant radiotherapy.

Results: We performed a histopathologically examination and an immunohistochemical studies. We demonstrated pan cytokeratin, cytokeratin 7, CEA (monoclonal) and sporadic HER2 neu positive reaction (see Fig. 3).Theestrogene and progesterone receptors, PSA (prostatic specific antigen), p63, S100 protein and calponin-1 did not show any positivity a. The proliferation activity index Ki67 was approximately 50%.

Conclusion: SDC is regarded as a high-grade aggressive malignant tumour of salivary gland characterized by an invasive growth with early regional and distant metastasis. It shows great similarity to ductal carcinoma of the breast, pathomorphologically. The MRI / CT scans are non-specific, but they help to do the diagnosis of malignancy and to manage the disease. The positive diagnosis is based on the histological examination findings.

**P-1390****STUDY OF OUTCOMES IN SURVIVAL FOR PATIENTS WITH CARCINOMA OF SALIVARY GLANDS**

A. Rollón Mayordomo, M. A. Juliá Martínez, A. Tofé Povedano

Department of Oral and Maxillofacial Surgery, Virgen Macarena University Hospital, Seville, Spain

Objectives: The aim of this study is to expose our experience in the treatment of salivary gland malignant tumors. Report of clinical, histological features and response to treatment in this patients in an univariant study, then the influence of these factors on the survival rate in a multivariant logistic and Cox analyses.

Materials and methods: This is a follow- up study of patients affected of salivary gland carcinoma, included in the Cancer Registry at Virgen Macarena University Hospital from 1992 to 2012. 1071 patients with head and neck primary cancer, with the inclusion criteria.

Results: Of the initial 1072 patients, we selected 92 patients who met the inclusion criteria. The peak of age is 60 years (20% under 45), 70% men and 60% in the parotid gland. Epidermoid carcinoma is the most frequent histological type. Most of the patients were treated with surgery without subsequent adjuvant quimio- radiotherapy. Follow- up range 1 to 165 months (median 37.3) with an overall 5 year survival of 44%. In the univariate analysis statistical significance was obtained for age, male sex, tumor size, clinical stage, N, histologic type, epidermoid histological grade and type of treatment received. In the multivariate analysis (Cox regression), independent other significant variables are the type of treatment received, histological grade, and initial clinical stage.

Results: The high points of the study are homogeneous population group, long follow- up and minimal number of losses, standarized treatment protocol, and methodology of the study itself. This provides high internal validity and effectiveness of valuation.

Conclusion: The type of resective surgery performed together with the initial TNM clinical stage and histological grade are variables with statistical significance in survival of patients affected of salivary gland carcinoma.



5. Prevention of Head and Neck Tumours

P-79

CHANGE OF PATIENTS' SMOKING ATTITUDES AFTER CONSULTATION WITH CLINICIANS IN ORAL, MAXILLOFACIAL, HEAD AND NECK SURGERY

L Cheng, G Kennedy, C Kyriacou, A Walton, O Aziz, R Qureshi, E Ali

The Royal London Hospital, Oral and Maxillofacial Surgery, London, United Kingdom

Introduction

Over half of mouth and oropharyngeal cancer are caused by smoking. Smoking related mortality and morbidity including mouth cancer has been estimated to cost the NHS a staggering £5.2bn in 2006. Patients are 4 times more likely to quit smoking with the use of Stop Smoking Service (SSS). Maximising the use and effectiveness of such services is vital in reducing mouth and oropharyngeal cancer, and improving both oral and general health.

Aim

To obtain information regarding patients smoking status, including demographics, and to observe if there is a change in patients' opinions/attitudes after their consultation with Oral, Maxillofacial, Head and Neck surgeons (OMFH&NS).

Materials and Methods

All patients in the OMFH&NS consultant clinic waiting area were approached and only smokers were asked to complete a questionnaire on their attitudes towards smoking both before and after their consultation.

Results

Out of 245 patients approached, 186 (76%) were non-smokers, 59 (24%) were smokers and 3 (1.2%) refused to participate. Most smokers tended to agree with the statement related to being in the contemplation, preparation and action stages from the Transtheoretical Beliefs Model. Over half (58.9%) of smokers' attitudes towards smoking remained the same, 22% improved and 14% worsened after their consultation.

Discussion

Surprisingly OMFH&NS in Homerton provides the second highest number of referrals of smokers to the SSS, after Respiratory Medicine. 1 in 8 OMFH&NS patients quit smoking with SSS. This conversion rate is higher in respiratory and cardiac patients. Most smokers very much want and intend to take 'action' to quit smoking but for some reasons are not able to translate thoughts into action. The severity and morbidities associated with smoking may have subtler and less well publicised connection with oral and oropharyngeal cancers thus making it harder for our patients to remain motivated after consultation with a clinician.

Conclusion

The reason behind behaviours such as smoking can be argued to be motivational, followed by physical addiction and then negative withdrawal effects. Increasing patient motivation prior to their referral to the SSS could help improve the effectiveness of the service and subsequent smoke cessation among motivated patients.

**P-168****PREVENTION AND EARLY DETECTION OF ORAL CANCER: CONCEPTUAL BACKGROUND AND DESIGN OF AN ORAL CANCER AWARENESS CAMPAIGN IN NORTHERN GERMANY**

K. Hertrampf¹, E. Baumann², M. Koller³, H.-J. Wenz⁴, B. Möller¹, J. Wiltfang¹

¹ *Clinic of Oral and Maxillofacial Surgery, University Hospital Schleswig-Holstein, Campus Kiel, Kiel, Germany*

² *Bielefeld School of Public Health, Department of Prevention and Health Promotion, University of Bielefeld, Bielefeld, Germany*

³ *Centre of Clinical Studies, University Hospital Regensburg, Regensburg, Germany*

⁴ *Clinic of Prosthodontics, Propaedeutics and Dental Material, University Hospital Schleswig-Holstein, Campus Kiel, Kiel, Germany*

Objectives: In Germany, more than 13,000 people are annually diagnosed with this cancer. The majority of these cases are still diagnosed at advanced stages. Our own results as well as those from international studies have shown a considerable lack of knowledge about the existence, symptoms, risk factors and prevention among the public, and especially in groups affected by certain socio-economic factors. Therefore, the aim was to develop, to implement and to evaluate an oral cancer campaign based on the conceptual steps of health communication strategies.

Methods: Based on preliminary studies carried out for several years in the Schleswig-Holstein, the conceptual background needed for an oral cancer awareness campaign was developed. A qualitative exploration was carried out to identify the communication channels, media carrier, the design of the layout and slogan. A mediaplan was developed to schedule content and time flow of the campaign, and the use of each medium was documented. For the scientific evaluation, specific questions for the target group were added to the established survey (problem awareness, perception of preventive measures).

Results: In April 2012, the state-wide awareness campaign was launched with the focus on the target group ≥ 50 years and older in urban areas. The campaign process has been laid out as a combination of the recommended mediamix divided in mass media, interpersonal communication, PR-medical journalistic network, local events, using an inflatable 'walk-in' oral cavity model, and the internet. In order to reach the high-risk group, a regional network including e.g. health authorities and charities was established. Scientific evaluation was carried out in March 2012 (baseline), six month and 12 month after the launch.

Conclusion: The campaign aimed mainly at the risk group: When addressing the target groups, typical lifestyles including media usage as well as known risk factors were taken into account. Until now, the mediaplan has been successfully realised and the first results of the evaluations confirmed the selected conceptual strategy.



P-288

IS ANYTHING NEW REGARDING MANAGEMENT OF DENTAL CYSTS? –OUR EXPERIENCE

G. Mihalache, S. Bhatia

Oral and Maxillofacial Surgery, Shrewsbury and Telford Hospitals NHS Trust, Shrewsbury, United Kingdom

Objective

There are various modalities for surgical treatment of dental cysts which include total enucleation, marsupialisation, or a combination of the two techniques. Extraction or endodontic treatment of the affected tooth is required. Trying to save the teeth it is sometimes a challenge, but the satisfaction of the surgeon and preserving the masticatory function for the patient is rewarding.

Methods

The patient group consisted in 10 patients with various large dental cysts. Treatment was enucleation or marsupialisation under GA, with conservative management regarding teeth.

Results

All the patients healed uneventful and dental units preserved and fully functional. The follow up showed nice bone regeneration and fully recover of the jaw bones.

Conclusions

Conservative management of the dental units is possible and satisfactory in surgical treatment of large dental cysts. Long-term follow up is mandatory and healing should be closely monitored



P-355

ASSESSMENT OF LYMPHOMA DIAGNOSTIC PATHWAYS FOR PATIENTS PRESENTING WITH NECK LUMPS

Y.Khober, N.Pattni, K.Chow

Oral and Maxillofacial Surgery, Chesterfield Royal Hospital, Chesterfield, United Kingdom

Objective

Guidelines for management of patients with head and neck cancer and haematological malignancies published by NICE advocate rapid diagnostic clinics for patients with head and neck lumps. The aims of this study were to compare the management of patients with lymphoma presenting to the neck lump clinic against all other pathways and to assess whether management pathways meet the guideline recommendations.

Methods

Patients with lymphoma presenting as head and/or neck lumps were identified and the notes retrospectively reviewed.

Results

Of the 60 patients included in the study 24 patients were referred to the neck lump clinic and 36 were referred to medical/surgical specialties. All patients had an initial appointment within the recommended 2 weeks. The majority underwent either an ultrasound guided core needle biopsy (CNB) or open surgical biopsy; 15% underwent multiple investigations. Open biopsy had a diagnostic accuracy of 100% whereas for CNB it was 82%. All biopsies were reported within the recommended time. Patients referred to the neck lump clinic had a diagnosis quicker than those referred elsewhere.

Conclusions

The neck lump clinic allows a diagnosis of lymphoma to be made quicker and recommended time intervals to be met. For lymphoma diagnosis CNB should be considered a suitable initial investigative modality with high diagnostic accuracy and which minimises cost and reduces waiting time.

**P-399****MICRORNA EXPRESSION PROFILING IN PRIMARY AND METASTATIC LESIONS, ITS CULTURED CANCER CELLS AND SERUM OF AN ORAL CANCER PATIENT.**

M. Urade, K. Noguchi, Y. Zushi, H. Sei, H. Kishimoto

Hyogo College of Medicine, Nishinomiya, Japan

Objective: The aim of this study is to investigate the microRNA (miR) expression in cancer tissues, cultured cancer cells and serum of a lower gingival cancer patient, and to search the possibility of miR as a biomarker of oral cancer.

Material and Methods: A global miR profiling was done on cancer tissues of primary and metastatic lesions, cultured cancer cells (OSCC) derived from metastatic lymph node, and serum of first visit of a lower gingival cancer patient. Human oral keratinocytes (HKT) derived from healthy individuals were used as the control. Total RNAs were extracted from these samples, and analysed the miR expression by microarray for human miR (3D-Gene, Toray Co, Kamakura, Kanagawa).

Results: Among a total of 1,709 miRs, 643 showed >3-fold change in cancer tissues of primary and metastatic lesions and OSCC as compared to those of HKT, wherein 302 were upregulated and 341 were downregulated. Out of 302 upregulated miRs, 130 were in primary tumour, 80 were in metastatic tumour, and 92 were in OSCC. Out of 341 down regulated miRs, 90 were in primary tumour, 62 were in metastatic tumour, and 189 were in OSCC. Thirty-one miRs were upregulated and 36 miRs were downregulated in all of primary and metastatic lesions and OSCC. Among 31 upregulated miRs, 6 miRs including miR-223 and miR-4306 were also upregulated in serum, whereas among 36 downregulated miRs, 27 miRs including miR-365* and miR-4756-5p were downregulated in serum.

Discussion and Conclusion: The microRNAs are approximately 22 nucleotides long, single stranded, non-coding RNA molecules that regulate gene expression at the posttranscriptional level. In this study, commonly upregulated 31 miRs are considered to be oncogenic miR and commonly downregulated 36 miRs are considered to be tumour suppressive miRs. In addition, upregulated and down regulated miRs in serum may be the candidates of potent biomarker of oral cancer.

**P-455****KERATOCYSTIC ODONTOGENIC TUMOUR: CASE REPORT**

Z. Agani¹, M. Loxha², V. Hamiti Krasniqi¹, J. Ahmed¹, A. Rexhepi³, A. Mutezani¹

¹ *Department of Oral Surgery, Clinical University Stomatological Center of Kosovo, Prishtina, Albania*

² *Department of maxillofacial surgery, Clinical University center of Kosova, Prishtina, Albania*

³ *Department of Pedodontics, Clinical Stomatological University Center of Kosova, Prishtina, Albania*

Introduction: Keratocystic odontogenic tumour, known as Gorlin Goltz Syndrome is a rare hereditary condition, characterized by a wide range of developmental abnormalities and a predisposition to neoplasms.

Case Report: We report a case of two patients with Gorlin Goltz syndrome who are diagnosed and treated in our clinic and followed until present day. This syndrome is associated with a broad specter of anomalies and neoplasm's as basal cell carcinomas, odontogenic keratocysts, palmar and/or plantar pits, and ectopic calcifications of the falx cerebri. It affects multiple organ systems, which include skeletal, teeth, jaws, skin, eyes, reproductive organs, and neural system, although all the features are rarely observed in a single patient. The paper presents the importance of early diagnosis of the syndrome and importance of multidisciplinary approach to provide a proper treatment to the patient.

Conclusion: Gorlin-Goltz syndrome is an infrequent multi-systemic disease that is inherited in a dominant autosomal way and shows a variable expressiveness. At the very first suspicion for this syndrome, clinical and radiographic tests are recommended and treatment decided by a multidisciplinary team, composed of oral and maxillofacial surgeons, as well as dermatologist, neurologist and geneticist. And definitely, the regular follow-up is mandatory to prevent the risks of possible complications which may follow the syndrome.

**P-568****ORAL SUBMUCOUS FIBROSIS IN THE UK: OUR EXPERIENCE AND A SYSTEMATIC REVIEW OF CURRENT MANAGEMENT STRATEGIES**

N. Vig, I. Rahim, R. Bhandari, S. Whitley

Blizard Institute, QMUL, London, United Kingdom

Introduction:

Oral submucous fibrosis (OSMF) is chronic, debilitating disease that is potentially malignant. It is characterised by juxtaepithelial inflammation and progressive fibrosis of the oral cavity and oropharynx. Symptoms at onset include burning and dryness, followed by fibrosis which can lead to trismus. Mucosa can become dysplastic; there is a malignant transformation rate of between 2.5 and 30%. OSMF is predominantly seen in South Asia and immigrants from South Asia, with an estimate of 5 million people affected in India alone. It is strongly associated with the consumption of the areca nut/betel quid in the subcontinental population.

Methods and Results:

The Royal London Hospital is based in Tower Hamlets, a borough in East London with a population of just over a quarter of a million people. It is particularly ethnically diverse: 53% are White (cf 87.2% UK total) and over 30% are of Bangladeshi origin, the highest concentration in the UK. Other ethnic groups make up no more than 3% of the population. Areca nut usage is high amongst the local Bangladeshi population –approximately 40% of all individuals use it, male and female, of all ages. Average age of first use is 9 years old.

We discuss our experience in managing patients with OSMF, and the resulting malignancies, after reviewing our patient database over a 10-year period. We highlight our transformation rate and particular challenges to treatment using a series of patients. We present a systematic review of the literature of current medical and surgical management for OSMF. This was achieved by performing a literature search using Medline, PubMed, Cochrane register and the internet, using appropriate terms. Fourteen studies met selection criteria, including 3 randomised controlled trials, with a total of over 1250 patients.

Conclusions:

The results of our patient cohort, and the systematic review, demonstrate the limited role medical management plays in treating OSMF. Given migration from South Asia, and inter-generational use of areca nut, it is likely to present to units across Europe and elsewhere in the world. Raising awareness may lead to earlier diagnosis and better treatment of OSMF, potentially reducing oral cancer diagnoses.

**P-600****HUMAN PAPILLOMAVIRUS (HPV) AND HEAD AND NECK CANCER – A RETROSPECTIVE TRIAL ON TUMOUR PROBES FROM A SINGLE INSTITUTION (N=479)**

M. Hofmann¹, M. Gebhard², P. Sieg¹

¹ Dept. of Maxillofacial Surgery, Medical University of Lübeck, Lübeck, Germany

² Inst. of Pathology, Medical University of Lübeck, Lübeck, Germany

Objective: several studies have shown that human papilloma viruses act as an own risk factor in the development of oropharyngeal cancer. The correlation of HPV infection with an oncogenic transformation seems to vary for the different anatomical sites in the oral cavity and pharynx. In this context especially the oral cavity has been investigated in less detail.

Methods: the formalin-fixed tumour probes of 479 patients were detected who had been treated for a malignant neoplasia of the oral cavity, the pharynx and the paranasal sinuses from 2002-2011. 418 tumour probes conformed to the inclusion criteria. The probes were assembled to a tissue-micro-array and then qualitatively analysed for p16^{INK4a} (clone JC8) immunoreactivity in accordance with morphologic criteria and the DNA of HPV high-risk (HR) subtypes 16,18,31,33,51 and low-risk (LR) subtypes 6 and 11 with in-situ hybridization processed in autostainer BondTM. Additionally PCR and HPV-Chip 3.5C were available for analysis.

Results: 394 tumour probes were squamous cell carcinomas (SCC), 24 tumour probes showed other entities. 42 tumour probes (35 SCC) were tested positive (prevalence 10.1%) for HPV within the meaning of oncogenic transformation (positive p16^{INK4a} expression, detection of HPV DNA). A detailed description of the different detection methods of HPV associated oncogenic transformation and the correlation of HPV infection with tumour characteristics and prognosis parameters (tumour localizations, risk factors, TNM-classification, recurrence rate, radiotherapy, survival rate) will be the central part of this presentation.

Conclusions: the prevalence of HPV positive head and neck cancer underlies great geographic differences. Until now there has been a lack of consensus on uniform criteria for detection and significance of HPV infection for the different anatomical sites of the oral cavity and pharynx.



P-683

HISTONE GENE METHYLOME IN NORMAL AND TUMOUR HUMAN GENOMES OF THE HEAD AND NECK CANCER PATIENTS

WL Lo¹, MT Liu², SY Kao²

¹ *Department of Dentistry, National Yang-Ming University, Taipei, Taiwan*

² *Section of Oral and Maxillofacial Surgery, Department of Stomatology, Taipei Veterans General Hospital, Taipei, Taiwan*

Objective: To study the differences of histone gene methylome between normal and malignant head and neck cancers.

Methods: We had profiles DNA methylation of 10 normal/cancer pairs of head and neck cancer by using Illumina M450 CpG island array.

Results: (1) The CpG sites of histone genes are hypermethylated in head and neck tumours. Particularly, HIST3H2A and HIST3H2BB are hypermethylated in all of the three samples of head and cancer (2) The tumour tissues shows global hyper-methylation of CpG sites in promoter/CpG island of many genes (3) Gene ontology analysis shows these hypermethylated genes are involved in transcription regulation (83 genes), signal transduction (59 genes), cell to cell signaling (36 genes) and cell-fate commitment (19 genes)

Conclusions: These candidate genes can serve as a biomarker for head and neck cancers through screening robust clinical samples. In addition, these candidate genes can provide precious information for further study of the epigenetic regulation of these candidate genes and the mechanisms involved in the tumourigenesis of the head and neck cancer.



P-698

ASSESSMENT OF ORAL CANCER AWARENESS AMONG DENTAL STUDENTS, PRACTITIONERS AND PATIENTS IN MANITOBA

R.F. Elgazzar^{1, 2}, H.A. Hosni³, A.S. Shah¹, I.R. Elgazzar⁴, Mahmoud Khalefah²

¹ *Oral and Maxillofacial Surgery/ Dental Diagnostic and Surgical Sciences Dept., Faculty of Dentistry, University of Manitoba, Winnipeg, Manitoba, Canada*

² *Oral and Maxillofacial Surgery, Faculty of Dentistry, Tanta University, Tanta, Egypt*

³ *Oral and Maxillofacial Surgery, Faculty of Dentistry, Pharos University, Alexandria, Egypt*

⁴ *Faculty of Science, University of Manitoba, Winnipeg, Canada*

Objectives:

This study aimed at assessing the level of knowledge and awareness about oral cancer (OC) & its associated manifestations and risk factors, among dental students, dental practitioners, & dental patients at the University of Manitoba, Canada. This may help us find out whether a change is required to enhance our curriculum, focus our continuous education (CE) and raise the public health awareness.

Materials and Methods:

This study involved preparation of 3 different focused questionnaires relevant to each of the following categories: 1) The final year dental students at the University of Manitoba (33 students); 2) The dental practitioners working in Winnipeg city, Manitoba (51 of 100 returned the survey); 3) The patients attending the outpatient OMS clinic at the University of Manitoba (53 patients).

Results:

About 55% of the students thought that they have received sufficient didactic & clinical information about oral cancer during their U/G study, 18% thought they had inadequate information, 24% were not sure. Only 37% of the GDP thought they have sufficient knowledge concerning the prevention & detection of oral cancer?, 29% thought they have inadequate information, 33% were not sure. 59% of the GDP has shared in diagnosis of 1-4 Oral Cancer lesions in the last 5 years. 92% were in favour of having more CE on oral cancer topic. 96% of the surveyed patients knew that tobacco use may cause oral cancer; surprisingly, only 43% knew that Alcohol is a risk factor for oral cancer. Only 19% of the patients answered they have enough information and dentist was the main source of it.

Conclusion:

This study indicated that a quite good percentage of the surveyed dental students, practitioners and patients may need more didactic/ clinical information about oral cancer. This might warrant a change in our dental curriculum, more targeted oral cancer CE, and finally innovative programs for raising oral cancer awareness among the public, particularly dental patients.



P-712

DETECTION OF SQUAMOUS CELL CARCINOMAS WITH NEW SUBSTANCES IN AN ANIMAL EXPERIMENT

L. Gerzanic, H. Kärcher

CranioMaxillofacial Surgery, Medical University Graz, Graz, Austria

OBJECTIVE:

Worldwide 7.6 million people suffer from cancer and in 13% of the cases of all illnesses is the cause of death. In Austria 9.8% of all new cancer cases per year are carcinomas of the head and neck area.

The working beginning of the study is that after intravenous application of two new substances, it is a new fluorescence diagnostic and possibility of therapy to prove the method in tumour surgery.

METHODS:

For the mouse experiments 2 substances are used in vitro cells of the exponential growth phase. The identity of the cells was checked by means of STR (Short tandem repeat).

The bioassay is carried out in naked mice NMRI in vivo. The experiment contains 2 groups with 50 animals: a control group (20 animals) and two test groups (a total of 50 animals) with induced oral squamous cell carcinoma.

RESULTS:

Tumour cells in vitro and in vivo tumours of the naked mice NMRI could be proved by two new substances unambiguously and with the pure substance no demarcation could be proved to the healthy fabric. The evaluation of the bioassays in vivo proved a total of 120 animals.

CONCLUSIONS:

The diagnosis of suspicion is made by an inspection of the oral cavity and by palpation of the cervical organs and is protected in parallel with the radiological diagnostics and proved histology. Such a method and diagnostic can prove tumours in his safe distance as well will give the resection edges of the oral squamous cell carcinoma to the healthy tissue and shows a new insight into the tumour size and expansion of the resection.

**P-738****NECK LUMP CLINIC- PATIENT SATISFACTION SURVEY**

A. Sanalla, F. Ryba, R. Burgess, K. George

Oral and Maxillofacial Surgery, King's College Hospital, London, United Kingdom

Objective

One-stop neck lump clinics have been advocated by NICE in their "Improving outcomes in head and neck cancers" document (2004). In response, we have introduced a weekly one-stop multidisciplinary (MDT) neck lump clinic. An Oral and Maxillofacial Surgeon, a Haematologist, a Radiologist, a Cytologist and a specialist Nurse are present. Patients are sent an information leaflet explaining how the clinic runs together with the details of their first appointment. 124 patients have been seen in this clinic since April 2013 and 16 cancers have been diagnosed with an average days to diagnosis of 15.6 days.

Quality in healthcare delivery is paramount. Patient satisfaction is a key determinant of quality of care and thus, a patient satisfaction survey was designed for patients attending our neck lump clinic. This was carried out over a 4-month period.

Methods

All patients attending the neck lump clinic were asked to complete a patient satisfaction survey, composed of 13 questions at the end of their appointment. Once completed, questionnaires were handed into the reception desk. No patient identifiable data was entered onto the questionnaire and patients were made aware that all data was anonymous.

Results

Most patients (70%) received the clinic information leaflet prior to their clinic appointment, and most people who received it, said that they had read it (95%). 76% of patients were seen on time or within 15 minutes of their appointment time with 8% waiting longer than 30 minutes. All patients reported confidence in the staff seeing them and 100% were satisfied or very satisfied with the service and would recommend the clinic to a family member or friend.

Conclusions

This survey has demonstrated that a one-stop MDT neck lump assessment clinic can provide an efficient service with a high level of patient satisfaction. We encourage all Oral and Maxillofacial Surgery Units to consider such a service.

**P-787****PROGNOSTIC FACTORS FOR LOCAL RECCURENCE IN BASAL CELL CARCINOMA OF THE FACE**

K. Iwulska, J. Zapala, G. Wyszynska-Pawelec, M. Szuta

Department of Cranio-Maxillofacial Surgery of the Jagiellonian University, Cracow, Poland

Aggressive-growth basal cell carcinoma (BCC) subtypes largely determine unfavorable course of disease and the treatment outcome. Prognostic factors for local recurrence differ in aggressive and non-aggressive BCC subtypes.

Objective: To analyze risk factors for local recurrence in facial basal cell carcinoma according to the aggressive-growth (aBCC) and non-aggressive-growth (nBCC) subtypes.

Methods: A group of 353 patients operated between 1997-2009 in the Department of Maxillofacial Surgery of the Jagiellonian University in Cracow with aggressive (n = 49) and non-aggressive (n = 304) BCC of the face was analysed. Additional immunohistochemical studies were performed in a group of 79 patients to evaluate the expression pattern of following tumour-related markers: α -SMA, E-cadherin, MOC-31, BerEP4, Ki-67.

Results: Risk factors for local recurrence vary depending on BCC histologic subtype. Multivariate analysis revealed that incomplete excision ($p=0.046$) and recurrent tumour ($p<0.001$) were significant risk factors for local recurrence in the group of nonaggressive-growth BCC. In the group of aggressive-growth BCC the only statistically significant factor was recurrent tumour ($p=0.015$). In addition, intraoperative frozen section examination was falsely negative in 70% of cases of incompletely excised aBCC. Analysis of immunohistochemical markers revealed that overexpression of stromal α -SMA in primary BCC ($p=0.032$) and α -SMA in tumour cells in recurrent BCC ($p=0.002$) was correlated with higher recurrence rate. In the group of primary aggressive BCC reduced expression of MOC31 ($p=0.02$) was also related with higher recurrence rate.

Conclusions: Prognostic factors for local recurrence vary depending on aggressive and non-aggressive BCC histologic subtype. To determine the recurrence risk factors of aggressive BCC subtypes, evaluation of immunohistochemical markers may be helpful. Risk factors for local recurrence include positive expression of stromal α -SMA in the primary BCC or α -SMA in tumour cells in recurrent BCC and reduced expression of MOC-31 in the primary aggressive BCC. Standard surgical excision with intraoperative frozen section examination does not provide sufficient margins control in the case of aggressive BCC subtypes.

**P-795****SQUAMOUS-CELL CARCINOMAS IN PAST 10 YEARS IN SLOVAKIA – WAS THE SCREENING EFFECTIVE?**

J. Stilla, D. Statelova, M. Janickova, I. Malachovsky, K. Adamicova

University hospital in Martin, Martin, Slovakia

Objectives

Squamous-cell carcinoma is most frequent malignant tumour in oromaxillofacial region. Incidence of this disease is about 3% of all diagnosed malignant tumours. Although the risk factors are very well known, the head and neck cancer is sixth most common malignity in Slovakia. Aim of this study is to find the weaknesses of the nowadays screening and finding the high risk population groups, in which it could be efficient to target the screening.

Methods

In this study are authors evaluating incidence, prevalence, surviving and mortality of the squamous-cell carcinoma patients in the region of central Slovakia. Reviewed period is ten years. Authors are also making survey in risk factors, gender, age and commorbidities of the patients.

Results

Results of this study can help to understand the primary prevention problems in oral oncology in Slovakia. About 50% of the head and neck cancers are diagnosed in the late stage. Majority of the patients had some commorbidities and were treated and examined by the GP more than once a year.

Conclusion

Despite the fact that the oral cavity is well available for examination and not for the specialists or dentists only, but also for the general practitioners, the number of the late diagnosed head and neck cancers is not very encouraging. The treatment of the early stages diseases is very often successful. But nowadays it is also important to aim our target to the risk groups of the population and to prevent the diagnosing in the late stage, because these are the instances that are making the mortality rates higher.



P-912

A MULTIDISCIPLINARY ONLINE DATABASE FOR GORLIN-GOLTZ SYNDROME

E.Vetro¹, J.Olah², E.Horvath³, N.Nagy³, L.Seres¹, J.Piffko¹, A.Varga²

¹ *Department of Oral and Maxillofacial Surgery, University of Szeged, Szeged, Hungary*

² *Department of Dermatology, University of Szeged, Szeged, Hungary*

³ *Department of Medical Genetics, University of Szeged, Szeged, Hungary*

OBJECTIVES: Gorlin-Goltz syndrome is an autosomal dominant, inherited cancer disease with a rare incidence. The presence of two major or one major and two minor criteria are necessary to establish the diagnosis. Because of the variable expressivity significant part of the patients are not recognised as they are scattered amongst different specialities. The aim of this study was to set up a multidisciplinary work group to collect, diagnose and treat Gorlin-Goltz patients according to the same principles.

METHODS: An online database has been set up and made available to oral and maxillofacial surgeons, dermatologists, radiologists and clinical geneticists. A common diagnostic protocol was worked out. Data have been collected not only on major (basal cell carcinomas, odontogenic keratocysts, palmar and/or plantar pits, ectopic calcifications of the falx cerebri, bifurcated ribs) and minor criteria (spina bifida, macrocephaly, cleft lip and palate, hypertelorism, ovarian fibroma, medulloblastoma), but also on cytogenetic and genetic testing.

RESULTS: In our paper we would like to present our initial results.

CONCLUSIONS: Multidisciplinary approach and the online database proved to be extremely useful in terms of collecting diagnostic results for Gorlin-Goltz syndrome. Information does not get lost among the different specialities. More patients are diagnosed with this disease than before. Genetic testing may find a connection between clinical and genetic variations of the disease. The study is ongoing.

**P-918****INTRAVITAL ENDOCYTOLOGICAL MICROSCOPY FOR NONINVASIVE DETECTION OF ORAL DYSPLASIA**

J. Liese, J. Bertolini, T.W. Remmerbach, A. Hemprich, I. Schiefke, B. Frerich

Department of Maxillofacial Surgery, Universitymedicine Rostock, Rostock, Germany

Objective:

Early diagnosis of potentially malignant disorder has a potential to reduce mortality of oral cancer. Biopsy represents the gold standard but is limited to the specific lesion and lack of interobserver reliability. Tb-blue dye test and autofluorescence are upcoming localisation and detection systems for full mouth screening but show high false negative detection rates.

Methods:

The EndoCytoscope (Olympus Medical Systems) allows direct microscopy of mucosa. Our prospective study was designed to identify dysplasia in mucosal lesions stained with toluidine or methylene blue. Lesions typical for oral cancer were excluded. Endocytological images were judged by nuclei of keratocytes. Diagnosis was concluded either by a cytological scoring system or by count of nuclei per images grouped according to size and morphology and with fully automated image analysis depending on size, contour, hexagonal distances of nuclei. Histopathology served as control.

Results:

36 biopsies have been performed. Toluidine blue 1% was superior in staining nuclei. Nuclear irregularities proofed to be the strongest predictor of dysplasia in ROC-curves. Automatic segmentation of endocytological images was dependent on staining quality. In summary detection of dysplasia was possible with 75% sensitivity and 91% specificity (LR+: 8, LR-: 0,28) for the cytological scoring system and 86% sensitivity and 98% specificity (LR +: 37, LR-: 0,15) using number of large and atypically formed nuclei per images as well as 82% sensitivity and 79% specificity (LR+: 3,9, LR-: 0,22) for a combination of hexagonal distances and compactness of segments in fully automated image analysis.

Conclusions:

The EndoCytoscope with toluidine staining allows non-invasive evaluation of oral mucosal lesions. Semi and fully automated image analysis shows a convincing diagnostic evidence for oral dysplasia. The diagnostic system can be applied as detection and localisation system for early diagnosis as well as a screening of mucosa adjacent to oral cancer.



P-979

SARCOIDOSIS WITH BILATERAL PAROTID HYPERTROPHY AS A FIRST SYMPTOM

V. Hidalgo-Lopez, M.Ramos-Murguialday, C.Salcedo-Gil, P.Sambo-Salas, J.L.Iriarte-Ortabe

Maxillofacial surgery service at Son Espases Hospital, Palma Mallorca, Spain

Introduction: In this paper, we have attempted to highlight the importance of considering Sarcoidosis in the differential diagnosis of a parotid mass.

Objective: Sarcoidosis is a systemic disease with unknown origin, which is characterized by noncaseating granulomatous lesions. Primary manifestations of the head and neck are not commonly observed. The documented incidence of parotid gland involvement (such as primary or secondary) is only 6%. Extrapulmonary involvement is only presented in up to 30% of patients with Sarcoidosis and can occur at the same time as Pulmonary Sarcoidosis.

Our objective is to achieve the correct diagnosis and treatment of these patients in order to avoid overly aggressive interventions.

Method: Case of an 83 year old woman with a history of Adenocarcinoma Laparoscopic Sigmoid Resection. Without any previous concerns, the patient was referred to a maxillofacial surgeon to facilitate the existing left preauricular tumour that had existed for months. However within the last three weeks it had accelerated in growth.

It was decided to make a puncture with a fine needle aspiration and CT scan. The histological evaluation displayed a non-necrotizing granulomatous inflammation suggesting Sarcoidosis. We opted for a conservative treatment. A review of the diagnosis and treatment method was performed as well as the comparison of our results with thorough medical literature.

Results: Our patient had an optimal response to the medical treatment with corticosteroids and methotrexate with the complete disappearance of the parotid mass. Given the limited amount of medical literature dedicated to this topic and the aggressive treatment in these patients on the literature review, it would be beneficial that we publish the correct treatment for these patients.

Conclusion: It is important to have the diagnosis of Sarcoidosis to the differential diagnosis of a parotid mass. Although, rare cases may require a different therapeutic approach, the majority of the cases with a parotid mass received optimal results to conservative treatment. Therefore, before a parotid mass receives clinical suspicions of Sarcoidosis, it is indispensable to complete tests and an open biopsy in order to confirm the diagnosis of Sarcoidosis.

Key words: Parotid mass, Sarcoidosis, open biopsy



P-1092

ASSOCIATIONS BETWEEN SINGLE NUCLEOTIDE POLYMORPHISMS OF THE VEGF GENE AND LONG-TERM PROGNOSIS OF ORAL SQUAMOUS CELL CARCINOMA

P. W. Kämmerer, F. P. Koch, E. Schiegnitz, M. Berres, J. Brieger, B. Al-Nawas

University Medical Centre of Rostock, Rostock, Germany

Objective: Functional polymorphisms (SNPs) of the vascular endothelial growth factor (VEGF) are associated with the incidence of oral squamous cell carcinoma (OSCC). An impact of VEGF-SNPs on prognosis of OSCC-patients seems possible. Therefore, correlations between prognostic parameters of OSCC-patients and five VEGF-SNPs were determined.

Methods: In a retrospective long-term study, in 113 OSCC-patients that underwent curative resections, five VEGF-SNPs (-1154 G/A, +405 G/C, +936 C/T, -2578 C/A and -460 C/T) were analysed. Associations between SNPs and prognosis (incidence of local recurrent disease, second cancer, metastases, death, total disease-free survival) were examined.

Results: After a mean follow-up time of 57.6 months, 32 patients had local recurrences; 15 patients had second cancer, 15 patients metastases and 23 patients died. The mean disease-free survival was 43.1 months. A significant increased incidence of OSCC in smokers with the VEGF -2578 A/C and -460 C/T SNP was seen (each $p < 0.0001$). In univariate analysis, patients with advanced OSCCs ($T > 2$ or $N > 0$) together with the -1154 A/A allele had a significant worse survival and a worse disease-free survival (both $p < 0.04$). The same was seen for the +405 G/G SNP (both $p = 0.002$). In multivariate analysis, only the negative influence of the +405 G/G SNP on survival in advanced OSCCs ($T > 2$) could be confirmed ($p = 0.002$).

Conclusions: Possible reciprocal interactions between smoking and VEGF-SNP function were observed. Multivariate analysis confirmed the VEGF +405 G/G genotype to be associated with poor survival in advanced OSCCs; a further use of this haplotype as biomarker has to be discussed.



P-1122

USE OF LASER FDU-1 IN RECONSTRUCTIVE NOSE SURGERY FOR VASCULAR TUMOUR

Sadykov R.R.

Tashkent Medical Academy, Tashkent, Uzbekistan

Background. Unfortunately vascular tumours are localized in 80% cases in the face region and in 18% - in nose. These tumours include haemangiomas, lymphangiomas, malformations which present at children birth. The rapid growing stage for tumour is most dangerous for its complications. There are breathing problems, bleeding, infection and face disfigurements, and scars. Also part of this tumour, specially infantile haemangiomas, resolves till 8 ages but for a 50%.

Modern medicine technologies and investigations of the vascular tumour give to physicians different methods of treatment. All this methods aren't selective and have a lot of side effects. For this reason we observe another method of treatment for vascular tumour - a photodynamic therapy for the selective primary tumour destruction.

Material and methods. 46 patients with nose vascular tumour were treated in Tashkent Medical Academy from August 2011 to January 2012. The middle age was $0,6 \pm 0,2$ years (max 30). After multidisciplinary discussion, all patients underwent photodynamic therapy under general anaesthesia, with 5-ALA as photosensitising agent.

Results. During treatment 5/46 patients reported significant reduction of bleeding related to their vascular anomaly; while a reduction of the infection episodes was evident in 9/10 patients and 44/46 reported reduction in the disfigurement caused by their pathology. Clinical assessment showed that more than half of the patients had good response to the treatment. Significant clinical response was reported by 28 (60,4%) patients, moderate result by 13 (28,6%). Radiological and ultrasound assessment comparing imaging 6-week postphotodynamic therapy period to the baseline showed moderate response in 14 (31,8%) patients and significant response in 23 (49,8%) patients.

Conclusion. The growing body of evidence regarding its efficacy, and the innate minimally invasive characteristics of photodynamic therapy suggest that it should become an important addition to the various techniques used in the management of the vascular tumour.



P-1268

CARDIOVASCULAR COMPLICATIONS OF PROPRANOLOL TREATMENT FOR INFANTILE HAEMANGIOMAS.

Margarita Timofeeva, Natalia Kotlukova

Pediatric, Russian State Medical University, Moscow, Russian Federation

Purpose: the purpose of this study was to investigate the effects of propranolol treatment for IH to the cardiovascular system of the children with and without pre-existing heart pathology.

Methods: the study comprised 154 infants with IH who were prescribed propranolol treatment. Cardiological evaluations (ECG, cardiac ECHO, Holter monitoring, blood pressure) were obtained before, during, and after treatment. After initial examination all patients received treatment with propranolol starting at 1.0 mg/kg/day with an incremental increase up to a maximum of 2 mg/kg/day. Average duration of treatment was 9 months and 20 days.

Results: During the first month of treatment the mean decrease of SBP was 8,86 mm.Hg, decrease DBP was 5,29 mm.Hg, and cardiac rate fell 12,6 bpm. In the 18 patients (11,7 %) diagnosed with congenital heart diseases, none of them had cardiovascular complications of propranolol treatment. Adverse effects were only observed in 10 of the patients: 2 of them had short and self-limited episodes of hypotension, 3 infants registered prolonged sinus-arrest and treatment was discontinued, 5 patients registered AV blocks 1st degree for which treatment was not discontinued.

Conclusion: Propranolol treatment produces a small percentage of cardiovascular adverse events. Nevertheless, despite the small number of patients in this study, the high incidence of infantile haemangiomas combination with congenital heart disease (11,7 % in our study), argues for intensive monitoring of the occurrence of adverse events in all infants treated for IH by propranolol.



P-1269

PROPRANOLOL FOR THE TREATMENT INFANTS WITH INFANTILE HAEMANGIOMA: RESULTS FROM A SERIES OF 154 PATIENTS.

Margarita Timofeeva, Natalia Kotlukova

Pediatric, Russian State Medical University, Moscow, Russian Federation

Objectives. The purpose of this study was to describe the results of oral propranolol treatment for infantile haemangioma (IH) in terms of efficacy, therapeutic approach and adverse events.

Patients and methods. The study comprised 154 infants with IH in the proliferative and involuting phase. 18 patients (11,7 %) were diagnosed congenital heart diseases and 10 patients (6,5%) – PHACE syndrome.

Results. Propranolol treatment was effective in all cases, with a good or excellent response in 71.0 % at 6 months. Mean duration of treatment was 9,5 months. Adverse effects were only observed in 10 patients: 2 of them had short and self-limited episodes of hypotension, 3 infants registered prolonged sinus-arrest and treatment was discontinued, 5 patients registered AV blocks 1st degree for which treatment was not discontinued. During treatment mean decrease of SBP was 8,86 mm.Hg, DBP was 5,29 mm.Hg, and cardiac rate 20,31 bpm.

Conclusions. In all cases, oral propranolol produced rapid and sustained improvements in IH as in the proliferative phase as in the involuting phase. All adverse events were in the form of episodic cases. However, incidental finding without any complication requires for more intensive monitoring for possible drug toxicity.



P-1294

LOCAL STRATEGY FOR IMPROVEMENT OF EARLY DETECTION OF ORAL CAVITY CANCER AND PREMALIGNANT LESION TARGETTING SMOKERS IN SOMME.

S. Dakpé^{1, 2}, B.Lapôtre-Ledoux^{3, 4}, C.Neiva^{1, 2}, O.Ganry⁴, O.Dunaud¹, A.Caula¹, B.Devauchelle^{1, 2}, H.Delattre⁵, N.Thomas⁶, S.Testelin^{1, 2}

¹ Department of Maxillo Facial surgery, University Hospital, Amiens, France

² Projet Idecab, Facing Faces Institut, Amiens, France

³ Register of cancer of Somme, University Hospital, Amiens, France

⁴ Department of Epidemiology and Public Health, University hospital, Amiens, France

⁵ Adema 80, x, Amiens, France

⁶ Biostatitics, Regional Observatory of Health and Social, Amiens, France

Although the oral cavity is potentially accessible site for examination, up to 50% of oral cancers are not detected until the disease is well advanced. In an area of France (Somme), where incidence rate is particularly high, we perform a pilot feasibility study to improve strategy of early detection and diagnosis of oral cancer and pre malignant lesion.

Objective :

The aim of this project is to set up actions to invite smokers aged between 30 years old and 75 years old living in Somme (France) to a screening of oral cavity mucosal. Others secondary objectives are to implicate medical general practitioner in the screening and to ask tobacco venders to distribute a flyer, which invite smokers to a free examination by general practitioner.

Material and methods :

Locals Teams involved in Screening, in Epidemiological survey, in diagnosis and treatment of oral cancer coordinate their works and elaborated a project support by region of Picardy and regional health agency. Strategies for improvement of early detection include tobacco venders and medical general practitioner. In the area of Somme, tobacco venders are solicited to distribute during 15 days the flyer. General practitioner is invited to examine smokers, and to fill a pre determinate systematic oral cavity examination record during 3 months. They were asked to refer to a specialist if there is potentially malignant disorder. During one day, maxillo facial surgeon organise free examination.

Results :

92 patients were included in the study. 25% of oral mucosal examination by medical general practitioner were performed thank to flyers. While 6,2 % of potential malignant lesion were founded during the day organised by maxillofacial surgeon, medical doctors referred 22,5% of the examined patients.

The participation of tobacco venders is rated as 67,3%, 79% of them are ready to participate in another campaign .

Discussion/ Conclusion:

Involvement of tobacco venders and medical practitioners in our region for improvement of detection of oral cancer cavity is feasible. Other similar actions are planned, which will include other health workers. This original study could lead to improve the strategy of screening in a delimited region, where incidence is particularly high.

**P-1338****LASER ABLATION VERSUS "WAIT AND SEE" IN TREATMENT OF ORAL LEUKOPLAKIA. 10 YEARS STUDY.**

R. Smucler^{1, 2}, M. Vlk¹

¹ *1st Faculty of Medicine, Charles University Prague, Prague, Czech Republic*

² *Laser Centre, Asklepion-Laser Centre Prague, Prague, Czech Republic*

Oral leukoplakia is precancerous lesion with significant risk of malignant transformation. Many different lasers including diode (980 nm) we advocated for office based ablation with various recurrence rates. Laser is seen as more comfortable procedure over common surgery because of lower bleeding, less pain and simple treatment protocol. Biggest problem is limited histopathology due to laser tissue destruction. We use this procedure more than 20 years with high degree of patient acceptance but after some years we diagnosed malignant transformations even in between patients after ablation. Aim of this study is to verify effect of laser ablation compare to strategy "wait and see" in long –term study (10 years).

200 consecutive histologically verified leukoplakia (200 patients) of tongue (other areas were excluded- homogenization) without previous treatment. 100 we treated (or re-treated) with laser ablation (diode 980 nm) and for control group we used "wait and see" protocol. We controlled patients every six-month for 10 years.

Final control (double-blinded) after 10 years we made for 93 patients versus 90 in control group. 5 versus 7 (control) patients were lost, others died without malignant transformation. Many patients were lost after some years but due to recurrences they returned. We found 9 malignant transformation in treatment group and 10 in control group, which is insignificant. But we have no one death in TX group compare to three incurable tumours in control group (poor cooperation). Cooperation (regular controls) was significantly higher in treatment group. Even after 10 years majority of patients in TX group prefer to be treated because they are worried about an untreated tumour.



6. Chemotherapy and Radiation in Head and Neck Oncology and Metastatic Disease

P-11

EFFECT OF HYPERBARIC OXYGEN ON OSTEORADIONECROSIS EVALUATED BY ^{18}F -FLUORIDE PET/CT. A CASE REPORT

M. Marcussen¹, Lars Jelstrup Pedersen², Victor Vishwanath Iyer²

¹ Department of Oral and Maxillofacial Surgery, Aalborg University Hospital, Aalborg, Denmark

² Department of Nuclear Medicine, Aalborg University Hospital, Aalborg, Denmark

Background

Osteoradionecrosis (ORN), a side effect of radiation therapy, is diagnosed as a chronic non-healing lesion with exposed dead previously irradiated bone. Depending on degree of severity, management of ORN comprise of a non-surgical approach or surgical removal of necrotic bone, and may include hyperbaric oxygen treatment (HBO), though the efficacy of HBO is still controversial. Imaging technique for evaluation of ORN is x-ray or CT-scan. ^{18}F -fluoride PET/CT, known to detect lesions of metabolic bone diseases, has hitherto not been used in ORN diagnostics.

Case presentation

A 63-year old man previously irradiated due to oral cancer, was diagnosed with ORN and scheduled for HBO. An ^{18}F -fluoride PET/CT taken before HBO treatment, 4 and 8 month after, displayed a very significant increase in ^{18}F -fluoride uptake. No change was demonstrable with scintigraphy, CT-scan or x-ray. Since ^{18}F -fluoride has high affinity for osteoblastic activity, we interpreted this as an ongoing regeneration process in the jaw.

Conclusion

^{18}F -fluoride PET/CT may prove a valuable tool for diagnosis and treatment of ORN, and for evaluation of the preventive effect and treatment potential of HBO in ORN. Further investigations are required to elucidate the cellular mechanisms behind our findings.



P-38

TREATMENT OPTIONS OF THE PATIENTS WITH OSTEORADIONECROSIS OF THE JAWS

O. Titova, V. Afanasiev

Moscow State University of Medicine and Dentistry named after A.I. Evdokimov, Moscow, Russian Federation

Introduction. Radiotherapy is one of the main treatment options for head and neck tumours. During radiation procedure normal tissues are included in radiation field too. It can lead to severe complication of radiotherapy (osteoradionecrosis of the jaws, ORNJ). Mandible is affected more often than maxilla due to different morphological structure. Treatment of ORNJ is difficult and often ineffective.

Purpose. This investigation aims to improve treatment options of ORNJ.

Materials and methods. Totally we observed 44 patients suffering from ORN of the upper (5) and the lower (39) jaws. The patients received total focal radiation dose between 40 and 91 Gy. During monitoring period pathologic fractures of the mandible occurred in 12 patients. Disease duration reached from 2 months to 10 years. Duration of our monitoring period was between 6 months and 3 years. Orthopantomography, MSCT, ultrasound, morphological study of bone sequester and determination of immune status were performed for diagnostics.

Results. Patients complained of persistent exhausting pain in the jaw and halitosis. There was a plenty of destroyed teeth, fistulas and exposed jaw bone covered with necrotic plaque in the mouth cavity. Radiological study revealed destructive changes of the bone without clear borders. All the patients received complex local and general (anti-inflammatory & immunomodulatory) treatment. Irrigation of purulent wounds and their dressing was performed 2-3 times a week. Parenteral detoxification and hyperbaric oxygen therapy was applied to accelerate sequestration. After the sequestra had been separated they were removed surgically. As a result of the treatment we observed reducing pain, improvement of general condition, and delimitation of sequestra. Full separation of sequestra took place in 19 patients. Delayed consolidation of bone fragments and formation of false joint took place in 3 patients. Ten patients died of tumour recurrence. In the rest patients chronicity of ORNJ took place.

Conclusion. Radiological studies are helpful to assess the extent of osteolysis. Long courses of detoxification and hyperbaric oxygen therapy promote quick delimitation of sequestra. ORNJ is often accompanied with recurrence of the primary disease leading to death of the patient.



P-67

REDUCED OXIDATIVE STRESS RESPONSE AS A RISK FACTOR FOR NORMAL TISSUE DAMAGE AFTER RADIOTHERAPY: A STUDY ON MANDIBULAR OSTEORADIONECCROSIS

D. Danielsson¹, K. Brehwens², M. Halle³, M. Marczyk⁴, E. Munck af Rosenschold Wikland¹, A. Wojcik², S. Hagdoost²

¹ *Department of Clinical Science, Intervention and Technology, Division of ENT-diseases, Karolinska Institute, Stockholm, Sweden*

² *Centre for Radiation Protection Research, Department of Molecular Biosciences, the Wenner-Gren Institute, Stockholm University, Stockholm, Sweden*

³ *Department for Reconstructive Plastic Surgery, Karolinska University Hospital, Stockholm, Sweden*

⁴ *Institute of automatic Control, Silesian University of Technology, Gliwice, Poland*

Purpose:

The use of radiotherapy (RT) to treat cancer also inevitably involves exposure of normal tissue. Adverse effect on normal tissue following RT is not uncommon. Typically these effects are divided into early and late effects and may range from mild to severe where the latter can have a devastating impact on patient quality of life.

Factors that promote the development of normal tissue reaction are poorly understood. An increased individual sensitivity to ionizing radiation is a likely candidate, but general phenotypes for late adverse effects of RT are difficult to define. We have selected osteoradionecrosis (ORN) of the mandible as a well-defined model phenotype for an in-depth study of clinical and biological risk factors for developing late adverse effects to RT.

Methods and materials:

A cohort of patients with mandibular ORN following RT for Head and neck cancer (HNC) was studied and compared to a closely matched control group. Blood samples were collected and irradiated in vitro. The capacity to handle radiation-induced oxidative stress was investigated by measuring levels of 8-oxo-dG in serum 60 minutes post exposure. The patients were also genotyped for eight SNP in genes known to be involved in oxidative stress response and previously studied in context of individual radio sensitivity. Results from these endpoints were analysed in conjunction with clinical data using multivariate analysis and an ORN risk model was constructed.

Results:

A significant difference in 8-oxo-dG levels was found between patient cohorts, indicating a heterogeneous response to oxidative stress induced by the in vitro Y-radiation. The SNP rs1695 in GTSP1 was found to be significantly more frequent in patients with ORN. Multivariate analysis of the clinical and biological factors revealed concomitant brachytherapy plus the two biomarkers to be the most significant.

Conclusion:

The current study indicates that patient-related factors are a major source of individual variation in normal tissue response to radiotherapy. Two of the studied genetic biomarkers are strong factors in the described risk model of ORN.



P-81

CALCINEURIN INHIBITOR, TACROLIMUS A NEW THERAPEUTIC OPTION IN SEVERE CHERUBISM.

N.Kadlub, A.Coudert, A.Coulomb, T.Ulinski, B.Fauroux, I.Pavlov, A.Berdal, MP.Vazquez, V.Descroix, A.Picard

APHP, Paris, France

Introduction: cherubism is a rare genetic disorder, characterized by the development of bilateral disfiguring jaw granuloma. Cherubism mutation causes a gain of function of the SH3BP2 protein, leading to an over activation of NFATc1-dependant-osteoclastogenesis. Recent findings in human and mice cherubisms suggested calcineurin inhibitor might be interesting in cherubism medical treatment.

Material and methods: We treated a patient with aggressive cherubism for one year and analyzed clinical, radiological, and molecular data. An immunohistological analysis was performed to compare pre and post-operative NFATc1 and TRAP stainings. A real-time polymerase chain reaction (RT-PCR) was performed to analyze OPG and RANK-L relative expressions.

Results: After tacrolimus therapy, the patient showed clinical improvement with a stabilization of the jaw sizes, an intra-osseous osteogenesis. Immunohistological results showed that tacrolimus decreased NFATc1 nuclear staining in cherubism multinucleated giant cells, and a decrease of the number of osteoclasts. Molecular analysis showed that tacrolimus inhibited osteoclastogenesis by stimulating OPG expression.

Conclusion: We presented the first case of efficient medical therapy in cherubism. Tacrolimus enhance bone formation and inhibit myeloid and lymphoid inflammation.

**P-334****LOW LEVEL LASER THERAPY IN THE TREATMENT OF ORAL MUCOSITIS ON A PAEDIATRIC HAEMATO - ONCOLOGY UNIT.**

C. Dhooge, V. Van de Velde, J. De Porre, R. Cauwels

Ghent university hospital, Gent, Belgium

OBJECTIVE

Despite the implementation of evidence based mouthcare guidelines, oral mucositis (OM) remains a frequently encountered and painful complication of chemotherapy.

There is an increasing evidence that low level laser irradiation can reduce the severity and duration of mucositis.

The objective of this study was to assess the effectiveness, quantitatively and qualitatively, of low level laser therapy (LLLT) for the treatment of chemotherapy induced OM in paediatric patients.

METHOD

When mucositis occurred, patients were treated using AlGaAs diode laser every two days until complete healing of the mucositis. Patients were evaluated for pain severity by the visual analogue scale or the faces pain scale before and immediately after LLLT. OM grade (WHO-criteria) as well as functional impairment were evaluated. Both nurses and dentists were trained to assess OM and to administer LLLT in an identical way. Data is analysed using SPSS version 17.

RESULTS

From May 2009 till December 2011, 122 children with diagnosis of leukaemia, lymphoma, Osteosarcoma or Ewing sarcoma, suffering from chemotherapy-induced mucositis, were treated with LLLT. Of these 122 patients, 23 had undergone a haematopoietic stem cell transplantation. Age ranged from 1 to 17 years.

During 300 mucositis episodes, 846 treatments with LLLT were done and 3124 lesions were treated. Distribution of mucositis grade was : grade 0 (n=59), grade 1 (n=1181), grade 2 (n=1228), grade 3 (n=438), grade 4 (n=98) and unknown (n= 120).

Cheeks (n=828), tongue (n=640), lips (n=521), palate (n=259) and gums (n=233) were the most frequent sites affected.

LLLT resulted in immediate pain relief in 2/3 of the patients (1301 of 1993 adequately scored lesions). In 692/1993 cases the pain remained unchanged. In 799 cases pain scores were missing due to noncooperation or young age. A mean of 4/ 5 treatments were necessary to heal mucositis and to obtain overall pain relief.

CONCLUSION

These results show that LLLT, in addition to standard oral care significantly reduces pain for chemotherapy –induced oral mucositis. Four low level laser treatments per mucositis episode seem to be a realistic approach. Controlled randomized trials are necessary to confirm the efficacy of LLLT and to develop general guidelines.



P-338

ASSESSMENT OF EFFECTIVENESS OF PROPRANOLOL IN CHILDREN WITH INFANTILE HAEMANGIOMAS OF THE HEAD AND NECK WHO HAVE PREVIOUSLY RECEIVED TREATMENT

D. Komelyagin¹, D. Romanov¹, A. Petuchov¹, S. Dubin¹, O. Topolnitsky², A. Ivanov², S. Epifanova¹, N. Kotloukova³, Y. Soldier³, H. Fokin¹

¹ Maxillofacial surgery, Pediatric st. Vladimir hospital, Moscow, Russian Federation

² Pediatric maxillofacial surgery, Moscow medico-stomatological institute, Moscow, Russian Federation

³ Pediatric maxillofacial surgery, The first Moscow state medical University named after I.M.Sechenov, Moscow, Russian Federation

Objective: to assess the effectiveness of therapy propranolol in children with infantile hemangiomas of the head and neck, had been receiving different treatment of the underlying disease.

Material and methods: from 2011 DGKB St. Vladimir for the treatment of children with infantile hemangiomas started to be applied propranolol in a dose of 2 mg/kg / day duration of up to 8 months. The treatment involved 60 patients aged from 2 weeks to 4 years. Of them, boys 24 (40%), girls 36 (60%). These children have received various kinds of treatment in other clinics: hormone therapy, hardening of alcohol sclerosing fibro implies-Vein, the application of a CO laser, cryosurgery, radiotherapy. These treatments have caused rapid growth of haemangiomas and deterioration of the General condition of the children.

Haemangioma localized: parotid area of 20 (33.3%) of children; in the nose 8 (13,3%) patients; in the orbital region 10 (16,7%) patients; in the area of the upper and lower lips 8 (13,3%) patients; in the neck area 4 (6,7%) patients; in 10 (16.7%) of the children infant haemangioma struck several anatomical areas.

All patients before treatment was conducted a comprehensive survey: photographs using metrical scale with subsequent weekly assessment of changes in the size of haemangioma, cardiology (ECG, echocardiography, Holter monitoring, measurement of blood pressure), flexible laryngoscopy, determination of the level of glucose in the blood, ultrasound Doppler ultrasonography. CT scan with contrast, with subsequent 3D reconstruction carried out in case if according to the U.S. it is impossible to determine the size of haemangiomas and volume of affected tissue growth.

Results. In the result of the treatment received good results in 45 patients (75%), as satisfactory in 14 children (23.3%) and negative - 1 patient (1,7%). Complications in the form of transient bradycardia were 5 patients (8.3%) of patients with end-good results of treatment. Reduction of blood glucose in patients reported.

Conclusions: the use of other forms of treatment of infantile haemangiomas reduces the effectiveness of therapy of propranolol. The appointment of propranolol should precede other methods of treatment of patients with infantile haemangiomas of the head and neck.

**P-398****COMPLETION OF AUDIT CYCLE FOR WAITING TIME INTERVAL BETWEEN SURGERY AND START OF RADIOTHERAPY IN HEAD AND NECK CANCER PATIENTS**

K. Shah, A.Adams, S.Narasah, S. Crank

LEEDS GENERAL INFIRMARY, Leeds, United Kingdom

Audit of waiting time interval between surgery and start of radiotherapy in Head and Neck Cancer patients

Introduction

Adjuvant radiotherapy is a key treatment in the management some post-surgical head and neck cancers patients. Feras et al 2004 have clearly shown a mean doubling time of less than 40 days for tumour clonogens after surgery and a decrease of 0.09% decrease in local control with each day of delay. Hence ideally radiotherapy should be started within 6 weeks of surgery. The aim of this audit was to locally assess possible delays in commencement of Maxillofacial Head and Neck cancer patients requiring post-operative radiotherapy.

Methods

A retrospective review of case notes was performed and data recorded regarding the time interval from the date of surgery to the specimen log in pathology department, the final pathology report, MDT decision to proceed with Radiotherapy and start date of radiotherapy. A gold standard of less than 6 week was set with an unacceptable delay greater than 8 weeks.

Results

Out of 75 major cases operated upon between January 2010 and December 2011, 31 required post-operative radiotherapy. The time interval of less than 6 weeks from surgery to commence radiotherapy was achieved in only 3 cases. The delays in the system are evaluated and presented. A reaudit is currently being conducted after implementing the changes from Jan 2012 and the results will be presented

Conclusion

We have identified a problem regarding a time delay for our post-surgical oncology patients to enter radiotherapy. Steps are presented to try to improve our processes at all levels which should improve long term patient outcomes.

References

Effect on tumour control of time interval between surgery and post-operative radiotherapy-an empirical approach using Monte Carlo simulation

Feras M et al
Physics in Medicine and Biology-VOL49,No13-2004

**P-401****ARECA UP-REGULATES COX-2 TO MODULATE HB-EGF EXPRESSION AND THE CONSEQUENT CHEMO-RESISTANCE IN HNSCC**

Hsi-Feng Tu, Cheng-Chieh Yang

National Yang-Ming University Hospital, Yilan, Taiwan

Objective: The popularity of betel nut (areca) chewing is significantly correlated to incidence of HNSCC in Asia. This cancer is characterized by poor loco-regional control and tendency to metastasis. The areca is a potent COX-2 inducer and up-regulation of COX-2 could provide a microenvironment suitable for carcinogenesis. Heparin-binding EGF-like growth factor (HB-EGF) is a member of the epidermal growth factor (EGF)-like growth factor family and is capable of binding to EGFR and its associated receptors ERBB2, ERBB3 and ERBB4. HB-EGF expression was up-regulated in many malignancies and might play certain role in carcinogenesis. HB-EGF not only activate the downstream EGFR signalling but also activate COX-2 through MEK/ERK5 signalling.

Methods: In this study, cancer cell lines including SAS, OECM1 and primary culture cells were utilized for phenotypic assay. The drug resistance was determined by MTT assay and tissue arrays from HNSCC patient were used for HB-EGF and COX-2 detection.

Results: we demonstrated a feed forward regulation loop between HB-EGF and COX-2. COX-2 expression could also in turn stimulate HB-EGF expression and the COX-2 inhibition could also down-regulate HB-EGF expression. Moreover, as the cancer cell line became more chemo-resistant, the HB-EGF expression was significantly increased and this phenomenon could be reversed by COX-2 inhibition. This correlation was then confirmed in cancer tissues from stage IV HNSCC patients who had received chemotherapy, which demonstrated a high percentage of recurrence and poor survival among patients with higher HB-EGF expression.

Conclusion: These data provided a hint in strategy of inhibiting HB-EGF and COX-2 in management of HNSCC.

**P-413****LOCOREGIONAL CONTROL IN ADVANCED RESECTABLE ORAL SQUAMOUS CELL CARCINOMA BY CONCURRENT PREOPERATIVE CHEMORADIOTHERAPY WITH DOCETAXEL AND CISPLATIN**

Y. Ohiro, K. Kuribayashi, Y. Ashikaga, M. Ono, Y. Totsuka, K. Tei

Oral and Maxillofacial Surgery, Graduate School of Dental Medicine, Hokkaido University, Sapporo, Japan

Objective: We conducted a regimen of concurrent preoperative chemoradiotherapy with Docetaxel and Cisplatin for oral squamous cell carcinoma (SCC) to evaluate the histopathological tumour regression.

Patients and Methods: Forty nine patients with previously untreated oral SCC were enrolled in this study. Patients were 35 males and 14 female of 64 years median age (range 30 to 77 years). The primary sites were the tongue (19), the lower gingiva (15), floor of the mouth (7), upper gingiva (5) and buccal mucosa (3). Three patients were diagnosed clinical stages II, while 11 were stage III and 35 were stage IV. Before the operation, 15 patients were treated by radiotherapy alone (group R), while 34 patients received concurrent chemoradiotherapy (group CCRT) with Docetaxel (10mg/m², weekly) and Cisplatin (4mg/m²/radiation). Radiation was delivered at 2.0 or 2.5 Gy/day to a total dose of 40 Gy. All patients underwent surgery and the efficacy of the preoperative treatment was estimated histopathologically according to the Oboshi-Shimosato classification.

Results: In histopathological evaluation in primary site, only 4 (26%) in group R and 30 (85.3%) in group CCRT presented more than Grade III. In metastatic regional lymph node, 47 nodes were diagnosed as positive preoperatively, but only 13 nodes were found positive in resected specimen in histopathology. All patients in group R received full dose of radiotherapy, but 9 patients in group CCRT were obliged to discontinue radiotherapy or chemotherapy due to severe mucositis (Grade II in 8 cases). Neutropenia (Grade II in 5 cases, Grade III in 5 cases) was observed in group CCRT, but all patients underwent planned surgery. Overall survival rate was 40.0% in group R and 91.3% in group CCRT.

Conclusions: Concurrent chemoradiotherapy with Docetaxel and Cisplatin can be carried out safely and is expected with a high rate of histopathological tumour regression and excellent outcome.

**P-498****MIR17-5P REGULATED THE RADIATION INDUCED P21 EXPRESS IN HUMAN SQUAMOUS CARCINOMA CELLS**

Kuan-Chou Lin¹, Chia-Lun Chang², Wei-Cheng Lin³, Szu-Yuan Wu^{4, 5}

¹ *Oral and Maxillofacial Surgery, Wan-Fang Hospital, Taipei Medical University, Taipei, Taiwan*

² *Hemato-Oncology, Wan-Fang Hospital, Taipei Medical University, Taipei, Taiwan*

³ *Thoracic Surgery, Wan-Fang Hospital, Taipei Medical University, Taipei, Taiwan*

⁴ *Radiation-Oncology, Wan-Fang Hospital, Taipei Medical University, Taipei, Taiwan*

⁵ *Graduate Institute of Toxicology, National Taiwan University College of Medicine, Taipei, Taiwan*

According to the latest cancer registry database and statistics of cause of death, in the last 10 years, the number of oral cancers in Taiwan has increased 2-fold. Oral cavity cancer is becoming the leading cancer in male in Taiwan. The incidence of death is growing fast. MicroRNAs are small ~22-nt regulatory RNAs that play important roles in a variety of normal and pathologic processing. They are expressed differently during the development of multiple cellular lineages and respond to a variety of extracellular signals. The misregulation of miRNAs has been implicated in the pathogenesis of various diseases, miR-17 polycistron which encodes seven mature microRNAs are the first characterized oncomir. According to previous study, it has revealed the role of miR-17-5p in oral cancer is released to the p21 modulation. In this study, we used the cell line, SCC 9, which was established from human squamous cell carcinoma of tongue to investigate the expression the role of miR-17-5p in SCC 9 cells with or without radiation treatment.

**P-510****UP-REGULATED MTOR SIGNALING PATHWAY INDUCE CISPLATIN-RESISTANCE AND STEMNESS CELL PROPERTIES IN ORAL SQUAMOUS CELL CARCINOMA**

C-H. Wu, K-W. Chang, H-C. Chang, C-C. Yang

Oral and Maxillofacial Surgery, Taipei Veterans General Hospital, Taipei, Taiwan

Objective: The mammalian target of rapamycin (mTOR, also known as the mammalian target of rapamycin) is a 289kDa serine/threonine kinase which belongs to the family of phosphatidylinositol 3-kinase-related kinases (PI3K) protein family. Extensive researches revealed mTOR is a central regulator of many important biological functions including cell cycle control, anabolic (protein and lipid synthesis, nutrient storage) and catabolic (autophagy) processes. Dysregulated mTOR signaling pathway is found to be associated with many human diseases, such as diabetes, obesity, depression, and cancers. Our previous tissue microarray studies revealed positive correlation between p-mTOR expression level and tumour recurrence even in cases with cisplatin-based adjuvant therapy. The objective of present study is to unravel the underlying mechanism.

Methods: Two oral cancer cell lines: OECM-1 and SAS were used for *in vitro* studies. The differential expression level of mTOR-autophagy-p62 signalling loop was evaluated by western-blot and qRT-PCR and further confirmation with over-expression mTOR construct and shRNA knockdown. To investigate the association with EGF pathway, downstream inhibitors AG1478, U0126, and LY294002, and S3I-201 were used for clarification the mechanism. Cancer stem cell properties were also examined.

Results: In responsive to cisplatin treatment, OSCC cell line revealed up-regulated mTOR expression and inhibition of autophagy that may be mediated by p62 that is modulated by upstream EGF/Akt or EGF/Stat signals. We also identified up-regulated mTOR will enhance cancer stem cells properties of OSCC cell lines which could be inhibited by mTOR inhibitors, e.g. rapamycin and metformin.

Conclusions: In summary, the present study depicts the possible role of mTOR signalling on cisplatin resistance and cancer stem cells properties. Further investigations are required to unravel the detail regulatory circuit of mTOR. Establishment of the cause-effect relationship is beneficial for the design of customized therapies to intercept the aggressiveness of OSCC.

**P-515****HAEMATOLYMPHOID TUMOURS OF ORAL CAVITY: REPORT OF THREE RARE CASES OF EXTRANODAL PRESENTATION**

A. Kulyapina, S. Ochandiano Caicoya, A. Lopez Lopez, J. Salmerón Escobar, R. Fernandez Valades, C. Navarro Vila

Maxillofacial Surgery, Gregorio Marañón General University Hospital, Madrid, Spain

INTRODUCTION

Malignant lymphomas represent approximately 5% of all malignant neoplasms of the head and neck. They are classically divided into two subgroups, Hodgkin's lymphomas (HL) and non-Hodgkin's lymphomas (NHL). HL most frequently presents as cervical lymphadenopathy and rarely involves extranodal sites, whereas 30% of NHLs arise at extranodal sites. NHL represents 75% of lymphomas in head and neck. 70% of extranodal lymphomas in head and neck occur in the Waldeyer ring, being oral mucosa a rare localization. Three cases of rare oral extranodal presentation of NHL and HL are described.

CASE 1

The patient, 37 year old man, HIV positive presented an expansive mass in the right maxilla with teeth loss and bone destruction. The biopsy of the lesion gave result of plasmablastic lymphoma (PBL): large lymphoid cells proliferation was observed, no expression of leucocyte common antigen (LCA) and B-cell antigens (CD20 and CD79a) were seen with consistent CD138 positivity. The further study revealed pleural, pericardial and nodal affection. The patient received chemotherapy and antiretroviral therapy with complete remission of the disease.

CASE 2

The patient 53 year old man, originated from Peru, presented an ulcerative lesion in the midline of hard palate accompanied by symptoms of nasal obstruction and chronic rhinorrhoea. CT showed mass occupying paranasal sinuses and a nasal cavity fistulizing into hard palate. The biopsy of the lesion of the hard palate gave the result of natural killer/T cell lymphoma (NKTCL). Histopathology showed positivity for CD2, CD56, CD3e, granzyme B.

CASE 3

The patient, 82 year old woman, presented a nodular submucosal lesion of the right inferior lip. The incisional biopsy was performed with result of Hodgkin's lymphoma: infiltration by Reed-Sternberg cells, immunoreactivity for CD 20 and CD 30 and nonreactivity for CD15, CD45 and VEB were observed. No nodal disease was detected upon completion of study. The patient received local radiotherapy with remission of disease.

CONCLUSIONS

Both HL and NHL may have oral extranodal manifestations. Extranodal PBL and NK/T lymphoma manifest as ulcerative destructive lesions and HL as submucosal and nonulcerating lesion. Primary extranodal HL is very rare entity with less than ten cases described.



P-554

LASER-ENHANCED CYTOTOXICITY OF ZOLENDRONIC ACID AND CISPLATIN ON HUMAN FIBROBLASTS AND HEAD AND NECK SQUAMOUS CELL CARCINOMA CELLS.

P. Heymann, R. Mandic, P.W.Kämmerer, F.H. Kretschmer, A. Saydali, A. Neff, G.F. Draenert

Department of Oral and Maxillofacial Surgery, University Hospital Giessen and Marburg, Campus Marburg, Marburg, Germany

Objective: Low-level laser therapy (LLLT) is used in parodontitis treatment in combination with an antimicrobial photosensitizer (Helbo Photodynamic Systems). The purpose of this study was to investigate the combination of LLLT with cisplatin and zoledronic acid as potential photosensitizer *in-vitro*.

Methods: Primary human fibroblasts (PHF) and head and neck squamous cell carcinoma cells (HNSCC, exactly UM-SCC-3) were treated with different concentrations of zoledronic acid and cisplatin and irradiated twice with a non-thermal diode laser (wavelength 670nm, 2 minutes, 100mW/cm²). Cell viability was tested by XTT-assay and histomorphological analysis with HE staining.

Results: LLLT increased bioviability for both cell lines (all $p < 0.001$). LLLT lowered PHF viability at the highest concentrations of cisplatin ($p = 0.027$ and $p = 0.005$) and zoledronic acid ($p < 0.001$). For HNSCCs, LLLT reduced cell viability at every concentration of cisplatin (all $p < 0.05$). In cases of incubation with zoledronic acid, similar to fibroblasts, laser therapy lowered cell viability at the highest concentration only ($p < 0.001$).

Conclusions: Within the limits of this study, it can be concluded that LLLT enhances the effect of cisplatin and zoledronic acid in the discussed cells in order to develop new therapeutic options for cysts in the craniomaxillofacial region and other appropriate indications.

**P-584****DIFFUSE LARGE B-CELL LYMPHOMA OF THE MANDIBLE: A CASE REPORT**

O. de la Sen-Corcuera, A. González-Corchón, A. Encinas, E. Varela, I. Martínez-Padilla, A. Alonso-Ovies

Oral and Maxillofacial Surgery, Hospital Clínico San Carlos, Madrid, Spain

Introduction: Lymphoma is divided in two groups, Hodgkin lymphoma and non-Hodgkin lymphoma (NHL). Non-Hodgkin lymphoma (NHL) is a group of neoplasms that originate from the cells of the lymphoreticular system. About 30% of NHL in our environment is diffuse large b-cell lymphoma. This kind of pathology usually appears in the sixth decade of life, with a male predominance. Primary lymphoma of the oral cavity is rare and 2.8% of all NHLs appear in the oral cavity. Lymphoma of the mandible is only 0.6% of all NHLs, and the most common site of onset in the mandible, is the mandibular body.

Case report: A 68 year old male noticed a painless swelling on the right mandibular gingiva for the last month. He also had tooth mobility. A panoramic radiograph showed a diffuse radiolucency in the right mandibular ramus that could be compatible with a radicular cyst. We took a biopsy of the lesion with diagnose of diffuse large b-cell lymphoma of the mandible. The patient received three cycles of chemotherapy (CHOP-Rituximab) and the lesion is still under control one year after de treatment.

Discussion: Between 24% and 45% of NHLs arise from extranodal sites. The most common site for extranodal NHL is the gastrointestinal tract, and the second most frequent site is the head and neck region (10-30% of the cases). Jaw involvement of NHL is rare, just 0,6% of all NHLs affect this region of the head, and the mandibular body is the most frequent site of NHL occurrence. As this lesion may look like an odontogenic infection, primary lymphoma of the mandible is often misdiagnosed clinically. Bone swelling, tooth mobility, pain, and neurologic disturbance are the most common clinical presentation. Radiographic signs as diffuse bone destruction may be absent in 10% to 20% of the cases. It is important to think about this type of tumour in the differential diagnosis, as osteomyelitis is typically suspected. Therefore, lymphoma should be considered in the differential diagnosis when a radiolucent image appears in the mandible.

**P-618****CISPLATIN SUPERIOR TO CARBOPLATIN IN ADJUVANT RADIOCHEMOTHERAPY FOR LOCALLY ADVANCED CANCERS OF THE OROPHARYNX AND ORAL CAVITY**

M.D. Abé-Nickler, D. Rades, T. Ulbricht, H.C. Jacobsen, P. Sieg, S.G. Hakim

Klinik für Kiefer- und Gesichtschirurgie, UKSH, Lübeck, Germany

BACKGROUND AND PURPOSE:

The optimal radiochemotherapy regimen for squamous cell carcinoma of the head and neck (SCCHN) is controversial. In most cases, platin-based chemotherapy regimens are used. However, uncertainty exists whether cisplatin or carboplatin is the better choice. This retrospective study compared radiochemotherapy with either cisplatin or carboplatin in patients with locally advanced SCC of the oropharynx and oral cavity.

PATIENTS AND METHODS:

Concurrent chemotherapy consisted of two courses of cisplatin (20 mg/m²) on days 1-5 and days 29-33; n = 65) or two courses of carboplatin (AUC 1.5 on days 1-5 and days 29-33; n = 41). Both regimens were retrospectively compared for locoregional control (LRC), overall survival (OS), and toxicity. Thirteen additional potential prognostic factors were evaluated including age, gender, ECOG performance status, tumour site, histologic grade, T/N category, AJCC stage, year of treatment, extent of resection, interval between surgery and RT, completion of chemotherapy, and radiotherapy breaks.

RESULTS:

The 3-year LRC rates were 85% in the cisplatin group and 62% in the carboplatin group, respectively (p = 0.004). The 3-year OS rates were 78% and 51%, respectively (p = 0.001). Acute toxicity (mucositis, skin toxicity, nausea/vomiting, renal toxicity, hematologic toxicity) and late toxicity (xerostomia, neck fibrosis, skin toxicity, lymph oedema) rates were not significantly different between the two groups. On multivariate analysis, better LRC was significantly associated with cisplatin (p < 0.001), an ECOG performance status of 0-1 (p = 0.001), and an interval between surgery and RT of ≤ 6 weeks (p = 0.001). Improved OS was significantly associated with cisplatin (p < 0.001) and completion of chemotherapy (p = 0.002).

CONCLUSION:

For adjuvant radiochemotherapy of patients with locally advanced cancer of the oropharynx and oral cavity, cisplatin appears preferable to carboplatin as it resulted in better outcomes without increased toxicity.



P-647

THE CLINICOSTATISTICAL OBSERVATIONS ON PREOPERATIVE CHEMOTHERAPY WITH S-1 AND NEDAPLATINE FOR ORAL CANCER PATIENTS FOR THE PAST 5 YEARS.

Shinya Koshinuma, Higo Tomoki, Yuki Inaba, Yasuyuki Asada, Yasushi Kosasa, Shoko Takamori, Ayumi Shibutani, Takeshi Adachi, Takuya Murakami, Gaku Yamamoto

Department of Oral and Maxillofacial Surgery, Shiga University of Medical Science, Shiga pref, Ootsu, Japan

We studied for utility of combination chemotherapy with S-1 and nedaplatin for oral cancer. In total, 33 cases treated by the chemotherapy (male 12 cases, female 21 cases) for five years from January 2008 to December 2013. Age was 49-90 years old (mean age : 67.3 years old), and 16 cases were tongue, 10 cases were gum, 6 cases were buccal mucosa, 1 case was lip. And 4 cases were Stage 0, 19 cases were Stage I , 9 cases were Stage II , and 1 case was Stage III. Patients received S-1 orally (day 1 to 14), and followed by nedaplatin iv (day 14) as 1 course.

In the 21 cases of the neoadjuvant chemotherapy, 4 cases achieved a complete response, 9 cases a partial response, 8 cases a stable disease, and none of them were progressive disease.

Total of Preoperative and Postoperative chemotherapy was 56 course.

Among adverse event (Clinical symptoms), anorexia was Grade III in one case. And nausea, diarrhoea, mucositis oral, skin hyperpigmentation, and eye disorders was Grade II or loss. This combination chemotherapy that serious adverse event was less is useful.



P-686

EXPRESSION OF E-CADHERIN AND OB-CADHERIN CELL ADHESION MOLECULES IN ORAL SQUAMOUS CELL CARCINOMA WITH SPECIAL REFERENCE TO THE BONE METASTASIS

T. Aoki, Y. Ota, K. Karakida, M. Otsuru, M. Takahashi, R. Sekine

Tokai University School of Medicine, Isehara City, Kanagawa, Japan

OBJECTIVE: The prognosis of squamous cell carcinoma occurring in the oral cavity (OSCC) depends on the presence of distant and bone metastasis. The expression of E-cadherin (E-CDH) and OB-cadherin (OB-CDH) is reported to relate to the invasiveness and metastasis of various types of cancer.

METHODS: Clinicopathological and immunohistochemical analyses, using E-CDH and OB-CDH, of 502 patients with OSCC undergoing radical surgery were performed.

RESULTS: Distant metastasis was found in 54 cases including 25 cases with bone metastasis from 1 month to 76 months with a median of 11 months after radical surgery. Binomial logistic regression analysis showed that the expression of OB-CDH, advanced stage of pN, lower histological differentiation and high grade of YK classification were significantly related to distant metastasis, and the expression of OB-CDH, advanced stage of pN and lower histological differentiation were significantly related to bone metastasis. In both analyses, OB-CDH was the most important risk factor in distant metastasis (OR=3.107) and in bone metastasis (OR=8.179), respectively. Overall survival and disease-specific survival curves showed a lower survival rate according to the lower E-CDH scores and was lower in OB-CDH (+) than OB-CDH(-).

CONCLUSIONS: The expression of E-CDH and OB-CDH is related to the prognosis of OSCC. OB-CDH is a good predictor for distant and bone metastasis.

**P-754****VEGF INHIBITOR THERAPY INDUCED ORAL LESIONS - CASE REPORT AND LITERATURE REVIEW.**

T. Annussek¹, K. Wermker², S. Jung¹, J. Kleinheinz¹

¹ *Department of Cranio-Maxillofacial Surgery, University Hospital, Muenster, Germany*

² *Department of Cranio-Maxillofacial Surgery, Fachklinik Hornheide, Muenster, Germany*

Aim: Bevacizumab, a monoclonal antibody targeting vascular endothelial growth factor (VEGF), has been reported to induce mucosal toxicities. Clinical characteristics of these particular toxicities have just been described incomplete. We present a case report of bevacizumab induced, deep oral mucosal ulcer and discuss VEGF antibody induced oral side effects, based on current evidence.

Case report: A 46 years old female patient with previously diagnosed high grade astrocytoma was introduced to our department by the attending oncologist. Six weeks before, a VEGF inhibitory therapy (bevacizumab) was started. Actually the patient was complaining about a heating tongue lesion. While examination we found a deep ulcer of the tongue, reaching the muscle layer. Any traumatic injury could be excluded. We advised analgesics, daily antibacterial chlorhexidine mouthwash and contemporary clinical examination. While following examination we observed a continuous healing of the previously described ulcer without any complication.

Results: We identified nineteen studies between 2010 and 2013, dealing with mucosal events, related to VEGF inhibiting drugs. All studies were representing the lowest level of evidence. However, oral side effects of VEGF antibody therapy like erythematous circinate, serpiginous erosions, mucositis and stomatitis are described in literature before. We herein present the first case report of a deep ulcer of the tongue related to anti-VEGF treatment.

Conclusion: Supported by experimental findings, there exists a sensitive period for developing mucosal toxic effect while VEGF antibody administration. The rate of mucosal events seems to be related to highest antibody concentrations which are reached 4-6 weeks after first administration. Even more serious mucosal lesions, as described before could be expected. Without clinical signs and symptoms of inflammation, a spontaneously remission could be supposed. A non-surgical intervention, e.g. antibacterial mouth rinsing seems to be effective treatment approach.



P-800

METASTATIC SYNOVIAL SARCOMA OF MAXILLARY GINGIVA: A CASE REPORT

Chih-Chieh Hu¹, Kuan-Chou Lin¹, Bey-Rong Guo², Wei-Yu Chen³

¹ *Department of Oral and Maxillofacial Surgery, Wan-Fang Hospital, Taipei Medical University, Taipei, Taiwan*

² *Department of Oral Pathology, Wan-Fang Hospital, Taipei Medical University, Taipei, Taiwan*

³ *Department of Pathology, Wan-Fang Hospital, Taipei Medical University, Taipei, Taiwan*

Synovial sarcoma is the most third common soft tissue sarcoma in extremities. About 9% of synovial sarcoma occurs in head and neck region, in which the pharynx is the most common site. The mostly metastatic site is noted in lung. Synovial sarcoma is from epithelial origin according to the current evidence. Histologically, the morphology might be biphasic, monophasic or poorly differentiated and might be necessary to use immunohistochemical stain for definite diagnosis. The case is a 66-year-old female with metastatic synovial sarcoma of lung and suspected primary site in interphalangeal joint of left thumb. She was diagnosed of metastatic synovial sarcoma over left maxillary gingiva. For the rarely reported metastatic region in oral cavity, the differential diagnosis is discussed in clinical, histological and immunohistochemical aspects.



P-861

INFLUENCE OF EPIDERMAL GROWTH FACTOR RECEPTOR EXPRESSION ON THE CETUXIMAB AND PANITUMUMAB RESPONSE RATES OF HEAD AND NECK CARCINOMA CELLS

S. Hartmann¹, A. Seher¹, R. Brands¹, C. Linz¹, G. Lessner², H. Böhm¹, A. Kübler¹, U. Müller-Richter¹

¹ *Department of Oral and Maxillofacial Plastic Surgery, University Hospital Würzburg, Würzburg, Germany*

² *Institute of Pathology, University Würzburg, Würzburg, Germany*

Objectives: To examine the impact of epidermal growth factor receptor (EGFR) expression level on the efficacy of monoclonal antibodies against the EGFR.

Methods: In four human head and neck carcinoma cell lines, epidermal growth factor expression was knocked down by lentiviral RNA interference. Next, the efficacies of cetuximab and panitumumab at concentrations of 4, 40, and 400 µg/ml were measured by real-time cell analysis for a 48-hour duration. Finally, the different response rates to the drugs were statistically analyzed.

Results: The lentiviral EGFR knockdown efficiency ranged from 18–54 % across all of the cell lines. All original cell lines exhibited rather poor or inverse responses with regard to EGFR-AB treatment. In contrast, inhibiting EGFR expression in the same cell lines yielded statistically significant better responses to cetuximab or panitumumab treatment.

Conclusions: The results revealed novel and unexpected aspects of the head and neck carcinoma cell line response rates after monoclonal antibody treatment. Our findings highlight the fact that stronger EGFR expression does not necessarily lead to beneficial anti-EGFR treatment effects. Instead, reduced EGFR expression yields better responses to antibody treatment in vitro. These findings might explain cases of head and neck cancer that were unsuccessfully treated with anti-EGFR antibodies.

**P-863****ESTABLISHING OF THERMOSENSITIVE LIPOSOMES FOR CONTROLLED DRUG RELEASE IN ORAL CANCER.**

N. M. Purcz, C. Heneweer, O. P. Medina, L. Purcz, A. Malinowski, L. Baltz, Y. Ail, O. Jansen, J. Wiltfang

Department of Oral- and Maxillofacial Surgery, Universityhospital Schleswig-Holstein, Campus Kiel, Kiel, Germany

Objective:

Systemic toxicity limits the maximal tolerable dosage of chemotherapeutics. Ectopic metabolism of the drugs reduces the effective concentration in the tumour. Both reduce the effectiveness of chemotherapies. By encapsulation of chemotherapeutics in liposomes, these effects can be reduced. Thermosensitive liposomes (TSL) release their drug load if they are heated to 42°C, so that a local increase of the drugs at the desired site can be achieved.

Methods:

In this pilot study TSL were monitored by photoacoustic imaging with the Vevo-LAZR-system (VisualSonics), which combines the good sensitivity of optical imaging with the high resolution of ultrasound. Indocyanin green (ICG) was used as contrast agent, as free ICG has a higher photoacoustic signal intensity than in liposomes encapsulated ICG. Therefore it is possible to monitor the drug release with photoacoustic imaging. ICG loaded TSL were first measured in phantoms at room temperature and after heating to 42°C. Next, the ICG loaded TSL were tested in an orthotopic xenograft mouse model of oral squamous cell carcinoma. TSL were injected in the tail vein and the photoacoustic signal was monitored in the tumour region. Then the tumour region was heated and the photoacoustic signal was again monitored. Mice without tumour and non-thermo-sensitive liposomes were used as controls.

Results:

In vitro the heating of the liposomes showed a significant increase of the photoacoustic signal intensity. In vivo a significant increase of the photoacoustic signal was seen in the tumour after injection of the TSL which is probably due to an accumulation of the TSL in the tumour. After heating another significant increase was measured. The increase after heating was not observed in the controls, neither in the healthy mice without tumour or when using the non-thermosensitive liposomes. Therefore the increase of the photoacoustic signal seems to show a release of the ICG of the TSL.

Conclusion:

This pilot study shows a promising way to increase local drug concentration in the tumour. As a next step a therapy study in mice is needed to prove a better chemotherapeutic effect and clinical outcome.

**P-880****MODIFIED APPROACH IN ADVANCED CASES OF BRONJ (BIPHOSPHANATE RELATED OSTEO NECROSIS OF THE JAWS)**

R. Javadian, S. Gilis, I. Loeb

CHU St PIERRE, Brussels, Belgium

Objectives :

For more than 8 years (2005-2013) we have treated BRONJ by preventive dentistry followed by conservative medical treatment because of frequent failure of surgical technique.

These treatments have been inadequate in advanced cases of BRONJ, therefore we modified our surgical approach.

Methods:

In our department 7 cases have been treated by combined medical and surgical approach: 3 in state IV BRONJ (pathology mandibular fracture) and 4 in a state III BRONJ (fistula, marginal mandibular fracture or bucco-sinusal comminucation).

Patients received several weeks before surgery preoperative antibiotics (Amoxicilline – Acide clavulanique) and a mouth bath (H₂O₂ 2vol%).

In the 3 cases of state IV BRONJ with mandibular fracture a large mandibulectomy (leaving the residual bone periosteum untouched) was done. In two cases the reconstruction consisted of fibular flap whereas the last one was reconstructed with a reconstructive plate combined with a pectoralis pedicled flap.

The other 4 cases of state III BRONJ received following treatment: atraumatic necrotic bone elimination, meaning a combination of mouth bath and modified surgical treatment (without periosteal detachment), followed by local buccinator flap reconstruction and ending with preventive postoperative antibiotics of 1 to 6 weeks.

Results:

All 7 patients presented with adequate bone healing and recovery of their predominant symptoms. An average one year follow was respected.

Conclusion:

Mouth bath in *combination* with antibiotics results as a satisfying preoperative treatment to facilitate operative modified necrotic bone elimination techniques (without periosteal detachment) followed by reconstructive techniques (local and free flap reconstruction).

In the beginning (2005 – 2011), patients presenting with state III and IV BRONJ, presenting with low quality of life, received surgical treatment in our department. All cases presented with surgical failure. This has modified our preoperative medical and surgical approach. The following 7 patients with this modified approach presented good results in an average 1,5 year follow-up.

**P-920****A STUDY OF SERUM HAEMOGLOBIN LEVELS IN MAXILLOFACIAL PATIENTS WITH OROPHARYNGEAL SQUAMOUS CELL CARCINOMA PRIOR TO RADIOTHERAPY**

EA Gruber, L Al-Qamachi, S Waring, D Gahir, P Grime

Oral and Maxillofacial Surgery, University Hospital of North Staffordshire, Stoke on Trent, United Kingdom

Objective

An association between low serum haemoglobin (Hb) and a poor response to radiation therapy has been previously established, especially in patients with squamous cell carcinoma (SCC), such as cervical and laryngeal SCC. Studies have shown a correlation between low pre-radiation Hb level and poor loco-regional control and survival (Harrison, Girinsky, Van Achet). Oxygen is a potent radiosensitizer, increasing the effectiveness of a given dose of radiation. Tumour cells in a hypoxic environment may be up to two to three times more resistant to radiation damage. Early correction of anaemia is a strategy for targeting hypoxia.

The aims of this study were:

1. To identify patients with low serum Hb prior to commencing radiotherapy for oropharyngeal SCC.
2. To determine possible ways to improve Hb prior to radiotherapy.

Methods

Retrospective analysis of serum Hb levels in patients with oropharyngeal SCC who received radiotherapy, with curative intent, as a primary (with or without neo-adjuvant chemotherapy) or adjunctive treatment. Target Hb was our institute's reference range.

Results

42 patients were included. 6/42 (14%) had adjunctive radiotherapy compared to 36/42 (86%) who received primary radiotherapy. Of this cohort, 28/42 (67%) were anaemic prior to commencing radiotherapy (24/36 of the primary group versus 4/6 in the adjunctive group).

Conclusions

A large proportion of our patients were anaemic prior to commencing radiotherapy and this could compromise their response to treatment. We propose a protocol to evaluate anaemic patients and optimise Hb levels prior to radiotherapy. We recommend a randomised, multicentre trial to establish the correlation between anaemia and response to radiotherapy in oropharyngeal SCC.

**P-938****BIOLOGICAL CHARACTERIZATION OF SQUAMOUS CELL CARCINOMA OF THE ORAL CAVITY IN NEVER SMOKERS AND NEVER DRINKERS**

J.P. Foy, R. Incitti, C. Crozes, S. Deneuve, P. Zrounba, I. Treilleux, M. Devouassoux-Shisheboran, P. Goudot, C. Bertolus, P. Saintigny

Centre Léon Bérard, Lyon, France

Objectives: Squamous cell carcinoma of the oral cavity (SCCOC) usually occurs in smokers and drinkers patients (SD). However, never smokers and never drinkers (NSND) represents about 10% of SCCOC; they are not associated with the human papillomavirus (HPV) infection. Our goal was to identify biological features of SCCOC in NSND.

Methods: We interrogated The Cancer Genome Atlas Data Portal to identify patients with SCCOC who were either NSND or SD. Clinical and pathological characteristics including gender, age, tumour subsite, AJCC tumour stage, HPV status, p16 expression, lymphovascular and perineural invasion, and extracapsular extension were analyzed. Expression profiles from level 3 RNA-seq v2 available as of January, 2014 were downloaded. To compare SCCOC in NSND and SD patients, we applied univariate t-tests on log2 transformed RSEM normalized read counts. A Gene set enrichment analysis (GSEA) was performed using a complete table of genes ranked according to their log2 fold change between NSND and NS.

Results: Among 468 HNSCC, 76 SCCOC with available information on alcohol and smoking exposure were identified, including 27 NSND and 49 SD. Female gender ($P<0.0001$), stage pT1-2 vs. pT3-4 ($P=0.0021$), and stage I-II vs. III-IV ($P=0.0139$) were more frequent in NSND. No difference was observed for the remaining clinical and pathological characteristics. When available, HPV status and p16 expression were negative. A total of 240 genes were found to be differentially expressed between NSND and SD ($P<0.01$ and absolute log2 fold change >1). Several genes found to be upregulated in NSND are targetable with drugs being evaluated in other tumour types: *ADRB1*, (adrenoreceptor beta1), *TERT* telomerase reverse transcriptase), *FLT3* (fms-related tyrosine kinase 3), and *CX3CR1* [chemokine (C-X3-C motif) receptor 1]. Genes involved in the modulation of T-cell behavior were upregulated in NSND (e.g. *IDO1&IDO2*), and most significant changes identified by GSEA were immune-related, with a significant enrichment of multiple genesets involved in the response to interferon and T-lymphocytes modulation, such as PD1 signaling.

Conclusion: Our study identifies specific biological features of SCCOC in NSND that may represent new avenues for the treatment of this population.



P-1001

UNEXPECTED CAUSE OF TMJ PAIN

K. Lewis, M. Faulkner, J. Herold

Royal Sussex County Hospital, Brighton, United Kingdom

Introduction:

Distant metastasis of carcinoma to the oral cavity and maxillofacial skeleton is unusual. They comprise approximately 1% of all malignant neoplasms of the oral cavity. The most common carcinomas that metastasise to the oral cavity are lung, breast and kidney. We report a case of adenocarcinoma of the oesophagus metastasising to the oral cavity and mandible.

Case:

A 61 year old male was referred to the Oral and Maxillofacial Surgery Department with a 6 week history of pain associated with his left temporomandibular joint (TMJ). He also presented with a 2 week history of a pre-auricular swelling. Past medical history included hypertension and a history of T2N1 adenocarcinoma oesophagus- treated oesophagectomy and post-operative chemoradiotherapy 4 years previously. Clinical examination revealed a 1cm soft swelling in the left pre-auricular region. There was nil of note on examination of his neck. His inter-incisal opening was 2.5cm and slowly worsening. Intra-oral examination showed a small mass in the left buccal mucosa posteriorly. There was also pain and tenderness of lower left first molar tooth.

An OPG radiograph showed a 2cm osteolytic lesion replacing the left coronoid process and ascending ramus of mandible as well as some generalised bone loss in the LL56 region. The patient then developed an intra-oral swelling in the floor mouth and lingual mucosa LL6 region. This was biopsied and was shown to be metastatic adenocarcinoma of oesophagus. A staging CT neck and thorax as well as a bone scan were performed and showed likely metastatic deposits in the left humerus, scapula as well as mandibular lesions described. The mandibular lesions were treated with local radiotherapy with no response. The patient died a month after the diagnosis was confirmed.

Conclusion:

There should always be a suspicion of metastatic disease in patients with a past history of cancer who complain of TMJ symptoms. If an osteolytic lesion is noted on plain radiographic examination with diagnosis can be a challenge in terms of tissue diagnosis and risks of surgical intervention.

**P-1026****ILL FITTING DENTURES AS PRIMARY PRESENTATION OF MANTLE CELL LNFOMA: A CASE REPORT WITH LITERATURE REVIEW**

Ö. Dereci, S. Ay, M. Karagülle, MF. Açıklın

Eskişehir Osmangazi University, Faculty of Dentistry, Eskişehir, Turkey

Objective: Mantle cell lymphoma (MCL) is a subtype of B-cell non-Hodgkin's lymphoma and seen predominantly in males and older adults. Patients with MCL usually present with stage 3 or 4 disease. Common extranodal sites of involvement of MCL are Waldeyer's ring, gastrointestinal track, bone marrow and peripheral blood. In this study we reported a case of MCL primarily presenting as palatal swelling and discussed the possible role of dental professionals in the early diagnosis of this rare entity.

Methods: 71 years old male patient was referred to Eskişehir Osmangazi University, Faculty of Dentistry, Department of Oral and Maxillofacial Surgery clinic with a complaint of inadequate stability of his maxillary dentures due to the rapid swelling of his palate. Mucosal ulceration and swelling on hard palate were observed in the clinical examination. Incisional biopsy was performed under local anesthesia and surgical specimen was sent to the microscopical examination.

Results: Histopathological examination revealed neoplastic small lymphocytes with irregular nuclear contours. A immunohistochemical panel of CD20, CD5, PAX-5, BCL-2, cyclin D1, IgM and CD10 was performed for differential diagnosis. CD10 was negative while the other markers were diffusely positive, indicating the diagnosis of MCL. Patient immediately underwent COP chemotherapy protocol (cyclophosphamide 400 mg/m², oncovin mg/m², prednol 100 mg/m²) in 4 intermittent regimens. Five months after the diagnosis, patient was lost due to agranulocytosis and lung infection.

Conclusion: MCL constitutes %3-10 of all non-Hodgkin lymphomas. Although most of the cases present with nodal involvement, extraoral involvement may also be the primary presentation of the disease. The extranodal palatal localization of MCL is quite uncommon. MCL is seen in predominantly older patients, therefore undiagnosed MCL patients are likely to have total prosthesis. Oral surgeons and dentists should be aware of MCL in the case of unfitting detures of elderly patients.

**P-1027****EXPRESSION OF COXSACKIE ADENOVIRUS RECEPTOR (CAR) IN UNDIFFERENTIATED CARCINOMAS OF THE HEAD AND NECK**

R. E. Friedrich, T. Wunder, U. Schumacher

Oral and Maxillofacial Surgery, Eppendorf University Hospital, Hamburg, Germany

Background: HNSCC is the sixth most common cancer in the world and especially nasopharyngeal tumours have a poor prognosis. Besides radiation combined with chemotherapy new therapeutic options are therefore urgently needed. One of these is the treatment with an oncolytic adenovirus whose primary receptor for internalization of the virus into the tumour cells is the coxsackie adenovirus receptor (CAR). Apart from its association with tight junctions, little is known about its physiological role and regulation of its expression. To investigate if a treatment with an adenovirus could be an option, CAR expression was evaluated in HNSCC.

Methods: CAR expression of clinical specimen from 41 patients was investigated by immunohistochemical staining.

Results: CAR expression was in most carcinomas very heterogeneous and present in all grades of differentiation. Its expression was more abundant in well differentiated carcinomas and it decreased with the grade of dedifferentiation. The highest amount of CAR positive specimen was found in G1 tumours with 72,4 % while it decreased to 56 % positive cases in G4 tumours.

Conclusions: CAR expression is decreasing during the malignant progression in solid anaplastic HNSCC. Only about half of the patients with grade 4 HNSCCs express CAR in their tumour cells therefore down regulation of CAR expression in advanced grades of HNSCCs could be an indicator for tumour progression. As CAR expression is closely correlated with the ability of oncolytic adenoviruses to infect cells, a CAR expression analysis should be performed prior to treatment. Because of the higher CAR expression in more differentiated stages the chance of therapeutic succeeding seems to be better in G1 tumours.

**P-1104****ULTRASOUND SCANNING OF THE NECK IN PRE-OPERATIVE STAGING OF CUTANEOUS SQUAMOUS CELL CARINOMA; A 5-YEAR REVIEW (PART 2))**

R. Isaac¹, J.N. Ban², S.F. Mustafa¹

¹ *Oral and Maxillofacial Surgery Department, Prince Charles Hospital, Merthyr Tydfil, United Kingdom*

² *Restorative Dentistry Department, Bristol Dental Hospital, Bristol, United Kingdom*

Introduction

The incidence of nodal metastasis in Cutaneous Squamous Cell Carcinoma (cSCC) patients ranges from 2% to up to 20% in some reports. Current UK guidelines suggest that Ultrasound scans (USS) are reserved for clinically positive necks only. An initial audit demonstrated that staging USS of all patients with cSCC of the head & neck did not incur any added benefit to the detection or management of this disease. A change in practice was implemented reserving the investigation for high-risk patients. The aim of this re-audit is to assess the impact of refined scanning criteria on the pick up rate of nodal metastasis in cSCC patients.

Patients & Methods

Records of *ALL* cSCC patients presenting to the Health Board from June 1st 2012 to May 31st 2013 were reviewed and analysed using the same data collection protocol of the initial audit.

Results

98 individuals with cSCC were identified, of which 43 met the 'high risk' parameters. 2 individuals were identified with metastatic nodal disease and only one of them was subclinical.

Conclusion

In keeping with BAD guidelines, the low pick up rate of cervical nodal metastasis on USSs from the first audit review didn't warrant the application of this investigation routinely. The measures subsequently adopted provided a means of enhancing detection whilst preventing blanket screening of all cSCC patients. Although the number of scans was reduced, the pick up rate remains too low to warrant the staging of clinically negative necks in patients with cSCC of the head and neck.

**P-1179****TUMOUR METASTASES IN THE OROFACIAL REGION AS THE FIRST SYMPTOM OF ADVANCED MALIGNANT DISEASE - TWO CASE REPORTS**

J. Jambura¹, D. Hrusak¹, P. Andrlé¹, L. Hosticka¹, L. Hauer¹, P. Posta¹, O. Daum²

¹ *Department of Maxillofacial Surgery, University Hospital and Faculty of Medicine in Pilsen, Charles University in Prague, Czech Republic, Pilsen, Czech Republic*

² *Síkl's Department of Pathology, University Hospital and Faculty of Medicine in Pilsen, Charles University in Prague, Pilsen, Czech Republic*

Objectives: Metastatic tumours to the maxillofacial region are uncommon. At times, metastatic lesions of the orofacial region may be the first evidence of dissemination of a tumour from its primary site or even the first sign of malignant tumour at all. The authors present two rare cases where the metastasis in orofacial region was the first sign of malignant disease.

Material and Method: Both patients were treated in the department of maxillofacial surgery in the University Hospital and Faculty of Medicine in Pilsen from 7/2011 till 2/2014.

Results: The authors present two rare cases. One is the case of 58 years old man suffering from swelling of the left parotidomasseteric region for a few months affecting the left mandible. The biopsy, CT and PET/CT findings led to the diagnosis of generalized hepatocellular carcinoma. The other is the case of a 64 year old man suffering from lesion of the left submandibular region imitating sialoadenitis. The antibiotic therapy didn't have effect and so the fine needle biopsy was made. The result of the biopsy, PET/CT and urological examination showed that the patient was suffering from generalized prostate cancer.

The patient suffering from generalized hepatocellular carcinoma was treated with palliative radiotherapy, chemotherapy and biological treatment since 10/2011 till 2/2013. In February 2013 (17 months after the diagnosis was made) he died because of disease. The other patient with prostate cancer passed palliative radiotherapy of the submandibular lesion. Now is he treated hormonally and the disease is stabilized.

Conclusion: Tumour metastases in the orofacial region are relatively rare. However, we need to think about them in the differential diagnosis of the head and neck tumours. The presented cases demonstrate, that metastasis in maxillofacial region may be the first sign of serious disease.

**P-1343****PROTECTIVE EFFECT OF BOTULINUM TOXIN TYPE A IN THE RADIATION-INDUCED SIALADENITIS**

M. Melero Luque, A. Mari Roig, A. Morla, C. Arranz Obispo, G. Gomez , S. Cusco Albors, B. Moralejo , E. Arguero, F. Cuesta, M. Monner Diequez

Oral And Maxillofacial Surgery Department, Hospital Universitario de Bellvitge, Hospitalet de Llobregat, Barcelona, Spain

Objective: The head and neck tumours represent 5-10% of malignancies. Radiation therapy is one of the treatments commonly used in these patients. Despite its success, is not without complications in the short and long term.

The radiation-induced xerostomia is a symptom that reflects a reduced salivary flow secondary to irradiation of the salivary glands and affects the vast majority of irradiated patients for head and neck cancer. This clinical condition affects the quality of life for these patients, who in the majority of cases can do only symptomatic treatment as the therapeutic option.

Botulinum toxin is an accepted therapeutic tool for disorders of hyper salivation by its action on the decrease in the number of granules and salivary excretion. It is also known for use in patients with squealae of head and neck cancer and facial paralysis, speech in laryngectomized patients, Frey syndrome.

This study aims to evaluate the possible effect of radioprotection glandular injection of botulinum toxin before the start of radiotherapy treatment due to decreased number of secretory granules, responsible for radiation-induced glandular damage.

Material and Methods: Prospective controlled study. The same patient will be submitted to both treatments, botulinum toxin type A will be administered to the right submandibular and saline solution in left one. Our study was single blinded.

Results and Conclusions: The main objective was to assess the effectiveness of injecting botulinum neurotoxin A intraglandular prior to commencement of radiotherapy in patients with squamous cell carcinoma of head and neck, as a preventive treatment of radiation-induced glandular damage.

We described the changes in the glandular function by scintigraphy, the ultrasound gland volume variation as indirect sign of the degree of glandular atrophy and, also, we evaluated the safety of injection of botulinum neurotoxin type A intraglandular

We found that Botulinum toxin exerts a protective role in the glandular parenchyma. But we could not objectify a quantitative benefit in the preservation of the glandular function.



P-1366

OSTEONECROSIS OF THE JAW- FOUR YEARS EXPERIENCE IN TREATMENT

S.Dvojakovska-Bozovic¹, D. Popovic-Monevska², V.Popovski², A. Benedeti², S. Idoska S²

¹ *Maxillofacial surgery, maxillofacial surgery, Skopje, Macedonia*

² *Clinic for maxillofacial surgery, maxillofacial surgery, Skopje, Macedonia*

Introduction: Osteonecrosis of the jaw (ONJ) - "bone death", caused by compromise bone blood flow is a consequence of a heterogeneous systemic and local disorders like : post irradiation, periodontal disease, local malignancy, chemotherapy, glucocorticoid therapy, or trauma. Recently, high-dose intravenous bisphosphonates in patients with metastatic cancers have been identified as a risk factor for bisphosphonate related osteonecrosis of the jaw (BRONJ).

Objectives: To review the location of the lesions and relation with previous history. We assessed the main clinical-radiographic and CT aspects of osteonecrosis , their treatments carried out, and outcomes achieved.

Materials and methods: In retrospective study were treated 19 patients, between 2011 – 14year, presenting with nonhealing extraction or gingival sockets, intraoral exposed bone or painful swelling of the jaw for more than 8 weeks. They were clinically followed through Rtg- orthopantomography and CT was performed in all cases. From the beginning all patients were treated conservatively with antibiotics, followed by surgery procedures.

Results: Most of the patient had a previous history of bone metastasis and bisphosphonate treatment or after irradiation of squamous cell carcinoma but all of them were with oral complications after dento-alveolar surgery. The management of ONJ was symptomatic and palliative, including antibiotics, control of pain, and strict oral hygiene during long periods of time. For patients who did not respond to conservative treatment, a surgical bone debridement was performed.

Conclusions: Dental extractions seem to contribute the development of osteonecrosis of the jaw in patients with BRONJ and after irradiation. Osteonecrosis of the jaw can occur in patients without traditional risk factors.

Whereas the pathologic mechanisms is not well understood, the treatment of osteonecrosis of the jaw is currently focused on reduction of local pain, treating secondary infection, and ensuring adequate nutritional (if necessary with a feeding tube). That surgery should be limit on removing necrotic debris.

Key words: *osteonecrosis, bisphosphonates, cancer, oral complications.*



7. Microsurgical Reconstruction in Head and Neck

P-15

MANAGEMENT OF PAEDIATRIC AGGRESSIVE MANDIBULAR TUMOURS. LONG-TERM FOLLOW-UP.

A.M. Medra

Cranio-Maxillofacial, Oral, and Plastic Surgery, Alexandria University, Alexandria, Egypt

OBJECTIVE

Is to evaluate The long-term aesthetic and functional outcome of the treatment of paediatric aggressive mandibular tumours by en bloc resection, and immediate reconstruction.

Materials and Patients

Fifty eight paediatric patients with aggressive mandibular tumours were treated during the period from Jan. 2000 to Dec. 2004, consisted of 38 males and 24 females, with an average age of 9.8 years (range, 2 to 16 years old) with different benign aggressive tumours. Tumours having malignant criteria were excluded. All patients were treated using the staged protocol as follows: 1) En bloc resection and placement of a mandibular mini-reconstruction plate, 2) Primary bone grafts; either free non-vascularised split rib bundle graft or free vascularized bone grafts, 3) Implant placement approximately 6 months after stage 2, and, 4) Implant loading approximately 6 months after stage 3.

Patients were divided into two groups:

Group I: Resection and Reconstruction by Split rib Bundle Bone Graft (SRBBG) 48 patients; (38 patients underwent primary reconstruction, and 10 patients were secondarily reconstructed).

Group II: Resection and reconstruction by free vascularised bone grafts (FVBG), 10 patients; in which seven patients had free fibular flaps, while three patients had free radial forearm flaps. (8 patients underwent primary reconstruction, and 2 patients underwent secondary reconstruction).

RESULTS

Ten patients were reconstructed with vascularized grafts, the remainder by Split rib bundle bone grafts, (48) from the chest wall, usually right side. The length of follow-up ranged from 8 years to 14 years. Successful reconstruction was accomplished in 55 patients (94.8 %).

Early infection (within the first post-operative week) occurred in five patients (0.09%); in three patients the infection was mild, and controlled by conservative measures, while in two patients it was severe, and necessitated, in addition partial removal of sequestered bone grafts. Three patients (.05%) had recurrence, during the first post-operative year and managed by re-surgery.

Two patients had partial resorption of the rib graft secondary to severe infection, and managed by removal of the mini-reconstruction plate, and augmentation after 6 months.

CONCLUSION

Paediatric aggressive mandibular tumours, should be treated in an aggressive manner and immediate reconstruction



P-23

SECTIONED IMAGES AND SURFACE MODELS OF A CADAVER FOR UNDERSTANDING THE DEEP CIRCUMFLEX ILIAC ARTERY FLAP

B. C. Kim¹, M. S. Chung², H. J. Kim³, J. Lee¹, B. Choi¹, D. S. Shin²

¹ *Oral and Maxillofacial Surgery, Daejeon Dental Hospital, College of Dentistry, Wonkwang University, Daejeon, South Korea*

² *Anatomy, Ajou University School of Medicine, Suwon, South Korea*

³ *Oral and Maxillofacial Surgery, College of Dentistry, Yonsei University, Seoul, South Korea*

Objective: The aim of this study is to describe the deep circumflex iliac artery (DCIA) flap from sectioned images and stereoscopic anatomic models using Visible Korean, for the benefit of medical education and clinical training in the field of oro-mandibular reconstructive surgery.

Methods: Serially sectioned images of the pelvic area were obtained from a cadaver. Outlines of significant structures in the sectioned images were drawn and stacked to build surface models.

Results: The PDF file (PDF file; size 30 MB) of the constructed models is available for free download on the website of the Department of Anatomy at Ajou University School of Medicine (<http://anatomy.co.kr>). In the PDF File, the relevant structures of the DCIA flap can be seen in the sectioned images. All surface models and stereoscopic structures associated with the DCIA flap are displayed in realtime.

Conclusions: We hope that these state-of-the-art sectioned images, outlined images, and surface models will help students and trainees better understand the anatomy associated with DCIA flap.

Acknowledgements: This research was supported by Fishery Commercialization Technology Development Program, Ministry of Agriculture, Food and Rural Affairs. (112092-03-2-SB010)



P-42

LANDMARKS AND STRUCTURAL REFERENCES FOR THE RECONSTRUCTION OF THE HIGHLY AESTHETIC EYEBROW

M. Gerle¹, S. Wolfart², J. Wiltfang¹, B. Möller¹, I. Springer¹

¹ Department of Oral and Maxillofacial Surgery, University of Kiel, Kiel, Germany

² Department of Prosthodontics and Dental Materials, RWTH University of Aachen, Aachen, Germany

Objective

The aim of this study was to work out standardized reference points to phrase reliable practical guidelines for the surgical reconstruction of a highly aesthetic eyebrow, in both woman and men.

Methods

For this standardized pictures were taken from a collective of 311 individuals of both genders aged between 18 and 30 years. A questionnaire addressing the satisfaction with the appearance of their own eye region was completed by these subjects. The respective 16 most satisfied, moderately satisfied and most dissatisfied individuals were grouped together separately, their eyebrow regions were surveyed and composite images were created.

Results

Several significant differences in shape, position and superciliary arch of the eyebrows were found between the different satisfaction groups and also between the genders ($p < 0.05$). In summary it can be stated for the shape of the female eyebrow within the group of subjects with the highest satisfaction that it describes a curved superciliary arch, the medial onset being more cranially located than the lateral end and the highest point of the superciliary arch being in line with an imaginary division of the brow between medial 2/3 and lateral 1/3. Generally, the same applies to the superciliary arch of the eyebrow of the male subjects with the highest satisfaction, only their arch being less bent, the brow being significantly wider over the whole length and the horizontal length being longer when compared with that of the highly satisfied women. For both women and men, the medial onset of the eyebrow is located on the cranially extension of a line connecting the lateral side of the nose with the medial canthus.

Conclusion

We suggest that the gender specific reference values and aesthetic guidelines presented in this paper for the reconstruction of the eyebrow are evidence based and the first such approach.

**P-88****OSTEOGENIC DISTRACTION IN MICROSURGICAL FIBULAR RECONSTRUCTION**

J Ferreras Granado, A García Rozado, B Patiño Seijas, R Luaces Rey, A Otero, V Chaves, N Carral, JL López-Cedrún

Oral and Maxillofacial Department, CHUAC, La Coruña, Spain

In mandibular reconstruction after oncological resections , we have different microsurgical bone flaps (iliac crest , scapula , fibula). When the bone defect is greater than 8 inches, we employ microsurgical fibula flap . This flap can provide soft tissues and bone of very good quality, even if their height is not comparable to the previous mandibular height. This anatomical deficiency has implications for subsequent dental rehabilitation of patients. On the one hand, the placement of osseointegrated implants is very difficult. On the other hand, the significant increase of the prosthetic space, increases the complexity of the rehabilitation. To solve this anatomical deficiency, we have resorted to various options such as the use of a double-barrel flap or osteogenic distraction of fibular bone. We report 5 cases with a follow up period between 1 and 4 years that were treated in our department with osteogenic distraction of microsurgical fibular flap. The goal of this treatment was to achieve enough bone height so that the patients could undergo subsequent placement of dental implants and prosthetic rehabilitation.

**P-98****A SERIES OF FREE BONE GRAFTS FOR MANDIBULAR RECONSTRUCTION THAT ARE GREATER THEN 6.0 CM**

B Nandra, N Uppal, T Martin, P Praveen, S Dover, S Parmar

Oral and Maxillofacial Surgery, University Hospital Birmingham, Birmingham, United Kingdom

Introduction

Composite tissue transfer has transformed reconstruction and in particular when patients have received radiotherapy

However, there is morbidity related to free tissue transfer.

Free non vascularised bone grafts have much lower morbidity.

Surgeons believe that free bone grafts greater then 6.0 cm are prone to failure, even in patients who have health surrounding soft tissues. This is supported by some literature (Chen YB & Foster R) .

Objectives

To review whether bone grafts greater then 6.0 cm in length are at greater risk of failure.

Material & Methods

A retrospective study using theatre log books, case notes and radiographs was carried out of all patients who had free bone grafts greater then 6.0 cm in length at the University Hospital Birmingham. None of these patients received radiotherapy. A Quality of Life questionnaire was filled in by the patients.

Results

10 patients had undergone bone grafts for mandibular defects greater then 7.0 cm in length.

All the bone grafts were successful. None of the bone grafts were infected and there was radiographic evidence of bony union. Some of the patients had been dentally rehabilitated with implants and the other patients were awaiting dental implants.

Conclusions

Contrary to the literature and many surgeons belief, our study has shown that long mandibular defects (> 6.0 cm) is not a contraindication to the use of free bone grafts.

However, certain key principles need to be observed to achieve this success. These principles will be discussed.

1. Chen YB et al. Major mandibular Reconstruction with Vascularised Bone grafts: Microsurgery 15:227, 1994
2. Foster R, Pogrel A et al. Vascularised Bone flaps versus Non- vascularised Bone Grafts for Mandibular Reconstruction. Head and Neck 21 (1) 1999

**P-154****USEFULNESS OF SERUM C-REACTIVE PROTEIN (CRP) LEVEL FOR PREDICTING FLAP COMPLICATION AFTER PERFORMING FREE MICROVASCULAR HEAD AND NECK RECONSTRUCTION**

S.Y. Yim, M.C. Park, Y.H. Joh, S.J. Seo, I.J. Lee

Department of Plastic and Reconstructive Surgery, Ajou University Hospital, Suwon, South Korea

Objective : Free microvascular head and neck reconstruction requires minimal complication and safety. However, clinical observation of wound in head and neck area is very difficult because of its narrow and inaccessible anatomy. Serum C-reactive protein (CRP) level is commonly used as a marker of acute inflammatory response and quantitative test that shows predictable kinetics.

The goal of this study is to describe the time course of serum CRP level and prove the usefulness of CRP as a predictor of postoperative flap wound complication after performing free microvascular reconstruction in head and neck area.

Methods : Between June 2009 and November 2012, we retrospectively analysed the data of 25 patients who received free microvascular tissue transfer for head and neck reconstruction at Ajou University Hospital. The characteristics of patients and surgical information were analysed. From the first day after surgery, CRP levels were daily measured for two weeks.

Results : A Total of 25 patients were included in this study. The amount of time taken to reach the peak of the CRP level is significantly less in the normal group (2.9 days) than the complicated group (7 days) ($p < 0.001$). Furthermore, the amount of time to reach half of the peak was significantly different between groups (7.2 days vs. 10.1 days, respectively, $p < 0.05$). In the normal group (17/25), there were 14 cases which reached peak CRP level before postoperative day 4. However, in the complicated group (8/25), there was only 1 case which reached peak CRP level before postoperative day 4 ($p < 0.05$). The complication rate is 32.7 times higher when CRP value reaches peak on or after postoperative day 4 (95% Confidence interval, 30.26 - 35.14; $p = 0.002$). Patients in the complicated group showed significantly elevated CRP levels compared to those in the normal group at day 6 to 9 and day 12 to 13 ($p < 0.05$).

Conclusion : In head and neck reconstructions, the high probability of flap wound complications are indicated through the result of having highest CRP values on or after postoperative day 4, slow normalization of plasma CRP level and secondary rise in serial CRP values.

**P-164****ROLE OF MUSCLE FREE FLAP IN THE SALVAGE OF COMPLICATED SCALP WOUNDS AND INFECTED PROSTHETIC DURA**

S.Y. Lim, M.C. Park, Y.H. Joh, S.J. Seo, I.J. Lee

Department of Plastic and Reconstructive Surgery, Ajou University Hospital, Suwon, South Korea

Background

The prosthetic dura is an essential element in the protection of the cranial parenchyma and prevention of cerebrospinal fluid leakage. Although prosthetic dura are widely used in neurosurgery, they occasionally provoke infection, which can be a major concern after neurosurgical treatment. However, removal of the prosthetic dura carries a risk of brain parenchyma injury and cerebrospinal fluid leakage. The salvage of infected prosthetic dural material has not been adequately addressed in the literature. In this study, we demonstrate the value of the combination of a meticulous surgical debridement of necrotic tissue and simultaneous muscle free flap for intractable postoperative epidural abscess without removal of the infected prosthetic dura.

Methods

Between 2010 and 2012, we reviewed the data of 11 patients with persistent infection on the prosthetic dura. The epidural infections each occurred after a neurosurgical procedure, and there was soft tissue necrosis with the disclosure of the underlying prosthetic dura and dead bone around the scalp wound. To salvage the infected prosthetic dura, meticulous debridement and a muscle free flap were performed.

Results

All 11 patients experienced complete recovery from the complicated wound problem without the need for further surgical intervention. No signs of prosthetic dural infection were observed during the mean follow-up period of 11 months.

Conclusions

The combination of a meticulous surgical debridement and coverage with a muscle free flap is an effective treatment for salvage of infected prosthetic dura



P-175

A PROSPECTIVE STUDY OF MEDIAL SURAL ARTERY PERFORATOR FLAP WITH COMPUTED TOMOGRAPHIC ANGIOGRAPHY-AIDED DESIGN IN TONGUE RECONSTRUCTION

Y. He, SF. Jin, Z. Fang, SQ. Feng, CP. Zhang, YX. Zhang, ZY. Zhang

Department of Oral Maxillofacial-Head Neck Oncology, Faculty of Oral and Maxillofacial Surgery, Ninth People's Hospital, Shanghai Jiao Tong University School of Medicine, Shanghai, China

Objective: To investigate the application of the medial sural artery perforator flap in hemiglossectomy reconstruction and evaluate the value of preoperative computed tomographic angiography for perforator location.

Methods: Nine patients with medial sural artery perforator flaps for tongue reconstruction were between August 2013 and January 2014. There were 5 males and 4 females, with a mean age of 51 years (range, 22 to 67 years). The number, location, and course of the perforators were measured on the computed tomographic angiogram preoperatively.

Results: 8/9 of the medial sural artery perforator flaps survived and one with necrosis. Thirteen perforators were visualized by angiogram and 10 of these were used in the operation. There was no significant difference between the computed tomographic angiography location and intraoperative findings in the perforator's distribution. The mean diameter of the medial sural artery was $1.0 \pm 0.3\text{mm}$ and the concomitant vein was $2.0 \pm 0.7\text{mm}$. The mean pedicle length was $9.7 \pm 1.0\text{cm}$, with $5.1 \pm 1.7\text{cm}$ of main trunk and $4.6 \pm 2.1\text{cm}$ of perforator. The average number of muscular vessel branches was 23.9 ± 6.9 , with 12.2 ± 5.1 of main trunk and 10.1 ± 4.4 of perforator. There were 1 (10%) septocutaneous and 9 (90%) myocutaneous perforators.

Conclusions: The medial sural artery perforator flap is appropriate for medium-sized tongue defect reconstruction, with a long pedicle of matching calibre, adequate tissue volume, and minimal donor site morbidity. Computed tomographic angiography is a valuable and necessary method for preoperative assessment of the perforator's location.

**P-267****ACCURACY OF FREE FIBULAR MANDIBULAR RECONSTRUCTION USING VIRTUAL SURGICALLY PLANNING**

P. Metzler, E. Geiger, D Steinbacher

Plastic and Craniomaxillofacial Surgery, Yale University, New Haven, CT, United States

Free fibular transfer (FFF) is the workhorse for large, complex mandibular reconstruction. However, accurate restoration of the proper mandibular shape and contour can be difficult using a freehand approach, particularly when multiple osteotomies are required. Virtual surgical planning (VSP) and use of a prebent plate may help improve accuracy. However, the ability to transfer the proposed plan to the actual result has not been adequately studied using rigorous, quantitative 3-dimensional linear and angular assessments. The purpose of this study is to morphometrically compare the virtually pre-planned scenario with the real post-operative 3D anatomic result.

Methods/Techniques

This retrospective analysis was approved by the Yale University HIC. Patients who underwent mandibular reconstruction using a free fibula flap and VSP between November 2012 and November 2013 at Yale-New Haven Hospital were included. Demographic information was tabulated including patients' age, gender, and diagnosis. Pre- and post-operative CT scans were imported into the Mimics 10.01 software (Materialize, Leuven, Belgium), and planned in typical fashion. Resection and osteotomy guides, and pre-bent reconstruction plates were generated and used for all cases. CT data of the actual postoperative results was uploaded into Materialize and compared to the planned outcome. Data collected included: fibular dimensions and anthropometric mandibular landmarks. Statistical analysis involved the paired and un-paired t-test ($p < 0.05$ considered significant).

Results/Complications

15 patients (8 male) 28 to 70 years old (mean 45.8 years) were included. In total, 44 osteotomies within the bony transplant were performed. The dimensions of the post-osteotomy fibula segments were almost identical to the preoperative VSP showing a mean difference in fibula height of 1.2mm ($p=0.442$), in width of 0.9mm ($p=0.395$), and in length of 1.3mm ($p=0.845$). The actual postoperative anterior and posterior mandibular angles differed from the VSP by 12.4° ($p=0.410$) and -12.5° ($p=0.208$), respectively. The condylar distance and inclination showed a discrepancy of only 1.7mm ($p=0.41$) and 4.6° ($p=0.41$).

Conclusions:

This study shows reproducibility and accuracy when using VSP for FFF mandibular reconstruction. The few discrepancies between the planned and actual mandibular morphology, occurred when multiple fibular segments were required.

**P-268****SPATIAL POSITIONING IS IMPROVED USING 3D PLANNING FOR FREE FIBULAR MANDIBULAR RECONSTRUCTION**

E Craig, A Shah, P Metzler, D Steinbacher

Plastic and Craniomaxillofacial Surgery, Yale University, New Haven, CT, United States

PURPOSE:

The vascularized free fibular flap is the workhorse for mandibular reconstruction. Traditionally an en fos approach is taken to adapt a mandibular reconstruction plate and fashion the fibular flap accordingly. 3-dimensional planning, with use of cutting guides and pre-bent plates, has been introduced with possible benefits. The purpose of this study is to evaluate the interfragmentary gap size and symmetry between conventional free-hand fibular preparation and those using 3-dimensional planning.

METHODS:

A retrospective review was performed in concordance with Yale HIC(#1101007932). Mandibular reconstructions involving free fibular transfer performed by the senior authors (SF, DMS) at a single institution between 2010-2012 were included. Cases without CT scans in the early postoperative period were excluded. Demographic and intra-operative data was collected. Post-operative CT scans were analysed using Materialise software. Interfragmentary gap distances (mm) and symmetry (degrees) were assessed. Results were analysed using a two-sided t-test.

RESULTS:

Of 32 fibular reconstructions, 19 met inclusion criteria. The majority were male (13M:3F), with a mean age 56.7 (range of 24-82 years). Inter-fibular gaps measured 0.36 mm versus 1.88 mm in the non-3D group compared to the 3D group ($p=0.004$). Overall symmetry (a ratio between right and left angles) measured 1.024 versus 1.01 in the non-3D group compared to the 3D group ($p=0.807$). Within the subgroup analysis of mandibular body reconstructions only, symmetry was similar between the two techniques: 0.96 versus 1.05 for the 3D group, ($p=0.295$). However, within the subgroup analysis of complex reconstructions, inter-fibula gap distances were smaller in the 3D group, with the results approaching statistical significance (0.22 vs 1.533, $p=0.071$). Interestingly, the type of technique used did not affect the symmetry for complex reconstruction.

CONCLUSIONS:

3D planning with use of intra-operative cutting guides and pre-bent plate lessens interfibular gap dimensions and may enhance axial symmetry. Space between native mandible and fibula is not appreciably altered using planning. Future efforts will focus on the accuracy and reproducibility of the 3D planned to actual results as well as clinical significance and efficiency benefits.

**P-379****POST-OPERATIVE MANAGEMENT OF THE HEAD-NECK RECONSTRUCTION PATIENT: CURRENT PRACTICE IN THE UK**

N.Vig, M.Shah, A.Ujam, M.Kumar

Dept of Maxillofacial Surgery, NWLH NHS Trust, London, United Kingdom

Introduction

Four years ago, our unit began to send 'routine' post-operative head-neck reconstruction patients to the high dependency unit (HDU) as opposed to intensive care (ICU). This was based on evidence that patients recovered better in HDU, and had fewer complications. We wanted to determine whether this was indeed the case for our patients, and also what current practice in the UK was.

Methods

Complication rates and length of stay were compared in two groups of patients either side of the change-in-practice date. Additionally, a concise questionnaire was sent to UK units querying details about where patients were sent post-operatively, staffing levels, number of reconstructive procedures performed per annum and cancellation rates experienced per annum.

Results

Patients experienced fewer complications in HDU v ICU (for example, chest infections and respiratory insufficiency) when matched for co-morbidity, but differences between groups were not statistically significant.

Ninety-five questionnaires were sent in July 2013 and there were 60 responses (63% response rate), 57 from OMFS units. 48 units (80%) performed reconstructive procedures with a reported total of 1700 cases annually (mean = 36/unit/yr, range 10-110/yr).

Thirty-five units sent patients to ICU routinely (76% of total patients), 8 to HDU (18% total) and 3 (6%) to the ward directly (additional data discussed). Patients going to the ward all returned to dedicated head-neck wards with higher nursing ratios than a general ward.

Cancellation rates varied significantly from 0.25/yr to 10/yr (mean = 2/yr). No unit sending to HDU alone described any cancellations over the past year.

Conclusion

Patient outcomes are no worse, and may be better, if patients are sent to HDU rather than ICU. They are also significantly less likely to be cancelled (in the UK, 100 events annually) due to lack of ICU beds - this obviously has an impact on patient care. There are also the cost implications relating to ICU stay (HDU is less expensive). If a tracheostomy is performed, we argue it may be clinically (and financially) beneficial to send a patient to HDU over ICU.

**P-395****THE RECONSTRUCTION OF THE EXTENDED SQUAMOUS CELL CARCINOMA IN FACE AND ORAL CAVITY – CASE REPORT**

D. Chun-Yu Ho, Yu-Cheng Cheng, Kuan-Chou Lin

Oral and maxillofacial surgery, Municipal Wan Fang Hospital, Taipei, Taiwan

Head and neck soft tissue defects pose significant challenges in reconstruction regarding cosmetic and functional considerations. Many reconstructive options are available including primary closure, skin grafts, local transposition of skin, mucosa and/or muscle, regional flaps, microvascular free flaps and maxillofacial prosthesis, which are depended on the site and size of the lesion, involved tissues of the surgical defects and patient factors. The advances in free flap design and reductions in free tissue morbidity propel the use of microvascular free tissue transfer. For reconstruction of the extensive head and neck soft tissue defects, the fasciocutaneous / myocutaneous free flaps [e.g. anterolateral thigh (ALT), rectus abdominis and latissimus dorsi] have proven to be very reliable. Among these free flaps, the ALT free flap is extensive and the size can be up to 15 cm in width and 25 cm in length with long pedicles and adaptability in supporting a variety of tissues (muscle, fascia, and soft tissue). There is no need to reposition the patient during harvesting the ALT free flap. The donor site can be closed primarily if the width of flap does not exceed 8~9 cm. Therefore, the ALT is a bulky, reliable vascularity and extreme versatility free flap for reconstructions. The case presented was a extended squamous cell carcinoma which involved the upper & lower lip, left hard palatal mucosa and left buccal mucosa. The wide excision, left modified radical neck dissection, right selective neck dissection and left ALT free flap reconstruction were performed and the patient was satisfied with the cosmetic and functional outcomes.



P-521

NEW TRENDS IN MANDIBULAR RECONSTRUCTION

A. Mahmoud

Al Azhar University, Cairo, Egypt

Reconstruction of maxillo-facial defects creates a challenge for oral and maxillo-facial surgeons. It requires basic knowledge of anatomy and thorough skills for harvesting osseous and soft tissue to reconstruct the defective area

Aim

To select and compare between different approaches for mandibular reconstruction

Patients and methods

A total number of thirty patients of different age groups complaining of different mandibular lesions were selected for resection and reconstruction of their defects either simultaneously or delayed after thorough investigations

The reconstruction will depend on many factors which include size, site of the defect, age and medical status of the patient, nature of the donor and recipient site

Results

Immediate reconstruction is preferred than delayed one if it is feasible. In children preservation of the periosteum is mandatory for self bone regeneration without harvesting bone graft. Micro-vascular bone grafting is the golden standard for reconstructing large bone defects while non vascularized iliac crest bone grafting is suitable for mild to moderate bone defects

Recommendations

Rehabilitation of the reconstructed patient is mandatory as soon as possible for preserving bone, contour and facial symmetry by inserting dental implants with bridges or over dentures

**P-528****ONE STAGE PROTHODONTIC AND 3D CAD/CAM SURGICAL RECONSTRUCTION OF THE MANDIBLE USING THE DENTAL ARCHBAR AS AN EXTERNAL FIXATOR**

F. P. Koch^{1, 2}, W. Wagner²

¹ Oral & Craniomaxillofacial Surgery, Goethe University Frankfurt, Frankfurt, Germany

² Oral & Maxillofacial Surgery - plastic operations, University medical centre Mainz, Mainz, Germany

Introduction

Large defects of the human face regularly occur after Head&Neck trauma or cancer resection. They often cause esthetic as well as functional disorders especially if the dental arch is affected. For a complete esthetic and functional reconstitution, at least two operations, in general however 3-4 operations are necessary. We present a new technique providing the reconstruction of the mandible as well as the prothodontics by a single operation .

Method

The 58years old patient presented with a near total defect of the mandible after cancer resection and primary reconstruction by a titanium plate which perforated the skin within the first year. Since, no recurrence of the tumour has occurred.

Aiming a complete reconstruction of the mandible, the gingiva and the teeth, a 3D model of the skull was manufactured. The prothesis of the upper jaw indicated the tooth positioning of the lower jaw. Then the mandibular joints have been positioned in the centre of their fossa and four dental implants have been planned to provide a quadrangular base for the lower jaw prosthesis. The position of the fibula segments as well as their angulation and lengths were adapted to the implant position. After, the moulded fibula-model, already bearing the dental implants, has been transformed into its natural straight appearance again to design the sawing splint and the implants drilling guide.

To provide the correct angulation of the fibula segments a CAD/CAM dental archbar was manufactured from Titanium to be placed immediately during transplantation. This new approach of an prefabrictaed archbar fulfills three function: 1. It bears the prothethis 2. It stabilizes the molded fibula as a fixateur externe, 3. It positions the complete fibula with the prosthesis in a correct relation to the upper jaw, indicated by the prostheses.

Conclusion: This innovative approach of a prosthodontic and reconstructive rehabilitation could shorten total reconstruction and rehabilitation time.



P-537

MANDIBULAR RECONSTRUCTION WITH FREE FIBULAR FLAP IN PATIENTS WITH HOMOZYGOUS SICKLE CELL DISEASE: A LITERATURE REVIEW AND CHARACTERISTICS

V.PRADE^{1, 2, 3}, I.GUICHARD⁴, C.BOUTET^{5, 6}, P.SEGUIN¹, T.ALIX^{1, 2, 3, 7}

¹ *Maxillo-Facial Surgery, University Hospital of Saint-Etienne, Saint-Etienne, France*

² *General Surgery - Unit of Reconstructive Surgery, University Hospital of Saint-Etienne, Saint-Etienne, France*

³ *SNA-EPIS EA4607, University Hospital of Saint-Etienne, Saint-Etienne, France*

⁴ *Internal Medicine, University Hospital of Saint-Etienne, Saint-Etienne, France*

⁵ *Radiology, University Hospital of Saint-Etienne, Saint-Etienne, France*

⁶ *Thrombosis Research Group EA3065, University Hospital of Saint-Etienne, Saint-Etienne, France*

⁷ *CREATIS-LRMN, CNRS UMR 5220 - INSERM U1044, University of Lyon 1, Villeurbanne, France*

Objective: Sickle cell anaemia, the most common haemoglobinopathy in the world, is a genetic disease characterised by presence of haemoglobin S (HbS) in the blood. Homozygous sickle-cell disease (SCD) is necessary for symptoms to occur. Homozygous forms of SCD may be considered as relative contraindications to free flap transfer by some authors.

Methods: We report the case of a 19-year-old homozygous SCD patient who presented a large benign tumour of the right mandibular corpus which treatment resulted in a lateral mandibular interrupter substance waste of 10 cm long.

Results: A double-barrel free fibular bone flap made the reconstruction without any postoperative ischaemic event.

Conclusions: We report the first case of bone free flap in SCD patients. Fourteen cases of free flaps were reported, all of them made of soft tissues (*latissimus dorsi*, TRAM, radial forearm, *gracilis*, omentum, temporoparietal fascia), mainly for the reconstruction of SCD chronic ulcerations of the lower limb. Free flap transfer in SCD patients requires precautions in order to prevent thrombosis in the microcirculation of the flap. According to the literature and our experience, we suggested 1) exchange transfusions until the ratio of HbS to normal haemoglobin is lower than 30%; 2) stabilisation of the haematocrit between 31 and 35%; 3) prevention of hypothermia for a body temperature of 37°C; 4) vascular rinsing of the flap with warm heparinized saline; 5) reduction of the ischaemia time; 6) prophylactic antiplatelet treatment (e.g. acetylsalicylic acid).

**P-589****LATISSIMUS DORSI FLAP - SUPINE POSITION FOR A TWO-TEAM APPROACH**

J. T. Lichtenstein, M. E. H. Wagner, M. Rana, F. Tavassol, N.- C. Gellrich

Cranio-Maxillofacial Surgery, Hannover Medical School, Hannover, Germany

Objective: The latissimus-dorsi-flap is one of the most versatile free tissue transplants in reconstructive head-and-neck surgery. Due to its elaborate supply of muscle and skin tissue, even large post-ablative defects may be reconstructed sufficiently. The standard position of the patients according to literatur is the lateral decubitus position. Although this is not a disadvantage in itself, it may prohibit a time-efficient two-team-approach. Therefore, we introduced flap-harvesting in supine position in our department. In the following, our experience with this procedure shell be presented.

Methods: In contrast to the standard lateral harvesting-position, the supine position is being applied to raise the latissimus-flap. The standard straight-flat supine position for resection is altered by elevating the thorax ipsilaterally. This may be performed by supporting the back on one side with a cushion or other adequate material. By this, a two-team approach for simultaneous resection and harvest is possible.

Results: The two-team approach for immediate reconstruction after tumour-resection is being performed routinely in our department nowadays. OR-time has been reduced effectively since the introduction of the supine harvest position. In contrast to the standard approach with repositioning of the patient during the procedure, an economization of around 30% of surgery-time was achieved. This means diminishing the perioperative stress for the patient, and permitting higher surgical accuracy through less exhausted surgeons.

Conclusion: Our experience with this technique is generally positive. The main benefit of this approach is the significant reduction of surgery-time. Although the described modification is associated with a certain learning-curve, the access to the latissimus muscle is granted without objective limitations. The major drawback of this technique is a certain shortage of available space in theatre, hence two teams need to arrange around head and shoulder. If manpower is available, this disadvantage is outweighed by the time-effectiveness of this approach.

**P-628****MASTICATORY REHABILITATION FOLLOWING JAW RECONSTRUCTION USING VASCULARIZED FREE FIBULA FLAP AND ENOSSAL IMPLANTS- 19-YEAR EXPERIENCE WITH A COMPREHENSIVE CONCEPT**

M. Ofer, T. Trenkle, H.C. Jacobsen, P. Sieg, S.G. Hakim

Klinik für Kiefer- und Gesichtschirurgie, UKSH, Lübeck, Germany

Objectives:

Conventional prosthesis is generally inapplicable following reconstruction with free fibula flaps (FFF) due to impaired bone and soft tissue conditions. Rehabilitation via endosseal implants in FFF is relatively novel and this retrospective study aimed to document surgical aspects of this option and describe related supplementary procedures to optimize the definitive outcome.

Material and Methods:

119 implants were inserted within FFFs in 37 patients aged 51.8+/-10.6 years, which underwent ablative surgery of the maxilla (3) and mandible (34). In a cross-sectional study design with a follow-up period of 3-172 months kind and configuration of graft design, pattern of implant insertion and the prosthetic rehabilitation as well as primary stability and survival rate were analysed.

Results:

Most patients underwent jaw reconstruction using mono-barrel FFF (14 osseous and 18 osteocutaneous/ osteomyocutaneous) whereas 3 patients received double barrel reconstruction of the mandible. Patients with maxillary defects (3) were reconstructed using mono-barrel grafts (1 osteocutaneous and 2 prefabricated grafts). 23 patients required pre-prosthetic procedures to optimize peri-implant soft tissue situation. Iliac bone onlay-graft was used in 6 patients to achieve appropriate vertical height in mono-barrel-grafts. 10 implants in 8 patients in total (5 irradiated) couldn't be loaded. All other implants showed stable osseous integration and satisfying peri-implant soft tissue conditions.

Conclusion:

Masticatory rehabilitation can be achieved using endosseal implants inserted in FFF. Special requirements can be met by appropriate graft configuration and adequate implant positioning. Supplementary pre-prosthetic procedures are mostly required and contribute to improve long-term survival.

**P-633****TERMINO-LATERAL ANASTOMOSIS SUTURE TO INTERNAL JUGULAR VEIN IN MICROVASCULAR FLAPS: TECHNIQUES AND RESULTS.**

A. Encinas Bascones, E. Fernandez, O. De la Sen, E. Varela, I. Martínez, R. Martín-Granizo, A. Alonso Ovies

Oral and Maxillofacial Surgery, Hospital Clinico San Carlos, Madrid, Spain

Introduction:

Micro-vascular free tissue transfer is a widespread, safe and reliable method for the reconstruction of head and neck defects following oncologic surgery. A post-operative monitoring of the perfusion of a free flap is important to achieve a favourable outcome and to decrease morbidity. When microvascular thrombosis occurs, the best chance for flap salvage is earliest revision of the microanastomosis. Complications concerning the microvascular suture technique are related to the patient baseline status, recipient vessels in the neck and the different techniques used. Venous occlusion anastomosis is considered the leading cause of microvascular flaps failure and there is no scientific consensus on what type of venous anastomosis is better: end-to-end or end-to-side.

Aims:

To compare the different types of venous anastomosis performed in our Oral and Maxillofacial department and to compare our results with those published in the scientific literature.

Material and Methods:

We explain the end-to-side anastomosis technique. Since 2003, we have performed 125 microvascular anastomosis in 119 patients, in our department. We analysed 20 different variables including the following: anastomosis technique (end-to-end or end-to-side), recipient vessels, microsurgical flap used, and anastomosis and flaps complications. We used the SPSS 15.0 statistical tool.

Results:

3 patients (2, 5%) died in the first year. 4 flaps failed: 2 forearm flap and 2 fibulae flap. 2 forearms flaps anastomosis (1, 6%) were early reviewed and finally saved. We obtained 96, 8% success rate and 3, 2 % thrombosis rate in internal jugular vein (IJV) anastomosis. A high success rate was obtained with end-to-side anastomosis to IJV compared with end-to-end anastomosis to other recipient vessels. Other parameters such the patient age and baseline status and the surgical learning curve have to be taken into account to assess success rates.

Conclusions:

Better outcomes have been obtained with end-to-side microvascular anastomosis to IJV for head and neck reconstructive flaps. End-to-side overcomes size discrepancy, avoids vessel retraction and IJV acts as a venous siphon.



P-643

MANAGEMENT OF AMELOBLASTOMA IN NORTH YORKSHIRE- OUR EXPERIENCE OVER 22 YEARS

T. A. Teemul, S. M. Fletcher, R. P. Singh, D. Houghton, J. A. Taylor

Oral and Maxillofacial Surgery, York Teaching Hospitals NHS Foundation Trust, York, United Kingdom

Objective

Ameloblastomas are invasive jaw tumours with a recurrence rate related to both surgical and pathological factors. This study looks at 15 cases diagnosed and treated in York and reviews histopathology, surgery, follow-up and recurrence.

Method

Retrospective review of medical records and literature review.

Results

The histological subtypes were solid/multicystic (53.3%), extraosseous/peripheral (13.3%), unicystic (13.3%) and not specified (20%). The surgical management included wide resection with reconstruction (66.7%), enucleation (20%) and marsupialisation (13.3%). Follow-up ranged from 4 – 194 months with a mean follow-up of 47 months. 80% of patients are still under review. There was 1 recurrence at 291 months, which was a unicystic subtype treated with enucleation. There was also 1 unconfirmed recurrence at 171 months.

Conclusions

The literature suggests follow-up for 5-10 years although there was no consensus. However, in our series and in the literature there are late recurrences reported at >10 years after treatment. Outcomes for cases treated with radical surgery seem promising as there are no recurrences in this group. Does radical surgery make long follow-up necessary? Although our results imply that it does not, there is not enough supporting evidence. There is need for a national audit and database in the United Kingdom for rare odontogenic tumours in order to provide more evidence for practice. Since recurrence is related to surgical management we propose separate follow-up protocols for conservatively treated patients and radically treated patients.

**P-656****REVIEW OF FREE FLAP RECONSTRUCTION SUCCESS RATES IN MANAGEMENT OF GRADE III OSTEORADIONECROSIS FOLLOWING PRIMARY HEAD AND NECK CANCER TREATMENT.**

S. Bayoumi, P. Praveen, T. Martin, S. Parmar

University Hospital Birmingham, Birmingham, United Kingdom

Objective:

Osteoradionecrosis (ORN) is a recognised complication of treatment of head and neck cancer. Whilst it may be possible for ORN to develop spontaneously, the majority of cases tend to occur following a form of tissue trauma. There are currently on-going prospective trials looking at both prevention of ORN and the treatment of established ORN. The Notani classification is an established system of grading the severity of ORN. This study looks at our series of patients who presented with Notani grade III ORN treated with surgical resection and free flap reconstruction.

Methods:

The records of 23 consecutive patients under the care of the Maxillofacial Head and Neck team at University Hospital Birmingham diagnosed with Grade III ORN were reviewed. All 23 patients had been treated for an established head and neck cancer and were disease free at time of diagnosis of ORN. 21 patients underwent free flap reconstruction of their ORN and were included in the study. Patients included in the series did not have any active infection at the time of surgical management of the ORN

Results:

A total of 21 patients were included in the series (15 males, 6 females) with a mean age 62.8 years (range 45 - 77). 3 patients had received radiation as their primary treatment modality and subsequently developed ORN. 18 patients had combined surgical and post-operative radiotherapy to manage their primary disease and developed ORN. Free flap reconstruction was successful in 20 patients with only 1 case of flap failure (95.2%).

Conclusions:

ORN is a complex condition with often prolonged and debilitating morbidity. Elimination of active infection and secondary reconstruction in grade III cases can result in patients achieving good symptom control and a functional outcome. The success rate of free flap reconstruction in treatment of ORN is comparable to recognised free flap success rates in head and neck reconstruction.



P-700

MONITORING OF FREE FLAPS IN MAXILLOFACIAL SURGERY

Peter Bouvry, J. Abeloos, J. De Ceulaer, P. Lamoral, F. Lippens, K. Nagy, N. Neyt, G. Swennen, C. De Clercq

Department of Maxillofacial Surgery, AZ St Jan Brugge, Brugge, Belgium

Introduction:

Early identification of flap failure is important because of the limited time interval to re-establish the vascular patency.

There is evidence that early intervention can lead to successful salvage rates of 80 % and more.

Material and methods:

Review of the recent literature. A Pubmed and Scopus search was performed with combinations of the terms 'monitoring', 'free flap' and 'head and neck surgery'. After screening of the abstracts 31 studies were included.

Objective:

Evaluation of the current monitoring techniques of microsurgical free tissue transfer for head and neck reconstruction, their accurateness, cost-effectiveness, technical complexity, usability for buried flaps and finally their ability to distinguish arterial from venous occlusions. We would also like to discuss our own experience.

Results:

Non- invasive techniques: surface temperature monitoring, microlightguide spectrophotometry, handheld surface doppler monitoring, colour doppler sonography, laser doppler flowmeter, CT based imaging.

Invasive techniques: implantable doppler monitoring, invasive temperature monitoring, oxygen tension partial pressure monitoring, tissue pH, microdialysis.

Discussion:

Most of the literature favours conventional clinical bedside monitoring. Many studies claim a monitoring technique that warns for flap failure, but very few of them bring evidence that the use of advanced techniques results in interventions leading to a higher salvage rate.

For the subgroup of buried flaps the beneficial effect of invasive techniques is more clear, although their cost-effectiveness is not well known yet.

Conclusion:

Recent technologically advanced monitoring techniques seem to be useful for monitoring free flaps, especially for buried free flaps. Unfortunately, few studies use a relevant measure of outcome such as the flap salvage rate.

**P-729****ANTIBIOTIC PROPHYLAXIS FOR ORAL CANCER SURGERY WITH FREE FLAP RECONSTRUCTION**

R. Sekine, K. Karakida, T. Aoki, H. Haruo, Y. Ota

Department of Oral and Maxillofacial Surgery, Tokai university School of Medicine, Isehara, Kanagawa, Japan

To clarify the effectiveness of antibiotics prophylaxis for surgical site infections (SSI), a total of 262 patients who underwent oral cancer surgeries with free flap reconstructions at the Department of Oral and Maxillofacial Surgery Tokai University Hospital were enrolled in the study. Antibiotics prophylaxis with Penicillins in 52 cases (ampicillin, aspoxicillin), Sulbactam/Ampicillin in 57 cases, Cefem in 141 cases (Cefmetazole, Cefoselis) and others in 12 cases (clindamycin, piperacillin, flomoxef, ceftriaxon) were given at the start of surgical incision. Other possible risk factors for SSI in major oral surgeries were studied and described elsewhere (J Infect Chemother 2010 Oct;16(5):334-9.) In the present result, overall SSI rate was 40.5% (106/262). Methicillin resistant *Staphylococcus aureus* (MRSA), *Pseudomonas aeruginosa*, *Enterococcus* sp., *Klebsiella pneumonia* were mainly isolated from SSI samples. Incidence of SSI in relation to antimicrobial regimens were as follows; ampicillin 71.4%(25/35), Sulbactam/Ampicillin 29.8%(17/57), cefmetazole 37.7%(46/117) and aspoxicillin 41.2%(7/17). SSI was highly found in ampicillin prophylaxis patients compared to other regimens. Days of antibiotics infusion were ranged between 1 to 22 days (average 5.1 days), and Incidence of SSI was not related to the duration of antibiotics used. In addition, SSI was first found in the 8.2 post operative day, in contrast remote infection such as pneumonia were revealed at the 12.6 post operative day. Our result may suggest that chemoprophylaxis with ampicillin alone supposed to be ineffective compared to Sulbactam/Ampicillin for prevention of SSI in major oral cancer surgeries.



P-916

PRIMARY BAR STABILISATION FOR FIBULA GRAFTS - ACCURACY OF GUIDED IMPLANT PLACEMENT - A PRE-CLINICAL STUDY

E. Goetze, S. Surjono, L. Righesso, F. Koch

Oramaxillofacial and Plastic Surgery, University Medical Centre, Mainz, Germany

Objective: The reconstruction of mandible defects by microvascular flaps and functional rehabilitation by dental implants is a challenge. The transplantation of skin grafts on the microvascular osseous flaps, precise preoperative planning and guiding enables an immediate reconstruction of bone, soft tissue and dentition. A CAD/CAM bar construction enables an accurate moulding, positioning of the reconstruct and fixation of free skin grafts for gingival reconstruction. The dental archbar fixes the bone fragments and replaces parts of the osteosynthesis materials. For implant placement an accurate guidance through a drilling splint is essential. The aim of this preclinical study was to evaluate the accuracy of such an implantation/cutting splint.

Methods: Four dental implants (Dentsply Astra® 4,0 x 10mm) were placed in porcine bone guided by a drilling splint (Bredent® system). The implantation followed a stepwise Astra®-drilling protocol. Afterwards implants were fixed with a CAD/CAM prefabricated 4-point-fixed dental archbar (Astra ISUS®). The fixation torque was limited to 9 Ncm. Contact X-ray pictures were done from the construct as well as cone beam volume tomography (CBVT) of the implant position. Gap size between implant inner thread and cone and implant angulation were measured. The experiment was repeated four times (n=16).

Results: The dental archbar did not fit simultaneously on each of the four implants. The outer implants could be loaded 3 times on one implant and once not at all. The screws did only show thread contact for 2 implants. The thread cone distance was maximum 2,9 mm/2,73 mm (left/right). The implants differed up to 6,48° (1th plane P) and 12,93° (2nd P). The inner implants showed a gap difference of 0,56 mm ($\pm 0,37$) and an angulation difference to each other of 1,47° ($\pm 0,22$) (1th P) and 3,83° ($\pm 3,28$) (2nd P).

Discussion/Conclusions: Despite of a guided implant placement, the real implant position differs from the planned implant position. Thus, the application of a fixed 4-point dental archbar is limited to primary stabilization of a fibula graft and demands a two-piece dental archbar, stabilized secondarily by the coverdenture, if two or more implants are placed in the same bone fragment.

**P-930****TOPOGRAPHICAL SUBSTANTIATION OF TREATMENT OF MAXILLOFACIAL DEFECTS USING NECK FLAPS ASSOCIATED WITH PERFORANT VESSELS**

E.V.Verbo, I.K. Filippov, K.S. Gileva

Maxillofacial surgery, Central Research University of Dentistry and Maxillofacial surgery of Healthcare Ministry of Russian Federation, Moscow, Russian Federation

Objective: to identify the most significant perforant vessels of neck and supraclavicular region; to create the separation method of cutaneous-fascial-muscular and cutaneous-fascial flaps based on perforant vessels, suitable for restoration of the defects of face and neck.

Methods: 20 unfixated cadavers of man in the age from 31 to 88 were observed. Layer-by-layer preparation with infusion of liquid nonradio-opaque coloring agent in vessels presented in 40 cadaverous samples allowed to make detailed analysis of perforant blood supply of neck and subclavicular region and to choose the most significant among them to create the surgical method of treatment: including vascular perforant from mental artery for central region of the neck and supraclavicular one for the low lateral neck region. The offered method was used in the group of 8 patients with 100% successful results.

Results: the perforating vessel, starting from supraclavicular artery of the neck and giving capable blood subcutaneous supply to the low-lateral regions of the neck, supraclavicular region and upper third of the external surface of shoulder, was identified in the supraclavicular region; this vessel allows to separate a large flap necessary to restore the defects of face and neck. The significant perforant vessel, starting from submental artery and going perpendicular to the skin through the anterior portion of m.digastricus, was identified in the submental region. Including this perforant into the cutaneous-muscular flap associated with platysma allows to achieve stable perforant blood supply, which minimizes the negative aspects of performed operation.

Conclusion: the most significant perforating vessels of anterior and lateral neck surfaces offering stable blood supply to cutaneous-muscular and cutaneous-fascial neck flaps are perforants of submental and supraclavicular neck arteries. The flaps, which include these vessels, are characterized with thin vascular pedicle, high mobility, appropriate metric parameters and low donor site damage which allows us to recommend them as the surgical method of the soft tissue defects of face and neck.



P-936

MICROVASCULAR RECONSTRUCTION OF THE MANDIBLE AFTER BISPHOSPHONATE-RELATED OSTEONECROSIS OF THE JAW

G. Spinelli, T. Agostini, D. Valente, F. Arcuri, D. Rocchetta, G. Carnevali

Maxillofacial Surgery, "Careggi-CTO Hospital", Florence, Italy

OBJECTIVE Bisphosphonate-related osteonecrosis of the jaws (BRONJ) is the most serious complication of bisphosphonates (BP) therapy. Despite several medical and surgical treatment modalities have been described, aggressive surgical treatment approach with wide bone resection and vascularized microsurgical reconstruction is the preferable choice for severe conditions. The aim of this study is to evaluate the clinical outcome of 8 cases of BRONJ treated with resection and mandibular microvascular reconstruction with fibula free flap.

METHODS Retrospective data of 8 patients with BRONJ who underwent to segmental mandibulectomy and reconstruction with osteocutaneous fibula free flap from January 2004 to January 2008 were collected (6 patients stage III BRONJ; 2 patients stage II BRONJ).

RESULTS All patients were Caucasian (62.5% women), with a mean age of 64.7 years (range 53 to 77). All BP were administered intravenously and all patients had mandibular disease. The average period of follow-up was 28.9 months. No flap loss or minor complications and no BRONJ recurrence were observed. All patients were able to ambulate pain-free.

CONCLUSIONS This method seems to be a safe and feasible option in oncological patients with reasonable life expectancy, despite initial concerns regarding reliability of mandibular free flap reconstruction after BRONJ. Our findings confirm data previously published by other authors, without complication and with a much longer median follow-up time.



P-947

MODIFIED AXIAL FLAPS IN THE TREATMENT OF NOSE DEFECTS

E.V.Verbo, L.A. Brusova, A.I. Nerobeyev, K.N. Gorkush

Central Research University of Dentistry and Maxillofacial surgery of Healthcare Ministry of Russian Federation, Moscow, Russian Federation

Objective: to create algorithm of surgical treatment of nose defects, depending on its characteristics and infringement of external respiration using modified axial flaps.

Methods: since 2004 till 2014 180 patients with nose defects (63 – associated with excision of oncological tumours, 77 – traumatic, 40 – associated bites) were observed and divided into groups according the volume of defect: isolated single region defects, defects involving 2 and more regions, total nose defects with surrounding tissues destruction.

All patients underwent pre- and postoperative evaluation: laser doppler fluorometry, face vessels ultrasonic duplex scanning, acoustic rhinometry, anterior active rhinomanometry and multyspiral computer tomography of facial skeleton. Gypsum face models with wax templates were made in all cases. Different frontal flap variations were used: linear, oblique, horizontal, Konverse and buccal flaps.

In case of absence of supporting structures allo-cartilage and silicone implants were used.

Results: the results of ultrasonic duplex scanning on the layer of a.supratrochlearis and definite borders of neuro-vascular bundle allowed to perform separation of flap of appropriate shape and size with minimal donor site damage.

It was evaluated that the most aesthetical results are achieved with frontal flap, in cases of single region and total nose defects.

Two flake flaps from nasolabial folds of the both sides serve as alternative method in the case of significant damage of donor site associating total nose defects.

According to laser doppler fluorometry, performed to examine the viability of flaps, the rate of its' blood flow doesn't change significantly on the stages of early recovery. The optimal time of supplying end trimming (60 days) and supporting-contour plastics (3 months) were determined according the rates of microcirculation within the limits of $5,3 \pm 0,7$.

In the group with large nose defects we performed treatment of the damaged surrounding tissues first.

Conclusion: to restore nose defects the most optimal method is the axial flaps in combination with complex of measures, performed to restore the infringement of an external respiration achieve asctetical result.

**P-968****FEMORAL CONDYLE OSTEOPERIOSTEAL FREE FLAP FOR RECONSTRUCTION OF ALVEOLAR RIDGE DEFECTS**

Z. Kovacic, L. Skamagkoulis, T. Dovsak, V. Didanovic, A. Kansky

Department of Maxillofacial and Oral Surgery, University Medical Center Ljubljana, Ljubljana, Slovenia

Objectives: The femoral condyle osteoperiosteal freeflap (FCOFF) can be a method of choice in reconstruction of segmental alveolar ridge defects when there is a need for a good vascularized bone, but the dimensions are too small for fibula or crista iliaca flaps. The objective of this study is to present two such cases.

Material and Methods: First 20 year old patient, had a marginal mandibulectomy 10 years ago because of a myofibroma. Inferior alveolar nerve was transpositioned. Reconstruction was done with FCOFF. The flap was fixed with two lag screws, end to end anastomosis with facial artery and vein were done.

Second 38 year old patient had a myxoma removal 7 years ago. A year ago there was a recidivant lesion in the corpus of the mandible. He was treated by transposition of alveolar nerve, marginal mandibulectomy, reconstruction with FCOFF. The flap was fixed with two miniplates and the rest of the mandible stabilized with a prebent reconstruction plate. End to end anastomoses were made with facial artery and vein.

Results: In both cases there was no limitation of leg movement and lower lip sensation was normal. Postoperative radiograms showed the fixation of the flaps in the desired positions. Both patients are waiting for prosthetic rehabilitation.

Discussion and Conclusion: FCOFF has a predictable anatomy, offers a good quality bone, has minimal donor site morbidity and there is possibility of including the skin island. Disadvantages are small diameter of vessels and short pedicle especially for reconstructions of midface.



P-982

A NOVEL WAY OF MANAGING AN ORAL NASAL FISTULA - A CASE REPORT

J. Begum, Kieren McVeigh, Mr. Graham James, Mr. Neal Barnard

Oral and Maxillofacial Surgery, Worcestershire Royal Hospital, Worcester, United Kingdom

Introduction

A 'fistula' refers to a pathological communication. When this communication occurs between the oral cavity and the nasal cavity, it is referred to as an oral nasal fistula (ONF). ONF are a common complication following cleft palate surgery. The most common symptom patients present with are regurgitation of food into the nasal cavity and speech problems such as hypernasality.

Case report

This case report brings to the attention of the author a novel way of managing a persistent oral nasal fistula where conventional surgical flaps have failed. A 42-year old male patient was referred by his GP with a lump present on his hard palate for 3 weeks. The diagnosis was a large inflammatory radicular cyst associated with a non-vital upper right lateral incisor. Following enucleation and dental extractions the patient returned with an OAF.

Outcome

Spontaneous healing did not occur via the provision of a cover plate. The first surgical procedure involved carrying out a left palatal rotation flap with a labial advancement flap. The fistula however remained present. Revision surgery was therefore required. Due to scar tissue formation from previous surgery, risk of failure with further local flap surgery was considered to be high. Distant flaps such as tongue pedicle flap was an option, however would be highly uncomfortable for the patient. An alternative option was to use a self-inflating hydrogel tissue expander to provide adequate tissue for direct closure of the defect.

Conclusion

This proved to be successful overall and is recommended for revision surgery where conventional surgery has failed.



P-1005

DCIA FREE FLAP; THE IDEAL FLAP FOR RECONSTRUCTION OF BROWN'S CLASS IIB AND III A – D MAXILLARY DEFECT

V. Valentini, A. Cassoni, A. Battisti, V. Terenzi, P. Priore, G.M. Prucher, M. Della Monaca

Maxillo - Facial Department, Sapienza University of Rome, Rome, Italy

Background

Management of maxillary defects is among the most challenging and controversial areas of head and neck oncologic reconstruction. Options include use of prosthetic obturators, pedicled flaps and free flaps. Despite the many and different reconstructive techniques suggested, the best technique is still a subject of debate. One of the fundamental problems with reconstructing the maxilla is that defects created by oncological resection are highly variable.

Methods

In this paper the Authors presented their experience in maxillary reconstruction; in particular bony reconstruction of maxillary defects was analysed. Retrospective analysis of medical charts from 2000 to 2013 was performed. Each maxillary defect was classified according to Brown's classification. Flaps used for each defects, complications of the donor and recipient site, the need for further secondary reconstructive procedures and functional and aesthetic outcomes were analysed.

Results

From 2001 to 2013, 124 maxillectomies were performed. Of these 49 required reconstruction with bony free flaps. Iliac crest free flap was the first choice for the reconstruction of Brown's class IIb and IIIa-d defects.

Conclusion

Bone reconstruction should be considered in medium-sized to large maxillectomy defects, with good oncologic prognosis, whenever oral rehabilitation, midface contour, and orbital support are a priority. The iliac crest free flap, based on the deep circumflex iliac artery and harvested with internal oblique muscle, provides a complete maxillary reconstruction; one part can restore the alveolus, zygomatic prominence, and infraorbital rim, and the muscle is used for sinus obliteration, oronasal separation, and intranasal lining. In our opinion, iliac crest free flap is the first choice in Brown class IIb and IIIa-d defect.



P-1039

MICROVASCULAR COUPLERS IN HEAD AND NECK RECONSTRUCTION: AN UNDERUTILISED RESOURCE?

W. Thompson, S. Endersby, A. Burns, R. Banks, M. Nugent

Oral and Maxillofacial Surgery, Sunderland Royal Hospital, Sunderland, United Kingdom

Microvascular couplers have been on the scene for a number of years, and are both quick and reliable. Since introducing them to our practice in Sunderland, we have investigated the time taken for anastomosis, patency rates and costs. We were also interested to know how widespread their usage is elsewhere.

Method

Sutured anastomosis and coupled anastomosis times were recorded, as was flap survival and re-exploration. Costs were obtained directly from the manufacturer with theatre time costing taken from national figures.

We contacted each UK Oral and Maxillofacial unit as to whether or not they used couplers.

Results

Initial results showed that couplers are not being used routinely across all United Kingdom units.

Times for anastomoses by coupler were 8-13 minutes compared to 35-45 minutes for sutured anastomoses.

There were no take backs or flap failures.

The couplers cost £150 each. A suture costs £9. The approximate cost of theatre time is £15 per minute. The approximate saving is £300 per case.

Conclusion

The coupler is an effective time saving tool, which is under-utilised. Couplers with an integrated Doppler probe, can also be used for flap monitoring. The couplers are currently an underutilised resource that reduces the duration of head and neck anastomoses. Oral a



P-1043

RENAISSANCE OF MICROVASCULAR FREE FLAP RECONSTRUCTIONS IN MAXILLOFACIAL SURGERY DEPARTMENT IN SLOVAKIA – COMPLICATIONS AND SUCCESSES

A. Stebel, R. Slávik, K. Halmová, E. Strecková, T. Szabó, Ľ. Malíček, P. Stanko, D. Poruban

Division of Maxillofacial Surgery, Department of Stomatology and Maxillofacial Surgery, Comenius University and St. Elisabeth Cancer Institute, Bratislava, Slovakia

Objectives:

To our best knowledge the first successful microvascular reconstruction in head and neck region in Slovakia was performed in our institution in 1995 - free osteomyocutaneous fibular flap, followed by 4 more microvascular flap reconstruction cases with two partial and one complete flap loss. Due to discussed medical and logistic reasons for more than 10 following years no free flaps were performed in our department.

Material and Method:

In November 2012 we performed another successful microvascular reconstruction with free osteomyocutaneous fibular flap in 60 year-old-patient after the resection of the body of mandible for recurrent squamocellular carcinoma. Between September 2013 and January 2014 another 4 successful microvascular free flap reconstructions were performed at our institution, namely 2 fibular and 2 radial forearm flaps.

Results:

Since November 2012 we performed 5 successful microvascular free flap reconstructions in head and neck region with no flap loss, one complete venous thrombosis followed by successful revision surgery with flap salvage, one internal jugular vein thrombosis and 3 cases of orocutaneous fistulas in postoperative period.

Discussion and conclusion:

Restarting microvascular program at our institution, focused on oncologic patients' treatment, was of supreme medical importance. We are aware of very small group of presented patients, nevertheless we are able to analyze and discuss the pitfalls and complications. Resurrection of the microvascular program finally allows us to offer radical surgical treatment up-to-date and current medical status. The rebirth of the microvascular program at our institution was possible only thanks to the former free flap experience of the only experienced surgeon of our team and thanks to the theoretical knowledge we have gained during the EACMFS Special courses at the University of Warsaw and practical Rolling program course – Microvascular course at Bochum of crucial importance for gaining basic microvascular skills, which we and our patients are very grateful for.



P-1072

RAISING OF THE LATISSIMUS DORSI FLAP IN A SUPINE PATIENT'S POSITION

J. Dittmann, H. Kokemüller, R. M. Zimmerer, N.-C. Gellrich

Oral and Maxillofacial Surgery, Hannover Medical School, Hannover, Germany

Objective:

Ablative tumour surgery in the field of craniomaxillofacial surgery requires adequate soft tissue reconstruction. The latissimus dorsi flap is an important transplant for defect reconstruction. It can be raised as a pedicled flap or a microvascular free flap, depending on tumour size, site and patient's comorbidities.

According to the literature, the flap is usually raised while the patient is in a lateral decubitus position which is in conflict with the supine patient's position for the resection of the tumour. Changing the patient's position intraoperatively is a time and resource consuming procedure. Another major disadvantage is the lacking feasibility of a two team approach.

Technical Note:

We therefor raise the flap in a supine patient's position and use a two team approach for resection and reconstruction. These two changes in our protocol reduce the operation time significantly by at least 90 minutes, leading to a reduced risk of anaestheological complications.

In a retrospective analysis of our department's database we found 197 patients who had undergone soft tissue reconstruction using a latissimus dorsi flap between 2003 and 2013, of whom 79 were transplanted as free and 118 as pedicled flaps, all of them harvested in a supine position. This technique has proved to be a save and time-saving procedure for craniomaxillofacial reconstruction.



P-1081

SCAPULAR OSTEOCUTANEOUS FLAP FOR MAXILLARY AND MANDIBULAR RECONSTRUCTION.

S.Ferrari, B. Bianchi, A. Ferri, D. Lanfranco, M. Leporati, E. Sesenna

Head and Neck Department, Azienda Ospedaliero Universitaria di Parma, Parma, Italy

Objective The scapular osteocutaneous flap can be used for the reconstruction of a variety of head and neck defects. The authors describe their experience with the this flap for maxillary and mandibular reconstruction .

Methods The present study regards 12 patients who had undergone reconstruction with a scapular osteocutaneous flap from 2009 to 2014.

Results The flap survival was 100 %. There were no complications at the donor site except a limitation in the lifting of the arm that is resolved in all cases after physiotherapy. Above one

patients completed oral rehabilitation with dental implant placement.

Conclusions The scapular osteocutaneous flap is an optimal method for maxillary and mandibular defect reconstruction and considering the very low rate of donor site morbidity is an excellent choice for patients who require a fast postoperative rehabilitation.

**P-1084****LONG TERM EFFECT OF BOTULINUM TOXIN A IN ORAL AND MAXILLOFACIAL REGION**

Tuba Develi, Sidika Sinem Soydan, Burak Bayram, Firdevs Veziroglu

BASKENT UNIVERSITY, Ankara, Turkey

Objective; Botulinum toxin type A (Btx-A) has widespread indications in oral and maxillofacial surgery. Btx-A is one of the 8 subtypes of a strong biological toxin synthesized by Clostridium Botulinum which is a gram positive, anaerobic, spore forming. Its mechanism of inhibiting acetylcholine release at neuromuscular junctions following local injection is unique. Other dose-dependent anti-neuroinflammatory effects and vascular modulating properties have extended its spectrum of applications. The aim of this study was to evaluate long term effect of Btx-A in the field of oral and maxillofacial surgery.

Methods; In this report management of 40 patients (34 female/6 male) with Btx- A injection is described. 27 of the patients had orofacial pain, 1 had chronic temporomandibular joint (TMJ) subluxation, 5 had unilateral masseter hypertrophy and 7 had trigeminal neuralgia. The symptoms of the patients were evaluated in four terms as preoperatively, postoperative 3rd day, 1st month and long term follow-up in every Btx- A injection sequence. The change of pain was evaluated by Visual analog Scale (VAS) in patients with myofascial pain and trigeminal neuralgia.

Results; The mean age of the patients was 32 ±7.2. Out of 40, in 5 patients (12.5%) second Btx-A injection was needed. The mean follow up period of the patients was 31 months. Although chronic TMJ subluxation problem was solved by single Btx-A injection, problem recurred at 4th year follow-up. The recurrence of masseter muscle hypertrophy was seen in 4 patients (80%). The mean preoperative VAS score of the orofacial pain patients was 7.8. The mean VAS score of orofacial pain patients was 2 at 3rd postoperative day and reduced to 1.1 at postoperative 1 month, and; then increased to 4.2 at long term follow-up. The mean preoperative VAS score of the trigeminal neuralgia patients was 8.5. The score reduced to 2.7 on 3rd postoperative day and remain same at postoperative 1 month, and; increased to 5.5 at long term follow-up.

Conclusion; The injection of Btx-A is an effective method especially in chronic orofacial pain. Even if duration of action of Btx-A ranges between 3-6 months with low morbidity and side effects, improving patients' quality of life.

**P-1100****MUSCULO-CUTANEOUS FLAPS VERSUS FASCIAL-CUTANEOUS FLAPS IN THE FUNCTIONAL RESTORATION OF PATIENTS WITH ORAL CANCER**

Victor-Vlad Costan, Mihail Balan, Marilena Badaluta, Otilia Boisteanu, Eugenia Popescu

UMF "Gr. T. Popa", Iasi, Romania

The purpose of the treatment in patients with oral cancer is curing the disease while achieving a quality of life as high as possible. The aim of this paper is to make a comparison between fascial-cutaneous flaps and musculo-cutaneous flaps from the view point of functional recovery.

Material and method

We conducted a study on 87 patients operated between 2006 and 2013 for cancers of the oral cavity whose removal implied only the removal of soft tissues. Most of the defects were located on the tongue (74 patients). 41 fascial-cutaneous radial free flaps were used along with 33 musculo-cutaneous latissimus dorsi free flaps and 13 pedicled great pectoral musculo-cutaneous flaps. The flaps were not lost in any of the patients included in the study. All patients entered in the study were operated for the first time and could be followed at least 1 year postoperatively. Phonation and swallowing evaluation was performed preoperatively, at one month, 6 and 12 months postoperatively.

Results

In musculo-cutaneous flaps, the functional results at the first assessment, were superior to fascial-cutaneous flaps, and in some cases (11 patients) swallowing and phonation were superior to preoperative status.

At the second assessment, the functional results were almost equal between the two flaps, slightly lower for pedicled flaps.

In the 1 year postoperative assessment, the deglutition of liquids and solids was performed without significant difficulty in the case of the radial flaps, while in the musculo-cutaneous flaps, deglutition for solids was difficult;

The diction quality in patients with fascial-cutaneous flaps was superior to that of patients with musculo-cutaneous flaps.

Conclusions

When possible, it is preferred to use fascial-cutaneous flaps, because the functional results are superior to those obtained in the musculo-cutaneous flaps; certain corrective surgery may improve the quality of swallowing and phonation in both groups of patients.



P-1114

INTRAOPERATIVE NAVIGATION IN MANDIBULAR RECONSTRUCTION

Chiara Copelli, Lazzaro Cassano, Nicola Pederneschi, Aurelio d'Ecclesia, Alfonso Manfuso, Roberto Cocchi

Maxillo-Facial Surgery, Hospital Casa Sollievo della Sofferenza, San Giovanni Rotondo (Fg), Parma, Italy

Objective: Mandibular reconstruction with bone free flaps today represents the gold standard to optimize the results both in term of aesthetic and function. Mandible is in fact a key structure for feeding, speech and to define the face lining. The correct positioning of the free flaps is one of the most important points to define the results. Deferent methods were been developed during years with the aim to help the surgeons in that phase.

Study design and methods: in this paper the Authors report about their experience on the use of the intraoperative navigation during complex mandibular reconstruction.

They describe the pearls and disadvantages of this technique. They moreover show a possible method to bypass the main obstacles of the procedure (mandibular mobility)

Results and conclusions

The intraoperative navigation can be a suitable device to reduce the operating time and to improve the results of the discussion. To do this it's necessary to have a fix and stable mandible.



P-1139

RECONSTRUCTIVE PROCEDURES IN MAXILLOFACIAL ONCOSURGERY.

R. Pink, M. Molitor, P. Tvrdý, P. Michl, V. Zbořil, J. Pazdera

Maxilofacial surgery, univesity hospital in Olomouc, maxilofacial surgery, univesity hospital in Olomouc, Olomouc, Czech Republic

Objective

Malignant tumours of the head and neck are common diseases with increasing incidence. In the Czech Republic, the percentage of orofacial tumours is around 2 % of the total number of malignancies. The treatment of these tumours is complex and long. In therapeutic terms, patient's age and stage of the disease, including the presence of distant metastases are important. A prerequisite for the success of surgical treatment is to remove the tumour with a sufficient safety margin.

Methods, results

The authors present a group of 26 patients with oropharyngeal carcinoma who underwent radical surgical removal of tumour followed by reconstruction of postoperative defects using distant and free flaps. The histopathology showed were predominantly squamous cell carcinomas, one case of adenocarcinoma and one of Merkel cell carcinoma . Radical surgical removal of a malignant tumour in the early stages of the disease is associated with fewer postoperative complications and longer survival prospects for the patient.

Conclusions

Reconstructive procedures in maxillofacial oncosurgery demand good interdisciplinary collaboration and high professional preparedness of the surgical and nursing team. Apropos the risk of local and/or systemic postoperative complications appropriate patient selection is important. Overall, the traditional, classic reconstructive procedures with the use of prostheses, may in many cases still be the optimal solution.

**P-1145****RECONSTRUCTIONS OF CRANIO-MAXILLO-FACIAL SKELETAL DEFECTS, BY USING INDIVIDUAL MADE IMPLANTS.**

A. Jenča¹, J. Živčák², R. Hudák², A. Jenča, jr.²

¹ *Department of Stomatology and Maxillofacial Surgery, University of Pavol Jozef Šafarik, University Hospital of Louis Pasteur, Košice, Slovakia*

² *Technical University, University Centre for Innovation, Technology Transfer and Intellectual Property Protection, Košice, Slovakia*

Objectives:

Craniofacial defects reconstruction is challenging procedure. Craniofacial trauma and neurosurgery procedures contribute with an important number of cases that allow the development of new biomaterials. Different techniques and materials have been employed in cranium reconstruction. It depends on the size of the defect and the recipient zone. To explore a new material and method to repair skull defect.

Methods:

The skull defects were scanned in continuous volume scan mode with electron beam CT. All the CT images were transmitted to Allegra work station for 3D reconstruction. The 3D reconstruction images of skull defects were transformed into specific computer aided design and manufacturing format. The range and curvature of the implants were determined according to the size of skull defect and the anatomical features of the surrounding bone tissues. The thickness was 1,5 mm and these were converted into the hypertext language that could be received by RP equipment. After special standardisation of modelling procedures, medical titanium Ti64 meeting national standard was used to make individualised skull defect implants. CAM of the model (STL format), which was the initial point for manufacturing implants using straight laser sintering from powder alloy of titanium (technology known as DMLS-Direct Metal Laser Sintering). In internal atmosphere in the chamber of the equipment the powder alloy will be sinterized to final requested form assembled by computer. After manufacturing the product there was necessary to deal with thermal processing, surface finishing and cleaning of the implant.

Results:

By listed methods we delivered a very satisfied results. From psychological side patients became sure about protection for their brain structures what given them back their socio-motivational insertion into normal life stream. Observation of the patients after the surgery did not brought any local complications or condition deterioration. In one case of an elderly man, there came a change in behaviours not just on family but also on social background by showing too much self confidence, later individual cured by psychologist.

Conclusion:

Individualized repair of skull defect has bright perspective for wide use because of its advantages, such a simple operation, few complications, precise repair, good bio compatibility.



P-1148

FUNCTIONAL OUTCOME AFTER PARTIAL GLOSSECTOMY AND RECONSTRUCTION WITH TONGUE PEDICLED LATERAL ROTATIONAL FLAP.

M. Alkhalil

Cranio Maxillofacial Surgery, Hamad Medical Corporation, Doha, Qatar

Purpose: to evaluate the use of tongue pedicle lateral rotational flap for reconstruction after partial glossectomy as one of the reconstruction options that can provide the patients with accepted health related quality of life.

Patients and Methods: Ten patients randomly selected out of forty eight patients who had undergone partial glossectomy with reconstruction by tongue pedicle lateral rotational flap, between Jan 2003_ June 2011 in Hamad Medical Corporation were enrolled, the personal information and tumour details were collected from the patient's medical record using a standardized form designed for the study, the speech assessment was performed by Speech understandability test, and Self assessment questionnaire, tongue size and mobility were assessed, as well as the tongue sensation and taste, based on standardized scales.

Results: Overall results and outcomes of this novel reconstructive technique were highly satisfactory. The results however need to be validated by further studies involving a greater number of patients.

Conclusions: The hemi tongue lateral rotational flap is a simple, yet highly effective reconstructive technique that utilizes identical tissue for recreation of the tongue shape and volume. it is less morbid and utilizes native tongue tissue and this makes it a highly desirable method of tongue reconstruction.

**P-1155****FLUORESCENT ANGIOGRAPHY FOR PERFORATOR FLAP MONITORING IN RECONSTRUCTIVE SURGERY**

G Bettega^{1, 2}, C Ochala¹, M Hitier¹, C Hamou², S Guillermet³, P Gayet³, JL Coll²

¹ Plastic and maxillofacial surgery department, Grenoble university hospital, Grenoble, France

² INSERM-UJF U823 team 5, Albert Bonniot Institute, Grenoble, France

³ Fluoptics, Fluoptics, Grenoble, France

Objective: We tested fluorescent angiography (FA) in reconstructive surgery using the FluobeamTM device for free perforator flap monitoring.

Methods: we included 20 patients reconstructed by free flaps after ethical approval. Each patient received iterative injections of 0.025 mg/kg InfracyanineTM. An injection was performed intra-operatively just after flap pedicle anastomosis to recipient vessels. The same injection was repeated every 6 hours for 4 days, beginning 2 hours after surgery. The parameters measured per-operatively were the time needed for fluorescent dye to flow from arterial to venous anastomosis (ITT) and skin flap fluorescence average intensity. The postoperative parameters were the delay before onset of fluorescence in the flap after ICG injection, the rise speed of the fluorescent signal, and the maximum fluorescence intensity.

Results: there was no complication with the iterative ICG injections but 2 patients had a flap complication. A venous thrombosis was clinically identified in both cases 20 hours after surgery requiring surgical revision of the anastomosis and both flaps were salvaged. Another patient presented with partial necrosis of the skin paddle 14 days postoperatively. The skin paddle of the flap was not fluorescent per-operatively for these 3 patients. The fluorescence intensity evolution, on postoperative monitoring, was clearly different for these patients. Our data does not allow concluding on the relevance and the predictability of ITT for the flap outcome. It was longer only in one case of thrombosis.

Conclusions: FA is a good tool for flap monitoring. The postoperative intensity of flap fluorescence and the dynamics of fluorescence seem to be good and early indicators of flap perfusion.



P-1160

MANDIBULAR RECONSTRUCTION WITH DCIA ASSISTED BY DIGITAL SURGERY

Xin Peng, Wen-bo Zhang, Yao Yu, Yang Wang, Chi Mao, Chuan-bin Guo, Guang-yan Yu

Department of Oral and Maxillofacial Surgery, Peking University School of Stomatology, Beijing, China

Purpose: The DCIA flap is widely used for reconstruction of mandibular defects. However, the three-dimensional position of the DCIA flap is difficult to control during the operation according to the experience of the surgeons. The purpose of this study is to improve the process by using digital surgery techniques.

Methods: 13 patients have been performed mandibular reconstruction with DCIA flap in Peking University School of Stomatology from 2011 to 2013. Virtual planning and surgical navigation were used in 4 cases, and 9 cases were operated traditionally by the experience of the surgeons. The three-dimensional position of condyle and lower border of reconstructed mandible were evaluated in the two groups.

Results: The three-dimensional position of the DCIA flap in assisted digital surgery group is significantly more accurate and ideal than the traditional group ($P < 0.05$).

Conclusion: Application of digital surgery techniques can significantly improve the clinical outcome of mandibular reconstruction with DCIA flap.

**P-1168****CORPUS ALIENUM IN THE RIGHT MANDIBULAR CANAL AFTER MOLAR FILLING , CASE REPORT**

R Isufi, Ph D, DMD¹, A Qendro, DMD¹, A Isufi, DMD¹, I Isufi, DMD²

¹ *Oro Maxillo Facial, "Mother Theresa" Univeristy Hospital Center, Tirane, Albania*

² *Dentistry, Private Practice, Tirane, Albania*

This article presents a rare case of a 16 years old female patient reported to Oro Maxillo Facial Surgery with severe pain in the right side of the mandibular body and numbness in the lower lip from the lip angle to the median line ,right side. Medical history of the patient was taken, patient did not have any other diseases and no one in the family with these symptoms. Patient referred for root canal filling in the 46 tooth , with several stages of treatment five months ago. In the intraoral examination pain in percussion in the 46 tooth, no cavity, no pain in the adjacent teeth. A panoramic x ray and a dental scan was made. The results of the dental scan reveals for a foreigner body, calcium hydroxide paste (UltraCal, Ultradent product referred by the dentist) in the right mandibular canal from foramen mental to foramen mandible .Patient was scheduled for intervention, exposure of the right alveolar inferior nerve and cleaning of the filling material was made with piezosurgery . The follow up of the patient was made 2 weeks after surgery , no pain, no oedema and numbness in the half of the lower lip, right side and one month after surgery no pain ,no oedema and began to have sensitivity in the lower lip right side.

**P-1177****THE USE OF MEDIAL FEMORAL CONDYLE CORTICOPERIOSTEAL FREE FLAP FOR THE MANDIBULAR RECONSTRUCTION**

F.Spallaccia¹, V. Sciannameo¹, G.Giuliani¹, D. Paravani², L. Braghiroli², M. Altissimi²

¹ *Maxillo-facial surgery, Santa Maria Hospital, Terni, Italy*

² *Hand surgery and microsurgery, Santa Maria Hospital, Terni, Italy*

OBJECTIVE

We describe the use of medial femoral condyle corticoperiosteal free flap for the mandibular reconstruction

METHODS

A 40 years old patient came to our department with an history of multiple surgical procedures on the left side of the mandibular bone. He underwent 14 years before a reduction and fixation after a low condylar dislocated fracture and a parasymphyseal one. The system that was used is the Anchor screw by Krenkel (Leibinger). After this, he developed an anterior open bite due to a nonunion of the bone fragments. He went to another maxillo-facial department in which the colleagues tried to close the open bite with a BSSO with bicortical screws. After many infective processes of the surgical site he was treated with curettages of the nonhealing tissue, the patient was left with a pseudoarthrosis of the left mandibular body.

We decided to treat him with a resection of the nonunion bone, screws removal and a free bone graft taken from the medial femoral condyle with adescending genicular peduncle vascularized at the facial vein and artery. For the fixation, a 2,4 mm titanium plate (Synthes mandibular reconstruction system) and screws were used.

RESULTS

The patient was immediately able to open the mouth, no infection and no vascular thrombosis in anastomosis region were observed. The small scar on the leg and the partial portion of the femoral condyle that was resected have allowed the immediate mobilization of the patient.

CONCLUSIONS

The medial femoral condyle corticoperiosteal free flap is used by microsurgeons for stabilization of the arm bones affected by pseudoarthrosis and infections. We can use this free bone flap for medium and small graft of the mandibula (max 6-7 cm) instead of no-vascularized bone (iliac crest, cadaver bone, alloplastic material). The advantages are that the graft preserve the volume, heals faster and so it's eventually possible to put the implants inside early for dental reconstruction. Furthermore the removal of the flap from his donor site is quick and easy and doesn't leave aesthetic or functional sequelae. The disadvantages are the limited dimension and the monocortical bone quality.

**P-1181****PERFORATOR FLAPS IN HEAD AND NECK RECONSTRUCTION.**

P. de Leyva¹, M. Picón¹, D. Villegas¹, I. Page¹, K. Sagüillo¹, J. Núñez¹, F. Almeida¹, T. Martínez-Iturriaga², J.J. Acero¹

¹ *Oral and Maxillofacial Surgery Department, Ramón y Cajal University Hospital, Madrid, Spain*

² *Oral and Maxillofacial Surgery, Private Practice, Madrid, Spain*

Aims/Objectives

Perforator flaps, since their first description in 1989, have in many ways revolutionized reconstructive surgery. A perforator flap is a flap consisting of skin and/or subcutaneous fat whose supplying vessels are isolated perforators. The basic concept is that any larger named vessel in the body will give off smaller branches toward the skin on which flaps can be designed and raised as pedicled or free flaps. Our objective is to make a brief comment on some of the perforator flaps used in our department for head and neck reconstruction.

Material and Methods

A review of the most relevant perforator flaps used in head and neck reconstruction in our department is made. We provide a succinct overview of their vascular anatomy, main characteristics, major advantages, flap design, utilization and pitfalls.

Results

Different reliable perforator flaps of various sizes and compositions are reviewed here. Some of them can be transferred as free flaps. However, some others offer the possibility of using tissue adjacent to the defect that can be transferred as a local perforator flap. This provides a simpler and more expeditious repair leading in a superior aesthetic result because of better tissue match.

Discussion and conclusion

Seeking the best way to achieve the optimal functional and aesthetic result, with the least donor site morbidity is key in surgical reconstruction. For decades, it was the lack of detailed knowledge of the way skin obtains its blood supply that delayed advances in reconstruction. The study of the vascular anatomy of cutaneous perforators was of vital importance for the design of successful perforator flaps.

Perforator flaps have contributed to improved functional and aesthetic outcomes for head and neck reconstruction while preserving donor site function. The increased availability of local flap options has given the reconstructive surgeon the choice to use a local solution, simpler than a free flap, when needed. With a huge range of perforators to choose from, the challenge is to select the best perforator flap for each wound.



P-1184

MICROVASCULAR RECONSTRUCTION OF MANDIBLE IN CHILDREN

A. Lopatin, M. Bolotin, S. Yasonov

Cranio-Maxillo-Fascial Surgery, Russian Childrens Hospital, Moscow, Russian Federation

Objective. Treatment of extended benign and malignant tumours of head and neck in some cases results to defect of mandible. Correct restoration of mandible and relationship between mandible and maxilla is essential for correct development of fascial skeleton, prevention further deformation of lower face. Reconstruction of extended mandible defects represent a challenge, especially in childhood, due to a rarity of events. Several surgical techniques have been described from free bone grafts to microvascular reconstruction. Some authors report of spontaneous regeneration.

Methods. From 1 January 2010 to 2013 seven paediatric patients underwent microvascular mandible reconstruction with fibular free flap. Age of patient was from 5 to 15 years. Four patients underwent simultaneous mandible resection due to advanced benign bone tumours and reconstruction; three have various defects after tumours surgery, performed several time ago. Segmental resection was performed in 2 cases, hemimandibular in 2. In 5 cases defect include part of horizontal, angle, vertical ramus and condyle of mandible, in 2 cases horizontal, angle and part of vertical ramus. Length of defect was from 8 to 13 cm. Fixation of transplantate was done on reconstructive plate in 3 cases, on miniplates on 4 cases. For reconstruction of condyle, distal fragment of transplatate was directly put on condyla fossa. Vascular anastamoses were performed between artery of the flap and fascial artery and the vein of the flap and fascial (3 case), internal jugular (3 case) and external jugular vein (1 case). There were no postoperative complications as from donor and from recipient side. In 6 month after surgery clinically and radiologically there were no evidence of bone resorption, good cosmetic and functional outcome.

Conclusion. Obtained data suggest, that reconstruction of extended defects of mandible with fibular revascularized transplant is treatment of choice in case of big defects of mandible in children.



P-1189

REPLACEMENT AND REGENERATION OF SEGMENTAL MANDIBULAR DEFECTS. A PRECLINICAL MODEL BASED ON TISSUE ENGINEERING

J.F. Granados¹, L. Zamudio¹, I. Yañez¹, F. Ruiz¹, L. Bermudo¹, L. Santos²

¹ Oral and Maxillofacial surgery, Carlos Haya Regional University Hospital, Malaga, Spain

² Biological Research, CIBER-BBN, Malaga, Spain

Objectives

Mandibular osteonecrosis is a relatively common adverse effect (90%) among head and neck oncology patients that underwent radio and chemotherapy. Bisphosphonates appears as another cause of therapy associated bone necrosis. Nowadays these defects are managed with biocompatible materials such as ceramics, or bone graft from patient's fibula. We aim to establish a pre-clinical model to develop a new therapeutic option for bone necrosis and to accomplish a new procedure for bone rehabilitation surgery, integrating previously known treatments for bone induction and conduction.

Material and Methods

Twenty New Zealand rabbits divided in four groups with an unilateral segmental mandibular osteotomy performed, and a titanium porous designed scaffold. With the following biomaterials: Collagen type I, bovine, as an Absorbable Collagen Sponge (ACS), Bone conduction molecules: Bone Morphogenetic Proteins (BMPs), Bone Marrow Mesenchymal Stem Cells (BM-MSC). Due to a poor adherence of BMPs to ACS; the LABRET group of Malaga, have produce a human recombinant BMP-2, with a prolonged union to ACS.

Group A: titanium scaffold (TS). Group B: TS - Absorbable collagen sponge (ACS). Group C: TS - ACS - Bone morphogenic protein (BMP). Group D: TS - ACS - BMP - Mesenchymal stem cells (MSC).

Results

Several biomaterials and bone regenerative structures are being approved for human use, however its combination in a tri-element bone regenerative technique has not been done before. Therefore we present a preclinical model still in progress as a prelude of a clinical study for bone regeneration treatment on patients with bone necrosis.

Discussion and Conclusion

Currently studied scaffolds are bone inductors, including bio-ceramics, albumin has been recently used as scaffold, with bone induction capacity and osteogenesis properties. Bone marrow stem cells, are currently approved as a regenerative option in several diseases; these cells can be differentiated to osteoblasts with the advantage of the patient being the donor himself.

We propose a pre-clinical study design involving currently approved techniques on humans, suitable to be use as bone regeneration therapies, which had never been used together before as repair therapies for gross bone defect pathologies on jaw such as bone necrosis.

**P-1205****EFFECT OF 3% 4-HEXYLRESORCINOL SILK MEMBRANE ON VASCULAR REGENERATION IN A RAT CAROTID INJURY MODEL**

MK Kim, H Seok, SG Kim, YW Park, KJ Kwon

Department of oral and maxillofacial surgery, Gangneung-Wonju National University, Gangneung city, South Korea

- Objective

The aim of this study is to determine the effect of 3% 4-hexylresorcinol(4HR) silk membrane as a vascular patch on the injured carotid artery of the rat. The other objective is to compare the functional results of the healed carotid arteries between direct closure group and vascular patch groups.

- Methods

We used the 21 Sprague-Dawley rats with 8 weeks old and body weights of 250~300 g. The right carotid artery of every rat was excised with sharp scissors, the defect size was 1 x 0.5 mm. And then we applied 4-hr silk membrane(Group A) and GORE® ACUSEAL Cardiovascular Patch(Group B), and direct closure(Group C). We used an ultrasonic device to compare the peak systolic velocity, (PSV), and diastolic velocity(EDV) and resistivity index(RI) of all groups. And we used angiography of carotid artery to confirm the patency of the injured carotid artery. After the carotid angiography, we got the tissue sample and histologic analysis was done.

- Results

The 4-HR silk membrane showed good success rate of re-anastomosis than direct closure and gore-tex vascular patch group. At the histologic analysis, 4-HR group showed better result than gore-tex group with minimal foreign body reactions. In gore-tex group, there were 2 foreign body granulomas. At the ultrasonographic analysis, direct closure group showed higher velocities than vascular patch groups.

- Conclusions

In this experiment, the potential of 4-hr silk membrane as a possible candidate for vascular patches to accelerate vascular wall regeneration was discovered. The silk membrane can help regeneration of injured carotid artery and show good result compared with gore-tex vascular patch.

Key words : carotid artery, microsurgery, gore-tex vascular patch, 4-HR silk membrane, direct closure

Acknowledgements

This study was supported by a grant from the Next-Generation BioGreen21 Program (No. PJ009051), Rural Development Administration, Republic of Korea.

**P-1208****EFFECT OF 4-HEXYLRESORCINOL ON THE BLOOD COAGULATION AND HEALING OF INJURED VESSEL IN A RAT FEMORAL MODEL**

MK Kim, H Soak, SY Park, YT Park, SG Kim, YW Park

Department of oral and maxillofacial surgery, Gangneung-Wonju National University, Gangneung city, South Korea

Objective: 4-hexylresorcinol(4-HR) is generally known as an antiseptic and antiparasitic agent. This study was conducted in order to evaluate the effect of the 4-HR on the blood coagulation in vitro. In addition, we investigated thrombus formation and endothelial repair of an injured vessel.

Methods: In vitro experiment, we compared blood coagulation time between the 4-HR treated group and normal blood. In vivo experiment, after cutting of the right femoral vein of a rat microvascular anastomosis was performed using 10-0 nylon under microscopy. In the experimental group (n=15), 4-HR(250 mg/kg) mixed with olive oil(10 ml/kg) was administered per os daily. Animals in the control group (n=15) were given olive oil only. The animals were sacrificed at three days, seven days and 14 days after surgery and rat femoral vein samples were taken. Vascular patency and thrombus formation were investigated before sacrifice. Histologic analysis was performed.

Results : Results of an in vitro blood coagulation test showed that coagulation time was delayed in the 4-HR treated group. The results obtained from an in vivo 4-HR administrated rat model showed that the patency of all experimental groups was better at 30 minutes, 7 days, and 14 days after microvascular anastomosis, than that of the control group at 7 days and 14 days after anastomosis, and the amount of thrombus in the experimental groups was much less than that of the control group. Endothelial repair was observed in the histologic analysis.

Conclusions : Findings of this study showed that blood coagulation was delayed in the vitro 4-HR treated group. In addition, good vascular patency, anti-thrombotic effect and repair of venous endothelial cells were observed in the vivo 4-HR administered rat group.

This study was supported by a grant from the Next-Generation BioGreen21 Program (No. PJ009051), Rural Development Administration, Republic of Korea.



P-1225

RISK ACCEPTANCE AND EXPECTATIONS IN LARYNGEAL ALLOTRANSPLANTATION

H. K. Jo, J. H. Hwang, K. S. Kim, S. Y. Lee

Department of Plastic and Reconstructive Surgery, Chonnam National University Medical School, Gwangju, South Korea

Objective: Laryngeal Allotransplantation (LA) is the transfer of a larynx from a deceased donor to a recipient, and it may be substituted for conventional laryngeal reconstruction methods that have been carried out until now. However, there are widely different views on LA because the recipient has to receive life-threatening immunosuppressive therapy continuously in order to get the laryngeal function which is not directly related to life extension. The purpose of this study was to analyze the difference in risk acceptance and expectations of LA between four population groups.

Methods: A survey for investigation of risk acceptance and expectations in LA, was carried out using a questionnaire-based instrument, the Korean version of Louisville Instrument for Transplantation (LIFT). The survey included 287 subjects in total (general public, n=100; kidney transplant recipients, n=53; post-laryngectomy patients, n=34; doctors, n=100).

Results: Risk acceptance and expectations in LA were highest in the kidney transplant recipients and lowest in the doctor group.

Conclusions: This study shows that the specific population groups have noticeable differences in risk acceptance and expectations in LA. By addressing the information gaps about LA in the different populations that have been highlighted from this survey, we suggest that LA can become a more viable alternative to classical surgery with resultant improved quality of life for patients.



P-1241

VALIDATED VIRTUAL 3D PLANNING IN PATIENT SPECIFIC OSTEOSYNTHESIS AND CRANIOFACIAL RECONSTRUCTION SURGERY

J. Kraeima, R.H. Schepers, G.M. Raghoobar, J.L. Roodenburg, H. Reintsema, M.J.H. Witjes

Department of Oral and Maxillofacial Surgery, University Medical Centre Groningen, Groningen, Netherlands

Objective: Establishing and validating a workflow for fully 3D digitally planned implant placement and reconstruction of craniofacial defects with free vascularized fibula with a CAD/CAM fabricated fixation plate.

Methods: In a patient series, the prefabrication of the fibula graft was performed in the treatment of osteoradionecrosis, benign ameloblastoma or pre-existing defects. Tumour or osteonecrosis was virtually resected in the software. The segments of the fibula were virtually placed in the defect. Implants were digitally planned in the fibula bone. Drilling guides and a titanium reconstruction plate was designed and 3D printed and milled.

During surgery the guides translate the 3D virtual planning towards osteotomies in both the mandible and the fibular graft. The titanium fixation plate is leading in the shape and positioning of the segments during the reconstruction.

Post-operative imaging was made for accuracy analysis of both the implant and fibula segment placing compared to the 3D virtual planning. Matching of both pre- and post-operative imaging was performed using an iterative closest point algorithm.

Results (preliminary): A series of 5 patients with in total 6 dental implants was treated using this methodology. The average Euclidean distance differences between planning and post-operative results were between 1.5 and 10 mm.

Conclusion: The 3D virtual planning of craniofacial reconstructions can be executed very accurately, guided by patient specific CAD/CAM manufactured fixation plates.



P-1262

THE TEMPOROMANDIBULAR JOINT FUNCTION AFTER MANDIBULAR RECONSTRUCTION.

Yasunobu Terao, Masataka Shiozaki, Koichiro Taniguchi

Plastic and Reconstructive Surgery, Tokyo Metropolitan Komagome Hospital, Tokyo, Japan

Objective

In the patients who undergo mandibular reconstruction, generally coronoidectomy is performed to maintain the function of temporomandibular joint (TMJ). But even if it is a patient who had coronoidectomy, trismus or luxation of the mandibular head is often seen. We observed the TMJ function of the patients after mandibular reconstruction, and examined the cause of trismus and luxation of the mandibular head.

Methods

Sixty-six patients who had undergone mandibular reconstruction participated in this study. The mandible was reconstructed with fibula osteocutaneous flap(31), reconstruction plate with rectus abdominis mc flap(27), and rectus abdominis mc flap without mandibular reconstruction(8). Maximum opening diameters in a vertical direction, mandibular protrusive sliding movement, and luxation of the temporomandibular joint were investigated with TMJ radiography and orthopantomography. The relation between these elements and the excision range of the mandible (especially coronoidectomy) was considered.

Results

In the 38 patients who had coronoidectomy, dislocation of the mandibular head was seen in 22 patients (58%). On the other hand, dislocation did not occurred in 28 patients whose coronoid process was preserved. Distance of mandibular protrusive sliding movement in 16 patients who had coronoidectomy and did not cause dislocation of the mandibular head was 9.5mm (1.4mm-20.7mm) and in 28 patients without coronoidectomy was 8.6mm (0mm-22mm).

Discussions

Correlation was seen between maximum opening diameters and mandibular protrusive sliding movement. Cronoidectomy tends to induce dislocation of the mandibular head. If a lateral pterygoid muscle is damaged in connection with coronoidectomy, mandibular protrusive sliding movement will be restricted. In the group which had coronoidectomy, good mandibular protrusive sliding movement was shown in only 8 (21 %) patients. We think that coronoidetomy can become a factor which impairs the function of TMJ.



P-1289

SECONDARY RECONSTRUCTION OF THE MANDIBLE IN A 5 YEAR OLD BOY AFTER SEGMENTAL MANDIBULECTOMY FOR A DESMOPLASTIC FIBROMA

R. Sieira^{1, 2, 3}, E. García¹, A. Ferrer^{1, 2, 3}, J. I. Iriarte⁴, J. Rubio², C. Martí², G.Y. Cho Lee²

¹ Maxillofacial Surgery, Hospital Sant Joan de Déu, Barcelona, Spain

² Maxillofacial Surgery, Hospital Clinic, Barcelona, Spain

³ Oral and Maxillofacial Surgery, Universitat Internacional de Catalunya, Barcelona, Spain

⁴ Oral and Maxillofacial Surgery, Hospital Son Espases, Palma de Mallorca, Spain

Introduction - Objective

Desmoplastic fibroma is a benign but locally aggressive neoplasm of the bones, being a rare entity in the mandible. It presents a destructive growth, showing a high recurrence rate after local resection. In 1965 the first report about a desmoplastic fibroma of the jaw was presented by Griffith and Irby. In the maxillofacial area non-odontogenic fibromatosis was declared as desmoplastic fibroma what distinguished it from odontogenic fibroma.

Pathognomonic symptoms do not exist and their occurrence is mostly insidious, describing pain and swelling.

Radiologic findings are unspecific and extend from mono to polycystic appearance with a partially sharp or diffuse borderline. Surgical resection, radiotherapy and pharmacological treatments are recommended for treatment. Due to the high recurrence rate, surgical resection is preferred as first option, dependent on tumour location.

Secondary reconstruction of a mandibular defect in a 5 year old boy who underwent segmental mandibulectomy for desmoplastic fibroma in the mandible is described.

Methods - Case Report

We report the clinical course and therapy of a 5 year old patient diagnosed with a desmoplastic fibroma in the left mandibular branch and body. The patient underwent an initial surgical treatment to excise the mandibular tumour. At this time a segmental mandibulectomy was performed and was reconstructed with a rib graft. The graft was reabsorbed due to secondary infection.

The patient was then referred to our institution for a secondary reconstruction. Decision was made to raise a free fibula bone flap to finally reconstruct the mandibular bone defect through an extra-oral approach.

Six months later the reconstruction titanium plate used to fix the flap, was removed.

Results

We present a clinical case of desmoplastic fibroma of the mandible in a child, describing the surgical steps undergone until final reconstruction was achieved with a fibula free flap.

The case is described through clinical and radiological images.

Conclusions

Microsurgical reconstruction of mandibular bone defects in child is possible. The objective is to restore the mandibular contour, allowing a normal development of their maxillofacial skeleton. Future orthognathic procedures may be needed to restore facial symmetry and dental occlusion.

**P-1296****MONITORING BONE FREE FLAPS WITH MICRODIALYSIS CATHETER DIRECTLY POSITIONED IN BONE TISSUE**

S.Dakpé¹, C.Neiva¹, J.Davrou², A.Algrin¹, L.Doucín¹, S.Testelin¹, B.Devauchelle¹

¹ *Maxillofacial Surgery, University Hospital, Amiens, France*

² *Maxillofacial surgery department, Necker Hospital, university hospital, Paris, France*

Introduction :

In case of buried bony flaps, the follow-up of the viability of the skeletal tissue transfer is difficult. Among several flap monitoring tools, Microdialysis is admitted by numerous surgeons to be a reliable method for the vascular assessment of buried flaps. Nevertheless, only a few authors reported monitoring of bony flaps with microdialysis ; moreover, all of them based their observations on data recorded from a catheter positioned in the surrounding muscle tissue, which is not always the exact reflect of bone vascularisation.

Objective The aim of our study was then to investigate the feasibility and reliability of a new follow-up method using a microdialysis catheter directly positioned in bone tissue.

Material and methods: 34 patients were included in a prospective research study. In addition to a classical clinical monitoring, bone free flaps performed in facial reconstructive surgery have been monitored with a CMA 70 catheter, directly positioned in bone tissue. Glucose, lactate, pyruvate and glycerol rates were analysed during 5 days.

Results : 5532 values were collected. No thrombosis was noticed during the first five days. The involvement and the reliability of the paramedical team to collect the microvials in time were good. The compliance rate was evaluated at 80%.

Discussion and Conclusion: However, the common metabolites rates known for microdialysis in soft tissues could not be strictly applied for bone flaps. In hard tissue, flush out period is indeed longer, and the Lactate/Pyruvate ratio (mean: 53) is higher than in soft tissue. In two patients, a long-term follow-up showed a bad viability of their bone flaps: in both cases, the specific design of their early metabolites curves could be premonitory. Monitoring of bone free flaps with a catheter directly positioned in bone is feasible. This allows a more specific assessment of the viability of buried bone tissue.

**P-1302****PARTICULARITIES IN HEAD AND NECK RECONSTRUCTION IN THE ELDERLY PATIENTS FOR CANCER**

L.Doucine, C.Neiva, O.Dunaud, A.Caula, C.Racz, S.Testelin, B.Devauchelle

Maxillofacial surgery department, University hospital, Amiens, France

INTRODUCTION: Particularities of cranio facial reconstruction in the elderly is a subject of interest in our aging population. We are daily facing aging population and we have therefore to evolve our surgical practices. The aim of this work is to expose both difficulties encountered in the reconstruction because of their fragility and present amount of comorbidities and to discuss the indications throughout some examples.

MATERIAL AND METHODS: A retrospective study was conducted in our maxillo-facial surgery department. All patients over 70 years who received a head and neck reconstruction were included. 423 flaps all ages have been made in the same period (January 2010 - January 2014). Among these series 81 patients over 70y (76 free flaps and 5 pedicle) were concerned. The analysis was focused on the complications in the elderly compared to the whole population. We identified the conditions and difficulties to choose surgical procedures and all others specificities to perform reconstruction in good conditions.

RESULTS: There was no significant difference in morbidity between those two groups of patients regarding the rate of medical, surgical complications and flap failures. Of course, mortality risk is higher in the elderly group. However, there is no significant difference regarding the free flap success rate.

CONCLUSION: Regarding the impact of comorbidities and the follow up of the elderly patient under reconstructive surgery for cancer or secondary reconstruction, this should be performed within a multidisciplinary team involving the surgeon, the anaesthesiologist, the onco-geriatrician and all paramedical team. Finally, the real age is less important than the physiological one and the real question is more "Which reconstruction regarding the known comorbidities ?" rather than "Which reconstruction for which age ?".



P-1303

CUSTOM MADE TITANIUM MADE BY LASER SINTERING TECHNOLOGY FOR RECONSTRUCTION OF CONTINUITY DEFECT OF ATROPHIC EDENTULOUS MANDIBLE

R.Conley

Maxillofacial Surgery, Kaplan Hospital, Rehovot, Israel

A 70 year old otherwise healthy edentulous mail presented with a 3 cm. Continuity defect on the right side of the severely atrophic mandible and caused by a pressure erosion of the bone by an ill fitting denture.

Initial work up included appropriate biopsies to exclude malignancy and pre operative hyperbaric oxygen therapy and antibiotics. Using 3-D computer technology, a custom made titanium plate was manufactured by laser sintering and extended from the external aspect of the ascending ramus on the right and along the lower border of the mandible to the contralateral side and fixed by screws.

The plate bridged the gap and has remained stable now for two years with excellent function.



P-1322

SURVIVAL AND FUNCTIONAL OUTCOMES FOLLOWING COMPLEX OROPHARYNGEAL FREE FLAP RECONSTRUCTION

M. Moreno Sánchez, L. Ruiz Laza, D. Manzano Solo de Zaldívar, R. Gonzalez García, I. Rubio Correa, C. Hernández Vila, F. Ramírez Pérez, F. Monje Gil

Department of oral and maxillofacial surgery, University Hospital Infanta Cristina, Badajoz, Spain

Objective. Oropharyngeal reconstruction represents one of the greatest challenges in the surgical rehabilitation of patients with head and neck cancer. The aim of the study was to evaluate the functional outcomes and the survival in patients with oropharyngeal squamous cell carcinoma (OSCC) treated by surgery with free flap reconstruction followed or not by radiochemotherapy.

Methods. A retrospective study was performed on 37 patients treated by surgery with microvascular free flap reconstruction with or without postoperative radiochemotherapy for squamous carcinoma of the oropharynx from 2007 to 2013. The study parameters were survival, recurrence rates and functional outcomes.

Results. Twenty-nine patients were treated with free radial forearm flap and 8 with free anterolateral thigh flap. Most of the patients had normal food intake. They did not have alterations in speech quality or verbal communication. We found low survival in patients with positive surgical margin.

Conclusions. Treatment OSCC is complex and requires input from a multidisciplinary head and neck oncology team. Surgery and postoperative radiochemotherapy allows for an acceptable survival rate for patients with advanced oropharyngeal squamous cell carcinoma. Radial forearm free flap is considered as the flap of choice for oropharyngeal reconstructions and allows excellent functional results.

**P-1325****MIDFACE RECONSTRUCTION WITH MYOCUTANEOUS RECTUS ABDOMINIS MYOCUTANEOUS (RAM) FREE FLAP**

F. Pimentel¹, M. A. Vilares², J. N. Costa³, H. M. Marques¹, R. Saleiro¹, I. O. Santos¹, D. Sousa², J. R. Santos²

¹ *Craniomaxillofacial Surgery, Centro Hospitalar do Porto, Porto, Portugal*

² *Head & Neck Surgery, Instituto Português de Oncologia Francisco Gentil - Lisboa, Lisboa, Portugal*

³ *Plastic & Reconstructive Surgery, Centro Hospitalar de Lisboa Ocidental - H. Egas Moniz, Lisboa, Portugal*

Midface defects after oncological surgery represent a complex three-dimensional reconstructive challenge. However free flap techniques have presented new solutions for our patients.

We report a case of a 60 year-old male with a recurrent post-Radiotherapy (RT) Squamous Cell Carcinoma of the left maxilla with palpebral, alveolar, orbital and ptergomaxillary extension, submitted to hemimaxillectomy — Brown class IVb/Cordeiro type IIIb defect, ipsilateral type 3 modified radical neck dissection, total parotidectomy, and primary reconstruction with temporalis muscle flap to orbital cavity, and a myocutaneous pectoralis major flap for covering of the skin defect.

Post-op period was complicated by necrosis of the pectoralis flap, thus requiring secondary reconstruction. A two-step procedure was performed, first for surgical debridement of the necrosed tissues (revealing viability of the temporalis flap), and the second for microvascular reconstruction using a large myocutaneous rectus abdominis (RAM) free flap (≈15cm long). Successful closure of the hemifacial skin defect was accomplished, thus achieving the primary reconstructive objective. No further complications were registered.

This case emphasizes the combination of surgical reconstructive alternatives that may be necessary for ablative treatments, with particular highlight to complication management, and increased possibilities that free flap techniques present. The free RAM flap is a well-known, reliable, large flap that has been recommended for the midface, making this a breakthrough development for our department. There is a significant widening of excision limits, and further alternatives for reconstruction, as it is illustrated.

**P-1326****MANDIBLE RECONSTRUCTION WITH OSTEOMYOCUTANEOUS PERONEAL ARTERY COMBINED (OPAC) FLAP**

F. Pimentel¹, M. A. Vilares², J. N. Costa³, H. M. Marques¹, R. Saleiro¹, I. O. Santos¹, J. R. Santos²

¹ *Craniomaxillofacial Surgery, Centro Hospitalar do Porto, Porto, Portugal*

² *Head & Neck Surgery, Instituto Português de Oncologia Francisco Gentil - Lisboa, Lisboa, Portugal*

³ *Plastic & Reconstructive Surgery, Centro Hospitalar de Lisboa Ocidental - H. Egas Moniz, Lisboa, Portugal*

Mandibular Reconstruction following surgical ablation has evolved significantly over the last years. Nowadays, a satisfactory oncological surgery must not be limited to complete tumour excision, making a functional and aesthetic reconstruction an essential part of the successful oncological treatment planning.

The Peroneal Osteoseptocutaneous free flap has been one of the most useful and suitable techniques to re-establish the mandibular and facial contour, allowing dental rehabilitation whilst still supporting adjunctive chemo or radiotherapy. One of the most recent refinements of this technique is to include a portion of the Soleus muscle using a perforator from the flap's artery (Osteomyocutaneous Peroneal Artery Combined – OPAC flap).

We report a case of a 49 year-old male patient with a Squamous Cell Carcinoma of the right retromolar region (T4aN2bM0G2), submitted to partial right glossomandibulectomy with excision of mucosal lesion, and type 3 modified radical neck dissection, in whom was performed primary reconstruction with free right OPAC flap with 2 osteotomies (for contour of the angle and parasymphysis) and reconstruction plate. The perforator-based soleus segmental flap was used to cover the plate, thus protecting it from radiotherapy-associated cutaneous exposure.

Patient recovery on post-op was uneventful, and was subsequently submitted to adjunctive chemo and radiotherapy, however without flap failure or plaque exposure.

This case emphasizes the refinements of surgical procedures, with benefits for patient recovery with decreased morbidity. A faster recovery is expected, with a reduced complication risk, while still regarding aesthetic and functional rehabilitation. The limits of surgical excision are significantly broadened by these developments in reconstruction techniques whereas short and long-term morbidity has been reduced, as our case illustrates.

**P-1331****MR ANGIOGRAPHY OF THE LOWER LIMB FOR FREE FIBULA FLAP TRANSFER.**

Nandra B, Rout J, Colley S, Martin T, Praveen P, Parmar S

Oral and Maxillofacial Surgery, Queen Elizabeth Hospital, Birmingham, United Kingdom

Introduction

The composite Fibula flap is the commonest bony flap use in head and neck reconstruction.

The harvest of a composite fibula flap involves taking the Peroneal artery from the lower limb. To avoid ischaemic complications of the foot, the Posterior Tibial and Anterior Tibial arteries must be patent.

Clinical examination is insufficient to determine whether the patient is at risk of limb ischaemia post-operatively

Known abnormalities of the vessels are Peronea arteria magna where the peroneal artery is the dominant vessel in the lower extremity. Rosson et al reported a prevalence of 0.2-8.3 %. Many of the head and neck cancer patients also have a high incidence of atheroma in their lower limb vessels.

MRA is commonly used to assess the 3 vessels to the foot.

Classically, the popliteal artery bifurcates to become the tibio-peroneal trunk and anterior

Objectives

To assess the abnormalities and variations in vascular anatomy to the lower limb and foot. To also assess what sort of abnormalities precluded the use of the fibula flap and what alternative bony flap was used.

Methods

Retrospective study using theatre log books, Head and Neck cancer data bases and the Radiology data base. All the studies were carried out at a single institution.

All the MRA reports and images were reviewed.

Results

Over 160 patients underwent MRA scans prior to composite fibula flaps for reconstruction in the Head and Neck between 2003 and 2013.

Variations in anatomy are described and types of abnormalities that precluded the use of the fibula free flap are also illustrated

Conclusions

This is one of the largest series of MRA scans carried out for fibula flaps in Head and Neck reconstruction that have been published.

By visualizing the division of the vessels the MRA scans also aided the dissection of the fibula pedicle.

The incidence and type of abnormalities that were an absolute contraindication to raising a fibula flap are discussed.

In those patients where a fibula flap could not be used, the alternative reconstructions are discussed.

MR Angiography is a robust technique, that is reproducible, non-invasive and there is no ionizing radiation.

**P-1351****USE OF STEREOLITHOGRAPHIC OSTEOTOMIE GUIDES FOR RESECTION OF A RECURRENT CARCINOMA INFILTRATING MANDIBLE AND MANDIBLE RECONSTRUCTION WITH FIBULA FLAP .**

F. Iglesias-Martín¹, A. García-Perla¹, R. Belmonte-Caro¹, N. Fakh-Gómez¹, G. Gómez-Ciriza², D. González-Padilla¹, T. Gómez-Cía³, J.L. Gutiérrez-Pérez¹

¹ *Cirugía Oral y Maxilofacial, Hospital Universitario Virgen del Rocío, Sevilla, Spain*

² *Digitálca Salud S.L., Hospital Universitario Virgen del Rocío, Sevilla, Spain*

³ *Cirugía Plástica, Hospital Universitario Virgen del Rocío, Sevilla, Spain*

Objectives: Using 3D CT measurements, virtual simulation and design of surgical guides can be helpful in craniomaxillofacial surgery such as Oncologic pathology both in the ablative surgery and the following reconstruction.

Materials and Methods: We report the case of a 70-year patient with twice recurrent gingiva squamous carcinoma infiltrating mandible. In the previous surgery, a segmentary mandibulotomy and a fixation with a titanium reconstruction plate was made. In this time, the fact of not having a complete mandible was a challenge in bending another reconstruction plate in a new good position. We performed a surgical planning software simulation AYRA generating a 3D model for a virtual surgery of the patient. A stereolithographic mandible model was printed in order to bend the new reconstruction plate. We designed a plastic surgical guide for mandible osteotomies, which determined the precise amount of bone to be resected to obtain the desired segmentary mandibulomy including the exact position of the screw holes of the new pre-bent reconstruction plate. A customized fibula osteotomies guide, which had two segments single-barrel osteocutaneous flap, was prepared to get the mandibular reconstruction. Both the guides and the stereolithographic models were sterilized for surgery.

Results: Surgery time was reduced by an average of 2 hours owing the surgical guides. Uncomplicated postoperative course. TC is checked postoperatively in a high degree of accuracy in the reconstruction of mandibular defect. We obtained a satisfactory mandibular shaping,

Conclusions: The use of 3D virtual reality systems and surgical guides optimize the planning and development of surgical procedures, reducing time and improving results. It is a helpful system for decision-making in the field of surgery. We believe that it is a useful tool, allowing a safety surgery and an accurate reconstruction.

**P-1381****FUNCTIONAL OUTCOMES FOLLOWING MAXILLOFACIAL RECONSTRUCTION**

N. Anavekar, M. Broome

Department of Oral and Maxillofacial Surgery, Centre Hospitalier Universitaire Vaudois, Lausanne, Switzerland

AIM: To determine the influence of surgical and patient derived factors on functional outcomes following maxillofacial reconstruction post oncologic resection.

METHODS: This will be a large scale, multi centric European cross-sectional study. Initially, a database will be compiled containing data pertaining to patient demographics, oncologic details, operative information and postoperative course. Patients from this database will then be issued with a standardized, validated Quality of Life Questionnaire. Results from these questionnaires will then be statistically analysed to determine which reconstructions provide optimal functional outcomes and in which group of patients.

DISCUSSION: Current approaches to maxillofacial defects serve to reconstitute structures which have been ablated. In addition, outcome measures predominantly focus on surgical outcomes rather than patient perceived functional outcomes. Although anecdotal evidence indicates operative outcomes may be of a high standard, this does not necessarily translate to high standards in patient quality of life. We aim to investigate the differences in functional outcomes following maxillofacial reconstruction and will examine the influences of surgical and patient factors on quality of life. By analysing postoperative functional outcomes, as perceived by the patient, we can endeavour to provide individualized patient treatment plans to cater for differences in patient requirements which may be the result of differences in socio-economic background, culture, age or level of education. As a result, we believe that patients will experience better quality of life, if reconstructive aims are directed toward functional outcome measures. We hypothesize that despite two patients having the same surgical defect, differences in patient requirements and priorities will result in different surgical recommendations.

**P-1386****CASE REPORT: RECONSTRUCTION OF THE ANTERIOR SKULL BASE WITH RECTUS ABDOMINIS MUSCLE FREE FLAP.**

R. Lesko¹, A. Sukop², J. Kozak¹, M. Tichy¹

¹ *Department of Neurosurgery, 2nd Faculty of Medicine, Charles University, Motol University Hospital, Prague, Czech Republic*

² *Department of Plastic Surgery, 3rd Faculty of Medicine, Charles University, Kralovske Vinohrady University Hospital, Prague, Czech Republic*

Background: In the cases of defect of central anterior skull base an appropriate isolation of the skull base from the upper aerodigestive system with well-vascularized tissue must be obtained to prevent serious infectious complications.

Methods: We present the clinical case of a patient with frontal basal osteomyelitis after fracture of rhinobasis in history, manifested after functional endoscopic sinus surgery (FESS) by liquorrhea and tension pneumocephalus. Extensive defect of anterior skull base was caused by radical debridement of the necrotic bone. Failure of reconstruction of the defect with local flaps (transnasal endoscopic with nasal septal flap, transcranial with pericranial pedicled flap), was indication for using of rectus abdominis muscle free flap. Anastomoses were performed between vessels of the flap (inferior epigastric artery and veins) with superficial temporal artery and veins.

Results: Transient venous free flap congestion was notice postoperatively. Good clinical result, no other complications, viable microvascular anastomosis and free flap with adequate cranionasal separation were observed during a further 1-year follow-up period.

Conclusions: Free tissue transfers are not standard methods to reconstruction of the central anterior skull base defects but represent alternative possibilities when traditional methods are not available or have failed. A rectus abdominis free flap is mainstay because it provides a large amount of vascularized tissue with a long pedicle.



8. Surgery for Facial Paralysis

P-126

ANCILLARY PROCEDURES IN FACIAL ANIMATION SURGERY

A. Ferri, B. Bianchi, S. Ferrari, V. Poddi, M. Leporati, D. Lanfranco, E. Sesenna

University Hospital of Parma, Parma, Italy

Background. Facial paralysis patients are affected by a complex disease that is characterized not only by the inability to smile, but also by several additional deformities that could represent primary issues both for the patient and the surgeon and that could be difficult to manage with neuromuscular transplantations alone. Forehead, peri-ocular complex, nasal base area and inferior lip are “secondary” sites that need to be considered for a complete rehabilitation of a flaccid facial palsy. Authors discuss their approach to these “neglected” areas presenting some easy and reliable ancillary procedures to complete the rehabilitation of facial palsy patients treated with neuromuscular transplantations.

Patients and results. Patients treated with suspension of eyebrow, placement of platinum eyelid, suspension of the inferior lid, suspension of the nasal base with fascia lata and botulinum toxin injection were retrospectively analysed.

65 patients were considered and the use of the different techniques has been evaluated focusing on cosmetic results obtained.

Conclusion. Ancillary procedures are an integrated part of the rehabilitation of facial palsy patients. Timing, indications and precise surgical procedure are essential to ensure optimal results.

**P-127****THE MASSETERIC NERVE: A VERSATILE POWER SOURCE IN FACIAL ANIMATION TECHNIQUES**

A. Ferri, B. Bianchi, S. Ferrari, V. Poddi, M. Leporati, D. Lanfranco, E. Sesenna

University Hospital of Parma, Parma, Italy

Background. The use of masseteric nerve is associated with multiple advantages, including the low morbidity rate, the proximity of the masseteric nerve to the facial nerve, the strong motor impulse that is provided, the reliability in its use, and the fast re-innervation achievable in most patients. Reinnervation of neuromuscular transplants represents the main indication for its use, but recently it has been applied also to recent facial palsies with satisfactory results.

Methods. Authors retrospectively evaluated 60 patients who underwent facial animation procedures using the masseteric nerve in the last 10 years. Patients sample included recent and established or congenital as well as unilateral and bilateral palsies. Masseteric nerve was used for facial nerve coaptation, alone or in association with cross-facial nerve grafting technique, or for the reinnervation of gracilis neuromuscular transplants.

Results. Reinnervation success rate was 100%. Mean reinnervation time was 3.75 months for facial nerve coaptation and 4.2 months for neuromuscular transplants. Patients were evaluated assessing cosmetic results (moderate in 10 patients, good in 30, excellent in 20) and functional outcome (no case of masticatory function impairment, ability to smile, achievement of a biting-released smile).

Conclusions. The use of the masseteric nerve presents several advantages in multiple situations, including both recent and established or congenital cases. In some conditions, it is the first line of treatment. Finally, the combination of multiple techniques seems to provide excellent results in unilateral palsies and should therefore be considered a valid option in these patients.



P-570

MYLOHYOID NERVE AS A DONOR FOR FACIAL NERVE RESTORATION. A TOPOGRAPHIC-ANATOMICAL STUDY.

Emir Omerelli, A.I. Nerobeev, M.M. Somova, K.S. Salikhov

Maxillofacial Surgery, Central Research of Stomatology and Maxillofacial Surgery, Moscow, Russian Federation

Central Research of Stomatology and Maxillofacial Surgery, Russian Ministry of Health and Social Development, Russian Medical Academy of Postgraduate Education, I.M. Sechenov First Moscow State Medical University.

Surgical accessibility of the mylohyoid nerve and its qualitative characteristics (length, thickness, ramification patterns, peculiarities of branching from the third part of the trigeminal nerve, surgical mobility, the possibility to reach the trunk of the facial nerve) are discussed. The anatomical study was carried out on 20 fresh unfixed cadavers. In all the cases, the transposed nerve reached, without stretching, the trunk of the facial nerve where it emerges from the stylomastoid foramen and more distally than the trunk. We performed, under the supervision of professor A.I. Nerobeev, the world's first operations on 17 patients with mimic muscle paralysis using mylohyoid nerve as a donor for the recovery of facial nerve motor function. Positive results were obtained in all the cases. They give evidence that the mylohyoid nerve is an ideal donor for facial nerve restoration.



P-579

A NEW TECHNOLOGICAL APPROACH TO FACE NERVE SURGERY

A. Nerobeyev¹, M. Somova¹, V. Domanski², I. Sobakin², S. Koshelev²

¹Central Scientific Institute of Stomatology and Cranio-Facial Surgery, Moscow, Russian Federation

²Scientific and Technological Centre of Unique Instruments of Russian Academy of Sciences, Moscow, Russian Federation

Objectives. Development treatment of the complex face nerves and muscles challenges technology, including the reconstructive surgical operations and application of intra-operative testing electrical stimulation (IOTES) as well as subsequent postoperative functional electrical stimulation (POFES) in the stage of rehabilitation.

Materials and methods. A special facial nerve and muscles electrical stimulator was designed and applied. Stimulation tests for evoking different muscle responses were developed and allowed to estimate muscle atrophy and denervation degrees. In addition, the stimulation programs for activation the axons growth and mimic muscles functional stimulation in the course of post-operative rehabilitation were developed.

In the control group of 34 patients, the reconstructive operations were carried out without application of IOTES and POFES. In the main group of 58 patients, IOTES and POFES were used.

Results. At the operations for the revision of the facial nerve branches and neurolysis, the IOTES was used. It facilitated the separation of nerve tissue from fibrous conglomeration, and the determination of innervation zone of each nerve branch. IOTES allowed the exact identification of thin facial nerve branches and small mimic muscles and estimation of their integrity and excitability.

The five-years monitoring of the control group revealed the 20-25 per cent motor activity reduction.

In 86 per cents of the patients of the main group, the motor activity was observed after 14 post-operation days. At the stage of post-operative rehabilitation, the POFES application reduces this period up to 6 months. The mimic muscles motor activity grows by 30- 35 per cents during the 5 years period.

Conclusion. The technology of reconstructive surgical operations with the IOTES and subsequent POFES application in the stage of post-operative rehabilitation is an effective mean of nerves and muscles defeat treating in the maxillofacial region. The motor activity restoration proceeds more rapidly and to a higher degree.



P-590

ANCILLARY SURGERY: REFINEMENTS AND COLLATERAL TECHNIQUES IN FACIAL PALSY SURGERY

V. Colombo, D. Rabbiosi, S. Marelli, F. Giovanditto, L. Comini, G. Motta, F. Biglioli

A.O. San Paolo, Milano, Italy

OBJECTIVES

Ancillary surgery includes a set of minor surgical techniques which enhance the morphological and functional results obtained with facial reanimation major surgeries (nerves anastomoses, transposition of muscular or microvascular flaps, cross-face nerve grafts, etc.), offering a significant improvement of symmetry both static and dynamic.

MATERIALS AND METHOD

The ancillary techniques are often performed under local anaesthesia, rarely require hospitalization of the patient and do not require a long term rehabilitation and post-operative convalescence.

100 patients previously operated on with major techniques and operated on by ancillary procedure were studied. Static symmetry of the upper third of the face can be enhanced by the suspension of the eyebrow, ptosis of the lower eyelid resulting in ectropion and scleral show can be corrected by suspension with fascia lata, a Kuhnt – Szymanowski procedure or several canthoplasties.

Lipostructure according to Coleman is the second most widely used intervention to correct minor residual bulk defects because of muscle atrophy, increasing the symmetry and the harmony of the lower two-thirds of the face. The camouflage with autologous fat tissue is used to fill the lips (if residual thinning of the red edge is recorded after static suspension of the upper lip) , the masseter region (in case of residual atrophy of the masseter muscle following the use of the masseteric nerve as donor source), furrows and unnatural buccal folds as required after microvascular flap.

The revision of the buccal fold is achieved through a lozenge skin excision and inner stitches delivered to the periosteum of the zygoma, making it symmetrical to the contralateral one. In case of free flap transposition, the resuspension of the flap at the buccal fold may improve both the symmetry at rest and the contraction effectiveness.

RESULTS

Considering an unchanged amount of muscle contraction, a better symmetry at rest generally effects an improved dynamic symmetry as a more balanced smiling in all patients treated.

CONCLUSION

By the correct use of ancillary techniques, final aesthetics and morphological improves results significantly. Almost all patients sustaining facial palsy reanimation should undergo ancillary surgery procedures to enhance results.

**P-598****CORNEAL NEUROTIZATION: A THERAPEUTICAL OPTION FOR NEUROPATHIC KERATOPATHY IN UNILATERAL FACIAL PALSY**

F. Biglioli, D. Rabbiosi, V. Colombo, F. Allevi, M. Latiff, F. Tarabbia

OSPEDALE SAN PAOLO - UNIVERSITA' DI MILANO, SEGRATE (MI), Italy

OBJECTIVES

Corneal surface is innervated by the ophthalmic nerve, the first main branch of the trigeminal nerve. Corneal sensitiveness is essential to preserve the function of the eye by adjusting the lubrication of the conjunctiva, blinking function and maintaining the health of the corneal epithelium.

Corneal anaesthesia can be caused by several diseases that lead to a clinical condition known as keratopathy, characterized by corneal and conjunctival degeneration.

Patients with facial paralysis cannot fully close the eyelids so they have a chronic exposure of the cornea with dry eye, keratitis and corneal opacification. Several medical and surgical devices to protect the eye with chronic keratopathy have to be used, however the addition of corneal anaesthesia worsen the problem to the point of losing eye function. The contemporary presence of corneal anaesthesia and lid paralysis is rare and are generally due to extended tumours of the cerebellopontine angle or may be the consequence of their surgical removal.

In 2009 Terzis et al. presented a technique to restore corneal sensitivity by rotating the contralateral supratrochlear and supraorbital nerves.

MATERIAL AND METHODS

The Authors applied this technique, called direct neurotization, in 6 cases of complete corneal anesthesia.

Aesthesiometry of corneal surface and evaluation of the anterior segment was carried out by the ophthalmologist of our team before surgery to ascertain anesthesia and several time after surgery to evaluate results.

RESULTS

In all operated cases a good grade of corneal sensitivity was re-established and functional recovery was completed by different eyelid reanimation techniques.

In two cases, before surgery the cornea was completely opaque. Both were successfully submitted to corneal transplantation after corneal neurotization took place. That would have not been possible in case of anesthesia. A good grade of visual acuity was obtained in both cases.

CONCLUSION

By preliminary data direct neurotization of the cornea using the branches of the contralateral supraorbital and supratrochlear nerves seems to be an effective method to restore corneal sensitivity. Adding lids reanimation techniques, patients affected by unilateral facial paralysis plus corneal anesthesia seem to be cured effectively.



P-652

APPLICATION THREADS WITH THE RETENTION POINTS FOR LIFTING FACE AND NECK.

V. Malahovskaja

Summary: Filament correction used in aesthetic and reconstructive surgery for static face correction in patients with lesions of the facial nerve. In our work we present a comparative analysis of the application of different types of yarns with the retention points for the correction of the face and neck.

Material and methods: Clinical experience is based on using threads with the retention points from different manufacturers to correct the middle and lower zone of the face in 99 patients during the period from 2007-2013 . The majority of patients - 89 - people were women aged 30 55 years . For the correction of soft tissue of the face and neck with a thread used the retention items Company Lorca Marina (Spain) non-resorbable (polypropylene), absorbable (polylactic acid), Silhouette Lift and I-st Surgi Concept.

Results: Results were tracked from month to 4 years in patients. Were analysed complications and adverse effects, which include : retractions in the exit points of threads through the skin and places a surface location, asymmetry, and the eruption of filament mesh fixation location in the temporal region, contouring threads under the skin, broken threads, post-operative pain . All complications had a favorable outcome. Conclusions about the duration and degree of fixation of threads with the retention points. Thread with the retention points can improve the effectiveness of the classic versions of a facelift , as stabilizing elements and fixing operation.

Conclusion: Age-related changes are complex, in which the use of threads with the retention points provides only reposition and stabilize the soft tissue without eliminating many other features . Integrated approach in the correction of these changes is more effective. Effectiveness of methods of lifting the filament is directly proportional to choose the right indications, methods used and the expectations of patients.

**P-711****THE MODERN CONCEPT DETERMINING THE TACTICS OF THE FACIAL NERVE SURGERY**

A. Nerobeyev, M. Somova, K. Salikhov, Z. Visaitova, I. Malykhina, V. Polshina

Maxillofacial surgery, Central Research Institute of Dentistry and Maxillofacial surgery, Russian Ministry of Health Department, Moscow, Russian Federation

Violation of facial movements is associated with any form of damage of the facial nerve. Paresis and paralysis of mimic muscles may be complications of neuro-, ENT and maxillofacial surgery and removing tumours of the exact localizations. Anyhow our main task is the quick restoration of conductivity of the facial nerve.

In the case of extra cranial damage of n.facialis, resulted from the excision of the parotid gland, or trauma, the affected branch must be immediately restored, with the use of nervous graft (a fragment of sensitive nerve: n.suralis, n. auricularis magnus). The successful result may be evaluated in 6-12 months postoperatively by the examination of motor activity of mimic muscles.

In the case of intra cranial damage of n.facialis it is extremely difficult to restore its' function. However, if it is possible to find out the exact localization of the damage of the nerve, predictable result of the operation may be achieved by making the direct anastomosis between the peripheral portion of the intact nerve and of the trunk of the damaged one in the nearest time. Faster restoration of functional activity and transmission along the facial nerve is achieved by using a graft of n. massetericus or n. mylohyoideus. The successful result of such method achieved in 6 month period is not associated with any additional functional disorders.

The negative aspects of this method are the same as in case of direct anastomosis: asynchronization of mimic movements and pathological synkinesis.

According to our clinical experience it is more preferable to perform operation in one and a half years' time after the damage to restore function the facial nerve and achieve ascetic result of the operation on the short period of time (before degeneration of the facial muscles).



P-831

CHEWING NERVE AS THE DONOR OF A REINNERVATION AT THE INTRAKRANIAL DAMAGES OF A FACIAL NERVE

A. Nerobeev, V.Polshina

Central research institute stomatology and maxillofacial surgery, Moscow, Russian Federation

Purpose.

Development of a method of a reinnervation of the paralyzed mimic muscles till 18 months from the moment of a lesion, at a lesion of a nerve of the central genesis, with use of a branch of the trigeminal nerve.

Materials and research methods.

In our clinic, on the basis of the Central Research institute, since November, 2011, 27 operations with technique application anastomosis applying between a facial and a branch of the trigeminal nerve were performed.

Patients to whom this operation was executed, treated different age and sexual groups. To all patients a series of clinical trials was carried out.

Result.

As a result of clinical trial the chewing nerve was used as the donor for a reinnervation of the paralyzed muscles at paralyzes till 18 months from the moment of a lesion.

Conclusions

Anastomosis applying between a facial and a branch of the trigeminal nerve, is one of the new directions in a reinnervation of a mimic muscle. Use of this nerve as the donor, considering their close anatomic locating with a facial nerve and available central interrelations between cores of V and VII couples craniocerebral nerves for applying anastomosis, it is possible to perform emergency surgery for conservation of functional activity of mimic muscles and prevent dysfunction of the muscles of expression of the person.

**P-843****FACIAL ANIMATION IN PATIENTS WITH MOEBIUS MOEBIUS-LIKE SYNDROME**

V. Poddi, B. Bianchi, A. Ferri, S. Ferrari, E. Contadini, E. Sesenna

Maxillo-Facial Surgery - Head & Neck department, Parma, Italy

Introduction. Moebius syndrome, a rare congenital disorder of varying severity, involves multiple cranial nerves and is characterized predominantly by bilateral or unilateral paralysis of the facial and abducens nerves. Congenital facial paralysis often causes bilabial incompetence with speech difficulties, oral incompetence and drooling. Other relevant clinical finding is incomplete eye closure. Furthermore the lack of facial animation in these patients poses a major barrier to interpersonal communication.

Patients. 38 patients with Moebius and Moebius-like syndromes were treated surgically for facial animation from 2003 to 2014 at the Maxillofacial Surgery Division, University Hospital of Parma, Italy. To re-animate both sides of the face in patients with classic Moebius syndrome we transplanted a segment of gracilis muscle in all cases, innervated by the motor nerve to the masseter muscle; revascularization was via the facial vessels.

Results. All the flaps were transplanted successfully, with optimal aesthetical and functional results. We obtained a high degree of patient satisfaction; the majority were happy with the results and reported improvement in self-esteem and social interaction.

Conclusion. The restoration of even a small degree of facial movement can be gratifying in terms of function and verbal and nonverbal communication. Gracilis muscle transplants can be considered in our experience as the first choice for facial animation in Moebius Syndrome

**P-1003****SURGICAL MANAGEMENT OF POST – OPERATIVE FACIAL PALSY: OUR EXPERIENCE**

V. Valentini, M. Della Monaca, A. Cassoni, A. Battisti, A. Anelli, A. Cardarola

Maxillo - facial department, Sapienza University of Rome, Rome, Italy

Background: postoperative facial paralysis is not an uncommon occurrence in otolaryngology–head and neck surgery and is also seen with relative frequency following neurosurgical and oral and/or maxillofacial surgical procedures. The resection of head and neck malignancies often requires extensive procedures. For tumours located close to the facial nerve, this could also include facial nerve sacrifice. The subsequent facial palsy is severely disabling functionally, psychologically, and aesthetically. Functional impairments include disturbances in eye protection, eating, and drinking. Treatment of these kind of lesions requires a comprehensive understanding of the cause of the palsy, patient's characteristics and the timing of the onset of the paralysis. In particular the timing of the onset is the key point in the selection of the best treatment. In this paper the authors present their own experience in the management of patients with post – operative facial palsy

Methods: From 2008 to 2013, 32 patients suffering from unilateral facial palsy were admitted to our Department. Eleven patients with near – term palsy were treated with direct neurorrhaphy between the two facial stumps or, when this is not feasible, an interpositional graft was positioned. In 13 patients with mid – term paralysis, the “baby – sitter” procedure was performed. Finally, the 13 patients with long – term paralysis underwent facial reanimation with functioning free or pedicled muscle flap.

Results

All the patients treated for post – operative facial palsy were evaluated with FACEGRAM software in order to objectify the outcome of each surgical procedure. All the patients presented an improvement of facial movement with a progression from House - Brackmann class 6 or 5 to class 3 or 4. Facial nerve reconstruction should be addressed routinely in every patient who undergoes facial nerve resection. Preoperative facial nerve weakness, postoperative irradiation, and advanced age are not contraindications to facial nerve repair.



P-1036

FACIAL NERVE SECTION – A CASE SEEN IN EMERGENCY CONTEXT.

I. Correia-Sá^{1, 2}, T. Neto¹, M. Marques^{1, 3}, A. Silva¹

¹ *Department of Plastic and Reconstructive Surgery, Maxillofacial Surgery and Burn Unit, Centro Hospitalar S. João, Porto, Portugal, Porto, Portugal*

² *Department of Pharmacology and Therapeutics, Faculty of Medicine, University of Oporto, Porto, Portugal*

³ *Department of Plastic and Reconstructive Surgery, Faculty of Medicine, University of Oporto, Porto, Portugal*

Aims and objectives: Traumatic facial nerve disorders are mainly iatrogenic or due to basilar skull fracture. Although lesions due to facial blunt trauma can be seen, they rarely sever all the five branches of the facial nerve. We present a case of a man with a lesion of the facial nerve observed in the emergency room caused by a “clean” cut with a window glass.

Materials and Methods: A male was transferred to our unit by a severe facial lesion with parotid lesion caused by a window glass in a work accident context. When arriving to our unit the patient was not able to move the left portion of the face. We appeared to have a lesion of all the branches of the facial nerve. He has taken to the Operating Room to lesion exploration. He presented all the branches of the facial nerve and the Stenonsduct sectioned. Neuroanastamoses were performed and the duct sutured.

Results: No acute or chronic complications where observed. An year after surgery the patient showed signs of recovery in all branches of facial nerve.

Discussion and Conclusion: Management of facial nerve injuries requires knowledge and skills that should be in every facial plastic surgeon's knowledge. Good results can be achieved in patients with traumatic section of all of the five branches of the facial nerve and Stenons duct.



P-1125

MASSETERIC MUSCLE TRASNSPOSITION FOR DYNAMIC REHABILITATION OF FACIAL PARALYSIS

J. Guiñales, T. Gonzalez Otero, M.J. Nieto, P. Losa, E. Alonso, M.A. Burgueño

Oral and Maxillofacial Surgery, University Hospital la Paz, Madrid, Spain

The facial paralysis is one of the most complex entities for the maxillofacial surgeon. The affected individuals have important functional and aesthetic sequelae that affect their daily activities and social integration.

The masseteric muscle transposition is a valid option for the functional rehabilitation of the smile in patients with permanent facial paralysis who are not candidates for microsurgical or nerve regeneration techniques.

We report a case of a long-term evolution facial paralysis that was successfully treated by masseteric muscle transposition.



P-1370

OUR EXPERIENCE WITH REANIMATION TECHNIQUE IN MOEBIUS SYNDROM

M. Tichý¹, J. Kozák¹, L. Frajer², R. Kufa²

¹ Neurosurgery dept., University Hospital Motol, Prague, Czech Republic

² Plastic Surgery dept., University Hospital Motol, Prague, Czech Republic

Objectives: Moebius syndrome is defined as congenital facial palsy, complete or partial, with or without paralysis of other cranial nerves, where the abducent palsy is the most frequent. The syndrome is often associated with malformations of limbs, orofacial structures and deformities of musculoskeletal system. The condition is congenital, not progressive, the aetiology is regarded as multifactorial. The intrauterine hypoxic ischemic injury or toxic exposure is considered as etiological hypotheses. Clinical appearance after the birth includes drooling of saliva, difficulties in sucking, swallowing, respiratory problems and later the loss of facial muscle movement is recognised. The condition is described as mask like faces.

Material: We present our experience with first 6 patients, 3 boys, 3 girls, age from 8 to 15 years. The follow up in all cases is more than 2 years. Two patients presented with facial diplegia, in for patients the lesion was unilateral or asymmetric. Total of eight operations were performed, 2 bilateral, 4 unilateral. The free muscle transfer of musculus gracilis in to the paretic face was performed with microanastomosis of vessels and reinnervation using the motor branch of the trigeminal nerve. The quality of mastication was not compromised. In two bilateral cases, the second operation was performed minimum 3 month after the previous side, when the graft function was achieved.

Results: In all of 8 operations the free gracilis muscle transfer graft was successfully implanted and the reanimation from good to excellent result was observed. In 3 patients the face movement was spontaneous and emotional without any need of voluntary support. We had only one complication, facial subcutaneous hematoma was evacuated the first day postoperatively. There was no infection and no complication at the donor side.

Conclusion: Reanimation technique with free gracilis muscle graft and anastomosis to the trigeminal nerve is successful treatment in children with facial palsy. This type of operation improves as well the facial expression and the level of speech and other activities in these severely handicapped children



9. Structural Fat Grafting - 25 years of experience

P-8

USE OF POLY-L-LACTIC ACID (SCULPTRA®) IN FACIAL RECONSTRUCTION OF SOFT TISSUE DEFECTS: OUR EXPERIENCE AND OUTCOMES

A. Novoa, I. Peña, J.C. De Vicente, L.M. Junquera, L. Garcia-Consuegra

Oral & Maxillofacial Surgery, Hospital Universitario Central de Asturias, Oviedo, Spain

BACKGROUND

Poly-L-lactic acid is a synthetic material belonging to the family of α -hydroxyl-acids, with numerous applications in medicine, ranging from nanomedicine to its use as a resorbable osteosynthesis material.

As filler, is considered a biostimulator rather than a traditional filler material, as it promotes the increase of volume by producing collagen and native collagen vascularization. Therefore, their results are not immediate but are more stable over time compared to using other synthetic fillers or autologous fat grafting.

We present our experience of its use in the reconstruction of facial soft tissue defects, both post-surgical and associated with Parry-Romberg syndrome.

MATERIAL AND METHOD

8 patients treated with Sculptra ® between January 2009 and February 2013, for reconstruction of facial soft tissue defects. Of these, 4 cases are hemifacial atrophy by Parry-Romberg syndrome, and the other 4 cases belongs to postsurgical sequelae (2 orofacial squamous cell carcinomas, 1 mandibular osteosarcoma and 1 severe craniofacial trauma). In all patients, CT was performed prior to injection to confirm soft tissue atrophy and exclude that the defects were caused by bone sequelae. We performed an exhaustive follow-up, with weekly reviews in the first month post-injection, and every 6 months thereafter to assess results, side effects and need for new applications.

RESULTS

The aesthetic results are excellent, achieving a stable filling of the defect, after several boosters, with a high degree of satisfaction among patients

The complications are practically null, presenting a single case of epidermolysis located at the injection site, which resolved spontaneously in a few weeks, which brings clear advantages over other techniques such as Coleman's lipostructure.

CONCLUSION

Poly-L-lactic acid is a stable filler, secure, devoid of associated morbidity and we can achieve excellent cosmetic results in the reconstruction of facial soft tissue defects.

**P-254****A CASE OF USING A MALAR FAT PAD AS A GRAFT IN PATIENT WITH LARGE CHIN ADVANCEMENT.**

K. Kurakin, A. Drobyshev, E. Lonskaya, I. Klipa, N. Drobysheva

Oral & Maxillofacial, Moscow State University of Medicine and Dentistry, Moscow, Russian Federation

Introduction. In patients with severe cases of II Class malocclusion large chin advancement may be required to obtain optimum profile projection. Sliding chin osteotomy with the advancement of a fragment more than 10 mm forward can result in dissatisfactory soft tissue projection of the chin area. Usage of a graft may seem relevant for shaping the labio-mental fold.

Case report. 22 year old female patient with severe case of II Class of malocclusion, mandibular hypoplasia and asymmetry of the face is reported. Main complaints were: malocclusion, lip incompetence, small chin, chin strain. Anthropometry, 3D cephalometry and plaster models were examined. Patient showed 35mm of mouthopening range and no signs of TMJ problems. Combined orthodontic and surgical treatment option was chosen. On completion of orthodontic preparation and final planning of surgical outcome the mandibular only and chin osteotomy were performed. As it was predicted in 3D planning software we achieved a range of 9 mm of mandibular advancement and 10 mm of chin advancement. Such a big advancement of the chin is all the time questionable in terms of shape of labio-mental fold. To make this fold not too deep and aesthetically pleasant we took the right molar fat pad due to the patients middle face asymmetry particularly in molar regions, placed and fixated it over the chin osteotomy step. Post operative examination included ultrasound scans, CBCT which were taken on 1, 3, 6 months after the surgery. Results showed that despite the fact that free fat is prone to considerable resorption after 6 months post op we were able to achieve good aesthetical outcome not only in labio-mental area but also in a whole face.

Conflict of interest. None declared.



P-256

CHIN FILLING : FAT AND HYALURONIC ACID

S. Benazzou, P. Kestemont

Department of ENT and Maxillofacial surgery, Avicenne University Medical Centre,, Rabat, Morocco

OBJECTIVE: Facial appearance is important for psychological well-being and social acceptance, and the chin position is an essential feature for facial balance and harmony. It is not surprising, therefore, that several corrective procedures have been developed to correct deficits in the chin, we presented a relatively easy techniques with a good outcome.

METHODS: With the aging process, the soft and hard tissues of the chin become atrophied. As a rejuvenation intervention, the authors used autogenous fat or hyaluronic acids for advanced mentoplasty. The usual regions for fat harvesting are the inner thigh and the neck. The chin filling is a useful procedure in aesthetic surgery and often can be combined with other procedures (as lifting, blepharoplasty...) to obtain an optimal aesthetic outcome.

RESULTS: Considerable changes could be seen in the softtissue profiles as a result of treatment, all patients had straighter facial profiles, more harmonious lip profiles, and deeper mentolabial folds.

CONCLUSION: The chin filling is a simple procedure compared with other chin augmentation techniques with no increase of operation time, postoperative morbidity, or financial cost.



P-491

THE USE OF FAT GRAFTING IN FACIAL AESTHETIC AND RECONSTRUCTIVE PATIENTS

A. Elbarbary

Ain-Shams University, Cairo, Egypt

Fat grafting has been serving as the primary procedure or an adjunct to other procedures in facial aesthetic surgery. In reconstructive surgery, several techniques were used to correct soft tissue deficiency with variable degrees of successes and problems. Attempts of using fat grafting have been limited to hemifacial atrophy cases. Its application to the more complex deformities with skeletal deficiencies is limited in the literature.

Objective: this work underlines the critical role of fat grafting for volume restoration in facial rejuvenation as well as its extended application in managing difficult facial reconstructive cases with soft tissue &/or skeletal deficiencies.

Methods: Coleman's principles for structural fat grafting were used to replenish volume in different aesthetic units of the face for rejuvenating 45 aesthetic patients. The application was further expanded to include another 45 patients with facial soft tissue deficiencies &/or skeletal deficiencies. 6 patients had only soft tissue deficiencies and they all belonged to the hemifacial atrophy category and received only fat grafting. The remaining 39 patients had both skeletal & soft tissue deficiencies and included repaired cleft lip & palate, Treacher Collins syndrome, frontal plagiocephaly, anophthalmic sockets, hemifacial microsomia, and jaw deformity cases. With the exception of 5 patients whom declined bony work & underwent only fat grafting as a camouflage tool, the remaining received fat grafting after establishing their bony framework. Individualized planning was formulated for each patient to achieve realistic aesthetic goals.

Results: over 90% high satisfaction rate were demonstrated among patients up to four years of follow up. Fat grafting offered simple, natural, and highly predictable outcomes. It restored volume in the aesthetic patient and enhanced the results in patients with different craniofacial deformities with overall regain of facial balance.

In conclusion, fat grafting plays a fundamental role in aesthetic facial surgery and its versatile application can be implemented efficiently into the difficult craniofacial patients. Its use becomes a logical approach to treat cases with only soft tissue deficiencies "replacing like with like", cases with combined skeletal & soft tissue deficiencies after establishing the bony foundation, or as a camouflage tool for cases declining major surgeries.



P-699

THE USE OF COLEMAN FAT GRAFTING IN THE OMFS TRAUMA PATIENT

I. Balasundaram, A. Kanzaria, S. Myers, C. Bridle, S. Holmes

Oral and Maxillofacial Surgery, Bart's Health NHS Trust, London, United Kingdom

Introduction

High energy injuries stereotypically compromise skeletal and soft tissue compartments. Following skeletal repair attention to soft tissue suspension is mandatory. In a small subgroup of patients, however, there is secondary contraction of soft tissue compartments and redistribution of soft tissues with volume enhancement is required. We have used autologous fat transfer in a number of maxillofacial trauma patients and in this presentation is to present the case series of 20 patients treated at the Royal London hospital over a two year period.

Methods

Patients treated with autologous fat transfer were identified from the theatre diary from the period 2012-2013. We present a case series of 20 patients treated with clinical photographs.

Results

The indications for fat transfer are panfacial, e.g. the upper third for temporal hollowing and post craniotomy. In the middle third following orbital and zygomatic fractures, or delayed presentations when formal zygomatic osteotomy has been discounted.

We have also used it successfully in a number of patients for scar revision and to fill depressed scars. The treatment is carried out as a daycase and fat is normally harvested from the thighs. Sites are normally overfilled by 50% due to resorption. No patient required more than two treatments.

Conclusion

Autologous fat transfer is a low morbidity procedure which carries high patient satisfaction. It should be considered as part of major injury algorithm in the maxillofacial trauma patient, and has a role in both volume replacement of soft tissues, and as a camouflage procedure in imperfect skeletal reduction.



P-817

AUTOLOGOUS FAT TRANSFER: ACHIEVING FACIAL SYMMETRY AFTER TOTAL PAROTIDECTOMY.

I. Pinto, T. Neto, M. Capelo, L. Coelho, R. Balhau, J. Braga, I. Oliveira, D. Monteiro, T. Burnay, A. Silva

Maxillofacial Unit of Plastic Department, Hospital São João, Porto, Portugal

Objective: Total parotidectomy is a surgical procedure associated with severe aesthetic compromise. Many procedures have been described to primarily avoid or secondarily reconstruct the post-operative facial defect.

Methods: We describe a case of a 50-year-old man with facial asymmetry after total parotidectomy and radiotherapy due to a malignant tumour. Autologous fat transfer was secondarily used to minimize the defect.

Results: Fat grafting brought balance and better proportion to the structural appearance of the patient's face, with minimal resorption.

Conclusions: Autologous fat transfer is a simple technique widely used in cosmetic and reconstructive surgery which gives very satisfying long-term results.

**P-860****AUTOLOGOUS FAT GRAFTING IN GROWING PATIENTS WITH PARRY-ROMBERG SYNDROME**

E. Segna, G.A. Beltramini, O. D'Orto, V.A. Combi, F. Laganà, A. Baj

Maxillo-Facial surgery and Odontostomatology, Fondazione IRCCS Ca' Granda - Ospedale Maggiore Policlinico, Milano, Italy

OBJECTIVE

Parry-Romberg's syndrome (PRS) is an uncommon hemifacial atrophy. Progressive degeneration of the tissues is the stigmata of the disease, the range of clinical manifestations is wide. The aetiology is still misunderstood, the onset varies from childhood to adulthood and the rate of progression is unpredictable. We present 2 cases of quiescent PRS treated with lipostructure in young age in order to assess the results in this patient population.

METHODS

A 10-years-old boy and a 12-years-old girl underwent to three and two lipostructures respectively. All the procedures were performed in general anaesthesia, every 12 months, with the Coleman technique, the mean quantity of fat grafted was 19 mL each time, withdrawn from abdominal panniculus. All hospitalization lasted 2 nights without complications. Every 6 months clinical observation, photos uptake and a telethermography have been performed in order to evaluate aesthetical outcomes and to monitor the disease activity.

RESULTS

Lipostructure improved facial volume, yielding a better facial symmetry. Thermographic reports showed a reduction in heat dispersion as a consequence of soft tissues thickening confirmed the fat grafting validity.

CONCLUSIONS

There isn't a general consensus on hemifacial atrophy treatment, particularly in childhood, and on the period to perform surgical therapy (age, disease activity). There are several options to correct the volumetric defects (fat, dermal, cartilaginous, bony graft, alloplastic material injections, local or free flaps). We think that fat transplantation is the best choice in paediatric population: fat tissue is a biocompatible and safe filler; lipofilling is simple, repeatable, low morbidity procedure, in adolescents can be performed in local anaesthesia, the hospitalization is brief with a minimal impact in daily living. Another possible advantage is that human adipose tissues represents a rich source of adipose stem cells. The authors are waiting to confirm radiologically if asymmetry correction with fat grafting in young age can help all facial tissues regeneration restoring the bone potential of growth in long term follow-up, avoiding more invasive procedures in older age.

**P-1004****PNEUMOSINUS DILATANS: CASE REPORT AND FAT TRANSPLANTATION AS A SIMPLE METHOD TO IMPROVE COSMETIC**

C. A. Salcedo Gil, P. Espinosa Calleja, M. C. Bosch Lozano, A. Garcia Sanchez, P. C. Sambo Salas, J. I. Iriarte Ortabe

Oral and Maxillofacial Surgery, University Hospital Son Espases, Palma de Mallorca, Spain

BACKGROUND: Pneumosinus dilatans (PD) is a rare condition. The first description of the disease was made in 1898 by Meyers; since then only a few cases had been reported. One of the latest reviews made by Lombardi et al reported approximately 60 cases. PD is a condition where the sinus abnormally expands beyond the normal limits of the frontal bone, with sinus walls of normal thickness. The entity is mainly found in men in the age range from 20 to 40 years. The typical signs are frontal bossing and the prominence of the supraorbital ridge.

OBJECTIVE: The aim of our case report is to propose the lipostructure technique as a safe and simple method to camouflage the supraorbital prominence resulting of the gross enlargement of the frontal sinus in the PD.

MATERIAL AND METHODS: We present a case of a 23 years old male patient that was referred to our department complaining of prominence of his supraorbital region; the patient was otherwise asymptomatic, and the history did not include any trauma or infection. Computed tomography scan showed enlargement of the frontal sinus, with no obvious thinning of the sinus wall. Nasofrontal ducts were not altered. Different craniofacial surgery techniques have been described for the treatment of PD frontalis, but as our patient rejected a coronal approach we opted for a more conservative approach. Frontal recontouring by means of Coleman's lipostructure technique was the chosen procedure to camouflage the frontal bossing and supraorbital prominence.

RESULTS: Good cosmetic results were obtained in the treatment of frontal bossing with the use of lipofilling technique.

CONCLUSION: The lipostructure technique described by Coleman is a simple and safe method to improve the cosmetic deformity of the frontal bossing and the supraorbital ridge deformity in PD.

KEY WORDS: Pneumosinus dilatans; Frontal bossing, Lipofilling

**P-1103****LIPOSTRUCTURE AND IMPROVING QUALITY OF LIFE OF PATIENTS WITH MULTIMODAL TREATMENT FOR HEAD AND NECK CANCERS**

Victor-Vlad Costan, Cristian Ilie Drochioiu, Mihail Balan, Otilia Boișteanu, Eugenia Popescu

UMF "Gr. T. Popa", Iași, Romania

Modern cancer surgery is based on the premise of ensuring a long survival rate while maintaining a high quality of life. This is accomplished by accurately restoring the functions of phonation, mastication, deglutition, providing a good symmetry as to ensure social integration as quickly as possible.

Material and method

The study was conducted on a total of 21 patients with carcinomas of the OMF territory. They had at least one surgery performed followed by radio- and / or chemotherapy, being at the time of admission in the study, with no evidence of local or regional tumour recurrence. Time supervision after the lipostructure was at least one year. The main reason for performing lipostructure was the persistent pain syndrome in the operated areas (9 patients), improving the functions of phonation, mastication and deglutition (7 patients) or postoperative correction of asymmetries (5 patients). The procedure was repeated once in 6 patients, and 2 times in other five patients. In all patients periumbilical fat was harvested.

Results

The results were very good, without the occurrence of significant complications. In the case of the pain syndrome, it has decreased significantly. None of the patients requested this procedure being repeated. In patients with asymmetry, it was necessary to repeat the lipostructure twice (4 cases). The significant increase in deglutition and phonation quality prompted this procedure being repeated in another 5 patients, or even twice in one other.

Conclusions

By lipostructure, as a minimally invasive procedure, we can significantly increase the quality of life of patients with neoplastic disease in the OMF territory, subjected to multimodal treatment. These results have stimulated an increase in the number of patients subjected to lipostructure over the last period of time.



10. Skull Base Surgery

P-1288

OROCERVICOFACIAL PAIN AND STYLOHYOID COMPLEX SYNDROME: A RETROSPECTIVE STUDY.

M. Sánchez- Sánchez, L.M. González-Pérez, N. Fakihi- Gómez, V. Prats- Golczer, F. Iglesias- Martín, P. Infante- Cossío, J.L. Gutiérrez- Pérez

Oral and Maxillofacial Surgery Department, Virgen del Rocio University Hospital, Seville, Spain

Background and Objective:

Stylohyoid Complex Syndrome (SHCS) includes all conditions characterized by lateral orocervicofacial and oropharyngeal pain resulting from one of three distinctive pathologic conditions: an elongated styloid process (more than 30 mm long), a calcification of the stylohyoid ligament, or an elongated hyoid bone. In this group, the best known is Eagle syndrome which is the term used when there is history of prior trauma or surgical procedure. Diagnosis is based on clinical and imaging examinations (panoramic radiography, CT and MRI). Usually, the SHCS remains asymptomatic until it reaches a large enough size to provoke compression of the adjacent soft tissues, at which point the patient may perceive symptoms. Even though conservative management using analgesics, local steroid or anaesthetic injections can be considered in certain patients, surgical treatment may be the best option, especially when neurological symptoms are predominant.

The aim of this study is to present a retrospective study with this syndrome and their imaging findings with a discussion of the published works on SHCS.

Methods: A retrospective study was performed on a group of patients with lateral orocervicofacial and oropharyngeal pain which were diagnosed and treated of SHCS at the Department of Oral and Maxillofacial Surgery, Virgen del Rocio University Hospital, Seville, Spain, between 2005 and 2014. Data collected included age, gender, symptoms location, initial treatment, type of treatment and follow-up.

Conclusion: Although SHCS is rare, it should be kept in mind as one possible cause of lateral orofacial and oropharyngeal pain. This syndrome includes 3 distinct clinical entities resulting from the three pathologic conditions associated with the SHCS: stylohyoid syndrome, pseudostylohyoid syndrome, and Eagle syndrome as described with previous trauma or surgery. Stylohyoid syndrome was the most common of the three, and applied when a patient's symptoms appeared earlier in life owing to a developmental anomaly of ossified stylohyoid ligament or elongated styloid process with no associated trauma. In patients with severe symptoms, which do not respond to antiinflammatory therapies, or in cases where vascular or neurological symptoms predominate, the treatment of choice is surgical intervention along the stylohyoid complex, via a transoral or transcervical approach.

**P-1386****CASE REPORT: RECONSTRUCTION OF THE ANTERIOR SKULL BASE WITH RECTUS ABDOMINIS MUSCLE FREE FLAP**

R. Lesko¹, A. Sukop², J. Kozak¹, M. Tichy¹

¹ Department of Neurosurgery, 2nd Faculty of Medicine, Charles University, Motol University Hospital, Prague, Czech Republic

² Department of Plastic Surgery, 3rd Faculty of Medicine, Charles University, Kralovske Vinohrady University Hospital, Prague, Czech Republic

Background: In the cases of defect of central anterior skull base an appropriate isolation of the skull base from the upper aerodigestive system with well-vascularized tissue must be obtained to prevent serious infectious complications.

Methods: We present the clinical case of a patient with frontal basal osteomyelitis after fracture of rhinobasis in history, manifested after functional endoscopic sinus surgery (FESS) by liquorrhea and tension pneumocephalus. Extensive defect of anterior skull base was caused by radical debridement of the necrotic bone. Failure of reconstruction of the defect with local flaps (transnasal endoscopic with nasal septal flap, transcranial with pericranial pedicled flap), was indication for using of rectus abdominis muscle free flap. Anastomoses were performed between vessels of the flap (inferior epigastric artery and veins) with superficial temporal artery and veins.

Results: Transient venous free flap congestion was notice postoperatively. Good clinical result, no other complications, viable microvascular anastomosis and free flap with adequate cranionasal separation were observed during a further 1-year follow-up period.

Conclusions: Free tissue transfers are not standard methods to reconstruction of the central anterior skull base defects but represent alternative possibilities when traditional methods are not available or have failed. A rectus abdominis free flap is mainstay because it provides a large amount of vascularized tissue with a long pedicle.



11. Orbital, Paranasal Sinuses and Nasal Cavity Surgery

P-24

SURGICAL METHODS OF MAXILLOFACIAL DISEASES TREATMENT IN PATIENTS WITH HAEMOPHILIA.

D.S.Schinkevich, V. V.Afanasiev, V. U. Zorenko, G.V.Mishin

Maxillofacial Traumatology Department MSMSU named after A. Evdokimov, head of department-professor V. V. Afanasiev, FSBI "Haematological Scientific Center" of Public Health Ministry, general director- academician V. Savchenko, Moscow, Russian Federation

Introduction: there is no agreement among doctors regarding surgical approach towards maxillofacial diseases treatment in patients with haemophilia.

The objective of the work: increase in efficacy of surgical stomatological treatment in patients with haemophilia due to existing surgical methods enhancement.

Materials and methods: four male-patients with haemophilia were operated (mean-age of 38 years). Two patients underwent ablative sinusotomy due to odontogenic maxillary sinusitis; one patient underwent face skin atheroma excision; one patient underwent parotid-masticatory infection dissection. One female patient (39 years, Von Willebrand disease) underwent alveololingual groove abscess excision. Existing surgical treatment methods in our modification were used. All patients underwent operations under anaesthetic. A substitutive haemostatic therapy (VIII and IX blood factors) was conducted under the haematologist supervision.

Results and discussion: there were no intraoperative bleeding due to layerwise extracoagulation of all dissected tissues conducting. In order to reduce the wound length during atheroma excision one linear skin cut was conducted instead of converging skin cut. After maxillary sinusotomy one male-patient underwent a sinus bleeding due to early iodoform wick drain removal, which was stopped after inferior nasal packing. The wick drain should be removed during 4-5 days by exhaustion and undercutting. In other cases there was no postoperative bleeding. After infection and abscess dissection the wounds were tamponed with iodine-containing wick drains for 7-8 days till the ousting of ripe granulations. Narcosis helped to avoid haematomas formation (often appear after local anaesthesia). Interrupted stitch irritates the wound's edge, causing bleeding. We recommend using subcuticular suture. Intense pain wasn't reported, oedema dissipated after 6 days.

Conclusion: face and neck surgical operations in patients with haemophilia should be conducted in a hospital under haematologist supervision, familiar with substitutive hemostatic therapy. To prevent bleeding layerwise extracoagulation of dissected tissues should be used; with purpose of vast face and neck haematomas prophylaxis operations should be conducted under anaesthetic.



P-195

RECONSTRUCTION UPPER EYELID WITH CUTLER-BEARD FLAP

M. Acosta-Feria, JJ. Haro-Luna, S. Garcia-Alvarez, B. Ramos-Medina, A. Gomez-Poveda

Oral and Maxillofacial surgeon, Cartagena, Spain

Introduction: The main objective of the reconstruction after oncological resections eyelids is to restore functionality to also protect the eye and allow normal vision. Secondly we need to get a good cosmetic result not to alter relationships of our patients. Depending on the size of the anatomical defect originated after resection, we can use different types of local flaps. Reconstruction with flap Cutler-beard is indicated when resection of the upper eyelid is more than 50% of its length. It is a skin-muscle-conjunctiva flap from the lower eyelid advanced into the upper eyelid defect.

Methods: A 50 years old man, who had a basocellular carcinoma of the upper eyelid at six months of evolution and 1, 5 cm in size. Extirpation of the tumour with margins of 0.5 cm on each side was performed and the surgical defect was reconstructed using the Cutler-beard flap. At six weeks the two eyelids are separated in a second surgical time.

Result: One year after surgery, the patient has a good eyelid closure and cosmetic result. There hasn't been altered vision, xerostomia or ectropion of the lower eyelid. The patient continuous free of disease.

Conclusion: In surgical defects affecting > 50% of the total length of the upper eyelid, the Cutler-beard flap is a technique of choice for reconstruction, both from the point of view of functional recovery of the same, as the aesthetic result patient. The main drawbacks we note the need for a second surgical procedure for the release of both eyelids, difficulty in vision in the involved eye during that time, and that the rigid posterior lamella is not usually replaced, which may result in instability of the reconstructed eyelid margin over time. Free transconjunctival grafts or free autogenous hard palate mucosal grafts can be used to provide posterior lamellar support to the flap.



P-243

SILENT SINUS SYNDROME

P. Balon¹, A. Vesnaver²

¹ *Department of Otorhinolaryngology, Cervical and Maxillofacial Surgery, University Medical Centre Maribor, Maribor, Slovenia*

² *Department of Oral and Maxillofacial surgery, University Medical Centre Ljubljana, Ljubljana, Slovenia*

Objective: Silent Sinus Syndrome (SSS) is a rare clinical condition, characterized by unilateral maxillary sinus atelectasis. Most patients with this syndrome are presented with ipsilateral enophthalmos and hypoglobus. Typically, they are unaware of any preexisting sinus disease and deny orbitofacial trauma. Rarely, they will complain of diplopia and orbital asymmetry. In some asymptomatic patients the condition is detected incidentally while undergoing radiological examination due to other causes. The most widely accepted pathophysiological mechanism is the occlusion of the maxillary ostiomeatal complex, which results in hypoventilation and negative pressure, leading the sinus walls to migrate inward and the orbital floor being pulled downward. There may be some bone remodeling and thinning due to increased osteoclast activity.

Patient: The patient is a 33-year-old man presented with SSS, who was found accidentally during radiological examinations after having sustained a contralateral orbit injury. A CT scan showed chronic maxillary sinusitis of the right maxillary sinus with associated decrease in volume as compared to the left maxillary sinus. The medial wall was thinned, and there was a downward retraction of the orbital floor. The treatment was done under general anaesthesia by performing a maxillary antrostomy, removing the thickened mucosae and the sinus content. A sample of the tissue was sent to pathohistological examination. Sinus drainage was normalized through maxillary sinus meatotomy. Postoperatively, the patient was feeling fine and reported no problems. The pathohistological findings showed nonspecific fibro-productive right maxillary chronic sinusitis.

Conclusion: In the differential diagnosis of SSS it is always important to rule out malignant diseases. If treated timely, disease progression can be arrested without development of further deformity.



P-290

DENTAL BASIS OF NASAL RECONSTRUCTION

S. Bhatia, G. Mihalache

Oral and Maxillofacial Surgery, Shrewsbury and Telford Hospitals NHS Trust, Shrewsbury, United Kingdom

Objective

Popularity of aesthetic nasal surgery is testament to the importance patients place on the cosmetic appearance of the nose. Some nasal defects following tumour surgery require a Rhinectomy or partial Rhinectomy. Nasal defects can have significant psychological and functional morbidity. There are various surgical options for reconstruction of nasal defects. There a variety of reconstructive methods including prosthetic. Dentists are used to taking intra oral impressions. We used this expertise to reconstruct patient specific splints. Where the original nose is present prior to tumour excision we use that to make a two part splint to allow fabrication of a neo nose with good results.

Methods

We present a series of patients that underwent partial rhinectomy for tumour. At presentation the nasal shape was largely intact.

Impressions were taken of the nose, both intra and of the external nose. A two part interlocking splint was made to facilitate reconstruction and allows remodelling like the original nose.

Three layer composite reconstruction was carried out with intra oral lining for mucosa, auricular cartilage for cartilage and a variety of skin flaps for external skin.

Results

Nasal form and function was remarkable with good cosmesis. Good functional result with reconstruction of the external valve too.

Conclusions

The use of the prefabricated individual splints allow for a better result with good forma and function of partial nasal reconstruction.

**P-309****ADENOMATOID ODONTOGENIC TUMOUR AND OSSIFYING FIBROMA AS DISCRETE PATHOLOGICAL ENTITIES IN AN ANATOMICALLY COINCIDENT AREA**

J Haq, A Tilston, P Stenhouse

Oral and Maxillofacial Surgery, King's College Hospital, London, United Kingdom

Background:

Adenomatoid odontogenic tumour (AOT) is an uncommon pathology of dental origin thought to derive from the enamel organ. It preferentially affects the maxilla in young female patients, and is commonly associated with unerupted teeth.

Methods:

An eleven year old Black-African girl presented with a short history of a firm mass in the left maxilla. Radiography confirmed the presence of a large cystic lesion in the left maxillary antrum, associated with an unerupted canine tooth. Appearances were consistent with a dentigerous cyst.

Following marsupialisation, biopsy specimens confirmed presence of an AOT. Definitive enucleation was performed three months later by means of a Le Fort 1 osteotomy. She made a good recovery and underwent a period of clinical and radiological surveillance.

18 months following surgery, a recurrent bony swelling was noted at the area of surgery. CT confirmed a calcific proliferation at the left naso-maxillary junction.

Debulking surgery was performed via an intra-oral approach, and histological analysis diagnosed the lesion as ossifying fibroma (OF).

Discussion:

AOT and OF are both clinically uncommon entities. The presence of concomitant lesions has been described previously (1,2). However, this was either in discrete anatomy or time, and not as in this case as a second lesion arising in the post surgical field of the first.

Histologically, both specimens were classical representations of individual pathologies, excluding diagnostic overlap. There has been no sign of recurrence at one year post-operatively.

Conclusion:

A causal link between AOT and OF is yet to be identified, and such a case is, to our knowledge, unique. Familial or genetic studies may help to further understand these disease processes.



P-345

CRANIOFACIAL INTRAOSSEOUS CAVERNOUS HEMANGIOMA: FINDINGS IN TWO PATIENTS.

D.P. López Gordillo¹, W.Salcedo Mercado², J.C Blasco Palacio¹, F.J Rehberger Bescos¹, L.Bermejo Abascal¹, S.Lazuen Fernandez¹, S.Sanchez Santolino¹, M.F.García Reija¹, T.Gonzalez Terán¹, R.J. Saiz Bustillo¹

¹ Oral and Maxillofacial Surgery, Hospital Universitario Marqués de Valdecilla, Santander, Spain

² Pathological Anatomy, Hospital Universitario Marqués de Valdecilla, santander, Spain

Intraosseous hemangiomas represents less than 1 % of all osseous neoplasms. They are extremely rare and histopathologically benign tumours, these lesions are most frequently found in the parietal and frontal bones. Less commonly, they arise from craniofacial bones. Microscopically are composed of thin-walled vascular channels lined by a single layer of flattened endothelial cells interspersed among bony trabeculae. Immunohistochemical stains, such as CD34, CD31, vimentin, O13, and factor VIII are useful in confirming a vascular origin.

The first description of craniofacial intraosseous hemangioma is ascribed to Toynbee in 1845; however, it was not until 1942 that Rowbothan described a case with histologic confirmation of the disease. Are slow-growing lesions and typically occur in women in the fourth and fifth decades of life, the most typical clinical manifestations are: proptosis, diplopia, ophthalmoplegia, nasal obstruction, epistaxis and headache.

The classical radiographic appearance of intraosseous hemangioma are honeycomb configurations or " soap bubble", sunburst trabeculations, usually without reactive sclerosis and hypervascularity on angiography. However, these features are not as apparent in smaller lesions, especially in the skull base, the majority diagnosed only after surgery.

The surgical treatment of choice is bloc excision and establishment of normal bony margins, with or without preoperative embolization to reduce intraoperative hemorrhage, which can be severe.

We present two cases of Intraosseous Cavernous Hemangioma was referred to our department of oral and maxillofacial surgery.

Case 1: A 50 – year –old woman presented with 3 months history of proptosis and edema in the left upper eyelid. CT showed a lesion of the left lesser wing sphenoid extending temporal fossa and lateral wall of the orbit, following temporal craniotomy, the tumour was excised and the histologic examination showed intraosseous cavernous haemangioma was made.

Case 2: A 52 year- old woman presented with 10 months history of an occasional painful palpable mass in the left maxillary and nasal cavity. CT showed a large mass in the nasal cavity and maxillary sinus on the left side, partial maxillectomy orally was performed and the histologic examination was intraosseous cavernous haemangioma.

**P-349****"CUSTOM-MADE" MAXILLO-FACIAL RECONSTRUCTION. A LOW COST METHOD.**

A.-M. Negulescu, S. Medin Rey, I. Loeb

CHU Saint-Pierre, Brussels, Belgium

Many alloplastic materials are used as alternatives to the gold standard autologous bone graft for craniofacial bone repair. The polymethylmethacrylate (PMMA) has a long history of use in cranioplasties and orthopaedic implants. Currently, CAD-CAM technology offers the possibility of reconstructing some of the bone defects with custom-made craniofacial implants from alloplastic materials. But, it remains an expensive and time consuming technic.

We present our technic using custom-made implants of PMMA for various reconstructions, especially for the orbito-zygomatic region. The production begins with a wax shaping on a 3D model from the CT-scan. After the clinical validation, silicone moulds are made and the PMMA will be sterilely injected inside during the surgical operation. If necessary the implant is adjusted and then osteosynthesized.

The functional and aesthetical results are good, except one case of intraoral suprainfection for which the implant had to be removed.

The custom-made implant in PMMA from a silicon mold is well suited for reconstruction of craniofacial defect. It appears to be a less expensive method and a simple and fast surgical procedure with possibility of retouch and no long-term resorption.



P-351

POTT'S PUFFY TUMOUR

D. Garcia Molina, T. Gonzalez, M.J. Nieto, E. Alonso, I. Calvo, M. Burgueño

Servicio de Cirugía Oral y Maxilofacial, Hospital Universitario La Paz, Madrid, Spain

INTRODUCTION: Pott's puffy tumour is defined as a subperiosteal abscess of the frontal bone associated with frontal osteomyelitis. It is traditionally considered a complication of frontal sinusitis, but is also occasionally described after head trauma. Fewer than 50 adult cases have been described in the literature in the last 40 years, which makes it a very rare condition. We report a Pott's puffy tumour in a 30-year-old male and how it was successfully treated.

METHODS: A 30-year-old male complained of frontal slowly enlarging mass. CT scan revealed a 4 x 5 cm mass in frontal sinus, affecting both anterior and posterior tables, with intracranial abscess. This was interpreted as Pott's puffy tumour. Antibiotic therapy was recommended and when the intracranial abscess was partially solved, surgery was performed: drainage, complete excision of the lesion and craniolization of frontal sinus. The patient followed a schedule of 6 weeks with antibiotics after surgery.

RESULTS: The aesthetic result was excellent and the postoperative course was uneventful.

CONCLUSION: Pott's puffy tumour is a rare entity. It should be treated and diagnosed early because it has life-threatening complications.

**P-368****DECISION MAKING IN THE SURGICAL TREATMENT OF RHINOCEREBRAL MUCORMYCOSIS.**

S. Dalampiras¹, G. Venetis¹, J. Tilaveridis¹, N. Pastelli², C. Smias³, L. Zouloumis¹

¹ *Oral & Maxillofacial Surgery, Aristotle University of Thessaloniki, School of Dentistry, Thessaloniki, Greece*

² *Pathology, "G Papanicolaou" Gen. Hospital, Thessaloniki, Greece*

³ *Hematology and bone marrow transplantation, "G Papanicolaou" Gen. Hospital, Thessaloniki, Greece*

Objectives: To investigate the importance of readiness and radicality in the treatment of Rhinocerebral Mucormycosis, a potentially lethal infection occurring in immunosuppressed patients. Rapid progress of the disease, without specific radiological findings, poses dilemmas in decision making on radicality and on-time intervention.

Patients and methods: We present two young males, seriously immunosuppressed, who were infected by mucormycosis of the paranasal sinuses. In one of them (35 years old, recently received a renal transplantation) the surgical intervention was implemented one week after the onset of symptoms and involved maxillary and ethmoid sinuses wide exposure and debridement. In the second patient (27 years old, recently received bone marrow transplantation) surgery was performed earlier (at the 2nd day) and was more radical, including orbital exenteration.

Results: Pathology showed mucor rods in both cases but moreover the second case was superinfected by *Candida Krusei* and *Pseudomonas Aeruginosa*. Nonetheless, the second case survived after a long postoperative period, although the first one died five days postoperatively by a huge intracranial spread of the infection.

Discussion: Decision-making in orbital exenteration has not been studied enough for rhinocerebral mucormycosis. The general guideline for laborious surgical cleaning does not clarify the time and extension of surgery, and the publication of our experience will help to build a treatment protocol for these rare but serious conditions.

Conclusion: Prompt surgical intervention and radical ablation, might have salvage outcome in rhinocerebral mucormycosis.

**P-392****SINONASAL MYXOMA – A PAEDIATRIC CASE REPORT**

T. Lopes¹, M. Mesquita¹, T. Burnay², D. Lopez¹, J. Carreiro¹, L. Barroso¹, A. Ferreira¹, F. Heitor³

¹ *Department of Maxilo-Facial Surgery, Centro Hospitalar e Universitário de Coimbra, Coimbra, Portugal*

² *Department of Plastic, Reconstructive, Aesthetic and Maxillofacial Surgery, Hospital de São João, Porto, Portugal*

³ *Department of Pediatric Oncology, Centro Hospitalar e Universitário de Coimbra, Coimbra, Portugal*

Objectives: We present a case of an infantile sinonasal myxoma. This is a benign and slow growing but locally invasive tumour that can develop in either bone or soft tissue. Paediatric cases are infrequently reported in the literature and are typically odontogenic, involving the maxilla and the mandible. Because this tumour is rare, it may not be included in the differential diagnosis of a sinonasal mass. By describing this case we aim to increase the awareness of the presentation, histological features, behavior and treatment of myxomas of the head and neck.

Methods: Case report

Results: A 14 months old male child presented with a huge mass, which occupied all the right side of the face distorting the orbit, palate and nasal cavity. This mass had grown slowly but progressively for four months before he arrived to our hospital. The CT and MRI showed a maxillary sinus lesion with 50x41x54mm, which compressed and remodelled the bone, leading to deviation of the external wall of the nasal cavity, orbital floor and ethmoid cells, suggesting invasion. Correlating the histologic analysis with the presentation and imaging studies the diagnosis of myxoma was suspected. Because the mass was exceptionally large we choose to approach the tumour through a Weber-Ferguson incision, ensuring an appropriate visualization and excision, which was achieved "en bloc". The gelatinous mass infiltrated the orbit, with destruction of its floor, which was reconstructed with a titanium mesh. The tumour bed was subjected to chemical cauterization with Carnoy's solution. The functional and aesthetic results are perfectly acceptable considering the aggressiveness of the lesion and the treatment performed.

Conclusion: Although rare, sinonasal myxoma should be included in the differential diagnosis of slow-growing, well-defined lesions of the face and jaws in infants. Their infiltrative nature and propensity to recur locally if not completely excised were the reasons for our choice of an aggressive surgical approach. However, the risks of radical excision must be balanced, sparing critical structures and preserving organ function.

**P-396****ORBITAL MARGINOTOMIES**

P. de Leyva¹, J.M. Eslava¹, M. Sales-Sanz², D. Villegas¹, I. Page¹, F. Pérez-Flecha¹, E. Sánchez-Jáuregui¹, J. González¹, J.J Acero¹

¹ *Oral and Maxillofacial Surgery, Ramón y Cajal University Hospital, Madrid, Spain*

² *Ophthalmology, Ramón y Cajal University Hospital, Madrid, Spain*

Objectives: Orbital tumours can be approached in several ways, but the orbital rims are often an obstacle to the surgeon's direct visualization and access, especially if the lesion is deep within the orbit. Orbital osteotomies allowing removal of various segments of the orbital rim improve exposure and control.

The author's aim is to review a series of 15 cases of orbital lesions in which surgical access included temporary removal of orbital rim segments.

Methods: A retrospective, non randomized case series of 15 patients undergoing orbital surgery between April 2011 and February 2013 is reviewed. In all cases tumour approach was based on temporary removal and replacement of orbital rim segments.

Results: Out of the 15 tumours, 8 were approached using a lateral marginotomy (53%), 2 using a combined lateral marginotomy and pterional approach (13%) and 5 using a superior marginotomy (33%). For the histology, we had 4 dermoid cysts (27%), 3 hemangiomas (20%), 3 osteomas (20%) and 2 solitary fibrous tumours (13%) as the most frequent. Functional and cosmetic results were good in all cases and no complications were found.

Conclusions: Orbital marginotomies are a useful tool for the surgical management of orbital tumours. An appropriate temporary marginotomy allows easier and safer access to deep structures, reducing the risk of damage to the eye and optic nerve. The removal of the orbital rim reduces surgical times and no significant morbidity is added. As the fragments of bone are replaced at the end of the procedure, no cosmetic or functional damage is caused.



P-424

RECONSTRUCTION PRINCIPLES OF ZYGOMATICO-NASO-FRONTO-ORBITAL AREA DEFECTS AND DEFORMATIONS

S. Butsan, Sh. Yighitaliev, S. Khokhlachev, E. Verbo, K. Gileva

Central Research Institute of Stomatology and Maxilo-Facial Surgery, Moscow, Russian Federation

Objective: Improve functional and esthetic surgical treatment results of patients with defects and deformations of zygomatico-naso-fronto-orbital region based on 3D planning and modelling of reconstructive surgical interventions

Methods:

148 reconstructive interventions were performed for liquidation of upper and mid face defects

and deformities at 82 man and 66 women during 2006-2013. Etiological: 136 posttraumatic defects and deformities, 8 gunshot defects, 4 defects after radical resections due to oncological indications.

Reconstruction of zygomatico-naso-fronto-orbital region presented 3 stages:

1. Bone reconstructive surgery with different types of autotransplants (calvaria graft, revascularized fibula flap, femoral cortico-periosteal revascularized flap etc.).
2. Soft tissue of the revascularised flap corrective surgery (scar tissue, local tissue plasty,).
3. Contour plasty with individual silicone implants or (and) lipofilling.

Results:

Good aesthetical and functional result obtained in 124 cases. All interventions had as background computer planning and intervention modelling. Stereolithographic intrasurgical templates for transplant harvest and position were used.

In 24 cases a second stage intervention was needed.

In 20 cases the third stage was performed – contour plasty of the interest region with individual silicone implants also manufactured with CAD\CAM aid or (and) lipofilling.

Conclusions: Thus, proposed 3 stages method of reconstruction of defects and deformations of zygomatico-naso-fronto-orbital region with the aid of CAD\CAM technologies on different surgical stages permitted us to get better functional and aesthetical results.



P-452

THE SURGICAL TREATMENT MAXILLARY SINUS FUNDUS DEFECTS

Mag.Sh. Mustafaev, J.S.Zabakov, D.T. Kuzhonov, F.R. Batyrbekova, Mus.Sh. Mustafaev, L.T. Makitova

Medical department, Kabardino-Balkarien State University, Nalchik, Russian Federation

Relevance. Nowadays we see increasing of the number of patients with maxillary sinus fistula and perforations causing chronic perforative sinusitis. Because of this fact the problem of treating maxillary sinus fistulas as the reason of sinusitis is real issue. The statistic data show that complications in surgical treatment appear in 9-50% of cases. The edges of the wound are open and recurrence of fistula is observed.

Research objective: working out of effective method of treating oroantral perforations and maxillary sinus fistula.

Materials and methods. In our clinic we have worked out the method of treating maxillary sinus fistulas using the membrane TachoKomb. The method consists of, under local or general anaesthesia, freshening the defect, cutsting out trapezoidal muco-periosteal flap with buccal alveolar bone of the upper jaw in the area of the bone defect, the basis for the transitional fold, which continue to cut in both directions. The flap is raised up. Then wecarry out revision and antiseptic treatment of the bone defect. The gum is detached on the palatal side in 3-5 mm. A small sinusotomy is performed, pathological tissues and foreign bodies are taken away. Anastomosis is put with inferior nasal passage. The mouth of the small cavity is covered with a membrane. The membrane is introduced under the gum from the palatal side over cross covering the defect from all the sides in 3-5mm, and then pressed firmly against the bone for 3-5 minutes. The wound edges are neared and are stapled. Postoperative period is accompanied by standard medical therapy and physiotherapy. Using this method 50 patients have been operated.

Results and Conclusions. Recurrences of oroantral fistula were not observed. During the reviewexamination in 1, 3, 6 months there were not marked clinical and radiological signs of sinusitis. So, in maxillary sinus fistula defects this method is very effective, it provides a total absence of recurrence, thanks to the formation of an inner doubling layer membrane TachoComb.



P-500

A MINI-INVASIVE TREATMENT METHOD OF ORO-ANTRAL COMMUNICATION AFTER TOOTH EXTRACTION.

A.Mighic, D.Sirbu, V.Topalo, I.Suharschi, A.Mostovei

Department of Oro-Maxillo Facial Surgery and oral implantology "Arsenie Gutan", "Nicolae Testemitanu" State University of Medicine and Pharmacy, Chisinau, Moldova

Aim: To compare the method of oro-antral communication closure using vestibular flap versus tamponade of tooth socket using "Collapol KP3" (collagen with hydroxyapatite)

Materials and methods: From 01.01.10 to 01.08.13. 18 patients (8 women and 10 men) with mean age of 42.6 ± 0.86 years, had an oro-antral communication (OAC) after a surgical procedure, mostly because of the upper first molar extraction. Patients with maxillary sinus pathology and those with the lack of interradicular septum were not included in the study. Communication closure was performed immediately after its appearance. The OAC closure with tamponade of extraction socket using "Collapol KP3" was performed in 10 patients, who formed the first group of the study. Sutures were applied on the extraction socket without soft tissue plasty of the communication. The second group consisted from 8 patients who had their OAC closed with a vestibular flap by a classical manner.

Results: both groups were compared using 4 criteria:

1. The necessity in general anaesthesia: all surgical procedures of the first group were performed under local anaesthesia whilst in second group a general anaesthesia was used.
2. The recurrence of OAC: 0 cases in the first group and 1 in the second one.
3. The width of vestibular keratinized tissue was 3.6 ± 0.64 mm in the first group and 0 mm in the second one.
4. The possibility of implant placement: seven patients from the first group came after 3 months since OAC closure. All these patients had their missing tooth replaced by an implant. There was no necessity of repeated soft tissue plasty. At 5 patients from the second group implant placement without additional surgical procedures was not possible.

Conclusion: The method of OAC closure using osteoconductive material "Collapol KP3", proved to be effective and minimally traumatic.

**P-539****IDIOPATIC ANEURYSM OF SUPERIOR LABIAL ARTERY: AN EXTREMELY RARE CASE.**

M.S.Garcia, B.Ramos, M.Acosta, J.J. Haro, A. Gómez

Oral and Maxillofacial Surgery department, Santa Lucia University Hospital, Cartagena, Spain

Objective: aneurysms are abnormal and localized dilations of blood vessels presenting in any artery or vein of the body. They can be classified in false aneurysms or pseudoaneurysms, when they have a traumatic aetiology, and in true aneurysms, when the vessel wall is weakened but containing all layers. Surgical procedures in the face and neck such as bilateral split osteotomy, surgical removal of molar teeth, radiation or facial fractures are all reported causes of pseudoaneurysms of branches of external carotid artery. True aneurysms are not much described in the literature and aneurysms of the superior labial artery are extremely rare. To the best of our knowledge, we report the second case in the literature of true idiopathic aneurysm of the superior labial artery.

Materials and methods: a 48-year-old woman presented with a 5 cm painless, non-tender, non-pulsatile, palpable and visible elongated mass in the right side of the upper lip. She denied any history of trauma, dental extraction or local infection and there was no contributory medical history. Ultrasonography and colour Doppler examination revealed an arterial aneurysmal dilatation, sinuous looks and thick-walled with visible blood flow and area of partial thrombosis of 50 mm long and 5 mm axial diameter.

Results: under general anaesthesia a 1 cm incision in the melolabial fold was performed combined with an intraoral approach. The labial artery was exposed, isolated, and tied off with a 2-0 silk ligature. The postoperative course was uneventful and no recurrence has been noticed.

Discussion: The aetiology of superior labial artery aneurysms continues to be debated. Some consider it to be congenital in origin, whereas others think they are acquired. Colour Doppler ultrasonography has been suggested as screening method and CT angiography confirms the diagnosis. Treatment is thought to be mandatory because of the unstable wall and possibility of expansion or rupture. Options for treating include anticoagulation, ligation and surgical removal or endovascular embolization/stenting.



P-617

FREQUENCY AND NATURE OF MAXILLARY SINUS PATHOLOGIES TREATED IN TIRANA OMF AND ENT SURGERY SERVICES

A Isufi,DMD¹, R Isufi,Ph D,DMD¹, B Boci,DS,MD², I Isufi,DMD¹

¹ OMF Surgery, "Mother Theresa",Univeristy Hospital Center, Tirane, Albania

² ENT Surgery, "Mother Theresa",University Hospital Center, Tirane, Albania

Introduction :OMF and ENT surgery in "Mother Theresa" University Hospital Center are two units which for more than 30 years work as separated services in treatment of many pathologies .Maxillary sinus due to its proximity with the oral cavity and nose is a working anatomic area for both OMF and ENT surgery .

Objective :To provide data of the frequencies and nature of maxillary sinus in OMF and ENT surgery services, the differences and in common between them.

Materials and methods :This is a retrospective study of descriptive nature .Patients chars in the period of time 2005-2013 were studied in both OMF surgery and ENT surgery services in "Mother Theresa" University Hospital Center Albania. 278 patients treated for maxillary sinus pathologies were divides in two groups .Group 1 n=148 patients were treated in the OMF surgery service and group 2 n=130 were treated in the ENT surgery unit .Maxillary sinus pathologies treated in both groups were studied for the frequency of their nature ,the origin, possible causes ,male female ratio.

Results :Patients range from14 to 73 years in both groups with M:F ratio of 1,7:1 in group 1and 1,4:1 in group 2.Maxillary sinus pathologies in group 1,inflammatory (47%),cystic (17%),neoplastic (8%) and traumatic (28%).In group 2, inflammatory (63%),Cystic (5%), neoplastic (2%) and traumatic (30%).

**P-665****REMOVAL OF A FRONTAL SINUS OSTEOMA AND RECONSTRUCTION BY A CUSTOM-MADE IMPLANT WITH NEURONAVIGATION ASSISTANCE.**

S. Valsecchi, S.Bellocchi, L.Colombo, C. Gervasoni, V. Palazzolo, A. Tronchet, A. Di Francesco, S. Spotti, P.Ronchi

Maxillo-facial unit-Sant'Anna Hospital, San Fermo della battaglia – Como, Italy

Objective: The authors report the surgical treatment of an extensive right frontal sinus osteoma performed by an open access assisted by neuronavigation, with a subsequent reconstruction of the fronto-orbital region with a hydroxyapatite custom-made implant .

Methods: a 52 years old man came to our attention for ptosis, hypoglobus and proptosis of the right eye. The patient was completely asymptomatic without any visual impairment. CT scan showed a very large bony mass involving right frontal sinus and displacing caudally the orbital roof with a dislocation of the eye. A stereolithographic model-guided planning was carry out to obtain a practical simulation of the surgical operation, to visualize, verify and modify the resection and the reconstruction before surgery. Authors considered the removal of the whole frontal sinus with the orbital roof. The SLT model customized was submit to a new CT scan to acquire the reference point to realize the neuronavigation assistance, and to achieve the template to realize the hydroxyapatite custom-made implant. Intraoperatively, authors performed a direct bicoronal access to expose the fronto-orbital region. With neuronavigation assistance weperformed osteotomies by a piezoelectric device to avoid dural laceration and to obtain the most accurate excision. After tumour removal, the reconstruction was made by the hydroxyapatite custom-made implant, that was secured to the bone using suture thread.

Results: The procedure was damage free, the bony mass was excised and the orbital roof repaired, without any adverse effects. Histopathology was consistent with osteoma. The CT scan after surgery shows a good and stable reconstruction; the scintigraphy 1 year later shows a good quality osteoblasts activity on borders of the implant.

Conclusion: Osteoma is a benign slow growing bone tumour and represents the most common benign neoplasm of the paranasal sinuses usually involving the frontal sinus. Although recent retrospective studies have reported such successful attempts with endoscopic approaches, large osteomas of the paranasal sinuses are usually resected by external approach. Navigational assistance offers a very important help to performed safe osteotomies. Hydroxyapatite custom made implant seems to be an excellent reconstructive method.

**P-677****MANAGEMENT OF ORBITAL CAVERNOUS HEMANGIOMA: PREOPERATIVE DIAGNOSIS, EVALUATION OF SURGICAL APPROACHES, CONSIDERATIONS ABOUT PATHOLOGICAL EVALUATION AND REPORT OF 2 CASES.**

B. Patiño Seijas, J. Collado López, R. Luaces Rey, N. Carral Roura, V. Chávez Bonilla, A. Otero Rico, J.L. López-Cedrún

ORAL AND MAXILLOFACIAL SURGERY, COMPLEXO HOSPITALARIO UNIVERSITARIO DE A CORUÑA (CHUAC), A CORUÑA, Spain

Objective:

To consider the pathogenesis and growth of cavernous hemangioma, particularly within the crowded orbital apex, in decisions regarding surgical indications, timing, and technique.

Methods:

We present two cases of orbital cavernous hemangiomas in our department in 2012 and 2013 that underwent surgery by transcranial approach. Following extradural craniotomy and orbital unroofing, the tumour was accessed and dissected.

Results:

Cavernous hemangioma is the most common benign orbital tumour in adults. Options for surgical therapy are transnasal, transcranial, transantral and ophthalmological approaches. Based on their signal intensity in conventional magnetic resonance imaging (MRI) scans (isointense to muscle in T1-weighted images; hyperintense in T2-weighted images) imaging usually allows their differentiation from other apical tumours, such as schwannoma, neurofibroma, or meningioma. A cavernous hemangioma is not a neoplasm in the usual sense of the term: it does not derive from a single, proliferating progenitor cell. In the anterior and middle orbit, the relatively mobile muscles, nerves, vessels, and loose fibrofatty matrix can generally accommodate that slow expansion by moving aside. Compression to the point of visual impairment tends to occur only with larger tumours. In the orbital apex, in contrast, visually critical vessels and nerves are tightly compacted and directly apposed, with virtually no intervening fibrofatty matrix. Without room for displacement, tumour expansion takes a toll by compression and/or incorporation.

In formulating a management scheme, we should also consider what is known about the clinical behavior of these tumours. At least some cavernous hemangiomas will cease growing spontaneously.

Conclusions:

Although many orbital apex lesions share a common diagnosis of cavernous hemangioma, the microanatomic relationships and future growth of individual tumours cannot be preoperatively determined or predicted. The degree of fusion between the tumour capsule and visually important structures may be the most critical determinant of surgical outcome. Patients without significant deficits should be observed for progression. Those with significant deficits or signs of progression should be offered surgery, sooner rather than later, but with recognition of the risks. The surgical approach should be individualized based on macroanatomic relationships, and the surgical techniques should be influenced by the operative findings.

**P-690****3D-ASSISTED QUANTITATIVE ASSESSMENT OF ORBITAL VOLUME IN TAIWANESE PATIENTS**

Hsin-Yu Chen, Victor Bong-Hang Shyu, Chung-En Hsu, Chih-Hao Chen, Chien-Tzung Chen

Chang Gung Memorial Hospital, Taoyuan, Taiwan

Objective: Orbital volume estimation is a crucial step for pre-operative assessments in trauma and congenital deformity patients. The availability of the affordable, open-source software, OsiriX, for preoperative planning may increase the popularity of surgeon-based radiological assessments.

Methods: A volume calculation method based on 3D volume rendering-assisted range-of-interest summation was used to determine the normal orbital volume in Taiwanese patients after reorientation to the Frankfurt plane.

Results: The mean orbital volume for left and right orbits was found to be 24.21 ± 1.62 and 24.64 ± 1.33 ml³ in male patients and 21.31 ± 1.14 and 21.32 ± 1.50 in female patients. The mean difference between orbital sizes was 0.69 ± 0.36 ml³ in males and 0.62 ± 0.44 in females. To further evaluate orbital volume estimation methodologies reported in the literature, a second method based on the zygomatico-frontal processes was also tested on male patients and results were compared with the first method. The interrater reliability and intrarater reliability was found to be high based on Pearson's correlation test ($R > 0.9$) between users.

Conclusions: 3D-assisted quantification of orbital volume is a feasible technique for orbital volume assessment. The orbits can be used as controls for each other in cases of unilateral orbital reconstruction with a size discrepancy of less than 3.1% in females and 2.9% in males. OsiriX can be used by the individual surgeon as a comprehensive preoperative planning imaging tool for both orbital volume measurement and CT reorientation.



P-703

AND NOBODY PLAYED SYNTHESIZER – JUST HOW DIGITAL DOES THE MODERN DAY ORBITAL TRAUMA SURGEON HAVE TO GET?

A. Kanzaria, N. Bhatti, I. Balasundaram, C. Bridle, S. Holmes

Oral and Maxillofacial Surgery, Bart's Health NHS Trust, London, United Kingdom

Introduction

Orbital trauma management represents a spectrum in terms of complexity. Accurate three dimensional reconstruction is the expectation, but can be difficult to achieve in a highly privileged region.

Strategies exist to facilitate placement of grafts / alloplasts, but certain regions remain a surgical challenge.

Method

We present an 18 month experience of pure orbital and orbito-zygomatic complex fractures. This presentation addresses the surgical options available, and details the advances made with the latest technology which allows rapid digital surgical assessment with a surgeon friendly interface, and implementation on the table without the need for a dedicated registration scan.

Specific indications for the use of adjunctive measures in different regions of the orbit navigation are discussed. Navigation is discussed in addition to custom made, and true to life pre fabricated alloplasts.

Results

In this period 127 pure orbits and 155 orbito-zygomatic complex fractures have been treated. Five cases have returned to theatre for revision, due to bleeding or deformation of the prebent plate in storage. Over 90% of orbital fracture were treated with a prebent titanium orbital plate or PDS sheet. Navigation has been used to treat large orbital fractures where defects extend into the medial wall. The use of navigation has allowed for accurate reconstruction of the orbital floor and medial wall.

Conclusion

Use of adjunctive techniques supporting sound surgical dissection provides for a predictable surgical result with low morbidity and return to theatre rate.



P-706

DELAYED CLOSURE OF LATERAL CANTHOLYSIS POST ORBITAL FLOOR REPAIR

N. Bhatti, A. Kanzaria, N. Huxham, C. Bridle, S. Holmes

Oral and Maxillofacial Surgery, Bart's Health NHS Trust, London, United Kingdom

Introduction

A transconjunctival and lower lid swing approach to the infra-orbital rim and orbital floor is a well recognised technique. It allows good access to the infraorbital rim, the lateral rim and the orbital floor.

Repair of orbital fractures carry with them the risk of post-operative haemorrhage, which can have devastating consequences.

Indication of use

A post-operative haemorrhage can lead to an orbital compartment syndrome with subsequent compromise of the neurovascular structures supplying the globe and therefore blindness.

In patients in whom this risk is increased- patients with intra-operative hypertension, patients with clotting abnormalities, smokers in whom extubation may cause coughing and spasm and subsequent increases in orbital pressures, the authors propose a technique of delayed closure.

Method

1. The upper limb and lower limb of the lateral canthal tendon are approximated and 5/0 Vicryl rapide suture passed but not tied.
2. The grey line is stitched with 6/0 V rapide as is the conjunctival incision.
3. The lateral relieving incision is then closed also with 6/0.
4. Finally the loose canthal suture is secured loosely to the patient using steristrips.
5. After a period of observation- In this unit 6 hours, the suture can be tied.

Conclusion

This technique means that the orbital compartment remains decompressed while the patient is at risk from intra-orbital bleeding. In our experience there has been no aesthetic compromise as a result of this delayed closure.

The poster will identify which patients and which fracture patterns pose the greatest risk to post-operative haemorrhage.

**P-778****RECONSTRUCTION OF ORBITAL WALL DEFECT USING CUSTOM MADE TITANIUM PLATES**

Mathew Thomas, David grimes, Dilip Srinivasan

Oral & Maxillofacial Surgery, Queens Medical Centre, Nottingham, United Kingdom

Introduction: Accurate reconstruction of the orbital walls is difficult. Customised orbital plates and use of navigation are two well recognized solutions. The thickness of the orbital walls makes accurate 3D modelling difficult. We have used and presented our technique to overcome this

Aim: To analyse accuracy of our reconstruction in establishing orbital anatomy following reconstruction of orbital walls with custom made titanium plates.

M&M: We have used and presented an improved technique for reconstruction of orbital walls using para nasal sinus thresholding. We used this technique to accurately map the normal anatomical volume and position of the orbital walls. A swaged 0.3mm titanium plate was adapted to the reconstructed 3D models. Twelve consecutive patients reconstructed using this technique were included in the study, of the 12 Orbital reconstructions, 2 were secondary corrections, 3 were reconstructions following ablative surgery and 7 were primary repair. Accuracy of reconstruction was assessed using clinical, radiological and 3D model measurements.

Results: Clinically none of patients had enophthalmos. All patients had good orbital volume reconstruction except one where it was reduced.

Discussion: The accurate reconstruction is vital in producing good functional results. The advantages of 3D models has been widely reported, in our unit they provide advantages in terms of planning, consent and production. The laboratory technique is readily available and easy to replicate. This can reduce the postoperative morbidity; reduce the cost and operative duration.

References: 1. The Custom-made titanium orbital floor prosthesis in reconstruction for orbital floor fractures. Br J Oral maxillofacial Surg 2003; 41, 50-53

2. Development of in-house rapid manufacturing of three-dimensional models in maxillofacial surgery. Wesam Aleid , Jason Watson, Andrew J. Sidebottom, Philip Hollows. Br J Oral Maxillofacial Surg 2010; 48, 479-481



P-794

BRONJ AFTER THE TREATMENT OF TESTICULAR LYMPHOMA

Chang sig Moon, Baek Soo Lee, Byung Joon Choi, Joo Young Ohe, Jung Woo Lee, Seon Woong Yun, Yong Dae Kwon

Dept. of Oral & Maxillofacial surgery Kyung Hee University School of Dentistry, Seoul, South Korea

Most osteoporosis occurs in women at menopause. In the case of men, bone loss increases with age-related sex hormone deficiency and lifestyle choices-smoking, alcohol abuse etc. Hypogonadism, corticosteroid use and excessive alcohol consumption etc. could be secondary causes.

Among these, hypogonadism might be resulted from the treatments of prostate or testicular cancer. In our case, an 88-year-old man diagnosed osteoporosis and showing osteonecrotic lesion on his right maxilla has the medical history of testicular lymphoma (DLBCL:Diffuse large B cell lymphoma). He had had a radical orchiectomy and been treated with not only radioactive therapy but also chemo-therapy. 4 years after diagnosis of testicular cancer, he medicated alendronate(Fosamax Tab., once everyweek) until visiting our department and 3 years ago his teeth on his right maxilla were extracted on the local clinic.

We gave a diagnosis of BRONJ and performed partial maxillectomy under general anesthesia. And we recovered the soft tissue defect area with a right buccal fat flap. Until now, the wound show no symptom of any side effect.

It is ease to consider the osteoporosis as an important check point usually in the case of women. In this case, it seems like that it is also important to men.



P-816

TWO CASES OF ORBITAL INVOLVEMENT IN ACUTE SUPPURATIVE ODONTOGENIC SINUSITIS

C. Krasadakis, E. Parara, C. Mourouzis, S. Psomiadis, G. Rallis, M. Mezitis

Oral and Maxillofacial Department, KAT GENERAL HOSPITAL, ATTICA, GREECE, ATHENS, Greece

Introduction: Although accounting for less than 5% of all maxillofacial infections, orbital participation is a serious entity. Odontogenic aetiology is even more rare for the above site, reaching less than 2% of all cases. Concerning odontogenic infections, spreading usually occurs through the maxillary sinus, while direct subcutaneous spread of a buccal abscess is also possible. The aim of the present study is to present two cases of orbital cellulitis in otherwise healthy individuals.

Materials and methods: Presentation of two young male patients with eye movement restriction and ocular pain following upper molar extraction and odontalgia respectively. Both patients underwent surgical emergency intervention, where antral drainage was conducted.

Results: The outcome in both cases was favourable, with no persistence of orbital pathology.

Conclusions: Maxillofacial infections may involve the orbit, with serious complications. The importance of early recognition of an orbital cellulitis or abscess lies in the severe sequelae of delayed management. Namely, central nervous system and visual impairment may lead to visual loss or death.

**P-892****RECONSTRUCTION OF THE CONJUNCTIVAL DEFECT WITH INFRAORBITAL FAT PAD**

M. Romano, A. Baj, G.A. Beltrmini, V.A. Combi, A.B. Gianni, O. D'Orto

Maxillo-Facial Surgery and Odontostomatology, Fondazione IRCCS Ca' Granda - Ospedale Maggiore Policlinico, Milano, Italy

Objectives

Eyelid defect result from various causes, most commonly trauma and eyelid tumour excision. Once the eyelid margin is violated surgical repair can restore lid integrity. Repairing and reconstruction eyelid defects can be a challenge for even the most experienced surgeon.

According to use Bichat pedicled flap pad in oral reconstruction, our Idea is to use pedicles infraorbital fat pad for reconstruction of conjunctival defect.

Materials and Methods

Between august 2011 and august 2013, we treated 6 patients: 2 men and 4 women ranging in age from 38 to 83 years. Lower lid was involved in 5 cases and upper lid in 1.

The histologic diagnosis was basal cell carcinoma in 4 caucasian female patients and sebaceous cell carcinoma in a African male patient. A Chinese male patient reported a traumatic scar in the medial and central portion of the lower lid.

In all cases the reconstruction of the lower lid was complete with double flap: lower lid infraorbital fat pad for inner conjunctiva and rotation-advancement cheek flap for anterior lamella.

Follow-up was conducted every 3 months by clinical examination for 2 years and then every 6 month. Mean follow-up was 18 months.

At 6 months all patients underwent to biopsy of the inner layer of the reconstruction.

Results

The main aim of eyelid reconstruction is to produce a functional and aesthetically result with low morbidity.

In the series of patients who had rotation-advancement cheek flap for anterior lamella, there was no incidence of temporal nerve injury

All patients had good functional and aesthetical results.

No relapse of tumour has occurred in any patient during this time.

Clinically the inner layer has taken on the characteristics of the conjunctiva. This has been verified by histological examination that confirmed the transformation of fat in the epithelium.

Conclusions

The reconstruction of the inner lamella with infraorbital fat pad graft is a simple procedure that provides good aesthetic and functional results considering also the epithelialization of adipose tissue.



P-945

SILENT SINUS SYNDROME - COULD IT BE A POSTOPERATIVE COMPLICATION?

L. Zaleckas, J. Jasauskaite, D. Proskute

Centre of Oral and Maxillofacial Surgery Institute of Odontology, Faculty of Medicine Vilnius University, Vilnius, Lithuania

Objectives. To describe and discuss possible etiopathogenesis of one silent sinus syndrome case, which occurred almost one year after successful reduction and osteosynthesis of nasoethmoid complex type I fracture.

Material and methods. A 25 years old male 11 months after successful surgical treatment of ipsilateral nasoethmoid complex type I trauma arrived to our department due to diplopia. Enophthalmos and hypoglobus were also noted. The volume CT showed a collapsed maxillary sinus, retraction of orbital floor, retraction of the maxillary sinus walls. This patient was treated with a single-stage procedure performing functional endoscopic sinus surgery (resection of the middle turbinate, uncinectomy and opening of the maxillary sinus ostium) and reconstruction of the orbital floor using autogenous bone.

Results. Diplopia completely resolved on the sixth postoperative day. No postsurgical complications were observed, the symmetry of eyes position and aeration of maxillary sinus were restored.

Discussion and conclusion. Silent sinus syndrome is a rare acquired condition that typically presents as enophthalmos and hypoglobus due to ipsilateral maxillary sinus atelectasis. It is usually diagnosed when traumatic anamnesis is negative. Our case showed that even after successfully treated nasoethmoid fracture silent sinus syndrome can occur and continuous postoperative follow-up must be done.

**P-957****THE USE OF OSTEOTOMY IN FRONTAL BONE REMODELING**

I. Němec¹, P. Voska¹, J. Astl²

¹ Trauma Center - Department of Maxillofacial Surgery, Military University Hospital Prague, Prague, Czech Republic

² Ear, Nose, and Throat Department, 3rd Faculty of Medicine of Charles University and the Military University Hospital, Prague, Czech Republic

Objective:

The osteotomy of the anterior wall of the frontal sinus can be used in some cases to rectify post-traumatic deformity of that area. The osteotomy of the anterior wall of the frontal sinus and its shift find its substantial use in feminization of male-to-female transsexuals' forehead. We are going to present this method.

Material and method:

The set was formed by 3 patients. One patient (male) with post-traumatic deformity of the anterior wall of the frontal sinus which we have solved by multiple osteotomy and a shift of that area and fixing it by miniplates, and then 2 patients, male-to-female transsexuals in whom we have used osteotomy and a shift of the anterior wall of the frontal sinus backwards and fixation by miniplates in order to feminize their foreheads.

Results:

In case of the patient with the post-traumatic deformity we have achieved an anatomical position of the anterior wall of the frontal sinus with a satisfactory aesthetic result. In case of remodeling transsexuals' foreheads we have reduced frontal bossing and moderated nasofrontal passage.

Conclusion:

Osteotomy of the anterior wall of the frontal sinus represents one of the possible solutions of a post-traumatic deformity of the forehead. In case of transsexuals the shift of the anterior wall of the frontal sinus, if indicated, represents a radical solution within feminization of their forehead.

**P-983****ORBITAL RECONSTRUCTION AFTER SURGICAL REMOVAL OF MYXOMA FROM THE ORBIT IN THREE-YEAR-OLD BOY**

T. Hansen¹, L. Danielsson², J. Jakobsen², T. Thygesen¹

¹ *Department of oral and maxillofacial surgery, Odense University Hospital, Odense, Denmark*

² *Department of Ear, Nose and Throat, Odense University Hospital, Odense, Denmark*

Objective:

We present a 3 year-old boy with an odontogenic Myxoma (OM). OM's are rare and only a few cases with orbital involvement in a child have been reported in the literature. Myxomas are slow-growing, benign, mesenchymal neoplasms with locally invasive growth. The literature reports of no response to chemotherapy. Furthermore, only minor response to radiotherapy has been reported. Thus, surgical excision remains golden standard.

Material and Method:

A three-year old boy was referred to the maxillofacial unit at Odense University Hospital. Clinical findings included an asymptomatic swelling located with relation to the floor of the left orbit, cavum nasi and the maxilla.

Results:

Histological examination confirmed the diagnosis of odontogenic myxoma and the tumour was surgically removed. To prevent recurrence, a tooth germ and maxillary sinus mucosa with relation to the tumour was also excised.

The floor and medial wall of the orbit was reconstructed immediately using a non-resorbable Medpore© implant with passive adaptation. No clinical recurrence was observed 7 months after surgical removal the patient presented with normal anatomical relations and normal vision.

Conclusion:

Due to high recurrence rates, radical removal of the myxoma was carried out. The orbit was reconstructed immediately and the patient had no sign of remission at the 7 months follow up. Furthermore, full function was regained following reconstruction.

A long-term follow-up regimen with regular examination and cone-beam CT scanning is indicated due to the risk of recurrence.

Due to the growth of the patient and removal of a tooth germ, secondary dental rehabilitation will be relevant.



P-1020

BILATERAL IDIOPATHIC BLEPHAROPTOSIS: A CHALLENGING SURGICAL CASE.

I. Correia-Sá^{1, 2}, T. Neto¹, M. Marques^{1, 3}, A. Silva¹

¹ *Department of Plastic and Reconstructive Surgery, Maxillofacial Surgery and Burn Unit, Department of Plastic and Reconstructive Surgery, Maxillofacial Surgery and Burn Unit, Centro Hospitalar S. João, Porto, Portugal, Porto, Portugal*

² *Department of Pharmacology and Therapeutics, Faculty of Medicine, University of Oporto, Porto, Portugal*

³ *Department of Plastic and Reconstructive Surgery, Faculty of Medicine, University of Oporto, Porto, Portugal*

Aims and objectives: Blepharoptosis can be congenital or acquired and may be due to a myogenic, neurogenic, aponeurotic, mechanical or traumatic cause. In rare cases, no cause is found.

Acquired blepharoptosis presents as both a functional and cosmetic problem commonly encountered by facial plastic surgeons. Ptosis repair can be both challenging and frustrating, especially given ever-increasing demands for an optimal cosmetic surgical result. The authors present a case of a patient with a recurrent idiopathic blepharoptosis.

Materials and Methods: A woman was referred to our institution for bilateral idiopathic blepharoptosis. She has been studied in Neurology and no cause for the blepharoptosis was found. She was submitted to multiple procedures and recurrence was observed. Lately she was submitted to correction using the *Mustardé* technique.

Results: No recurrence was observed after 1 year of surgery.

Discussion and Conclusion: The Mustardé technique can achieve good results in the management of recurrent blepharoptosis. Idiopathic ptosis is a rare case of this condition in the literature.



P-1053

AGGRESSIVE INVERTED PAPILLOMA INVADING THE ORBIT

L. Zamudio Sánchez, J. L. Salinas Sánchez, A. J. Acosta Moyano, C. Sánchez Navarro, Y. Aguilar Lizarralde

Oral and Maxillofacial Surgery, Regional Hospital Carlos Haya, Malaga, Spain

Intoduction: Inverted papiloma (IP) is defined as a benign sinonasal tumour and it has a characteristic of aggressive local invasion, high incidence of recurrence and varying tendency for malignant transformation. This entity is a relatively uncommon tumour of the nasal cavity comprising approximately 0,5% to 4% of all primary sinunasal tumours.

Methods: Review of the pertinent literature and report of two clinical cases of a patients suffering from large, aggressively growing IP invading the orbit, ethmoid and frontal sinuses.

Results: The patients came to our service with proptosis, epiphora and nasal obstruction. Excisions of the tumours were performed by different approach in each patient.

Conclusion: Histopathologically, these tumours are benign, but locally invasive. The tumours that invade the orbit are usually locally aggressive, highly malignant and recur frequently. Radical excision of the tumour is technically difficult and often incomplete, so regular reviews of these patients are necessary.



P-1070

AMELOBLASTOMA OF THE MAXILLA MIMICKING A DENTIGEROUS CYST IN A CHILD

T.Tayeb^{1, 2}, Y.Torres¹, C.Denglehem¹, T.Dumousseau¹

¹ *Oral and Maxillofacial Surgery, SECLIN HOSPITAL CENTER, SECLIN, France*

² *Oral and Maxillofacial Surgery, ROUBAIX HOSPITAL CENTER, ROUBAIX, France*

Aim: To point out the difficulty to diagnose a unicystic ameloblastoma of the maxillary region in children and illustrate the importance of experience to identify such lesions.

Material and Methods: We report a case of a 13-year-old boy referred to our department for diagnosis and treatment of a swelling of the the left upper jaw. Panoramic radiography revealed a well defined unilocular radioculent lesion occupying and deforming the left maxillary sinus. Based on the medical history, clinical exam and radiologic findings we concluded the swelling to be a dentigerous cyst.

Results: The lesion was removed entirely by enucleation. Histologic examination of the specimen confirmed the diagnosis of unicystic ameloblastoma. The patient is actually undergoing a regular follow-up in the outpatient department including clinical exam, CT-scan and facial MRI. There is no recurrence reported until now.

Conclusion: Through this clinically, radiographically and histologically documented report we hope to show a better understanding of some aspects of UA. It is important for every clinician who deals with maxillofacial pathologies to be aware of such uncommon tumours.

**P-1074****APPLICATION OF PIEZOELECTRIC DEVICE IN ENDOSCOPIC SINUS SURGERY: TWO YEAR REPORT.**

G. Mancini, S. Buonaccorsi, M. Tedaldi, G. Reale

LA SAPIENZA UNIVERSITA' DI ROMA, Rome, Italy

OBJECTIVE: New applications of Piezoelectric device have been already documented from otologic and ophthalmic endoscopic studies. Authors describe a first experience with piezosurgery in paranasal sinuses endoscopy.

Methods: Patients involved in this study presented for rhinogenous headache, rhinorrhea, nasal obstruction and sinusitis. Radiologic studies as ct scan of paranasal sinus, and a correct clinical exam with a rigid endoscope 0° were carried out, in order to exclude from the procedure patients with polyposys or other soft tissues diseases. In fact because of piezosurgery properties of micrometric and selected cutting on mineralized tissues, it has been used, at functional frequencies of 25-29 kHz, only to treat bone or cartilage anomalies of nasal sinus. The surgical procedure was performed by trans-nasal endoscopy, with optical fibers at 0 ° for approaching the sinus antrum, then fibers at 30 ° for concha bullosa, and fibers 45 ° for the frontal recess.

Results: The main advantages of the technique include: soft tissue protection, optimal visibility in the surgical field with decreased blood loss. From this preliminary report, the stability of mucous membrane previously cut has been documented by endoscopic follow up with rigid fiber 0°, and the resolution of the main symptom of rhinogenous headache was referred (period of follow up: from 2 weeks to 24 months).

Discussions and conclusions: The main indications for the piezosurgery showed in literature since the 80's are in oral surgery, such as sinus lift, bone graft harvesting, osteogenic distraction, ridge expansion, endodontic surgery, periodontal surgery. Other applications have been showed in othology, neurosurgery, ophthalmology, and orthopaedics. Authors describe as a promising technique the piezoelectric device use in functional endoscopic paranasal sinuses surgery in selected cases. It is becoming a new conservative procedure, as the balloon sinusplasty, for its minimal mucosal approach to reach bone and cartilage structures of sinuses. In a two years follow up, results show how ventilation has been preserved and avoiding post surgical synechia.



P-1096

OSTEOMA OF THE CRANIOFACIAL BONES.CLINICAL CASES

L. Zamudio Sánchez, A.J. Acosta Moyano, J.F. Granados Colochó, J.L.Salinas Sánchez, Y. Aguilar Lizarralde

Oral and Maxillofacial Surgery, Regional Hospital Carlos Haya, Malaga, Spain

Introduction: Osteomas are relatively rare, benign bone neoplasms that usually develop in craniofacial and jaw, characterized by slow growth and are often asymptomatic. They are the most frequent neoplasms of the paranasal sinuses, most often originating from the ethmoid and frontal bones. The maxillary and sphenoid osteomas are rare. Surgery is the mainstay of treatment for these cases and is curative with no recurrence following complete surgical excision.

Methods: We report some cases of osteomas in the craniofacial bones surgically treated with a review of literature.

Results: All three patients had good functional and aesthetic outcomes. All patients reported relief of pain and other symptoms in the post-operative period and there was no recurrence of the lesions in any of our cases.

Discussion and Conclusions: Surgery is indicated when lesion is symptomatic or actively growing. The surgical approach for better exposure of the lesion should be individualized in each case. Tumour recurrence due to incomplete resection is very unusual. Once the area is stable, yearly controls are recommended to identify recurrent or persistent tumour.

**P-1186****THE ROLE OF FUNCTIONAL ENDOSCOPIC SINUS SURGERY BEFORE MAXILLARY SINUS FLOOR AUGMENTATION**

T. Spindler¹, A. Eberlinc², D. Sapundziev²

¹ Department for Oral and Maxillofacial Surgery, General Hospital Celje, Celje, Slovenia

² Department for Oral and Maxillofacial Surgery, University Clinical Center Ljubljana, Ljubljana, Slovenia

Background: Functional Endoscopic Sinus Surgery (FESS) is a minimally invasive procedure, used to restore sinus ventilation, drainage and normal function. It is a surgical treatment of recurrent acute and chronic sinusitis, nasal polyps, bacterial or fungal related sinus problems. It is a relatively recent surgical procedure that uses nasal endoscopes through the nostrils to avoid cutting the skin. Improvement of up to 90 percent may be expected following the procedure. All sinuses can be accessed at least to some degree by means of this surgery.

Objective: Objective was to show the efficiency of FESS in paranasal sinus surgery by presenting a case report of a patient with chronic maxillary sinusitis diagnosed on routine CB-CT evaluation before sinus floor augmentation and dental implant reconstruction where FESS resulted in both symptomatic and objective improvement on Cone Beam-CT (CB-CT) radiographs.

Methods: We are presenting 55 year old , otherwise healthy female patient who was referred to our clinic. Her chief complaint was pain in the left infraorbital region after several tooth extractions. Cyst in the region 23 was diagnosed after panoramic radiograph. Cyst was removed and sent for histopathological evaluation. Final diagnosis was residual cyst. Later on CB-CT and CT of paranasal sinuses were taken before dental implant treatment. CT examinations have shown mucosal thickening with complete opacification of left maxillary sinus and middle meatus syndrome. We performed antrotomy and middle meatotomy with FESS in general anesthesia.

Patient's complaints completely resolved after surgery. CB-CT of paranasal sinuses was performed two months later. Normal maxillary sinus mucosa and no signs of infection were seen. Sinus floor elevation by lateral window approach, bone augmentation with deproteinized bovine bone and simultaneous dental implant placement in regions 22, 24 and 26 were performed. Three months after procedure patient was asymptomatic and prosthodontic rehabilitation was completed. One year after procedure patient is still asymptomatic with no radiological signs of relapse.

Conclusion: This case report demonstrates that FESS is reliable procedure that leads to improvement of symptoms in chronic maxillary sinusitis. This is mandatory for successful treatment outcome of sinus floor augmentation and dental implant placement.

**P-1209****CAMOUFLAGING OF SUPRAORBITAL RIDGE PROMINENCES BY METHYL METHACRYLATE FOREHEAD SHAPING**

Y. T. Song

JOGAK Plastic Surgery Clinic, JOGAK Plastic Surgery Clinic, Seoul, South Korea

Objectives;

Aesthetically displeasing prominences of the supraorbital ridges are normally treated by osteotomy in which an oscillating saw or burr is used to remove excess bone, an invasive procedure. However, forehead augmentation using implants can camouflage the apparent protrusion of the supraorbital ridges without invasive osteotomy if excessive supraorbital ridges are accompanied by a depressed forehead. As an alternative to osteotomy of the supraorbital region with coronal approach, the author here presents a minimally invasive forehead augmentation technique that uses methyl methacrylate and a relatively small incision for simultaneous aesthetic improvement of both prominent supraorbital ridges and forehead depression.

Patients and Methods;

Between 2006 August to 2013 November, 84 patients with prominence of the supraorbital ridges and depressed foreheads underwent forehead augmentation using methyl methacrylate. The procedure was performed under local anaesthesia on an all outpatient basis. A small incision was made in the scalp behind the front hair line followed by subperiosteal dissection of the skin covering the forehead. Methyl methacrylate was inserted directly above the supraorbital ridges through the incision. The soft methyl methacrylate putty was molded manually through the skin from the upper margin of the supraorbital ridges to the front hair line to camouflage the ridge prominences and simultaneously augment the depressed forehead.

Results;

The mean follow-up period was 45 months (3 months to 72 months). The aesthetic appearances of all patients were much improved, nearly all patients were satisfied with the outcome, there were no complications, and no secondary corrective operations were needed.

Conclusion;

Provided that a depressed forehead also exists, an alternative method to osteotomy of prominent supraorbital ridges is contouring from the upper margin of the supraorbital ridges to the front hair line using methyl methacrylate. This is a minimally invasive procedure giving satisfactory aesthetic camouflaging of prominent supraorbital ridges.

**P-1377****AN ECTOPIC MAXILLARY INTRA-SINUS THIRD MOLAR: LE FORT I OSTEOTOMY APPROACH**

E. Massereau, L. Caquant, M. Romeu, P. Revol

Service chirurgie maxillo-faciale, CH Aix-en-Provence, Aix-en-Provence, France

Introduction

Teething is a complex phenomenon leading to a functional position of teeth within the dental arcade. There are numerous hazards associated with dental eruption, such as an ectopic tooth. An ectopic tooth occurs when the tooth eruption is adjacent to the normal site. The main problem with ectopic teeth lies in their extraction. This article presents arguments which justify the selection of an atypical route to extract an ectopic maxillary intra-sinus wisdom tooth and cyst, through a Le Fort I osteotomy (OLFI).

Case presentation

A 26 year old patient presented recurring signs of unilateral sinusitis and an intraoral posterior flow. The patient history noted the avulsion of three wisdom teeth with agenesis of the 18th tooth. The orthopantomogram showed a radiopaque image in the right maxillary sinus. The scan imagery confirmed the diagnosis of an intra-sinus wisdom tooth with a hyper-dense image in its upper posterior part. The scan also showed a hyper-dense image of cystic appearance around the tooth, surrounded by a bony septum. An OLFI procedure was performed. The post-operative course was uneventful. After six months, the patient was asymptomatic.

Discussion

The main challenge presented in the case was the choice of the exact approach. The Caldwell-Luc route would have led to a significant decay of the anterior wall of the sinus. The OLFI allowed the resection of the osseous septum, the excision of the lesion in one piece and the curettage of the sinus under visual control. The OLFI was therefore the most appropriate surgical approach.

Key words : third molar / sinus / Le Fort



12. Rhinoplasty and Otoplasty

P-48

CORRECTION OF PROMINENT EAR IN ADULT PATIENTS

S.F.POURDANESH

Shahid Beheshti university of medical sciences, Tehran, Iran

Objectives: The corrective otoplasty is the aesthetic surgery most frequently performed in childhood. Several techniques have been described for correction of this deformity. The aim of this study was to evaluate the outcome of Davis approach for correction of prominent ear in adult patients.

Methods: A total of 9 patients with prominent ears ranging in age from 19 to 30 years were consecutively enrolled in this study. Written consent was taken. Under GA by using Davis approach the prominent ears were corrected. The minimum follow-up period was 8 months. A series of standard photographs were taken pre and post operatively. The results were evaluated in terms of complications and patient satisfaction.

Results: 9 adult patients (6 male, 3 female) with prominent ears were included. 7 subjects had bilaterally cup ears and in 2 cases only one ear had deformity which was corrected by Davis approach simultaneously with rhinoplasty. We had no complications, no relapses and the results showed that the cosmetic outcome was satisfactory in all cases except in one case who was unhappy of sutured line in one side.

Conclusion: This technique was successful in 9 adult consecutive cases with up to 12 months follow up.

Key words: prominent ear. Cup ear. Davis technique, otoplasty

**P-442****RHINOSINUSAL MUCORMYCOSIS IN AN IMMUNOSUPPRESSED PATIENT**

S. Crespo¹, M. Sánchez², D. Hassan², J. Rey¹, L. Pingarrón¹, D. Martínez¹

¹ *Cirugía Oral y Maxilofacial, Fundación Jimenez Díaz, Madrid, Spain*

² *Cirugía Oral y Maxilofacial, HH.UU Virgen del Rocío, Sevilla, Spain*

INTRODUCTION

The rhinosinus mucormycosis is a serious affection caused by fungi of the order *Mucorales*, generally it develops in acute and fatal way, and it occurs in debilitated patients such as immunosuppressed patients or diabetic patients with ketoacidosis.

This is an unusual and unknown entity, which contributes to delay diagnosis and treatment. Even with early surgical and medical treatment, according to statistics, its mortality is over 70- 80%.

We must know these mentioned items because there are many patients with risk factors in the population.

CLINICAL CASE

A 42- years- old male patient with diagnosis of Acute Myeloid Leukemia (AML) is presented. He developed a necrotic lesion in the left nasal ala, fever, and nasal obstruction 24 hours after receiving the second cycle of chemotherapy. The diagnosis of rhinosinus mucormycosis was histopathologically confirmed and treatment was initiated with antifungal (liposomal amphotericin B) and large spectrum antibiotics. The treatment was accomplished with a surgical debridement of the area with a wide margin of resection. In a second time, four months later, the reconstruction of the defect, using a forehead flap, was carried out. Later, in a third surgery, the nasal ala was reconstructed with an auricular conchal cartilage graft.

RESULTS

The anatomopathological result demonstrated the existence of large areas of necrosis with thrombosed vessels and abundant hyphae. The postoperative course was favourable, demonstrating no progress or new foci of fungal infection.

CONCLUSIONS

Although rhinosinus mucormycosis remains a very serious infection, its vital prognosis has improved, mainly due to: early recognition, correction of predisposing factors and medical treatment with amphotericin B, associated with appropriate surgical debridement of devitalized areas.



P-445

SINGLE-STAGE OTOPLASTY IN CONGENITAL MICROTIA WITH SILICONE IMPLANT

T.Chkadua, L.Brusova

Federal State Institution Central Research Institute of Stomatology and Maxillofacial Surgery, Moscow, Russian Federation

Objective: Single-stage otoplasty using silicone implant in patients with congenital microtia.

Material and method. During 2004-2014 150 patients with congenital microtia underwent one-step otoplasty using silicone implant as ear framework and temporoparietal fascial flap. We studied anatomical features and characteristics of blood flow in the superficial temporal artery and its frontal and parietal branches on the affected and contralateral side. Comparative characteristics of the vessels determined viability of temporoparietal fascial flap.

Results. During follow up period, we had no complications in most patients. During the period of 14 years, we`ve lost 8 implants. 6 of them for the first 3 months postop as a result of failure of the supplying vessels of the fascial flap and 2 implant after 1 year postop as a result of trauma.

Conclusion: Thus, we believe, that despite the difference in blood flow between healthy and deformed side from 15 to 40 %, temporoparietal fascial flap can be used for single-stage otoplasty using silicone implant in patients with congenital microtia. The advantages of the silicone framework are: elasticity, strength, inertness and biocompatibility. That's why we continue to result, and it permits our patients to sleep on the reconstructed ear, without affecting its blood supply.

**P-487****SOFT TISSUE REDUCTION AND TIP STRENGTHENING IN MANAGING RHINOPLASTY CASES WITH THICK SKIN**

A. Elbarbary

Ain-Shams University, Cairo, Egypt

Introduction: Thick/sebaceous skin envelopes with excessive fibrofatty tissues are among the difficult problems encountered in the aesthetic rhinoplasty patient. It becomes further challenging when combined with ill-defined plunging nasal tips, and weak lateral crurae relative to the skin envelope.

Objectives: This work aims to emphasize the importance of incorporating soft tissue reduction & strengthening of the nasal tip in the operative steps of rhinoplasty to overcome the difficult problem of the thick skin envelope.

Methods: The usual operative sequence included an open approach with bony, septal, tip, and alar base modifications as indicated for each of the 75 patients included in this work. The two constant surgical steps included the plane of dissection & strengthening of the tip. Instead of the standard subperichondrial plane of dissection, exposure was carried out subdermally in the fibrofatty layer over the lobule then converted subperiosteally over the bone. This allows for a uniform & controlled defatting of the thick skin along with excising the soft that remain on the alar cartilages. Tip sutures & grafts were used for all patients with or without columellar struts.

Results: Based on objective & subjective evaluation, 90% of the patients were satisfied with the significant change in their nasal appearance, which still maintained balanced facial features within an average of 2-year follow-up. There were no functional complaints. The most common postoperative sequel was the prolonged oedema in the supratip/tip region.

In conclusion, there is no routine standard technique suitable for any nose & the surgery should be highly individualized. However, the results of this work demonstrate that incorporating soft tissue reduction & strengthening of the nasal tip in the operative steps of rhinoplasty are useful to overcome the difficult problem of the thick skin envelope. Strengthening of the lobular cartilage is needed for structure & definition of the tip in order to support the originally large heavy skin. Thinning of the formerly thick skin envelope will allow it to contract around the new rigid tip framework to achieve the desired aesthetic goal.

**P-780****A NOVEL METHOD FOR CORRECTION OF THE HYPOPLASTIC PIXIE EARLOBE DEFORMITY**

Euna Hwang

Department of Plastic and Reconstructive Surgery, Seongnam, South Korea

The pixie ear deformity is a condition in which the inferior edge of the helix of the ear is attached to the cheek without a convolutional notch at the ear lobule-cheek junction. Numerous surgical techniques have been proposed to correct pixie earlobe deformities. However, several of these techniques result in anterior or inferior scars of the ear lobules or dog-ear deformities. Such visible scarring detracts from the aesthetics of the ear lobule.

We report a novel method for the correction of pixie ear deformities in patients with small ear lobules. A hypoplastic ear lobule was expanded by a V-Y advancement flap designed on the posterior aspect of the ear lobule, and a dermofat graft was placed in the subcutaneous layer under the advanced flap. As a result, the pixie ear lobe deformity was camouflaged by the expanded ear lobule. Moreover, no scars appeared on the anterior or inferior sides of the ear lobule, and a natural appearance of the ear lobe was achieved.

We conclude that this method is a feasible alternative surgical option for hypoplastic pixie ear lobe deformities to avoid visible scarring in the anterior or inferior aspects of the ear lobe.



13. Salivary Glands - Minimal Invasive Surgery and Pathology

P-25

A GIANT BUCCOPALATINAL LIPOMA IN A 23-YEAR-OLD GIRL: A CASE REPORT

A.Benedetti, V.Popovski, D.Popovich, A.Kirkov, G.Panchevski, S.Bozovic, A.Iliev, P.Serafimovski

Department of Maxillofacial Surgery, Faculty of Dentistry, The Saints Cyril and Methodius University of Skopje, Skopje, Macedonia

Abstract: The majority of lipomas are slow-growing painless soft tissue benign tumours of adipose tissue and one of the most common benign neoplasms of the body. Their location in the oral cavity is very rare, accounting for 1-5% of all neoplasms. The purpose of this study is to present the diagnosis and operative treatment of a giant buccopalatinal lipoma in a 23 years old girl. The tumour was totally removed under general anaesthesia with surgical extirpation (via intraoral approach) and preservation of the nearby structures.

Introduction: Lipomas are benign, painless and in most cases asymptomatic tumours of the mesenchymal origin which are slow-growing and well-circumscribed and they are among the most common tumours of the human body. They are uncommon in the oral cavity and the occurrence of lipoma is rare, only 1-5% of all neoplasm. Sometimes when the tumour becomes large enough, dysphagia, difficulty in speech, mastication and dyspnoea are present. Surgical excision is the treatment of choice.

Case: A 23-year-old girl sought medical attention for a growth on the right retromolar and palatine area of the mouth in January, 2013, causing no pain, dysphagia or difficulty with speech. Intraoral examination revealed a soft painless mobile mass tender to palpation being clearly demarcated from normal tissue and not fixed to underlying deeper structures. The lesion was clinically diagnosed as a benign tumour arising in the buccopalatinal area.

The tumour was subsequently excised under general anaesthesia, requiring a total extirpation with an intraoral approach and preservation of the nearby structures. Macroscopically, the excised specimen was ovoid in shape and 44 × 30 × 22 mm in dimensions being yellow and soft in consistency. The patient recovered fully and the tumour was diagnosed as a lipoma.

Conclusion: Giant buccopalatinal lipomas are very rare benign soft tissue tumours in the oral cavity. Successful and nice aesthetic result with intraoral approach as a treatment of choice of total extirpation of the tumour was performed. Neither recurrence nor functional disorder like mastication and speech difficulties has been observed.



P-78

RARE SPINDLE CELL LIPOMA OF THE LIP

S. Girgis, L. Cheng, K. Piper

Oral and Maxillofacial Head, Neck Surgery, and Histopathology, Homerton University Hospital NHS Foundation Trust, London, United Kingdom

Introduction

Spindle cell lipoma (SCL) is a rare distinct variant of lipoma with only 2 cases of the lip reported in the English literature. SCL presents as painless, circumscribed slow-growing sessile and sometimes pedunculated superficial lesion on the lip which can mimic minor salivary gland tumour. We present a slow growing lower lip lesion and its management.

Case report

A 38-yr-old female gave an 8 yr history of a slow growing 6mm mass of her lower lip with intermittent change in size and bleeding during the winter months. She is generally fit with a submucosal nodule and thin overlying mucosa of the lower lip adjacent to the vermilion border. Surgical excision was carried out for histological diagnosis and cosmetic reasons. There was no postoperative complication and she had a good cosmetic outcome.

Discussion

The aetiology of SCL is unknown. The histology of this case showed a benign encapsulated tumour composed of lobules of uniform, mature adipose tissue with admixed spindle cell in a fibrous myxoid stroma. The spindle cells stain positively with CD34, but stain for S100 are negative. Surgical excision is advocated as the treatment of choice with good prognosis and no recurrence reported.

Conclusion

Lip SCL is rare and surgical excision is advocated in order to exclude underlying pathology and minor salivary gland tumour.

**P-92****DOES THE GREAT AURICULAR NERVE PREDICT THE SIZE OF THE MAINTRUNK OF THE FACIAL NERVE? A CLINICAL AND CADAVERIC STUDY.**

Serryth D Colbert, David Parry, Beverley Hale, James Davies, Peter A Brennan

Queen Alexandra Hospital, Dept of OMFS, Portsmouth, United Kingdom

Introduction/Aims – There seems to be only individual clinical experience and some anecdotal evidence about a relation between the width of the great auricular nerve (GAN) and the size of the main trunk of the facial nerve during parotidectomy. To our knowledge no anatomical studies have been published. In this cadaveric and clinical study we measured the widest point of the GAN as it crosses the sternomastoid muscle before it divides, and the main trunk of the facial nerve before it bifurcates.

Materials/Methods - Measurements were obtained from 16 patients who required formal superficial parotidectomies with identification of the facial nerve, and from 21 cadavers (16 formalin-fixed and 5 fresh frozen) where both sides were dissected. We recorded the results and the side of dissection.

Results/Statistics - The mean (SD) width of the GAN and facial nerve from all the dissections was 2.75 (0.53) mm and 2.83 (0.54) mm, respectively. There was a strong correlation between the width of the nerves from both sides (left: $r = 0.934$, $p < 0.001$; right: $r = 0.940$, $p < 0.001$). The nerves did not differ significantly in size in patients or cadavers (GAN: right, $p = 0.873$; left, $p = 0.486$; facial nerve: right, $p = 0.931$; left, $p = 0.691$).

Conclusions/Clinical Relevance – We have found that the GAN accurately predicts the width of the main trunk of the facial nerve. This is particularly useful surgically as a narrow GAN can alert the surgeon to expect a small facial nerve.



P-238

CONSIDERATIONS IN ELECTION OF SURGICAL TECHNIQUES IN BENIGN PAROTID NEOPLASMS

M.A. Sicilia Gutierrez, F. Espin Galvez, A. Garcia Carricondo, V. Garcia Perez, F.J. Quesada Bravo, Y. Herrero Basilio

ORAL AND MAXILLOFACIAL SURGERY, HOSPITAL "TORRECARDENAS", ALMERIA, Spain

Objectives

Removal of benign tumour and neoplasms of parotid gland should combine the need for surgical removal and preservation of function and facial aesthetics.

In recent years there have been significant advances in preoperative diagnosis and knowledge of natural evolution of benign parotid tumours.

Classically there are described 3 techniques: enucleation, extracapsular lumpectomy and conservative parotidectomy in its various forms.

Methods

In the last 15 years we have treated more than 300 benign parotid tumours by a group of 6 surgeons. We performed a descriptive study of casuistry, epidemiology, diagnosis, surgical treatment and follow-up.

We discuss and compare the location and histology of the lesion, the surgical technique indicated and results.

Results

We have evolved from more aggressive and extensive surgery (conservative parotidectomy) to more conservative surgery (tumourectomy, subtotal parotidectomy...) with excellent results.

Conclusions

- 1.- The conservative superficial parotidectomy is a surgical technique, not a therapeutic indication in most of cases
- 2.- We found no recurrence with lumpectomies
- 3.- The cytologic diagnosis and exactly localization is critical and determine the type of surgical technique indication.

Key-words: parotid tumour, parotidectomy, enucleation



P-248

40 CASES OF SIALOLITHIASIS TREATMENT WITH SIALOENDOSCOPIC APPROACH

K. Stammers, A. Skagers, S. Ozolina

Institute of Stomatology of Riga Stradins University, Riga, Latvia

Introduction – Sialolithiasis is the most common salivary gland disease. Sialolithiasis can occur in any of the salivary glands but appear most frequently in the submandibular gland and its duct. It is a frequent cause of salivary gland inflammation. Treatment methods variate from symptomatic to radical salivary gland removal, and is dependent on stone location, size, and disease symptoms. Therefore, endoscopic treatment of sialolithiasis is regarded as a minimally invasive etiological treatment.

Aim - to introduce with 3 year experience of sialoendoscopic surgery for sialolithiasis treatment in Latvia.

Materials and methods - All surgeries were done in the RSU Institute of Stomatology Clinic of Oral and Maxillofacial Surgery. KARL-STORZ semirigid endoscope with a total outer diameter of 1.3mm and 1.6mm were used. Clinical, x-ray and ultra sound examinations were done.

Results – From 40 cases 34 were successfully with stone removal. Patients' complaints within 6 months has not been repeated and symptoms subside. US was done 6 months postoperatively and revealed no pathological changes.

Conclusions. Endoscopic removal of salivary gland calculi is an effective and minimally invasive method for sialolithiasis treatment.



P-516

SMAS VS SCM FLAP: TWO SURGICAL TECHNIQUES IN COMPARISON

G. Micali, C. Freno, S. Crimi, B.D'Alessandro, I. Orlando, L.Catalfamo, F.S. De Ponte

UOSD Chirurgia Maxillo-Facciale, Messina, Italy

Objective: The purpose of this study is to compare the functional and esthetic results of facelift incision associated with sternocleidomastoid muscle flap (SCM) or with superficial musculoaponeurotic system flap (SMAS) in patients underwent to a subtotal or total parotidectomy for benign or malignant parotid lesions resection with facial nerve preservation.

Material and Methods: A retrospective analysis of 160 patients, treated between 2005 and 2013 and ranging in age from 26 to 76 years, was performed. The 160 patients were divided into 2 groups: parotidectomy with facelift incision associated with superficial musculoaponeurotic system flap (group 1) and parotidectomy with facelift incision associated with sternocleidomastoid muscle flap (group 2). Each patient passed to a postoperative follow-up of 12 months, at least. Facial nerve dysfunction, Frey's syndrome, salivary fistula, cosmetic deformity and recurrence are the main complications associated with this surgery and considered in every group during the follow-up.

Results: The statistical analysis, comparing both groups (the group 1 vs group 2), not revealed statistically significant differences. During the follow-up period, no recurrence developed in any of the groups.

Conclusion: Both techniques are aesthetically pleasant and efficacious to prevent of complications. So the choice of the surgical method could be surgeon-dependent.

**P-562****SALIWELL, AN ELECTRONIC INTRAORAL DEVICE TO TREAT XEROSTOMÍA: A LONG-TERM STUDY.**

E. Varela Reyes, R. Martin-Granizo, A. Encinas Bascones, O. De la Sen Corcuera, I. Martínez Padilla, A. Berguer

Oral and Maxillofacial Surgery Department., Hospital Clinico San Carlos., Madrid., Spain

Background: Xerostomia is the symptom of dry mouth. This symptom is frequently associated with difficulties in chewing, swallowing, phonation and may expose patients to an increased risk of dental caries, periodontal disease and other oral infections. It is a feature of Sjögren's syndrome, but there are many other causes such as taking drugs, radiotherapy or chemotherapy. It affects approximately 30 million Europeans, being three times as common in women than in men. The classic treatment include local measures or systemic sialogogues, however these drugs often have side effects.

Objectives: The aim of this study was to evaluate the efficacy of intraoral electrostimulation device and its safety exploiting the existence of the salivary reflex by stimulating it electrically rather than pharmacologically.

Materials and Methods: The intraoral electrostimulation contains an electronic circuit, a receiver of remote control signals, a pair of stimulating electrodes and two batteries. It fits to the mandibular dental arch. This prospective randomized crossover trial was divided into 2 stages. Patients were recruited from 14 institutions in 13 countries. The first stage aimed to determine whether electrostimulation has an additive effect on mechanical stimulation achieved by the device's foreign body effect in the mouth. In the second stage the aim was to assess the long-term effects of the device on xerostomia parameters.

Results: In stage I the active intervention was superior to sham in dryness severity ($P < 0.002$), also performed better than sham in dryness frequency ($P < 0.05$) and swallowing difficulty ($P < 0.02$). No statistical significance was detected between the active and sham interventions for the parameters oral discomfort, sleeping difficulty, resting salivary flow rate, and stimulated salivary flow rate. From baseline until the end of stage II all parameters improved in the active intervention group, except for quality of life, swallowing difficulty, and stimulated salivary flow rate. The dryness severity ($P < 0.0001$), dryness frequency ($P < 0.0001$), oral discomfort ($P < 0.001$) and resting salivary flow rate ($P < 0.01$), all improved.

Conclusions: Electrostimulation appears to be an efficient method for improving dry mouth symptoms, increasing salivary flow-rate, effective in patients with 0 flow-rate and devoid of side effects with a correct tolerance.



P-651

COMPLETE AGENESIS OF MAJOR SALIVARY GLANDS AND ABSENCE OF BILATERAL LACRIMAL PUNCTA: A CASE REPORT AND REVIEW OF THE LITERATURE

B. Patiño Seijas, R. Luaces Rey, J. Collado López, V. Chávez Bonilla, N. Carral Roura, J.L. López-Cedrún

Oral and Maxillofacial Surgery, CHUAC (Complejo Hospitalario Universitario de A Coruña), A Coruña, Spain

Objectives:

Dentists, general practitioners and maxillofacial surgeons should be aware that salivary gland aplasia is an uncommon cause of dental deterioration. It may manifest itself not by extensive caries but as dental chipping effect. Early recognition and a therapeutic strategy can prevent further dental damage.

Methods:

We report the case of a 40-year-old man with decreased saliva volume, impaired dental condition with extensive loss of tooth structure, and an astonishing pattern of dental destruction. Ultrasonography, contrast enhanced computed tomography, and salivary gland scintigraphy diagnosis of congenital absence of major salivary glands was made.

Discussion:

Congenital agenesis of the salivary glands is an extremely rare congenital condition, which may cause severe xerostomia, progressive dental caries, and oropharyngeal candidiasis in children. To date, there have been few documented cases of aplasia of the major salivary glands. Congenital agenesis of the salivary glands accompanied by absence of the lacrimal puncta is even more rare. The anomaly can be total or partial, unilateral or bilateral, and involve the parotid, submandibular, and sublingual glands. The resultant xerostomia leads to extensive dental demineralization.

Conclusions:

Agenesis of major salivary glands is rare and requires the multidisciplinary collaboration of maxillofacial surgeons, radiologists, dentists, and geneticists. The aim should be to provide appropriate symptomatic treatment and to detect familial, isolated, and partial forms. Early recognition and a therapeutic strategy can prevent further dental damage.

**P-679****BASKET RETRIEVAL OF SIALOLITHS IN PAEDIATRIC PATIENTS.**

N. Huxham, R. Pawar, J. Makdissi, L. Cheng

Departments of Oral, Maxillofacial, Head & Neck Surgery, and Maxillofacial Radiology, St Bartholomew's, the Royal London and Homerton University Hospitals, London, UK

Objective:

The treatment of submandibular sialoliths are well documented. Non invasive treatments have come a long way in preventing removal of the submandibular gland and has made a marked improvement in patient morbidity. Current minimally invasive methods include lithotripsy, sialendoscopy and basket retrieval. The shortcomings of lithotripsy and sialendoscopy are well known, leaving larger stones untreatable by these methods and leaving the clinician with only basket retrieval as an alternative. The vast majority of basket retrievals are done in adult patients, with only a few documented cases of basket retrievals in paediatric patients.

Method:

We present two cases of submandibular stone removal using x-ray guided basket retrieval, in patients under the age of 14.

Results:

Case one: A thirteen year old Sri Lankan born female, presented with a 2 year history of meal time syndrome and a large tender left submandibular region. Bimanual palpation revealed a possible stone in the Wharton's duct. Sialography demonstrated a large sialolith located near the opening of the left Wharton's duct.

Case two: A twelve year old U.K. born Arabic male, presented with a 3 year history of a firm nodule in the distal part of ventral tongue. Sialography demonstrated a large sialolith in the distal aspect of Wharton's duct.

Both these cases were treated successfully by means of x-ray guided basket retrieval with minimal postoperative discomfort and same day discharge from hospital.

Conclusion:

Although this treatment has been shown to be effective in adults, these cases demonstrate that basket retrieval can be used effectively in selective paediatric cases for the removal of large sialoliths.

**P-847****SIALOLITHOTRIPSY IN THE TREATMENT OF SALIVARY STONE DISEASE**

M. Abdusalamov, V. Afanasyev, I. Gamataev

Moscow State University of Medicine and Dentistry, Moscow, Russian Federation

Introduction. Among the non-neoplastic diseases of the salivary glands up to 78% of patients have salivary stone disease. Treatment of patients with this pathology in most cases is to remove the gland which contains the stone, although the removal of the salivary gland can cause complications, both local and general.

Materials and methods. Method of shockwave sialolithotripsy was used in 123 patients, 10 of whom had a stone located in the parotid gland and 113 - in the mandibular gland. Machines as lithotripters Modulith SLX (Switzerland), Edap (France), Wolf (Germany), Modulith SLK (Switzerland) were used. The pressure in the shock wave focus was on average 40 MPa (40% reserve capacity unit). Overall average 4-5 sessions required for crushing one stone. To 18 patients prior to the sessions of crushing gland's stones we were injecting saline (9% NaCl solution) into the duct until patient felt light fullness. The crushings were performed using a catheter in the duct.

Results. 49 patients (40%) lithotripsy has achieved "recovery" (the full removal of the calculus, the absence of clinical symptoms of the disease in the dynamics of monitoring and recovery of function of the salivary glands). In 62 patients (50%), we noted "improvement" (calculus crushed and partially released, but later found in the dynamics of long-term remission). Only 12 patients (10%) showed no change after crushing (stone did not crush or did not come out).

The results of this treatment of patients with partial removal of fragments of salivary stone (111 patients - 90%) we regarded as positive, since they restored outflow secretion and there were no complications.

The time needed to shock-wave focus on the stone without saline injection averaged 4.5 minutes. Our 18 patients who received this injection before crushing needed only 1.5 minutes and all of them showed the full stones' removal.

Conclusions. Sialolithotripsy is safe, very effective and alternative treatment of salivary stone disease. We improved methods of crushing stones with saline's injection into the gland, which helped not only reduce the time guidance shock wave focus on the stone but promoted the complete stone's destruction.

**P-896****DEMENTIA AND SICCA SYNDROME IN A PATIENT WITH HEPATITIS C INFECTION**

P. Nicol¹, R. H. Khonsari¹, S. Maylin², M. Martinot-Peignoux³, A. Créange⁴, P. Goudot¹, C. Duyckaerts⁵

¹ *Service de chirurgie maxillofaciale et stomatologie, Hôpital de la Pitié-Salpêtrière & Université Pierre-et-Marie-Curie Paris 6, Paris, France*

² *Service de microbiologie, Hôpital Beaujon, Clichy, France*

³ *INSERM U-773, Centre de recherche biomédicale Bichat-Beaujon CRB3, Université Paris 7, Clichy, France*

⁴ *Service de neurologie, Hôpital Henri-Mondor, Créteil, France*

⁵ *Service de neuropathologie Raymond-Escourolle, Hôpital de la Pitié-Salpêtrière & Université Pierre-et-Marie-Curie Paris 6, Paris, France*

Aims/Objectives

We report the postmortem case of a 65-years old patient initially presenting with dementia and sicca syndrome. We described the specific lesions due to HCV in the salivary glands and the central nervous system. The neuropathological description of hepatitis C infection has not been reported to date.

Material and methods

A 60-years old man developed amnesia and frontal behavioural problems associated with an oral sicca syndrome two years before his admission. Primitive Sjögren syndrome was initially diagnosed but the patient did not respond to immunomodulatory treatment. The patient died from evolutive neurological lesions. Transcription mediated amplification (TMA) adapted to RNA extracted from soft tissues was used to screen the presence of HCV in the salivary glands and the brain. Standard histological examination and targeted immunohistochemistry were used to characterize the brain lesions due to HCV.

Results

Postmortem visceral examination disclosed active hepatitis without fibrosis in the liver. Pericanalar CD20+ inflammatory infiltrates were found in the submandibular glands. The brain white matter contained multiple disseminated, well-delimited, millimeter-sized demyelination foci containing macrophages filled with luxophil material. HCV RNA from frozen samples was extracted from the frontal cortex, the subcortical frontal white matter, the submandibular glands and cervical lymph nodes. HCV RNA presence was confirmed by TMA in the frontal cerebral cortex, the submandibular glands and the cervical lymph nodes.

Discussion and conclusion

Chronic hepatitis C infection is known to be associated with oral sicca syndrome via HCV-induced sialitis. We have applied TMA to salivary and brain tissue and confirm that this method can be efficient for virus identification in tissues. The localized demyelination foci we report could be the specific lesions due to the presence of HCV in the brain and could be related to a specific toxicity of the virus for the oligodendrocytes.



P-926

VALIDATING ULTRASOUND AS A SINGLE MODALITY ASSESSMENT FOR PAROTID LUMPS.

N. Hendrix, P. Almela, P. Drury, T. De Vries, S. Morley, T. Beale, C. Liew

Head and Neck Oncology, University College London Hospital, London, United Kingdom

Objective: Ultrasound imaging has been recognized as a non-invasive, reproducible method for assessing the major salivary glands (1). The aim of this study was to investigate the usefulness of preoperative ultrasound diagnosis of parotid gland masses in predicting histopathology findings of parotidectomy specimens.

Methods: Literature search was performed to establish guidelines in the use of ultrasound imaging for assessing a parotid mass before surgery. Data of 58 patients from a Head and Neck Oncology department with parotid gland masses scheduled for surgery were reviewed retrospectively and the presumed sonographic diagnoses were compared with the histopathology. Data was collected from 2012 to 2014.

Results: 52% of cases had no documented diagnosis in the ultrasound report. Of those scans with a given, ultrasound diagnosis, 93% were correctly predicted. Only 2 cases revealed no similarity between ultrasound and histopathology diagnosis. 2 out of the 3 specialist head and neck radiologists were consistent and predicted a correct diagnosis in 100% of the cases

Conclusion: Preoperative ultrasound imaging of parotid gland masses is useful in establishing diagnoses. It is also useful in differentiating between benign and malignant parotid masses and further imaging and management. Factors such as operator experience are significant factors.

Literature

Correlation between ultrasound imaging of major salivary glands and histopathological findings of labial gland biopsy samples in Sjogren's syndrome. The lancet. Volume 381, Supplement 1, 27 February 2013.

**P-1002****A NOVEL CLINICAL ENTITY, IGG4-RELATED DISEASE (IGG4RD): MAXILLOFACIAL IMPLICATION.**

G.García-Serrano, P.De Leyva, K.Sagüillo, F.Pérez-Flecha, D.Villegas, I.Page, R.Carrillo, F.Almeida, M.Picón, J.Acero

Oral and maxillofacial Surgery, Ramón y Cajal University Hospital, Madrid, Spain

INTRODUCTION

IgG4-related disease (IgG4RD) is a novel clinical entity, with unknown etiology and it is characterized by elevated serum IgG4 concentration and tumefaction or tissue infiltration by IgG4-positive plasma cells.

Some authors support that IgG4RD may have a role in the physiopathology of a wide variety of diseases including autoimmune pancreatitis, hypophysitis, Riedel thyroiditis, interstitial pneumonitis, interstitial nephritis, prostatitis, lymphadenopathy, retroperitoneal fibrosis, inflammatory aortic aneurysm, and inflammatory pseudotumour.

The implication of IgG4RD in the maxillofacial area consist in the reduction or disappearance of the secretory activity of the salivary and lagrimal glands. This entity used to be called Mikulicz syndrome and it's was clasically included into the Sjögren syndrome, nevertheless the last studies had noticed important differences between the two of them and suggest to be separated histopathologic entities.

PATIENT AND METHOD

We present four cases of submandibular gland enlargement produced by the infiltration of IgG4-positive plasma cells.

The patients, three males and one female without any relevant medical history, consulted for bilateral or unilateral enlargement of submandibular glands not associated with xerostomia. In all cases the physical exam showed hard submandibular glands not adhered to the deep tissues. We decided surgical submaxillectomy, associated to the removal of some regional adenopathies with reactive aspect in two of the cases.

The histopathologic study showed sclerosing sialadenitis containing IgG4-positive plasma cells, and the immunohistochemical study confirmed the diagnosis of IgG4RD.

After these results a complete body study with body-TAC and physical exam was done without any other pathological findings.

DISCUSSION

IgG4-related disease (IgG4RD) is a clinical entity recently described. In the maxillofacial area the main clinical implication consist in enlargement and the reduction of the secretory activity of the salivary and lagrimal glands. It's important to know all the systemic diseases related with IgG4RD in order to extend the study to the rest of the anatomy and the internal organs.



P-1028

TRANSCERVICAL-TRANSMANDIBULAR APPROACH IN SURGICAL TREATMENT OF PARAPHARYNGEAL SPACE TUMOURS – INCIDENCE OF COMPLICATIONS AND IMPACT ON QUALITY OF LIFE

Z. Pesic, D. Petrovic, D. Krasic, N. Buric

Department of Maxillofacial Surgery, Medicine Faculty, University of Nis, Nis, Serbia

Development of endoscopic and robotic technics in treatment of tumours of parapharyngeal space by transoral access questioned importance of transcervical-transmandibular approach in surgical treatment of parapharyngeal space tumours.

The aim of this study is to determinate incidence of use, relation to tumour size and type, incidence of complication and impact on quality of life in patients with tumours of parapharyngeal space treated in period 2005 to 2012. on Department of Maxillofacial Surgery, Medicine Faculty, University of Nis, Serbia, by transcervical-transmandibular approach.

By retrospective clinical investigation we analyze incidence of use, relation to tumour size and type and incidence of complication during and after performing a transcervical-transmandibular approach in surgical treatment of parapharyngeal space tumours. Quality of life was measured by University of Washington Quality of Life Questionnaire.

From 21 cases of PPS tumours treated, 9 cases (43%) were treated by transcervical-transmandibular approach. Preoperative diagnostic procedures show that in 5 cases tumours were bigger of 4 cm. Incidence of complication: neurological deficit was present in 22 % of treated patient, infection in 11% as well as hypertrophic scar formation 11%. University of Washington Quality of Life Questionnaire show low results for saliva and swallowing only in patients who had malignant tumours and consecutive radiotherapy.

In cases of big and malignant tumours of parapharyngeal space, transcervical-transmandibular approach is effective because of good exposure of important anatomical elements. Rate of complication is appropriate to literature data and results from quality of life questionnaire in benign cases show high scores.

Beside development of new technics and accesses, in surgical treatment of parapharyngeal space tumours, transcervical-transmandibular approach still presents one of actual and important way to tumour eradication with good exposure of important anatomical elements.

**P-1041****A CLINICAL AND MORPHOLOGICAL REVIEW OF 63 PATIENTS WITH CLINICAL DIAGNOSIS OF SJÖGREN'S SYNDROME.**

M. Rączkiewicz¹, M. Panaś¹, M. Zaleska¹, T. Kaczmarzyk¹, K. Kisielowski¹, D. Adamek², M. Hejnold²

¹ *Department of Oral Surgery, Jagiellonian University Medical College, Kraków, Poland*

² *Department of Pathology, Jagiellonian University Medical College, Kraków, Poland*

Sjögren's syndrome (SS) manifesting as a dryness of mucosal surfaces is a chronic autoimmune disorder with second frequency of occurrence after rheumatoid arthritis. It concerns particularly women in their 4th and 5th decade of life. Chronic inflammation leading to a failure of exocrine glands (especially lacrimal and salivary) appears as a consequence of autoimmune process. The diagnosis of SS is difficult and complex due to lack of specific tests and manifestation of typical symptoms not until the late stages of the disease.

The aim of a study is a clinical-morphological analysis of 63 cases of patients diagnosed with Sjögren's syndrome in the Department of Oral Surgery at the Medical College of the Jagiellonian University between 2012 and 2013. Fifty four women and 9 men, aged 25 to 74 (average 53,6) entered the study. Patients were referred by rheumatologists and immunologists for minor salivary glands biopsy (MSGB), which is one of the SS diagnostic criteria established by American-European Consensus Group (AECG) (2002).

The examination of specimens was performed using "Focus Score" (FS) Pathologic Grading System for the SS proposed by Greenspan et al. A focus is defined as an infiltrate of 50 or more lymphocytes per 4mm² of glandular tissue. Depending on AECG criteria, a focus score 1 or greater confirms SS diagnosis when other required symptoms are positive.

In presented series, histological evaluation of labial MSGB showed FS ≥ 1 in 44 cases (39 women and 5 men). In 19 cases FS was less than 1.

Minor salivary glands biopsy has a significant role in diagnosis of SS. Patients diagnosed with SS require frequent dental follow-up due to higher risk of caries and mouth candidiasis. They also need salivary and lacrimal substitutes. Oncological vigilance is mandatory because of the significantly increased risk of development of lymphoepithelial malignancies especially B-cell non-Hodgkin lymphoma.



P-1101

NEWPORT THROUGH THE KEYHOLE

E. Brown, A. Earle, O. Bevan

Royal Gwent Hospital, Newport, United Kingdom

Endoscopically assisted surgery has rapidly developed over recent years. The use of the endoscope allows surgery to be minimally invasive. This has many advantages for patients including quicker and better healing. In particular, it allows visualisation of areas that would normally require large incisions to be made, therefore reducing perioperative complications and minimising the risk of nerve damage.

We present four different cases of the use of the endoscope within the Oral and Maxillofacial Department at the Royal Gwent Hospital in Newport, Wales. This includes endoscopically assisted open reduction internal fixation of a fractured condyle, endoscopically assisted repair of an orbital floor fracture, sialoendoscopy, and removal of a frontal bone osteoma. We aim to describe the surgical technique, and highlight the benefits and difficulties we have encountered.



P-1143

PAROTID TUMOURS: PATTERN AND VALUE OF FNAC

D. Garcia Molina, J.L. Cebrián, T. Gonzalez, M.J. Morán, B. Apellaniz, M. Burgueño

Servicio de Cirugía Oral y Maxilofacial, Hospital Universitario La Paz, Madrid, Spain

INTRODUCTION: Parotid tumours have been reported worldwide, however we don't have recent Spanish data. Fine needle aspiration cytology (FNAC) is commonly used in the study of parotid masses but its accuracy varies among centres. The objectives of this study are describe the pattern of parotid tumours at our institution and evaluate the effectiveness of FNAC as a preoperative diagnostic tool of parotid tumours.

MATERIAL AND METHODS: We conducted a retrospective study of the medical records of 146 patients who underwent FNAC of primary parotid tumours and subsequent surgical treatment between January 2008 and December 2013 at Hospital Universitario La Paz, Madrid.

RESULTS: Benign lesions were more frequent (91%). The most common tumour was pleomorphic adenoma (65, 44'5%), followed by Whartin's tumour (36, 24'65%), Lipoma (9, 6'1%) and Basal cell adenoma (8, 5'4%). The most common malign tumour was acinic cell carcinoma (5, 3'4%) followed by Squamous cell carcinoma (3, 2%) and one case of the following tumours: adenoid cystic carcinoma, undifferentiated carcinoma, lymphoepithelial carcinoma, mucoepidermoid carcinoma and carcima ex pleomorph adenoma. The sensitivity, specificity, positive predictive value, negative predictive value and accuracy of FNAC for malignancy were 80%, 100%, 3'22%, 96% and 96'12%, respectively.

CONCLUSION: As reported in other studies, parotid benign tumours are more frequent than malignant tumours, being the pleomorphic adenoma the most common in all series. FNAC, with high sensitivity and specificity, can be very useful in the preoperative assessment of parotid tumours and surgical planning.



P-1152

MULTIFOCAL SYNCHRONOUS BILATERAL TUMOURS OF THE PAROTID GLANDS: A REPORT OF AN UNUSUAL CASE

P. Serafimoski, V. Popovski, S. Idoska, R. Pecanovski

University Clinic for Maxillofacial Surgery, University Clinic for Maxillofacial Surgery, Skopje, Macedonia

Objective: Warthin's tumour is a benign adenoma in the parotid gland, but extraparotid and synchronous bilateral Warthin's tumours may occur. Primary bilateral tumours of the parotid glands are also very rare. They may occur unilaterally or bilaterally, synchronously or metachronously. Whartin's tumour is mostly find in bilateral parotid gland tumours.

Material and Methods: The authors present an unusual case of 60 years old man with bilateral, multifocal Whartin's tumour of the parotid glands undergone surgery at the University Clinic for Maxillofacial Surgery in Skopje. The tumours have appeared synchronously two years before the diagnosis was done. We performed bilateral superficial partial parotidectomy with removal of the tumours.

Results: Complete diagnostic work-up was performed and operative procedures were performed simultaneously. Tumours in the superficial lobe were resected with partial parotidectomy with preservation od the facial nerve billateraly. No complication were observed posoperatively and after 6 years there is no evidence of recurrence.

Discussion and Conclusion: The multifocal, synchronous bilateral Whartin's tumours of the parotid glands are very rare. Minimal invasive surgery procedures with tumour excision is the method of choice. The recurrence rate is very low.



P-1158

PRIMARY TUBERCULOSIS OF THE PAROTID GLAND: A CASE REPORT

D Kamal, A Oufkir, MN El Alami

ENT, Maxillo-facial, Reconstructive and Plastic Surgery Department, Sidi Mohammed Ben Abdellah University, Fez, Morocco

Objectives. – To report on a case of primary tuberculosis of the parotid gland in a 21-year-old female, and to stress the corresponding diagnostic pitfalls.

Case report. – A 21-year-old female presented with an isolated mass of the right parotid area. Radiological findings were in favour of a cystic lesion. Bacteriological and histopathological examinations were realized after spontaneous fistulization of the mass, and allowed the diagnosis of tuberculosis of the parotid gland. Evolution was favourable under antituberculous chemotherapy.

Discussion. – Tuberculosis of the parotid gland is a rare clinical entity. Diagnosis is difficult because there are no specific clinical, radiological or biological signs of the disease. Only bacteriological and histopathological findings can confirm the diagnosis. Treatment is based on antituberculous drugs and allows usually a favourable evolution.

**P-1171****A CLINICAL STUDY ON 74 CASES OF SALIVARY GLAND CARCINOMA**

K. Tanaka^{1, 2}, T. Taguchi¹, H. Mochizuki¹, H. Tomioka¹, H. Shimamoto¹, M. Ikuta¹, H. Harada¹, C. Bertolus², P. Goudot², K. Omura¹

¹ Dept. of Oral and Maxillofacial Surgery, Tokyo Medical and Dental University, Tokyo, Japan

² Dept. of Oral and Maxillofacial Surgery, Pitié-Salpêtrière Hospital, Paris, France

We analyzed clinical features of 74 patients (42 male, 32 female) with salivary gland carcinomas treated at our department, Tokyo Medical and Dental University Hospital, Japan, from April 2001 to March 2013. Median age was 61.0 years (range 11 - 84 years). These cases consisted of 19 major salivary gland carcinomas and 55 minor salivary gland carcinomas. The sites of major salivary gland carcinomas were composed of 9 cases of parotid gland, 7 cases of submandibular gland, and 3 cases of sublingual gland. Among the minor salivary gland carcinomas, the buccal mucosa was the most common site accounting for 16 cases, followed by the hard palate with 11 cases. Histologically, mucoepidermoid carcinoma (MEC) was the most common disease (n=27), followed by adenoid cystic carcinoma (ACC) (n=25), polymorphous low-grade adenocarcinoma (n=6), and carcinoma ex pleomorphic adenoma (n=4).

Sixty-nine patients underwent radical surgery and 5 patients received irradiation as the initial treatment. Local recurrence developed in 4 cases of MEC, 4 cases of ACC, and each case of adenocarcinoma, NOS, epithelial myoepithelial carcinoma and basal cell adenocarcinoma. Among these 11 local recurrence cases, 4 cases were salvaged by additional surgery. Neck failure following neck dissection performed on 24 cases occurred in 2 cases of MEC and 1 case of salivary duct carcinoma, and 1 case of MEC was salvaged by additional surgery. Lung metastasis without locoregional disease occurred in 6 cases of ACC, and each case of MEC and carcinoma ex pleomorphic adenoma, resulting in death in 6 cases. Five years and 10 years disease-specific survival rates of all 74 cases were 89.0% and 73.4%, of 31 cases with low-malignant carcinoma were 100% and 100%, of 25 cases with intermediate-malignant carcinoma were 89.1% and 68.8%, and of 18 cases with high-malignant carcinoma were 70.3% and 44.7%.

These results suggest that we should decide the extent of resection and the postoperative adjuvant therapy depending on the histological type and the grade of malignancy. Additionally, the treatment modality should be developed for lung metastasis, especially in ACC.

**P-1180****GIANT SIALOLITHS OF SUBMANDIBULAR GLAND: REPORT OF 17 CASES.**

S. Lehtman, D. Sirbu

Cathedra of Oro-Maxillo Facial Surgery and oral implantology "Arsenie Gutan", State University of Medicine and Pharmacy "Nicolae Testemitanu", Chisinau, Moldova

Introduction: Sialolithiasis is one of the most common diseases of the salivary glands in middle-aged patients and approximately 80% of all reported cases of sialoliths occur in the submandibular gland. Giant sialoliths (≥ 15 mm in any one dimension) are extremely rare and only case reports were published. This report describes a single-center experience in the management of giant sialoliths.

Materials & Methods: Retrospective review of medical records, including demographic data, clinical presentation and exam, radiologic studies, and operative reports of 17 cases of giant sialoliths of submandibular gland in our institution.

Results: The mean age was 42.8 ± 2.9 years (95% CI: 36.47–49.03). 16 men and one woman (94.1% vs. 5.9%, $p < 0.0001$). The diagnosis was confirmed by clinical investigation, ultrasound examination and X-ray study (panoramic radiograph). Giant stone located only in the left submandibular gland: Wharton's duct ($n=6$), proximal portion of the duct or hilum ($n=2$) and salivary gland parenchyma ($n=9$). The solitary salivary stones had a mean diameter: max size – 22.1 ± 2.6 mm (from 15 to 50 mm) and min size – 10.8 ± 0.8 mm (from 5 to 20 mm). The giant sialoliths were removed surgically: via intraoral approach for palpable stone in the floor of the mouth ($n=6$) and submandibular gland extirpation ($n=11$). There were no neurological post-operative sequelae in the group. No recurrence was recorded in any of the cases on follow-up.

Conclusion: Giant calculi of submandibular salivary gland are most commonly diagnosed in middle-aged male patients. Ultrasound examination is useful method for accurate preoperative estimation of stone size, regardless of stone location. For giant sialoliths, endooral sialolithotomy or sialadenectomy remains the mainstay of management.



P-1202

GIANT PLEOMORPHIC ADENOMA OF THE UPPER LIP: A CASE REPORT

I. Pinto, T. Neto, M. Capelo, T. Burnay, L. Coelho, R. Balhau, D. Monteiro, A. Silva

Maxillofacial Unit of Plastic and Maxillofacial Department, Hospital São João, Porto, Portugal

Objective: Pleomorphic adenoma is the most common salivary glands' neoplasm. Most frequently it arises in parotid gland and minor salivary glands' pleomorphic adenomas only account for 10% of these tumours. The lip is a relatively uncommon place. We present a giant pleomorphic adenoma case report for its rarity.

Methods: We describe a case of a bedridden 72-year-old man with a huge mass of the upper lip with years of evolution that caused problems with daily personal hygiene and feeding. Surgical resection was successfully performed under general anaesthesia. The specimen dimensions were 4,5x4,7x4,2cm.

Results: Surgical healing was complete 2 weeks post-op and no relapse was detected after 1 year.

Conclusions: Pleomorphic adenoma is a benign tumour. However since there is a possibility of malignant transformation, complete excision is the usual treatment.



P-1203

EPIDERMOID CYST OF THE PAROTID GLAND: A RARE ENTITY

I. Pinto, T. Neto, M. Capelo, T. Burnay, L. Coelho, R. Balhau, D. Monteiro, Á. Silva

Maxillofacial Unit of Plastic and Maxillofacial Department, Hospital São João, Porto, Portugal

Objective: We report a case of a young woman with an epidermoid cyst of the parotid gland which is a rare pathology.

Methods: A 20-year-old woman with a painless mass of the right preauricular area with 4-5 months of evolution came in for a consultation. She didn't have past history of ear surgery or local trauma. Ultrasonography showed a hypoechoic nodule. Magnetic resonance imaging confirmed a well limited mass within the superficial lobe of the parotid gland with cystic content. Fine-needle aspiration suggested the diagnosis of epidermoid cyst or branchial cyst.

Results: Superficial parotidectomy was performed and histology confirmed the diagnosis of epidermoid cyst.

Conclusions: Epidermoid cysts of the parotid gland are rare entities. However they must be considered as a differential diagnosis in cases of a painless and soft consistency enlargement of the parotid gland associated with pertinent radiologic examinations suggesting a mass with cystic component.

**P-1223****PAROTID GLAND TUMOUR - RARE MANIFESTATION OF IGG4 RELATED DISEASE**S.Andrejko¹, M.Švajdler²¹ Dept.Stomatology and Maxillo-Facial Surgery, Louis Pasteur University Hospital, Košice, Slovakia² Department Pathology, Louis Pasteur University Hospital, Košice, Slovakia**BACKGROUND:**

IgG4-related disease (IgG4-RD) is relatively new and expanding group of diseases with an unknown etiopathogenesis often mimicking tumourous changes. Characteristic serum IgG4 elevation and IgG4

positive plasmocytes presence in affected tissues are considerably non-specific. Universal and acceptable criteria for IgG4-RD diagnose have not existed till recently. Pathological and clinical diagnostic criteria used in different studies from different countries were significantly different.

A new system in acceptance of IgG4-RD could bring an uniform nomenclature, clinical and pathological criteria. Diagnosis is based on a combination of clinical symptoms and medical imaging examinations, serology, biopsy. It is important to underline, that none of these examinations alone is sensitive and specific enough for the clear diagnosis. Crucial is to exclude the malignant process.

CASE REPORT:

Authors present a 44-year-old man with a 3-month history of a tumour on the left parotid region resulting in trismus.. Palpation showed a solid resistance in a parotid gland. Magnetic resonance showed a tumourous process in parotid gland with reduced left parapharyngeal space and infiltrating a left masseter muscle.. Lesion size was 39 x 22 mm. After two weeks a CT scan revealed the progression of the lesion – 50 x 35 mm. The frozen perioperative biopsy revealed an inflammatory pseudotumour of the parotid gland without tumourous changes. In spite of a rare and atypical location the IgG4-RD was suspected and radical operation was not performed. Definitively the diagnosis was confirmed by the definitive biopsy, immunohistochemistry and immunological examination of the patient. After corticosteroid therapy gradually the pseudotumour was withdrawn.

CONCLUSION:

Authors emphasize a necessity of multidisciplinary approach in IgG4-RD diagnostic and therapeutic process. When the parotid gland is affected, it is important not to indicate the radical surgical treatment, because the risk of the damage of a facial nerve is very high and corticosteroid therapy is effective enough. Therapeutic success of used corticosteroids also verifies the accuracy of diagnosis.

But it is necessary to underline that the use of corticosteroids alone in the differential diagnosis is inappropriate, because in the case of malignant process there is a high risk of clinical deterioration.



P-1233

A CASE OF SALIVARY DUCT CARCINOMA ARISING IN THE PAROTID GLAND

Y.Katsumata, A.Takeyama, T.Fukawa, M.Sasaki, F.Tanaka, K.Hashimoto, T.Ikebe, S.Ozeki

Department of Oral and Maxillofacial Surgery, Fukuoka Dental College, Fukuoka, Japan

Introduction

Salivary duct carcinoma, which is comparatively rare, arises occasionally in the parotid gland. Clinically, it is reported to have a high malignancy showing the high rate of recurrence and poor 5-year survival rate. The aim of this presentation is to report a case of salivary duct carcinoma and discuss about postoperative follow-up for it.

Case report

A 66-year-old woman was referred to our department complaining of a mass in the left parotid gland. The mass was movable and elastic hard beneath the normal skin. MRI demonstrated a mass with a well-circumscribed round shape and heterogeneous appearance. The lesion was suspected to be a salivary duct carcinoma, however we could not distinguish the benign from the malignancy. Therefore the partial resection of parotid gland including surrounding tissues was performed under general anesthesia. Histologically, the tumour was diagnosed to be a salivary duct carcinoma. Because of being negative malignant and/or dysplasia cells at the surgical margin of the tumour, we decided to carry out the postoperative follow-up strictly. But, 4 months after surgery, MRI showed 2 masses in the left residual parotid gland and an enlarged lymph node in the left cervical region. Hence, the radical resection of the left parotid gland, the left radical neck dissection and immediate reconstruction with a pedicled flap using sternocleidomastoid muscle were performed. Moreover the postoperative chemoradiotherapy with DTX+CDDP+5-FU were undergone as an adjuvant therapy. During 12 months follow-up, the metastasis and/or recurrence is not seen.

Discussion

It is important to resect malignant tumours completely in a primary surgery if the tumour is correctly diagnosed as malignant before surgery. However, salivary gland tumour is difficult to be diagnosed only with examination including CT, MRI and so on. Although fine needle biopsy is one of the methods to diagnose before surgery, it is afraid that it disseminates tumour cells. Therefore, we have to consider a therapeutic strategy in cooperation with radiologists and pathologists before deterring surgery.



P-1346

A CASE OF IGG4-RELATED DISEASE PRESENTED AS SUBMANDIBULAR GLAND TUMOUR

M. Melero, F. Cuesta, A. Morla, C. Arranz Obispo, A. Mari Roig, S. Cusco Albors, E. Arguero , B. Moralejo

Oral and Maxillofacial Surgery Department, Hospital Universitario de Bellvitge, Hospitalet de Llobregat, Barcelona, Spain

Objective: IgG4-related systemic disease (IgG4-RSD) is a recently recognized fibro inflammatory condition, characterized by a tissue infiltration and/or enlargement and typical histopathological findings.

METHODS AND RESULTS: We report on a 75-year-old male with submandibular gland tumour without history of any systemic disease. CT-scan imaging showed a solid lesion of the salivary gland without cervical lymph node that was a presumptive diagnosis of mixed tumour. Elevated serum IgG4 levels and histopathological findings were consistent with IgG4-RSD.



14. Temporomandibular Joint Pathology and Surgery

P-19

DETECTING TUMOUR NECROSIS FACTOR AND EFFICACY OF ARTHROCENTESIS WITH INJECTING SODIUM HYALURONATE OR COX-2 INHIBITOR IN TREATING TEMPOROMANDIBULAR INTERNAL DERANGEMENTS

W.Talaat¹, A.El SWIFY¹, M.Hamed¹, H.Mourad^{1, 2, 2}, M.Rafeik^{1, 3}

¹Oral&Maxillofacial Surgery, Faculty of Dentistry, Suez Canal University, Ismailia, Egypt

²Radiology, Faculty of Medicine, Ain-Shams University, Cairo, Egypt

³Clinical Pathology, Faculty of Medicine, Ain-Shams University, Cairo, Egypt

Objectives: This study was conducted to detect soluble tumour necrosis factor receptors in synovial fluids aspirated from temporomandibular internal derangements and evaluate the efficacy of Arthrocentesis with injecting sodium Hyaluronate or COX-2 inhibitor in patients suffering from T.M.J internal derangements.

Methods: 24 T.M.J in 40 patients evaluated in this study. 4 males, 36 females aged 16 to 39 with chief complain of limited mouth opening, TMJ pain, and clicking sounds.

After clinical, radiographic examination and magnetic resonance imaging for the affected joints. Based on these examinations and patient's history, diagnosis of TMJ internal derangements was made.

Treated joints were divided randomly into two groups; group A consisted of 22 joints where Arthrocentesis was performed for affected joint followed by intraarticular injection of one ml. commercially available sodium Hyaluronate, which was further classified into two subgroups; A-1 consisted of 15 joints having anterior disc displacement with reduction, subgroup A-2 consisted of 7 joints having anterior disc displacement without reduction. Group B consisted of 22 joints where Arthrocentesis was performed for affected joint followed by intraarticular injection of one ml. commercially available COX-2 inhibitor. This group was further classified into two subgroups; subgroup B-1 consisted of 15 joints having anterior disc displacement with reduction, subgroup B-2 consisted of 7 joints having anterior disc displacement without reduction. Synovial fluid was sampled from the superior joint cavity by diluted aspiration. The concentration of soluble tumour necrosis factor receptor measured by Immunoenzymometric assay.

Evaluation of the patients performed preoperatively, after three days, at one, six, and twelve months postoperatively. The evaluation included maximal mouth opening, intensity of pain recorded on 100 mm visual analog scale and TMJ clicking sounds

Results: The results revealed that patients with either disc displacement with reduction or without reduction benefited from the Arthrocentesis procedure with injection of Sodium Hyaluronate and also with injection of COX-2 inhibitor.

Conclusion: Both treatments were able to reduce pain levels, increase maximal mouth opening and reduce clicking with no statistically significant difference. In addition, the detection of TNF- α in synovial fluid aspirates is useful as a biomarker of joint disease and inflammation.

**P-174****COSTOCHONDRAL GRAFT FOR MANDIBULAR RAMUS RECONSTRUCTION: OUTCOMES, GROWTH PATTERN AND COMPLICATIONS**

M. Almos, O. Emodi, A. Rachmiel

Rambam Medical Center, Haifa, Israel

Objectives

The aim of this study is to describe the use of Costochondral Graft in TMJ Ankylosis and Hemi Facial Microsomia in term of outcomes, growth patterns and complications.

Material and Methods

This is a retrospective study of 12 patients who have undergone reconstruction of the Mandibular Ramus Condyle Unit by CCG due to ankylosis and HFM type 2B and 3.

The surgical approach was usually via combined preauricular and submandibular incisions. The graft was harvested from the 5th or 6th rib of the contra lateral side, and included approximately 1 cm costal cartilage.

In cases of ankylosis, gap arthroplasty and lining of the TMJ with temporalis fascia was performed before the reconstruction with the CCG.

The grafts were rigidly fixed with positional screws and immediate postoperative physiotherapy was instigated.

Panoramic radiographs and AP cephalometric X rays were taken preoperatively, postoperatively, and once a year during the follow up period.

Clinical examinations during the follow up period included measurement of the maximal opening, observation of facial symmetry and recording of complications such as reankylosis and facial nerve paralysis.

Results

7 HFM patients and 5 ankylosis patients were operated on. Their ages ranged from 3 years old to 59. The cause of ankylosis was determined to be trauma in 3 cases, complication of ramus DO in 1 case and rheumatoid arthritis in 1 case.

There were no serious postoperative complications. The frontal branch of the facial nerve was temporarily affected in one case. There was no postoperative infection or graft rejection. In 4 cases of the HFM the patient underwent DO in order to improve the facial symmetry. In one patient, the graft continued to grow and the chin started to deviate to the opposite side.

Conclusions

CCG is a useful in treatment of TMJ Ankylosis and HFM. The bony part is used to replace the condylar neck and ramus, and the cartilage provides a centre with growth potential.

The frequency of operative complications is relatively low for donor, as well as recipient sites. Most of the patients in this study seemed to benefit from their CCG reconstruction.



P-202

CASE OF OSTEOMA OF THE CORONOID PROCESS (JACOB'S DISEASE) MISDIAGNOSED

F. Carlino¹, A. Mingione²

¹ *Department of Surgery - Section of Maxillo-Facial Surgery, Hospital "Villa deiPini", Cvitanova Marche (MC), Italy*

² *general dentistry, private practice for dentistry, Pesaro, Italy*

Objective

If a closed lock coexists with a skeletal malocclusion, diagnosis of TMJ internal derangement can be done. However, precise observation of the clinical case can lead to a different diagnosis.

Methods

A 40 years old woman with limited mouth opening (15 mm) and class III skeletal malocclusion was sent to our observation. MRI showed bilateral anterior disc dislocation without reduction. No acute trauma was mentioned in the clinical history. The patient was sent to the surgical consult with diagnosis of TMJ internal derangement, for performing an arthrocentesis.

However, the complete absence of pain was considered uncommon and the panoramic x-ray showed an over-sized left coronoid process. A CT scan was done that showed a mushroom-shaped coronoid process. The bony mass was embedded under the zygomatic arch and formed a pseudo-joint with the medial aspect of the zygomatic bone (so called *Jacob's disease*).

The patient was operated via intra-oral access: after removal of the left coronoid the mouth opened 3,5 cm; a contralateral coronoidectomy permitted to reach a 5 cm opening.

After surgery an intensive physical treatment was carried out and the mandible movements were fully recovered.

Subsequently, orthodontic pre-surgical treatment was accomplished and a bimaxillary osteotomy corrected the skeletal malocclusion.

Results

The patient recovered from the two surgeries without complications.

Histologic report was osteoma. After 3 years follow-up no recurrence of the pathology is noted, occlusion is converted to a class I and facial skeleton results well balanced.

Conclusions

Coronoid process osteoma/osteochondroma with pseudo-joint between the coronoid and the zygomatic arch is a quite rare report: 40 cases are documented in literature so far. Among these, to our knowledge only 5 cases of typical mushroom-shaped Jacob's disease are documented.

Elements of differential diagnosis with TMJ closed lock are: absence of pain and/or pathologic joint sounds, no history of acute trauma.

However, presence of bilateral disc dislocation without reduction and class III skeletal malocclusion can lead to diagnostic query. A CT scan, eventually with 3D reconstruction, provides the definitive answer.

**P-223****PREDICTION OF TMJ IMPLANT INFLUENCE ON THE OPPOSITE BEHAVIOUR OF CONDYLE**

A. Ramos, R. J. Duarte, M. Mesnard

TEMA, University of Aveiro, Mangualde, Portugal

Objective

According to previous studies, it is estimated that 75% of the population suffer from a TMJ disorder, but only a small number of patients needs an alloplastic. The objective of this study was to investigate the effect of a total temporomandibular implant on the behavior of the opposite condyle as comparison of previous pathological situation. The specific patient presented a pathology associated to the disc with wear on right side and he was simulated with the total temporomandibular joint (TMJ) prosthesis.

Material and methods

For a specific patient, a finite element model (FEM) was created based on CT scan images. The FEM considered the structures as cranium, disc, cartilage and mandible, with cortical and cancellous bone. On the right condyle, in a native situation, the model presents the wear of disc. On the left condyle, in a pathological situation, a temporomandibular implant in situ was implanted. The Christensen's prosthesis model was simulated with a metal-metal contact. The fixation used bi-cortical screws with 2.0mm diameter in cranium and 2.7mm in mandible component. The simulations took into account the five most important muscles acting on the mandible in each side for the situation of incisive support. The material properties of the bone structures, cortical and cancellous bone, and articular disc were implemented as linear elastic behaviours.

Results

Results in revealed an inclination of mandible (2° 50" approximately), it was observed higher loads in the opposite condyle than in the damaged one. Then, the results reflected that the disc without pathology presented more stresses (65%) than the damaged one in the intact situation. After the insertion of a total TMJ implant the load transfer changed (or moved) to the opposite condyle

Conclusions

This study indicates that replacing the damaged joint by a TMJ implant modified the joint position and consequently redistributed the loads in a different way from the intact situation. The TMJ implant reduced the condyle displacements and changed the occlusion situation. Results are linked to the position of the prosthesis with respect to the mandible

**P-224****EVALUATION OF INFLUENCE OF GENETIC PAIN SENSITIVITY ON THE SUCCESS OF ARTHROCENTESIS FOR TREATMENT OF NON-REDUCING DISC DISPLACEMENT OF TMJ**

T. Can¹, S. Cinar², M. Poda³, S. Bekpinar⁴, S. Cakarar¹, C. Keskin¹

¹ *Department of Oral and Maxillofacial Surgery, Istanbul University Faculty of Dentistry, Istanbul, Turkey*

² *Department of Immunology, Istanbul University Institute of Experimental Medicine, Istanbul, Turkey*

³ *Department of Genetics, Istanbul University Institute of Experimental Medicine, Istanbul, Turkey*

⁴ *Department of Biochemistry, Istanbul University Istanbul Medical Faculty, Istanbul, Turkey*

Objective: The aim of the study is to find out the role of pain sensitivity on clinical success of TMJ arthrocentesis for treatment of Non-reducing Disc Placement.

Methods: The study group comprised 31 patients (25 females, 6 males; mean age 36.00±13.84, range 18-60 diagnosed as having non-reducing disc displacement both clinically and radiographically. Synovial fluid samples were obtained before and 3 months after arthrocentesis. Maximum mouth opening and VAS pain scores were recorded during control examinations before arthrocentesis and 1 week, 1 month and 3 months after arthrocentesis. The pain sensitivity of all patients were determined after DNA isolation from blood samples according to the variations of the gene encoding the enzyme KOMT and the patients were divided into 2 groups (1. Group high pain sensitivity + average pain sensitivity and 2. group: low pain sensitivity). IL-1 β , IL-2, IL-6, IL-8, IL-10, and TNF- α concentrations and total activity of matrix metalloproteinases -1, -2, -3 and -9 in the synovial fluid samples were measured by using specific kits.

Results: In each group, maximum mouth opening was increased and VAS pain scores were decreased. The success rate of 1. group was 57.1 and of 2. group was %58.8. No correlation was observed between the clinical parameters and cytokin levels and MMP activity in the synovial fluid. No statistical difference was recorded between the success rates of the two groups created according to the genetic pain sensitivity. No correlation was observed also between the change of clinical parameters and change of cytokin levels and MMP activity in the synovial fluid obtained before and 3 months after arthrocentesis. The decrease in MMP activity in synovial fluids of successfully treated patients was statistically significant but there wasn't any statistically significant difference in synovial fluids of the patients who's treatments are unsuccessful.

Conclusions: TMJ arthrocentesis is a safe and successful method to treat Non-reducing Disc Placement. We couldn't determine any effect of genetic pain sensitivity on the clinical success of TMJ arthrocentesis for treatment of patients in our study.



P-276

AUTOGENOUS VENOUS BLOOD INJECTION FOR TREATMENT OF HABITUAL LUXATION OF TEMPOROMANDIBULAR JOINT

J.Y. Kim, K.M. Ahn, H. Lee, W.B. Chun, K.P. Park

Bundang CHA general hospital, Seongnam-si, Gyeonggi-do, South Korea

Objective

The purpose of this clinical study was to confirm the efficacy of a rather simple, safe, minimally invasive, and rapid alternative procedure for the treatment of habitual luxation of temporomandibular joint(TMJ) using autoblood injection to superior joint and retrodiscal and pericapsular tissue of TMJ.

Methods

Thirteen patients (M:F = 6:7) was included in this study from Oct.2005 to Dec.2013. Average age was 33 years and mean follow-up period was 16.5 months. Eleven patients were medically healthy and two patient suffered from cerebral infection. The technique was performed under local anaesthesia and cannulation of TMJ superior joint was performed. After insertion of a 21-gauge needle to the superior joint, 1.0cc of saline was injected to widen the joint space and confirm the right position of the needle. After injection of saline, 4cc of venous blood was drawn from antecubital fossa. 3 cc of venous blood was injected into the superior joint space and 1cc was injected to the retrodiscal tissue and pericapsular area. After the blood injection, elastic bandage was applied for two weeks and soft diet was taken for a week. One patient who could not control the jaw movement due to cerebral infarction received oral bracket bonding for elastic rubber traction. Two weeks after the procedure, physical therapy for mouth opening was performed.

Results

Both sides injection was performed to four patients and unilateral injection was performed to nine patients. There was no immediate postoperative complication and all patients satisfied with the results of the procedure. However three patient showed recurrent subluxation and they received another injection – success rate ($10/13 = 76.9\%$). After the procedure, two patients had eminectomy due to anxiety of the patient's wife for relapse and the problem of military service. During follow-up periods, all patients presented with normal mouth opening ranged between 35 and 50mm.

Conclusions

Injected blood generates a bed for fibrous tissue formation in TMJ area and fibrous scar formation reduces the movement of the TMJ. Autoblood injection procedure is simple and minimally invasive, must be considered before surgical intervention for correction of TMJ habitual luxation.

**P-293****TREATMENT OF BILATERAL ANKYLOSIS OF THE TEMPOROMANDIBULAR JOINT IN SAPHO SYNDROME USING CUSTOM-MADE TOTAL JOINT PROSTHESES.**

J. Arenaz Búa, J. Fernández Sanromán, A. Costas López, M. Fernández Ferro, A. López Bethancourt

Department of Oral & Maxillofacial Surgery, POVISA Hospital, Vigo, Spain

Aim: An unusual case of SAPHO syndrome involving both temporomandibular joints (TMJ) resulting in bony ankylosis and severe anatomic alterations of both the mandibular condyle and the glenoid fossae is presented. Few cases of complete osseous ankylosis of the TMJ in patients diagnosed of having SAPHO syndrome have been previously described.

Case report: A 57-year-old male with slowly and progressive decreased of maximal interincisal opening during the last 10 years was referred to our hospital. Maximal interincisal opening (MIO) was 6 mms with no protrusive or lateral mandibular movements. The clinical records met SAPHO syndrome's diagnosis criteria. Bilateral total TMJ replacement using a patient-fitted total joint prosthesis in a 2-stage approach was planned. In a first stage a bilateral condylectomy with coronoidectomy to correct the open mouth limitation was performed. Silicone spacers were placed in the space created to avoid reankylosis. After 3 months of the initial surgical procedure a new computed tomography (CT) scan was obtained to manufacture stereolithographic models and then total custom made TMJ prostheses (Biomet Microfixation, Jacksonville, FL). In a second surgical procedure the silicone spacers were removed and the total joint prostheses were placed. Patient's recovery was uneventfull, the custom made prostheses provided an excellent anatomical reconstruction with satisfactory functional results (normal occlusion, MIO: 32 mms)

Discussion & Conclusions: The SAPHO syndrome is characterized by specific clinical manifestations of synovitis, acne pustulosis, hyperostosis, and osteitis. It is a rare condition with a combination of sterile, inflammatory osteoarticular disorders classically associated with skin manifestations. Aetiology remains unclear. Bone lesions rarely affects the temporomandibular joint where ankylosis may result, Nowadays total replacement of the temporomandibular joint is increasingly accepted as the gold standard technique for reconstruction of irreparably damaged or ankylosed joints. Traditionally, joints are reconstructed using stock TMJ implants, but recent reports show that some biomechanical and surgical advantages by using CAD-CAM technology and custom made TMJ prostheses in selected cases can be obtained.

Our results suggests that a customized TMJ prostheses can be a reliable alternative in the treatment of cases with SAPHO syndrome and TMJ ankylosis.



P-311

MANAGEMENT OF ANKYLOSIS OF TEMPOROMANDIBULAR JOINT: OUR EXPERIENCES

S. S. Ahmed, D. Srivastava, Shadab Mohammed

ALIGARH MUSLIM UNIVERSITY, ALIGARH, India

Ankylosis of Temporomandibular joint (TMJ) is very common in India. The aetiology is varied and different treatment methods with different treatment outcomes have been reported in the literature. However, none of them give uniformly successful results. In this paper we have discussed our own experiences with treatment of this disease.



P-348

THE CLINICAL CHARACTERISTICS AND TREATMENT OUTCOMES OF CONDYLAR HYPERPLASIA PATIENTS

M. Almos, O. Emodi, A. Rachmiel

Rambam Medical Center, Haifa, Israel

Objectives

The aim of this study is to present our clinical experience with patients diagnosed with Condylar Hyperplasia (CH), to describe the clinical characteristics and the esthetic and functional results after treatment by high condylar shave during the active phase.

Material and Methods

Thirteen patients, 10 females and 3 males in age ranged from 12 to 26 years old with condylar hyperplasia were treated and evaluated in this retrospective study.

All patients underwent a clinical and a radiographic evaluation that included recording of the history regarded the onset of the asymmetry, rate of progression, panoramic and AP cephalometric X rays and SPECT.

The treatment plan for all patients was divided into two stages. The first stage was high condylar shave via Al-Kayat Bramley incision during the active phase of the condylar overgrowth and the second stage was an orthognatic surgery as needed.

Clinical examinations during the follow up period included assessment of the mouth opening in terms of magnitude and symmetry, observation of facial symmetry and recording of complications such as facial nerve paralysis.

Results

Facial symmetry and normal occlusion was achieved by the first procedure in 9 patients and no further surgeries were needed. The remaining 4 patients underwent a second surgery included a combination of bilateral or unilateral mandibular osteotomies with or without genioplasty and LeFort 1 maxillary osteotomy.

There were no serious postoperative complications. The frontal branch of the facial nerve was temporarily affected in one case, which was resolved in 2 – 4 months.

Discussion and Conclusion

Mandibular condylar hyperplasia is a condition that causes overgrowth of the mandible, leading to facial asymmetry, occlusal disturbance and joint dysfunction. The asymmetry progresses as long as the condyle is active.

In order to allow a balanced facial development, the treatment must include suppression of condylar growth process during active phase by high condylar shave. After puberty and at the end of active phase additional mandibular and maxillary osteotomies are needed to restore facial symmetry.

**P-514****SYNOVIAL CHONDROMATOSIS OF THE TEMPOROMANDIBULAR JOINT**

B. Duarte, M. Cuesta, F. Riba, M. Nevado

Department of Oral and Maxillo-Facial Surgery. HGUCR., Ciudad Real, Spain

INTRODUCTION:

Synovial chondromatosis consists a benign neoplastic growth characterized by cartilaginous nodules within the synovial connective tissue, with subsequent evolution to detachment, calcification, and formation of loose bodies within the joint space. Involvement of the TMJ in synovial chondromatosis is rare.

MATERIAL AND METHODS:

We report two new cases of sinovialchondromatosis of the TMJ. They are two 50-year-old women presented with a history of swelling and pain in the right TMJ. They had not limitation of mouth opening. They had no history of injury or rheumatoid arthritis. Panoramic radiographs, computed tomograms (CTs) and magnetic resonance images (MRIs) were used for its diagnosis. Arthrotomy of the right TMJ was done through a preauricular approach under general anaesthesia and nasotracheal intubation. After this, complete removal of the loose bodies together with excision of the synovial lining was done.

RESULTS:

Histological examination showed nodules formed by a core of hyaline cartilage surrounded by a fibrous capsule with a synovial internal lining. The patients had active and passive physiotherapy for 1 and 3 months postoperatively, respectively, with good outcomes as far as mandibular maximum interincisal openings were concerned, and no pain for 12 months' postoperatively.

CONCLUSIONS:

Synovial chondromatosis of the TMJ is rare. Pain and restricted mandibular movements have been reported as the predominant symptoms in synovial chondromatosis of the TMJ. Interestingly, although it is less common, swelling over the joint seems to be the most specific clinical symptom of synovial chondromatosis of the TMJ. Radiological findings, including CTs and MRIs, are used for its diagnosis. About the treatment, the complete removal of the loose bodies together with excision of the synovial lining is most common.

**P-519****FOCUS ON TMJ PSORIASIC ARTHRITIS : MULTIDISCIPLINARY APPROACH**

G.Micali, S.Crimi, C.Freno, F.S. De Ponte

UOSD Chirurgia Maxillo-Facciale, Messina, Italy

Psoriatic arthritis (PA) is a spondyloarthropathy, with spinal and peripheral joint involvement. It's an inflammatory condition that less commonly but certainly can occur in the TMJ. In literature there's still a lack of data on prevalence of temporomandibular disorders (TMD) in PA patients. A diagnosis of PA of the TMJ is not always easy but, aimed with what suggested by Kononen et. al., authors investigated subjective, clinical, radiographic and serological features of temporomandibular disorders in PA patients and reported that involvement of the TMJ may be common.

Material and Methods: In this preliminary study, involving patients affected of PA the prevalence rate of anamnestic dysfunction and of clinical dysfunction are shown. The inflammatory condition of this disease may be the major contributing factor to TMD symptoms and signs. The most frequent clinical finding in the patients with TMJ-PA is severe pain. Less evidence of restricted mouth opening and crepitation. TMD signs such as TMJ and muscle tenderness on palpation, morning stiffness/tiredness and TMJ sounds seem to be more frequent in PA patients than in healthy ones. TMD signs and symptoms were found more frequent and more severe in patients with PA than in healthy subjects, mainly caused by the related joint involvement that directly affects the masticatory system. Clinical and radiologic findings are to proper classify and involve the study group with PA to a treatment with arthrocentesis, with an adjuvant diagnosis purpose and therapeutic effect. It was used as an option to treat temporomandibular disorder patients, with the advantage of avoiding TMJ structural alterations that might be found involving other surgical procedures. Its use has positive effect on treatment of both joints, in those patients who showed only radiologic joint degeneration.

Results: No clinical-radiological signs or symptoms of progression of articular disease were observed within a period of 12 months after arthrocentesis. Furthermore, there was functional stability of the temporomandibular joint, total absence of local pain and improvement of mouth opening.

Conclusion: This study suggests that arthrocentesis can be considered a valid option for the management of TMD with low surgical morbidity and favourable clinical outcomes. Further studies are need to confirm preliminary results.

**P-526****IMPACT OF TEMPOROMANDIBULAR JOINT DISORDERS AND PAIN IN PSORIATIC ARTHRITIS**

G. Micali, S.Crimi, C.Freno, B.D'Alessandro, F.S. De Ponte

UOSD Chirurgia Maxillo-Facciale, Messina, Italy

Objective: The purpose of this study was to demonstrate the prevalence of signs and symptoms of temporomandibular disorders (TMD) in patients with PA and compare with a healthy group, and also the presence of articular disorders in those patients who showed no clinical manifestations. In addition, our goal is to intercept asymptomatic patients before they manifest the symptoms. To investigate the impact of temporomandibular joint (TMJ) disorders and pain, on daily activities and quality of life, in patients with psoriatic arthritis (PA), thirty consecutive outpatients with PA were included. Thirteen of these showed no clinical signs of joint disorders. TMJ disorders are investigated both clinically (in terms of symptoms and signs) and radiologically (MRI).

Methods: TMJ pain intensity at rest, on maximum mouth opening, and on chewing was assessed on a 0–10 numerical rating scale. TMJ palpation tenderness, degree of anterior open bite, the impact of TMJ pain on daily activities and quality of life were also assessed. A diagnosis of PA of the TMJ is not always easy but, aimed with what suggested other authors, we investigated the subjective, clinical, radiographic and serological features of temporomandibular disorders (TMD) in patients with PA and have reported that involvement of the TMJ may be common.

Results: Clinical findings shows that current TMJ disorders, pain intensity and systemic inflammatory activity play roles in the impact on daily living and quality of life in PA patients.

Conclusions: future prospects for the prevention and treatment of TMD in patients with PA includes without any doubt the use of Arthrocentesis and synovial fluid analysis.



P-530

B-DEFENSIN-3 AND B-DEFENSIN-4 IN SYNOVIAL FLUIDS FROM TEMPOROMANDIBULAR JOINTS WITH OSTEOARTHRISIS.

R.Leonardi, S.Crimi, F.S.Deponete, C.Loreto, E.Belli, G.Musmeci

UOSD Chirurgia Maxillo-Facciale, Messina, Italy

Objective: this study aimed to analyze β -defensin-3 and β -defensin-4 in human TMJ synovial fluid obtained from patients affected by OA, in order to better understand the pathogenic mechanism that underlies this joint damage.

Methods: A total 28 joints of 21 patients with diagnosis of OA were involved in the study group. Fourteen joints of 10 volunteers without signs or symptoms of TMJ diseases were used as the control group. The synovial fluid samples were collected from the superior joint cavity, by the push-and-pull method. The supernatant was separated and stored in a deep freezer. The expression of β -defensin-3 and β -defensin-4 was evaluated by Western blot analysis.

Results: findings obtained through Western blot showed that, respect to control, both β -defensin-3 and β -defensin-4 were highly expressed ($p < 0.01$) in OA TMJ synovial fluid, although the expression of β -defensin-3 was very strong while the β -defensin-4 was only strongly expressed. In control TMJ synovial fluid the band density observed was strikingly lower respect to OA TMJ synovial fluid.

Conclusions: according to results, here we hypothesize that β -defensins augment catabolic pathways in articular cartilage, ultimately leading to a timely breakdown of the extracellular matrix and they participate in the degeneration of the articular cartilage and bone.

**P-560****THE HIGH CERVICAL TRASMASSETERIC ANTEPAROTID APPROACH FOR ALLOPLASTIC TEMPOROMANDIBULAR JOINT REPLACEMENT: A RETROSPECTIVE STUDY.**

M.S. Garcia, A. Gomez, M. Acosta, J.J.Haro, B. Ramos

Oral and Maxillofacial Surgery, Santa Lucia University Hospital, Cartagena, Spain

Objective: The temporomandibular joint (TMJ) can be subject of severe degenerative pathological conditions, neoplasia, irreparable fracture, congenital disorders and recurrent ankylosis that may require autogenous or alloplastic replacement. Access to the TMJ is the sine qua non of surgical success and several techniques have been reported. The High Cervical Transmassesteric Anteparotid approach (HCTMA) or modified Risdom-Strasbourg approach inspired by Wilk in Strasbourg in 1994 is an easy technique derived from Eckelt's procedure designed for condylar fractures. The two main differences are that skin incision is placed 0.5 cm under the mandibular angle, in the submandibular shadow and that the masseter incision is placed more cranial and oblique. This stair-step dissection increases the safety for the facial nerve and improves the exposure of the vertical ramus and condylar region. Our objective is to present this approach for temporomandibular joint replacement.

Methods: we report a retrospective study of five cases of temporomandibular alloplastic joint replacement with Christensen's prosthesis using the HCTMA approach. We collected demographic data, medical comorbidities, joint's pathological condition, functional and aesthetic results, the ease to place the prosthesis and postoperative complications such as facial nerve injury, infection, seroma, hematoma, salivary fistula or Frey's syndrome.

Results: All patients were women aged between 45 and 56, four were diagnosed of severe temporomandibular dysfunction stage V of Wilkes and one of an osteochondroma of the condyle, mean postoperative mouth opening was 34 mm, no infection, hematoma, seroma or salivary fistula was observed using this approach. Only one patient suffered a transient paresis of the facial marginal branch, and the aesthetic results were excellent for 100% patients.

Conclusions: The high cervical transmassestericanteroparotid approach provides a good exposure of the posterior vertical ramus of the mandible and optimal angle to drill the bone for insertion of the screws that gives a stable fixation to the TMJ condylar prosthesis. The greatest advantage of this approach is the safety to the facial nerve and, in particular, the avoidance of the marginal nerve branch. Cosmetic results were satisfactory; a short and discreet scar was hidden under the lower border of the mandible.

**P-576****THE ROLE OF ALLOPLASTIC PROSTHESIS IN TOTAL TEMPOROMANDIBULAR JOINT RECONSTRUCTION IN PAEDIATRIC PATIENTS: AN INTERNATIONAL SURVEY.**

A. Banda¹, L. Mercuri², G. Warburton¹

¹ *Oral and Maxillofacial Surgery, University of Maryland Medical Center, Baltimore, United States*

² *Orthopedic Surgery, Rush University Medical Center, Chicago, United States*

Introduction: Developmental, pathologic, traumatic, and ankylosing processes can result in end-stage disease and functional compromise of the temporomandibular joints (TMJ). Given unpredictable growth and suboptimal outcomes often associated with autogenous TMJ reconstruction in growing patients, total joint replacement (TJR) provides a reasonable and practical management option. This pilot survey examined outcomes of TMJ TJR with alloplastic prostheses in skeletally immature patients (males <18 and female <15 years of age).

Methods: 12 surgeons worldwide that performed TMJ TJR in skeletally immature patients were identified and surveyed. Outcome parameters included maximal incisal opening, pain score, degree of facial and mandibular asymmetry, functional and aesthetic result, and patient satisfaction.

Results: 24 prostheses were placed in 14 patients (8 male and 6 female). The mean age at time of TJR was 14 years (range 7 to 17 years). Nine cases were bilateral and five were unilateral. Post-operative follow up ranged from less than one year to 10 years, with a mean range of 3 to 5 years. Diagnoses leading to TJR included idiopathic condylar resorption (57.14%), ankylosis (35.71%), high inflammatory arthritic disease (21.43%) including juvenile inflammatory arthritis and rheumatoid arthritis), trauma (21.43%), and pathology (21.43%, including desmoplastic fibroma, ossifying fibroma, and ameloblastoma). Complications occurred in two cases (infection and heterotopic bone growth). Both complications required surgical intervention, however no joint prostheses were removed permanently. In cases of unilateral TJR only, no contralateral pathology developed, and no contralateral TJR was subsequently performed. Mandibular symmetry and ramus height was restored at time of unilateral TJR surgery. Subsequently, 80% showed clinical evidence of contralateral condylar and ramus growth. Neither unilateral nor bilateral TJR cases showed asymmetric mandibular growth or asymmetric ramus height.

Conclusions: There is controversy regarding alloplastic TMJ TJR in the growing patient. To date, this is the first study to report exclusively on the use of alloplastic TMJ TJR in the growing patient. This pilot survey demonstrates the experience of surgeons and their encouraging results: TMJ TJR in this sample did not result in asymmetric mandibular growth in either unilateral or bilateral cases and also reported good functional outcomes.

**P-577****NASHA HYALURONIC ACID IN TMJ ARTHROSCOPY. A RETROSPECTIVE STUDY.**

O. de la Sen-Corcuera, R. Martín-Granizo, A. Encinas, E. Varela, I. Martínez-Padilla, M. de Pedro

Oral and Maxillofacial Surgery, Hospital Clínico San Carlos, Madrid, Spain

Introduction: The hyaluronic acid (HA) is a linear and uniform polysaccharide molecule whose unit is a disaccharide (glucuronic acid and N-acetylglucosamine). The main features of HA are the viscosity and high elasticity. The main actions are: creating volume, lubrication and maintain tissue integrity, cell mobility and protection. NASHA (Stabilized non-animal hyaluronic acid) technology has been introduced in the field of hyaluronic acid to provide an excellent safety profile, high strength and longer lasting.

Objectives: To compare the effectiveness of a unique infiltration of NASHA HA in patients undergoing arthroscopy with Wilkes stages II and stages III-IV.

Material and Methods: In our department, since 2012, we have performed 40 bilateral arthroscopies in 40 patients, 80 TMJ treated with non-invasive procedure. Women represent 95% of the sample. We injected HA in 71 joints. Wilkes stage III-IV was founded in 11 joints (27%). Stage II was founded in 29 joints. We compare that group of patients with 40 patients undergoing 40 bilateral arthroscopies in 2011, where HA was not used. Stages III-IV non HA and HA are compared together. We do the same for stage II. The postoperative study consists in the analysis of pain with VAS (Visual analog scale) and the mouth opening, measured in mm. The follow-up period is 12 months, distributed in 4 visits (1, 3, 6, 12 months).

Conclusion: In our series, the HA infiltrated after arthroscopy improved mouth opening and pain, but with no statistically significant difference. The advantages of this technique are its simplicity, biocompatibility, tissue lubrication, maintains the integrity, motility and cell protection.

**P-692****PLASMOCYTOMA OF THE TMJ REGION. A CASE REPORT**

J. Zajko, L. Czakó, B. Gális

Department of oral and maxillofacial surgery, Comenius University, Bratislava, Slovakia

Objective:

Plasmacytoma is a rare disease of based plasmatic cells. Belong to the myeloid dysplastic disease. Is a rare form of malignant tumour and is characterized of neoplastic proliferation of differentiated B lymphocytes. Occurrence affected marrow cells may be on vertebrae, ribs, sternum and skull bones.

Methods:

45 year old patient came to investigate with problem eating food. He had feel of sudden rupture when eating. Since then he opened his mouth harder and had a problem with eating food. A history was longer duration of fatigue. Other problems were negative. Negative was also extraoral examination palpation. The intraoral mucous membranes was pink, mouth opened slightly limited to 2,9 cm. On panorama x ray has been seen brightening around the mandible condyle on the left side. Subsequently we performed MRI. Result - a solid expansion based on the structures and caput column mandibular dimensions in AP Scan size 29x 28 x 27 mm. Due to the persistence of problems of diagnosis was defined as a tumour in TMJ on left side. The operation was indicated.

Results:

On case report we present the operating and postoperative course at 45 years old men. Operation performed in general anesthesia. The tumour and caput mandible was removed. Result of histology examination - plasmacytoma of the mandible. Followed by oncologic treatment. In year 2012 he completed the miniautolog transplantation cells from his brother, and in year 2013 the recurrence of the tumour appeared again at the site of a previous operation site. Nowadays the patient is again in ontological treatment. The oncologist did not recommend the operation in this time.

Conclusion:

Plasmacytoma is a malignant cancer of the bone marrow, characterized of neoplastic proliferation of differentiated B cells. In our case, the affected area was TMJ region. Patient undergoes also chemotherapy treatment. Two years after surgery the patient was free of recurrence. But after minitransplantation bone marrow the recurrence appeared in operation left side. The patient is now in strict observables, and we are waiting on the opinion of the oncologists, when the operation would be possible.

**P-731****DIVERSIFIED CLINICAL EVALUATION FOR ETIOLOGICAL FACTORS OF IDIOPATHIC CONDYLAR RESORPTION**

H. J. Yang, S. J. Hwang

Department of oral and maxillofacial surgery, School of Dentistry, Seoul National University, Seoul, South Korea

Objective: Idiopathic condylar resorption (ICR) usually occurs in females during the second or third decade of life, accompanying the progressive resorption of a large part of the mandibular condyle and facial pain and functional impairment. The disease has an obvious skeletal pattern characterized by the class II occlusal relationship, especially in individuals with a high mandibular plane angle. Although the aetiology of ICR has not been fully identified, the influence of female hormones and condylar trabecular pattern which cannot resist masticatory force well have been inferred as contributing factors. So, we did prospective clinical study to evaluate the etiological factors of ICR, especially hypoenestrogenemia and osteopenia.

Methods: IRB approval was obtained for this study (CRI11003G). 35 female patients (mean age: 22.1 years) participated this study. They are patient with ICR, or patient having high risk factor of ICR in their skeletal patterns. Condyle index (0 to 6) of each patient was calculated using their preoperative orthopantomograms according to the form, the inclination and the height of the condyle. Patients were divided into 2 groups according to the condyle index, group I (0 to 3, high risk patients and patients with mild ICR) and group II (4 to 6, patients with severe ICR). Blood analysis including female hormones was conducted 2 times according to each patient`s menstrual cycle at follicular and luteal phase. Dual-energy x-ray absorptiometry (DEXA) bone densitometry was performed only in patients over the age of 20. Statistical analysis of the correlation among each analytic result was done.

Results: 60% of patients showed hypoenestrogenemia (serum estradiol level < 21.2 pg/ml) during follicular phase; 28%, osteopenia (T-score < -1) from DEXA bone densitometry. Even though there was no statistical significance between group I and II, group II showed higher tendencies of hypoenestrogenemia and osteopenia. All patients who revealed both hypoenestrogenemia and osteopenia exhibited severe ICR. However, serum estradiol level was not related to osteoporotic change of bone.

Conclusions: Systemic symptoms of hypoenestrogenemia and osteopenia may be inferred as a contributing factor for ICR.



P-782

MANAGEMENT OF OSTEOCHONDROMA OF TMJ WITH HIGH CONDYLECTOMY AND INTERMAXILLARY FIXATION

Mathew Thomas, David grimes, Andrew Sidebottom

Oral & Maxillofacial Surgery, Queens Medical Centre, Nottingham, United Kingdom

Endochondral ossification makes the TMJ the most common facial site for Osteochondroma. Osteochondroma can present with facial asymmetry, prognathic deviation of chin, crossbite and functional disorders of the TMJ.

The growth of Osteochondroma is slow and hence causes gradual elongation of the mandible and the resulting deformity. The diagnosis is based on clinical, radiological and histological findings. 3D scans, SPECT scans and radio nucleotide scans have improved the diagnostic capability. The current management modality for Osteochondroma includes Condylectomy, selective removal of the tumour and secondary correction of the facial asymmetry.

We present a series of 4 cases of unilateral Osteochondroma of the TMJ managed with high Condylectomy and IMF.

The postoperative results showed good functional and aesthetic outcome. There were no recurrence and patients were satisfied with the outcome.

Osteochondroma commonly affects the medial aspect of the condyle. Several surgical methods have been reported over the years, including Condylectomy, reshaping of condyle with selective removal of the lesion, Condylectomy with reconstruction and concomitant orthognathic surgery. Our series showed a minimalistic approach with good clinical outcome, hence avoiding long drawn orthodontic treatment and complications associated with orthognathic surgery.

**P-833****CASE REPORT OF A SYNOVIAL CYST OF THE TEMPOROMANDIBULAR JOINT**

N. Galligan

Oral and Maxillofacial Surgery Queen Elizabeth Birmingham, Birmingham, United Kingdom

Background

Synovial Cysts are most commonly found in the wrist, knee or foot. Very few cases involving the Temporomandibular Joint have been reported. This is a review of one such case of a 69 year old female who presented to the Queen Elizabeth Hospital in Birmingham following referral by her GP to the Oral and Maxillofacial Department. She had a history of altered sensation of her lower lip for over a year.

Method

This report details the journey of this patient from diagnosis, treatment and management of a synovial cyst of the TMJ. Based on clinical and radiographic findings.

Results

Both MRI and CT showed a cystic mass underneath the left skull base/medial ramus. This appeared to be intermittently related to the TMJ. Further to this a TMJ MRI was carried out showing a well defined fluid signal around the left pterygoid space which extended into the degenerative left temporomandibular joint space. Consistent with a synovial cyst. Following the decision by MDT meeting an arthroscopy was undertaken of the left TMJ. At the one month follow up the patient noted an improvement in her symptoms. An MRI taken showed the cyst still present but reduced in size.

Conclusion

This patient will require further follow up to confirm resolution of the cystic lesion and the patients' symptoms. It is interesting to note that the arthroscopy alone, without invasive surgery has resulted in an improvement of patient symptoms as well as size of the cyst.

**P-851****INTRAORAL ENDOSCOPIC TREATMENT OF TEMPOROMANDIBULAR JOINT RE-ANKYLOSIS IN AN 8-YEARS-OLD PATIENT WITH TMJ TJR.**

F. Giovannetti, V. Ramieri, D. Angeletti, P. Cascone

Dipartimento di Scienze Odontostomatologiche e Maxillo-Facciali, Sapienza Università di Roma, Roma, Italy

Objective

Ankylosis of the temporomandibular joint (TMJ) is a pathological condition characterized by the fusion of the joint surfaces by bony or fibrous tissue. It is a common cause of dentomaxillofacial deformity, and it results in complex manifestations including mouth opening limitation, malocclusion, retrognathia, mandibular asymmetry, maxillary cant, malnutrition and serious oral hygiene. When this event takes place in subjects during developmental age, it results in an alteration of entire maxillofacial complex. Moreover, mandibular hypomobility and subsequent retrogenia can produce the narrowing of the oropharyngeal airspace which can induce obstructive sleep apnea syndrome.

The authors report a case of recurrent TMJ ankylosis in an 6 years old patient with TMJ prosthesis who underwent multiple surgical procedures.

Methods

A 6 years old patient affected by temporomandibular joint ankylosis who underwent multiple surgery for recurrence of the pathology. The patient was finally treated by alloplastic replacement of the temporomandibular joint (TMJ) with custom made device. At 7 years of age, the patient showed reankylosis of the TMJ medial aspect.

In order not to remove the implants and to avoid contaminations and infections we decided to approach the bony block intraorally with endoscopic assistance. The use of piezosurgery allowed the removal of the ankylotic block, preserving the adjacent soft tissues.

Results

After surgery, Maximum Incisal Opening (MIO) improved from 10 to 25 mm. The 1 year post-operative follow up demonstrated a significant improvement of the patency of the upper airway space and a good mandibular growth as well as the range of mandibular function stable on 25 mm.

Conclusions

The development of TMJ ankylosis during childhood development presents major growth problems for the patient and those who must care for them. Resection of the ankylotic block should be radical and complete. The authors think that endoscopic approach is a safe and minimally invasive technique in some selected cases.

**P-853****USE OF 20% DEXTROSE PROLOTHERAPY IN THE MANAGEMENT OF RECURRENT DISLOCATION OF THE TEMPOROMANDIBULAR JOINT IN ADOLESCENTS**

Rosemary Sykes, Sunil Sah, Andrew Sidebottom, Uthaya Selbong

Oral and Maxillofacial Department, Nottingham University Hospitals - Queens Medical Centre, Nottingham, United Kingdom

Objective

Prolotherapy means rehabilitation of an incompetent structure such as ligament or tendon by induced proliferation of cells. It is well documented in the literature for its use to relieve joint pain. Recently it has been described to reduce the incidence of TMJ dislocations after conservative management has failed. Alternative techniques include autologous blood injections (which may cause periarticular fibrosis) or more invasive treatments such as eminectomy which causes more morbidity and is not 100% successful. We present prolotherapy as an apparently safe and effective technique to reduce dislocations and pain. Our aim is to provide evidence for the effectiveness of prolotherapy in the treatment of recurrent TMJ dislocation and describe the prolotherapy technique.

Methods

Prolotherapy was offered to two adolescent patients with non-neurogenic recurrent dislocation of the TMJ. They were reviewed at 1, 6, 12 and 52 weeks post-operatively. They received one injection of 20% dextrose solution (2ml) in the pericapsular and retrodiscal areas under local anaesthesia. Pre and postoperative dislocation frequencies and visual analogue pain scales were recorded.

Results

The overall success rate (absence of further dislocation or subluxation at 6 months) was recorded. There were no neurosensory deficits recorded at follow up. One patient had higher than expected painful experience on administration of the dextrose – presumed due to osmotic effect. Both patients showed decreased dislocations and reduction in reported pain.

Conclusions

Prolotherapy provides the opportunity to correct recurrent dislocation with minimal complications and post operative morbidity. This study will continue to assess patients prospectively.



P-895

MYOSITIS OSSIFICANS - REPORT OF A CASE AND REVIEW OF THE LITERATURE

A. Silva, C. Carracha, A. Millán, H. Rodrigues, P.Coelho

Maxillofacial Surgery, Centro Hospitalar de Lisboa Central, Lisbon, Portugal

Introduction: Myositis Ossificans or Fibrodysplasia Ossificans Progressiva is a rare genetic disorder characterized by progressive heterotopic ossification of soft connective tissue, including tendons, ligaments, fascia, and skeletal muscle, due to a defect in the repair mechanism of bone metabolism. Early involvement of the cranio-maxillo-facial region is common with an important impact in everyday life routines. Early complaints progressively evolve into complete temporomandibular ankylosis.

Case report: We report a case of a 30-year-old man referred to our hospital by his general practitioner, complaining of progressive and severe mouth opening limitation. MRI was not performed due to patient inability to sustain accurate positioning. TC demonstrated muscular ossification of left lateral pterygoid and temporal muscles. Due to the extensive ossification present in this patient and the known progressive course of the disease, the patient was kept under surveillance and pharmacological treatment.

Discussion and Conclusion: We discuss the clinic presentation and review the yet limited treatment options. Attempts to surgically remove heterotopic ossification lesions generally provoke disease exacerbation. An early diagnosis is essential in order to implement preventive measures that delay the onset of the ankylosis.

**P-959****USE OF BOTULINUM TOXIN TYPE A (BT-A) AS A METHOD OF TREATMENT OF MYOFASCIAL PAIN AND TEMPOROMANDIBULAR DISFUNCTION**

JL. Giner¹, P. Barba², G. Schoendorff¹, R. Jiménez Bellinga³, N. Montesdeoca⁴

¹ *Oral and Maxillofacial Surgery, Ruberdental, Madrid, Spain*

² *Oral and Maxillofacial Surgery, Virgen de la Luz Hospital, Madrid, Spain*

³ *Oral and Maxillofacial Surgery, Private practice, Madrid, Spain*

⁴ *Oral and Maxillofacial Surgery, Clinica La Luz Hospital, Madrid, Spain*

Objective: Classic management of myofascial pain involving masticatory muscles and neck includes medication, physiotherapy and psychotherapy. Recently, the use of botulinum toxin A (BT-A) has been proposed for handling this pathology. In a similar way, it is been used to manage chronic bruxism, tension-type headache and, even, some types of migraine.

Methods: We make a brief description of our experience using BT-A to treat 23 patients meeting the Myofascial Pain Syndrome criteria with no response to conventional therapies. All of the patients were included in the protocol. Each patient was injected with a different amount of BT-A, in a range between 35 and 75mU distributed among the masticatory muscles involved and all of the trigger points

Results: We evaluate the results according to three main parameters: 1-Pain reduction measured with analogic visual scale. 2- Oral opening improvement, and 3- Subjective improvement of patient condition

Conclusions: In our experience, BT-A has shown effective in management of myofascial pain. It contributes to reduce pain and, also, improves mouth opening. It all results in subjective patient satisfaction with the offered treatment



P-963

ANKYLOSIS OF THE TEMPOROMANDIBULAR JOINT: A REVIEW

C. Collao-González, M. Reyes Rojas, L. CórdovaJara, M. Hernández R., J. Cortés-Araya

Pontifical Catholic University of Chile, Santiago, Chile

The temporomandibular joint ankylosis (TMJA) is the fibrous or bony fusion of the disc-condyle complex to the cranial temporal articular surface, which may involve the condyle, articular disc, glenoid fossa and eminence. Its main consequence is the restriction of the mandibular movement. Little is known about the aetiology and pathogenesis of this condition, although the clinical evidence points to that most of the cases occurred after localized trauma or infection and recent investigations provide evidence about genetic alterations that may cause congenital cases of TMJ ankylosis. A variety of treatments has been described, but conclusive supportive evidence on the results of each different approach are scarce.

We present a review of the scientific papers published on the subject, with focus on the aetiology and pathogenesis of the TMJ ankylosis.



P-974

NOVEL WAY OF MANAGING A PROGRESSIVE ANTERIOR OPEN BITE - A CASE REPORT

J. Begum, Christopher Fowell, Rob Harper, Rob Harper

Home, Birmingham, United Kingdom

Introduction

Anterior Open Bite (AOB) is defined as when the incisors do not contact and there is an absence of vertical overlap of the lower incisors by the upper incisors.

The cause is multifactorial. It is one of the most prevalent malocclusions and has the most difficult treatment. It results in a high level of instability and recurrence.

Progressive AOB occurs when there is evidence that the front teeth did once contact and function, providing appropriate anterior guidance at some point. This is most commonly due to a manifestation of condylar growth deficiency and hypoplasia and/or degeneration.

This can cause phonetic changes, difficulty biting into food and drifting of front teeth.

The following case report brings to the authors attention, a way of managing progressive AOB without the need for orthodontic and/or surgical intervention, as the risk of relapse was considered to be very high.

Case Study

A 44-year old Afro-Caribbean woman presented with difficulty in eating and bringing her anterior teeth together. This had worsened over the past 18 months. Medically the patient was paraplegic with a long history of weakness and joint pain that had worsened over 6-7 years. A CT and bone scan showed arthritic changes in the left TMJ which would be in-keeping with the change in the patients bite.

Outcome and Conclusion

A simple removable appliance was made which allowed the patient to chew. It was not intended to provide any corrective treatment. The patient has been managing to function with this appliance for the past two years.

**P-1025****RELATIONS BETWEEN TINNITUS AND TMJ**

A. Leonardi¹, G. Attanasio², P. Arangio³, R. Pucci¹, C. Bianca¹, P. Cascone¹

¹ *Dipartimento di Scienze Odontostomatologiche e Maxillo Facciali, Università Sapienza di Roma, Roma, Italy*

² *Reperto di Otorinolaringoiatria, Università Sapienza di Roma, Roma, Italy*

³ *Reperto di Chirurgia Maxillo Facciale, ASL RM/E Ospedale Villa Betania, Roma, Italy*

Aim: The authors want to emphasize the close correlation between tinnitus and temporo-mandibular joint disease

Materials and methods: The study consists of a sequential sample of 86 patients with subjective tinnitus from both genders, with age ranging from 18 to 60 years. Among them 20 patients don't want to participate the study and 11, who participated, there have been no subsequent checks. So the final real sample consists of 55. After applying the exclusion/inclusion otology criteria the patient received TMJ examination and all patients with history of facial trauma, with dental alteration, or patient with DTM who belong to Wilkes Classification Stage III, IV, V were excluded. All the patients were asked to rate the severity of their symptoms using 10-point VAS scale and the Tinnitus Handicap Inventory (THI) and they followed a standardizing protocol for the investigation of tinnitus. All the subjects were examined by the same researcher and they underwent the same treatment therapy with neuromuscular occlusal splint for six months. After the treatment they were asked to rate the severity of their symptoms using the same 10-point VAS scale and THI.

Results: Due to the non Gaussian distribution of values, non-parametric Wilcoxon paired test, was performed on data in order to compare THI pre- and post-treatment scores, and VAS pre- and post-treatment values within each group. The comparison between pre- and post-treatment phase showed in all groups a statistically significant decrease of THI and VAS values.

Discussion and conclusion: The characteristics of tinnitus and the degree of response to treatment confirmed the relationship between otologic disorder and DTM for this reason the authors believe that, when the most common causes of tinnitus, such as otology disorders and neurological disease were excluded, it is correct to refer to evaluate the functionality of the tmj and eventually treat tmj pathology to obtain tinnitus resolution.

**P-1085****ARTHROSCOPIC TMJ INFILTRATION OF BOTULINUM TOXIN IN THE PTERYGOID MUSCLE. TECHNIQUE AND INDICATIONS**

R. Martin-Granizo, A. Encinas, O. de la Sen, E. Varela, I. Martinez Padilla, A. Berguer

Department of Oral and Maxillofacial Surgery, Hospital Clinico San Carlos, Madrid, Spain

Objective: Temporomandibular joint dysfunction (TMD) is one of the most common diseases inside the TMJ. It is known that the mechanism is a combination of a biochemical disturbance and a contracture of the upper belly of the lateral pterygoid muscle, which directly inserts in the anterior part of the disc. Arthroscopy of the TMJ has shown to be an effective surgical method to treat this disease. Operative arthroscopy can free the pterygoid muscle with a surgical myotomy and try to fix the disc with discopexy techniques in the right position. Botulinum toxin (BT) is a substance derived from *Clostridium botulinum* that directly relaxes the muscles where it is infiltrated, and is routinely used to treat different form of myoclonus.

Methods: The purpose is to show the technique for direct infiltration of type A, BT (Hall strain) in the pterygoid muscle from the anterior recess of the upper joint compartment through the working cannula using a long spinal needle, with or without an additional conventional myotomy. The medium dose is 100 units divided in three places of puncture in each joint. A previous capsulotomy is made to directly see the muscular fibres. Also indications and technical difficulties are discussed. This toxin has a high purification rate with chromatography without complex proteins.

Results: This technique seems to add a supplementary method to free the antero-medial traction of the fibres of the pterygoid muscle, and provides better results for disc repositioning.

Conclusions: This technique of arthroscopic infiltration of BT gives better results for arthroscopic TMJ disc repositioning and fixation in its normal position. The advantages are its simple technique with precise puncture directly into the pterygoid muscle and avoids aggressive myotomy that can lead to unexpected bleeding.

**P-1093****REARTHROSCOPY OF THE TMJ. A CLINICAL & MORPHOLOGIC RETROSPECTIVE STUDY IN 600 PROCEDURES**

R. Martin-Granizo, A. Encinas, O. de la Sen, E. Varela, I. Martinez Padilla, A. Millón, A. Berguer

Department of Oral & Maxillofacial Surgery, Hospital Clínico San Carlos, Madrid, Spain

Objective: Minimally invasive surgery (MIS) of the temporomandibular joint (TMJ) is considered today as the initial surgical treatment of choice in temporomandibular dysfunction syndrome (TMDS) that has not responded to conservative treatment, because of its potential benefits and low morbidity. Within the MIS, arthroscopic surgery has an increasing interest in recent years. The effectiveness of arthroscopic surgical advanced techniques (anterior myotomy, lysis of adhesions, sclerotherapy, subsynovial infiltration, disc suture, etc.) versus classical arthroscopic lysis-lavage technique are controversial. The rates of improvement varies from 80% to 92% concerning pain, mandibular movements and sounds. When arthroscopy does not work the decision range from a new arthroscopy (rearthroscopy) on an open approach. The objective of this presentation is to show our experience with rearthroscopy.

Methods: We retrospectively studied patients who underwent TMJ arthroscopy. They included 600 arthroscopies in 360 patients who underwent surgery in the same institution by the same surgeon from 1997 to 2014. We analysed the morphologic findings seen inside the joint, as well as the clinical and radiologic features. In all cases an operative arthroscopy was done with different techniques. Hyaluronic acid was infiltrated in 4 patients after surgery. Follow-up included visits at 1, 3, 6, 12 months and after yearly.

Results: The rate of rearthroscopies was 3,05% of all patients (11 patients out of 360). The most common finding inside these joint was adhesences, fibrillations and different degrees of chondromalacy. Some degrees of synovitis were observed. Five patients needed further open surgery with discopexy, discotomy or total joint replacement.

Conclusions: The rate of rearthroscopies of the TMJ in our study is very low compared with other published papers. Most of these patients did well after the new arthroscopy and few needed open surgery. Therefore, rearthroscopy seems to be a valid and effective method to surgically manage patients with a wrong follow-up, being a minimal invasive method.



P-1111

A MISDIAGNOSED HEMIFACIAL MICROSOMIA: THE “CAMEL HUMP” CONDYLO-MANDIBULAR DYSPLASIA

JM Mercier, RH Khonsari, J Longis, L Arzul , JP Perrin, JM Salagnac, A Villers, T Durand, A Lebras, P Corre

Clinique de Stomatologie et Chirurgie Maxillofaciale, Nantes, France

OBJECTIVE

Most unilateral birth defects of the mandible fall in the spectrum of hemifacialmicrosomia (HFM). The “camel hump” condylo-mandibular dysplasia (CMD) is a peculiar unilateral birth defect of the ramus that differs from HFM. Here we intend to describe the clinical, radiological, and therapeutic aspects.

METHODS

Ten patients presenting with CMD were reviewed retrospectively at the end of facial growth. A tridimensional study was performed using a cone-beam CT in several cases.

RESULTS

Almost all the patients presented with features differing from HFM. CMD was not associated with soft-tissue defects (in particular the pinna was normal and muscle development was symmetrical). The shape of the hypoplastic ramus was peculiar and similar in all cases. The condyle was short and collapsed against the coronoid process. Furthermore, we frequently observed impacted molars in the affected side. In most cases, a full recovery of facial growth was achieved by functional orthopaedic appliances only.

CONCLUSIONS

The early screening of CMD cases that have been misdiagnosed as HFM is essential as these patients can benefit from functional stimulation as the only treatment.



P-1191

THE USE OF MITEK MINI ANCHORS IN TMJ DISK REPOSITIONING

I.Karabouta, El.Kalimeras, M.Voulgaropoulou

Oral and Maxillofacial Surgery, Interbalkan Hospital , Thessaloniki, Greece

OBJECTIVES: In this paper, the use of Mitek Mini Anchors in the TMJ articular disk repositioning and stabilization as well as a modified technique, are discussed. This modified technique concerns the site of placement of Anchors, which is the posterior eminence of the glenoid fossa, instead of the condylar head where they are usually inserted.

METHODS: The Anchors are inserted laterally into the posterior eminence of the glenoid fossa and in the middle of the height of the root of the zygomatic arch. The insertion has a 45° inclination and an anterior-posterior direction. The pullout force and the mandibular movements before the final stabilization are estimated after the disk repositioning and suturing with the anchor's Orthobond braided polyester suture.

RESULTS: Out of 26 patients, 47 temporomandibular joints with anterior disk displacement without reduction mainly caused by dysfunctional reasons were operated with the use of Mitek Mini Anchors. 21 patients had bilateral surgical intervention and 5 unilateral one. The majority of the applied devices consisted of titanium alloy basis. All patients had pain and discomfort relief and no masticatory or locking problems were observed. No other symptom was seen 1 year postoperatively. The pre- and post- operative situation of the disk was estimated by MRI examination and found it was well fixed.

CONCLUSIONS: The use of the Mitek Mini Anchor system seems to be useful in well selected cases with anterior disk displacement and without reduction. In such cases, the posterior disk repositioning and stabilization are required. The Anchor system provides the requirements mentioned above, and we consider that our modification provides the wanted result by an easy and safe way, avoiding possible complications.



P-1251

CONCOMITANT TEMPOROMANDIBULAR JOINT RECONSTRUCTION AND ORTHOGNATHIC SURGERY

C. Hernandez Vila, L. Ruiz Laza, F. Monje Gil, D. Manzano Solo de Zaldívar, I. Rubio Correa, M. Moreno Sánchez, F. Ramirez Perez

Department of Oral and Maxillofacial Surgery, University Hospital Infanta Cristina, Badajoz, Spain

Objectives: dentofacial deformities coexist with temporomandibular joint (TMJ) disorders and suppose a challenge for the surgeons because we need to restore the occlusion, the function of the joint and the jaw position.

Materials and methods: 26 years old female presents dentofacial deformity with open bite, class II malocclusion, TMJ clicking in the right side and laterodeviation of the chin to the left side at the maximal mouth opening (MMO). The radiological study showed a hypoplastic left condyle and fossa. We decided to correct the dentofacial deformity and reconstruct the TMJ in one surgical time by simultaneous TMJ prosthesis and orthognathic surgery.

Results: The treatment planning used a computer software (SimPlant®) for the orthognathic surgery, determining the advancement of the maxilla and the counterclockwise rotation of the mandible. Using the stereolithic model, we made the condylectomy and rami and fossaerecontouring. The model was sent to TMJ Conceptst® for the custom made prosthesis design. Finally the patient required an advancement genioplasty for an optimal result.

Discussion and conclusion: For TMJ reconstruction have been used bone grafts, microvascularized free flaps and prosthesis. We have chosen this plannification according with the protocol of *Wolford et al.* because the concomitant TMJ custom made total joint reconstruction and orthognathic surgery offer a reliable and predictable solution for these kind of patients unlike other reconstructive options.



P-1275

JACOB'S DISEASE: REPORT OF A CASE OF OSTEOCHONDROMA OF THE CORONOID PROCESS.

A. Daura Sáez, C. Sánchez Navarro., Y. Aguilar Lizarralde., L. Zamudio Sánchez., D. Pinos Galindo., F. Granados Colocho., E. Augustín Cordovilla.

Oral and Maxillofacial surgery, HRU Carlos Haya, Málaga, Spain

Objectives: Jacob's disease is regarded a rare condition in which a joint formation is established between an enlarged mandibular coronoid process and the inner aspect of the zygomatic body. Osteochondroma in the head it has been described in cranial base, maxillary sinus, orbits, posterior maxillary surface, and different mandibular areas like condyle, ramus, body and symphysis. Osteochondroma of the coronoid process are rare.

Methods: We present the report of a case of a 57 years old male who started presenting limitation of the mouth opening without other symptoms. No temporomandibular joint disease was present. MRI was realized without pathologic data. He started with conservative treatment and two years later the panoramic radiographs showed a coronoid tumour localized in the union of zygomatic arch and bone. The CT scan proved a bone excrescence depending on the coronoid process. Coronoidectomy was made through a combined approach intraoral and coronal with detachment of the zygomatic arch, recovering mouth opening. The post-operative period was performed without complications.

Results: Histopathological examinations revealed normal trabecular bone covered with hyaline cartilage. The histopathological diagnosis was osteochondroma.

Conclusion: Although the low prevalence of this entity, it should be considered as a possible diagnosis in patients with progressive limitation of mouth opening, especially those without temporomandibular dysfunction. The treatment is surgical, although the intraoral approach would be preferable, depending on the size of the tumour may be necessary extraoral approaches.



P-1280

A SIMPLE METHOD FOR PREVENTING REPEAT TMJ DISLOCATION FOLLOWING REDUCTION

R. Chandegra, L M. Hanu-Cernat, F. Shatwell

Oral and Maxillofacial Surgery, University of Coventry and Warwickshire Hospital, Coventry, United Kingdom

Recurrent dislocation of the TMJ is a common among patients with TMJ dysfunction.

Patients with cognitive disability due to cerebral palsy, learning difficulty, dementia, neurological impairment with spasticity are at higher risk of re-dislocating their mandibular condyles out of the articular fossa immediately or shortly after reduction of initial dislocation.

Traditionally, crepe bandage wrapped around the mandible and temporo-parietal area is used in order to limit the mouth opening and prevent further dislocation.

We present and illustrate our method of preventing TMJ re-dislocation using a Philadelphia cervical spine collar placed on the patient's neck in order to limit mandibular movements.

A 49 year old male patient with a history of a thromboembolic stroke treated with thrombolysis and a temporo-parietal craniotomy was referred with a 5 days old bilateral TMJ anterior dislocation with masticatory muscles spasm. Titanium plate cranioplasty was pending and currently he only had the scalp soft tissue protecting the brain.

An initial attempt to reduce the dislocation was carried out under sedation; however, the patient re-dislocated the TMJ instantly. Due to the previous craniotomy it was not appropriate to use a head bandage to prevent repeat dislocation.

Instead, a Philadelphia cervical spine collar was used in order to prevent wide opening of the mouth and immobilise the TMJ for two days without further recurrence of TMJ dislocation.

We recommend this method in all cases of difficult reduction of TMJ dislocation with a high risk of dislocation recurrence.



P-1312

GLENOTEMPORAL OSTEOTOMY AND BONE GRAFTING FOR RECURRENT CONDYLAR JAW DISLOCATION

C. Hernández Vila, F. Monje Gil, I. Rubio Correa, M. Moreno Sanchez, F. Ramirez Perez

Department of Oral and Maxillofacial Surgery, University Hospital Infanta Cristina, Badajoz, Spain

Introduction: jaw dislocation is defined as the loss of relationship between the condyle and the glenoid cavity. It may reduce spontaneously or be nonreducible. The most frequent type of dislocation is the anterior movement of the condyle and it could be acute, chronic or long time evolution.

Material and methods: We present 3 patients with recurrent anterior condyle dislocation who did not respond to the conservative treatment with soft diet, intermaxillary fixation and sclerosing substance injections in the temporomandibular joint (TMJ).

Results: We performed the glenotemporal osteotomy in the 3 patients. One patient was treated previously with arthroscopy in the right side and injection of sclerosing substance but a few months later required open surgery on both sides. There was not any complication in the postoperative period, without radiological signs of bone reabsorption and all patients are asymptomatic after more than 1 year of follow up.

Conclusion: There are many surgical options for the treatment of recurrent jaw dislocation, some techniques try to avoid the obstacle of the eminence and the other ones attempt to increase the height of the barrier restricting the anterior movement of the condyle. The glenotemporal osteotomy with the interposition of autologous bone grafts is a reliable method to restrict the anterior displacement of the condyle that preserve the original anatomy of the TMJ with a low rate complications.

**P-1355****TMJ ANKYLOSIS IN PATIENT WITH TREACHER-COLLINS SYNDROME AND ANOMALOUS ARTICULATION BETWEEN ZYGOMATIC ARCH AND MANDIBULAR CONDYLE: CLINICAL CASE REPORT**

H. Marques¹, R. Nunes², T. Neto², M. Mesquita², T. Lopes², D. Sanz², F. Pimentel¹, R. Saleiro¹, A. Ferreira²

¹ *Cirurgia Maxilofacial, Centro Hospitalar do Porto, Porto, Portugal*

² *Cirurgia Maxilofacial, Centro Hospitalar Universitário de Coimbra, Coimbra, Portugal*

Objective: Treacher-Collins syndrome usually affects bilateral and symmetric structures that include the orbits, zygomatic complex, mandible, and ears. The purpose of this report is to describe a clinical case of the syndrome, focusing on the temporomandibular joint (TMJ).

Results: A 33 year-old male presented to our department with severe mouth opening limitation, he had never been treated for his condition. Midfacial hypoplasia with a bilaterally symmetric convex facial profile, prominent nose, downward slant of the eyelids, sparse lower eyelashes and small ears were present. Family history was consistent with autosomal dominant inheritance.

He had hypoplasia of the maxilla and mandible with uncharacteristic posterior open bite and severe mouth opening limitation (<5mm), CT scan revealed abnormal bilateral ankylosis between a hyperplastic zygomatic arch and the mandibular condyle. We performed surgical excision of the ankylosis (lateral aspect of the zygomatic and condyle) preserving the medial portion of the condyle, coronoidectomy and on lay malar bone graft with the excised bone.

Mouth opening greatly improved with the procedure (20mm).

Conclusions: Most cases of TCS present with underdeveloped zygomatic arch. We report a case of ankylosis between a hyperplastic zygomatic arch and the condyle of the mandible, successfully treated with excision of the ankylosis.



P-1356

CALCIUM PYROPHOSPHATE DIHYDRATE DEPOSITION DISEASE OF THE TEMPOROMANDIBULAR JOINT- CASE REPORT

H. Marques, C. Monteiro, F. Pimentel, R. Saleiro, I. Santos

Cirurgia Maxilofacial, Centro Hospitalar do Porto, Porto, Portugal

Objective: Calcium pyrophosphate dihydrate deposition disease (CPDD, tophaceous pseudogout) is a rare crystal arthropathy characterized by calcium pyrophosphate crystal deposition in joint spaces, episodes of synovitis, and radiological features of chondrocalcinosis. While the disease is most prevalent in the shoulders, pelvis, knees, and joints of the hands, the axial skeleton can be affected, but the skull base is rarely involved.

Results: We present a case of a 41 year-old woman who presented with left temporomandibular joint (TMJ) pain and progressive limitation of mouth opening. She had previously done a CT that revealed a large mass at the TMJ with erosion of the glenoid fossa. An MRI was requested that revealed the same findings.

We performed surgery with excision of the lesion and continuity with the medial cranial fossa was detected. A partial condilectomy was also performed.

After the surgery the patient was pain-free and had improved mouth opening with no deviation.

Histology report was consistent with CPDD (tophaceous pseudogout).

Conclusion: CPDD has rarely been reported involving the TMJ. Symptoms are generally pain, swelling and hearing loss. Management is almost always surgical with many patients achieving symptomatic relief with resection, as in our case. CPDD can be associated with many medical problems, including renal failure, gout and hyperparathyroidism, but none of these risk factors were found in our patient.



P-1362

ANATOMICAL AND CLINICAL CORRELATION BEFORE AND AFTER ATRHOCENTESIS IN INTERNAL TMJ DISORDERS

Ângelo DF¹, Furtado IF¹, Sousa R², Cassiano M¹, Marques T¹, Nunes M¹, Salvado F¹

¹ *Stomatology, Hospital de Santa Maria, Lisboa, Portugal*

² *Neuroradiology, Hospital de Santa Maria, Lisboa, Portugal*

TMJ arthrocentesis represents a form of minimally invasive surgical treatment in patients suffering from internal derangement of the TMJ, especially closed lock. It consists of washing the joint with the possibility of depositing a drug or other therapeutic substance. Resolution of symptoms is due to the removal of chemical inflammatory mediators and changes in intra-articular pressure.

The main objective of our study is to correlate anatomical changes with the clinical ones observed in 8 patients suffering from internal TMJ disorders.

In this clinical study, 8 patients with internal TMJ derangement were submitted to arthrocentesis by two needle technique followed by injection of high molecular weight hyaluronic acid. Clinical evolution has been controlled by pain (VAS 0-10), maximum mouth opening and joint clicking. TMJ MRI has been performed just before and 6 months after surgery to detect anatomical changes.

Results and conclusions are still in course. The study will be finished on July, 2014.

**P-1379****ARTROCENTESIS AND SODIUM IALURONATE INJECTIONS IN TMJ SYMPTOMATIC DISORDER.**

G. Mancini¹, S. Buonaccorsi², M. Tedaldi², G. Reale³

¹ ENT department, SAN CARLO DI NANCY HOSPITAL, ROME, Italy

² MAXILLOFACIAL SURGERY DEPARTMENT, LA SAPIENZA UNIVERSITY, ROME, Italy

³ MAXILLOFACIAL SURGERY DEPARTMENT, POLICLINICO UMBERTO I, ROME, Italy

Objectives: authors report 1-year therapeutic outcome of tmj intra-articular injections of hyaluronic acid (HA) associated to arthrocentesis. Internal derangements of the temporomandibular joint (TMJ) are characterized by displacement of the intra-articular disc, that lead to clicking and popping sounds, or locking and difficulties in mouth opening. Osteoarthritis is a unilateral, degenerative disease of the jaw joint. It is characterized by breakdown of the articular cartilage, architectural changes in bone, and degeneration of the synovial tissues. These conditions may be symptomatic, especially during function. The most common results are represented by degenerative changes in the articular surfaces, increased friction, and gradual disc displacement.

Methods: 23 patients were included in this study: 9 with osteoarthritis (OA) and 14 with internal derangement of the temporomandibular joint (TMJ). The common symptom was pain that did not reduce with occlusal device and non steroid drugs. A cycle of 5 injections of HA (0,8 mg/ml- 1 ml per injection) into the TMJ was performed weekly, associated to double needle arthrocentesis. Patients underwent to Kinesiography, MR, orthopantomography, and vas scale to value function and symptoms.

Results: a follow up of 3- 6- 12 months was carried out; both group showed improvement in chewing and reduction of pain. Kinesiographic outcome instead did not described significant differences.

Conclusions: arthrocentesis followed by sodium hyaluronate intra articular injection represents a useful and minimally invasive procedure in the treatment of symptoms associated with temporomandibular joint disorder.



15. Preprosthetic Surgery and Implantology

P-10

RIDGE PRESERVATION 3 MONTHS AFTER TOOTH EXTRACTION WITH A MIX OF PARTICULATE DFDBA AND PLATELET CONCENTRATES. A RADIOGRAPHIC RETROSPECTIVE STUDY

B.Baniasadi, L.Evrard

Maxillofacial surgery, Erasme Hospital, Anderlecht, Belgium

Aim-Objectives

The present study evaluated the percentage of vertical loss of mid-buccal bone wall in case of post-extraction alveolar filling with DFDBA and platelet concentrates (PRF) gel and membrane, 3 months after teeth extraction, in order to compare with results gained with other techniques.

Methods

95 teeth were removed in 56 patient.

No exclusion criteria were defined. 17 patients had tobacco habits, and 16 received provisional removable prosthesis.

Teeth were removed for periodontic, endodontic, caries or root fracture reasons. Among teeth removed, 72 were monoradicular and 23 pluriradicular. Atraumatic extraction was performed with a minimal flap technique. Sockets were filled with a mixture of particulate DFDBA 300-500 μ m and platelet concentrates and covered with a platelet-rich-fibrin membrane. After suturing, primary closure was achieved in most time.

Measurements of bone height were performed by two independent operators, in the middle of the buccal aspect of the alveolar sockets, on Panoramic X-Ray before extractions, and on CT-Scan 3 months after. Calibration between panoramic X-Ray and CT-Scan measurements were made for each patient, using specific anatomical landmarks. We applied t test to compare the mean bone loss between different groups, we calculated Spearman correlation coefficient r to find out if tobacco use or provisional removable prosthesis had any effect on bone loss.

Results

In our series, three months after teeth extraction and alveolar ridge preservation using DFDBA and platelet concentrates, the mean percentage of vertical loss of mid-buccal bone wall is 5.53%. there is no statistical difference between bone loss of monoradicular teeth and pluriradicular teeth $p=0.982$ (NS). There is no statistical correlation between tobacco habits and bone loss $p=0.2$ (NS), and no statistical correlation between immediate prosthesis and bone loss $p=0.786$ (NS).

Conclusions

In this study, vertical mean bone loss after 3 months is 5.53% , which seems to reach a good result in socket preservation. Tobacco and provisional removable prosthesis does not seem to be negative factors in bone resorption.

Further RCT should be designed, in order to confirm these results.



P-22

THE TUNNEL TECHNIQUE IN BONE AUGMENTATION

Olga Eisenbraun, Svetlana Tarasenko

Oral surgery department, Sechenov First Moscow State Medical University, Moscow, Russian Federation

Sufficient bone volume in the implant site is key factor for long term results in dental implant surgery. Different techniques use alveolar ridge traditional incisions and raising of mucosal-periosteal flap. Using traditional incisions for patient with thin gingival biotype, with scarred mucosa due to previous surgeries, with associations pathology may lead to such complications as dehiscence, infections and bone graft loss. To avoid these complications the Tunnel Technique is used, creating ideal conditions for augmented bone healing.

Method. 26 partially edentulous patients having vertical and horizontal bone tissue loss were included in our clinical study. 13 of them had traditional incision, 13 patients had one or two vertical incisions. The autogenous bone blocks were grafted from the mandibular retromolar sites with the MicroSaw technique. The bone blocks were fixed with miniscrews. Dental implants were loaded 4 months after the augmentations.

Results. This study showed that patients where Tunnel technique incision was used had no or minor complications when compared to the patients with traditional incisions.

Conclusion. The Tunnel technique in bone augmentation allows us to achieve predictable and stable results. Maximal integrity of soft tissues and periosteum, minimal incision can guarantee revascularization which makes the treatment outcome predictable.



P-57

AN INTERNATIONAL MULTICENTER ANALYSIS OF FIXATION DEVICES USED FOR FACIAL EPITHESES

O.C. Thiele, J. Brom, M.P. Weißenhorn, J. Schlabe, R.A. Mischkowski

Department of Oral, Maxillofacial and Facial Plastic Surgery, Ludwigshafen Hospital, Ludwigshafen, Germany

Objectives:

Facial prostheses are regularly described in the medical literature since the 17th century. Even though modern surgical techniques are dominating reconstructive facial procedures, the capability to use facial epitheses for reconstruction is still an important skill for the maxillofacial surgeon.

We present an international multicenter analysis to clarify which techniques are used to fixate facial epitheses.

Materials and Methods:

We contacted all maxillofacial departments in Germany, Austria, Switzerland and Norway which were registered with the German society for oral and maxillofacial surgery (DGMKG). The centres were asked via electronical mail to provide information on the type of epithesis fixation systems currently used. The techniques of primary fixation (i.e. implants, plates, non- invasive techniques) and secondary retention system (i.e. magnets, screws, bars, buttons) were also analysed.

Results:

The return rate of the reports from the maxillofacial departments was 78 %. Overall, implant fixation was the preferred fixation system (77 %), no centre reported the use of non- invasive fixation techniques. The main retention systems in use were magnets (73 %).

Discussion and Conclusions:

Especially complete organ defects of the eye and orbit, but also of the nose and ear are sometimes eligible for reconstruction with facial epitheses. Some patients are not willing or physically not capable to receive complex surgical reconstruction of these defects. The current preferred fixation technique for facial epitheses consists of implant- based, magnet- fixated epitheses. For nasal prostheses, a plate- based, magnet- fixated system is often used. Because of the thin skin anatomy, centers occasionally reported problems with wound healing over the nasal plates.



P-61

EARLY FORECASTING OF DEVELOPMENT OF PERIIMPLANTITIS ON THE BASIS OF INDICES OF MINERAL METABOLISM OF ORAL FLUID

I. O. Pohodenko-Chudakova^{1, 2}, T. L. Shevela¹

¹ Oral Surgery Chair, Belarusian State Medical University, Minsk, Belarus

² Belarusian Collaborating Center Of EACMFS, Belarusian Collaborating Center Of EACMFS, Minsk, Belarus

Introduction. Development of diagnostic and prognostication tests on the basis of research of the oral fluid indices is one of the perspective directions in medicine.

Aim is to develop a test of osseointegration forecasting in dental implantation on the level of molecular Ca, the level of molecular P of oral fluid.

Objects and methods. We examined 43 patients underwent dental implant operations. A method for early forecasting of processes of osseointegration in dental implantation is proposed. We defined twice (before dental implantation and 3 days after surgery) the level of molecular Ca and molecular level P for the patient with point method using reagent Avarfenazo-3.

Results. Low risk of periimplantitis development is when the molecular Ca values is 2,58-2,63 and molecular P values is 6,89-7,62 and when molecular Ca values is 2.64 and more, molecular P values is 7,63 and more, the high risk was fixed.

In 88% of patients there was no risk of the periimplantitis development due to normal values of the molecular Ca and P. 12% of patients had the risk of peri-implantitis development. Though 2 persons had low risk for the complication and 3 - high risk of periimplantitis development.

Long-term results were examined: 2 years later in 30.2% of persons, 4 years later in 27,9%, 5 years later in 11,6%, 6 years later in 9.4%, 7 years later in 2.4% of patients.

We corrected the treatment for patients with low risk of periimplantitis and it allowed to prevent rejection of the implants for 2 persons. In the result of complex treatment we made prosthetic appliances subsequently for 93% of patients and they were satisfied with the immediate and distant results of treatment. The number of rejected implants as a result of development of periimplantitis amounted to 3 cases. Diagnostic efficiency of testing: Ca - 78%, P - 93%.

Conclusion. The results prove high efficiency of the proposed tests for osseointegration forecasting and indicate that their practical use can reduce the number of complications and adverse outcomes in dental implantation.

**P-63****MINERAL METABOLISM INDICES IN THE SERUM OF BLOOD IN DENTAL IMPLANTATION. EXPERIMENTAL CASE**

I. O. Pohodenko-Chudakova^{1, 2}, T. L. Shevela ¹

¹ *Oral Surgery Chair, Belarusian State Medical University, Minsk, Belarus*

² *Belarusian Collaborating Centre of EACMFS, Belarusian Collaborating Centre of EACMFS, Minsk, Belarus*

Introduction. At the present stage there is no uniform system of clinical and laboratory tests objectively characterizing the processes of osteointegration in the system jaw-dental implant which determines the relevance of this work.

Aim of examination is to make comparative assessment of mineral metabolism indices change for experimental animals after dental implantation accompanied with classic acupuncture treatment combined with the complex treatment.

Objects and methods. Examination was performed on 53 rabbits divided into three groups. 1st group consisted of 21 animals. It was a group of standard. 2nd group was a group of control underwent ordinary treatment. Animals of the 3rd group had acupuncture treatment postoperatively additionally during 10 days. We examined Ca^{2+} level, level of AP activity in the serum of blood, pH in the oral fluid for animal of 2nd and 3rd groups in different time: before operation, 3, 7, 14, 21 and 30 days after operation. Statistical processing of the data was conducted in the program Statistica 6.0.

Results. Animals of the 1st group had these indices for Ca^{2+} , AP activity level and pH. During examination we fixed the best results in the 3rd group. Ca^{2+} indices for the 3rd group of animals had authentic difference with initial indices by 4 examination. Ca^{2+} indices were authentically different comparing 3rd and 2nd groups of the 4 examination. No authentic difference found between 3rd and standard groups. AP activity level became less by the 3rd examination in the 3rd group. It was authentically better to the results of the 2nd group. This result was stable, no negative figures in the next examinations. pH indices became normal by 30 days in the group of control. The same results were achieved by 2nd examination for the 3rd group. One month later complications were fixed in the group of control – implants were rejected for 67% of animals and soft tissue near the implant became inflamed. The 3rd group treated with acupuncture additionally had the same complications but only for 25% animals.

Conclusion. Results we received demonstrated positive influence of acupuncture to the organism homeostasis of experimental animals underwent dental implantations course.



P-75

MULTIPLE TEETH REMOVAL WITH SIMULTANEOUS IMPLANTATION IN PATIENTS WITH GENERALIZED SEVERE PERIODONTITIS

Alexander V. Shchipskiy

Moscow State Medical and Dental University n. a. AI Evdokimov, Moscow, Russian Federation

Purpose: fixed implant prosthesis installed immediately after the multiple teeth removal.

Methods. 17 patients were included into the research due to the removal of all the teeth in the jaw and prosthetics with fixed prosthesis on implants. In 14 cases simultaneously and in 3 cases within two surgeries we removed 145 teeth, installed 164 ITI Standard Plus SLA implants and effected 33 sinus lift procedures. Defects plastic was performed with collagen (Polyst, Russia) without the use of membranes. Prosthetics of the edentulous jaws was effected in 76 % of cases on 5-6 implants after 3-4 months after the surgery (79%). Clinical and radiological control endured from 1 month up to 3.5 years. Statistics was prepared using Student's test and expert analysis.

Results. 162 implants (99%) integrated successfully: all 109 (100%) standard implants and 52 (96%) immediate implants ($p > 0.05$). Within one surgery lasting 1.5 - 2.5 hours 8 ± 4 teeth were removed, 8 ± 3 implants installed, 2 ± 1 sinus lift procedures were performed, 17 ± 6 manipulations were effected in total. Serial anaesthesia enabled pain control during the whole surgery. Implantation was realized after the radical bone sanitation and without molds. Implants were in primary stability. Plastic with collagen was simple, quick and always effective. Regeneration in periodontitis was not disturbed, no risks associated with simultaneous implantation were revealed. Patients reported good aesthetic result of prosthetic. Treatment results exceeded patients' expectations.

Conclusion. Comprehensive treatment of the patients with severe periodontitis may consist of one surgery and be completed with the rational prosthetics within three months after the treatment starting. Immediate implantation in patients with periodontitis can be effected without any additional risk providing the preliminary alveolar bone tissue sanitation, achievement of the primary implant retention and utilisation of the method of predicted osteoplastic. The proposed algorithm is designed for professionals with the corresponding surgical qualification in the field of periodontology and implantology and experience of local surgeries.



P-102

ALLOGENIC VERSUS AUTOGENOUS BONEGRAFTS FOR ALVEOLAR RIDGE AUGMENTATION PRIOR DENTAL IMPLANT PLACEMENT

G Princ, M Moret, E Henriot, T Piral, E Hauchard

Maxillofacial department, groupe hospitalier paris saint joseph, Paris, France

Allografts or autografts have been used for alveolar ridge augmentation prior to dental implant placement

A systematic review of the literature shows high rates of clinical incorporation of both types of grafts; and long term dental implant survival ,despite initial bone resorption

Cases report illustrate the presentation ,showing the techniques with auto grafts (cranial iliac mandibular) and allografts; and the results after dental implant placement



P-184

RESULTS OF CLINICAL AND HISTOLOGICAL EXAMINATION OF COLLAGEN MATRIX USE FOR INCREASING THE WIDTH OF KERATINIZED GINGIVA SURROUNDING THE IMPLANT

S. V. Tarasenko, I. P. Ashurko, A. M. Ershova

Department of Oral Surgery, Sechenov First Moscow State Medical University, Moscow, Russian Federation

Objectives: The aim of this study is to increase the efficacy of surgical treatment in patients with the lack of keratinized gingiva surrounding the implant

Methods: the clinical study included 45 patients aged 22-65 with the lack of keratinized gingiva. Four methods were used to increase the width of keratinized gingiva as follows: apically displaced flap, apically displaced flap with free mucosal graft, with connective tissue graft and using collagen matrix. The width of increased keratinized gingiva, painful syndrome, swelling and epithelization were evaluated in postoperative period. The fragment of regenerated mucosa in the implant area was taken with mucotome and examined using light microscope.

Results: No complications of the healing process were detected in any of the cases. The most expressive pain and the greatest increase of keratinized gingiva was observed after using free mucosal graft method (72% of width). The pain mostly located in the donor area. The width of keratinized gingiva in case of using collagen matrix (48% of width) was greater than in case of using connective tissue graft. The most marked swelling and the longest period of epithelization (>20 days) was clinically observed after application of collagen matrix. According to results of histological study, the regeneration of stratified squamous keratinizing epithelium and subepithelial lamina propria takes place after using all methods of increasing the width of keratinized gingiva. There was no structural difference between regenerated squamous epithelium samples in case when collagen matrix was used and epithelium of intact mucous membrane samples in most patients.

Conclusions: Using surgical methods of increasing keratinized gingiva width helps to increase the efficacy of treatment. Application of collagen matrix may be recommended as the method of choice for increasing the width of keratinized gingiva.

**P-215****MANDIBULAR FRACTURE AFTER INFERIOR ALVEOLAR NERVE TRANSPOSITION FOR ENDOSSEOUS IMPLANT PLACEMENT: REPORT THREE CASES, SURGICAL MANAGEMENT AND REVIEW THE LITERATURE**

P.M. Losa, J.L. Cebrián, M. Burgueño, M.J. Nieto, E. Alonso, D. Garcia, B. Apellaniz

Hospital La Paz, Madrid, Spain

Objectives.

The aim of this study is to report our experience with three cases of this rare complication, review the literature, and propose a surgical management based on our experience.

Methods

We review the literature and report the surgical management of three patients referred to our department with a mandible fracture after IAN transposition.

Results

Only three cases of fracture after IAN transposition were found in the literature.

Karlis V presented a case first treated with rigid MMF. After that the patient needed to be operated due to lack of consolidation. They performed open reduction and internal fixation (ORIF) with a 2.7-mm 7-hole titanium plate. Other patient was treated with rigid and elastic MMF during 6 weeks. The other one was treated with ORIF with uneventful follow up.

Three patients were referred to our urgencies service with mandibular fracture after IAN transposition. They were treated with open reduction and rigid fixation through intraoral approach. Locking plates 2.0 and 2.3 were used. They were set in the inferior border of the mandibular body as compression band. No implants were removed because they weren't implicated in the fracture. The postoperative follow up was uneventful.

Discussion

IAN transposition is performed in patients with reduced vertical dimension of mandible posterior sector. Moreover, many of them have an atrophic mandible that it's not able to support the same amount of force that normal mandibles. If an IAN transposition is performed and endosseous implants are placed, the anatomical structure of the mandible will be affected and bone stock will be reduced considerably. A little force over this mandible could produce a fracture, even masticatory forces. So we think these fractures must be treated with open reduction and internal fixation. We uphold that a load bearing osteosynthesis should be performed. Not to perform could result in non-union as complication. It would need surgery for more stable fixation and even bone graft.

Conclusions

Fracture after IAN transposition is a very uncommon complication and can be misdiagnosed. In our opinion, this situation must be treated as load bearing situation since they arise in atrophic mandibles with bone manipulation.

**P-219****MEDICAL AND SOCIAL REHABILITATION OF EDENTULOUS PATIENT SUFFERING FROM TYPE 1 DIABETES.**

I. Khomich¹, S. Rubnikovich¹, S. Khomich², A. Khomich²

¹ *Prosthetic Dentistry, Belarusian Medical Academy of Postgraduate Education, Minsk, Belarus*

² *Maxillofacial Surgery, Belarusian State Medical University, Minsk, Belarus*

Aims

Search for possibilities of the dental implantation and prosthetics in patients with significant atrophy of edentulous jaws and diabetes. With substantial atrophy of the alveolar processes it is very difficult to provide a decent prosthetic solution to edentulous patients due to inadequate fixation of full dentures, particularly in the lower jaw, and it is often impossible to perform dental implantation, especially in patients suffering from diabetes.

Materials and Methods

We examined a patient with complete secondary adentia and type 1 diabetes. We examined laboratory data and 3D computed tomography, and clinically identified opportunities for implant supported removable prostheses and bridges. Diagnostic models and templates were manufactured for evaluation in dental laboratory, as well as localization, amount and sizes of the planned dental implants were predefined. The surgery was performed in two stages under local anesthesia. Before the surgery the patient underwent correction of treatment for diabetes by an endocrinologist. Six months later, implant supported upper removable denture and non-removable metal-porcelain prosthesis in the mandible were fabricated.

Results

Stitches removed on the 10th day after the surgery. During the period of osseointegration X-ray examination was carried out. The maxilla had 4 and mandible - 6 implants installed. In 6 months gingivectomy was carried out in distal parts of maxillary alveolar processes due to excessive thickness, gingivaformers were installed and no implant mobility was found at a load of 15 N/cm.

Discussion and conclusion

After the treatment the patient underwent a control X-ray examination. X-ray showed complete osseointegration of implants with jawbones what characterized the successful stage before prosthetic treatment. In the postoperative period the patient received calcium supplementation and ascorbic acid, as well as antibiotics, including metronidazole. Rational prosthetics correlating to the height of lower face and the bone atrophy was the final result of the treatment. Patient was satisfied with effective aesthetic and functional result of surgical and prosthetic treatment. Thus medical and social rehabilitation of a patient suffering from diabetes and edentulous maxilla and mandible was accomplished.

**P-237****DENTAL IMPLANTATION OF ATROPHIC JAWS RECONSTRUCTED WITH ILIAC BONE GRAFT CREST.OUTCOME OF THREE CASES.**

F.Bllaca, K. Mance

Regional Durres Hospital, Durres, Albania

Objectives; Alveolar bone absorption after the teeth loss leads to important changes in the lower third part of the face. The lack of the functional load brings the progressive resorption of the jaws and the concomitant effect on the soft tissues. The total atrophic maxillae and mandible need to be reconstructed with a bone block graft to re-establish the facial size and shape, and to create the opportunity for dental implant placement. Evaluation of iliac bone graft crest on reconstruction and implantation of the atrophic jaws and a literature review of these cases, is the aim of this article.

Method. The upper jaws of two patients over 50 years old and a lower jaw of another one was first reconstructed with block grafts taken from iliac crest under general anesthesia. The grafts were installed on the vestibular maxillae and over the alveolar process of mandible, a little larger, predicting the later resorption of the graft. Dental implants were placed 6-8 months later in a good primary stability.

Results: Clinical results showed integration of the grafts 8 months after installation restoring the normal size of the jaws and the normal shape of the face. A good integration and stability showed also all the dental implants inserted on this period. The placement of the fixed bridges was done after 5 months.

Conclusion; The use of iliac bone crest graft is the treatment of choice on restoration of the severe atrophic jaws. Many other authors suggest the use of this type of graft. It creates the right conditions for implant placement.

**P-274****DISTRACTION OSTEOGENESIS. ONE OF THE METHODS OF PREPROSTHETIC SURGERY REHABILITATION OF PATIENTS WITH DEFECTS IN ALVEOLAR PART OF THE JAWS.**

E. Melikov, A. Drobyshev, S. Snigerev, S. Shamrin

OMFS, Moscow State University of Medicine and Dentistry named after A.I. Evdokimov, Moscow, Russian Federation

OBJECTIVE/AIM

Nowadays the number of adult patients are completely or partially edentulous, complicated by the defects of the alveolar parts of the jaws, which need rehabilitation with the use of dental implants is still very high. More stable, aesthetically satisfactory result, and early restoration of function can be achieved with a combination of a multi-stage surgery with rational prosthetic on dental implants.

Defects of the alveolar parts of the jaws with extensive bone deficit, caused by inflammatory degenerative process, traumatic injury, traumatic operations for malignancies of maxillofacial region, create problems for the dental implantation.

The aim of our study is to use the method of distraction osteogenesis in stage of preprosthetic surgery, in rehabilitations of patients using dental implants with defects of alveolar parts of the jaws.

MATERIAL AND METHODS

During the period from 2006 to 2013 130 patients with defects of alveolar parts of mandible and maxilla, caused by different aetiological factors were treated in our clinic. Planning of operations carried individually. Computer software, lithographic models, distraction devices and dental implants were used for planning surgical protocol.

RESULTS

Successful rehabilitation of adult patients with defects of alveolar parts of maxilla and mandible after surgical treatment of oral malignancies, traumatic injuries, chronic destructive inflammation was conducted.

As one of the step of rehabilitation of this patients was used the method of distraction osteogenesis.

CONCLUSION

Different methods of distraction were used to optimize the parameters of the alveolar part of the upper and lower jaws.

Opportunities of distraction osteogenesis may provide a solution to the many problems associated with the duration of the treatment, with existing conditions which cannot be treated with classical preprosthetic surgery.

**P-303****SINUS LIFT AND AUGMENTATION OF ALVEOLAR PROCESSES USING BONE SUBSTITUTE, COLLAGEN MEMBRANES AND ANTERIOR BONY WALL OF THE MAXILLARY SINUS.**

S. Khomich¹, I. Khomich², A. Khomich¹

¹ *Maxillofacial Surgery, Belarusian State Medical University, Minsk, Belarus*

² *Prosthetic Dentistry, Belarusian Medical Academy of Postgraduate Education, Minsk, Belarus*

Aims

Aim of our study was to determine the possibility of open sinus lift using large areas of anterior maxillary sinus walls, attached to sinus membrane, osteoconductive materials and collagen membranes during dental implantation.

Materials and methods

The objects of the study were patients with severe atrophy of the alveolar processes of the maxilla in the vertical and horizontal dimensions due to the long absence of teeth or after a traumatic tooth extraction causing bone tissue defect. In these patients dental implants were planned to support non-removable prostheses. Access to maxillary sinus was gained through 2 cm long by 1 cm wide lateral osteotomy. Performed bottom and lateral separation of Schneider membrane, bony plate folded upward, so that it became new bottom wall of maxillary sinus. The entire volume of the newly formed cavity filled with Bio-Oss, the formed defect covered with collagen membrane Alpha-Bio's Graft. Then mucoperiosteal flaps were then returned to their places and sutured.

Results

After the surgery, patients were observed in accordance with postoperative protocol. Sutures removed 10 days after surgery. Panoramic X-ray and 3D CT analysis determined an increase of the height and of transversal thickness of the alveolar processes in places where bone substitute was used to fill cavities formed during the sinus lift. Dental implantation was carried out as a second stage of treatment six months later after another X-ray exam.

Discussion and Conclusion

Two-stage surgery was carried out to prepare the alveolar processes for fixed prostheses. Thin and atrophic alveolar bone was augmented by using natural material Bio-Oss, autologous bone chips and a collagen membrane Alpha-Bio's Graft. During sinus lift procedure the formed lateral bony door was folded inward creating deep cavity and becoming the bottom wall of maxillary sinus. Installation of AlphaBio dental implants in the upper jaw became the final stage of surgical treatment. The feasibility of using such surgical techniques was determined based on the analysis of clinical cases. The results of this type of sinus lift and augmentation of atrophic alveolar processes proved clinically and radiologically to be an effective way to treat patients with such complexities.



P-322

LATERAL WINDOW APPROACH SINUS FLOOR ELEVATION TECHNIQUE WITHOUT GRAFTING MATERIAL, AND IMMEDIATE IMPLANT PLACEMENT IN ATROPHIC POSTERIOR MAXILLA

N. Onica, MD, DMD, A. Morari, DMD, G. Geletu, MD, DMD, PhD, G. Melian, MD, DMD, PhD

OMF Surgery Dept, St. Spiridon Emergency Hospital, IASI, Romania

Purpose: This technique presents an alternative in using various types of bone graft materials in atrophic posterior maxilla in order to rehabilitate the functions of the oral cavity.

Material and method: The technique consists of immediate implant placement after sinus floor elevation performed by lateral window approach. The study consists in the treatment of 20 patients with early loss of lateral maxillary teeth, with the age ranging between 32 and 60 years old , the remaining alveolar bone measuring between 2-8 mm.

The mean endosinus bone gain was between 8 ± 3 mm.

In every patient the implants were completely embedded in bone and the sinus floor had been relocated apical as initially , to the tip of the implant, after 6 months of healing . The check up after 6 months was made both by radiographical and pathological examination.

Results: All implants received primary stability, even the ones placed in 2 mm of remaining alveolar bone, and were successfully loaded after 6 months of healing. No implant failure and no infections occurred.

Conclusions: The outcome of this study suggests that the use of grafting materials in some cases is optional , the sinus mucosa and the bone having the capacity to form new bone after sinus floor elevation, based on the blood coagulum between initial sinus floor and the new position of the Schneiderian mucosa hanging on the tip of the implant.



P-342

THE RESULTS OF CLINICAL AND INSTRUMENTAL DEFINITION OF STABILITY DENTAL IMPLANTS IN ALVEOLAR BONE PROCESS OF PATIENTS JAWS

Y.Vovk, V. Vovk

Department of Oral Surgery and Prosthetic Dentistry, Faculty of Continuing Education for physicians, Lviv National Medical University named Danylo Halitzky, Lviv, Ukraine

Objective: We found that resonance frequency studies are not carried out in clinical trials of stability analysis of implants in native bone tissue and after its osteoplastic reconstructions. In connection with this we set out to analyze these in terms of clinical and instrumental parameters stability of dental implants.

Methods: For solving our goal we examined 14 patients (first group) who had 50 implants in bone alveolar process without jaws osteoplasty and 13 patients (second group) who had 37 implants in bone after reconstructive procedures. Clinical and instrumental evaluation was performed after the introduction of implants as well as for their osseointegration.

Results: Both groups showed clinical signs of implant stability in 96.7% of cases and statistically significant increase ISQ parameters after implantation and at their osseointegration. No differences were found, when comparing patients ISQ data between groups after putting of the implants, but after healing we have found significant difference in instrumental stability of the implants that was less in restored bone.

Conclusions: The use of clinical and instrumental diagnostic algorithm is effective for assessing the stability of dental implants and to optimize their functional load during prosthetics implementation.



P-382

TREATMENT CONCEPT FOR EXTREMELY ATROPHIC EDENTULOUS MANDIBULA RENOUNCING ON GRAFTS AND HEAVY SURGERY IN BONE HEIGHTS OF LESS THAN 5MM

F. Ghazaei, F. Spahn

CDPC-Clinic, Cannes, France

Since the introduction of endosseous dental implants, the treatment concepts for management of the edentulous mandible have changed drastically. Today surgery provides opportunity to place dental implants even in the lowest bone volumes in a way that normal mastication can be reinstalled and the intrinsic bone adaptation mechanisms can be reactivated following fix bridges.

We looked out for an acceptable proposition for the treatment of the mandible with less than 6mm bone in the symphyseal region and less than 3mm of vertical bone around the alveolar nerve; this pathology has an incidence of around 1 % of edentulous mandible cases.

In literature from 1974 to 2013 we identified therapy proposals and their disadvantages, heavy to assume for patients: crestal implants joint to onlay/veneer grafting , combinations of onlay, veneer, interpositional inlay grafting , distraction osteogenesis , ridge splitting , free and vascularized autografts, nerve displacement , mandibular interpositional grafting, tilted implants . The PEEK-PERSONO-concept is said to reduce invasivity to minimum , to osseointegration of the PEEK-implant material.

We observed the behavior of PEEK-PERSONO implants in function clinically, radiologically and prosthetically over 3 years. 4 patients with available bone height and width of less than 5mm/12mm in the interforaminal region and 2mm/12mm in the molar region have been implanted with PEEK-PERSONO-B- implants and fixed bridges. Problems, number of visits, interventions and the number of days of work-inability are registered.

There have been no complications after 3 years for our patients like jaw fracture, infections, osteomyelitis or implant loss. Less than 1000 cases of combined crestal implant treatments with surgical augmentation methods have been published. A reason to renounce on bone grafts is that volumetric measurements of the grafts and their related percentages of remaining bone attested to a progressive and unavoidable bone resorption of almost all the grafted bone in the maxilla and mandible.

For the treatment of extremely atrophic edentulous mandible a technique should be chosen which does not load teguments and which limits treatment risks to minimum. In the reported cases the PEEK-PERSONO-technic fulfills these requirements due to similarity of the PEEK-material to jaw bones' physical behavior.

**P-411****CLINICAL SOLUTION WITH PEEK IMPLANTS FOR ATROPHIED JAWS AFTER HEAVY GENERALISED CHRONIC PERIODONTITIS: A CASE DESCRIPTION**

A. Drobyshev, A.Bagdasarov

Maxillofacial Surgery, Moscow State University of Medicine and Dentistry, Moscow, Russian Federation

Objective: Partially edentulous jaws which are atrophied after heavy generalised chronic periodontitis makes normal implant procedures impossible. A cascade of surgical invasions (sinus-lift, 3D bone grafting, bone splitting, soft tissue grafting with auto or bovine bone) should be done to implant the base for fixed bridges rehabilitation.

At every step because of ungovernability of the processes there is a high risk of failure as loss or infection of filling and even autolog materials ; also a second surgical site to win the graft is necessary. Further risk is the temporary prosthetical solution, removable or fixed, on crestal implants. The aim of this study is to check the feasibility of alternative rehabilitation by metalfree immediately loadable PEEK implants.

Methods: A female patient, 58 years old, with heavy generalised chronic periodontitis was implanted with 4 basal PEEK and 8 crestal implants, 1 pterygomaxillary implant, with fixation of a immediately loaded fixed PEEK prosthesis. The two universal type implants have been shaped to personnalized monobloc implants fitting in the special atrophic anatomic situations.

Results: Seen the chronic pansinusitis the prognosis of sinus lift even after a radical sinusotomy was very suspicious. With our method and a special pterygomaxillary implant protocol we could surround and avoid these obstacles and enable immediate loading. In 3 years clinical and radiological examinations showed no complication. No implant was lost, all are in function.

Conclusions: PEEK method in a combination of basal and crestal PEEK implants is a promising technique for the restoration of heavy atrophied jaws even in cases of heavy generalised chronic periodontitis with the advantage to load immediately fixed bridges in one treatment session.

**P-447****OCCUSAL RECOVERY USING DENTAL IMPLANTS IN THE RECONSTRUCTED MANDIBLE WITH A CUSTOM-MADE TITANIUM MESH TRAY AND PCBM : 3-CASE REPORT**

K. Nakaoka¹, H. Yamada¹, G. Arai¹, K. Kumagai¹, T. Ikawa², S. Hirai², N. Harada³, N. Kawamura³, T. Ogawa², Y. Hamada¹

¹ Oral & Maxillofacial Surgery, Tsurumi University School of Dental Medicine, Yokohama, Japan

² Fixed Prosthodontics, Tsurumi University School of Dental Medicine, Yokohama, Japan

³ Dental Laboratory Technology, Tsurumi University School of Dental Medicine, Yokohama, Japan

Introduction

Currently, large mandibular defects have been treated using autogenous vascularized bone grafts such as fibula, ilia, or scapula. However, this conventional method is technically difficult to reproduce the original mandibular configuration, and has donor site morbidity as a major drawback. Moreover, the establishment of reasonable intermaxillary relationship between the reconstructed mandible and maxilla is not easy. To overcome the mentioned difficulties, we fabricated a computer-assisted designed custom-made titanium-mesh (Ti-mesh) tray for mandibular reconstruction. During reconstructive surgery, we pack particulate cancellous bone and marrow (PCBM) harvested from the iliac crest into the Ti-mesh tray which configuration is same as the original mandible. After successful reconstruction, occlusal recovery using dental implants is started.

Case reports

In this presentation, we introduce the clinical course of 3 cases reconstructed by our method. Case 1 is a 11-year-old girl with Ossifying fibroma in the left mandible who underwent segmental mandibulectomy (#35 - ramus) and immediate mandibular reconstruction. Twenty months later, 2 dental implants were surely placed in the reconstructed mandible without additional alveoloplasty. Case 2 is a 47-year-old man with ameloblastoma in the right mandible who underwent segmental mandibulectomy (mandibular angle - #32) and immediate mandibular reconstruction. Fourteen months later, 4 dental implants were surely placed in the reconstructed mandible with additional alveoloplasty. Case 3 is a 47-year-old man with ameloblastoma in the mid mandible who underwent segmental mandibulectomy (#46 - #33) and immediate mandibular reconstruction. Fourteen months later, 5 dental implants were surely placed in the reconstructed mandible with additional alveoloplasty. In all cases, the clinical design for placement of dental implants and superior prosthesis were not difficult.

Conclusion

Therefore, our mandibular reconstruction is suggested to be more reasonable for occlusal recovery than the conventional mandibular reconstruction.



P-449

A 5 YEAR EXPERIENCE ON AUTOLOGOUS BONE BLOCKS USE IN IMPLANT DENTISTRY

S. Ibric Cioranu, I. Fagetan, M. Cernusca Mitariu, V. Petrescu Seceleanu, V. Ibric Cioranu

ULBS, Sibiu, Romania

Objective: OMF surgeons, oral surgeons and implantologists are often dealing with a limited amount of bone available for placing dental implants. In large defects there is an impetuous need to use autogenous bone (especially in block form). Bone blocks combine the 3 major advantages needed in hard tissue reconstructions: osteogenesis, osteinduction and osteoconduction. There are well established protocols in harvesting and fixing bone blocks in the defect sites.

Methods: We analysed a group of patients admitted to our department between 2008 and 2013 with bone defects. A total of 98 bone blocks were placed. They were harvested from the oral cavity and from extraoral sites (ilium, calvaria).

Results: A follow up period of 8 to 45 months showed positive results of the implant driven therapy in the reconstructed bone.

Conclusions: Although there are numerous ready to use products available from various companies, the autologous bone remains the gold standard in hard tissue preprosthetic reconstruction.

**P-459****INDICATORS OF MACROPHAGE ACTIVATION OF PATIENTS WITH NONINFECTIOUS PERIIMPLANTITIS**

F.M. Mustafaeva, M.Sh. Mustafaev, Z.F. Kharaeva

Medical department, Kabardino-Balkarien State University, Nalchik, Russian Federation

Despite considerable progress in the implantation of teeth, still there is a problem of postoperative complications which arise at both the early and late stages of the implantation. The reasons of complications are not always clear and can be connected with the accession of infection and have other causes. One of the consequences of activation of macrophages as reaction on to implant is to increase the production of free radicals.

The aim was to identify indicators metabolism of oxygen radicals in tissues of patients with single screw implants in various periods of time of implantation.

Materials and Methods. 17 patients (47-58 age, 10 women, 7 men) with single screw implants at different periods after installation were obtained. The concentrations of superoxide radical, hydrogen peroxide, nitrite-nitrate in tissues near to implants of the patients were investigated with spectrophotometric method. Statistical data processing was performed using standard methods.

Results. At the first stage of the survey (the time of installation of the implant) in the tissues of the show increased levels of superoxide radical and hydrogen peroxide as a reaction to injury and is a sign of inflammation through the activation of macrophages , ($p < 0,001$). Levels of nitrite-nitrate were in the normal range. On the second stage of the survey (30 day) levels of nitrite-nitrate still within the normal range, the level of superoxide radical is normal due to the decreasing inflammation and adaptation to the foreign body. At the third stage (3 month) normal level of peroxide of hydrogen was determined, but increases the levels of superoxide anion radical and of nitrite-nitrate, which leads to the formation of peroxynitrite. It is also an important factor in the development of complications due to the toxic effect of secondary radicals (peroxynitrite).

Conclusions. Consequently, the necessary and reasonable preventive measure is development of methods of prevention of complications connected with oxidative radicals, which will reduce the risk of late complications of implantation.

**P-474****NEW WAYS WITH CUSTOM IMPLANTS MANUFACTURED BY USING ELABORATED CAD/CAM AND DVT TECHNOLOGY. FIRST CLINICAL EXPERIENCE WITH THE REPLICATE SYSTEM**

HC Jacobsen¹, S Clasen², P Scherer³

¹ *Maxillofacial Surgery, University of Luebeck, Luebeck, Germany*

² *Praxis für Zahnheilkunde, Lessingstrasse 14, Luebeck, Germany*

³ *Maxillofacial Surgery, Klinik am Ring, Cologne, Germany*

Objective: The authors report on a new implant system in order to treat patients in an innovative and minimally invasive approach. The REPLICATE Implant System is a patient-specific, 100% customized replica of the original tooth, implanted directly after extraction. Advanced technologies are used to shape and adjust the anatomical shape of the crown and root of the implant for insertion based on CBCT/DVT image and impression data.

Methods: 10 patients were included in the pilot study. The requirements to be fulfilled were: tooth to be replaced still in situ, no advanced periodontopathy or inflammation, structural intact alveole and no comorbidities. The REPLICATE system has splints to the neighboring teeth to achieve primary stability. It consists of a medical grade titanium root that mimics substantially the shape of the root of the non-functional tooth to be replaced. The endosseous titanium implant portion is seamlessly joined to a transgingival abutment made of zirconium. The abutment has a custom-shape designed to receive the definitive crown once the osseointegration has taken place. The implant benefits from an extremely osteo-conductive titanium surface due to chairside activation using a cold-processing glow discharge (plasma) device.

Results: All implants showed stable osseointegration after six months of retention time at the time the definitive prosthetic restoration was placed. The aesthetic results were rated as very good by patients and surgeon while postoperative complaints were minimal.

Conclusions: The REPLICATE system allows stable socket-preservation with maximum support of the surrounding bone and soft tissue. Therefore degradation is prevented and an excellent emergence profile can be achieved. Patient convenience is very high as surgical treatment is limited to one appointment. For a successful result the indication must be precisely defined, particularly the bone should be free of inflammation and should surround the implant completely. The long term stability has to be investigated in further studies.



P-496

IMMEDIATE IMPLANT, IMMEDIATE LOADING. IS IT PREDICTABLE?

F. Riba, M. Cuesta, B. Duarte, M. Ciudad, D. Medina

Department of Oral and Maxillo-Facial Surgery, HGU CR, Ciudad Real, Spain

INTRODUCTION

Implant-supported prostheses are the gold-standard in oral rehabilitation. In order to minimize the treatment time and number of medical visits, "all-in-one" techniques are proposed. We present our experience in immediate-implant and immediate-loading for full-arch rehabilitations.

MATERIAL AND METHODS

52 full-arch rehabilitations in 40 patients were performed from 2007 to 2013. Exclusion criteria were heavy smoking, diabetes, non-controlled oncological disease or periodontal disease, active infection. 27*4, 15*6, 10*8 implants, 278 implants.

Teeth extractions, implant surgery, bone regeneration, soft tissue grafts and full-arch immediate loading in one or both jaws were performed at the same time. Four to five months later the definitive prostheses were done.

RESULTS

Ten implants, mainly in the upper jaw, fail during the osseointegration process. One of them placed in a previous infected socket. Despite the failing implants all the rehabilitations were completed.

After a minimum of 1 year and maximum 7 years of follow up, no more implants were lost. The most important problems observed are non aesthetic retraction of gingiva seen mostly in patients with a fine biotype where no soft tissue graft was inserted.

DISCUSSION

The results are in accordance with the Literature. In our opinion there are some landmarks that can not be overseen to get success. These are length enough and primary stability of implants, grafting as many times as necessary but from the first surgery, stiffness of the provisional structure, occlusal adjust in order to protect weakest elements (short cantilevers, charge occlusion on harder bone, balanced occlusion...)

CONCLUSION

Immediate implant and immediate loading is a predictable and successful technique to rehabilitate complete edentulism in one step. It reduces time-package, number of visits to the office, allows the clinician to manage soft tissue before the final prosthesis. All in order to improve the quality of life of the patient.



P-501

IMMEDIATE LOADING IN ONCOLOGICAL PATIENTS

M. Cuesta, B. Duarte, F. Riba, M. Nevado

Department of Oral and Maxillo-Facial Surgery, HGUCR, Ciudad Real, Spain

INTRODUCTION.

Immediate loading of dental implants has been a great progress in implantology. Today, protocols in terms of indications, technique, time-outs and contraindications are very accurate. Immediate loading implant experience is very low.

MATERIAL AND METHODS.

We present a 60 years old man with squamous cell carcinoma of the tongue. Through lip incision with mandibulotomy approach, we attain the tumoural lesion to complete an adequate excision and reconstruction with antebachial fasciocutaneous free flap. We associated functional neck dissection. Later, patient was submitted to radiotherapy. Three years later, patient presented aggressive caries and he lost all mandibular teeth. We performed in one surgery all extractions and dental implants placement. Sixteen hours later, we placed one resin prosthesis for 6 months after which the final metal-porcelain restoration was placed.

RESULTS.

Implants didn't present any complication. Two years after loading, implants remain as the day of the placement and patient is very satisfied.

CONCLUSIONS.

Immediate loading after extraction in oncological patients submitted to radiotherapy it worked excellent in this case. It's essential that patient maintain a good level of oral hygiene and alveolar bone is well vascularized.

**P-571****MINI DENTAL IMPLANTS BENEFITS IN RETENTION OF PERMANENT TEETH IN CHILDREN**

E. Kuznetsova, A. Gurgenzadze, O. Koparzova, O. Loginopulo, P. Kuznetsov, A. Klinovskaya

MSMSU named after A.I. Evdokimov, Moscow, Russian Federation

Objective. To conduct a comparative analysis of the duration of orthodontic treatment with temporary implants and without them.

Materials and methods. The treatment of 59 patients aged 14 to 18 with the retention of canines was carried out with the application of temporary implants. In the control group (60 patients) it was evaluated the treatment of children in the same age group with similar diagnoses conducted by conventional techniques.

In 34 patients mini dental implants were installed on the upper jaw and in 25 patients on the lower jaw. In the maxilla mini dental implants were installed for distalization of the first molars and additional support, whereas on the mandible only for additional support in the retention of the canines of the upper jaw. Mini dental implants fixation in the maxilla was performed between the second premolar and first molar, on the mandible between the lateral incisor and the canine or between the canine and the first premolar.

Mini dental implants "CONMET" (Russia) were used as temporary implants. Mini dental implants were being installed under irrigated anesthesia simultaneously with the crowns exposure of impacted canines. The crowns exposure of impacted canines was conducted with radio knife and laser and the standard procedures.

We used radio wave surgical instrument «Surgitron Dento-Surg» «Elman International» (USA) and dental laser «Opus duo» (Israel) with CO₂- laser for soft tissues and erbium laser (erbium - W7g, YAG yttrium-aluminum-granat) for solid tissues.

Results. It was noted that orthodontic treatment was shortened twice in all children in the study group as compared with the control group. Optimal timing for fixation of mini dental implants in jawbones is about 3-6 months (the active orthodontic treatment with additional rubber rods). The active orthodontic treatment according to the traditional methods in the control group took from one to two years.

Conclusions. The use of mini dental implants as temporary implants to provide additional support significantly reduces the time of orthodontic treatment and achieves good aesthetic and function Optimal timing of fixation al results.



P-625

TUMOUR PATIENTS WITH RADIOTHERAPY IN HEAD AND NECK REGION AND ENDOSSEOUS IMPLANTS

C. Schmidt, W. Reich, A. W. Eckert

Martin-Luther-University Halle-Wittenberg, University hospital for Oral and Plastic Maxillofacial Surgery, Halle / Saale, Germany

Objectives

Orofacial implantological rehabilitation following oncological radiotherapy in head and neck region is challenging. Restoring structure and function there is special need for additional retention elements to improve patients quality of life. The purpose of the study was to determine the long term implant survival rate in irradiated jaw bone.

Methods

A monocentric retrospective study of tumour patients treated over the period of 30 years (01/1984 to 01/2014) was performed. All patients receiving radiotherapy in the head and neck region and treated with endosseous implants were included. The survival rate was correlated with respect of the implant configuration, peri-implant soft and bone tissue, the characteristics of radiotherapy and interval to operation, area of implantation.

Results

Out of 34 patients receiving radiotherapy in the head and neck region n=30 patients provided a cumulative dosage of 64-72 Gy, n=4 with a dosage of 25-60 Gy. A total of 150 inserted implants were analysed. The average follow up was 45 months (3,75 year). The cumulative survival rate was 93% (bone level implants 98%, soft tissue level 89%). Only 11 implants were lost (early loss n=7 in the healing period, late loss n=10 with the cumulative dosage exceeding 64Gy). The survival rate in native unresected bone was 95%, in partially resected bone 85%. Concerning time to implantation the success was as follows: implantation post radiotherapy 97% (mostly after 12-24 months), implantation before radiotherapy 72%. In maxilla the success rate was 92% (in case of internal sinus lift 89%) and mandibula 93% (no case of osteoradionecrosis). The prosthetic rehabilitation was mostly performed with removable dentures (n=71 jaw bar, n=25 locator, n=11 telescope), together with fixed dentures providing the best results measuring bone loss after 2 years. The angulation of the inserted implant was without significance.

Conclusions

It can be concluded that the prognosis of endosseous implants in irradiated patients suffering from malignancies in cranio-maxillofacial region is predictable. The sinus lift procedures and implantation in partially resected bone are significantly associated with peri-implant tissue loss. Jaw bar supported dentures can be considered as standard prosthetic devices.



P-726

BONE RECONSTRUCTION IN PATIENTS AFTER TUMOUR SURGERY OR TRAUMA.

Danuta Samolczyk-Wanyura, Michał Jonasz, Paweł Zawadzki, Marek Rybicki, Edyta Jaworska

Department of Cranio-Maxillofacial Surgery, Oral surgery and Implantology Medical University of Warsaw, Warsaw, Poland

Introduction

Restoration of bone within the upper and lower jaw is a problem often encountered in surgical practice. The issue has been widely analysed and growing experience allows clinicians to supply patients with extensive bone defects with implants. The rapid development of biotechnology has allowed the production of a wide range of materials for bone used to restore the lost bone. Despite this, the gold standard remains the reconstruction of autologous bone.

Objective

The aim of the study is to compare different methods of reconstruction of the alveolar process of the jaws.

Methods:

The study included patients requiring reconstruction of the alveolar bone. Planning involves mainly consideration of further implant prosthetic treatment after reconstructive surgery. The paper presents clinical cases of implant treatment in patients after reconstruction of bone in the maxillofacial surgery. Indications for treatment and the course of treatment with pressure on planning are discussed.

Results and conclusions

In patients with bone loss after craniofacial trauma or tumour can be successfully reconstructed. Adequate planning of the surgery gives predictable results and allows further implant prosthetic treatment.



P-730

THE USAGE OF IMMEDIATE LOADING TECHNIQUE IN REHABILITATION OF PATIENTS WITH ADENTIAS OF JAWS

A. Shabanovich, E. Rouzov, M. Varabei

Private clinic Relly, Minsk, Belarus

Objective: to define indications, contraindications, risk factors when using immediate loading technique of dental implants in different clinical situations (from single adentia to complete adentia of jaws).

Methods: 50 patients with adentias of jaws were operated, including 30 patients with single adentia, 15 with adentia in one segment and 5 with complete adentia.

First of all computer tomography of maxillofacial region was carried out to all patients. The surgery was performed under local anesthesia. Quantity of implants placed to patients with complete adentias of jaws varied from 8 to 10 on upper jaw and from 6 to 8 on lower jaw depending on type of orthopedic construction.

Dental prosthetics was carried out during first 3 days after dental implantation with the use of non-removable temporary orthopedic constructions with cement fixation. Patients were receiving standard complex anti-inflammatory therapy. Sutures were removed on the 14th day after implantation. If dental cement had vanished, immediate fixation of temporary orthopaedic construction was done. The replacement of temporary construction to permanent one was carried out in 6 month after dental implant placement.

Results: 148 dental implants were placed totally. 3 implants were lost. The percentage of failure is 2,027 %.

Conclusions:

Indications of usage of this technique are:

- ÿ The absence of bone deficiency in dental implantation region
- ÿ It is recommended to use implants with more than 10mm of length and with the angulation of dental implant no more than 15 degrees
- ÿ Primary stability of implant should be no less than 50 N
- ÿ It is recommended to remove the construction from occlusion in case of single restoration
- ÿ The control of hygiene
- ÿ The absence of temporary construction micromobility

It is recommended to apply this technique to patients who do not have any functional disorders (bruxism, obvious occlusion pathology)



P-748

MAJOR DEFECT RECONSTRUCTION WITH EXTRAORAL AUTOGRAFTS IN PREPROSTHETIC IMPLANT SUPPORTED TREATMENT.

D. Sirbu, V. Topalo, A. Ghetiu, I. Suharschi, A. Mighic, Gh. Cucu, A. Mostovei, M. Mostovei, S. Caldarari

*Department of oral and maxillo-facial surgery and implantology "A.Gutan", "Nicolae Testemitanu"
State University of Medicine and Pharmacy, Chisinau, Moldova*

Aim – to study the efficiency of different extraoral autografts donor sites in major defects reconstruction in preprosthetic implant supported treatment.

Material and method. 8 patients (6 females, 2 males, mean age 39,7 years) with mandible (7 cases) and maxilla (1 case) defects underwent preprosthetic (implant anchored) surgical treatment with bone avascular autografts in 2010-2013. Donor sites: iliac crest – 6 cases, rib – 2 cases. Defects etiology: bone tumours – 3 cases, severe atrophy - 3 cases, posttraumatic – 2 cases. Bone grafts were harvested in a classical manner and installed in the recipient zone with screws. Graft atrophy was studied by CT and OPG analysis (height and width, postop, 4 months - implant stage, 8 months – implants loaded, 3 years) and by possibility\impossibility of dental implants installation in the interest region.

Results: 5 cases (from 6) with iliac crest grafting, underwent dental implant installation and prosthesis manufacture. In 1 case bone graft lost, due to soft tissues covering the graft failed in 2 weeks postop. Bone resorption in iliac crest was determined to be 41,5%. In 2 cases of rib grafting it was not possible to install dental implants due to insufficient bone volume in the donor site, those patients underwent prosthetic rehabilitation by removable dentures. Resorption of rib graft determined to be 37,6%.

Conclusion: Due to insufficient bone volume in cases with rib grafting, we consider that iliac crest site is more favourable for major defects reconstruction, and it's atrophy must be considered at intervention planning. Soft tissues management in recipient zone is more challenging then bone grafting itself.



P-762

PATIENTS SATISFACTION WITH DENTAL IMPLANT TREATMENT

M. Bernasconi, T.J. Lambrecht, F. Carinci, V. Candotto, G. Lewis, M. Lawrence, J. Wille, P. George, S. Pinkerton, F.P. Carls

University of Zürich, Zürich, Switzerland

Objective

The objective of this study was to evaluate patient satisfaction with dental implant therapy in 135 patients treated in a private practice.

Methods

135 patients (76 females, 59 males) with a total of 287 implants inserted between 2001 and 2012 answered a questionnaire focusing on satisfaction with the overall results, the aesthetic outcome, chewing ability, pain or discomfort after treatment, experience with bone grafting procedures, costs and maintenance. Responses were either given in single or multiple choices and on a 10 cm Visual Analogue Scale(VAS).

In addition they underwent a clinical and radiological investigation to compare the subjective perception with objective clinical criteria.

Results

129 patients (96%) were more than satisfied with the overall results of the treatment and almost all patients (99%) would recommend the therapy to family and friends if indicated. About 50% of the restoration in the sample occurred in the aesthetic zone and 95% of the patients were very satisfied with the aesthetic results. 97% of the patients were highly satisfied with regards to chewing ability. Measurement of pain intensity immediately after implant placement using a VAS showed a mean of 2.7.

Autologous bone grafting procedures (local bone graft, mandibular block bone graft, hip bone graft) were well accepted by the patients and no one reported any disturbances from the harvest site.

The majority of the patients (96%) thought that the result was worth the money they spent and most of the patients had a very good recall compliance. Clinically the average peri-implant pocket depth measured was 1.7 mm.

More than 70% expected dental implants to last for a lifetime or more than 20 years.

All implants were in situ after a mean time in function of 62.3 months.

Conclusion

Implant therapy is a valid solution for enhancing the quality of life in terms of masticatory function, appearance and psychological state of mind. Possible drawbacks of the treatment (e.g discomfort, costs, length of the treatment) are well tolerated by the patients here presented. Important seems a good compliance with regards to dental hygiene and check-ups with the dentist.



P-766

BIOMECHANICS OF PERI-IMPLANTITIS- THE MACRO-ARCHITECTURAL DESIGN OF THE IMPLANT THAT MAKES THE DIFFERENCE.

Z. Laster

Poriya Hospital, Lower Galilee, Israel

Peri-implantitis is the main cause of osseointegrated implants failure. To prevent the process , we must understand the biomechanics of the peri-implantitis. In the search for explanations it was clear that the macro- architectural design of the implant that makes the difference.

Finite Element Analysis showed the stress distribution at the neck area and led to new designs with considerable reduced stress at the neck.

A new implant will be presented:

A "winged" implant specially designed for post extraction immediate loading and D5 bone type.

This implant will be presented with finite elements analysis and animal experiments with explanation of the biomechanics of pri-implantitis.

**P-793****LONG TERM RESULTS OF DENTAL IMPLANT FOR THE PATIENTS WITH CLEFT LIP AND/OR PALATE**

Katsuhiro MINAMI, Hideto IMURA, Teruyuki NIIMI, Toshio SUGAHARA, Nagato NATSUME

Cleft Lip and Palate Centre, Aichi-Gakuin University, Nagoya, Japan

PURPOSE We think an important goal in the treatment of cleft lip and/or palate patients is to normalize the function and anatomy of cleft region. Dental reconstruction of alveolar cleft is of great importance because of congenital missing of lateral incisor. Most of cleft patients have benefited from alveolar bone grafting and orthodontic realignment and require little or no prosthodontic treatment. Recently dental implant has been utilized for cleft patients. The purpose of this study was to evaluate long term results of dental implant into the grafted alveoli.

MATERIAL and METHODS Ten patients who had installed dental implants in alveoli more than 5 years were examined. All patients received orthodontic treatment and put removable retainer.

RESULTS The mean age at the time of implant treatment was 22.5 years old. 8 patients were received secondary bone grafting. 2 patients were performed tertiary bone grafting. 7 patients were needed additional alveolar augmentation for implant placement. 17 implants were inserted. There was no implant failure and loss.

DISCUSSION In many CLP patients, prosthetic rehabilitation is essential after orthodontic treatment because of congenital missing of lateral incisor. However there are many difficulties of prosthetic treatment in CLP patients. Recently alveolar bone graft was applied to the serial treatment of CLP patients. Alveolar bony reconstruction with bone grafting enabled us to apply almost same prosthetic protocol in CLP patients. Dental implant prosthesis has been thought to be one of the prosthetic option. From the viewpoint of prosthesis, there is no loss of implant in our cases, though observation period was insufficient. However there are some problems. In our cases, alveolar augmentation was necessary for fixture installation in many cases though secondary bone graft was performed formerly. In addition, there were some problems about soft tissue management after final prosthesis (loss of attached gingiva, exposure of prosthetic margin, hygienic problem).

It is concluded that alveolar bone grafting followed by implant placement is a reliable alternative for prosthetic rehabilitation of cleft patients. This treatment has the potential to overcome functional and psychological inconveniences for CLP patients.



P-806

HARDWARE FREE SANDWICH OSTEOPLASTY

C. Brandtner, F. Borumandi, C. Krenkel, A. Gaggl

University Clinic of Oral and Maxillofacial Surgery, Landeskliniken Salzburg, Salzburg, Austria

Objective: To present a new technique for sandwich osteoplasty in the posterior mandibular region and to evaluate its feasibility for dental implants

Materials and Methods: A retrospective study on sandwich osteoplasty of posterior mandibular region was conducted. No osteosynthetic material was used for stabilization of the osteotomy. The fixation was achieved by interposition of two bone blocs harvested from the retromolar region. Results: 18 subjects with 26 sites of severe atrophy of the posterior mandible were treated. After a healing period of four months 53 dental implants were inserted into the augmented region. The implants were loaded with single crowns or fixed dental prostheses three months after implantation. The mean vertical bone gain prior to implant placement was 4.2 mm (SD +1.4mm). The bone loss from augmentation to implantation was on average 2.3 mm (35.4%). All placed implants were osseointegrated and showed no clinical signs of peri-implantitis. In 3 subjects the elevated bony segment perforated the lingual mucosa near the adjacent teeth after excessive elevation (> 6 mm), which healed without any sequela.

Conclusion: An alternative method for vertical alveolar ridge augmentation of the posterior mandible is presented. No osteosynthetic material is required for fixation and related complications can be avoided. Further prospective clinical studies are required to demonstrate the feasibility of this technique to the conventional sandwich osteoplasty.

**P-818****POST-AURICULAR FULL THICKNESS SKIN GRAFTS IN THE MANAGEMENT OF SOFT TISSUE DEFICIENCIES AROUND DENTAL IMPLANTS PLACED IN VASCULARISED FIBULA GRAFTS**

Metin Sencimen¹, Aydin Gulses², Mustafa Ayna³, Hasan Ayberk Altug¹, Altan Varol⁴, Jülide Ozen⁵, Yahya Açıl⁶

¹ *Oral and Maxillofacial Surgery, Gulhane Military Medical Academy, Ankara, Turkey*

² *Center for Oral Health and Dentistry, Mevki Military Hospital, Ankara, Turkey*

³ *Clinic Implantology and Periodontology, Clinic Implantology and Periodontology, Duisburg, Germany*

⁴ *Oral and Maxillofacial Surgery, Marmara University, İstanbul, Turkey*

⁵ *Prosthodontics, Gulhane Military Medical Academy, Ankara, Turkey*

⁶ *Oral and Maxillofacial Surgery, Christian Albrechts University, Kiel, Germany*

Objective The aim of this study was to present the use of post-auricular full thickness skin grafts in the management of mandibular soft tissue deficiencies around dental implants inserted in vascularised fibula grafts.

Methods Two patients underwent mandibular reconstruction via vascularised fibula grafts due to mandibular gun shot injuries. Inadequate sulcus gaps secondary to mandibular soft tissue deficiencies were managed by full thickness autologous skin grafts harvested from post-auricular region. Dental rehabilitation was achieved by implants placed in free fibula grafts.

Results In both cases, complete graft survival was obtained. Cosmetic and functional outcomes were satisfactory.

Conclusion Owing to its high resiliency, elasticity and thin and hairless structure, full thickness post-auricular skin graft is an effective treatment modality in the management of intraoral soft tissue deficiencies.

**P-966****BONE GRAFTING TECHNIQUE USING PRGF IN PATIENTS WITH PERIODONTAL DISEASES AND MALOCCLUSION..**

S. Shamrin, A. Drobyshev, E. Melikov

Maxillofacial surgery, Moscow state university of medicine and dentistry, Moscow, Russian Federation

Objective: Periodontal diseases for many years remains the common defeats of dental system. Prevalence of periodontal disease in the adult working population of Russia has reached to 86.2%. This pathology is accompanied by inflammation, bone resorption, vertical and horizontal alveolar bone defects, gum recession, tooth loss, etc. Periodontal disease may be due to poor oral hygiene, functional injury, bad habits, common somatic diseases. Besides that, iatrogenic factor of bone resorption with thinning of the bone tissue in the upper and lower jaws, during the orthodontic treatment, including patients with congenital dentofacial anomalies. Especially, in case of a significant inclination change of the front teeth of the upper and lower jaws. With the aim to prevent the complications described, our technique was developed: bone grafting using tunnel access and Plasma Rich in Growth Factors. The purpose of the study is to evaluate the efficiency of application the osteoplastic materials and PRGF, to increase bone tissue of the upper and lower jaw with tunnel technique in a patient during a combined orthodontic and orthognathic treatment.

Methods: In the clinic of the Moscow State University of medical and dentistry 20 patients with bone resorption in the anterior region of the upper and lower jaws were operated to increase the volume of bone tissue, using the osteoplastic materials and tunnel techniques. 14 patients with bone resorption in the upper jaw, 4 patients with bone resorption in the lower jaw and 2 patients with bone resorption in the upper and lower jaws.

Results: During the control CT scan, all patients showed a significant increase of bone tissue in the area of bone grafting. Using tunnel access and PRGF provides a reduction of healing period.

Conclusions: This technique allows us to increase bone tissue volume in the anterior region of the upper and lower jaws. Orthodontic treatment of patients with significant protrusion of the front of teeth. This technique could reduce the risk of periodontal diseases.



P-973

REHABILITATION WITH IMPLANTS PLACED SIMULTANEOUSLY WITH SINUSLIFT AND BONESPLIT OF A PATIENT WITH EPIDERMOLYSIS BULLOSA

G. Geletu, N. Onica, A. Morari, A. Melian, G. Melian

Oral Surgery, Dental Clinic, Iasi, Romania

Objective: The aim of the study was to describe the rehabilitation with implants, placed simultaneously with sinuslift and bonesplit of a young edentulous patient with epidermolysisbullosa (EP).

Methods:Diagnosis of EPwas based on clinical, histological and immunopathologic evidence. It was a classic mechanobullous form with oral lessions, also genital ,conjunctival and skin involvement, without any dermatologic treatment. A CBCT was performed before and after surgery.4 implants were placed mandibulary using conventional drilling procedure and 4 implants were placed maxillary simultaneous with sinuslift(using bovine bone graft and collagen membrane)and bonesplit .The oral lesions during surgery appears with abundant blisters and the healing of irritated mucosa was difficult.

Results:The clinical and radiological results showed after one year very favourable. The rehabilitation with a fixed prosthesis gave to the young lady high satisfaction.

Conclusion: Even if surgery seems to be difficult because of the blistering disease, the results of the treatment using endosseous implants recommends the method for better care of the patients with epidermolysisbullosa.

**P-995****MULTIPLE IMPLANTATION PROCEDURE TO THE FREE FIBULA FLAP AFTER MANDIBLE RECONSTRUCTION USING REAL TIME SURGICAL NAVIGATION. CASE REPORT.**

Maciej Rysz, Roguś Paweł, Jaworowski Janusz, Jagielak Maciej

Maria Skłodowska-Curie Institute of Oncology, Maria Skłodowska-Curie Institute of Oncology, Warsaw, Poland

Objective: Reconstruction of mandibular body with free fibula flap requires stabilization and shaping of the graft on reconstruction titanium plate. The space between screws used to fix the graft is narrow and insertion of implants for prosthetic rehabilitation is difficult. Surgical navigation system can facilitate precise implants placement. We present a case of successful navigated insertion of 7 implants.

Material: Medtronic Stealthstation s7 optical system was used to navigate dental implant placement in the free fibula flap fixed with 2.0 Synthes reconstruction plate. Prefabricated surgical template has not been used. 11 pointed bridge was prepared for dental rehabilitation.

Results: In 38 year-old patient with fibrosarcoma resection of the tumour included whole mandibular body. Simultaneous reconstruction with free fibula flap was performed. 12 screws were used to fix the graft. Adjuvant radiotherapy with 70 Gy was delivered. After three years observation there were no signs of recurrence and implantoprosthesis rehabilitation was planned. Surgical navigation was used to guide insertion of the dental implants in narrow spaces between screws and to avoid unplanned titanium contacts. Proper axis of all implants was achieved and allowed to form a one-piece dental bridge. Bone infection occurred after implantation procedure and was successfully treated with antibiotics and hyperbaric oxygen therapy. After 6 months of healing period patient received permanent prosthesis.

Conclusion: Surgical navigation decreases risk of implant misplacement and allows minimalizing flap elevation and bone exposure during surgery. Presence of the titanium plate and screws used for osteosynthesis facilitates precise calibration of navigation and improves precision of implant placement.



P-1015

FLAPLESS EXTRACTION OF IMPACTED LOWER THIRD MOLARS – A CLINICAL EXPERIENCE

A. Ujam, N. Nasser

Barts Health, London, United Kingdom

Aims

Traditionally, impacted lower third molar teeth have been extracted through various buccal flap designs to allow direct vision of the crown and roots. Flap designs are variable and several have been well published and taught classically. The evidence that raising a buccal flap increases both post-operative pain and swelling is well documented. In recent times, there has been a trend towards minimal access extractions in an attempt to reduce such complications. We present the surgical technique and results of 50 flapless lower third molar surgical extractions and provide the evidence for its use as an acceptable and highly reliable technique.

Material and Methods

50 consecutive lower third molar extractions were performed with flapless surgery by the same surgeon employing the same technique. Inclusion criteria included all lower third molar teeth that were partially erupted.

Results

All patients were seen at regular follow-up intervals and important outcomes were recorded. These included post-operative pain scores, degree of post-operative swelling, post-operative infection and the numbers of post-operative inferior dental nerve and or lingual nerve injury. Over 90% of patients recorded a low post-operative pain score on a visual analogue scale, no patients experienced numbness to lip, chin or tongue at 2 years. Swelling was assessed as minimal for all patients by both the operating surgeon and patient on a scale of 0-3. Only 3 patients developed signs of infection, all resolved uneventfully with oral antibiotics.

Discussion and Conclusion

Our experience of flapless lower third molar surgery demonstrates that this technique is a reliable and most importantly, a safe technique for surgical extraction. The use of buccal flaps is sometimes clearly indicated as for example in completely buried teeth. However, in teeth that are partially erupted, a flapless technique still allows the tooth to be accessed sufficiently enough to perform sectioning of the roots in a safe manner. Our clinical experience supports its use in correctly selected cases and it is associated with minimal post-operative pain, infection and swelling.

**P-1017****SURGICAL AND PROSTHETIC TREATMENT OF PATIENTS MISSING LARGE NUMBER OF TEETH AND WITH SIGNIFICANT ATROPHY OF THE ALVEOLAR PROCESSES.**

S. Khomich¹, A. Khomich¹, I. Khomich²

¹ *Maxillofacial Surgery, Belarusian State Medical University, Minsk, Belarus*

² *Prosthetic Dentistry, Belarusian Medical Academy of Postgraduate Education, Minsk, Belarus*

Aim

To determine the possibilities of dental implantation and fixed prosthetics for medical rehabilitation of patients with atrophy of the alveolar processes.

Materials and Methods

In the outpatient setting, we conducted a study of a group of 8 patients whose teeth were removed as a consequence of periodontal disease. Clinical data, X-rays and 3D imaging of the jaws were analyzed prior to treatment. In each case diagnostic models were made in the dental laboratory to plan surgical and prosthetic treatment. All patients had dental implants installed in the areas of missing teeth as well as directly after tooth extraction. All remaining teeth were endodontically treated prior to prosthetics. Given the absence of a large number of teeth, physiological aspect ratio of the teeth, jaws and the height of the lower face was restored prior to the subsequent prosthetic. Metal-ceramic non-removable prostheses, supported by implants and existing teeth were made for all 8 patients.

Results

In the analysed group of patients dental implant surgeries were carried out according to clinical protocols. Natural and synthetic bone substitute materials, autologous bone chips and resorbable membranes were utilized with splitting of alveolar crest and for sinus lift. Two patients had Implant rejection after immediate implantation, all other implants osseointegrated well. Two months after rejection of the implants in two patients new implants were re-installed and integrated into the bone tissue well. Temporary aesthetic plastic prostheses were cemented on the remaining teeth for a period of manufacture of permanent metal ceramic prostheses. They also were used to adjust and adapt the height of occlusion.

Discussion and conclusion

In presented group of patients, despite adentia or absence of a significant number of teeth and atrophy of the alveolar processes, we managed with the help of dental implants, bone substitute materials and sophisticated prosthetics to achieve successful rehabilitation. Rejection of several implants after immediate implantation in two patients, apparently was due to the presence of microflora in the Haversian canals surrounding tooth socket. All studied patients were rehabilitated in according with functional and aesthetic requirements. At long-term follow up patients reported good functionality of recreated dentition.



P-1048

ZYGOMATIC IMPLANTS: A RECONSTRUCTIVE OPTION FOR MIDDLE THIRD ATROPHY AND ONCOLOGICAL DEFECTS. OUR EXPERIENCE

R. Fernández-Valadés, C. Ila, M. Tousidonis, A. Garcia, B. Leno, A. Kulyapina, C. Navarro Vila, C. Navarro Cuellar, J. I. Salmerón, S. Ochandiano

Servicio de Cirugía Maxilofacial, Hospital General Universitario Gregorio Marañón, Madrid, Spain

Objective:

We present our experience in patients treated with zygomatic implants to achieve dental rehabilitation in severe maxilla atrophy and as alternative to obturators in low maxillectomy defects

Material and method:

10 patients were treated with zygomatic implants. 5 of them due to severe bone atrophy, one due to anhidrotic ectodermic dysplasia, and the other four due to postextraction atrophy. In two cases we place four zygomatic fixtures and in the other three one on each side and at least two conventional fixtures in the premaxilla, as described by Bränemark.

Five oncological patients were also treated with zygomatic implants as an alternative to bone reconstruction but with complete soft tissue closure (with microsurgical or pedicled regional flaps) to avoid obturators. Two of them receive postradiotherapy implants.

We placed a total of 26 fixtures with a 100% of osseointegration rate even in the subgroup of two already radiated patients. 24 of 26 implants support a fixed dental rehabilitation. Two of them remain as "sleepers". The follow up ranges between 12 years and 12 months. We discuss the advantage of a full functional dental rehabilitation and soft tissue closure in terms of quality of life when comparing with obturators.

Conclusion:

Zygomatic implants are an option for the rehabilitation of atrophic edentulous maxilla, obviating the need for bone grafting, and they can also provide a solution in oncological low maxillectomy defects even in the radiated patients providing an adequate quality of life in terms of deglutition, mastication, swallowing and speech.

**P-1058****ALVEOLAR RIDGE AUGMENTATION WITH ITS SMALL VERTICAL AND HORIZONTAL DIMENSIONS**

S. Khomich¹, A. Khomich¹, I. Khomich²

¹ *Maxillofacial Surgery, Belarusian State Medical University, Minsk, Belarus*

² *Prosthetic Dentistry, Belarusian Medical Academy of Postgraduate Education, Minsk, Belarus*

Aim

Improvement of surgical techniques in autotransplantation of bone graft combined with synthetic bone substitute materials for the subsequent operation of dental implantation.

Materials and Methods

We operated the group of patients with alveolar bone defects after tooth extraction and subsequent atrophy. Dental implantation in these patients was not possible due to the small thickness and height of the bone of the alveolar processes. Removable prosthesis was unsuccessful because of poor retention. Individually, for each patient the method of augmentation, the possibility of taking autologous bone graft, donor site, the method of fixation were determined. Autologous bone grafts were taken from the chin, retromolar areas, mandible ramus and transferred to the alveolar bone of the upper jaw. Autobone blocks were obtained with piezoelectric surgical unit and chisel. After preparation of the recipient area of the alveolar processes bone grafts were fixed with titanium bone screws tightly to congruent surfaces. Additionally, all irregularities were covered with bone substitute materials and resorbable membranes. After mobilization of periosteum flaps were sutured.

Results

In all patients donor sites healed without complications. Autologous bone blocks used for augmentation of the alveolar processes gradually reduced in volume over time. Radiographs were examined at 1 and 4 months after bone grafting and augmentation. Fixating bone screws were taken out of engrafted bone blocks in 4-6 months, at the time of dental implantation. Two of the observed cases had bone grafts partially stripped. But after necrectomy of open fragments of transplanted bone blocks remaining parts successfully engrafted.

Discussion and conclusion

The main condition for the engraftment was their tight fixation to the recipient surface and full thorough closing of mucoperiosteal flaps. When these requirements were not met, in two patients in our observation group there was a partial graft rejection. In other cases, the postoperative period was smooth and uneventful. After such combined augmentation of the alveolar processes, using autologous bone grafts, bone substitutes and membranes all patients successfully implemented next stage of surgical treatment - dental implantation, and then the final stage of treatment - prosthetics, restoration of functional and aesthetic integrity of the maxillofacial system.

**P-1107****EVALUATION OF CLINICAL AND RADIOGRAPHIC CHANGES OF REGULAR DIAMETER IMPLANTS IMMEDIATELY PLACED IN THE POSTERIOR REGION**

D.W, jung, H.J, Yoon, S.H, Lee

Department of oral&maxillofacial surgery, Seoul, South Korea

The purpose of this study was to evaluate clinical and radiographic changes of regular diameter implants immediately placed in the posterior region.

A total of 89 standard diameter implants were consecutively placed in the posterior region of 60 partially edentulous patients. The diameters of the implants were 4.0mm (N=17, 19.2%), 4.1mm(N=24, 26.9%), and 4.3 mm(N=48, 53.9%) respectively. Peri-implant bone loss were evaluated at the baseline and the regular follow-up visit. change of the bone loss were compared in accordance with several condisions such as loading time, jaw conditions, smoking, sex, bone graft, and type of prosthetics.

after 1 year from insertion date, average bone loss was 0.782mm mesially, and 0.869mm distally. The cumulative survival rate of the regular diameter implants inserted from 2005 to was 98.8%. Only one implant failed. Some prosthetic complications occurred, such as screw loosening (N=2) and dissolution of cementation material (N=1).

Placing standard-diameter-implants are less invasive and safe procedure even in insufficient bone conditions.

Furthermore the advantage of immediate implant placement have been reported to include reductions in the number of surgical interventions and in the treatment time required. It has also been suggested that ideal orientation of the implant, preservation of the bone at the extraction site, and optimal soft tissue esthetics⁶ may be achieved.

The present study describes successful outcome following the use of standard-diameter-implants immediately placed in the posterior region, and further comprehensive maintenance practices and follow-up schedules are required.

.



P-1156

GUIDED IMPLANT SURGERY FOR SEVERE BONE ATROPHY OF THE MAXILLA

D. Garcia Molina, J.L. Cebrián, M.J. Nieto, E. Alonso, A. Moreiras, M. Burgueño

Servicio de Cirugía Oral y Maxilofacial, Hospital Universitario La Paz, Madrid, Spain

INTRODUCTION: Guided implant surgical systems allow us implant placement virtually in a CT scan which reproduces bone anatomy of the patient. In patients with severe bone atrophy of the maxilla we need to take advantage of this tool in order to use all the bone available.

MATERIALS AND METHODS: We describe a serie of 12 cases of patients treated with guided implant surgery.

RESULTS: In all patients we fulfilled our aim of oral rehabilitation. We had good osteointegration of the implants. After a medium follow up of 24 months we didn't have complications.

DISCUSSION: Among the advantages of guided implant surgery it's described and accurate diagnosis, treatment predictability, shorten surgical time and shorten recovery time. One of its disadvantages is an increase in the total price. We compare this technique with other techniques for rehabilitation of the severe bone atrophy of the maxilla.

CONCLUSION: Guided implant surgery allows us to rehabilitate patients with severe bone atrophy of the maxilla, in a fast and predictable way, adding more comfort to the patient in the postoperative period than conventional surgery.



P-1165

ANTIBACTERIAL PROPHYLAXIS OF INTRAORAL BONE AUGMENTATION SURGERY.

E.Chuvilkina¹, A.Zueva¹, V.Chuvilkin¹, A.Panin¹, V.Tsarev²

¹ Oral surgery and dental implantation, Moscow State University of Medicine and Dentistry, Moscow, Russian Federation

² Microbiology, Virology, Immunology, Moscow State University of Medicine and Dentistry, Moscow, Russian Federation

Objective. The aim of this study was to investigate efficiency of ceftibuten antibiotic in case of autogenous bone augmentation surgery.

Methods. 46 patients were treated with the autogenous bone to increase alveolar bone volume for following implant surgery. Slow-release antibiotic ceftibuten was prescribed in dose of 800 mg once a day before and 10 days after surgery to prevent inflammatory complications (24 patients). In control group (22 patients) 1000 mg of cefalexin was prescribed before and 1000 mg twice a day for 10 days after surgery. Efficiency of antibacterial agents was determined based on clinical and bacteriological examination. For statistical purposes CFU was transformed into lg.

Results. On the 1st day postop quantity index of *A.actinomycetemcomitans* was $3,0 \pm 0,20$. On the 3rd day it grew up to $4,4 \pm 0,19$. And on the 10th day it became less. *P. intermedia* and *P. gingivalis* showed similar dynamics. Quantity index of *Fusobacterium* spp. was $3,7 \pm 0,20$. On day 10 it decreased to $3,0 \pm 0,20$. For *Viridans group Streptococci (VGS)* quantity index was $7,9 \pm 0,20$ on the 1st day. It increased on the 3rd day and on the 10th day came close to initial numbers. In patients of the ceftibuten group quantity index of *A. actinomycetemcomitans* on the 1st day was $3,4 \pm 0,20$. On the 10th day this species was not identified. *P. intermedia* was identified with the quantity index of $4,0 \pm 0,20$ on the 1st day. On the 3rd day its quantity was decreased to $2,0 \pm 0,19$ and on the 10th day it was not identified. *P. gingivalis* was not identified already on the 3rd day postop. Quantity index of *Fusobacterium* spp. on the 1st day was $4,6 \pm 0,20$, on the 3rd and 10th days this characteristic decreased. Quantity index of *VGS* in this group was similar to control group.

Conclusion. In the ceftibuten group of patients on the 3rd and 10th days postop none of the main periapatogens were identified in comparison to the control group. The rate of inflammatory complications was lower in the ceftibuten group.



P-1166

ECTOPIC OCCLUSION

F. Hernández Altemir¹, S. Hernández Montero^{1, 2, 3}, S. Hernández Montero^{1, 4}, E. Hernández Montero^{1, 5, 6}, M. Moros Peña⁷

¹ Oral and Maxillofacial Surgery, Hernández Altemir-Hernández Montero Clinic, Zaragoza, Spain

² Master of Implantology, Prosthetic and Periodontic, Alfonso X El Sabio University, Madrid, Spain

³ Surgery Department, University of Zaragoza, Zaragoza, Spain

⁴ Medicine, University of Zaragoza, Zaragoza, Spain

⁵ ENT, Hospital of Villadecans, Barcelona, Spain

⁶ Otolaryngology, García Ibáñez Institution, Barcelona, Spain

⁷ Pediatric, Hospital Quiron, Zaragoza, Spain

Introduction

We may be authorized, scientific or ethically, for a particular clinic case to design an occlusal disposition that can break with the current and established occlusal criterion, either partially or totally.

Key words

Occlusion, ectopic, exceptional, unlikely, far-fetched, unbelievable, ethic

Material and Methods

We think that the selection of clinical cases is not difficult for partial assemblies, but it is for those more complicated (not due to technical difficulties) to propose certain patients to take our procedure to the limit of what we call situation of "Ectopic Occlusive Chimerism" (EOC). This procedure breaks with all current established methods from a scientific and ethical point of view in almost all the key aspects included in this term, therefore there is no specialty within the oral and maxillofacial surgery that is not involved.

Upon arrival of implantology can actually facilitate our procedure but we do not want our most radical proposals to be considered accomplished for the announced effects until scientific community is not aware of this particular work.

There are patients that show very complex occlusal restrictions; for these specific cases we want to open an applicative line that will be graphically shown via a series of sketches and drawings. There may be very rare cases that we will not describe in detail for which the on-duty doctor will apply his/her criteria.

Conclusions

We are aware of our radical approach of the occlusive point may be object of fair critiques from purist and supporters of the classic concept "occlusive" but also from less extremist sectors. Nevertheless, we do not hesitate to present our procedure for either extreme and more conventional cases and we believe than our patients will benefit from a middle approach between these 2 positions.

**P-1193****COMPLEX REHABILITATION OF CHILDREN WITH POST-RESECTION DEFECTS OF THE MANDIBLE**

A. V. Lopatin^{1, 2}, S. A. Yasonov¹, M. V. Bolotin¹, M.V. Afanasov²

¹ *Cranio-maxillofacial surgery, All-Russian children's hospital, Moscow, Russian Federation*

² *Orthodontics, All-Russian State University of Peoples Friendship, Moscow, Russian Federation*

Purpose: To improve results of surgical and orthopedic treatment of children with post-resection defects of the mandible based on combination of distraction osteogenesis and dental implantation.

Materials and methods: Twelve children with different defect of mandible after resection of benign tumours was include. Age of patients was from 11 to 15 years. There were 8 boys and 4 girls. Fibrous dysplasia was diagnosed at 5 children, ameloblastoma - 4 and a giant cell tumour – 4. Segmental resection was performed at 5 children, marginal resection at 8. For restoration of integrity of the mandible we used distraction devices manufactured by KLS Martin (Germany). Devices for horizontal transport distraction and for vertical distraction were used. After receiving dense bone regenerate the integrity of a tooth alignment was restored by use of dental implant manufactured by Straumann Company (Germany).

Results: Outcome of various reconstruction types were estimated from cosmetic and functional points of view. Functional results included quality of speech analyse, deglutition, mastication and labial competence. At 11 children good resistant functional and aesthetic result was observe. In one child (boy, 11 years old) it was necessary to refuse further treatment because of osteomyelitis in the place of distraction device standing.

Conclusion: combination of distraction osteogenesis and dental implantation is effective for complex rehabilitation of children with post-resection defects of the mandible.

**P-1229****INTRA-ORAL TISSUE EXPANSION USING SELF-FILLING HYDROGEL EXPANDERS PRIOR TO ALVEOLAR RIDGE AUGMENTATION:OUR EXPERIENCE**

C.A.VOISIN¹, T.GUSTIN², O.OTH², B.BANIASADI², Y.VANHEMELRIJCK², L.PISANO GOBBY³

¹ *Maxillo-Facial Surgery, ULB University HIS-SUD Hospitals, BRUSSELS, Belgium*

² *Maxillo-Facial Surgery, ULB University, Brussels, Belgium*

³ *Maxillo-Facial Surgery, El Cruce Hospital, Florencio,varela,BuenosAires, Argentina*

OBJECTIVE: Intraoral self-filling hydro-gel expanders have not been used routinely in Belgium. The advantages of this new material is to gain an amount of tissue after a few weeks , prior to bone ridge augmentation. The expansion is achieved without the use of an external source, which is very practical especially inside the mouth area.

METHOD:We report here 5 cases in which alveolar ridge augmentation is needed prior to dental implant placement. In these 5 cases, miniaturized self-inflating hydro-gel expanders of different sizes depending on the amount of soft tissue needed were placed through local anaesthesia. 3 patients had expanders bilaterally placed and 2 expanders were placed unilaterally.

RESULTS:In total, 8 expanders were placed. 2 expanders just "popped out" unfortunately after 1 week, and were replaced and one had to be removed because of infection. Proper tissue expansion was however achieved in all cases.

CONCLUSION:Despite the fact that 3/8 expanders were lost and had to be replaced, we believe that this new kind of self-filling expanders are very practical because of the ease of placement and the amount of tissue gained within a few weeks. We believe that these expanders are useful prior to alveolar ridge augmentation, and we have had so far good results. More cases and further studies are needed in order to conclude on the use of these expanders.

**P-1239****SURGICAL TREATMENT OF BONE LOSS IN ANTERIOR PART OF MANDIBLE BY INTERPOSITIONAL SANDWICH TECHNIQUE**

A. Lukyanova, I. Cherkesov

Department of cranio-maxillofacial surgery, I.M.Sechenov First Moscow State Medical University, Moscow, Russian Federation

Objective: the problem of loss of bone in anterior part of mandible is becoming increasingly important in implant dentistry and maxillofacial surgery. The aim of the study was to evaluate the necessity of the sandwich osteotomy and bone grafting in patients with anterior atrophic mandible.

Materials and methods: the study included patients with adentia in anterior mandible. The aims of the surgical procedure were to increase the alveolar crest and to achieve an adequate introclusal distance. 35 patients between 2011 and 2014 with anterior atrophy were treated using a sandwich technique. A total of 83 implants were placed. Quality criterion of surgical procedure was primary stability of implant in 4 months after bone grafting. All patients were monitored for sign of infection, dehiscence or other complications. The amount of bone augmentation was measured on panoramic radiographs as far as the postoperative graft resorption.

Local anesthesia was used (sol. Ultracaini 1:100000 1,7ml x 5). A 3- to 4- cm incision was made in the vestibule anterior mandible. Mucosa-periosteal flap was peeled. Osteotomy was made by piezo. The flap was easily elevated to essential height. The bone graft harvested from the mental area was placed between the mobilized segmental osteotomy and the basal bone. The fixation was made with straight screws. Wounds were closed with 5.0 Vicryl.

After 4 to 5 months after surgical procedure under local anesthesia screws were removed and endosseous implants were placed.

Results: Vertical gain ranged from 2.0 to 7.8 mm (mean value 4.61 mm). Patients were followed for 12 to 24 months. No signs of infection were observed. All implants osseointegrated successfully and underwent loading after 4 months.

Conclusion: Given procedure achieved good aesthetics and functional results. Anterior mandibular atrophy can be successfully treated by interpositional sandwich technique and bone grafting and later allowing following placement of implants.



P-1246

DENTAL IMPLANT REHABILITATION OF THE RETURNING MATURE ADULT CLEFT LIP & PALATE PATIENT.

T. Flood, A. Morton, D. Thomas, S. Stagnell, K. Tidbury, J. Burdett, K. French

Dept Oral & Maxillofacial surgery, Spires cleft centre, Salisbury District Hospital, Salisbury, Wiltshire, SP2 8BJ, United Kingdom

Introduction - In this presentation we will explore some of the challenges that face the cleft team when presented with an older cleft lip and palate patient with a failing dentition.

Methods - We present a group of patients who have returned to the cleft team recently with failing dentition, illustrating the problems encountered. This group includes:-

- Patient with large unrepaired alveolar cleft with a large failing bridge
- Patient with large oro-nasal fistula and alveolar cleft who is about to become edentulous
- Patient highly motivated with failing dentition with an unusually, partially repaired cleft
- Patient referred for single tooth replacement at end of orthodontics with short mobile upper anterior teeth
- Patient with cleft lip & palate repaired with Anterolateral thigh free flap and significant maxillary hypoplasia now edentulous requiring rehabilitation but unable to wear a complete denture

Results

We will present some of the findings, the challenges and the steps we have or are taking to attempt to rehabilitate this unusual but increasing patient group.



P-1250

THE SANDWICH OSTEOTOMY AND IMPLANT REHABILITATION OF THE POSTERIOR ATROPHIC MANDIBLE.

I. Cherkesov, A.Lukyanova

Maxillofacial surgery, I.M.SECHENOV FIRST MOSCOW STATE MEDICAL UNIVERSITY, Moscow, Russian Federation

Objective: surgical reconstruction of vertically atrophied ridges has been performed with onlay bone grafts or guided bone regeneration with membranes or meshes, but the results have not been satisfactory. Recently, alveolar distraction osteogenesis has been added to the armamentarium to manage this situation. The present report represents a retrospective study of 40 consecutive posterior mandibular osteotomies treated with sandwich bone graft.

Materials and methods: were selected 40 patients (25 women and 15 men). The goals of the surgical procedure were to obtain an alveolar crest with a minimum of 8 to 13mm of bone above the nerve. A total of 90 implants were placed. Quality criterion of surgical procedure was primary stability of implant in 4 months after bone grafting. All patients were monitored for sign of infection or other complications. Panoramic radiographs and computed tomographic scans were used preoperatively to assess bone height.

Local anaesthesia was used (sol. Ultracaini 1:100000 1,7ml x 7). A 4- to 5- cm incision was made in the vestibule posterior mandible. Mucosa-periosteal flap was peeled. Horizontal osteotomy was made by piezo from buccal to lingual side of mandible. The flap was easily elevated to essential height. The bone graft harvested from the linea obliqua was placed between the mobilized segmental osteotomy and the basal bone. The fixation was made with straight screws. Wounds were closed with 5.0 Vicryl rapid sutures in one layer.

After 5 to 6 months after bone augmentation the straight screws were removed and endosseous implants were placed. Panoramic radiographs were obtained preoperatively (before insertion of implants) and postoperatively through the follow-up appointments.

Results: the average height gain was 4.89mm. No loss of alveolar height was observed. No signs of infection were observed. All implants osseointegrated successfully and underwent loading after 5 months.

Conclusion: the main mission was to prove, that sandwich osteotomy and bone grafting is effective for patients with posterior mandibular atrophy.

**P-1283****THE USE OF A LIQUIDE MEMBRANE IN SINUS GRAFT PROCEDURES**

G. Verdino, S. Pozzi Taubert, D. Ippolito, V. Cotto

Oral & Maxillofacial Surgery, Centro Ortopedico di Quadrante, Omegna, Italy

The maxillary sinus floor augmentation is a surgical procedure to increase the available bone for dental implant rehabilitation in the posterior portion of the upper jaw.

Specifically we focus on one of the final phases of this surgery, the closure of the external maxillary osteotomy, which can be implemented through various methods.

Today, the gold standard is the use of reabsorbable membranes, either in collagen or pericardium, which are completely reabsorbed within 8-12 weeks.

However, during the post-surgical period, we can observe a bulge of the inserted material, which may be due to the positive pressure generated in the sinus whilst breathing.

This study foresees the use of MembraGel® to close the bony window during sinus lift procedure. MembraGel® is a reabsorbable technologically advanced membrane, which can be widely applied in oral surgery.

We treated twenty patients with the use of this device. The bone surface around the bony window was thoroughly cleaned before MembraGel® application. It is important to apply a uniform layer of gel above the graft, extending it for 2mm on the surrounding bone surface.

The consistency after hardening is similar to that of silicon materials, the adhesion to the bone is optimal and the whole graft is perfectly stabilized. MembraGel® remains stable until complete absorption, which is accomplished within 4 to 6 months.

With MembraGel® the adaptation and application steps of the absorbable membrane, be it in collagen or pericardium, can be avoided.

The obtained results were good. In the post surgical period there was no bulging in grafted area, clinical findings and CBCT imaging (cone beam computerized tomography) showed a perfect stabilization of the graft.

These encouraging results allowed us to consider MembraGel® an alternative to close the bony window in sinus graft procedures, with even better performances than classic resorbable membranes.

**P-1295****USE OF FACIAL ARTERY MUSCULOMUCOSAL FLAP (FAMM) TO SOLVE A COMPLICATION IN A QUADRUPLE ZYGOMA IMPLANT DENTAL REHABILITATION**

R. Sieira^{1, 2, 3}, C Martí^{1, 2, 3}, R. Davó^{4, 1}, A. Ferrer¹, J Rubio¹, E García^{2, 1}

¹ *Maxillofacial Surgery, Hospital Clínic, Barcelona, Spain*

² *Maxillofacial Surgery, Hospital Sant Joan de Déu, Barcelona, Spain*

³ *Oral and Maxillofacial Surgery, Universitat Internacional de Catalunya, Barcelona, Spain*

⁴ *Oral and Maxillofacial Surgery, Instituto Davó, Alicante., Spain*

Introduction

In 1992, Pribatz et al. described the facial artery musculomucosal (FAMM) flap. This flap is commonly described for closing intraoral defects after oncological resection of the floor of the mouth, tongue, maxilla or mandibular vestibule, oroantral fistula and cleft palates.

The FAMM flap is an axial flap based on the facial artery. This flap is raised including the mucosa, submucosa, buccinator muscle, and a more deeply lying facial artery and venous plexus. The FAMM can be used as both an inferior-based flap and a superior-based flap, perfused in a retrograde manner by the angular artery.

The zygomatic implant represents a non-grafting alternative for the oral rehabilitation of patients with extreme resorption of the maxilla. The use of an implant to be anchored in the zygomatic bone has been proposed in the literature as an alternative to bone grafting. This treatment is described to have few postoperative complications. However, oroantral communications are reported in the literature.

We describe a superior-based FAMM flap to repair a soft tissue defect and to close an oroantral communication in the right maxilla, after the placement of zygomatic implants.

Material and Methods.

A patient with severe atrophic maxilla was treated with a quad zygoma implants for dental rehabilitation. The patient explained maxillary sinusitis and oroantral fistula during the follow up after the zygomatic implants were loaded. Computed tomographic scan showed correct implant osseointegration.

The patient was referred to our institution and a FAMM flap was used to close the oroantral communication caused by the previous implant surgery. Previous attempts of closing it with the buccal fat pad flap (BFPP) were done.

Results

We describe our experience and discuss the advantages and disadvantages of the quad zygoma and the FAMM flap.

To our knowledge, no report has described the use of a FAMM flap to solve oroantral communication as a complication after the placement of zygomatic implants

Conclusions

The zygomatic implant represents a non-grafting alternative and safe procedure for the oral rehabilitation of patients with extreme resorption of the maxilla. Complication due to this technique can be solved using BFPP or a FAMM.

**P-1300****COMPLICATIONS AFTER CRANIOPLASTY MADE BY ARTEFICIAL PEEK PLATE**

P. Richtr¹, J. Mraček²

¹ *Department of Plastic Surgery, Medical School and Teaching Hospital in Pilsen, Charles University, Pilsen, Czech Republic*

² *Department of Neurosurgery, Medical School and Teaching Hospital in Pilsen, Charles University, Pilsen, Czech Republic*

Bone defects after hemicraniectomy are usually closed by replantation of autologous bone plate. However, in some cases gradual resorption of bone plate appears. Patient is not only mutilated in his appearance, but is also endangered by atmospheric pressure and by a direct brain injury too. Therefore, in these cases the cranioplasty is made by different allogeous materials. Every material has its advantages and disadvantages. Recently the materials with 3D modelation on the base of CT data are used. Data for obvious advantages of one of the materials have not been published yet. In our case we present difficulties in deciding on the use of suitable material, operation and management of possible complications (techniques and principles). Cranioplasty in our patient was made due to resorption of autologous bone plate after hemicraniectomy. As the best material for cranioplasty we have chosen PEEK (polyetheretherketon). During postoperative period some kind of fluid appeared above the PEEK plate. We diagnosed leak of cerebrospinal fluid. After an unsuccessful non operative treatment (permanent lumbar drainage and compressive bandage of the head) we decided for secondary operation - duroplasty. But within a few days, the fluid above the PEEK plate appeared again. This time we have excluded leak of cerebrospinal fluid by examination of beta trace protein. It was a seroma, which got spontaneously absorbed. Further course has been without another complication and the patient was discharged within several days.



P-1317

PHOTOGRAMMETRY, IMPLANT DIGITAL IMPRESIÓN

S. Hernández Montero^{1, 2}, L. Pardo Muzas², F. Hernández Altemir¹, Su. Hernández Montero¹, J. Medina de Moya², M. Mimoun Ben Abdellah², B. Gutiérrez-Jodra Gamboa²

¹ *Hernández Altemir-Hernández Montero Clinic, Head and Neck, Zaragoza, Spain*

² *Master of Implantology, University Alfonso X El Sabio, Madrid, Spain*

Key Words: Photogrammetry, PIC camera, digital impresion.

Introduction

The precision in the transmission of information is an added difficulty to the already complex rehabilitation sometimes demanded of our patients.

Photogrammetry is the science of measurements and reliable interpretations through photographs. The fundamental principle used is the triangulation.

Its application in the dental field is a technological revolution. And its enable us to to avoid repetitions in our prints.

Material and Metod

The system has a recognition software codes that identifies each attachment and assigns a vector director (position and direction) to each implant.

The acquisition of the images is needed to make a photogrammetric measurement and to obtain the accuracy, reliability and automation of the system is capable, the images should be of first quality.

The three main considerations for obtaining a good image are:

1. Field of vision (FOV)
2. Approach.
3. Exposure

We present several cases of immediate loading in which using this technology we have obtained the precision that we were looking for.

Conclusion

The precision of this technology makes it the most reliable way to current transmission of the intraoral information for obtaining the final prosthetic restoration.



P-1376

COMPLEX TREATMENT OF PATIENTS AFTER JAW'S TUMOURS REMOVAL

I. Yakimenko, A. Drobyshev, D. Ermolin, R. Grozov, I. Fedenko

Maxillofacial Surgery, Moscow State University of Medicine and Dentistry named after A.I. Evdokimov, Moscow, Russian Federation

Introduction. The problem quality of life of patients with defects and deformities after removal of jaws tumours is relevant. Such patients require dental rehabilitation.

Material and Methods. In our clinic from 2006 to 2012 we have put a complex evaluation and treatment over 100 patients with defects and deformities after combined treatment of benign and malign tumours of the maxillofacial region. There are benign tumours and tumour-like formations of our patients: ameloblastoma, fibrous dysplasia, ossifying fibroma, osteoclastoma. Malign tumours are: cancer of jaw bones and the oral mucosa, osteosarcoma, fibrosarcoma, chondrosarcoma. All patients removed the tumour, followed by the formation of defects, which have been replaced microvascular autografts (a tibia, an ilium, e.c.). Prosthesis in such conditions is impossible due to insufficient bone autograft or it's form.

Results. Dental rehabilitation of our patients we performed using prosthesis on dental implants. At first stage we made an osteotomy of the of the graft to create the appropriate configuration of the alveolar process of the maxilla and the alveolar part of the mandible. Then we made a horizontal osteotomy with fixation of plate distraction apparatus for increasing graft height. The next step - dental implants and prosthetics.

Conclusion. Thus, patients with defects and deformities of the maxillofacial region after removal of tumours requires multi-stage, long-term, complex treatment and rehabilitation.



16. Bisphosphonate Related Disease of the Jaws

P-160

AETIOLOGY AND CLINICAL PICTURE OF JAWS NECROSIS RESULTED FROM DRUG ABUSE. THE SIMILARITY TO BIPHOSPHONATES NECROSIS

N. Rusu, M.Radzichevici, A.Gulpe

Oro-Maxillo-Facial surgery and implantology "Arsenie Guțan", State Medical and Pharmaceutical University Nicolae Testemitanu, Chisinau, Moldova

Objects: There is the study of the aetiology and clinical picture of the jaw necrosis against drug abuse. The development of optimum treatment.

Materials and methods: There were used detailed anamnesis of disease development, clinical examination, general and biochemical blood analysis, blood markers and AIDS analysis.

Results: In details there were studied laboratory findings of patients treated in the maxilla-facial surgery clinic in the period of 2005-2013 year and at which were diagnosed chronic jaws osteomyelitis similar with the clinical picture of toxic osteomyelitis of patients takingbiphosphonates. Studied patients were and are current drug users. These drugs are prepared domiciliary and contain phosphorus and amphetamine range products. One of the important factors to define the reason and pathogenesis of the given disease is the study of utilized substances composition. According to oral information provided by patients we can conclude that the given disease is the result of "perventine" usage. The main substance of the given drug is ephedrine as well as red phosphorus and iodine, which accumulating causes various trophic changes. We developedthe scheme of conservative pre surgical treatment. Preliminary we performed the disintoxication and reduction of the endotoxiosis. On the 7-th day after the disintoxicationwe introduced active embryonic osteomedulary cells (medication Osteostimulin) locally under the mucosa in the affected region and at the time ofnecrectomy.

Conclusions:In the result of clinical and laboratory data there were defined that the jaw necrosis appears due to abuse of drug preparations which contains components of amphetamine range, red phosphorus and iodine. The clinical picture is very similar with toxic osteomyelitis inpatients which is seen withbiphosphonates. Drug preparation substances cause firm vasospasm as well as intoxication by phosphorus which is the reason forjaws necrosis. We obtained positive results of toxical osteomyelitis treatment by the way of disintoxication, local introduction of active embryonic osteomedulary cells and surgical treatment.

**P-162****MULTIMODALITY THERAPY OF JAWS NECROSIS RESULTED FROM DRUG ABUSE. THE SIMILARITY TO BIPHOSPHONATES NECROSIS**

M. Radzichevici, N.Rusu, A.Gulpe

Oro-Maxillo-Facial surgery and implantology "Arsenie Guțan", State Medical and Pharmaceutical University Nicolae Testemitanu, Chisinau, Moldova

Objects: The study of results of surgical treatment of jaws necrosis resulted from drug abuse. The development of optimum treatment.

Materials and methods: There were used detailed anamnesis of disease development, clinical examination, orthopantomogram before and after surgical treatment, general and biochemical blood analysis, blood markers and AIDS analysis.

Results: In the period of 2005-2013 year, in details there were studied clinical and laboratory data of patients treated in the maxilla-facial surgery clinic, at which were diagnosed chronic jaws osteomyelitis similar with the clinical picture of toxic osteomyelitis of patients taken biphosphonates. All given patients took drugs of amphetamine range. The main substance of the given drug is ephedrine as well as red phosphorus and iodine, which accumulating causes various trophic changes. Most patients were treated surgically only after exact demarcation of sequestra (in 3-4 months after last drug preparation abuse). Early surgical intervention does not provide positive results. In the case of upper jaw toxic osteomyelitis we performed necrectomy, sinusotomy, plastics of oro-antral communication in several steps and in some cases we performed the resection of necrotizing zygomatic bone. The teeth defect was reconstructed overdentures. In the presence of lower jaw toxic osteomyelitis we performed the resection of the necrotizing bone region with its further substitution by titanium reparative plate. To the given plate there were fixed implants by the help of soldering. Hereafter the defect of tooth alignment was reconstructed by various dental protheses.

Conclusions: During the supervision of patients with chronic jaw osteomyelitis which is alike the clinical picture of toxic osteomyelitis of patients taken biphosphonates we concluded that positive results of the treatment can be achieved only after complete cessation of drug preparation abuse. The lower jaw sequestrectomy is the best treatment, which should be combined with the reconstruction of the bone defect by the help of titanic reconstructive plate with the aim to preserve the patients' aesthetic appearance.



P-191

EFFECT OF BISPHOSPHONATE ON AKT OF HUMAN PERIODONTAL LIGAMENT CELLS

KI. Yun¹, JS. Lee², EJ.Kim³

¹ *Oral and Maxillofacial Surgery, The Catholic University of Korea St. Paul's Hospital, Seoul, South Korea*

² *Dept. of Orthodontics, Chung-Ang University Hospital, Seoul, South Korea*

³ *Clinical Research Institutes, The Catholic University of Korea St. Paul's Hospital, Seoul, South Korea*

Objective: The objective of this study is to reveal the effects of bisphosphonate and bacteria on the Akt production of human periodontal ligament cells.

Methods: Subjects of this study were five adults and approval was obtained from the IRB and informed consent was provided to patients according to the "Act on Legal Codes for Biomedical Ethics and Safety" and the Declaration of Helsinki. We used the periodontal ligament tissues that were separated from the lower 2/3 of the root surface of the premolars. Cell growth inhibition assay, qPCR and western blot were performed after human periodontal fibroblasts were treated with LPS 10ug/L, and ibandronate 80uM for 24 and 48 h, western blot was performed.

Result: Periodontal ligament fibroblasts decreased in accordance with ibandronate concentration and time. Akt mRNA was increased among all groups. However, Akt proteins were decreased with time when the cells were treated with ibandronate.

Conclusion: Bisphosphonate may effectAkt production of periodontal ligament cells.

**P-314****TEMPOROMANDIBULAR JOINT ARTHROCENTESIS FOR THE TREATMENT OF OSTEOARTHRITIS**

E. Leibur^{1,2}, O. Jagur¹, Ü. Voog-Oras¹

¹Dept. of Stomatology and ²Internal Medicine, Tartu University, Estonia

The study was designed to estimate the effect of arthrocentesis in the treatment of osteoarthritis of the temporomandibular joint (TMJ) and to investigate the synovial fluid (SF) as well as, blood samples.

Patients and Methods: Twenty three consecutive patients with a diagnosis of TMJ osteoarthritis (Wilkes' stages III, IV) after noneffective conservative treatment were treated with arthrocentesis using push and pull technique (Alstergren et al. 1999). Preoperative radiographs and the scores pre- and posttreatment (after 6 months) maximal interincisal opening (MIO) and visual analogue scale (VAS) for pain estimation were performed. Blocking the auriculotemporal nerve with a 2mL of 2% lidocaine solution, the needle was inserted into the upper joint compartment and connected with the three-way stopcock for infusion therapy (Discofix® Braun). To perform arthrocentesis 2-3 mL of saline solution was pushed slowly to the upper compartment and then aspirated back. The first SF aspirate ~ 2mL was allocated for the following analysis: SF viscosity (the scale from 0 to 3) estimated visually, presence of crystals, SF rheumatoid factor (RF) compared to blood plasma RF. The washing was repeated 3-4 times until the aspirate was clear.

Results: After 6 months MIO improved significantly ($p < 0.05$) and pain according to VAS had substantially decreased ($p < 0.01$). Viscosity of the aspirate was 0.78 (medium), crystals were found in 5 patients (21.7%). There was not statistical significant difference between SF RF and plasma RF values ($p > 0.05$). The effectiveness of arthrocentesis may be explained by the joint space expansion achieved with the introduction fluid washing out inflammatory mediators, the particles of adhesions, fibrillations, crystals etc. The push and pull technique breaks joint adherences and fibrillations. The presence of crystals in the SF and increased viscosity of the SF indicates a pathological condition of an inflammatory nature.

Conclusion: Arthrocentesis with this technique for the treatment of TMJ osteoarthritis offer favourable results with regard to increasing MIO, reducing pain and dysfunction. Acknowledgement. This study was supported by grants IUT2 -8, ETF6591.

**P-315****SUCCESSFUL TREATMENT OF ADVANCED BISPHOSPHONATE-RELATED OSTEONECROSIS OF THE JAW, BRONJ, WITH AN ADJUNCTIVE TERIPARATIDE THERAPY**

H Kakehashi¹, T Ando², T Minamizato¹, S Kuroshima³, S Hayashida⁴, S Yanamoto⁴, M Umeda⁴, I Asahina¹

¹ Department of Regenerative Oral Surgery, Nagasaki University, Nagasaki, Japan

² Department of Endocrinology and Metabolism, Nagasaki University, Nagasaki, Japan

³ Department of Applied Prosthodontics, Nagasaki University, Nagasaki, Japan

⁴ Department of Clinical Oral Oncology, Nagasaki University, Nagasaki, Japan

Objective. Teriparatide is a synthetic polypeptide hormone that contains the 1–34 amino acid fragment of recombinant human parathyroid hormone that stimulates bone formation. It has been shown that teriparatide directly stimulates bone formation and also has a positive effect on the non-BMD determinants of bone strength. Several recent studies have demonstrated that teriparatide has been effective for the treatment of BRONJ. We report here a case series of BRONJ treated by teriparatide.

Methods. Bisphosphonate was suspended and teriparatide was given to six patients diagnosed as BRONJ. The patients provided written informed consent for off-label use with subcutaneous injection of teriparatide at a dose of 20 µg per day. Their medical records were reviewed and the patients were inspected and interviewed. CTX and BAP were measured at the baseline, and at 3 months and more later after the administration. The outcome of the treatment and the change of biochemical markers and image findings were assessed

Results. Markers for bone turnover were increased without the emergence of adverse events in all cases, and also sequestration separation has progressed. Bone formation was proceeded in patients with sequestrum removal, followed by covering exposed bone with mucous membrane. Conclusions. Administration of PTH promotes bone formation and subsequent sequestration separation in a short time in BRONJ. We suggest that teriparatide is an effective therapeutic agent for BRONJ.

**P-421****A LONG-TERM FOLLOW-UP REPORT ON RESPONSE OF DIFFUSE SCLEROSING OSTEOMYELITIS OF THE MANDIBLE TO ALENDRONATE**

S. Hino, R. Murase, K. Nakashiro, H. Hamakawa

Department of Oral and Maxillofacial Surgery, Ehime University Graduate School of Medicine, Toon, Japan

Background: Diffuse sclerosing osteomyelitis (DSO) of the mandible is an intractable disease characterized by recurrent jaw pain, swelling, and trismus, without suppuration or sequestration. Its aetiology and pathology are not fully understood, thus treatments are challenging. Prolonged symptoms may require surgical resection of the mandible.

Case report: We had previously reported a case of DSO of the mandible that remarkably responded to treatment with alendronate, after a poor response to conventional therapy, including intravenous antibiotics, antibiotic irrigation-perfusion, and decortications. An intravenous infusion of 10 mg of alendronate resolved pain and swelling without severe adverse events. Furthermore, it was confirmed that increased uptake of ^{99m}Tc in the mandible almost completely disappeared 3 months after treatment. Because jaw pain and buccal swelling recurred after 23 months and 66 months of an initial administration of alendronate, an intravenous infusion of 10 mg of alendronate was repeated at each time. Remission duration of the third infusion was 32 months, then the patient began taking a 35 mg tablet of alendronate once a week. Although oral administration did not bring about the rapid effects, the patient could realize a relief within 3 months. Increased uptake of ^{99m}Tc in the mandible has not been detected for 24 months.

Conclusion and discussion: In this report, we exhibit that both intravenously-infused and orally-administrated alendronate exert a dramatic effect to this patient with DSO through suppressing bone turnover in the lesions. While we and others reported the therapeutic usefulness and safety of bisphosphonate in patients with DSO, studies to clarify the mechanism which bisphosphonate works on the DSO lesion has been delayed. It is also important to determine when the patient should stop administering alendronate.

**P-431****BISPHOSPHONATE-RELATED OSTEONECROSIS OF THE JAW AND FACIAL BONES FOLLOWING ADMINISTRATION OF ANTI-CANCER DRUGS**

K.Polyakov, Yu.Medvedev, A.Omelchenko, T.Obraztsova, A.Korshunova, A.Beliaeva

I.M. Sechenov First Moscow State University, Moscow, Russian Federation

Objective. This study aimed at optimization of the diagnostic, therapeutic and prophylactic measures as the non-timely diagnosis and insufficient awareness on the clinical presentation of osteonecrosis and its treatment basics inevitably leads to reduced quality of life for patients with bone metastases and prevents the continuation of specific anti-cancer therapy thereby having a negative effect on the life expectancy of cancer patients. Our purpose was to study the pathogenesis of osteonecrosis and develop optimal etiotropic and pathogenetic therapy for patients with osteonecrosis.

Methods. A total of 28 patients were under observation. The majority of cases of osteonecrosis of the jaw in patients treated in our clinic have been diagnosed after oral surgery procedures such as tooth extraction. Typically, osteonecrosis starts with a non-healing alveolar socket, tenderness, edema of the mucosa that covers the alveolar process often accompanied by a periosteal reaction in the form of its cuff-like thickening. Subsequently, a fistulous tract with the release of purulent exudate may occur. Examination of osteonecrotic foci reveals that the bone tissue is eroded although remains very dense, and the granulation tissue is either absent or present as light and scarce depositions. Diagnostic imaging helps reveal a focus of bone destruction in the alveolar process and bone sclerosis with no clear border between sclerotic and intact osseous tissue that is verified during surgery. Microbiological examination shows that the predominant pathogens are staphylococci and some anaerobic types of microorganisms, also fungi as a facultative parasite. Blood and urine laboratory tests show no remarkable changes.

Results. Best results in the treatment of osteonecrosis have been achieved using the combination treatment which includes the conservative therapy and subsequent radical resection of the jaw within healthy tissue.

Conclusion. Therefore, treatment of patients with osteonecrosis is a complex task and must aim at prevention of further spread of osteonecrosis and elimination of pain syndrome and accompanying intoxication. Prophylactic measures include sanitation of the oral cavity until the mucosa is completely healed, then the administration of bisphosphonates can be started.

**P-470****BISPHOSPHONATE-RELATED OSTEONECROSIS OF THE JAW: TREATMENT METHODS**

K. Polyakov, U. Medvedev, T. Obratsova, A. Omelchenko, A. Korshunova, A. Beliaeva, K. Balasanova, N. Zolotopup

I.M. Sechenov First Moscow State University, Moscow, Russian Federation

Objective: Treatment of the osteonecrosis of the jaw in patients with a history of intravenous bisphosphonate therapy is currently a topical issue in maxillofacial surgery and dental oncology. Bisphosphonates are a class of medications that help to prevent the loss of bone mass and used for the treatment of osteoporosis and similar diseases. Bisphosphonates have direct effect on osseous tissue zones where bone resorption and regeneration rate is particularly high, namely, they suppress bone resorption by reducing osteoclast activity through influencing the osteoclast adhesion, motility, cytological structure and cell differentiation activity. Zolendronic acid is a bisphosphonate with a selective effect on the bone tissue. Its ability to inhibit osteoclast activity was applied to the treatment of osteoporosis. Also, zolendronic acid has an anti-tumour activity and demonstrates efficacy in the treatment of bone metastases. The exact molecular mechanism of inhibition of osteoclast activity remains so far obscure. Objectiveto study the bisphosphonate-related osteonecrosis and define treatment tactics and particulars of monitoring of patients suffering from the osteonecrosis of the jaw. The main complaints of patients with the bisphosphonate-related osteonecrosis of the jaw include pains in the jaw, inability to chew properly, unpleasant smell, bone denudation and in some cases facial skin defects connected to the oral cavity (orostoma).

Methods: Five patients have been examined. One of them had a combined injury of the upper and lower jaws. Four patients had osteonecrosis of the lower jaw of whom two patients had undergone partial en block mandibular resection in combination with complex anti-inflammatory treatment. Two patients were managed conservatively without surgical intervention.

Results: After surgical intervention and anti-bacterial therapy all patients are in remission for the last six months. Patients are prepared for the endoprosthetic repair. Patients who are managed conservatively keep complaining on bone denudation in the oral cavity and pain in the jaws. Their control X-ray examination confirms progression of the osteonecrosis of the jaw.

Conclusions: for patients with osteonecrosis affecting both jaws a stepwise surgical management in combination with antibiotic treatment and anti-inflammatory therapy is recommended.



P-499

USE OF PLATELET-RICH FIBRIN (VIVOSTAT® SYSTEM) ON BISPHOSPHONATE-RELATED OSTEONECROSIS OF THE JAW: A CHANCE TO BE EFFECTIVE BUT NOT AGGRESSIVE?

D. A. Cebreros, N. Ventura, J. D. Morales, M. Villalta, M. Puche, M. Marqués, M. E. Iglesias

Oral and Maxillofacial Surgery, Hospital Clinico Universitario, Valencia, Spain

Introduction:

Despite the well documented benefits that bisphosphonate brings to many bone pathologies, we still have to deal with a serious adverse effect of them called bisphosphonate- related osteonecrosis of the jaw (BRONJ). This complication highlights the international difficulty of the treatment, going from conservative therapy with antibiotics and chlorhexidine mouthwash to different types of surgery with or without the help of hyperbaric oxygen before and after the procedure. Platelet- rich fibrin has come up as a second generation platelet concentrate with healing properties.

Methods:

We are presenting two cases of BRONJ that we followed for over two years with conservative therapy and because of the bad response and the persistence of the symptomatology (pain- infections- bone exposure) we decided to do surgical cleaning of the necrotic bone and stimulate the healing and re-growing of the jaw with platelet- rich fibrin (PRF vivostat® system) getting really good results diminishing the patient symptomatology and showing improvement in the radiologic studies.

Conclusions:

In our two cases we used PRF and we think that the improvement of wound healing and the increase in bone growing combine with the simple preparation and positioning in the surgical wound which makes this procedure a valid method in promoting and accelerating soft and hard tissue regeneration allowing less aggressive bone resections with better results.



P-583

CASE REPORT OF A LETHAL CERVICAL ABSCESS FOLLOWING BISPHOSPHONATE RELATED OSTEONECROSIS OF THE JAW

Ch. Kaehling, J.-F. Wilbrand, Ph. Streckbein, H.P. Howaldt

Cranio-Maxillo-Facial-Surgery / Justus-Liebig University Giessen, Giessen, Germany

Objective: Bisphosphonates are common drugs for the management of bone metabolic diseases. Their consecutive adverse effects, especially bisphosphonate-related osteonecrosis of the jaw (BRONJ), are monitored more frequently. BRONJ is a critical challenge in craniofacial surgery and is difficult to treat. Its occurrence is either spontaneous or follows dentoalveolar surgery. Typical complications of BRONJ are painful exposed bone, pathological fractures, extra-oral fistula, and local infections.

Patient and Methods: We present a rare case of bacterial embolism in the internal jugular vein after a BRONJ-induced submandibular abscess. A 59-year-old female patient developed severe BRONJ (stage II) with recurrent abscesses after oral osteoporosis therapy with alendronat. A following submandibular abscess formation led to bacterial embolism of the left internal jugular vein, causing sepsis, multi-organ failure and death.

Results and Conclusion: Prevention, early detection and therapy of BRONJ remain a crucial challenge in craniofacial clinical practice. Despite the several therapeutic approaches described in the current literature, none have undergone bedside application. Considering the present report of death after recurrent abscesses following BRONJ, the application of bisphosphonates should be carefully monitored in order to prevent severe complications.

**P-595****INFERIOR ALVEOLAR NERVE INVOLVEMENT IN BISPHOSPHONATE-RELATED OSTEONECROSIS OF THE JAW**

S. Otto, M. Troeltzsch, M. Pietzsch, F. Probst, M. Ehrenfeld

Department of Oral and Maxillofacial Surgery, Ludwig-Maximilians-University of Munich, Munich, Germany

Background: Bisphosphonate-related osteonecrosis of the jaw (BRONJ) has become a well known entity of rising clinical importance. Hypaesthesia or anaesthesia of the lower lip (Vincent`s symptom) has been observed as rare but characteristic clinical sign of BRONJ. Therefore, the aim of this study is to characterize the BRONJ patient cohort with inferior alveolar nerve involvement as well as the background on a cell cultural level with special regard to the pathogenesis of the disease.

Material and methods: Patients suffering from BRONJ according AAOMS 2009 treated between 2003-2013 were included and investigated with special regard to the occurrence and potential risk factors for inferior alveolar nerve involvement. Furthermore, cell cultural investigations with murine trigeminal neurons were performed with different concentrations of zoledronate in solution and at two different ph values. Cell activity was monitored using the WST-1-assay.

Results: Inferior alveolar nerve involvement in BRONJ was found in 19 out of a total of 240 BRONJ patients. It only occurred when BRONJ was localized in the mandibular molar and premolar region close to the mandibular channel. After surgical removal of bone necrosis and perioperativer antibiotic treatment nerve function improved in a significant proportion of cases.

Cell cultural investigations could prove that with increasing concentrations of zoledronate in solution and decreasing ph-value the activity of murine trigeminal neurons significantly decreased.

Discussion: Involvement of the inferior alveolar nerve can be an important early or even presenting sign of BRONJ. If adequate surgical treatment aiming in complete removal of necrotic bone parts accompanied by antibiotic treatment is performed the condition can significantly improve or even resolve. These clinical as well as the cell cultural findings support recent theories regarding the pathogenesis of BRONJ in which dento-alveolar infections and consecutive localized ph-changes might play a key role.

Conclusion: We conclude that impairment of inferior alveolar nerve function can be an important early or even presenting symptom of BRONJ. With regard to pathogenesis and treatment of BRONJ we conclude that inflammatory conditions should be avoided and necrotic bone parts should be removed followed by plastic wound closure and accompanied by antibiotic treatment.



P-602

INTRAINDIVIDUAL COMPARISON OF PREOPERATIVE ^{99m}Tc-MDP SPECT/CT AND INTRAOPERATIVE AND HISTOPATHOLOGICAL FINDINGS IN PATIENTS WITH BRONJ OR DRONJ.

A. T. Assaf, T. A. Zrnc, C. C. Remus, G. Adam, J. Zustin, M. Heiland, R. E. Friedrich, T. Derlin

Department of Oral and Maxillofacial Surgery, University Medical Center Hamburg Eppendorf, Hamburg, Germany

Objectives: Bisphosphonate- or denosumab-related osteonecrosis of the jaw (BRONJ/DRONJ) requires preoperative assessment of the extent of disease for surgical planning. The aim of this study was to compare the extent of BRONJ/DRONJ as detected by ^{99m}Tc-methylene diphosphonate (MDP) bone scintigraphy with intra-operative and histopathological findings and to assess the additional value of hybrid SPECT/CT (singlephotonemissioncomputedtomography/computed tomography) for evaluation of disease.

Material and methods: 21 patients suffering from BRONJ/DRONJ underwent 3-phase^{99m}Tc-MDP bone scintigraphy including SPECT/CT. The diagnostic certainty using conventional SPECT or fused hybrid SPECT/CT imaging was compared. Location and extent of disease on scintigraphic imaging and pre- and intraoperative clinical assessment were compared. Intraoperative and histopathological findings served as reference standard.

Results: 26 sites of BRONJ/DRONJ were histopathologically confirmed in 21 patients (stage II, 66.6%; stage III, 33.3%). Scintigraphy demonstrated increased perfusion in 57.1% of patients, increased blood-pool in 76.2% of patients and increased tracer accumulation at the metabolic phase in all patients. The intensity of tracer accumulation at the metabolic phase significantly correlated with clinical stage of disease ($r_s = 0.47$, $p = 0.03$). SPECT systematically overestimated the extent of disease at 50% of sites ($p = 0.001$). Fused hybrid SPECT/CT offered a significantly higher diagnostic certainty ($p < 0.0001$).

Conclusion: In patients with BRONJ/DRONJ, ^{99m}Tc-MDP bone scintigraphy may (1) sensitively detect sites of disease at the metabolic phase, but (2) may systematically overestimate the exact extent of disease. However, the difference between preoperative scintigraphic and intraoperative surgical assessment is small in most patients. Hybrid SPECT/CT may significantly increase the diagnostic certainty of anatomical localization.

**P-660****BRONJ IN A PATIENT WITH ADVANCED MEDULLARY THYROID CARCINOMA AND RET MUTATION IN CODON 804 - A CASE REPORT.**

M. Šabani¹, D.Jelovac¹, M.Antunović², M.Petrović¹, M.Gavrić¹, V.Konstantinović¹

¹ *Maxillofacial Surgery, School of Dental Medicine, University of Belgrade, Belgrade, Serbia*

² *Institute for Radiology, School of Medicine, University of Podgorica, Podgorica, Montenegro*

Until now there is no reported case in the literature of osteonecrosis of the jaw (ONJ) related to intravenous bisphosphonate treatment in patients with metastatic medullary thyroid carcinoma (MTC). This paper describes the case of a 67-year-old male patient with metastatic MTC who developed osteonecrosis of the jaw after tooth extraction following a long-term therapy with intravenous bisphosphonates. The patient underwent a palliative therapy with lanreotide autogel 90-120mg/monthly concomitantly with the bisphosphonate therapy (16 months with pamidronate 90mg/monthly and 78 months with zoledronate 40mg/monthly). High levels of serum calcitonin and CEA as well-established tumour markers for MTC revealed the progression of the disease. It was manifested with lymph node metastases of neck, mediastinum, lungs, liver and bones with associated pathological fracture of the vertebrae D6-D7. The patient's RET mutation on codon 804 made him resistant to the new available treatment with Vandetanib. Before dental procedure no ONJ during this long-term bisphosphonate therapy occurred. After tooth extraction the patient developed ONJ stage 2 in the upper right jaw. Despite of appropriate conservative treatment and discontinuation of the bisphosphonate therapy, the clinical impairment of ONJ developed in 2 years. Up to now there is no curative treatment of metastatic MTC. Treatment with Vandetanib is currently the treatment of choice for advanced and symptomatic MTC. Patients treated with long-term and intravenous bisphosphonate therapy could have a high risk to develop ONJ. Dental extraction is considered as a potential trigger for development of ONJ during a bisphosphonate therapy. It seems that intravenous bisphosphonate treatment could provide a good adherence of the patient to the therapy and an acceptable safety profile. Dental extraction could be considered as a potential trigger. There is no recommendation for metastatic bone disease (MBD) therapy with antiresorptive agents in patients with metastatic and progressive MTC. Additional clinical studies are necessary in order to make recommendation for MBD therapy with antiresorptive agents in patients with metastatic and progressive MTC.



P-714

"KROKODIL" – ASSOCIATED JAW OSTEONECROSIS, AS NEW ERA OF PHOSSY JAW.

E.M. Basin, Yu.A. Medvedev, N.S.Serova, D.B. Satueva, A.V. Korshunova, A.A. Babkova, D.V. Kureshova

I.M.SECHENOV FIRST MOSCOW STATE MEDICAL UNIVERSITY, Moscow, Russian Federation

Narcomania has become a growing problem in many countries. Atypical jaw osteomyelitis cases have been noted from 2002 in northern part of Russia due to systemic drug abuse of synthetic drug "Desomorphine", or "Krokodil". Common spread of this drug was because of its low cost, quick production process from codeine pills with addition of red phosphorus and iodine as an alternative to heroine.

Material and methods. From 2008 to 2014 in maxillofacial department of I.M. Sechenov First State Medical University 165 patients with addiction to "Krokodil" were examined.

Results. In all cases clinical diagnosis was set up as "Toxic phosphorus necrosis" of different bones of the facial skeleton. Clinical examination in all cases revealed long term bone exposure after tooth extraction (more than 8 weeks), purulent discharge with ichorous smell, progression of gum recession, no granulation tissue or bone softening, no or delayed demarcation process in facial bones, pathological fractures, periosteal accumulation. All patients were from 22 до 50 years old with no history of bisphosphonate therapy or head and neck irradiation. 164 patient were diagnosed with hepatitis C, HIV-positive – 22 patients, 3 with tuberculosis. All patients noted long term drug abuse of "Krokodil" from 2 month to 7 years.

Because of failure on common medical therapy of conventional sequestrectomies, long term antibiotic treatment, sealing progression of the disease all patients were treated with expanded necrectomies – mandibular discontinuity and resection of maxilla and midface. 98 patients underwent surgery – jaw extirpation (5), segmental jaw resection with implantation of nikelid titanium (44), itraoral maxillary resection (15), resection of maxilla and midface bones via Weber incision (15). Primary or as a secondary reconstruction 6 titanium reconstruction plates we implanted with combination of nikelid titanium, 7 custom made plates from nikelid titanium were also used.

Discussion and conclusion. Different comorbidities and failure on common medical therapy of drug users with atypical jaw osteomyelitis dictate a more radical approach to eliminate or in some cases slow down progression of jaw necrosis. In our opinion these form of osteomyelitis corresponds to phosphorus jaw necrosis and more recent disease – bisphosphonate-associated jaw osteonecrosis.

**P-788****DRUG INDUCED OSTEONECROSIS OF THE JAWS. DIAGNOSIS, TREATMENT AND PREVENTION MEASURES.**

N. Zaslavskaya, A. Drobyshev, A. Volkov, D. Lezhnev, N. Dikopova

Moscow State University of Medicine and Dentistry named after A.I.Evdokimov, Moscow, Russian Federation

AIM of our study is to improve the efficiency of prevention, diagnosis and treatment of osteonecrosis of the jaw in patients receiving antiresorptive therapy (bisphosphonates, denosumab) due to metastatic bone disease in solid tumours and multiple myeloma..

Materials and Methods. We treated 80 patients with a history of bisphosphonate therapy or denosumab. In 65 patients we diagnosed osteonecrosis of the jaw (60 cases of BRONJ and 5 denosumab-induced osteonecrosis). 15 patients needed surgical procedures and had a history of antiresorptive drugs treatment. Diagnostic procedures included X-ray examination (OPG and MSCT). Group 1 patients (n=43) treatment included courses of local ozone therapy on osteonecrosis area (ten treatment sessions per 3 min, which were repeated after a 3-week interval), patients of group 2 (n=22) were treated conservatively (antiseptic rinses, antibiotic therapy when indicated). Patients in group 3 (n=15) needed surgical dental procedures.

Results. Full recovery was achieved in 20 patients in the first group (47.6 %) after sequestrectomy. Terms of formation of sequestrums ranged from 6 to 15 months. The courses of ozone therapy eliminate pain, carry out prevention of inflammatory complications, stimulates the formation of the demarcation zone and the formation of sequestrums. A year after sequestrectomy according MSCT showed signs of severe osteoregeneration. 23 patients (53.5 %) of the first group are currently continuing treatment, in 20 of them (87.0%) are determined the signs of the formation of sequestrums according to MSCT. In group 2 patients terms of signs of the formation of sequestrums ranged from 13 to 36 months, but in none of the cases the final of their formation has occurred. 11 patients (16.9%) eliminate from the study due to death from the underlying disease. In 3 group of patients we performed teeth extractions with PRGF, antibiotic treatment, suturing of the sockets and ozone therapy. No signes of ONJ in postoperative period observed.

Conclusions. MSCT is most effective and informative radiological diagnostic method. Treatment of patients with osteonecrosis of the jaws on antiresorptive therapy should be minimally invasive. Ozone therapy is an effective method of treatment which has no contraindications for these patients.

**P-907****A PATHOGENESIS BASED ADJUVANT THERAPEUTIC FOR BISPHOSPHONATE-ASSOCIATED OSTEONECROSIS OF THE JAW**

T. F. Meiller¹, J. Brahim², D. Weikel¹, S. Varlotta¹

¹ *Oncology and Diagnostic Sciences, Marlene and Stewart Greenebaum Cancer Center, Baltimore, United States*

² *Oral and Maxillofacial Surgery, University of Maryland Medical System, Baltimore, United States*

OBJECTIVES/SPECIFIC AIMS The purpose of this translational study was to investigate the role a high calcium phosphate (CaPO₄) therapy has in neutralizing local acidic pH, inducing BP scavenging and inhibiting connective tissue fibrosis; to reduce the effect zoledronic acid (ZA) has on oral soft tissues.

METHODS/STUDY POPULATION Saliva from patients using or not using a BP; and with or without BRONJ was measured for pH. Fibroblast and keratinocyte cell lines were exposed to ZA (0.5-10 µM), acidity 5.5 to 7.0 pH and high CaPO₄ solution. We used visual inspection; TUNEL; immunohistochemistry; survivin, caspase 3, cleaved caspase 9 and Ki-67 expression; MTS; scratch migration; and flow cytometry assays to measure the effects of ZA and ZA plus CaPO₄.

RESULTS/ANTICIPATED RESULTS The results demonstrate that patients with BRONJ have more acidic saliva than those taking a BP without BRONJ or in those not taking a BP. Additionally, immunohistochemistry and Western blot shows the soft tissue surrounding BRONJ lesions overexpress caspase 3. A dose dependent response effect on apoptosis, cell proliferation and cell cycle was observed with increasing ZA concentrations. Finally, we have shown that ZA and acidity induce a conversion of fibroblasts to myofibroblasts, possibly inducing a localized fibrotic impairment of wound healing. Overall, CaPO₄ therapy reversed salivary acidity, the in-vitro effects of ZA, and the conversion to myofibroblasts.

DISCUSSION/SIGNIFICANCE OF IMPACT The combined results from this study demonstrate that the effect ZA and BRONJ have on salivary acidity; soft tissue apoptosis, cell proliferation; and conversion to myofibroblasts can be reversed by using a supersaturated CaPO₄ solution, supporting the potential role of CaPO₄ as an adjunct therapy for BRONJ by facilitating soft tissue healing.

**P-910****THE ROLE OF PH IN PATIENTS RECEIVING LONG TERM BISPHOSPHONATE THERAPY**

J. Brahim¹, T. F. Meiller², D. Weikel², S. Varlotta²

¹ *Oral and Maxillofacial Surgery, University of Maryland Medical Center, Baltimore, United States*

² *Oncology and Diagnostic Sciences, Marlene and Stewart Greenebaum Cancer Center, Baltimore, United States*

Purpose: Bisphosphonate (BP)-associated osteonecrosis of the jaw (BRONJ) lacks a defined pathophysiologic mechanism and treatment regimen. This current study was designed to be part of a parent BRONJ pathogenesis series of protocols to investigate the contributing factors of causation. The following hypothesis was tested: Subjects receiving long term bisphosphonate therapy that have developed BRONJ have a more acidic oral environment i.e. as measured by salivary pH than normal (no BP exposure) subjects and those receiving long term bisphosphonate therapy that have not developed BRONJ. This study assessed the pH of saliva in subjects receiving long term bisphosphonate therapy so that possible oral buffers could eventually be developed and investigated as possible treatments i.e. to reduce the acidic effects BPs such as zoledronic acid (ZA) have in BRONJ wound healing.

Methods: As part of a fully IRB approved protocol the informed consent process was used and for 124 subjects including 42 with BRONJ, 42 taking BPs but without BRONJ and 40 matched controls with no BP exposure. From those willing to participate and having signed the consent document, subjects were selected based on history and physical examination in order to document previous and/or current use of bisphosphonates. Standard of care physical examination was used to determine the presence or absence of BRONJ lesions intraorally., we collected samples of saliva on 2 occasions with each visit separated by 1 month. We employed these ex-vivo studies using pH measurements on ~5 ml of fresh unstimulated whole saliva collected over a 5 minute time period at each visit.

Results:*Ex-vivo*, we have shown in this study that patients with active lesions of BRONJ have more acidic saliva as compared to those without BRONJ or in those not taking a BP.

Conclusion: These findings suggest that acidic salivary pH is directly associated with BRONJ, may play a role in the initiation and prolongation of oral BRONJ and may eventually support the potential role of using salivary buffers to offset acidic saliva as an adjunct therapeutic treatment for BRONJ, specifically to speed wound healing.



P-964

SERUM CTX VALUES IN DRUG ADDICTS TO DESOMORPHINE AND PERVITIN.

E.M. Basin, Yu.A. Medvedev

I.M. SECHENOV FIRST MOSCOW STATE MEDICAL UNIVERSITY, Moscow, Russian Federation

Introduction: due to similar clinical and roentgenological changes in osteonecrosis among drug addicts to desomorphine and pervitin with – bisphosphonate-associated jaw osteonecrosis we decided to evaluate markers of bone turnover.

Objective: evaluate serum CTx values among addicts to desomorphine and pervitin with osteonecrosis of the jaws.

Materials and Methods: in the period from 2008 to 2014 168 patients were diagnosed with "Toxic phosphorus osteonecrosis" in corresponding bones of the facial skeleton. 105 patients underwent morning CTX terminal telopeptide test.

Results: All patients were from 19 to 46 years old with no history of bisphosphonate therapy or head and neck irradiation. 186 test were obtained during observation period from 2011-2014, 105 of them were done on primary diagnosis. Minimum value of CTx terminal telopeptide was 0,010, while maximum was registered as 2,260 ng/ml. All patients presented with long term bone exposure after tooth extraction (more than 8 weeks), purulent discharge with ichorous smell, gum recession, delayed demarcation process in facial bones, pathological fractures, periosteal accumulation. According to Position Paper on Bisphosphonate-Related Osteonecrosis of the Jaw of American Association of Oral and Maxillofacial Surgeons all patients were classified as stage 3 and due to failure on common medical therapy of conventional sequestrectomies, long term antibiotic treatment, sealing progression of the disease all patients were treated with expanded necrectomies – mandibular discontinuity and resection of maxilla and midface. CTx values may vary daily but a noted tendency of decreased bone turnover among addicts to synthetic drugs cooked with addition of red phosphorus (desomorphine, pervitin) was noted.

Discussion and conclusion: synthetic drugs cooked with addition of red phosphorus (desomorphine, pervitin) affect bone turnover and serum CTx values have to be routinely checked on primary diagnosis of osteonecrosis and during treatment.

**P-1087****SURGICAL TREATMENT IN BISPHOSPHONATE-ASSOCIATED OSTEONECROSIS OF THE JAWS: OUR EXPERIENCE WITH 33 CASES**

M. Pombo, A. González-Mourelle, V. Chávez, I. Vázquez-Mahía, J. Ferreras, J.L. López-Cedrún

Oral and Maxillofacial Surgery, CHU A Coruña, A Coruña, Spain

AIM: To investigate the results of surgical treatment in bisphosphonate-related osteonecrosis of the jaws.

PATIENTS AND METHODS: Thirty-three patients underwent surgery because of bisphosphonate-associated osteonecrosis of the jaws in the Department of Oral and Maxillofacial Surgery in A Coruña University Hospital, from 2004 to 2013. Twenty-five females and eight males. Mean age was sixty-six years. Eight patients had been treated with bisphosphonates for multiple myeloma, fifty for bone metastases (twelve for breast carcinoma), eight for osteoporosis and two for rheumatoid arthritis. The route of administration was intravenous in twenty-three patients and oral in ten patients. In twenty-two patients a history of oral surgery could be identified. Twenty-three patients had only one BRONJ site, fourteen of them in the mandible. Thirty patients had multiple BRONJ sites. Four patients were classified as stage0, six as stage1, sixteen as stage2 and seven as stage3; among stage3 patients, one of them had a pathological fracture, another one an extraoral fistula, two orosinusual communication, and one had a necrosis affecting mandibular basal; two patients had both a mandibular fracture and cutaneous fistula. We could diagnose bone sequestra in ten patients. Regarding to the surgical procedure, we performed one partial maxillectomy, one segmental mandibulectomy and microsurgical reconstruction with a fibular free flap and one marginal mandibulectomy with primary closure. In orosinusual communications we used pediculated Bichat's buccal fat pad. Pathological fractures were treated with a titanium reconstruction plate, unless one patient who rejected this procedure and was treated with rigid maxillomandibular fixation. In the other patients we performed more conservative procedures, as sequestrectomies, superficial bone remodeling and curettages.

RESULTS: Complete healing was obtained in thirteen patients (two stage0, four stage1, six stage2 and one stage3). Three patients improved their symptomatology (one stage3 and two stage2); nine patients did not improve (four stage3, five stage2); and three patients worsened despite treatment (stage2).

CONCLUSIONS: Treatment of bisphosphonates-related osteonecrosis of the jaws needs a conservative approach, with sequestrectomies and superficial curettages when necessary and reserving more aggressive debridement and radical resection for advanced stages where other procedures fail.

**P-1162****CONSEQUENCES AND EFFECTS OF BISPHOSPHONATES ON MAXILLOFACIAL TISSUES**

M. Riznič, A. Jenča, jr, A. Jenča

Department of Stomatology and Maxillofacial Surgery, University of Pavol Jozef Šafárik, University Hospital Louis Pasteur, Košice, Slovakia

Objectives

The article deals with the issues of maxillae and mandible osteonecrosis of oncologically treated patients accompanied by the bisphosphonate treatment. Authors evaluate a collection of patients treated with bisphosphonates, possible causes and osteonecrosis formation theories, pharmacological and surgical treatment with the emphasis on prevention and complications.

Methods

In the study we compared and evaluated surgical and conservative modalities of the treatment of bisphosphonate osteonecrosis. The methodology of the treatment was derived from the overall patient's status, oral hygiene, extensity of the necrotized area and level of discomfort in the oral cavity. From the conservative point of view it was a local treatment of the osteonecrosis, necrectomy, antibiotics therapy, sufficient supply of vitamins and supportive matters. In cases when the situation and patient's status let us the therapy was surgical, mainly using autologous platelet rich plasma concentrate, closure of the mucoperiosteal flap and defocuses. With all patients the therapy by itself was preceded by a haematological, laboratory, stomatological and oncological tests.

Results

In the patient file, treated in the workplace, we record a remission of discomfort in the oral cavity related to food intake and consolidation of the osteonecrotic area after a thorough preliminary preparation of the patient and a systematic long-lasting treatment. In spite of a dominating number of patients treated in time and a variable, individual approach the overall symptoms are influenced by primal oncological illnesses, long-lasting intravenous bisphosphonates feeding, chemotherapy, radiotherapy and none of the treatment processes is totally satisfying.

Conclusions

The bisphosphonates osteonecrosis treatment of oncological patients is difficult and long-lasting. Its success depends on a correct and adequate treatment procedure, multidisciplinary cooperation of the stomatologist, oncologist, haematologist, maxillofacial surgeon as well as the patient himself. The presumption of a successful surgical therapy can possibly be expected with patients who fulfil a sufficient anatomical ratio in the necrotized area and besides the primal oncological illness are in a good health state including oral hygiene.

**P-1231****BISPHOSPHONATE-RELATED OSTEONECROSIS OF JAW (BRONJ) IN TURKISH POPULATION: A CASE SERIES OF 6 PATIENTS AT OUR CLINIC**

İ.Macit , U.Tekin , F.Atil , D.Kocyigit, S.Öktem, Ö.Öner

Oral And Maxillofacial Surgery, Dentistry Faculty of Kirikkale University, Kirikkale, Turkey

Surgical management of patients following intravenous bisphosphonates (BPs) therapy is particularly difficult, since the dental extraction is the main cause of Bisphosphonates -related osteonecrosis of the jaws(BRONJ).

BPs are a commonly used class of drugs effective in the prevention and treatment of postmenopausal osteoporosis and Paget disease. They are also used intravenously in the prevention and treatment of bone metastasis associated with solid malignant tumours and multiple myeloma.

BRONJ is the term frequently used to describe a complication in a subset of patients receiving this medication, mainly in those receiving intravenous BPs. BRONJ has been described as an avascular area of necrotic bone in the maxillofacial area, with or without exposed bone that has been evolving for longer than 8 weeks in patients without a history of irradiation in the maxillofacial region.

Management protocols of these patients now tend to be preventive approaches. Such prevention and treatment strategies include the elimination of any potential infection sites in patients who are treated with IV bisphosphonates, in an effort to guarantee sufficient oral health status and to reduce the risk of BRONJ related to dental pathologies and/or prospective oral surgical procedures.

The diagnosis and management strategies of the patients with BRONJ is very difficult. Various case reports and case series in the literature were reviewed. A total of 6 patients (4 men and 2 women) were included. All the patients included in this study had received BP therapy and had BRONJ. This study present different stage of BRONJ and their treatment strategies. The current standard treatment for BRONJ does not always provide good results. It is necessary to accumulate further clinical data to establish more effective treatment strategies for BRONJ.



P-1252

DOES ABSCESS FORMATION AFFECT PROGNOSIS AND TREATMENT OUTCOME OF BISPHOSPHONATE-INDUCED OSTEONECROSIS OF THE JAWS? REPORT FROM THE COPENHAGEN COHORT.

M. Schiodt¹, S.S. Ahrensburg²

¹ Oral & Maxillofacial Surgery, Rigshospitalet, Copenhagen University Hospital, Danish Association for Oral & Maxillofacial Surgery, Copenhagen, Denmark

² Resource Centre for Rare Oral Diseases, Rigshospitalet, Copenhagen University Hospital, Danish Association for Oral & Maxillofacial Surgery, Copenhagen, Denmark

Objective:

To report the frequency of Oral ONJ-related Abscesses (OA) in the Copenhagen ONJ Cohort, and to examine if OA affect the prognosis and treatment outcome.

Material and Methods:

The cohort consists of 143 patients, treated with BP for multiple myeloma (24), mamma cancer (50), prostate cancer (15), other cancers (4), or osteoporosis (50).

Patients with OA during the course were compared with the group without OA. The subgroups were compared using Fischers exact test and students T-test. Significance level 5%.

Results:

Among 143 ONJ patients 28% had OA during the course. The age and gender, and anatomical distribution were similar in the two groups. Mean pain VAS score was 4.3 among the OA and 3.1 among the non-OA ($P>0.05$) at first examination. During course the VAS was higher (6.0) for the OA group and 3.5 for non-OA group ($P<0.002$). The ONJ stage in the two subgroups was higher in the OA group than the non-OA group ($P=0.001$). The treatment of the ONJ was conservative in 27% and surgical in 73%. No difference in treatment modality between subgroups.

As of Jan 1st, 2014 32% had died from their cancer. 27 % without OA had died, and 45% with OA had died ($P<0.04$). The observation period was similar in the two subgroups.

At last follow-up, the OA group and the non-OA-group were free of symptoms in 84% and 83%, respectively ($P>0.05$). The VAS in patients with surgery was 0.5 in both OA and non-OA ($P>0.05$). The VAS in those without ONJ surgery was 3.2 in the OA group compared to 0.4 in the non-OA group ($P>0.05$).

ONJ stage: Cured: 60%, ONJ stage-1: 23%, stage-2: 10%, stage-3: 8% in the OA group, compared to 54%, 29%, 11%, 6% in the non-OA group ($P>0.05$).

Conclusion:

Abscess formation initially or during the course of treatment of ONJ-patients is associated with higher VAS score and ONJ stage. More patients died from their cancer during the observation period among those with OA.

However, abscess formation during course did not affect the final surgical treatment outcome of the ONJ.

**P-1290****OSTEONECROSIS OF THE JAW RELATED TO NON-BISPHOSPHONATE DRUGS: A CASE SERIES OF FOUR PATIENTS**

M. Pombo, A. González-Mourelle, F. Gálvez, R. Luaces, J.L. López-Cedrún

Oral and Maxillofacial Surgery, CHU A Coruña, A Coruña, Spain

INTRODUCTION: Since first described by Marx in 2003, bisphosphonates have been associated to osteonecrosis of the jaw and the number of cases reported in the literature has been continuously increasing. In the last years, several reports have described a similar association between osteonecrosis of the jaw and other drugs used in cancer treatment, alone or in association with bisphosphonates, such as the antiangiogenic agents bevacizumab and sunitinib, the antiresorptive drug denosumab and the anti-TNF antibody adalimumab.

PATIENTS AND METHODS: We present four patients referred to the Department of Oral and Maxillofacial Surgery of A Coruña University Hospital for presenting osteonecrosis of the jaws related to non-bisphosphonates drugs.

CASE 1: A 63 year-old woman who had received adalimumab for rheumatoid arthritis during forty-eight months. She had a bone exposition in the second quadrant after a tooth extraction, solved with superficial debridement.

CASE 2: A 76 year-old woman who had received adalimumab during forty months for rheumatoid arthritis. She had also been having oral bisphosphonates for osteoporosis during thirty-five months. She came to the emergency with an abscess in the third quadrant. She was treated with antibiotics and hyperbaric oxygenation and she spontaneously expelled an osseous sequestration, with resolution of the symptomatology.

CASE 3: A 69 year-old woman with a metastatic breast cancer treated during two years with intravenous bisphosphonates and, after that, with bevacizumab during 18 months. She was referred for presenting osteonecrosis in both mandibular bodies after dental extractions in both sites. Several curettages and sequestrectomies were performed although the patient has not yet achieved a complete healing.

CASE 4: A 73 year-old man treated with denosumab during sixteen months for a prostatic adenocarcinoma. He was referred to our department with bone exposition and suppuration after a tooth extraction. He achieved a total resolution after several cycles of antibiotics, surgical debridements and sequestrectomies.

CONCLUSIONS: Although specific strategies have not been established for the prevention and management of the osteonecrosis of the jaw associated to non-bisphosphonate drugs, it would be reasonable to apply the same recommendations as for osteonecrosis of the jaw related to bisphosphonates, especially in terms of prevention.



17. Obstructive Sleep Apnea

P-246

SKELETAL SURGERY IN TREATMENT OF OSAS - COMPLICATIONS - THE AUTHORS EXPERIENCE

M.Jagielak¹, M. Rahnama¹, A. Wojtowicz², M. Rysz³

¹ *Department of Oral Surgery, Medical University of Lublin, Lublin, Poland*

² *Department of Dental Surgery, Medical University of Warsaw, Warsaw, Poland*

³ *Maria Skłodowska-Curie Institute of Oncology, Maria Skłodowska-Curie Institute of Oncology, Warsaw, Poland*

Introduction

The MMA - the well known procedure from the orthognathic surgery when applied to the OSAS patient gives excellent results although it is essential to take all possible precautions to avoid serious complications such as immediate or quick relapse, malunion, pseudoarthrosis, malocclusion or bone necrosis

Material

In the years 2006-2013 the authors performed 23 patients with severe signs of and symptoms hypoxia contributing to narrowed airway.

14 patients presented assorted various forms of occlusal deformity (class III, II , open bite).

9 patients presented class one occlusion with visible retropositioning of the maxillo mandibular complex.

Results

The initial results after the surgery were very good - stable class one occlusion with the mean increase of the retronasal and retroglasal airway of 6 mm. Subjectively the patients reported enhanced breathing.

After 3 weeks of the uneventful follow up in all patients in 4 cases we observed initially occlusal deformity follow by pain and swelling in the lateral mandibular area.

The x ray revealed deformity of the plating systems that increased within next days leading to the plate fracture. Such sequelae resulted in major malocclusion. As initial and emergency treatment IMF screws and wire fixation were applied. Such treatment was sufficient in 2 cases The wire IMF was maintained for 8 weeks followed by elastics for 12 weeks applied to the fixations screws. In 2 cases regardless of the IMF the malocclusion increased. Pathological mobility was observed in the sites of osteotomies. The x ray CB-CT revealed pseudoarthrosis

As the third surgical procedure full mobilisation of the osteotomized segments occlusal adjustment and stable load bearing osteosynthesis was perform follow by wire IMF for 8 weeks . After this time stable results were diagnosed.

Conclusion

MMA in OSAS patients although very efficient could be very challenging. One should take under consideration the discrepancies between the orthognathic and OSAS patients, such as: age, dental defects, coexisting health problems and patients compliance. The latter is of utmost importance and frequently lacking in the OSAS patients. In author's opinion in major advancement in OSA patients the wire IMF should routinely to applied together with osteosynthesis systems used.



P-383

DESIGN AND IMPLEMENTATION OF A NEW DEVICE FOR POSITIVE PRESSURE VENTILATION IN THE EDENTULOUS PATIENT: A PILOT STUDY

C Niño¹, A Pauwels², C Lozano², E. Arango¹, F. Raffan¹, D Benitez¹, A Tellez¹

¹ Department of Anesthesiology, Hospital Universitario Fundación Santa Fe de Bogotá, Bogotá, Colombia

² Department of Oral Health- Oral and Maxillofacial Surgery Service-, Hospital Universitario Fundación Santa Fe de Bogotá, Bogotá, Colombia

Objectives

The aim of this study was to describe the preliminary clinical results of the use of *NIPARA* as a new airway device, during positive -pressure -ventilation (PPV) using face mask in edentulous patients undergoing elective surgery procedures at University Hospital Fundación Santa Fe de Bogotá, by measured ventilation mechanical variables (VMV) and ventilatory difficulty grade, in six patients.

Materials and Methods

After obtaining institutional ethics committee approval, this preliminary study was designed as part of a randomized and controlled clinical trial. It was recruited six patients, who had elective surgery procedures under general anaesthesia at the Hospital Universitario between April to June 2013, previous sign of written informed consent. All patients group underwent PPV using face mask, three with the device and three without it, as a control group.

All patients accomplished the inclusion and exclusion criteria; VMV such as peak pressure, tidal-volume, dynamic compliance and difficulty ventilatory grade were measured. The results were analyzed using frequencies and percentages for nominal variables, median, 25 and 75 percentiles for variables of reason.

Results

Demographics characteristics of these six patients were as follows: Age 67,66 years, BMI 28,375, 83,33% were females and 16,67% male and 50% were ASA1 and 50% ASA2. The media and percentiles of measurements of the variables, on both groups were as follows:

	with <i>NIPARA</i>	without <i>NIPARA</i>
Peak Pressure	16,65 (14,87 - 19,12)	20,6 (20,16 - 22)
Tidal volume	466,75 (385 - 473,37)	260,66 (182,5 - 272)
Dynamic distensibility	22.46 (22.14 - 28.72)	12,14 (8,59 - 12,69)
Difficulty ventilatory grade	1(1-1)	2 (1,5-2)

Conclusion

In this pilot study, a tendency to have lower peak pressures and volumes increased flows and dynamic compliances were observed, and it showed lower difficulty ventilatory grade (Han Scale), using the device *NIPARA* during a positive pressure ventilation with face mask, when compared to the control group. However, as a pilot study, recruitment was underpowered to find statistical differences between groups. Therefore, it will require an expanded trial that could likely shows that *NIPARA* use in PPV with mask could to be superior during ventilation of completed edentulous patients.



P-418

A CONEBEAM-CT ANALYSIS OF UPPER AIRWAY VOLUME WITH AND WITHOUT MANDIBULAR ADVANCEMENT DEVICE (MAD).

L. Marcussen, J.E. Henriksen, T. Thygesen

Department of Oral- and Maxillofacial Surgery, University Hospital Odense, Odense, Denmark

Objective: Upper airway volume is a key factor in development and treatment of snoring and obstructive sleep apnoea. This study investigated upper airway volume and breathing pattern changes using custom made MAD appliances.

Methods: This prospective intervention study was made on 44 (31 male; 13 female) patients referred for MAD therapy and diagnosed with snoring, sleep apnoea or diabetes Type 2. Cone Beam CT scans were performed with and without MAD. Cardio Respiratory Monitoring was performed in an outpatient setup without MAD (diagnostic) and after 3 months MAD therapy.

Results: There was an increase in total upper airway volume with MAD therapy compared to no MAD therapy from $22.9\text{cm}^3 (\pm 8.7)$ to $26.7\text{cm}^3 (\pm 10.7)$; ($p < 0.001$). This difference occurred mainly due to increase in cross section area at level sub nasally and minimum airway diameter ($p < 0.001$), to lesser degree at Menton level ($p = 0.0039$). At B point and Pogonion level there were no significance but tendency ($p = 0.07$ and 0.058). MAD therapy reduced the apnoea-hypapnoea index (AHI) from $15.8 (\pm 17.4)$ events/h to $6.2 (\pm 9.8)$ ($p < 0.001$). The variables were tested by the Wilcoxon signed rank test.

Sub analyses in three sub groups: 1. $\text{AHI} < 5$ ($n = 17$); 2. $5 \leq \text{AHI} \leq 20$ ($n = 13$); 3. $\text{AHI} > 20$ ($n = 14$) showed no reduction in AHI in group 1, but Flow Limitation Index (FI) reduced from $25 (\pm 13)$ to $13 (\pm 11)$ ($p = 0.021$). Group 2 showed reduction in AHI from $10 (\pm 3)$ to $3 (\pm 2)$ ($p = 0.009$) and group 3 from $38 (\pm 13)$ to $15 (\pm 14)$ ($p < 0.0001$). The variables were tested by linear regression analysis.

Conclusions: This study showed significant effect on upper airway volume and breathing pattern parameters. From a clinical and public health perspective our study confirmed MAD therapy to be a relevant treatment option that may include also patients with high AHI. From a research perspective this volume model will be developed further as a recommendation tool to evaluate airway parameters when virtually planning surgery to treat sleep apnoea and growth disorders in the jaws.

**P-567****MAXILLOMANDIBULAR ADVANCEMENT SURGERY FOR OBSTRUCTIVE SLEEP APNOEA (OSA): THE RELATION BETWEEN OSA SEVERITY AND SURGICAL OUTCOMES**

S. Islam, C Taylor, I Ormiston

Maxillofacial Surgery, Leicester University Hospital, Leicester, United Kingdom

Objective: The objective of this study was to evaluate the relationship between preoperative obstructive sleep apnoea severity as defined from sleep study apnoea / hypopnea index (AHI), and its potential predictive value for maxillofacial orthognathic surgeons evaluating patients referred for surgery.

Method: We performed a retrospective analysis of consecutive patients who underwent maxillofacial surgery for OSA at our institution. Patients were stratified into two groups: mild-moderate OSA (AHI<30) and severe OSA (AHI>30) derived from the preoperative sleep study. We controlled for baseline demographic and clinical characteristics. We compared postoperative apnoea / hypopnea indices (AHI), Epworth sleepiness scores (ESS) and lowest recorded oxygen saturation (SpO2 min) in both OSA severity groups.

Results: We identified 51 patients of whom 39 had data available for inclusion in our analysis. The majority underwent Bi-maxillary advancement with Genioplasty. We found no statistically significant difference in the postoperative AHI between the two groups. Comparable surgical 'success' rates (AHI <15 postoperatively) were noted in mild-moderate and severe OSA groups. We noted a greater reduction in the mean ESS after surgery in the severe OSA group when compared mild-moderate OSA patients (mean postoperative ESS: 9 (+/- 6) versus 4 (+/-3), $p<0.05$).

Conclusion: This study found no relationship between mild-moderate or severe AHI scores and objective outcomes measures. OSA severity does not appear to be a good predictor of surgical success. Patients with baseline AHI>30 (severe OSA) postoperatively demonstrated a greater improvement in their subjective symptoms (ESS reduction), when compared to subjects with mild to moderate obstructive sleep apnoea.

**P-687****APPLICATION VIDEOFIBEROSCOPY IN AIRWAYS OBSTRUCTION LEVEL DIAGNOSTICS IN SLEEP APNEA SYNDROM.**

K.Walerzak

Medical University of Warsaw, Warszawa, Poland

Objective: Sleep apnoea is a commonly diagnosed disease. 20% of general population may be involved. It is associated with of cardiac disturbances, arterial hypertention, hyperthyroidism, diabetes and other sicknesses conducive to death. It result from either a decrease of pharyngeal and bottom of oral cavity muscles tension or morphology causing upper airways obstruction. It could be result of laryngeal factors such as: deviation of nasal septum, polyps, adenal hypertrophy or maxillo-facial causes: backward mandible position connected with facial skeleton malformation or dental insufficiencies.

Sleep apnoea ascertainment using polysomnography to confirm the diagnostics of obstruction causing air flow impairment may to be controversial. Clinical inspection together with radiological tests (lateral cephalograms, CBCT) do not always give the answer as to what is the real reason of obstruction. Videofiberscopy of upper arways under general anaesthesia can be used to show collapsing part of the patients nosopharynx in a supine body position

We discuss the of usability videofiberscopy in assessing upper airways obstruction level in sleep apnoea patients.

Material: 38 patients treated in Deparment of Cranio-Maxillo-Facial Surgery, Oral Surgery and Implantology Medical University of Warsaw between 2010-2013 with diagnosed sleep apnoea .

Methods: Epworth scale, radiology: panoramic picture, lateral cephalometry, CBCT. Functional estimation with polysomnography and portable Watch-Pad device were used for sick unit confirmation.

Results: In every case videofiberscopy gaveclear image of certain pharyngeal tissue collapsing.

Conclusions: Videofiberscopy is useful tool in detecting the obstruction level in obstructive sleep apnoea patients, especially in soft palate and tongue region to discriminate the reason of obturation.

**P-960****PUTTING INTO PRACTICE AN OBSTRUCTIVE SLEEP APNOEA (OSA) UNIT COORDINATED BY THE MAXILLOFACIAL SURGEON. OUR PROTOCOL**

JL. Giner¹, G. Schoendorff¹, I. Fernández Navarro², N. Montesdeoca³

¹ *Oral and Maxillofacial, Ruberdental, Madrid, Spain*

² *Lung department. OSA Unit, Ruberdental, Madrid, Spain*

³ *Oral and Maxillofacial Surgery, Clinica La Luz Hospital, Madrid, Spain*

Objective: Estimated prevalence of OSA in Spanish population is found to be around 3-6%. OSA is directly related to a mortality excess, mainly due to Hypertension condition, cardiovascular and brain strokes and traffic accidents. In addition, it's been recently proved that non-diagnosed patients tend to consume double health system resources than others correctly diagnosed and treated. That's why OSA is currently considered as a front line public health problem with a clear lack of Sleep Units that could allow to guarantee the correct diagnose and treatment for most of the patients.

Methods: We expose our experience in the development of a multidisciplinary OSA Unit, which includes neumologist, cardiologist, endocrinologist, dentist, etc. but fully coordinated by an oral and maxillofacial surgeon.

Our clinical guidelines and patient pathways are shown, starting by the first visit, correct diagnose, clinical management with Continuous Positive Airway Pressure (CPAP) until the surgical definitive treatment for those patients meeting age and severity criteria.

Results: Even though this is a long term project, since the very beginning of the Unit we can observe how patient perceives clear advantages of a multidisciplinary evaluation, both in a subjective way as in terms of fast diagnose and therapeutical adherence. Our aim in the next years is to achieve a better index of successful treatments in patients managed with our protocol.

Conclusions: Due to the high rate of CPAP treatment dropout in patients with mild and severe OSA, we think that a multidisciplinary and protocolized management of the problem can lead most of the patients to take advantage of a long-lasting successful treatment, contributing to reduce in the near future the syndrome-associated morbidity and mortality



P-971

EFFECTS OF RAPID MAXILLARY EXPANSION ON NASAL BREATHING AND RESPIRATORY OBSTRUCTION APNOEA SYNDROME IN CHILDREN

V. Hidalgo-Lopez, P.Espinosa-Calleja, C.Bosch-Lozano, A.García-Sánchez, JI.Iriarte-Ortate

Maxillofacial surgery service at Son Espases Hospital, Palma Mallorca, Spain

Introduction: Rapid maxillary expander (RME) may be an alternative in the treatment of children with respiratory obstruction Apnoea (OSAS).

Objective:

Although orthodontic treatment is carried out to correct dental and skeletal discrepancies, treatment outcomes may be effective for naso-respiratory problems and OSAS in growing children. Some potential favourable effects RME reported in treatment include a combination of poor nasal airway, septal deformity, recurrent ear or nasal infection, allergic rhinitis and asthma. RME increases the transverse dimensions of maxilla and nasal cavity by separating the two maxillary halves from midpalatal suture in a short period.

Method: We present a 10 year old patient with diagnosis of infant respiratory OSAS with altered parameters seen in the polysomnography. He had an apnoea-hypopnea index of 2.9. Six months later, after treatment, his apnoea-hypopnea index was 1 and symptoms disappeared.

Results:

It was decided to perform an RME. The positive effects of RME on OSAS result from increased pharyngeal dimensions, changing anatomical structures, improved nasal airflow, improvements of naso-pharyngeal functions, and reduced naso-respiratory problems. It may also speculate that 'the mechanism for the resolution of OSAS following RME relates to improved nasal airflow, which results in the generation of lower subatmospheric inspiratory pressures and hence reduces the vulnerability to pharyngeal collapse

Conclusion:

RME is a dentofacial orthopedic treatment procedure which has been routinely used in young patients. The main goal of RME is to correct the existing posterior crossbite and to widen the maxilla and maxillary dental arch. However, a concomitant and contributing benefit of this procedure is an improvement on nasal airway which facilitates nasal respiration. RME not only increases the nasopharyngeal airway dimensions and improves nasal respiration but also decreases naso-respiratory problems of patients having maxillary constriction and mouth breathing

The Nasal continuous positive airway pressure (CPAP) is considered an ideal treatment for treating OSAS, due to it being conservative and reversible; however, there is a poor rate of adherence in its long-term use. RME can significantly complement those cases where CPAP is not tolerated and can be used instead of CPAP in patients with a good response to RME



P-1057

CO₂-MONITORING IN THE SOAS DIAGNOSIS IN PATIENTS WITH CLASS II MALOCCLUSION

Kotov I.I.

Central Research Institute of Dental and Maxillofacial Surgery, Moscow, Russian Federation

Objectives. Sleep apnoea obstructive syndrome (SOAS) is not uncommon condition in patients jaw deformities, particularly in patients with distal type of dysocclusion (due to Class II malocclusion). Despite of the polysomnography, some other techniques are needed to identify the real cause of SOAS. Capnometry in addition to polysomnography turned to be very useful in diagnosis of SOAS in orthognathic patients.

Materials and methods. Using polysomnography in combination with capnometry we investigated 17 patients with Class II malocclusion. While defining SOAS we registered the end-tidal CO₂ preoperatively and in 3 month postoperatively.

Results. Polysomnography has registered SOAS in all 17 patients with Class II malocclusion. Preoperatively SOAS was combined with hypercapnia in 12 patients from 17 (71%). Postoperatively hypercapnia was registered only in 7 patients of 17 (41%), who suffered from bimaxillar orthognathic operation. Thus we conclude that orthognathic procedures proved to be sufficient at least in 41% of SOAS, associated with hypercapnia.



P-1065

SURGICAL TREATMENT OF SLEEP APNOEA SYNDROME: OUR EXPERIENCE

B.Leno-Dasi, C.Navarro-Cuéllar, R.Fernandez-Valadés, A.García-Sevilla, C. Ila-Raez, C.Navarro-Vila

Gregorio Marañon Hospital, Madrid, Spain

Introduction:

Sleep Apnoea Syndrome is characterized by repeated collapse of the upper airway related to excessive snoring, morning fatigue and witnessed apnoeas.

OSAHS affects approximately 2 to 5% of the population.

Continuous positive airway pressure therapy (CPAP) is the first line treatment for patients with Obstructive Sleep Apnoea Syndrome. An alternative approach to CPAP is the upper airway surgery destined to improve the compliance

When considering the possibility of surgery as treatment, it is crucial to determinate the correct location of the collapse of the airway by nasofibroscopy and image studies (CT, MR) and to determine its severity and complexity.

Objective:

Evaluate the surgical treatment results by taking as parameters the sleep apnoea episode reduction (measured by polysomnography) the increase of the airway surface and the daytime sleepiness, with a follow-up time of 2 year.

Patients and method:

An assessment is made to 5 patients previously diagnosed with OSHAS that did not tolerate treatment with CPAP. Imaging studies are performed and appropriate surgical planning for bimaxillary advancement, uvulopalatopharyngoplasty and rhinoseptoplasty is performed to all patients.

Results:

Apnoea and hypopnea index (AHI) measured by polysomnography demonstrated a significant improvement, along with increase of the upper airway evidenced by imaging studies. An evaluation of the symptoms was also recorded. The follow-up period was 2 year.

**P-1141****TREATMENT OF SNORING AND MILD-MODERATE OSA WITH ORAL APPLIANCES. OUR EXPERIENCE**

M. Gaseni

Oral and Maxillofacial Surgery, Sagrat Cor University Hospital, Barcelona, Spain

Introduction: Apnoea-hypopnea syndrome (OSA) is a sleep disorder characterized by snoring and recurrent partial or complete collapse of the pharyngeal airway, resulting in nocturnal oxygen desaturation and sleep fragmentation. Oral appliance therapy has emerged as an alternative to CPAP for snoring, and mild to moderate OSA in patients who refuse or fail to adhere to the use of the CPAP device.

Aim: The purpose of this study was to evaluate the effects in teeth, occlusion, appearance of ATM problems, changes in their skeletal parameters and their general satisfaction after the use of a mandibular monoblock repositioning appliance.

Material and methods: Twenty-eight patients were collected from "Hospital Universitari Sagrat Cor" between 2010 to 2013. The average age of the patients was 52 years. 64.3% of the patients were males and the 35.7% were females. Polysomnography was applied to diagnose OSA, finding 3 patients with Mild OSA, 17 with Moderate OSA and 8 with Severe OSA. 4 patients were diagnosed also with snoring (>100/h). Assessing molar occlusion, 50% showed class I Molar occlusion and 50% showed class II Molar occlusion. Moreover, 28.6% of the patients had associated pathology, most of them HTA. Patients were treated with a rigid mandibular repositioning appliance (monoblock) because of snoring or/and OSA. Every appliance was made by the same doctor by bite registration with George gauge and fiberscope. The parameters: teeth status, soft tissue, periodontal condition, occlusion, ATM problems, cephalometric points and quality of life were recorded at baseline and at the end of the study. Each patient used the appliance for approximately one to three years. Statistical analyses were performed using SPSS version 15.0.

Preliminary results: subjective clinical improvement was found as well as improvement in a large number of patients in both IAH and IR scores. The use of DAM had been well tolerated. No assessable changes were found, but 1 case of low molar malocclusion well tolerated by the patient.

Conclusion: rigid mandibular repositioning appliances are a good option cost-effective treatment, without relevant adverse effects, for patients suffering from snoring, mild apnoea-hypopnea syndrome or moderate apnoea-hypopnea syndrome that not tolerate CPAP.



18. Tissue Engineering and Cell Therapy

P-52

RADIODENSITY CHANGES OF RESIDUAL ALVEOLAR BONE AFTER SINUS – LIFT OPERATION ENFORCED WITH CALCIUM PHOSPHATE MATERIAL

L. Neimane¹, A. Skagers²

¹ *Oral and Maxillofacial diagnostic radiology department, Riga Stradins University, Institute of Stomatology, Riga, Latvia*

² *Oral and Maxillofacial surgery clinic, Riga Stradins University, Institute of Stomatologu, Riga, Latvia*

Objective. Bone substitute materials used for sinus – lift enforcement containing calcium phosphate provide increased mineralization of residual alveolar bone. That has been shown in histological and histomorphological studies with specimens. The aim of this study was to evaluate radiodensitometrical bone changes at least one year after sinus lift operation.

Methods. Thirteen sinus - lift operation enforced with xenogenic Bio-Oss, Geistlich Biomaterials, Switzerland. Cone beam computed tomographic (CBCT) investigation was performed before operation and at least one year after operation. The radiodensity of residual alveolar bone was measured in both CBCT images and compared.

Results. The average radiodensity of alveolar bone before sinus – lift operation was 140.69 SD±216.159 HU (median 79.00). The second radiological investigation was performed 1.39 SD±0.32 years (min 1, max 1.67) after operation. The second, postoperative radiodensitometric measurement of residual alveolar bone was 335.38 SD±278.847 HU (median 213.00). The Wilcoxon test showed statistically significant difference ($p=0.007$) found between residual alveolar bone measurement before and after sinus lift operation with calcium phosphate containing material.

Conclusions. The long term contact with calcium phosphate containing materials increase mineralization of residual alveolar bone after sinus – lift operation. That can be detected radiologically by CBCT.

**P-149****BIOMORPHIC CERAMIC BASED ON SiC/Si AS A NEW MATERIAL FOR RECONSTRUCTIVE MAXILLOFACIAL SURGERY (EXPERIMENTAL STUDIES)**

V. Malanchuk, O. Zhukovceva, Y. Chepurnii, V. Kiselev, T. Alekseeeva

National medical university, Riev, Ukraine

Objective.

Due to the rehabilitation medicine development, particularly in maxillofacial surgery, the necessity of new materials is appeared. The guideline for their choosing is bio - and functional compatibility to the organism.

The innovation method of fabrication a new material included the pyrolysis of wood to form a carbon matrix, which is infiltrated with molten silicon and reacts with the carbon template to form silicon carbide (SiC). The final product, called ecoceramic, is a biomorphic material that "mimics the fibrous microstructure of the wood that has been perfected by natural evolution". The preliminary cell-culture tests show its nontoxicity. The aim of our study was to compare living body reaction on samples' surface of SiC/Si.

Materials and methods.

Study was carried out on laboratory bread white rats, weight 350-370 g. Under the total anesthesia the samples of SiC/Si as plates with dimensions 3x2x0,8 mm were implanted at back side (tergum's muscle). In 4 weeks after manipulation rats were mortified and the tissue with implants was collected for further histological study.

Rats' blood was collected just before operation and at the end-point of the study to evaluate C-reactive protein (CRP) level. Also IgG was extracted by salt precipitation for samples biocompatibility determination by atomic-force microscopy method (AFM).

Results. Preoperational tests with AFM show that IgG adhesion to the samples surfaces is practically equal and vary in the term 20 ± 0.63 nN. The comparison of CRP levels before operation and at the end-point also demonstrates that implants have not given rise to aseptic inflammation (CRP 3.8 ± 0.95 mg/l vs. 4.2 ± 1.1 mg/l correspondingly). Microscopy study shows that thin fibrous-connective capsule without trace of inflammation was formed around the samples.

Conclusion. *In vitro* and *in vivo* results permit to make a conclusion that biomorphic ceramic based on SiC/Si is compatible with living body tissue, does not give rise to total and local inflammation and may be used for durational presence in organism. The results of the studies showed that SiC can be proposed as a possible material for reconstructive maxillofacial surgery but needs following experimental studies.

**P-158****PROPOFOL POST-CONDITIONING PROTECTS HUMAN OSTEOBLAST FROM HYPOXIA/REOXYGENATION STRESS**

TS Kim¹, JM Song¹, HK Kim¹, MN Woo¹, YD Kim¹, JY Yoon², CH Kim¹

¹ *Department of Oral and Maxillofacial Surgery, School of Dentistry, Pusan National University, Yangsan-si, South Korea*

² *Department of Dental Anesthesiology, School of Dentistry, Pusan National University, Yangsan-si, South Korea*

Purpose: Oxygen deprivation in bone occurs in fractures, osteotomy arthritic joints, tumours, wounds, and limb ischemia. Under these conditions, reduction and disruption of blood supply to the tissues causes tissue hypoxia, which can cause pathologic bone loss. The effects of propofol on osteogenesis have received little attention. Therefore, we investigated the effects of propofol treatment on the proliferation and differentiation of osteoblasts during hypoxic- reoxygenation condition.

Methods: Human osteoblast cell line hFOB 1.19 was cultured under 1 % oxygen tension for 24 h. The osteoblasts were then treated with various concentrations of propofol (3 μ M, 30 μ M and 300 μ M) for 2 hours. Thereafter, the cells were reoxygenated for 12 h at 37°C. Quantitative real time PCR and western blot methodologies were utilized to determine Runx-2, osterix, BMP-2, TGF- β 1, type I collagen, osteocalcin, HIF-1 α , HIF-1 β and Akt expression levels. We also measured cell viability via MTT assay.

Results: All propofol treatment groups showed significantly increased cell viability compared to controls. Under hypoxic/reoxygenation conditions, propofol treatment induced the expression of Runx-2, osterix, BMP-2, TGF- β 1, type I collagen, osteocalcin, HIF-1 α , HIF-1 β and Akt in osteoblasts. Additionally, propofol promoted the activation of hypoxia-mediated HIF-1.

Conclusions: Propofol treatment under hypoxia/reoxygenation conditions stimulates proliferation and differentiation of osteoblasts through enhanced expression of Runx-2, osterix, BMP-2, TGF- β 1, type I collagen, osteocalcin, HIF-1 α , HIF-1 β and Akt. Our results suggest that propofol might help in the recovery of bone fractures.

**P-166****BONE REGENERATION OF DDM WITH PRF AND RECOMBINANT HUMAN BONE MORPHOGENETIC PROTEIN-2 ON THE BONE DEFECTS IN RABBIT CALVARIA**

YH. Kim, BJ. Kim, KW. Kim, JH. Lee, CH. Kim, SJ. Han, MY. Kim

Department of Oral and Maxillofacial Surgery, Dankook University, College of Dentistry, Cheon-An City, South Korea

Objective

The purpose of this study is evaluation of osteoinductive ability of demineralized dentin matrix(DDM) from specially developed extracted tooth due to the composition of the teeth closely match the composition of the bone and osteogenesis ability when Platelet Rich Fibrinogen(PRF) and recombinant human Bone Morphogenetic Protein-2(rhBMP-2), which are recently used widely as spotlight signaling molecules to promote bone formation, use together with DDM.

Methods

After forming four defects on each 12 rabbit skull with diameter of 8mm, DDM was transplanted into first defect, DDM and PRF mixture was transplanted into second defect and rhBMP-2 absorbed into the DDM third defect was transplanted into third defect(Experimental group). Fourth defect used as control group. At postoperative 2, 4 and 8 weeks, respectively, 3 rabbits sacrificed. Histopathologic analysis, morphometric analysis and Osteonectin the reverse transcription polymerase chain reaction(RT-PCR) analysis of each group was evaluated.

Results

1. rhBMP-2 absorbed into the DDM group compared with other groups, in the entire defect including the central defect was observed in large amount of new bone formation, degree of calcification was faster, the lamellar structure of mature bone was better observed in bone matrix. Compare to control group, osteoinduction that new bone is generated directly from the surrounding DDM induction was observed in all experimental group.
2. The amount of new bone formed part of the skull defect in experiment 2, 4 and 8 weeks in all experimental groups statistically showed a higher amount of formation, compared to the control group($P<0.05$). In experiment 4, 8 weeks, rhBMP-2/human DDM group showed significantly higher amount of formation compared to DDM group($P<0.05$).
3. The experimental results of Osteonectin RT-PCR analysis in 2, 4 and 8 weeks in all groups showed osteonectin exhibited statistically a high expression($P<0.05$), compared to the control group. Moreover, in experiment 2 weeks, 4 weeks and 8 weeks, rhBMP-2/human DDM group statistically showed high expression of Osteonectin($P<0.05$) compared to the DDM group.

Conclusions

DDM is being considered as bone graft material with osteoinductive and osteoconductive ability. DDM could be used excellent carrier for the maintenance and secretions of rhBMP-2 as spotlight signaling molecules to promote bone formation recently.

**P-295****EVALUATION OF SILK PROTEIN MEMBRANES FOR THE RECONSTRUCTION OF CRANIAL BONE DEFECTS**

R. Smeets¹, H. Hanken¹, M. Heiland¹, R. Zimmat², St. Klaus², M. Wöltje², Ch. Knabe³, M. Bagheri⁴, M. Rheinnecker²

¹ *Department of Oral- and Maxillofacial Surgery, University Medical Center Hamburg Eppendorf, Hamburg, Germany*

² *Research and Development, Spintec Engineering GmbH, Aachen, Germany*

³ *Department of Experimental Orofacial Medicine, Philipps-University Marburg, Marburg, Germany*

⁴ *Preclinical Services, BLS, Berlin, Germany*

Objective: The aim of the study was to analyse biocompatibility and the induction of bone growth by silk protein membranes compared to a conventional collagenous membrane that served as a reference material.

Methods: The study consisted of four different testing items (Group I: unmodified Silk protein membrane, Group II: Silk protein membrane modified with hydroxyapatite, Group III: Silk protein membrane modified with β -TCP and Group IV: control/ conventional collagenous membrane. All test items were implanted into pre-defined bone defects in the cranium of female White New Zealand rabbits (n= 40). Bone defects and its restoration are monitored by haematological examinations, micro- computer tomography, immunohistochemistry and histomorphometry. 20 animals were sacrificed after 5 weeks and 20 animals after 10 weeks.

Results: All membranes facilitated bone repair of critical-size calvarial defects in rabbits 10 weeks after surgery. The amount, thickness and stage of maturity of the newly formed bone, however, differed for the various membranes used in this study. Greatest bone formation was noted with Group III followed by Group IV and Group II. Defects covered by silk protein membranes modified with β -TCP showed greater bone formation displaying a higher degree of maturity than defects, for which the other membranes were used. Empty control defects did not display any defect bridging or bone repair.

Conclusions: Silk protein membranes modified with β -TCP contain bioactive ceramic, which is well known for its excellent osteoconductive properties, and also in part is responsible for the greater mechanical stiffness of these membranes. According to this first in vivo study functionalized silk membranes are a promising tool for natural bone replacement without any signs of bulk or foreign body reaction during degradation process.



P-316

THE TISSUE-ENGINEERED CONSTRUCT BASED ON NIKELID TITANIUM AND GINGIVAL MESENCHYMAL STROMAL CELLS FOR BONE DEFECTS PLASTIC IN MAXILLOFACIAL REGION

Y. Medvedev, A. Lyundup , K. Balasanova, N. Zolotopup, P. Yelistratov, M. Danilevsky, V. Nikolenko, K. Polyakov, M. Udalova, K. Kudryachevskaya

I.M. Sechenov First Moscow State Medical University, Moscow, Russian Federation

Relevance. Implants made from nikelid titanium (NiTi) have worked well for bone defects plastic of lower orbital wall and the maxillary sinus front wall for the past two decades. To improve the properties of graft (prevention of inflammation, epithelial growth acceleration) gingival mesenchymal stromal cells (MSCs) can be used.

Objective: To explore the use of NiTiendoprotheses as scaffolds for gingival MSCs.

Materials and Methods: MSCs were obtained from a fragment of the gingiva (submucosal layer) 3×3 mm. Plates of mesh and porous NiTi (size 15×15×2 mm) served as scaffold. MSCs were cultured under 5% CO₂ and 37°C in DMEM+10% FBS supplemented with 0.292 mg/ml glutamine, 100 U/ml penicillin G, 100 mkg/ml streptomycin (all reagents are from Invitrogen). Epithelial cells were not detected in either the primary or passaged cultures.

Results. On porous NiTiendoprosthesis was marked complete filling of microspaces by cells. Mesh endoprosthesis was filled with cells between the filaments. There were found a multilayer cell structures in meshes when it stains by haematoxylin and eosin.

Conclusion. Samples from mesh and porous endoprotheses made by NiTi, which are suitable for cultivation gingiva-derived MSCs are selected. It allows us to create tissue-engineered construct for experimental operations on models of bone tissue damage in the maxillofacial region.



P-364

BIOENGINEERING TISSUES IN ORAL CAVITY LESIONS

L. Catalfamo, B. D'Alessandro, J. Matyasova, F.S. De Ponte

University Hospital Messina, Messina, Italy

Background: To date, there are no studies reported in the literature on the possible use of bovine collagen, oxidized regenerated cellulose, or synthetic hyaluronic acid medications in the oral cavity. The aim of this paper is to report the use of bovine collagen, oxidized regenerated cellulose, and synthetic hyaluronic acid medications to improve wound healing in the oral cavity by stimulating granulomatous tissue.

Methods: From 2007 to 2011, 80 patients (median age 67 years) suffering from oral mucosal lesions participated in this double-blind study. The patients were divided into two groups, each consisting of 40 patients. One group received conventional medications, while the other group of patients were treated with the advanced medications.

Results: Advanced medications allowed re-epithelialization of the wound margin in 2–20 days, whereas patients receiving conventional medication showed a median healing duration of 45 days.

Conclusion: The results of this study demonstrate that treating oral mucosal wounds with advanced medication has an advantage with regard to wound healing time, allowing patients to have a rapid, functional, and aesthetic recovery.

**P-388****GERANYLGERANIOL IMPROVES VIABILITY, MIGRATION ABILITY AND APOPTOSIS RATE OF ENDOTHELIAL PROGENITOR CELLS (EPC) AFTER BISPHOSPHONATE TREATMENT IN VITRO**

A.M. Pabst, T. Ziebart, M. Krüger, C. Walter

Department of Oral and Maxillofacial Surgery, University Medical Center Mainz, Mainz, Germany

Objectives: Geranylgeraniol (GGOH) has been described as a potential treatment option for bisphosphonate associated osteonecrosis of the jaws (BP-ONJ). Aim of this study was to analyze the effects of GGOH on endothelial progenitor cells (EPC) after bisphosphonate treatment in vitro.

Methods: EPC were incubated with different nitrogen (N-BPs: ibandronate, pamidronate, zoledronate) and a non-nitrogen containing bisphosphonates (NN-BP: clodronate) in two diverse test lines with and without GGOH. Cell viability was measured by a MTT- and PrestoBlue assay. Migration ability was analyzed with a Boyden- and Scratch assay. Apoptosis rates were detected by a Tunel- and ToxiLight assay.

Results: Negative effects of N-BPs on EPC could be shown in the test lines without GGOH in all assays. In the GGOH test lines, EPC demonstrated a significantly increased cell viability (MTT- and PrestoBlue assay: p each N-BP < 0.05) and migration ability (Boyden- and Scratch assay: p each N-BP < 0.05). Concerning the apoptosis rates, decreased numbers of apoptotic cells in the Tunel assay (p each N-BP < 0.05) and a decreased adenylate kinase release in the ToxiLight assay (p each N-BP < 0.05) could be observed. Concerning the NN-BP Clodronate, whether in the test line without GGOH nor in the test line with GGOH significant differences could be demonstrated in any assay (p each > 0.05).

Conclusions: GGOH cell-treatment rescued the negative effects of bisphosphonates on EPC. These findings support the hypothesis that systemic or local GGOH treatment might lead to new therapeutic strategies for BP-ONJ.



P-403

INHIBITION OF ENHANCED MOTILITY STIMULATED BY EGF IN HUMAN ORAL SQUAMOUS CELL CARCINOMA CELL

H. Nagayasu, Y. Handa, T. Shibata

Oral and maxillofacial Surgery, School of Dentistry, Health Sciences Univ. of Hokkaido, Sapporo, Japan

Objective

Growth factors can enhance the malignant potential of tumour cells. To study the effects of epidermal growth factor(EGF) on invasion and metastasis of human oral squamous cell carcinoma, we examined the intercellular signal transduction of EGF-induced motility using an EGF sensitive S-1 clone cell line, obtained from Ca9-22 cell line.

Methods and Results

EGF-treated S-1 cells were affected by some blocking chemicals, and modulation of random motility was examined by phagokinetic track assay. When the cells were treated with erbstatin analog to inhibit tyrosine phosphorylation, or psi-tetorigenin to inhibit phosphatidyl-inositol turnover the motility enhanced by EGF was completely inhibited. When phorbol 12-myristate 13-acetate(PMA) was used, to stimulate protein kinase C(PKC), motility in the absence of EGF was enhanced similar to that of EGF stimulation. Calphostin C, an inhibitor of PKC activation, completely eliminated the EGF-induced enhancement of motility. Examination of the intercellular localization of PKC with a confocal laser microscope showed enhanced expression of PKC and translocation of PKC to membrane area after EGF stimulation.

Conclusions

These results suggest that activation of phospholipase C γ (PLC γ) caused by auto-phosphorylation of EGF receptor might play an important role in the signal transduction of EGF induced cell motility.

**P-405****ESTABLISHMENT OF INDUCED CANCER STEM CELLS BY TRANSFECTION OF A TONGUE CANCER CELL LINE WITH YAMANAKA'S FACTOR**

K. Harada, T. Fredous, T. Harada, Y. Ueyama

Department of Oral & Maxillofacial Surgery Yamaguchi University Graduate School of Medicine, Ube, Japan

Objective Cancer stem cells (CSCs) are capable of continuous proliferation and self-renewal, and thus play important roles in oncogenesis, tumour growth, metastasis and cancer recurrence. In 2007, Yamanaka's group succeeded in generating induced Pluripotent Stem (iPS) cells by reprogramming (dedifferentiation) of differentiated cells. In general, it is believed that non-CSCs can be generated into CSCs by dedifferentiation.

Methods In the present study, we tried to dedifferentiate non-CSCs (HSC2 cells; a tongue cancer cell line) into CSCs by introduction of reprogramming factors (Yamanaka's factor), and to establish induced CSCs (iCSCs). For this experiment, we transfected HSC2 cells with plasmid vectors (pCXLE-hOCT3/4-shp53-F, pCXLE-hSK, pCXLE-hUL; Addgene, Cambridge, MA, USA) using microporator (Life technology, Carlsbad, CA, USA) and also used parental HSC2 cells as control.

Results In our in vitro analysis, a transfectant cell line (HSC2/hOCT3/4-shp53-F+hSK+hUL) showed rapid proliferation and higher sphere-forming capacity than HSC2. In addition, the transfectant was resistant to anti-cancer drugs (5-FU, Cisplatin and Docetaxel) when compared to the parental cells. Moreover, the transfectant showed higher tumourigenic capability than that of the parental cells in our in vivo studies with nude mice.

Conclusions These findings demonstrated that the generated iCSCs were distinct from parental cells in regard to their growth characteristics and their resistance to anti-cancer agents.



P-426

IMMUNOHISTOCHEMICAL EVALUATION OF OSTEOGENESIS IN TRANSGENIC PIGS- POTENTIAL BONE GRAFT DONORS

G. Wyszynska-Pawelec¹, J. Zapala¹, R. Tomaszewska², Z. Smorag³, B. Rynska³, J. Jura³

¹ Department of Cranio-Maxillofacial Surgery, Jagiellonian University Medical College, Cracow, Poland

² Department of Pathomorphology, Jagiellonian University Medical College, Cracow, Poland

³ Department of Animal Reproduction, National Research Institute of Animal Production, Balice, Poland

Objective.

Comparison of human bone graft healing in scapular bone of transgenic pig with autogenous bone graft healing by evaluation of expression of human and porcine osteocalcin as the marker of osteogenesis in osteoblasts on the border between the bone graft and the recipient bone.

Material.

The research was conducted on 18 transgenic pigs: 6 animals transgenic for the gene of human $\alpha 1,2$ -fucosyltransferase, 6 animals with expression of the gene coding for enzyme $\alpha 1,3$ -galactosyltransferase, 6 animals with cumulative transgenesis for the gene of human $\alpha 1,2$ -fucosyltransferase and the gene coding for enzyme $\alpha 1,3$ -galactosyltransferase. The control group comprised of 6 non transgenic pigs. In transgenic pigs from experimental groups human bone graft (5x8-10mm) harvested from the femoral head, before hip joint replacement, was transplanted into pig's scapula. In the W+ control group (3 non transgenic pigs), autogenous bone graft harvested from the pig's scapula and reinserted into the donor site was analysed. In W- control group (3 non transgenic pigs) xenogenous human bone graft inserted into the pig's scapula was evaluated. The first phase of bone graft healing was investigated by analysis of expression of human osteocalcin while the second phase by expression of human and porcine osteocalcin.

Results.

Statistically significant increased level of human osteocalcin expression on the border between transplanted bone graft and the recipient bone was found in all transgenic pigs in the first 2 weeks following surgery ($p=0.01373$) indicating enhanced activity of the human osteoblasts in this period. In transgenic pigs expression of the human osteocalcin on the border between transplanted bone graft and the recipient bone as well as in the human bone graft was observed longer than in non transgenic pigs. Higher expression of porcine osteocalcin on the border between the human bone graft and the recipient bone of transgenic pigs in the fourth week was not revealed.

Conclusions.

1. Osteogenesis observed during human bone graft healing in transgenic pigs is comparable to the first phase of autogenous bone graft healing.
2. Domination of host's osteoblasts in the second phase of bone graft healing was not proven.



P-451

INTERLEUKIN STATUS OF CHILDREN WITH PYOINFLAMMATORY DISEASES OF MAXILLOFACIAL AREA

M.Sh. Mustafaev, Z.F. Kharaeva, M.L. Zshanataeva

Kabardino-Balkarien State University, Nalchik, Russian Federation

Despite considerable achievements of modern medicine, an urgency of a problem of acute inflammatory pathologies takes a special place. Pyoinflammatory diseases (PFD) of maxillofacial area (MA) are one of the most widespread in paediatric surgery. This problem causes special concern with children because of high prevalence..

The purpose: to investigate features of the interleukin status of children with pyoinflammatory diseases of maxillofacial area with different severity level.

Material and methods: the 27 children with PFD of MA were studied.

Tests of peripheral blood took at receipt in hospital and on the 3, 5 and 7 days of staying in hospital. The blood levels of IL-1 β , IL-6, IL-10 ("Vector-best", Russia) were defined. Statistical processing was performed using the software package Statistica for Windows.

On the first day of supervision the surveyed patients in all groups revealed increased concentration of IL-1 β and IL-10 in blood whey with the maximum value at height of clinical displays. For 3 day of supervision the investigated indicator as a whole remained higher than healthy children though decreased almost twice from peak level at an aggravation. On the 5 and 7 day of disease indicator of IL-1 β and IL-10 became normal with patients with infection and periostitis.

Dynamics of maintenance IL-6 in whey of blood of patients with PFD of MA as a whole correlated with that of IL-1 β : at the disease aggravation the concentration of IL-6 increased, in a stage of remission the level IL-6 went down.

Conclusion: thus, during the research of the cytokine status of children with PFD of MA have revealed that in the first days there is a sharp increasing of indicators with the subsequent recession below the norm, remaining till the discharge. The obtained data is the basis for introduction in a complex therapy of immunomodulators since the 3rd day from the beginning of the disease.

**P-460****THE COMPARATIVE ANALYSIS OF EFFICIENCY OF DIFFERENT TYPES OF IMMUNOCYTOKINOTHERAPY OF PATIENTS WITH INFECTIONS OF MAXILLOFACIAL REGION**

M.Sh. Mustafaev, Z.F.Kharaeva, E.M.Tarchokova, Z.R. Shardanova

Medical department, Kabardino-Balkarien State University, Nalchik, Russian Federation

The problem of healing and wound treatment of maxillofacial region was and remains one of the most actual problems of surgery.

The aim of the study was the comparative assessment of different types of immunocytokinothrapy of patients with odontogenicinfections

Materials and Methods. The 3 groups (15 people) patients with infections with the severity of the inflammatory process on 3 and more cellular tissue space were observed. In the first group the cytokines complex «Superlymph» (Russia) was applied topically in the form of irrigation and surface infiltration of wound surface of a solution containing 100 mcg drug in a volume of 2,0 ml In the second group «Superlymph» was used in the form of rectal suppositories (2 times a day for 10 days). As a control group was observed patients receiving standard complex therapy. The clinical efficacy of the treatment was evaluated in complex system on the severity of symptoms of inflammatory process activity in the soft tissues. Statistical processing was performed using the software package Statistica for Windows.

The results of the investigations showed that the 2-3 day when local therapy with «Superlymph» together with antibacterial and detoxification significantly decreased the severity of disease. The rapid wound cleansing of necrotic tissue and reduction of the sizes of infiltration was noted. On the fifth day of patients, there was an almost complete relief of the inflammatory process in the wound: the purification of necrotic tissues, the absence of the wound discharge, filling the wound surface by granulation tissue, reduction of the area of the wound (3,5 approximately 0.5 points). Patients receiving immunocytokinothrapy in the form of suppositories «Superlymph» the positive trend was less pronounced.

Conclusions. Thus, the use of the cytokines complex in any form led to more rapid relief of purulent infection, but more effective was the local way of immunocorrection.

**P-461****LEVEL OF PROINFLAMMATORY CYTOKINES IN PATIENTS WITH PURULENT-INFLAMMATORY DISEASES OF THE MAXILLOFACIAL AREA ON THE BACKGROUND OF CYTOMEGALOVIRUS INFECTION**

M.Sh. Mustafaev, Z.F.Kharaeva, F.R. Batyrbekova

Medical department, Kabardino-Balkarien State University, Nalchik, Russian Federation

In recent decades odontogenic inflammatory diseases have become more severe and atypical. Due to the immunobiological reactivity changes, especially when accompanied by a herpes viral infection the damaging effect of an infectious agent on soft tissue complex is enhanced. This increases the degree of intoxication and antigenic load on the body as a whole.

In this regard, it is relevant to study clinical features of the disease, the dynamics of purulent wounds healing, the state of the immunobiological resistance in patients with purulent-inflammatory diseases of the maxillofacial area on the background of cytomegalovirus infection.

The aim of the study. To measure the concentration of proinflammatory cytokines in the blood serum on the background of the CMV infection.

Materials and Methods . Two groups of patients have been examined :

Group 1 32 patients (22 women, 10 men aged 18 to 47 years); group 2 65 patients (27 women, 38 men aged 19 to 49 years). The CMV was identified by the polymerase chain reaction (PCR ZAO «Vector -Best», Russia). Immunocytokine (IL-1 β and IFN γ) concentration was determined by the enzyme-linked immunosorbent assay ("Protein contour" , Russia). During the acute inflammation period (1-3 days from the time of admission) blood serum was taken as a biological environment. Statistical processing was performed using the software package Statistica for Windows.

Results and conclusions. The blood levels of IL-1 β and IFN γ of patients with odontogenic infections on the background of cytomegalovirus infection were considerably low, ($p < 0,001$). The importance of determining the level of IL-1 and IFN - gamma in the focus of inflammation for the assessment of the peculiarities of the inflammatory process in the above patients has been established.



P-490

INTRALESIONAL INJECTIONS WITH 5-FLUOROURACIL AS A TREATMENT OF THERAPY-RESISTANT HYPERTROPHIC AND KELOID SCARS DIRECTLY AFTER SURGERY.

M. Van Genechten, G. Van Hemelen, N. Nadjmi, J. Defrancq, J. Van de Perre, B. Vanassche, H. Sr. Vercruysse, L. Renier, E. van der Velden

Department of Cranio-Oral-Maxillo-Facial Surgery, A.Z. Monica-HH Lie-KLINA, Antwerp, Belgium

Objective: As the aetiology of hypertrophic and keloid scar formation is not fully understood, a wide spectre of interventions have been proposed in literature to treat this type of lesions. Excessive scar formation can be considered aesthetically disfiguring which is why an effective therapy imposes itself.

Methods: In 1999 Fitzpatrick published his paper on the use of 5-FU for the intralesional treatment of hypertrophic scars and keloids. This paper inspired us to apply his method in combination with surgical excision of the scar tissue. Immediately after scar excision we divided one 1mL (50 mg/mL PCH) over 10 depots of 0.1 mL with a syringe needle (thickness of 27 gauge) next to the excised scar. After 3 weeks a second injection was performed in the same manner. One, two and three months later these injections were repeated leading to a total of 5 injections.

Results: Our results show that 5-FU in combination with surgical excision can be considered as a very useful alternative for the treatment of subdermal and subcutaneous fibrosis, especially in the cervical neck area as well as for other types of skin retractions and deformities caused by fibrosis.

Conclusions: We propose some illustrated cases in which the combination of 5-FU and surgical excision is the therapy of choice.

**P-694****COMBINATION OF ADIPOSE-DERIVED STEM CELLS WITH THE MIXTURE OF FIBRIN GLUE AND BMP-2 FOR RECONSTRUCTION OF MANDIBULAR DEFECT**

Yu-Chen Ho, Chih-Hao Chen, Chien-Tzung Chen

Chang Gung Memorial Hospital, Taoyuan, Taiwan

Objective: This study examined whether a combination of adipose-derived stem cells (ASCs) with the mixture of fibrin glue and BMP-2 could act as an osteogenic substitute and whether this treatment yields faster new bone formation than adipose-derived stem cells alone or fibrin glue plus ASCs.

Methods: MSCs were harvested and isolated from the inguinal area of adult beagle canine. Full-thickness bony defects (1.5 x 1.5 cm) were created in the bilateral mandibular ramus of the dog. Treatments for bone defect in each group were as follows: group I, ASCs + fibrin glue + BMP-2; group II, ASCs + fibrin glue; group III, fibrin glue + BMP-2; and group IV, control (empty defect). The percentage of new bone regeneration in CT scans at 2 months and 4 months was calculated by 3D analysis software. The mandibles were harvested from all specimens at 4 months, and the grafted sites were evaluated by gross, histologic, and X-ray examination.

Results: By radiographic analysis at 16 weeks post-transplantation, it was shown that an average of $76.8 \pm 10.5\%$ new bone formation in group I, $18.2 \pm 8.5\%$ in group II, $33.3 \pm 7.1\%$ in group III, and $13.1 \pm 5.7\%$ in group IV. Histologic examination revealed that the defect was repaired by typical bone tissue in groups I and II, whereas only minimal bone formation with fibrous connection was observed in the groups III and IV group.

Conclusions: The advantages of autologous fibrin glue include the biocompatibility, biodegradability, 3-D porosity, and injectable properties. The multi-lineage capacity of ASCs suggesting that adipose tissue represents an ideal source of stem cells. Adipose-derived stem cells combined with mixture of fibrin glue and BMP-2 can accelerate bone formation of the mandible.



P-735

B-CELL LYMPHOMA IN THE MANDIBLE REFERRED AS A DENTAL ABSCESS!

M. Ashraf¹, S. Hussain¹, D. Falconer¹, C. Hendy²

¹ *Oral and maxillofacial surgery, Broomfield Hospital, Mid-Essex Hospitals Trust, Chelmsford, United Kingdom*

² *Oral and maxillofacial surgery, William Harvey Hospital, East Kent University Hospitals Foundation Trust, Ashford, United Kingdom*

Introduction

Diffuse large B-cell non-Hodgkin's lymphomas are aggressive tumours that can occur anywhere in the body. Although in up to 40% of cases the primary occurrence is in an extranodal site, only 0.6% of cases are reported as presenting in the mandible.

Case report

This presentation reports a case that occurred in a 64-year old lady who was referred to the A&E department by her general dental practitioner with pain and difficulty eating due to a dental abscess. Examination revealed an exophytic lesion in the left mandibular molar region. Radiographs showed a 4cm diameter radiolucency associated with a buried tooth and a pathological fracture.

Discussion

Although rare this case serves as a reminder that not all loose teeth are a result of periodontal disease and not all neoplastic lesions of the mandible are squamous cell carcinomas. The importance of having a tissue diagnosis before ordering investigations is discussed, the investigation of lymphomas (CT head, neck, thorax, abdo and pelvis) are different to those for a squamous cell carcinoma (MRI head and neck, and CT thorax). The treatment and prognosis are also significantly different.

Clinical relevance

Although the presentation of non-Hodgkin's lymphoma in the mandible is rare, it is worth highlighting this case as lack of knowledge can lead to misdiagnosis and delay in acquiring correct treatment.



P-756

EVALUATION OF ANGIOGENESIS IN A THREE DIMENSIONAL MIXED TISSUE CULTURE MODEL.

T. Annussek, T. Szuwart, J. Kleinheinz

Department of Cranio-Maxillofacial Surgery, University Hospital, Muenster, Germany

Aim: A main challenge in tissue engineering is still to ensure the viability of cells inside a three dimensional tissue construct. Therefore a vascular like system has to be established in engineered three dimensional cultures to provide the nutrition of each single cell. We investigated the angiogenetic potential of a scaffold free, three dimensional mixed tissue culture model.

Material and Method: Osteoblasts (OB), chondrocytes (CH), and endothelial cells (EC), were cultured till reaching confluence and afterwards combined in a scaffold free three dimensional culture model. After previously defined periods of investigation (Day 7, 14, 21, 28) the differentiation of cell types was measured by immunostaining (osteocalcin, osteonectin, collagen I, IV, CD 31, and glycosaminoglycan). Differences were measured using phase-light microscope and scanning electron microscope (n=567).

Results: We found a statistically significant higher volume of micro mass-culture while the use of osteoblasts specific cell culture medium. Excluding the expression of CD 31 the synthesis of specific extracellular proteins was not altered in general.

With rising time we observed a focused expression of collagen IV and CD 31 that was just seen by the use of endothelial cell culture medium. At day 14, differences reached statistical significance. Osteoblastic proteins were divided equally and independent to specify of culture medium. A tube like formation could be observed at all samples. However, the proof of focused expression of CD 31 and collagen IV was limited to endothelial cell medium.

Conclusion: The present study demonstrates the appearance of tube like formations at the inner side of a three dimensional tissue construct. Concerning the expression profile, the tube could be seen as primitive vessels that are lined by a typical basal lamina.

**P-901****VASCULARIZATION OF TISSUE SUBSTITUTES VITALIZED WITH DIFFERENT CELL TYPES AND VESSEL FRAGMENTS**

P. Schumann, D. Lindhorst, H. Essig, F. Tavassol, N.-C. Gellrich, M. Rücker

University Hospital Zurich Oral and Maxillofacial Surgery, Zurich, Switzerland

Introduction: The survival of tissue engineering constructs depends on their rapid vascularization. It is still unclear, if there is any influence of the seeded cell type on the extent of scaffold vascularization. Therefore, we herein studied *in vivo* the amount of newly formed vessels in porous poly L-lactide-co-glycolide (PLGA) scaffolds seeded with isogenic osteoblasts, mesenchymal stem cells and vessel fragments for tissue substitution.

Methods: PLGA scaffolds (size: 3x3x1mm, pore size: 250µm) were coated with collagen and additionally vitalized with seeded osteoblasts, mesenchymal stem cells and vessel fragments. The scaffolds were implanted into the dorsal skinfold chamber of balb/c mice. Chambers of animals with non vitalized PLGA scaffolds served as controls. Subsequently, capillary densities were analyzed over a 14-day observation period using intravital fluorescence microscopy. In a second step using the same experimental protocol cells and vessel fragments were preincubated in Matrigel-filled PLGA scaffolds for two weeks before transplantation into the dorsal skinfold chambers of balb/c mice.

Results: Apart from a weak inflammatory response in all groups, vascularization was found distinctly accelerated in vitalized scaffolds, indicated by a significantly increased microvascular density, when compared with controls. Angiogenesis started around day 3 after implantation by protrusion of capillary sprouts. This acceleration was independent from the seeded cell type. Thereby the capillary densities caused by preincubated isogenic osteoblasts, mesenchymal stem cells and vessel fragments were found significantly higher.

Conclusions: Our study demonstrates that 14 days after implantation the vascularization induced by tissue engineering constructs vitalized with isogeneic osteoblasts, mesenchymal stem cells and vessel fragments is significantly higher compared with non vitalized PLGA scaffolds. By the use of preincubated cells and vessel fragments, an additionally accelerated angiogenesis can be achieved. For this reason preincubation of cells and vessel fragments in nutrient solutions supporting different steps of angiogenesis provides a technique to promote the routine use of tissue engineering in the clinic.

**P-1008****SUCCESSFUL GUIDED REGENERATION OF THE MASTICATORY UNIT IN A LARGE OSSEOUS DEFECT ARISING FROM A LARGE DENTIGEROUS CYST:**

J K Muhammad¹, S Akhtar¹, H Abu Nassar², P Magbanua³, N A Khoury⁴

¹*Maxillofacial Surgery Service, Preston & Blackpool Hospitals, UK*

²*SEHA Facility, Abu Dhabi, UAE*

³*Maxillofacial Surgery Service, Rahba Hospital,*

⁴*Department of Anesthesiology, Rahba Hospital*

The reconstructive options for the treatment of large expansive cystic lesion affecting the jaws are many. The first stage of treatment may involve enucleation or marsupilization of the cyst. Lesions that have caused erosion of both the lingual and buccal cortices of mandibular body and angle are at risk of causing pathological fracture of the mandible and sepsis if they become infected. Indeed, surgical management of the cyst if associated with the removal of an impacted tooth may result in iatrogenic fracture of the mandible.

Attempted reconstruction of large osseous defects arising from the destruction of local tissue can be a formidable challenge. The literature reports the use of bone grafts, free tissue transfer, bone morphogenic protein and reconstruction plates to assist in the healing and rehabilitation process. The authors would like to report their experience of using a combination of drainage, marsupilization, serial packing and the fabrication of a custom made obturator to facilitate regeneration of bone and the masticatory unit in a young female patient for whom the ramus, angle and part of the body of one side of the mandible had been reduced to a pencil thin like strut of bone as a result cyst expansion.

**P-1019****IS CELL-BASED TISSUE ENGINEERING STILL CLINICALLY RELEVANT? A PRECLINICAL STUDY**

P Corre, C Merceron, J Longis, L Arzul, H Bertin, G Mouallem, RH Khonsari, JM Mercier, P Weiss, J Guicheux

Clinique de Stomatologie et Chirurgie Maxillofaciale, Nantes, France

OBJECTIVE

For craniofacial bone defect repair, several alternatives to bone graft (BG) exist, including the combination of calcium phosphate biomaterials (CaP) with total bone marrow (TBM) and bone marrow-derived mesenchymal stromal cells (MSCs), or the use of growth factors like recombinant human bone morphogenetic protein-2 (RhBMP-2) and various scaffolds. Therefore, clinicians might be unsure as to which approach will offer their patients the most benefit. Here, we aimed to compare different clinically relevant bone tissue engineering methods in an "all-in-one" study in rat calvarial defects.

METHODS

Thirty adult inbred Lewis 1A-haploype RT1a rats were divided in 10 groups. Critical sized parietal defects (5 millimetres) were bilaterally performed. TBM, and MSCs committed or not, and cultured in two- or three-dimensions were mixed with CaP and implanted. RhBMP-2 and BG were used as positive controls. Rats were sacrificed at 7 weeks. The bone formation was qualitatively and quantitatively assessed by micro computed tomography (μ CT), scanning electron microscopy (SEM), and histology.

RESULTS

Only 4 groups demonstrated a significant bone formation. The highest rate (49,3%) of bone formation was seen in the RhBMP-2 group (positive control). The BG group exhibited a 38,7% of bone formation. An average of 24,9% and 23,8% were measured in TBM Group and when committed MSCs cultured in three-dimensions were cultured on the surface of BCP. No significant bone formation was detected in the remaining groups compared with the empty defects.

CONCLUSIONS

This study demonstrates the positive effect of associating TBM or osteogenically committed MSC by culture onto a BCP for bone formation in critical sized defect in rat calvaria. Due to the efficacy and safety of the TBM/BCP combination approach, we recommend this one-step procedure for further clinical investigation



P-1119

DEVELOPMENT OF TISSUE EQUIVALENTS FOR HEAD AND NECK RECONSTRUCTION

E.V.Kiseleva^{1, 2}, E.V.Batukhtina³, V.V.Tersikh¹

¹ *Laboratory of cell proliferation problems, Koltzov Institute of Developmental Biology, Moscow, Russian Federation*

² *Department of biomedical technologies, Pirogov Russian National Research Medical University, Moscow, Russian Federation*

³ *Laboratory of new surgical technologies, Stat Research Center – Burnasyan Federal Medical Biophysical Center of Federal Medical Biological Agency, Moscow, Russian Federation*

Objective

The development of tissue equivalents that are similar to the morphological, anatomical and functional structure of the native tissue for head and neck reconstruction.

Methods

Chondrocytes were isolated from cartilage tissue biopsy by enzymatic method, and cultured under standard conditions at 37°C, 5% CO₂. De novo cartilage sheet was formed by at high density chondrocytes seeded on plastic and cultured in medium containing growth factors for 3 weeks. Autologous keratinocytes were seeded onto a surface of the cartilage sheet and cultured in growth medium for 5-7 days to create an epithelial-cartilage equivalent.

3.5-4 kg chinchilla rabbits have been used for the experiment. The experimental protocol was approved by the Local Ethics Committee. Rabbit model was developed for ear reconstruction using autologous cartilage equivalent. Defects of ear cartilage 1,5 x 1,5 cm were surgically formed, the skin over the defect was mobilized and not removed. Autologous cartilage equivalent was transplanted into damaged area and sutured to the edges of own cartilage and covered by skin graft. Autologous epithelial-cartilage equivalent was developed for complex defects (nasal septum, larynx, etc.) reconstruction. Epithelial-cartilage equivalent was transplanted on the rectus abdominis of the rabbits. Morphological assessment graft was performed on 9, 28, 56, 84 days after transplantation.

Results

In the model of cartilage defect reconstruction is shown that the defect is filled with a cartilaginous tissue (complete restoration of the cartilage plate) through 9, 56, 84 days after transplantation. This result was confirmed by immunohistochemical analysis for cartilage markers-collagen type 2, cartilage proteoglycan. In the control group of animals of the cartilage defect was filled with fibrous tissue. Histological examination of the epithelial - cartilage equivalent on day 28 after transplantation to the rectus abdominis demonstrated its viability, saving two-layer structure and histological corresponding native tissues.

Conclusions

Developed tissue equivalents for head and neck defects reconstruction have the ability to maintain defined structure, the viability, morphological properties and functions associated with each component tissue-engineered construct in vivo.

The work is supported by RFBR grant № 13-04-12052 ofi_m

**P-1120****BASIC RESEARCH ON COMBINED EFFECT OF CETUXIMAB AND PACLITAXEL ON ORAL SQUAMOUS CELL CARCINOMAS.**

Takanori Takenawa, Koji Harada, Hiroaki Kobayashi, Toyoko Harada, Tarannum Ferdous, Yoshiya Ueyama

Department of Oral and Maxillofacial Surgery, Yamaguchi University Graduate School of Medicine, Ube, Japan

Objective Cetuximab is a chimeric (mouse/human) IgG1 monoclonal antibody that targets the extracellular ligand-binding domain of EGFR with high affinity. Recently, a novel combined therapy of weekly Cetuximab and Paclitaxel has been used for recurrent and/or metastatic oral squamous cell carcinoma. In the present study, we examined the augmentation effect of Paclitaxel by Cetuximab on oral squamous cell carcinoma (OSCC) and the mechanism of the enhancing effect.

Materials and methods Treatment of OSCC cells (HSC2, HSC3, HSC4) with Cetuximab (1µg/ml) and/or Paclitaxel (0.02µg/ml) resulted in a significant suppression of cell growth. Moreover, it was found by Hoechst 33258 staining that DNA fragmentation markedly occurred in cells treated with Cetuximab and Paclitaxel. Furthermore, reduction of Stathmin (microtubule catastrophic factor) was detected in cells treated with Cetuximab and Paclitaxel by Western blotting. Tumour-bearing nude mice were treated with Cetuximab (20 mg/kg/day, twice/week, 3 weeks) and/or Paclitaxel (20 mg/kg/day, 7 times/week, 3 weeks). Apoptotic cells in tumours were detected by TUNEL method.

Results The combined treatment results in a significant suppression of tumour growth. Moreover, immunohistochemical staining revealed that expression of Stathmin was down-regulated in tumours treated with Cetuximab and Paclitaxel. Also, TUNEL staining showed that expressions of TUNEL positive cells were up-regulated in tumours treated with Cetuximab and Paclitaxel.

Conclusions These findings suggest that Cetuximab may enhance the effect of Paclitaxel on OSCC through the down-regulation of Stathmin expressions.



P-1128

MORPHOLOGICAL EVALUATION OF POLYMER AND TRICALCIUM PHOSPHATE (TCP) SCAFFOLDS COATED WITH RESORBABLE NANO HYDROXYAPATITE (HAP) FOR BONE REPLACEMENT

I.Salma^{1, 2}, G.Salms¹, J.Locs³, M.Pilmane², W.Lojski⁴

¹ Maxillofacial surgery, Riga Stradins University, Riga, Latvia

² Institute of Anatomy and Anthropology, Riga Stradins University, Riga, Latvia

³ Rudolfs Cimdins Biomaterials innovation and development centre, Riga Technical University, Riga, Latvia

⁴ Institute of High Pressure Physics, Polish Academy of Sciences, Warsaw, Poland

Objective

Trauma and bone pathologies in maxillofacial region frequently require bone replacement with biomaterials. Due to bioactivity and biocompatibility hydroxyapatite (HAP) and tricalcium phosphate (TCP) are frequently used as the bone graft substitutes. Ceramics are brittle, and at present time their resorption rate is difficult to control. Polymers – polycaprolactone (PCL) offer good fracture toughness, but are less biocompatible than the ceramics. Covering a porous bioresorbable polymer scaffold with nano-HAP particles would intensify the bioactivity of the scaffold. Osteoblasts proliferate better on a hydrophilic surface made of nano-ceramics than on a polymer one.

Methods

Two kinds of porous scaffolds were produced - one using state of the art polymer bio-plotting technology, and one made of TCP produced using ammonium hydrogen carbonate provided viscous slurry foaming. Resorbable nanoparticles of HAP 8 to 20 nm in diameter were produced using solvothermal synthesis. The nanoparticle coating on the external and internal surfaces of the scaffolds were performed using ultrasonic energy. The ultrasonic coating technology ensures strong adhesion of the nanoparticles to the scaffold.

12 rabbits were used to perform *in vivo* tests. TCP ceramic and PCL non-coated, PCL and TCP coated with nano-HAP scaffolds (dimensions: 5 mm diameter, 3 mm height) were implanted in bone of New Zealand rabbits.

After 3 months explanted samples were used to evaluate the scaffold resorption and bone regeneration rate. Routine histological method - staining with hematoxylin and eosin was used for obtaining a review picture.

Results

Intraosseous implantation of TCP ceramic, PCL and TCP coated with nano-HAP scaffolds initiated new bone formation. Near the implanted materials we observed many osteoblasts. Visible were also rare osteoclasts. A partial destruction of biomaterial was seen.

In the samples with pure PCL scaffolds dense connective tissue capsule was visible between the material and the bone. Material was not fused together with the bone and new bone formation was not observed.

Conclusions

Introduction of nano-HAP coating can significantly improve the bioactivity of PCL scaffolds. Intraosseous implantation of TCP ceramic, PCL coated with nano-HAP and TCP coated with nano-HAP scaffolds causes comparable osteogenesis after 3 months could be used in maxillofacial surgery.



P-1144

AUTOLOGOUS MESENCHYMAL STEM CELLS IN REGENERATIVE MEDICINE OF OROMAXILLOFACIAL AREA IN 15 – YEARS RESULTS.

J. Jenča¹, A. Jenča¹, J. Rosocha², A. Jenča, jr.¹

¹ *Department of Stomatology and Maxillofacial Clinic, University of Pavol Jozef Šafarik, University Hospital of Louis Pasteur, Košice, Slovakia*

² *Tissue Bank at University of Pavol Jozef Šafarik, University of Pavol Jozef Šafarik, Košice, Slovakia*

Objectives:

In oromaxillofacial surgery reconstruction are many techniques used. In regenerative medicine by using autologous mesenchymal stem cells trade on possibilities of activation qualitative usage of bone grafts.

Methods:

Loss of bone in oro - facial region as a result of bone pathology or trauma require surgical therapy using various types of materials and tissues. Each defect possesses unique set of problems that reconstructive surgical intervention must address. In the period of years 1998 - 2012, 480 patients were treated at our clinic. In 256 cases auto - grafts were used, and in 224 cases the alo - grafts were used. In 85% of cases supporting of osseointegration with autogenic osteoblast was used.

Results:

Advantage of using combination with autogenic osteoblasts, was more than 93% and the period of healing activate and time decrease to 30%. Bone grafts serve a combined mechanical and biological function, depending on the desired clinical outcome, one function maybe more important than the other. A complex relationship exists at the host - graft interface and the desired clinical result was ensured.

Conclusion:

Bone grafting is a surgical procedure by which new bone or replacement material are placed into space between or around broken bone (fractures) or holes in bone (defects) to aid in healing.

The types of bone grafts available for the maxilla and mandible are the autogenous, allogenic, alloplastic, xenogenic and isograft.

**P-1147****DESIGNER TISSUE-ENGINEERED BONE SCAFFOLDS IN THE MANDIBLE: ARE WE THERE YET?**

K. Solanki¹, C. Woodmansey¹, A. Shehovych¹, G. Jell²

¹ Division of Surgery and Interventional Science, University College London, London, United Kingdom

² Department of Nanotechnology and Regenerative Medicine, University College London, London, United Kingdom

OBJECTIVES: Critical-sized mandibular defects necessitate surgical repair. With UK oral cancer incidence rates rapidly rising, more patients are likely to require mandibular reconstruction post-oncological resection. The current gold standard, autografting, invariably creates another skeletal defect and relies on the quality of autogenous bone. There has been much interest in scaffold freeform fabrication (SFF), a tissue-engineering (TE) technique involving *de novo* layer-by-layer reconstruction of bespoke three-dimensional porous bone scaffolds. We aimed to systematically review the state-of-the-evidence for SFF in repairing mandibular defects and assess whether it is currently a viable alternative to autografting and conventional TE approaches.

METHODS: A comprehensive electronic literature search of the MEDLINE and ISI Web of Knowledge databases was performed. All study methodologies, including preclinical *in vivo* and clinical literature regarding SFF for the repair of mandibular bone defects were systematically reviewed. Research papers had to present a bespoke SFF scaffold that had been surgically implanted into the mandible of the subject(s). The primary outcome measure was evidence of new bone growth, regardless of whether this was ascertained clinically, radiographically or histologically.

RESULTS: 281 records were identified through database searching after duplicates were removed. 6 studies (4 animal and 2 human studies) were deemed suitable that met the inclusion criteria. Hydroxyapatite was the most commonly used scaffold material (n=3). All animal studies showed substantial bony ingrowth, with two demonstrating cartilage formation along the condylar articular surface. Both human studies showed acceptable occlusion with post-operative increase in mouth opening and decreased mouth opening deviation, although one demonstrated suboptimal temporomandibular joint function.

CONCLUSIONS: Our systematic review demonstrates SFF scaffolds have produced good bony ingrowth in animal studies, although there is a paucity of data. There are limited reports of good functional outcome in preliminary studies in humans. The level of control of internal and external scaffold architecture in SFF is clearly highly desirable, however the barrier of scaffold-muscle attachment needs to be overcome. With such limited data thus far, SFF is not currently as a viable alternative to autografting, however the results thus far have been promising and should serve as a stimulus for further research.

**P-1150****CALVARIAL BONE REGENERATION WITH INACTIVATED PRP OR ACTIVATED PRP**

BK. Jung, MC. Lee, IS. Yun, YO. Kim, DH. Lew

Department of Plastic & Reconstructive Surgery, Yonsei University College of Medicine, Seoul, South Korea

Purpose: Autologous platelet-rich plasma is separated from whole blood, including plasma with high concentration of platelets, and contains full of growth factors. PRP has been applied to various clinical fields for fat graft and adjuvant therapy to increase the survival rate of bone graft. In this study, we compared the effects of inactivated PRP, activated PRP and BMP-2 on calvarial bone regeneration to determine whether PRP could replace BMP-2.

Methods: Forty New Zealand white rabbits (2500g ~3000g) were used in this study, and randomly divided into four groups. A 15 x 15 mm² sized defect was created on the cranium of each rabbit, then acellular collagen sponges (Gelfoam®) with PRP 1.0cc in Group A, activated PRP 1.0cc in Group B, normal saline 1.0cc with BMP-2 0.43mg in Group C or normal saline 1.0cc in Group D were immediately placed in the defects. After 16 weeks, using 3-dimensional CT, the volume of new bone was measured. The surface area of new bone was measured through an autopsy. The newly created bone and normal bone samples were histologically analyzed.

Results: The experimental groups had significantly increased volume of new bone compared with the control group. (1) 310.5±57.7 mm³, Group A; 2) 313.4±55.2 mm³, Group B; 3) 276.1±29.0 mm³, Group C; 4) 242.5±25.1mm³, Group D; $p<0.05$) The experimental groups had significantly increased surface area of new bone compared with the control group. (1) 84.9±10.1%, Group A; 2) 78.8±17.6%, Group B; 3) 81.5±9.8%, Group C; 4) 56.2±15.0%, Group D; $p<0.05$) In the histological findings, there was no significant difference in the newly created bone between experimental groups, showing the calcified woven bone.

Conclusion: Regardless of activation, the results reveal that the ability of bone regeneration is similar between PRP and BMP-2, because the growth factors contained in the PRP promote cell recruitment, proliferation and differentiation involving bone regeneration. We think that the appropriate scaffold for the bone regeneration and combination of cell therapy improve the ability of bone regeneration of PRP. In addition, further investigation can be possible for PRP to be applied clinically.



P-1175

COMPARISON THE BONE REGENERATION ABILITY WITH TWO DIFFERENT THICKNESS OF SILK MEMBRANE FOR THE GUIDED BONE REGENERATION

H. Seok¹, M. K. Kim¹, S. G. Kim¹, H. Y. Kweon²

¹ *Oral and maxillofacial surgery, College of Dentistry, Gangneung-Wonju National University, Gangneung, South Korea*

² *Sericultural & Apicultural Materials Division, National Academy of Agricultural Science, Suwon, South Korea*

Objectives: The objective of this study was to compare the bone regeneration ability between the different thickness of silk membrane in a rabbit calvarial defect model.

Methods: Scanning electron microscope imaging (SEM) was taken to exam gross morphology of each membrane. Ten New Zealand white rabbits were used for this study. Bilateral round shaped defects were created in the parietal bone (diameter: 8.0 mm). Thin silk membrane (SM1, 0.01 mm thickness) was covered on the right parietal bone defects, and the left parietal bone defects were covered with thick silk membrane (SM2, 0.5 mm thickness). The animals were sacrificed at 4 weeks and 8 weeks, respectively. Bone regeneration was analyzed in each specimen by micro-computerized tomography (μ -CT). Masson trichrome stain was done for histological analysis.

Results: As measured by μ -CT analysis 4 weeks and 8 weeks after surgery, the average of new bone formation in SM2 group was greater than that in SM1 group. There was a statistically significant difference at 4 weeks after surgery ($P = 0.004$). In the histological analysis, SM2 group showed much more lamella bone formation than SM1 group at 8 weeks after surgery ($P = 0.021$)

Conclusions: The bone defect covered with thick silk membrane showed more bone regeneration than with thin silk membrane.

Acknowledgements

This study was supported by a grant from the Next-Generation BioGreen21 Program (No. PJ009013), Rural Development Administration, Republic of Korea.

**P-1185****AGE EFFECTS ON BONE INDUCING ACTIVITY BY RECOMBINANT HUMAN BONE MORPHOGENETIC PROTEIN-2**

T. Hara, N. Kakudo, N. Morimoto, T. Ogura, K. Kusumoto

Kansai Medical University, Department of Plastic and Reconstructive Surgery, Hirakata City, Japan

Objective

Bone morphogenetic proteins (BMPs) play important roles in the migration of osteoblast progenitor cells, proliferation of mesenchymal cells, differentiation to chondrogenic and osteogenic cells, and bone remodelling. Therefore, BMPs may have wide potential for clinical application for bone defects after tumour resection and traumatic damage, and alveolar ridge absorption, since the synthesis of recombinant human bone morphogenetic protein-2 (rhBMP-2). We previously evaluated the osteoinducing activity of rhBMP-2 combined with atelopeptide type I collagen in a rodent model. However, the relationship of rhBMP-2 and aging is not sufficiently understood. The aim of the present study was to investigate the effect of aging on osteoinduction by rhBMP-2.

Method

rhBMP-2 had been lyophilized, was dissolved in atelopeptide type I collagen solution. The solutions were lyophilized and compressed in a syringe to make a discoid implant. After treating anesthesia against rats (n=12), the skin and muscular fascia were cut to produce a muscle pouch and the disc implant was inserted. The fascia and the skin were then tightly sutured layer by layer. Three weeks after the implantation, ectopic neoplastic bones had bone mineral density (BMD) measured by means of dual energy X-ray absorptiometry (DXA) and imaged by soft X-ray. In addition, H-E stain, von Kossa stain and Proliferation cell nuclear antigen (PCNA) immunostaining were performed. The Mann-Whitney U test was used to compare between groups with significance set at $P < 0.05$. Data are presented as mean $\pm$ SD.

Results

BMD determined by DXA were 29.40 ± 5.47 , 24.15 ± 2.33 , and 19.01 ± 2.02 mg/cm² in the 3-, 8-, and 48-week-old rats, respectively, demonstrating that the BMD significantly decreased with aging ($P < 0.05$). von Kossa staining-positive areas significantly decreased with aging ($P < 0.01$). The number of PCNA-positive cells decreased with aging.

Conclusions

The ectopic bone induction ability of rhBMP-2 decreased with aging, demonstrating the effects of aging on bone induction by rhBMP-2. These findings will be of considerable benefit in the bone regeneration of oral and maxillofacial tissue clinically in elderly patients.



P-1212

ANGIOTENSIN RECEPTOR BLOCKERS REDUCE ADVANCED GLYCATION END PRODUCTS AND AMELIORATE FRAGILITY OF BONE IN DIABETIC RATS

H. Shimizu¹, H. Nakagami², N. Yasumasa², S. Morita³, R. Morishita⁴

¹ *Department of Nutritional Sciences for Well-being, Kansai University of Welfare Sciences, Kashiwara, Osaka, Japan*

² *Vascular Medicine and Epigenetics, Osaka University United Graduate School of Child Development, Suita, Osaka, Japan*

³ *Oral Surgery, Osaka Dental University, Hirakata, Osaka, Japan*

⁴ *Clinical Gene Therapy, Graduate School of Medicine, Osaka University, Suita, Osaka, Japan*

Objective: Recent epidemiological studies have demonstrated that diabetes mellitus (DM) is a risk factor for bone fracture. Both hyperglycemia and oxidative stress induce a reduction in enzymatic beneficial cross-links and the accumulation of disadvantageous non-enzymatic cross-linking advanced glycation end products (AGEs) such as pentosidine in bone. On the other hand, some antihypertensive drugs such as angiotensin receptor blockers (ARBs) have been reported to improve peripheral conditions such as retinopathy or kidney dysfunction induced by DM.

Methods: In this study, ovariectomised rats with a high-fructose diet were treated with or without ARBs, and used to investigate the aspects of bone and mineral metabolism derangement in DM.

Results: High-fructose loading increased insulin resistance and serum pentosidine concentration. Immunohistochemical analysis also demonstrated pentosidine accumulation in bone. These results were in concert with the results of a three point bending test, which revealed fragility of bone. Of interest, treatment with olmesartan improved insulin resistance and decreased the accumulation of the AGE pentosidine. Three point bending test also revealed improvement in fragility of bone induced by a high-fructose diet.

Conclusions: Overall, ARB treatment might be a useful approach in the treatment of hypertensive patients with DM

**P-1238****FREEZE-DRIED ACTIVATED PLATELET-RICH PLASMA (FD-APRP) PROMOTES MOUSE SKIN WOUND HEALING**

T.Ogura, N.Morimoto, N.Kakudo, T.Hara, K.Kusumoto

Kansai Medical University, Department of Plastic and Reconstructive Surgery, Hirakata Osaka, Japan

Objective:

It is well known that platelets contains several growth factors: PDGF-AB, PDGF-BB, VEGF and TGF- β 1, and so on. By centrifuging blood, we can obtain platelet-rich plasma (PRP). Effects of wound healing promotion by aPRP have been reported.

Freeze-drying is a dehydration process to preserve proteins without denaturation. This freeze-drying technology has made possible the long-term storage of materials at room temperature.

We performed freeze-drying of aPRP to increase the concentration ratio of growth factors in it. The objective of this study was to explore the effectiveness of concentrated freeze-dried human aPRP (FD-aPRP) on full-thickness skin wounds in model mice to evaluate the optimal concentrations of FD-aPRP in wound healing.

Methods:

Human aPRP was prepared using a double-spin method (with ACD-A, 450 G/7 minutes/20 °C as first spin, 1,600 G/ 5 minutes /20 °C as second spin) and activated by CaCl₂ and freeze-dried. We prepared x1/x3/x5- concentrated FD-aPRP and preserved them in a room temperature desiccator for one month. After that, we determined the levels of growth factors of them by ELISA and evaluated the healing process on day 6 after the operation on full-thickness skin wounds on mice (C57BL, n=6) by each FD-aPRP impregnated in a collagen/gelatin scaffold.

Results:

The levels of the growth factors in FD-aPRP were equal to those for aPRP and proportional to the concentration ratio. The ratios of reduction of area of the mouse skin wound on day 6 relative to day 0 were 77.1% (Control), 68.6% (x1- concentrated FD-aPRP group), 54.5% (x3- group) and 74.4% (x5- group). The area in the x3 concentrated FD-aPRP group was significantly smaller than those in the other groups ($p<0.05$).

Conclusions:

We must prepare PRP just before application and it is an issue of PRP treatment. We showed that aPRP could be preserved at room temperature for one month keeping its activity. The amount of growth factors in FD-aPRP could be concentrated successfully. The effectiveness of PRP on wound healing have been reported and our results suggest that PRP could be used more easily and effectively in the clinical practice.

**P-1384****RESULTS OF CHRONIC TOXICITY STUDY AFTER LIDOKAIN REPEATED INJECTION IN THE REGION OF HEAD AND NECK. EXPERIMENTAL CASE**

I. O. Pohodenko-Chudakova, E. V. Maksimovitch, S. F. Kuralenya

Belarusian Collaborating Center for EACMFS, Minsk Advisory and Diagnostic Center, Belarusian State Medical University, Minsk, Belarus

Aim was study possible pathological changes of the macroorganism during the repeated injection of lidokain when local anesthesia was applied in therapy dose.

Methods and material. The experiment was carried on the adult males of white mice weighing 22-25 gr. Therapeutical doses of the local anesthetics were numbered off the unit of the weight according to the clinical pharmacology prescriptions. Anesthetic injection was made into the submandibular region. The first series contained 16 animals treated with 2% Lidokain hydrochloride. The second series – group of control – contained 4 healthy sexually matured males. They were not tested. We performed 5 injections every 3-4 days than animals were removed from the experiment. Parenchymatous organs sampling of deceased animals were removed for postmortem examination during all stages of the examination.

Results. According to the results of the morphological examination after five injections animals of the first series had ill-defined iatrogenic polymorphism in some specimens of the liver and small centers of hepatocyte necrosis with perifocal inflammatory reaction, poor inflammatory infiltration in some portal tracts, low-grade intrastreaming cholestasis. The inflammatory reaction was more expressed in other preparations of the liver and it was possible to find it out in all portal tracts. The inflammatory infiltration was fixed around the central veins. The inflammatory infiltration was presented predominantly by lymphocytes with a touch of a few number of eosinophils and single neutrophils. There was more of the focuses of the hepatocyte necrosis. Eosinophilic intranuclear substances were found in some nucleus.

After five introductions, fuzzy expressed plethora with single diapedetic extravasations and irregular plethora of the glomerules were determined. Irregular plethora of the glomerules, dystrophic changes of the canaliculus epithelium and small globocellular infiltrations in the interstitial tissue were fixed in other preparations. In third part of infiltrations the number of infiltrations and the dimensions were bigger; glomerule vessels changes were fixed.

Conclusion. Repeated injection of lidokain during the local anesthesia can lead to the chronic toxicity development what directs to the necessity of further examinations for development of the methods for prophylaxis of the side toxic effects development.



19. Advanced Imaging and CAD / CAM Technology

P-46

SELECTIVE LASER MELTED TITANIUM IMPLANT FOR THE ZYGOMATIC BONE RECONSTRUCTION. REPORT OF A CASE

H. Rotaru¹, R. Schumacher², O. Bill², E. Schkommodau², S.G. Kim³, C. Dinu¹, D. Spirchez¹, D. Rosca¹, Al. Rotaru¹, Gr. Baciut¹

¹ Department of Oral and Maxillofacial Surgery, "Iuliu Hatieganu" University of Medicine and Pharmacy, Cluj-Napoca, Romania

² School of Life Sciences, Institute for Medical and Analytical Technologies, Muttens, Switzerland

³ Department Oral and Maxillofacial Surgery, Gangneung-Wonju National University, Gangneung, South Korea

Aims. Zygoma defects commonly follow craniofacial trauma, tumour resection or malformations. The reconstruction is mandatory for aesthetical and functional reasons. Accurate restoration of the normal anatomy, symmetry, proper facial projection and facial width are the key points.

Material and Method. A post-traumatic zygomatic bone defect was reconstructed using a custom-made implant made by selective laser melting from Ti6Al4V alloy.

Results. The computer designed implant had the proper geometry and fitted perfectly into the defect. No adaptations were needed at the time of surgery. One-year follow-up revealed a proper restoration of symmetry and projection of the reconstructed malar bone. No complications occurred and the bone integration of the implant was visible on computer tomography.

Discussion. Different surgical strategies to reconstruct the zygomatic complex defects had been reported in the literature. Computer-aided design and manufacturing (CAD/CAM) allows the production of defect-specific implants, improving the strategy and results of bone reconstructive procedures

Conclusions. The use of selective laser melted custom-made titanium implants allow the accurate restoration of symmetry and projection of the zygomatic bone, significantly increasing the biological integration, while decreasing the operative time and morbidity.



P-118

INTRAORAL ACCESS FOR RESECTION OF MANDIBULAR AMELOBLASTOMA WITH UTILIZATION OF BIOMODEL - CASE REPORTT

J. Cravinhos, I. Nunes, L. Marinho, J. Dias, S. Dione, W. Moura, V. Valente, S.Freitas

Federal University of Piaui, Teresina, Brasil

Purpose: To show a case the removal of a mandibular ameloblastoma by intraoral resection and planning through prototyping.

Method: Patients 22 years of age, female, attended the Oral And Maxillofacial Surgery service of Federal University of Piaui-Brazil complaining of volumetric increase in right hemiface. On physical examination and CT images, there was an increase in volumetric cortical bone expansion. The patient had undergone an incisional biopsy, which diagnosed the presence of ameloblastoma. For the case, a biomodelwas obtained by scanningthe jaw of the patient, allowingplanning for surgery to be made. Thus, the jaw had partial resection and a reconstruction plate system 2.4 mm was used for fixing the remaining mandibula. The entire procedure was carried out through the oral cavity in order to avoid extra-oral scars and possible neurologic injury.

Results: One year postoperatively, the patient presents with good occlusion, maintenance of mandibular movements without motor deficits and no recurrence of the disease.

Conclusion: The intraoral access can be performed even in large mandibular resections, especially if using a planning model obtained from rapid prototyping. This mode reduces the operative time and allows better anatomical reconstruction of the region.

**P-182****A COMPARISON BETWEEN CONVENTIONAL RADIOLOGICAL TECHNIQUES AND CONE BEAM CT FOR LOCALISATION AND ANALYSIS OF IMPACTED TEETH AND SUPERNUMERARY TEETH**

C.M. Ziegler, T. Klimowicz, N.-P. Fossland

Dep. for Oral & Maxillofacial Surgery, NTNU / St.Olavs University Hospital, Trondheim, Norway

Objectives: An increasing number of different types of commercial cone beam computed tomography (CBCT) devices are available for three-dimensional (3D) imaging in the field of dental and maxillofacial radiology. When removing impacted or supernumerary teeth, surgeons often operate adjacent significant anatomical structures such as nerves, vessels, adjacent teeth roots, and paranasal sinuses. Choosing an appropriate approach is therefore important to avoid iatrogenic damage to the essential anatomical neighbouring structures. CBCT, also called digital volume tomography (DVT), can visualize impacted and supernumerary teeth in all standard planes, as well as multi-sectional 3D views. These devices have shown to be highly beneficial in the assessment of small bony lesions and maxillofacial injuries. However, it is still necessary to determine the effectiveness of such devices in the assessment of impacted and supernumerary teeth, in comparison to the conventional radiological methods of intraoral x-rays and panoramic x-rays.

Methods: During a period of 2 years, a total of 61 patients of whom majority had impacted teeth or supernumerary elements in the frontal maxillary region were studied with CBCT and treated at the St. Olavs University Hospital. Patients were referred to our Department of Oral and Maxillofacial Surgery with both conventional and digital intraoral x-rays and/or panoramic x-rays. None had any acute infections or odontogenic abscesses, and most presented with asymptomatic impacted tooth. A comparison between the preoperative conventional and the CBCT images, the resulting diagnoses, and the intra-operative findings as "gold standard" were made and recorded in a compiled scoring sheet. The objects of interest were researched with the magnification method. Each patient was identified only with a patient number.

Results: In contrast to the conventional x-rays, the pre-surgical evaluation with the CBCT revealed detailed imaging of significant anatomical structures and objects of interest, with highly accurate anatomical and morphologic imaging, when compared to the intra-operative findings. Furthermore, no diagnostic problems, in relation to the anatomical localization, occurred preoperatively.

Conclusion: The CBCT provides true and precise anatomical information with high surgical predictability without distortion or artefacts, and is superior to conventional radiography. It enables more time-efficient surgeries and reduces costs and surgical complications.

**P-227****EVALUATION OF THREE-DIMENSIONAL TRABECULAR-STRUCTURE OF AUTOGENOUS GRAFTING BONE BY MICRO-CT**

E.Imamura¹, M.Mayahara², M.Nakamura³, M.Miyamoto³, N.Matsubayashi³, M.Narukawa³, Y.Kariya³, K.Haku³

¹ *Oral and Maxillofacial Surgery, Yokohama General Hospital, Yokohama, Japan*

² *Dental Education, Showa University School of Dentistry, Tokyo, Japan*

³ *Oral Anatomy and Developmental Biology, Showa University School of Dentistry, Tokyo, Japan*

Objectives: The purpose of this study was to evaluate the micro-trabecular structure of four differences harvested sites using for the dental implant treatment.

Material and methods: Five rod-shaped bone samples of human cadavers were taken from four sites (mandibular ramus, mandibular symphysis, ilium and tibia). Micro computed tomography (micro-CT) was used for the analysis of three dimensional internal trabecular bone structures, cortical bone region area Cv (mm²) and cancellous bone area Bv (mm²).

Results: Trabecular bones of mandible and tibia showed the plate type, while the bone structure of ilium showed the rod type. Significant differences of cancellous bone region volume (BV) were detected between the mandibular symphysis and tibia, mandibular symphysis and ilium, mandibular ramus and tibia ($p < 0.05$, Scheffe). No significant correlations between cortical bone region volume (CV).

Conclusion: When using autogenous cancellous bone as a graft material, mandibular ramus and mandibular symphysis provide relatively more bone than iliac and tibial sites of the same volume.

**P-239****THE ANALYSIS AND EVALUATION OF THOSE IMPACTS ON THE RELATIVE POSITIONS BETWEEN MANDIBULAR THIRD MOLAR AND MANDIBULAR CANAL**

HS. Park, KW. Kim, JH. Lee, CH. Kim, SJ. Han, MY. Kim

Department of Oral and Maxillofacial Surgery, Dankook University, College of Dentistry, Cheon-An City, South Korea

Background : There can be complications such as continuous bleeding, edema, infection, dysesthesia after surgical removal of impacted third molars. Dysesthesia is the most undesirable results to the patient and the surgeon. The authors examined the complications that appear after extraction. Also, by using CBCT author examined the relationships of root of the mandibular third molar and the mandibular canal and its relative paresthesia.

Method : 340 patients with a total of 424 teeth were examined. First, author researched the complication between a group having only an OPT and additionally a group who had CBCT taken after extraction. Second, author researched the prevalence of dysaesthesia according to the cortical integrity of mandibular canal in the CBCT group. In addition, we examined the difference prevalence of dysaesthesia according to the relationship between mandibular canal and root. Finally, other variables were investigated which cause dysaesthesia when there is no bony separation between root and the mandibular canal.

Result : Most of the teeth's location is horizontal and mesioangulated. In addition, teeth were semi-impacted and number of root were two. There was no difference in complications between panorama taken group and CBCT taken group. If tooth are located lingual side in the horizontal plane and deep in the vertical plane, prevalence of dysaesthesia is very high. Also, the more canal located in the lingual nerve, the more integrity of canal is destroyed. Prevalence of dysaesthesia is high when mandibular canal size is extremely narrow at the contact area.

Conclusion : There was no difference between the panorama and CBCT group in the prevalence of dysaesthesia. But, CBCT radiograph provide three-dimensional information about relationship between mandibular canal and root. Therefore surgeon can explain dysaesthesia before extraction of mandibular third molar. This gives confidence to surgeon and would be able to protect themselves better.

**P-296****CONE-BEAM CT HELPS TO SHAPE AN UNCOMPLICATED TREATMENT PLAN IN LARGE ODONTOMAS**

H.Isıl Imamoglu, E.Adalı, A. Sipahi Calis, C. Efeoglu, H. Koca

Oral Surgery, Ege University, İzmir, Turkey

Background and objectives:

Odontomas are generally asymptomatic, if remain undetected they may grow larger and result in deformations of jaws, impaction of permanent teeth, pathological fractures and occasionally injury to adjacent nerves. Early diagnosis is possible by regular clinical and radiographic reviews as appropriate during childhood. This case series aims to demonstrate the importance of Cone-Beam CT (CBCT) imaging in managing odontomas with a minimally invasive surgical approach. This is especially important in growing individuals as CBCT data helps to avoid potential injury to adjacent anatomical structures and pathological fractures during and after the operation.

Methods:

In this study, 5 patients with odontomas are presented. Two of the odontomas are in the maxillary tuberosity, 2 in symphysis and 1 in angle of the mandible. CBCT data is used to detect the borders of the lesions accurately. Thus, all the operations were able to be planned and performed via the intra-oral route using a minimally invasive approach under local anaesthesia.

Results:

All the patients healed well, and surgical treatment with intra-oral incisions and minimal dissection of the tissues did not result in any complications. Functional teeth adjacent to the lesions were protected and simple monomaxillary arch bar fixation was used in 2 giant odontoma cases to prevent mandibular fractures.

Conclusion:

CBCT data can be utilised to shape an uncomplicated treatment plan by allowing an accurate prediction of potential complications such as pathological fracture and injury to adjacent structures. This in turn enables a precise informed consent of the patient and/or legal guardian while avoiding unnecessary surgical interventions.



P-313

APPLICATION OF SHEAR WAVE ELASTOGRAPHY IN THE DIAGNOSIS OF ACUTE INFLAMMATION OF SOFT TISSUES IN MAXILLOFACIAL REGION AND NECK

A. Lysenko, N. Petrov

1st Pavlov State Medical University, Saint-Petersburg, Russian Federation

Objective. Diagnostic of acute inflammation of soft tissues in maxillofacial region and neck is important problem of maxillofacial surgery. Patients with this pathology makes more 50% among patients of clinic maxillofacial surgery. The aim of the study was to evaluate the usefulness of ultrasound shear wave elastography in the diagnosis of acute inflammation of soft tissues in maxillofacial region and neck.

Methods. The study group consisted of 69 patients with acute inflammation of soft tissues in maxillofacial region and neck: 13- with abscesses, 18-phlegmons, 38- acute lymphadenitis and 13 with diseases, simulated acute inflammation. Sonographic examination performed on ultrasound scanner Super Sonic with linear ultrasound transducer.

Results. Ultrasound allowed us to determine localization and stage of inflammation, discriminate it from non-inflammatory diseases and improve assessment of its dynamics. Ultrasound shear wave elastography allowed to evaluate the difference in hardness between pathologic and normal tissue.

Conclusion. Ultrasound shear wave elastography is useful diagnostic tool in acute inflammation of soft tissues in maxillofacial region and neck.

**P-370****THE USE OF A 3-D MODELING IN BENIGN JAW TUMOURS INVOLVING INFERIOR ALVEOLAR NERVE**

Z. YAMAN¹, B.T. SUER², P. CEBE¹

¹ Oral Surgery, VKV Amerikan Hospital, Istanbul, Turkey

² Oral and Maxillofacial Surgery, Gulhane Military Medical Academy (GATA), Haydarpasa Teaching Hospital, Istanbul, Turkey

Objectives: Computer-aided presurgical planning using rapid prototyping (RP) or stereolithographic (STL) models allow the surgeon to visualize, simulate, and plan a patient's operation. The aim of this study is to examine the effect of using STL models in preoperative planning on intra and post-operative complications including inferior alveolar nerve damage in removing mandibular benign tumour.

Material and Methods: 5 patients (4 male, 1 female; mean age: 33.6 ± 4.21) with posterior mandibular benign tumour that was either close or adjacent to inferior alveolar nerve (IAN) were included to the study. Preoperative computed tomography (CT) data (DICOM format) were converted to a binary STL file format for use in RP. Using computer-aided design (CAD) software, opaque STL models were produced. Opaque STL models made out of autoclavable polymers and used for the examination of the exact location and dimensions of the tumours, determination of the adjacent anatomic structures that may damage during the surgery, and calculation of the exact dimensions of the residual defects after surgery. A piezoelectric ultrasonic device (Piezosurgery 3, Mectron, Italy) was used to complete excision or resection of the benign tumours in bone related procedures. All patients were followed-up for 24 months (average: 19.6 ± 5.02).

Results: All patients responded to the surgery well and postoperative recovery was uneventful except one patient who had transient IAN sensory alteration lasted 2 months. Authors had noticed that presurgical STL model planning could help transfer the desired treatment plan to operating room.

Conclusions: Presurgical planning of the operations using STL models may lessen the risk of harming IAN. Preoperative CAD and STL modeling seems to provide useful guide for surgeon to achieve more accurate presurgical planning. As a result, it yields decreased operative time, complications, and blood loss. Time and relatively high cost are the biggest drawbacks to this technique's routine use; however, it can be argued that overall benefits may supervene these shortcomings.



P-432

RECONSTRUCTION OF THE LOWER FACE BY OSTEOGENIC DISTRACTION IN GUNSHOT WOUNDS: CONTRIBUTIONS OF COMPUTER-ASSISTED SURGERY

H. Benateau, D. Labbé, A. Veyssière, A. Chatellier, M. Mundreuil, L. Olive, J-F. Compère

Maxillofacial surgery, University hospital, Caen, France

Objectives: We report our experience using computer-assisted surgery to improve the reconstruction of the lower face by osteogenic distraction in suicide attempts with a shotgun. This type of injuries requires the reconstruction of several tissues at the same time: bone and soft tissues including the attached gum, which is very difficult to reconstruct in other ways.

Methods: Previously we have successfully used an osteogenic distraction technique with a customised external device (DEOS) for reconstruction of lower face and midface after gunshot wounds [1,2]. Therefore, the concept of computer-assisted surgery has further improved the management of our last patients. Two cases are largely illustrated.

Results: the presentation of the two cases permits to discuss about:

- the accuracy of the osteotomies. Corticotomies are realized with pyezosurgery and ideally preoperatively determined on the computer. The surgical procedure is reproduced with cutting guides.
- the endless screw can be shortened so that it corresponds exactly to the defect to be reconstruct, thereby decreasing discomfort for the patient.
- the stability of the device by modeling on computer the pins and the plate implant for bone flat. Those individualized metal devices are applied perfectly on bone surfaces and improve the global stabilization of the endless screw to the mandible. This is of great importance for these patients because of the scary tissues which increase the resistance to elongation.
- the better control of the distraction vector. The axis of the endless screw of the device is decided preoperatively with great accuracy.
- At least, the operative time is widely shortened.

Conclusion: computer-assisted surgery with osteogenic distraction improve the accuracy of treatment of that kind of patients.

[1] Labbé D, Nicolas J, Kaluzinski E, Sabin P, Compère J-F, Bénateau H.
Gunshot wounds : reconstruction of the lower face by osteogenic distraction.
PlastReconstrSurg2005 ; 116, 6 : 1596-603.

[2] Labbé D, Kaluzinski E, Soubeyrand E, Delcampe P, Sabin P, Bénateau H.
Gunshot wounds: two cases of midface reconstruction by osteogenic distraction.
J PlastReconstrAesthetSurg 2009; 62,9 :1174-80.

**P-493****ACCURACY OF 3D VIRTUAL SURGICAL PLANNING -A RETROSPECTIVE STUDY OF FOUR TYPES OF ORTHOGNATHIC SURGERY**

K. Stokbro¹, R. B. Bell², P. Torkov¹, E. Aagaard¹, T. Thygesen¹

¹ *Department of oral and maxillofacial surgery, Odense University Hospital, Odense, Denmark*

² *Department of Oral and Maxillofacial Surgery, Oregon Health and Science University, Portland, OR, United States*

Objective:

This retrospective study analyzes the difference between virtual surgical planning and the postoperative outcome in four types of orthognathic surgery.

Methods:

The difference was assessed by comparing the virtual surgical plan with the postoperative outcome. 30 patients were randomly selected. All patients had been treated with bimaxillary orthognathic surgical intervention with/without segmentation of the maxilla and/or genioplasty. The surgeries were performed by three surgeons.

Mean linear difference was calculated for the maxilla, mandible and chin segment. Clinical relevance was set at 2 mm difference. Also, the size of transverse expansion measured on dental reference points (top of mesiobuccal cusp, first molar) was calculated.

Statistical analysis evaluated mean difference and standard deviation between planned and actual postoperative outcome in absolute numbers. ANOVA analysis calculated statistical difference between surgeons and between procedures.

Results:

Mean linear differences for both the maxilla and mandible were all less than 2 mm.

The transverse expansion of the segmented maxilla, showed a lack of expansion with a mean difference of 1,5 mm.

ANOVA analysis showed no statistical significant variance between surgeons.

Conclusions:

The maxilla and mandible can accurately be placed according to the virtual plan, using virtual surgical planning. Placement of the chin segment is slightly less accurate. The experience of the surgeon does not significantly influence the accuracy of the procedures. In the segmented maxilla, a lack of transverse expansion is observed, even in the occlusal level.

**P-505****BIOMODELING IN CHILDREN'S MAXILLOFACIAL SURGERY**

D. Komelyagin¹, D. Romanov¹, S. Dubin¹, A. Petuchov¹, Ch. Vafina¹, A. Ivanov², O. Patches¹, V. Popov¹

¹ *Maxillofacial surgery, Pediatric st. Vladimir hospital, Moscow, Russian Federation*

² *Pediatric maxillofacial surgery, Moscow medico-stomatological institute, Moscow, Russian Federation*

Objective: to enhance the effectiveness of treatment of patients with congenital and acquired maxillofacial pathology.

Material and methods: the method of biomodeling was applied in 95 patients aged 2 weeks to 17 years. According to diseases patients distributed in the following way: craniosynostosis – 9, hemifacialmicrosomia - 12, Pierre Robin syndrome – 5, Treacher-Collins syndrome - 4, bilateral cleft lip and palate - 3, congenital defect of mandible - 5, oncological patients - 7, TMJ ankylosis - 3, cranial vault defect - 16, post-traumatic skull deformation - 8, acquired mandible hypoplasia with defect - 11, acute injuries of skull bones - 12. We used CT as standard diagnostics in all patients. Stereolithographic installation and 3d-printer BFB 3D Touch were used for skull model manufacturing. As software we used Materialise Mimics and BFB Axon.

Results: duration of models manufacturing ranged from 2 to 24 hours depending of desired object. Models were used for surgery planning, for manufacturing of individual implants of various biocompatible materials, for modeling metallic constructions: distraction devices, titanium plates. This allows us to decrease operation time by 20-50%. Good final results were achieved in all patients, despite that 5 patients had a paresis of facial muscles during postoperative period, baring titanium implant occurred in 1 child (which was removed later) and postoperative wound infection in 1 patient (which was successfully cured).

Conclusions:biomodelingallows more comprehensive assessment of the pathological process, choose optimal surgical tactics and method of treatment. Planning of surgical intervention allows us to decrease time of operation, decrease stages of surgical treatment and accordingly decrease postoperative rehabilitation period.

**P-533****3D EVALUATION OF MANDIBULAR SIMMETRY. A STUDY WITH LOW DOSE CT, AUTOMATIC SEGMENTATION AND MANDIBLE SURFACE MEASUREMENTS.**

R.Leonardi, S.Crimi, F.S.Deponte

UOSD Chirurgia Maxillo-Facciale, Messina, Italy

Objective: The aim of the study is, to evaluate mandibular symmetry on CT images, obtained with a low dose protocol, from young patients with functional posterior crossbite malocclusion and compare findings with a sample with normal occlusion, in order to establish if the presence of cross-bite could affect mandibular dimension.

Methods: 26 patients with FPXB (mean age 9 +- 1,4) were the study group (SG) and 13 right hemimandible from subjects affected by just unilateral palatally displaced canines, and a normal relationship of the jaw in the 3 planes, were the control group (CG). A low-dose CT scan protocol was used in this investigation. All data, reconstructed with 0.5-mm slice thickness, were stored as DICOM (Digital Imaging and COmmunications in Medicine) files and visualized in a workstation by using the OsiriX Medical Imaging software program. Thereafter, automatic segmentation of the mandible and a 3D reconstruction were carried out.

Results: There were no statistically significant difference when comparing the measurements of right side from CG subjects and measurements SG i.e., hemimandibles from FPXB side and from non FPXB side, except for chin unit length ($p < 0.01$), angular unit length ($p < 0.01$) and condylar wide. However, even if these data were statistically significant, differences in measurements were of few millimeters.

Conclusions: The presence of a huge facial asymmetry in patients affected by FPXB seems that is not supported by findings of this study. In fact, most differences of measurements from FPXB side hemimandible when compared to non FPXB side of the SG and to the CG were not statistically significant, only angular unit length and chin unit length showed significant statistical differences from multiple comparison test .

**P-585****ORBITAL VOLUME MEASUREMENT USING 3D CT MODELS**

D. Grimes, M. Thomas, V. Okseloglou, A. Richmond, D. Srinivasan

Oral and Maxillofacial Surgery, QMC Hospital, Nottingham, United Kingdom

Objective: When planning reconstruction of the orbit one of the parameters for consideration is the restoration of the orbital volume. Attempts to calculate orbital volume with programs utilising CT data have been disappointing. By mapping the contralateral intact orbit and air sinuses onto the injured site it is possible to construct a 3D CT model which approximates the pre-pathological orbital anatomy. Using this technique we present an alternative method using 3D CT orbital reconstruction to provide an accurate estimate of the orbital volume.

Methods: 5 patients with unilateral orbital floor fractures had 3D CT models constructed from the post injury CT and from a digital reconstruction created by mapping a mirror image of the intact contralateral anatomy. Orbital volume was measured by filling the orbital cavity to the orbital margins of the model with 1mm beads. The volume was then measured by pouring the beads into a measuring cylinder. Orbital volumes were measured for intact contralateral, injured, remodelled and post-operative orbits using 3D CT models.

Results and conclusion: Volumes were comparable between contralateral, remodelled and post-operative CT model orbits. This is a reliable technique to estimate the pre-traumatic orbital volume of an orbit with a floor fracture. It is a useful addition to the planning of surgery for these injuries.

**P-608****CT SCANS AS A TOOL FOR PLANNING INTUBATION IN THE DIFFICULT AIRWAY**

D. Grimes¹, I. MacLeod², T. Taylor², M. O'Connor³, A. Sidebottom¹

¹ *Oral and Maxillofacial Surgery, QMC Hospital, Nottingham, United Kingdom*

² *Radiology, QMC Hospital, Nottingham, United Kingdom*

³ *Anaesthesia, QMC Hospital, Nottingham, United Kingdom*

Objective: Procedures in Oral and Maxillofacial Surgery often require nasal intubation, with many patients having limited mouth opening making intubation more hazardous. Standard UK teaching for anaesthetists is to intubate the right nostril in the first instance, due in part to the practice of inserting the endotracheal tube with the right hand. However clinical situations occur where unfavourable nasal anatomy will make intubation more challenging. This may be predicted using 3D CT models, as described by Sidebottom and O'Connor (reference). Using this technique we present the value of CT scans to assess patients with potentially difficult intubation.

Methods: All TMJ replacement patients have a CT scan to assess the joints which happen to include the nasal cavities. We reviewed anaesthetic records and CT scans of all 62 patients undergoing TMJ replacement surgery since 2010. The nostril intubated was recorded as was any difficulties in intubation. The CT scan was reviewed to identify anatomy that might impede nasal intubation. The two sets of data were compared to establish if a correlation existed.

Results: Preliminary results suggest abnormal anatomy of the nasal cavity on CT correlates with findings on intubation.

Conclusion: Where available the use of existing CT scans to aid planning of nasal intubation of patients with difficult airways is a useful adjunct to the anaesthetist and can help reduce repeated attempts and time required to intubate this challenging group of patients.

Reference: Is the 3-D CT model useful to our anaesthetists? M.O'Connor, A.J. Sidebottom. British Journal of Oral and Maxillofacial Surgery April 2013, Vol 51, Issue 3, Pages 262-263



P-612

OVERLAY OF CT SCANS AS A TOOL FOR TREATMENT OUTCOME REVIEW AND FURTHER PLANNING

D. Grimes, M. Thomas, J. Watson, A. Richmond, D. Srinivasan

Oral and Maxillofacial Surgery, QMC Hospital, Nottingham, United Kingdom

Objective: CT scans are a commonly used tool for treatment planning for trauma and deformity patients. Due to the complex 3 dimensional nature of the midface, it can be challenging to assess the success of surgical procedures in this region. We present a technique to aid this assessment by using pre and post-operative CT scans and overlaying one over the other.

Methods: 3 patients planned for extensive surgery of the midface had pre-operative CT 3D models constructed and used to plan and design the plates for reconstruction. Post-operative CT scans were assessed and relevant slices selected for comparison to the pre-operative scans. Equivalent slices from pre and post-operative scans were then overlaid on each other.

Results: CT scans were overlaid successfully with 1 used to assist managing a patient complaint and another for planning a secondary procedure.

Conclusion: This technique has utility for surgeon and technician for both further treatment planning and quality assessment in complex cases. It can also be used to aid explanation of care to selected patients.



P-673

CYTOTOXICITY OF PAPER BASED 3D MODELS.

M. Kozakiewicz, P. Szymor, R. Olszewski

Medical University of Lodz, Lodz, Poland

- Aims/Objectives

Aim of this study was to determine the cytotoxicity of 3D printed models created from cone beam computed tomography, segmented with 3D Slicer software, and printed with Matrix 300 (MCor Technologies, Dunleer, Ireland) which is a low-cost paper-based 3D printer.

- Material and Methods

Tests of influence of cytotoxicity of 3D printed models were performed to verify the possibility of intra-operative safe use of 3D printed models from Matrix 300 low-cost 3D printer.

To determine the cytotoxicity XTT test and calcein/ethidium dyeing were performed by Nanostructural and Molecular Biophysics Laboratory in Technopark Lodz. It was tested on 60 3D printed cylinders of 3mm of height and of 14mm of diameter. They were divided into 6 groups by 10 samples. Three of those groups were covered before sterilization with 2-octyl-cyanoacrylate.

Results were analysed statistically. Statistical significance was determined as $p < 0.05$

- Results

In XTT analysis samples showed higher cytotoxicity against normal, human, adult dermal fibroblast culture when compared to positive control. However, statistical analysis confirmed that 2-octyl cyanoacrylate coating of 3D paper model improved biological behaviour of the material. It decreased cytotoxicity of the model independently of sterilization method.

- Discussion and Conclusion

Acquired results show that there is a significant cytotoxic effect of unprotected paper-based 3D models. However, coating with cyanoacrylate significantly reduced this effect. Nevertheless, further studies regarding safe covering of 3D paper-based printed models is required.



P-675

INFLUENCE OF DIFFERENT METHODS OF STERILIZATION ON PAPER-BASED 3D MODELS SHAPE STABILITY

M. Kozakiewicz, P. Szymor, R. Olszewski

Medical University of Lodz, Lodz, Poland

- Aims/Objectives

Aim of this study was to determine the shape stability of 3D printed models created from cone beam computed tomography, segmented with 3D Slicer software, and printed with Matrix 300 (MCor Technologies, Dunleer, Ireland) which is a low-cost paper-based 3D printer.

- Material and Methods

In order to verify influence of sterilization on shape stability we printed 30 cuboids of 10x20x30mm. Cuboids were divided into three groups and each group was sterilized either with: ethylene oxide, hydrogen peroxide gas plasma, and gamma irradiation. Each cuboid was measured using calliper three times before and three times after sterilization.

Results were analysed statistically. Statistical significance was determined as $p < 0.05$

- Results

There was no statistically significant difference in cuboids dimensions before and after sterilization regardless of sterilization method.

- Discussion and Conclusion

Acquired results show good stability of shape of paper-based 3D printed models during sterilization process.

**P-676****ACCURACY OF PAPER-BASED 3D PRINTED SKULL MODELS WITH LOW-COST 3D PRINTER AND BASED ON OPTICAL SCANNING**

M. Kozakiewicz, P. Szymor, R. Olszewski

Medical University of Lodz, Lodz, Poland

- Aims/Objectives

Aim of this study was to determine the accuracy of a 3D models created from cone beam computed tomography, segmented with 3D Slicer software, and printed with Matrix 300 (MCor Technologies, Dunleer, Ireland), which is a low-cost paper-based 3D printer.

- Material and Methods

The Ethic Committee approval was obtained for this study. A cone beam computed tomography was performed on one dry human skull. DICOM files were imported into 3D Slicer software for automatic segmentation based on a threshold and manual correction. 3D model of a skull was exported then in a form of .STL file and processed in Netfabb Studio software. Processing consisted of restricting the model to right facial region and cutting the model into 3 smaller parts in either x, y and z axis. Such obtained three different models were printed with low-cost Matrix 300 3D printer. After printing parts of each 3D model were glued together. In order to verify accuracy of those models each of 3 models and original skull was scanned with BreuckmannsmartSCAN 3D optical scanner. Acquired virtual models were superimposed and compared with Geomagic Qualify.

- Results

Average distance between original human dry skull and its 3D printed model was 0.3mm

- Discussion and Conclusion

Our results show a good quality of paper based 3D printed models. Contrary to analysis of some selected anatomical points, optical scanning and later comparison of a skull and its 3D printed model allows for a better assessment of accuracy of surfaces created with help of rapid prototyping techniques.



P-702

THE ROLE OF INTERVENTIONAL RADIOLOGY FOR THE OMFS TRAUMA PATIENT

A. Kanzaria, I. Balasundaram, S. Kane, I. Rahim, S. Holmes, C. Bridle

Oral and Maxillofacial Surgery, Bart's Health NHS Trust, London, United Kingdom

Introduction: Interventional has a defined role in maxillofacial trauma management specifically when there is major vascular compromise in concealed anatomical regions. We present our experience where interventional radiology management has been a game changer to the outcome of selected major craniofacial injury.

Method: We present a number of examples of endovascular management of acute concealed major vascular injury both extra and intracranially.

Results:

Case 1: An 85 year old gentleman with a penetrating transorbital mechanism involving the cavernous sinus compromising the carotid artery. Removal of the foreign body was completed within the interventional radiology suite with the radiologist providing safety with a balloon occlusion of the carotid artery. The object was removed successfully with real time imaging of the procedure.

Case 2: A 28 year old fireman fell 40 feet onto a concrete floor sustained an anterior skull base injury with pulsatile exophthalmos. This was managed by an endoluminal approach.

Case 3: A gunshot maxilla transected the maxillary artery. Following resuscitation this was treated with an endoluminal coil.

Conclusion

Injuries such as these are rare but can be difficult to manage. This case series highlights the role of interventional radiology in treating OMFS trauma patients.

**P-732****EOS® SYSTEM FOR IMAGING OF THE FACIAL SKELETON: A FEASIBILITY STUDY**

B.-I. Berg, A. Laville, D. Courvoisier, P. Rouch, T. Schouman

University Hospital Basel, Basel, Switzerland

Objectives

The EOS® imaging system acquires posteroanterior and lateral imaging simultaneously. The advantage of the EOS® system is its very low radiation dosage (approximately 50% in comparison with conventional biplanar X-ray systems). No study ever using this system for capturing the facial skeleton was found in recent literature. The aim of this study was to evaluate the feasibility of the biplanar low-dose X-ray EOS® imaging system (EOS Imaging, Paris) for capturing the facial skeleton.

Methods

48 biplanar radiographs (posteroanterior/ lateral) were acquired using the EOS® imaging system intended previously for the study of scoliosis with different positions of the upper extremities. To determine the reliability/ reproducibility of facial skeleton's landmarks, two observers identified 38 landmarks two times with at least a time interval of two weeks. The landmarks were placed digitally using an image-treatment software that provides the coordinates of each landmark in a 2D reference system. Intraoperator repeatability and interoperator reproducibility were evaluated for each landmark. Furthermore, intraclass correlation coefficients (ICC) were calculated for each landmark.

Results

Interoperator and intraoperator test-retest reliability was overall greater than 0.91, except for the lateral orbital which was 0.86. Other landmarks showed slightly lower but still very good repeatability.

Conclusion

Assessment of the facial skeleton's anatomical landmarks using the EOS® system is precise and radiological diagnostics of the facial skeleton is well possible. Children who need continuous follow-ups with imaging (e.g. idiopathic scoliosis) show more often asymmetric features of malocclusion. The EOS® imaging for the spine can also be used for assessing the facial skeleton. Reduction of radiation is essential since the radiation dosage accumulates through a lifetime. In light of this excellent precision, EOS imaging system can also be considered a valuable option for the assessment of facial skeletal deformities or trauma.

**P-750****A REVIEW OF MAGNETIC RESONANCE IMAGING: ACCIDENTS CAUSED BY FOREIGN BODIES, LOCALIZED AT THE CRANIO-FACIAL REGION.**

T. Annussek, S. Jung, J. Kleinheinz

Department of Cranio-Maxillofacial Surgery, University Hospital, Muenster, Germany

Aim: Although the magnetic resonance imaging is described as a safe technique in general, critical incidents are described in literature. Associated risk factors during MRI application concerning foreign bodies at the cranio-facial region are discussed on the base of available literature.

Material and method: Scientific databases (e.g. pubmed, medline, embase) were searched for articles, dealing with possible accidents during MRI and associated materials that are used in dental practice or maxillofacial surgery. The search items "magnetic resonance", "dental alloys", "orthodontic appliances", "dental implants", and "internal fracture fixation" were used in different combinations. For exclusion criteria, any position of foreign bodies outside of the orofacial region and magnetic field intensity of more than three tesla, was defined. Studies were evaluated by the 2011 criteria of oxford center for evidence based medicine.

Results: 275 studies were identified, according to the inclusion criteria. Mechanisms behind critical incidents were identified as translation, rotation, artifacts and heating of foreign bodies. 8 Studies reached the third level of evidence while the most of identified articles were representing a lower level of evidence. The influence of artifacts on diagnostic findings is discussed controversially in literature. Rotational and translational movements of orthodontic appliances, caused by magnetic resonance, are described. There was no study, discussing forces, that act on osteosynthesis material.

Conclusion: The safety of MRI is clearly restricted to the knowledge of possible risk factors. Often it is not really clear which kind of material or foreign body is located next to the facial region (e.g. titanium implants, dental alloys or orthodontic appliances). Therefore it seems to be extremely difficult to forecast the occurring forces. It is recommended to remove all foreign bodies that are detachable or loose before MR Imaging.

**P-769****RECONSTRUCTION OF CRANIAL VAULT DEFECTS USING PEEK PATIENT SPECIFIC IMPLANTS**

M. BILA, E. NOUT, J. HES, J. P. O. SCHEERLINCK, L. SMETS, S. STOLK-LIEFFERINK, A. VAN VEEN

Maxillofacial surgery, Sint Elisabeth Tilburg, Tilburg, Netherlands

An anatomical reconstruction of full thickness scalp defects is important from a functional, aesthetic and psychological point of view. Nowadays a wide range of materials can be used to repair skull defects. With the advancement of computed 3D imaging, computer-assisted designed and computer-assisted manufactured (CAD-CAM) prostheses are gaining popularity because of their numerous advantages, most importantly the elimination of donor site morbidity, reduced operating time and the ability to reconstruct complex defects with great precision.

Traditionally PMMA and titanium were the materials of choice. Nowadays PEEK (Poly-Ether-Ether-Ketone) patient specific implants are gaining popularity. PEEK is a semicrystalline polyaromatic linear polymer that exhibits an excellent combination of strength, stiffness and biocompatibility making it mechanically more comparable to calvarian bone than any other material. Moreover, the radiographic translucency and non-magnetic properties are crucial in the follow-up of oncologic patients.

In our institution we have treated a series of 12 patients using the PEEK PSI's and would like to share our experience using this novel material.

**P-849****DOES FLY-THROUGH VIRTUAL ENDOSCOPY HAVE A ROLE IN PRE-SURGICAL HEAD AND NECK CANCER PATIENTS ?**

KN Rajaram, M Maranzano, TK Blackburn

Department of Maxillofacial Surgery, Manchester Royal Infirmary, Manchester, United Kingdom

Fly-through virtual endoscopy is generally used in the head and neck region to evaluate pathologic processes of the nasopharynx, larynx and the tracheobronchial tree. This tool allows the operator to fly-through the three-dimensional anatomy with the ability to navigate in any direction with a 360 degree manoeuvrability. Pre-operatively this aids in planning from both the surgical and anaesthetic point of view based on a 3D CT Scan.

Aim: To assess the feasibility of utilising fly-through virtual endoscopy of the upper aerodigestive tract as an aid to treatment planning for anaesthetists and surgeons, software cost implications and its application in the authors' practice in head and neck surgery.

Materials and Methods:

Fly-through virtual endoscopy was carried out in a pilot series of 10 patients prior to head and neck surgery from 2013-2014. the inclusion criteria were patients who required high resolution 3D CT scan for either reconstruction planning or assessment of bone invasion. The anaesthetists and surgeons were given a questionnaire to assess its role in planning, training and teaching. The time taken to prepare the fly-through analysis was recorded and cost estimated.

Results

Fly-through virtual endoscopy is easy to perform and existing software is commonplace. The combined Lickert scale score among both surgeons and anaesthetists was 8/10 suggesting that it is feasible to implement in practice. The tool is easy to traverse and visualise areas inaccessible by nasoendoscopy. There is no additional risk / morbidity to the patient. The mean time to construct the fly through was 44 minutes. It was found to be most useful in facilitating planning the intubation strategy in difficult cases for shared airway procedures and rated highest by trainees.

Conclusion

The authors conclude that in selected cases fly-through virtual endoscopy is feasible, low cost useful for clinical and training purposes to utilise in head and neck surgery.

**P-900****3D RECONSTRUCTIONS FROM CT-SCANS ON SMARTPHONES AND TABLETS: A SIMPLE TUTORIAL FOR THE WARD AND THE OPERATING ROOM**

S. Ketoff, T. Schouman, P. Goudot, C. Bertolus, R. H. Khonsari

Service de chirurgie maxillofaciale et stomatologie, Hôpital de la Pitié-Salpêtrière, Université Pierre-et-Marie-Curie Paris 6, Paris, France

Aims/Objectives

3D reconstructions based on DICOM files from medical CT-scans are difficult to transfer between users and handle on smartphones and tablets due to their size. Here we provide a simple and user-friendly method that allows us to convert a stack of DICOM files into an STL file that occupies less than 3 MB. The process does not require specific skills, is not time-consuming and only involves public domain softwares available for free download online. This method provides a suitable solution for the straightforward visualization of 3D CT-scan reconstructions during ward rounds or in the operating room.

Material and Methods

Medical CT-scans were uploaded on OsiriX v.5.7 32-bit on an Apple iMac desktop. 3D surface rendering was produced and exported as an STL file. The initial DICOM stack of files was cropped if required using the Scissors function on 3D volume rendering before producing 3D surface rendering. Meshlab was used to open the STL file and export it under the compressed CTM format. The final CTM could be attached to emails or transferred directly to portable devices using USB connections.

The Meshlab application was used to open the CTM file on the portable devices.

A tutorial video showing the file transfer process was displayed to 5 residents in surgery. from our department. Residents then applied the process to 10 head and neck medical CT-scans. The duration of the file transfer process was measured and the size of the CTM file was recorded.

Results

The file transfer process took in average 4.2 min (+/- 1.3 min). The ratio between the size of the STL file exported from OsiriX and the final CTM file was 70.2 (+/- 20).

Discussion and Conclusion

We provide a user-friendly method that allows us to display and handle 3D reconstructions from CT-scans on portable devices. These reconstructions can be used to discuss the cases between health professionals and for patient education, both before and after surgery.

Conflicts of Interest

No conflict of interest.



P-939

COMPOSITE CUSTOM-MADE BONE GRAFTS (SMARTBONE® ON DEMAND™) FOR A LARGE SPHENO-ORBITAL RECONSTRUCTION.

A. Anesi¹, G. Perale², G. Pavesi³, A. Salvi⁴, L. Chiarini¹

¹ *Department of Medical and Surgical Sciences for Children & Adults; Cranio-Maxillo-Facial Surgery, University of Modena and Reggio Emilia, Modena, Italy*

² *Department of innovative Technologies, University for Applied Science and Art of Southern Switzerland, Manno, Switzerland*

³ *Neuroscience Department, Neurosurgery Unit, NOCSAE Hospital, Modena, Italy*

⁴ *CAD/CAM Laboratory Equipment, 3D Solution, Modena, Italy*

The treatment of anterior and lateral skull base tumours has always constituted a complex surgical challenge: extensive bony demolitions produce aesthetic deformities that need accurate reconstructions. Indeed, highly destructive procedures increased the need to introduce new reconstructive techniques. Wide defects, *e.g.* those involving more than a single orbital wall, have to be reconstructed with solid tissues such as autologous grafts or alloplastic materials. Surgical visual limits may reduce the possibility to properly repair the three-dimensional bony architecture of the craniofacial skeleton: because of the nonlinear nature of the bone in the craniofacial skeleton, even small degrees of error can lead to poor outcomes.

Objective: Here we investigated the innovative application of custom-made bone grafts in a case of skull base reconstructive surgery, a technique that is not previously reported.

Methods: Innovations applied to this case were multiple: basing on high resolution patient's CT scans, virtual surgery and computer-aided design were used to plan resection; contralateral disease-free skull base was used as a reference and mirroring technique was used to create the ideal grafts, which were then manufactured accordingly using the new composite custom-made bone grafts (SmartBone® on Demand™). SmartBone® is shaping resistant and offers high tenacity to screws and surgical fixation manoeuvres, because it is produced by combining bovine mineral bone structures with biopolymers and cell nutrients (polysaccharides).

The patient underwent resection of a meningioma in the spheno-orbital-temporal region. The neurosurgeon resected the meningeal area, which was then reconstructed with a collagenous membrane. SmartBone® on Demand™ were then very precisely grafted into destination site.

Results: During follow-up, nor cerebrospinal fluid leakage nor intracranial infection were registered. Postoperative CT scans showed excellent stability and integration of all bone grafts; postoperative morphological results are satisfactory.

Conclusions: Outcomes confirm the high reliability and accuracy of virtual surgical planning and grafts design, which, together with SmartBone® high performances, allow producing very precise and stable custom-made grafts and, finally, addressing the previously unmet needs in skull base reconstructive surgery.

**P-994****PRIMARY AND SECONDARY RECONSTRUCTION OF COMPLEX CRANIOFACIAL DEFECTS USING CUSTOM-MADE IMPLANTS**

G. Gerbino, E. Zavattero, F. Bianchi, P. Garzino-Demo, F. Zenga, G. Ramieri

University of Turin, Torino, Italy

Aim: The aim of this study was to evaluate the surgical outcomes using patient-specific prostheses produced by computer-aided design and manufacturing for primary and secondary reconstruction in patients with craniofacial defects.

Methods: The present study included 16 patients who underwent reconstruction for craniofacial defects using patient-specific implants (PSI). Seven patients underwent single-step primary reconstruction using individual custom-made surgical guides and custom-made prostheses during the same surgery; nine patients underwent delayed reconstruction. The material used to manufacture the implants was HTR in 4 cases, PMMA in 1 case, polyethylene in 1 case, and PEEK in 10 cases. All patients underwent aesthetic examination (facial and orbital symmetry and globe projection and position), ophthalmological examination (diplopia with the Hess Lancaster test, visual field, and acuity), and radiological evaluation (computed tomography and magnetic resonance imaging) during the preoperative and follow-up periods. The operation duration and short- and long-term complications were recorded.

Results: The shape and global position of the implants were satisfactory in each case. Maximum spacing between the bone and the implant was 3 mm. Fitting of the implant during surgery required extensive adaptation in 2 cases and minor in 14 cases. Fifteen implants out of 16 adequately restored a morphological complex area with satisfactory cosmetic results. One HTR-PMI implant was removed because of infection. No other complications related to the implants were reported.

Conclusions: Reconstruction for cranio-facial defects using computer-aided designed and manufactured implants is a challenging new technique that decreases the operative time and morbidity

**P-998****INERTIAL NAVIGATION SYSTEM –POSSIBLE NEW TECHNOLOGY FOR SURGERY
NAVIGATION PRESENTATION OF FUTURE STUDY**

Drazen Jokic, Davor Jokic, Predrag Knezevic

University Hospital Dubrava, Zagreb, Croatia

Objectives

The complex three-dimensional anatomy and geometry of the human skull and face, combined with the need for precise symmetry, poses a challenge to reconstruction in that region. Therefore, and because of technical improvements accurate pre-operative 3D-planning of corrective surgical jaw interventions becomes more and more important in modern orthognathic surgery.

Considering importance of 3d planning we will try to design less expensive method which will enable 3d orientation of bone segments, according to treatment plan. Due to previous technical limitations we are currently at the initial stage, but we would like to present our idea which we think could be cheaper alternative.

Methods

Invensense® MPU 6000/6050 and first tests

Invensense® MPU 6050 is a motion tracking device whose small size (4mm x 4mm x 0.9mm) and priced (15\$) meet the requirements in this initial stage. The devices combine a 3-axis gyroscope and a 3-axis accelerometer on the same silicon die together with an onboard Digital Motion Processor™ (DMP™) capable of processing complex 9-axis MotionFusion algorithms. We will use it with Atmel UC03 Xplained board and Embedded MotionApps™ Platform. With that combination we will be able to access data for euler angles, quaternions and rotation matrices. In this stage we will use serial connection for communication. With this sensor we can estimate yaw angle and monitor axial rotation.

Given that so far there are no similar studies we will first develop application to test reliability and accuracy of available sensor during orientation of bone fragments. Using skull model we will try to bring bone segments in positions according to treatment plan for le Fort I osteotomy and genioplasty. With same application we will try to position upper jaw cast in exactly planned 3d position for making surgical splints.

Conclusion

If preliminary tests on the models show expected results, this method could be very useful in orthognathic surgery. It would be cheap but reliable, and as such great help in exact 3d orientation in everyday surgical work. We hope that this poster will encourage others to engage in research of this technology in the surgical field.

**P-1047****RECONSTRUCTION OF COMPLEX MANDIBULAR DEFECTS WITH CUSTOMIZED MANDIBULAR PROSTHESIS: A PILOT STUDY**

A. Bedogni, G. Bettini, A. Fior, M. Rossi, G. Ferronato, A. Sandi, G. Saia

Unit of Oral and Maxillofacial Surgery, Department of Surgery, University of Verona, Verona, Italy

Objective: To present a new method of mandibular reconstruction under complex anatomical conditions using patient-specific mandibular prostheses.

Methods: Patients were eligible for the study if they had: 1) fracture/dislocation of standard reconstruction plates previously implanted 2) extensive bone defects of the mandible that could not be treated with standard reconstruction plates due to poor anatomical conditions 3) specific contraindications to free bone flap surgery. Customized mandibular implants resembling the natural shape of native jaw were virtually created and manufactured by SintacS.r.l Biomedical Engineering, (Trento, Italy), based on a virtual 3-D template using Mimics software (v. 14.12; Materialise, Leuven, Belgium) and digital software (ClayTools System, Wilmington, MA). The plate ends on the proximal and distal stump were designed according to the patient's individual anatomical bone profile/conditions gaining the maximum contact with the bone surfaces. Screws holes for the device fixation and retention titanium structures were manufactured on each plate-end surface to increase the overall stability of the system. Standard bicortical screw fixation was used in all cases (at least 3 cortical screws at each stump). Local ethical committee approved the study.

Results: between March 2012 - December 2013, six consecutive patients (male=4, female=2; mean age 71 years), underwent mandibular reconstruction with customized mandible replicas. Bisphosphonate-associated ONJ was the most common diagnosis (4 cases). Free-flap soft-tissue coverage of the prosthesis was required in two cases. One patient died 4 days postoperatively due to acute respiratory distress. Oral feeding was always resumed after surgery (range 1-10 days). In 5 patients occlusion maintained stable. Skin extrusion of the plate occurred in a radiated patient 6 months after surgery that was fixed with a regional flap. No radiological signs of dislocation/fracture of the prostheses occurred at a mean follow-up of 11 month.

Conclusion: In conclusion, although further research is warranted to assess the long-term suitability of customized mandible prostheses, patient specific prototype is likely to become a reasonable reconstructive option under complex anatomical conditions and poor bone quality.

**P-1075****IMAGE-GUIDED RECONTOURING AND NAVIGATION IN THE MANAGEMENT OF CRANIOFACIAL FIBROUS DYSPLASIA.**

F J Alamillos, A Dean, S Heredero, A Candau, B García-García

Oral and Maxillofacial Surgery Department, University Reina Sofía Hospital, Córdoba, Spain

Introduction:

Fibrous dysplasia is a benign developmental dysplastic disorder of the bone in which abnormal fibroblastic proliferation replaces the normal bone matrix and can cause severe deformity. Precise surgical removal of the fibro-osseous allows to restore normal function and aesthetics. Imaging-guided recontouring and navigation can be use as a useful tool in the surgical management of fibrous dysplasia.

Objective:

To show our experience with the computer-aided recontouring and navigation in the surgical management of craniofacial fibrous dysplasia.

Material and methods:

Two men (16 and 25 years old) with facial asymmetry and deformity caused by craniomaxillofacial fibrous dysplasia were enrolled into this study. With preoperative planning and three-dimensional simulation, normal anatomic contours of the deformed area were recreated by superimposing unaffected to the affected side. Surgical facial recontouring was performed under the guidance of navigation system. By creating a mirror image of the unaffected side on the affected side as a virtual template, we accomplished the recontouring procedures in real time with the aid of the Brainlab® navigation system.

Results:

Facial bone recontouring was performed uneventfully in all cases. The surgical outcome was assessed by superimposing the postoperative computed tomography (CT) images onto the preoperative CT images. Postoperative CT was compared with the preoperative plan, yielding an average discrepancy of <2.0 mm. Both patients' facial symmetry and aesthetics were improved.

Conclusions:

Image-guided recontouring and navigation show benefits in improving accuracy and safety for craniofacial fibrous dysplasia. Navigation-guided facial bone recontouring is a valuable treatment modality in managing craniofacial fibrous dysplasia.

Key words: computer-assisted surgery, navigation, craniofacial fibrous dysplasia.

**P-1200****FEATURES OF 3D PLANNING AND CAD/CAM TECHNOLOGY IN COMPLEX ORTHOGNATHIC SURGERY: THE CASE OF HEMIFACIAL MICROSMIA**

N. Carral-Roura, V. Chávez-Bonilla, M. Pombo-Castro, F. Gálvez-Prieto, I. Vazquez-Mahía, B. Patiño-Seijas, A. Otero-Rico, A. García-Rozado, A. González-Mourelle, J.L. López-Cedrún

Department of Oral and Maxillofacial Surgery, A Coruña University Hospital, A Coruña, Spain

Introduction: Hemifacialmicrosomia is the second most common congenital syndrome of the head and neck region. Its treatment involve multiple surgical interventions, sometimes starting early in the childhood. In severe cases, magnitude of the deformity together with the diminished vascularization in the hypoplastic side may lead to undesirable complications or suboptimal results. For these reasons, severe hemifacialmicrosomia is often considered as a surgical challenge. The objective of this report was to assess the features of CAD technology versus the traditional planning methods.

Material and Methods: A 22 year-old male presenting with a Pruzansky type III hemifacialmicrosomia underwent orthognathic surgery at our department. Ramus reconstruction with a rib graft was performed in the childhood. Orthognathic procedure included bilateral sagittal split osteotomy and le Fort I osteotomy. Surgery was planned both on 2D-dental casts and using a CAD/CAM software for 3D planning.

Results: 3D planning was useful to simulate osteotomy lines and bone reposition. Osteotomy was performed very high in the non-sick ramus due to the presence of a high lingula, and virtual reposition showed an excessive medialization of the occlusal fragment with an unacceptable gap between fragments. Therefore, orthodontic preparation was changed and dental midline was planned to switch between lateral incisor and canine. Besides, osteotomy through the rib graft was able to be planned in an oblique fashion, allowing simple reposition without bone grafts. Overall symmetry was better controlled in the CAD/CAM planification. Dental casts were useful to define occlusion, as we lack of a 3D scan or a cast-CT protocol.

Conclusion: 3D simulation is a valuable tool in the planning of orthognathic surgery applied to severe hemifacialmicrosomia.



P-1287

A DISCUSSION OF THE TECHNICALITIES OF USING A 3-DIMENSIONAL (3D) LASER SCANNER WHEN MEASURING PALATAL CHANGES FOLLOWING VOMER FLAP REPAIR

N. Perinparajah, C. Gravenor, D. Drake, S. Colbert

Oral & Maxillofacial Surgery Department, Morriston Hospital, Swansea, Wales, United Kingdom

Aim: To determine the changes in palatal shelf dimensions & angulations following anterior palate vomer flap using a 3-dimensional (3D) Laser scanner

Objective: To assess the technical difficulties of using the scanner on measuring the effects of vomer flap repair on maxillary arch development and soft plate cleft width

Method: 3D-analysis of plaster models from 25 consecutive UCLP patients, who underwent the Oslo technique involving a rotational-advancement flap of the lip and vomer flap repair of their anterior hard palate with subsequent soft palate closure (undertaken at 3 and 9 months respectively). The study models were assessed by a single investigator, scanned and re-assessed. Palatal shelf length, angulations and palatal cleft width measurements were recorded along with previously validated Seckel et al's landmarks.

Results: The following significant changes were noted- Narrowing of the anterior alveolar cleft width, Reduction in maxillary arch length from pre-maxillary margin of cleft to tuberosity axis, Increase in arch length from lateral segment of cleft margin to tuberosity axis, Narrowing of the anterior and posterior cleft widths, Increased Shelf length bilaterally both along the occlusal plane & along either side.

Analysing and recording measurements from study models involved a steep learning curve. It was possible to record all reference points from the 3D scans as well as on the models. Many problems were successfully overcome whilst using the 3D laser scanner.

Conclusions: Using the 3D Laser scanner proved to be more accurate and reliable in comparison to employing manual methods with callipers. It also enabled taking measurements of palatal shelf angle and length that proved difficult to do manually.

In the future, the need to store vast quantities of study models may be obliterated and replaced with 3D imaging tools that provide remote access, increased validity and reliable results.

Cleft centres generate a large amount of models of babies and this certainly has implications with regards in terms of storage. By storing them digitally, this will free up space for other activities and also will reduce the funding required for model storage freeing funds to be used elsewhere in the cleft care.

**P-1354****FACIAL MOTION CAPTURE : AN INNOVATIVE TECHNIQUE FOR 4-DIMENSIONAL FACIAL DYNAMICS ANALYSIS**

H. Jr. Vercruysse, G. Van Hemelen

Department of Cranio-Maxillofacial Surgery, GH MONICA/ University of Antwerp, Antwerp, Belgium

Objective : As modern concepts of orthognathic surgery are oriented towards a predicted static soft tissue outcome, the impact of adequate soft tissue reconstruction during orthognathic surgery on dynamic soft tissue functionality remains unclear. In case of exclusively mucosal suturing without muscular closure after Le Fort I surgery, the changes in the width of the alar base of the nose in relation to the maxillary movement are well described, as well upper lip flattening and dropping of the corners of the mouth. The expressionless atonic upper lip after Le Fort I surgery is well known to every maxillofacial surgeon but undescribed in literature so far. Recent evolutions in facial motion capture techniques in 3D-gaming industry could be helpful to address the analysis of this entity. Markerless technologies use the features of the face such as nostrils, the corners of the lips and eyes, and wrinkles and then track them.

Purpose : Development and validation in healthy subjects of an innovative facial motion markerless caption technique.

Methods & Conclusion : In contrast to time-consuming and expensive marker based techniques, we present a markerless technique that can be operated with any conventional 2D-camera or webcam. The reliability of the technique is proven on 10 healthy subjects. This markerless facial motion capture technique can therefore be an essential and cheap tool in the analysis of facial dynamics after facial nerve reanimation or orthognathic surgery.



20. Evidence Based Medicine

P-31

ASSOCIATION OF POLYMORPHISMS OF INFLAMMATORY MEDIATORS GENES WITH PYOINFLAMMATORY DISEASES OF MAXILLOFACIAL AREA

Suleymanov A.M.², Minniakhmetov I.R.¹, Gizzatullin I.V.², Shut E.A.², Latypov R.S.¹, Mingazov G.G.², Khusnutdinova E.K.

¹*City Hospital Clinic No. 21, Ufa, Russian Federation*

²*Institute of Biochemistry and Genetics, Ufa, Russian Federation*

Despite advances in the treatment of pyoinflammatory diseases of maxillofacial area, the number of diseases is increasing from year to year. In this connection, the study of the pathogenesis of pyoinflammatory diseases is one of the most pressing issues in maxillofacial surgery. The purpose of this study was to investigate the role of the cytokines genes in the development of odontogenic inflammatory processes.

To estimate the role of polymorphisms of inflammatory mediator genes in genetic predisposition to pyoinflammatory diseases of maxillofacial area, the allele and the genotype frequencies distributions of *IL1β*, *IL1RA*, *TNFA*, *TNFB* and *IL10* genes were investigated.

The studied groups included 189 patients with pyoinflammatory diseases of maxillofacial area divided into two groups: odontogenic infection (141) and osteomyelitis (48) and 105 healthy controls. Genomic DNA was extracted from peripheral blood leukocytes by standard phenol/chloroform method. Genotyping was performed by the PCR-RFLP technique.

Studies have revealed that the C*A* genotype (OR = 1,83; 95% CI 1,08-3,10) of *IL10* polymorphic locus 627C>A is associated with increased risk of odontogenic inflammation, while the G*A* genotype (OR = 0,29; 95% CI 0,08-1,04) of *TNFA* polymorphic locus 308 G>A is associated with lower risk of osteomyelitis of maxillofacial area. It is possible to suggest that genotype C*A* of *IL10* polymorphism (627C>A) and the G*A* genotype of *TNFA* polymorphism (308 G>A) may be genetic predictor of odontogenic inflammatory processes. No significant differences were found between the groups of patients and healthy control concerning the genotype frequencies of the polymorphisms *IL1β* (3953 C>T), *IL1RA* (VNTR) and *TNFB* (1069 C>T).

**P-49****INVESTIGATION OF THE LACTATE CONTENT OF THE ORAL MUCOSA AND TUMOUR TISSUE OF PATIENTS WITH ORAL SQUAMOUS CELL CARCINOMA**

T. Ziebart, A. Pabst, N. Voelxen, S. Walenta, W. Müller-Klieser

Department of Maxillofacial Surgery, Mainz, Germany

Objective: An increased lactate concentration in the tissue of malignant tumours is associated with increased malignancy, metastasis assets and radiation resistance. In the present study, the lactate concentrations of the primary tumour, the macroscopically healthy mucosa of the same patient and the oral mucosa non- tumour-bearing patients are compared. In addition, a correlation between lactate concentration of the tumour and clinical parameters is shown.

Method: By means of bioluminescence were determined in kryo-biopsies of 25 patients with squamous head and neck region. In addition, the same metabolites in a group of 10 non- tumour-bearing patients were determined.

Result: ATP concentrations of the various sample groups were not significantly different from each other. In the macroscopically healthy oral mucosa of cancer patients , the lactate concentration was significantly lower than in the tumour. The lactate concentration of the oral mucosa non- tumour-bearing patients without comorbidities were not significantly different from that of the oral mucosa samples of tumour patients. The lactate concentration of the oral mucosa non- tumour-bearing patients with comorbidities, however, was significantly higher than that of the oral mucosa sample of the tumour patients. Patients with stage T4 had a significantly higher lactate concentration in the tumour tissue than in stage T1/T2 . The lactate concentration in the tumour tissue of patients with stage N1/N2 was significantly higher than that in the stage of N0.

Conclusion: The lactate concentration in squamous cell carcinoma of the head and neck region correlates with the extent of the primary tumour and the nodal status. The presence of co-morbid conditions have an effect on the lactate concentration of the mouth the non- tumour-bearing patients.



P-58

EXPERIMENTAL MODEL OF INFECTION IN SUBMANDIBULAR REGION

I. O. Pohodenko-Chudakova¹, A. A. Kabanova Vitebsk State Medical University², Y. M. Kazakova Belarussian State Medical University¹

¹ Oral Surgery Chair, Belarussian State Medical University, Minsk, Belarus

² Children Stomatology and Craniomaxillofacial Surgery Chair, Vitebsk State Medical University, Vitebsk, Belarus

Aim is creation of experimental model of infection in submandibular region, localization, symptoms, ways of distribution as well as examination and treatment methods which are similar to those in real clinical conditions and enable to get cost-effectively and humanely the diffused purulent-inflammatory process of the head and neck.

Objects and methods. The problem is solved by the fact that the method of creation of experimental model of infection in submandibular region at a rabbit under intravenous anesthesia in aseptic conditions. The operation is performed by intramuscular injection in submaxillary region of mixture of 2 ml of animal blood and 2 ml of purulent exudate obtained at the primary surgical processing of acute purulent periostitis of a human.

Creation of a model of infection in submandibular region as well as complex treatment, including primary surgical processing of suppurative focus, antibacterial, anti-inflammatory and disintoxication therapy, living conditions of animals, removal of them from the experiment and biopsy specimens were held in a special box keeping all rules of aseptics and antiseptics.

Results. On the selected side of submandibular region hair was shaved. Blood sampling of 2 ml was made with a syringe in marginal vein. This blood was mixed in a sterile tube with prepared 2 ml of purulent exudate obtained in the process of primary surgical treatment of acute purulent periostitis of a human. The mixture in the amount of 4 ml was taken in the sterile disposable syringe. We performed an antiseptic treatment of the operative field. The needle was injected into submandibular region and directed upwards and backwards towards the sagittal line of the lower jaws of this animal. When the needle entered 2.5-3 cm, we injected the mixture. Infection was formed during 7 days. The classical signs of inflammation confirmed development of diffuse purulent-inflammatory process: local hyperthermia in the area of pyoinflammatory focus formation, considerable local rise of temperature. In submandibular region was determined diffuse infiltrate with the fluctuations in the centre.

Conclusions. The experimental model of pyoinflammatory process of the soft tissues of the submandibular region fully meets the clinical conditions during development, clinical course and spread of the pathological process of mentioned localization.

**P-59****IMMUNOLOGICAL STATUS OF PATIENTS WITH FURUNCLES AND CARBUNCLES IN MAXILLOFACIAL AREA AND NECK**

I. O. Pohodenko-Chudakova^{1, 2}, M. S. Fleryanovitch¹

¹ Oral Surgery Chair, Belarusian State Medical University, Minsk, Belarus

² Belarusian Collaborating Center of EACMFS, Belarusian Collaborating Center of EACMFS, Minsk, Belarus

Relevance. The last decade, a number of researchers proved the leading role of the deviations of immune system functioning in the emergence and development of furuncles. It is known that the number of relapses of chronic recurrent furunculosis in maxillofacial area is in direct dependence on the state of phagocytes link of the immune system.

The aim isto evaluate the immune status of patients with furuncles and carbuncles in maxillofacial area and neck.

Objects and methods. We made immunological blood examination in 7 patients with furuncles and carbuncles in maxillofacial area, treated in the Vitebsk regional clinical hospital in 2013. We estimated indices of T lymphocytes (E-ROCK), T-active lymphocytes, T-helpers-CD 4, T-cupressors-SD 8, immunoregulatory indices (IRI=TX/TC), B-lymphocytes BOD 22, immunoglobulin-G, A, M, immune complexes, phagocytic indices and phagocytic number.

Results. Examined patients had a decrease of T-lymphocytes (E-ROCK) in blood serum, T-active lymphocytes in 20%, T-helpers-CD 4 in 80% and T-killers-CD 8 in 20%.

Reduced activity of T-helpers together with the low value of immunoregulatory index in 40% of patients can lead to a rapid suppression and abortive flow of immune response and the phenomens of immunological tolerance.

Should indicate that 20% of all patients had a decrease of B-lymphocytes CD 22. Some patients had a IgG growth relative to the standard indices simultaneously with the decrease of lymphocytes. The growth indices of IgA in serum of blood of patients of this category was observed in 20% of immunological researches.

We discovered an increase of the indices of phagocytic number in 80% of cases in patients with furuncles in maxillofacial region comparing with the normal indices.

80% of patients had increased number of circulating immune complexes in the serum of blood which cause damage of tissues and system diseases.

The values of the other indices were within the norm.

Conclusion. Based on the analysis of laboratory researches we should conclude that all patients with a diagnosis of furuncle of the maxillofacial area, there are deviations from the norm indices of immunological researches associated with the disruption of the functioning of its parts.



P-60

NEW EXPERIMENTAL MODEL OF CHRONIC MAXILLARY SINUSITIS

I. O. Pohodenko-Chudakova^{1, 2}, A. V. Surin¹, A. I. Gerasimovich¹

¹ *Oral Surgery Chair, Belarusian State Medical University, Minsk, Belarus*

² *Belarusian Collaborating Center of EACMFS, Belarusian Collaborating Center of EACMFS, Minsk, Belarus*

Relevance. It is known that only 40-60% of patients with maxillary sinusitis recover. It confirms the necessity to develop new methods of diagnostics and treatment of this disease and grounds the expediency of creating a new experimental model of chronic sinusitis of maxillary sinusitis (MS).

Aim is to develop the experimental model of chronic sinusitis MS closest to the clinical situation and the confirmation of its creation on the basis of the principles of evidence-based medicine.

Objects and methods. We proposed the method of experimental model creation by performing rabbit operations under intravenous anaesthesia in aseptic conditions cutting and sliding the tissue in order to provide access to a projection of the upper part of MS. Its front wall was perforated with physiodispenser. The cavity of MS was filled in through the perforation hole with 0.1 g of filling material AH Plus, which was placed on the mucous membrane. Wound was sutured. We preformed haemostasis and antiseptic treatment of seam lines. Sterile dressing with bandage fixation was imposed for 3 days. This method was tested on 10 rabbits Shinshilla.

Results. The proposed method of experimental model creation has advantages: allows to obtain the model of chronic sinusitis MS in 100% of the examined animals; produces the optimum experimental model due to an adequate MS of the rabbit for the material sampling and performing morphological examinations; the model allows to carry out functional and laboratory examinations in dynamics; surgical intervention for its creation is carried out in aseptic conditions that do not allow additional wound infection, not violates the purity of the experiment what corresponds to the rules of work with experimental animals. Conclusions about the development of the animal chronic sinusitis MS were made according to the morphological examinations when it was stated foreign body in tissues with a strong productive reaction by 6 days (macrophages, separate giant multi-core cells and young granulation tissue). These symptoms are typical for the diagnosis of chronic sinusitis MS.

Conclusion. The above proves that the developed method of modelling of chronic sinusitis MS corresponds to real-life clinical conditions, is a humane and economically, socially justified.



P-62

EFFICIENT COMPLEX OF PROPHYLAXIS OF INFLAMMATORY COMPLICATIONS IN ORAL CAVITY SURGERY

I. O. Pohodenko-Chudakova^{1, 2}, A. P. Ignatovich¹

¹ Oral Surgery Chair, Belarusian State Medical University, Minsk, Belarus

² Belarusian Collaborating Center of EACMFS, Belarusian Collaborating Center of EACMFS, Minsk, Belarus

Relevance. Prophylaxis of pyoinflammatory complications is one of main subjects in maxillofacial surgery.

The aim of the work is to compare efficiency of «Septotele D» pills, acupuncture and a complex of both for prophylaxis of inflammatory complications in the operations in the oral cavity on the basis of microcrystallization of the oral fluid.

Objects and methods. We examined 133 patients with common outpatient operations in the oral cavity which were divided into three groups. Group 1 (61 patients) had «Septotele D» pills for prophylaxis. Group 2 (42) had «Septotele D» and acupuncture. Group 3 (30 persons) was treated with acupuncture only.

Acupuncture treatment consisted of dynamic electroneurostimulation in skin projection of acupoints with DiaDENS device. Procedure duration was 30 minutes. Irritation was carried out in the comfort mode with frequency 10-77 Hz. The course included 5 procedures (1 - before operation and 4 - daily after surgery).

The effectiveness was evaluated on basis of microcrystallization indices of the oral fluid checked before surgery, 3 and 7 days after surgery. As a standard we considered the indices of microcrystallization of the whole group of the examined persons before the operation.

Results. Common microcrystallization indices was 1.5 (1.4-1.8) for the whole group. Microcrystallization indices by the 3rd day was 2.3 (2.2-2.5) for the 1st group, 1.9 (1.7-1.9) for the 2nd group, 3 – 2.1 (2.0-2.4) for the 3rd group that was differed from the standard ($p < 0.05$). When comparing the indices of the groups in the specified period, we found differences of groups 2 and 3 indices compared to group 1 ($p = 0$). On the 7th day after operation group 1 had indices equal to 1.7 (1.6- 1.9), group 2 – 1.5 (1.4-1.7), group 3 – 1.8 (1.6-2.0). The indices of groups 1 and 3 saved the difference from the standard ($p < 0.05$). The result of group 2 corresponded to the standard. Comparative evaluation of the results within the period of examination demonstrated the difference of groups 1 and 2 ($p = 0.02$); the indices of group 3 compared to group 2 ($p = 0$).

Conclusion. The given results show the high efficiency of preoperative preparing when applying acupuncture combined with «Septotele D» pills.



P-65

BACTERIAL BIOFILMS IN CHRONIC INFLAMMATORY DISEASES OF THE MAXILLOFACIAL REGION

I. O. Pohodenko-Chudakova^{1, 2}, A. A. Kabanova³, F. V. Plotnikov⁴

¹ Oral Surgery Chair, Belarusian State Medical University, Minsk, Belarus

² Belarusian Collaborating Center for EACMFS, Belarusian Collaborating Center for EACMFS, Minsk, Belarus

³ Children Stomatology and Maxillofacial Chair, Vitebsk State Medical University, Vitebsk, Belarus

⁴ Surgery Chair, Vitebsk State Medical University, Minsk, Belarus

Aim was to study the prevalence of pyoinflammatory diseases in the maxillofacial region depending on the ability of bacteria to form a biofilm.

Materials and methods. The study involved 123 patients with pyoinflammatory processes of the maxillofacial area: group 1 (26 people) – patients with acute periostitis, group 2 (65) – patients with infections of one cellular space, group 3 (23) – patients with infections of two cellular spaces, group 4 (9) – patients with infections of the floor of the mouth. Wound samples with the subsequent identification of the causative agent were conducted during the surgical treatment. We determined the ability of the microorganism to form a biofilm by using our modified method in the 96-alveolar polystyrene plate. 150 mkl of bacterial suspension with a concentration of 1.5×10^8 CFU/ml were added in the wells. The plate was incubated in an incubator at 37°C for 24 hours. Statistical processing of the data was conducted in the program Statistica 6.0.

Results. The ability to form biofilm by the agents of chronic inflammatory diseases of the maxillofacial area was determined. In group 1 the figure was 0.14(0.1;0.18) mAU, in group 2 – 0.14(0.12;0.17) mAU, in group 3 – 0.21(0.17; 0.23) mAU in group 4 – 0.23(0.22; 0.26) mAU. The correlation analysis revealed that $r=0.33$ ($p < 0.05$). The present value of the index of correlation (Spearman test) indicates a statistically significant positive association between the prevalence of medium strength inflammatory processes in the maxillofacial area and the ability of agents to form a biofilm.

Conclusions. Thus, on the basis of the results of the study it can be concluded that the prevalence of inflammatory processes in the maxillofacial region directly depends on the ability of bacteria to form the microbial community. Biofilm can be considered as a factor in resistance of a microorganism. The more pronounced this version of stability, the worse is the macro-patient cope with infectious disease and the more common focus of suppurative inflammation.



P-66

CLINICAL EFFICACY OF TREATMENT OF TOXIC DAMAGE OF THE INFERIOR ALVEOLAR NERVE WITH DIA DENS DEVICE

I. O. Pohodenko-Chudakova^{1, 2}, K. V. Vilkitskaya¹

¹ Oral Surgery Chair, Belarusian State Medical University, Minsk, Belarus

² Belarusian Collaborating Center of EACMFS, Belarusian Collaborating Center of EACMFS, Minsk, Belarus

Relevance. A retrospective analysis of patients concerning temporary or permanent sensorineural violations of inferior alveolar nerve after dental procedures revealed the persistent damage in 19.6% of persons.

The aim was to determine the clinical effectiveness of treatment of toxic damage of inferior alveolar nerve with DiaDENS therapy.

Objects and methods. We observed 15 patients with traumatic toxic damage of inferior alveolar nerve. The proposed by us method of treatment of toxic damage of n. alveolaris inferior with DiaDENS device was applied in complex treatment in 7 patients constituting the group 1. Group 2 consisted of 8 people where we applied the standard treatment.

DiaDENS treatment consisted of 10 daily procedures lasting up to 30 minutes each. Irritation was applied consistently symmetrically on either side. During one procedure we irritated not more than 3 acupuncture points (one of wide spectrum of action and two of local action). When paresthesia is kept partially in labiodental region or pain syndrome in the area of innervation of n. alveolaris inferior after the first course of DiaDENS treatment, we appointed second treatment course in 7-10 days, and the third one through 20-21 days.

Efficiency of application of transcutaneous electric neurostimulation in the complex rehabilitation of patients with toxic damage of n. alveolaris inferior was evaluated on the basis of the degree of reduction in the sensitivity of the skin, lower lip and chin on the side of traumatization and by calculating the index NNT which is the value inverse to the absolute risk reduction or increase in the number of patients who need to be treated in order to get the result compared with the control.

Results. Application of the proposed method of treatment of toxic damage n. alveolaris inferior allowed obtaining of positive results in group 1 in 5. The sensitivity of the skin, lower lip and chin on the side of the damage was not observed in the group 2. All of this determines the clinical effectiveness of the proposed method as a hypothetically high (NNT=1.41).

Conclusion. The obtained results allow to recommend DiaDENS therapy as a method of choice in patients with toxic damage of the inferior alveolar nerve.



P-68

FUTURE DIRECTION IN 3D CEPHALOMETRY DEVELOPMENT BASED ON SYSTEMATIC REVIEW OF THREE-DIMENSIONAL CEPHALOMETRY EXPERIMENTAL STUDIES.

Tomasz Smektała, Marcin Jędrzejewski, Katarzyna Sporniak-Tutak, Raphael Olszewski

Department of Oral Surgery, Pomeranian Medical University, Szczecin, Poland

Objective: to indicate future direction in 3D cephalometry development.

Methods: In order to create guidelines for future direction in 3D cephalometry development a systematic review of literature was executed based on three research questions:

1. What is the accuracy of 3D cephalometric measurements compared to in vitro measurements?
2. What is the intra- and inter-observer reliability in the selection of 3D cephalometric landmarks?
3. What is the reproducibility of the linear and angular measurements in 3D cephalometry?

Results: We found that there was a high level of agreement (<1 mm) between the in vitro measurements and those obtained from 3D cephalometry and that some landmarks provided highly repeatable results. However, the linear (0.04 - 7.49 mm) and angular (0.99 - 9.30 degree) measurements greatly differed. Based on this results and „materials and methods” sections from included studies we have formulated 10 steps from data acquisition to cephalometric analysis creation for future development.

Conclusions: This study summarizes current 3D cephalometry accuracy and propose 10 steps for further development to improve this technique.



P-87

FAMILIAL CHERUBISM: REPORT OF A CASE

D. Popovich Monevska, S. Naumovski, A. Benedetti, S. Bozovich, S. Pepich

University clinic for maxillofacial surgery, Skopje, Macedonia

Cherubism is rare genetic disease of dominant autosomal inheritance with variable clinical expressivity. The hereditary occurrence is probably caused by a mutation in the gene SH3BP2 which is located at chromosome 4p16.3. The diagnosis of cherubism is based on clinical radiographic and histological findings.

We present a case of familial cherubism affecting two children in the family brother and sister with variable clinical involvement. Girl was presented at 10 years of age with facial asymmetry swelling and deformation of the right angular region of mandible. CT scan revealed expansive multiple osteolytic areas in the right side of the mandibular angle, unerupted and displaced teeth and very discrete osteolytic lesions on left angular side of the mandible. Laboratory tests, which included serum calcium, phosphorous, alkaline phosphatase and parathyroid hormone, were normal.

Histopathological examination showed fibrovascular collagenous connective tissue with dispersed giant cells. After one year parents brought the son, 9 years old with bilateral swelling of the mandibula and swelling and deformation of the maxilla more evident on the right side. KT showed osteolytic areas on both sides of the mandible and maxilla. Genetic examination was made on both children and parents.

We believe that is important to inform and educate patients and carriers about hereditary occurrence of the cherubism also about the variable clinical manifestations of the disease and therapeutic modalities.



P-93

POOLING OF SALIVA: AN ASSOCIATION WITH REGION SPECIFICITY OF ORAL SUBMUCOUS FIBROSIS

Serryth D Colbert, Gururaj Arakeri, Peter A Brennan

South Wales and South West Cleft Units, SA6 6NL, United Kingdom

Introduction/Aims – Oral submucous fibrosis (OSMF) is a premalignant condition affecting primarily oral mucosa. While a clear association exists between areca nut and OSMF, very little has been published on the sporadic nature of its intra oral distribution. We aimed to demonstrate whether a link exists between saliva pooling patterns and the distribution of OSMF by transporting the chemicals responsible for mucosal damage.

Materials/Methods – We randomly recruited 174 gutkha / areca chewers with confirmed OSMF to this study. We evaluated the sites of habitual quid placement and areas of saliva pooling. We recorded the sites of intra oral OSMF in these patients.

Results/Statistics – the results were analysed using a Yates continuity correction and a chi-squared test. The standardised residuals suggest statistically significant associations between salivary pooling and OSMF

Conclusions/Clinical Relevance – Our study demonstrates an association between saliva pool surfaces and OSMF surfaces to support our hypotheses. These findings help explain the sporadic distribution of OSMF in oral mucosal surfaces.



P-111

RESULTS OF CHRONIC TOXICITY STUDY AFTER REPEATED LIDOCAIN INJECTION IN THE REGION OF HEAD AND NECK. EXPERIMENTAL CASE

I. Pohodenko-Chudakova^{1, 2}, E. Maksimovitch¹, S. Kuralenya³

¹ Oral Surgery Chair, Belarusian State Medical University, Minsk, Belarus

² Belarusian Collaborating Center for EACMFS, Belarusian Collaborating Center for EACMFS, Minsk, Belarus

³ Pathological Anatomy Chair, Belarusian State Medical University, Minsk, Belarus

Aim was study possible pathological changes of the macroorganism during the repeated injection of lidocaine when local anaesthesia was applied in therapy dose.

Methods and material. The experiment was carried on the adult males of white mice weighing 22-25 gr. Therapeutical doses of the local anaesthetics were numbered off the unit of the weight according to the clinical pharmacology prescriptions. Anaesthetic injection was made into the submandibular region. The first series contained 16 animals treated with 2% Lidocaine hydrochloride. The second series – group of control – contained 4 healthy sexually matured males. They were not tested. We performed 5 injections every 3-4 days than animals were removed from the experiment. Parenchymatous organs sampling of deceased animals were removed for postmortem examination during all stages of the examination.

Results. According to the results of the morphological examination after five injections animals of the first series had ill-defined iatrogenic polymorphism in some specimens of the liver and small centres of hepatocyte necrosis with perifocal inflammatory reaction, poor inflammatory infiltration in some portal tracts, low-grade intrastreaming cholestasis. The inflammatory reaction was more expressed in other preparations of the liver and it was possible to find it out in all portal tracts. The inflammatory infiltration was fixed around the central veins. The inflammatory infiltration was presented predominantly by lymphocytes with a touch of a few number of eosinophils and single neutrophils. There was more of the focuses of the hepatocyte necrosis. Eosinophilic intranuclear substances were found in some nucleus.

After five introductions, fuzzy expressed plethora with single diapedetic extravasations and irregular plethora of the glomerules were determined. Irregular plethora of the glomerules, dystrophic changes of the canaliculus epithelium and small globocellular infiltrations in the interstitial tissue were fixed in other preparations. In third part of infiltrations the number of infiltrations and the dimensions were bigger; glomerule vessels changes were fixed.

Conclusion. Repeated injection of lidocaine of local anaesthesia can lead to the chronic toxicity development what directs to the necessity of further examinations for development of the methods for prophylaxis of the side toxic effects development.



P-150

META-ANALYSIS OF SURGICAL OUTCOMES FOLLOWING HILOTHERAPY VERSES CONVENTIONAL FACIAL COOLING OF THE MAXILLOFACIAL REGION

A. Bates, GJ. Knevil

Faculty of Medicine and Dentistry, University of Bristol, Bristol, United Kingdom

Objective: Craniofacial surgery causes post-operative swelling and functional limitations. Hilotherapy delivers cooled water through an anatomically designed face mask at 15°C. This is the first meta-analysis of post-operative facial wound recovery following hilotherapy.

Methods: A systematic database search was conducted using keywords. Trials of patients undergoing surgical intervention of the maxillofacial region and treated with hilotherapy vs standard facial cooling therapy were included for meta-analysis. Patient demographics and surgical results were extracted against strict criteria. Data were analysed using MedCalc Statistical Software. Mean patient characteristics, Standardised Mean Difference (SMD) $\pm$ Standard Error and the 95% CI were calculated for post-operative outcomes.

Results: Eight trials were extracted providing 305 patients for analysis. Mean age was 29.4 ± 9.4 years. Post-operative swelling was reduced by hilotherapy on day 2 and 3; SMD -1.49 ± 0.19 (95% CI -1.86 to -1.11) and -1.79 ± 0.15 (95% CI -2.10 to -1.48). Trismus was reduced by 1.79 ± 0.31 (95% CI 1.17 to 2.41). Analyses of patient satisfaction provided an SMD in favour of hilotherapy of -2.72 ± 0.25 (95% CI -3.21 to -2.24).

Conclusions: Hilotherapy appears to be effective in reducing post-operative facial swelling, trismus and patient reported outcomes. Further well designed randomised controlled trials are required to optimise post-operative hilotherapy.



P-156

SIGNIFICANCE OF OSTEOPOROSIS IN FACIAL BONE DENSITY USING COMPUTED TOMOGRAPHY

Y.H. Joh, M.C. Park, S.Y. Lim, S.J. Seo, I.J. Lee

Department of Plastic and Reconstructive Surgery, Ajou University Hospital, Suwon, South Korea

Objectives: The objectives of this study were to compare the variations of bone density in the midfacial bones as measured by computed tomography (CT) scans between the osteoporosis and control groups and to evaluate the regions that facial trauma and iatrogenic problem often occur in the midface.

Methods: The 96 patients who underwent both osteomeatal unit CT scans and dual-energy x-ray absorptiometry at our hospital were included in this study retrospectively. Seven skeletal regions were chosen for evaluation: group A (orbital floor, nasal bone), group B (zygomaticomaxillary suture, zygomatic arch, zygomaticofrontal suture), and group C (anterior wall of the maxillary sinus, maxillary process). Forty-seven patients were in the osteoporosis group, and 49 patients were in the control group. On a PACS (picture archiving communication system), the region of interest was analysed, and the Hounsfield units were measured.

Results: There was a significant difference in the mean bone density of the midfacial bones between the osteoporosis group and the control group ($P < 0.01$). For both groups, each of comparison of the 7 skeletal regions was greater as group A > group B > group C in this order ($P < 0.01$).

Conclusions: We can see the independent effects of osteoporosis on the midfacial bones using CT scans. Estimated Hounsfield unit through CT scan is able to explain osteoporosis, which may be useful in the clinical fields in the future.



P-203

SURGICAL VERSUS CONSERVATIVE TREATMENT IN MANDIBULAR CONDYLAR FRACTURES: METHODOLOGICAL PROTOCOL FOR STUDIES SELECTION TO BE INCLUDE IN A SYSTEMATIC REVIEW

V. Duarte^{1, 2, 3}, C. Vidal¹, O. Badillo¹, R. Osben¹, F. Werlinger²

¹ *Department of Maxillofacial Surgery, Hospital Carlos Van Buren, Valparaíso, Chile*

² *Area Salud Pública, Facultad de Odontología, Universidad de Chile, Santiago, Chile*

³ *Facultad de Ciencias, Pontificia Universidad Católica de Valparaíso, Valparaíso, Chile*

Objective

Development of the methodological protocol for studies selection to be included in a systematic review of Surgical versus conservative treatment in mandibular condylar fractures.

Methods

Clinical trials comparing surgical and conservative treatments for mandibular condylar fractures in adults were included.

The search was conducted on the following electronic databases: Cochrane Oral Health Group's Trials Register, the Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE and EMBASE. We also searched the WHO International Clinical Trials Registry Platform and ClinicalTrials.gov for ongoing or recently completed trials.

The MEDLINE strategy was developed in accordance with the guidelines outlined in the Cochrane Handbook for Systematic Reviews of Interventions. The subject-specific search was combined with the Cochrane Highly Sensitive Search Strategy for identifying randomized trials in MEDLINE; this strategy was adapted to the syntax and capacities of the other databases. There were no restrictions regarding language or date of publication.

A maxillofacial surgeon (MPH) examined the titles and abstracts, identified in the search, as potentially relevant trials. Subsequently, two maxillofacial surgeons independently selected potentially eligible studies for review using the inclusion criteria and clinical experience. Any disagreements were resolved by discussion.

The qualitative analysis of selected trials included the assessment of risk of bias using The Cochrane Collaboration's 'Risk of bias' tool, Jadad Score and CONSORT - 2010 check list (Consolidated Standards of Reporting Trials).

Results

The search strategy completed December 2013 identified a total of 829 records from the following databases: Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE and EMBASE. Seventy were clinical trials and twenty were eliminated because of duplicate reports.

One maxillofacial surgeon examined the titles and abstracts of fifty articles identified in the search as potentially relevant trials. From this initial assessment, we obtained full versions of all potentially relevant articles. Fifteen randomised and quasi-randomised controlled clinical studies comparing surgical and conservative treatments in adults mandibular condylar fractures.

Conclusions

The clinical trials protocol and information reported is essential to judge the reliability or relevance of the findings. Reports must be assessed from the point of view of clinical and methodological protocol to retrieve the best available evidence.



P-211

CLINICAL AND RADIOLOGICAL APPLICATIONS OF THE SECOND MAPZ® SYSTEM: A PROOF OF CONCEPT

L. Wong¹, S. Richardson¹, J. Richardson², M. Abu-Serriah¹

¹ *Oral and Maxillofacial Surgery Department, John Radcliffe Hospital, Oxford, United Kingdom*

² *Department of Plastic and Reconstructive Surgery, John Radcliffe Hospital, Oxford, United Kingdom*

Introduction

The SECOND MAPZ® system is a novel approach to classifying midfacial defects. It integrates the concepts of regional anatomy, three-dimensional mapping, and hierarchy of functional priority during assessment and management of mid facial oncology.

Objective

The aim of this study is to demonstrate the flexibility and the ability of this system to report midfacial defects of varying complexity in a logical and reproducible manner.

Methods

A random selection of clinical and radiological examples of midfacial defects of varying complexities were assessed by an expert panel in using the SECOND MAPZ® system.

Results

This classification is logical, informative and more reproducible than existing classifications. High detail of mid facial defects can easily be described by the multidisciplinary team. This is likely to result in effective communication and encouraging standardised outcome reporting .

Conclusions

Universal use of SECOND MAPZ® system may facilitate evidence-based practice in head and neck oncology, hence enhancing patient care.



P-212

THE POWER OF LANGUAGE

F.Hernández Altemir, S.Hernández Montero, S. Hernández Montero, E. Hernández Montero, M. Moros

Hernández Altemir-Hernández Montero Clinic, Zaragoza, Spain

Key words: Power, language, interests, science, medicine, Oral, Surgery, Maxillofacial, Cranio-Maxillofacial

Introduction

Clearly, there are languages that prevail in many aspects over others, even though they are surrounded by centuries of history and traditions and have served for the development of the first ones.

This indisputable fact, must keep us vigilant to avoid an atmosphere of inferiority and submission. Moreover, this applies to professionals that have been worldwide recognised by their contributions and that currently face communication (language wise) constraints.

This is also applicable to the fields of Medicine and Surgery, more specifically to the Maxillo Facial Surgery.

Material and Method

Primarily bibliographic, without forgetting the powerful marketing editorialist, where captured without doubts, the global influence of some languages over others. That might directly create that the most purist authors and reviewers, stay tuned to when someone passes, due to interests or even established routines, aspects of authorship in time and form.

The global market might mean that pointed interests are even more obvious. It is there where our focus must be not to lose our dignity and scientific personality. The freedom of the communication means is already a fact. That may create that what has been always considered unquestionable, is more subject to revisions. Those must be used to regenerate the sources of the science and communication and to keep or recover all credibility.

A common example might help to understand our thesis: the evolution of Transfacial Access to retro maxillary area since it was made available in 1982 (Bib. 1, 2, 3, 4, 5, 6).

More recent examples are listed in Bib. numbers 7 and 8.

We are witness in everyday life, of Prime ministers with demonstrated linguistic capabilities that turn to their interpreters (even with being familiar with the language of its interlocutor) to be backed by the prevailing language.

Conclusions

Language must be a mean of communication, understanding and development. In any way, an uncontrolled mean of interests, softly said.

Whenever previous publications have been made available and even if they are in other languages, they should be provided with their correspondent space.

**P-233****DILATATIONAL STRATEGIES TO HELP NEGOTIATE DIFFICULT TRACHEOSTOMIES.**

L.Cheng, E. Ali, A. Ezsias, D. Jacobs, L. Davis, R. Qureshi, S. Girgis, T. Schembri, N. Rahman

Oral & Maxillofacial Head & Neck Surgical Department, Homerton University NHS Trust Hospital, London, United Kingdom

Introduction

To be competent with surgical tracheostomies is a pre requisite for any Oral, Maxillofacial, Head & Neck surgical training. As part of the multidisciplinary airway team, our department, at Homerton University Hospital, provides an essential surgical service. Tracheostomies on virgin necks without any anatomical distortions are generally straightforward to manage. For the more complex cases it is vital to discuss the potential complications pre operatively to ensure good surgical support and experienced anaesthetists who are experienced percutaneous tracheostomy techniques.

Aim

We present 2 cases where dilatational techniques were instrumental for successful tracheostomy tube placement.

Case 1

80 yr old male required surgical tracheostomy, as it was envisaged he would need long term ventilator support in ITU. The gentleman had a marked cervical kyphosis allowing for minimal neck extension. Open surgical dissection managed to clear a path to a vertically positioned trachea despite cricoid elevation. Surgical incision to create a tracheal window was impossible without potential loss of an already difficult airway. However, we now had decent access to percutaneously dilate under direct vision the 2nd and 3rd tracheal rings and insert an adjustable flange tracheostomy tube of appropriate size.

Case 2

79 yr old female with severe neurological insult from intra- cranial bleed was having her tracheostomy tubes downsized to a mini-tracheostomy tube at appropriate intervals. She unfortunately developed a chest infection following which decision was taken to change back to a larger tube under sedation in theatre. During placement of the new tube the stoma was found to have quite significantly narrowed. In order to dilate the soft tissue tract, the dilator from the cricothyroidotomy kit was used to enlarge the soft tissues and the tracheal window. A size 5 tracheostomy tube was inserted without a formal tracheostomy.

Conclusion

The above examples highlight the need of dilatational techniques in managing complex open tracheostomies. Percutaneous tracheostomy technique should therefore be part of training for Oral, Maxillofacial, Head& Neck surgeons.

**P-260****BIBLIOGRAPHIC DATABASES AND SOCIAL NETWORK FOR RESEARCH AND REVALIDATION IN MAXILLOFACIAL SURGERY**

G. A. Ghaly¹, A. Espeso², P. J. Ameerally³

¹ *Oral and Maxillofacial Surgery, Oxford Deanery, Oxford, United Kingdom*

² *Otorhinolaryngology, Severn Deanery, Bristol, United Kingdom*

³ *Oral and Maxillofacial Surgery, Northampton General Hospital, Northampton, United Kingdom*

Objectives

Digital databases are some of the most used resources in researching surgical topics. Traditionally there have been some reliable Bibliographic databases like Ovid-Medline. Recently other databases like Google Scholar started to gain more popularity between researchers. Some websites can help in providing evidence of publication and their impact factor. We aim to assess the availability of web based search engines for efficacy and ease of use when searching for current and historic evidence related to Oral and Maxillofacial Surgery topics.

Methods

Researching two OMFS subjects 'orbital floor fracture' and 'Radial forearm free flap' on different bibliographic databases comparing results for ease of search, availability of publications, cost and accessibility. Assessment of websites that can be used in creating a publications profiles and if they can be used as evidence in appraisal and revalidation.

Results:

Results from PubMed and Ovid- Medline and Google Scholar were relatively similar with multiple options for making search items more specific. Results from ScienceDirect seem to be less in number but provide relevant recent articles. Google Scholar and ResearchGate provide options for research profile of each author with number of citations and impact factor. Google Scholar is free to access and is reasonably user friendly. Social networks like Researchgate help establishing collaboration between researchers in their subjects of interest

Conclusions:

Google Scholar represents a strong competitor for being the leader of Bibliographic databases. Ovid-Medline and ScienceDirect remain reliable options for research but with limited usage in providing evidence of citations and impact factor for authors individually. The major appeal for researchers to use Google Scholar is its simplicity and the Google brand name. ResearchGate and Google Scholar can be used in appraisal of researchers and their revalidation by providing information on author's publication and impact factor. They can be valuable tools in assessment of competency progression. ResearchGate gives users opportunity to ask questions of other researchers, to follow other researchers and to collaborate regarding research projects.

**P-279****IN VITRO AND IN VIVO ANALYSIS OF A NOVEL BONE ADHESIVE FOR FACIAL FRACTURE OSTEOSYNTHESIS**

H. Hanken¹, K. Endres², G. Stockbrink², B. Hermanns-Sachweh³, R. Marx⁴, M. Heiland¹, A. Gröbe¹, W. Eichhorn¹, A. Kolk⁵, R. Smeets¹

¹ *Department of Oral- and Maxillofacial Surgery, University Medical Center Hamburg-Eppendorf, Hamburg, Germany*

² *Department of Oral-, Maxillofacial- and Plastic Facial Surgery, University Hospital of Aachen University, Aachen, Germany*

³ *Institute of Pathology, University Hospital, RWTH Aachen, Aachen, Germany*

⁴ *MTZ Aachen, CC&A Ltd., Aachen, Germany*

⁵ *Department of Oral and Maxillofacial Surgery, Klinikum rechts der Isar, Technische Universität München, Munich, Germany*

Objective: This study evaluates a novel adhesive fixation technique to affix cortical bone fragments to osteosynthesis plates using common PMMA cement. This technique utilizes a new amphiphilic bone bonding agent adhering with both, hydrophilic bone and hydrophobic PMMA cement.

Methods: After in vitro biomechanical testing of the bonding strength with explanted bovine and rabbits calvarian bone samples osteosynthesis plates with screw holes of 1.3 mm and 1.5 mm were placed on the cranial bone of New Zealand white rabbits and the bond strength of these plates was determined through tension tests.

Results: In vitro bond strengths of 19.8 to 26.5 MPa were obtained. Control samples, prepared without a bone bonding agent, exhibited bone bonding strengths less than 0.2 MPa. In vivo respective bond strengths at the cranium of the white rabbits were 2.5 to 4.1 MPa two weeks post surgery and 1.9 to 2.5 MPa 12 weeks after implantation.

Conclusions: This new innovative fixation method can be envisioned for cases in which conventional fixation techniques of screws and plates are insufficient or not possible due to the bone or trauma conditions. The observed bonding strengths support implementing this technique in non-load bearing regions, such as the central midface or frontal sinus, facilitating immobilization until bone reunion is complete.



P-292

REACTIVE OXYGEN SPECIES PROMOTES CELLULAR SENESCENCE IN NORMAL HUMAN EPIDERMAL KERATINOCYTES THROUGH SUPPRESSION OF METHYLATION ON P16INK4A PROMOTER

Mina Sasaki, Hiroshi Kajiya, Katsunori Nagashima, Fumie Tanaka, Yoshihiro Nagaoka, Yuri Katsumata, Teruhisa Fukawa, Koji Okabe, Tetsuro Ikebe, Satoru Ozeki

Department of Oral and Maxillofacial Surgery, Fukuoka Dental College, Fukuoka, Japan

Increased levels of reactive oxygen species (ROS), such as hydrogen peroxide (H_2O_2) can cause severe damage to DNA, proteins, and lipids in normal cells, contributing to carcinogenesis and metastasis. Cellular senescence has been termed premature in absence of any detectable telomere loss or dysfunction, and arrest an early step in cell-cycle process in a variety of conditions. Although cellular senescence are known to be implicated in protection of tumour progression, it is remains unknown about the exact role of cellular senescence induced by ROS in normal cells, especially human epidermal keratinocytes (NHEK). To clarify whether ROS induce cellular senescence in NHEK, and to establish how protection in response to ROS regulate cellular senescence, we investigated the effect of H_2O_2 on the expression of tumour suppressor molecules involved in cyclin-dependent kinase (CDK) inhibitors in NHEK. NHEK derived from human skin were cultured in KGM-Gold culture medium and incubated in a humidified incubator containing CO_2 at 37 °C. When H_2O_2 treated with or without 5-AzaC or menadion in NHEK, we examined them with the senescence associated(SA)- β -galactosidase, DNA microarray, RT- and real time-PCR, western blot, methylation-specific PCR and FACS assay. H_2O_2 increased the number of positive cells in the SA- β -galactosidase activity in NHEK in time-dependent manner, but not squamous carcinoma cells (SCCs). H_2O_2 was upregulated the expression of CDK inhibitors, especially p21^{cip1} and p16^{INK4a}. Interestingly, H_2O_2 suppressed the methylation of p16 promoter lesion in NHEK, but not in SCCs. H_2O_2 induced the suppression of phosphorylation of Rb proteins, resulting in arrest in G1 phase in NHEK. Our results suggest that the protection in the ROS-induced carcinogenesis in NHEK was caused by the expression of CDK inhibitors, especially p16^{INK4a} through suppression of methylation in its promoter, leading to cellular senescence.

**P-407****ANGIOGENIN IS A MOLECULAR TARGET FOR ORAL CANCER DRUG DEVELOPMENT**

K. Kishimoto, S. Yoshida, S. Ibaragi, N. Yoshioka, A. Shibata, A. Sasaki

Department of Oral and Maxillofacial Surgery, Okayama University Graduate School of Medicine, Dentistry and Pharmaceutical Sciences, Okayama, Japan

Objective: Angiogenin (ANG), originally identified and characterized as an angiogenic ribonuclease, has a dual effect of inducing angiogenesis and cancer cell proliferation by undergoing nuclear translocation and stimulating ribosomal RNA transcription in both endothelial and cancer cells. We have previously shown that ANG is up-regulated in oral cancer, at least partially through the hypoxia-mediated increase of HIF-1 α expression. The aim of this study is to determine whether ANG is a molecular target for oral cancer drug development.

Methods: We used ANG antagonists including neamine, a nontoxic degradation product of neomycin that blocks nuclear translocation of ANG, and terrein, a bioactive fungal metabolite that inhibits secretion of ANG. The antitumour activity of both antagonists against HSC-2 or SAS oral cancer cells was evaluated *in vitro* and *in vivo*. Each mouse was inoculated with 5×10^5 HSC-2 or SAS cells and treated subcutaneously with PBS, neamine (30 mg/kg), or terrein (14 mg/kg) 3 times weekly. Mice were sacrificed and immunohistochemical examinations were performed.

Results: Neamine perfectly inhibited the proliferation of HSC-2, but not that of SAS oral cancer cells *in vitro*. Treatment with neamine effectively inhibited xenograft growth of HSC-2 and SAS cells in athymic mice. Neamine treatment resulted in a significant decrease in tumour angiogenesis, accompanied by a decrease in ANG- and PCNA-positive cancer cells, especially in HSC-2 tumours. Treatment with terrein also effectively inhibited xenograft growth of HSC-2 cells in athymic mice and decreased tumour angiogenesis and PCNA-positive cancer cells. These results suggest that neamine and terrein effectively inhibit oral cancer progression through the inhibition of tumour angiogenesis. Both ANG antagonists also may directly inhibit proliferation of some types of oral cancer cells.

Conclusions: We confirmed that ANG is a molecular target for oral cancer drug development. Our results also suggested that both ANG antagonists are a lead compound for oral cancer therapy.

**P-430****AUDIT OF SUPERFICIAL TEMPORAL ARTERY BIOPSIES (TAB) FOR SUSPECTED GIANT CELL ARTERITIS (GCA)**

V Bhatt, C Lawson

Oral and Maxillofacial Surgery, Southend University Hospital, Westcliff-On-Sea, United Kingdom

Background: Giant Cell Arteritis (GCA) is the most common vasculitis of adults in the western world, affecting between 7 and 29/100,000 in population aged over 50 in Europe. It's a systemic inflammatory vasculitis that affects that affects medium to large sized arteries, with the most susceptible sites being the extra-cranial branches of the carotid arteries.

Objectives: The aim of this audit was to identify the: number of temporal artery biopsies (TAB) performed and by whom, the time taken between presentation and biopsy, quality of biopsy sample, usefulness of Duplex Ultrasonography, and the quality of patient information provided. These criteria were measured against BSR and BHPR Guidelines for the management of giant cell arteritis.

Materials and Methods: Data was collected for all TAB performed in SouthendHospital across all departments between Feb 2012- Feb 2013. 42 patients were identified, and information was collected from hospital notes. A patient telephone questionnaire was also carried out for 35/42 patients regarding post-op experience.

Results: TAB were performed by; Ophthalmology: 31%, OMFS: 57%, General and vascular surgeons: 12%. As a whole biopsy specimens were too short (6.78mm) compared to the recommended guidelines of between <1-2 cm, and in 12% of cases an artery was not even biopsied. Duplex ultrasonography did not influence the selection of the biopsy site. The telephone questionnaire revealed that the OMFS had the highest satisfaction rate (96%) with the information they received about TAB, however feedback suggested patients were not well informed about their follow-up.

Conclusions: OMFS performed 57% of all TAB (1 year) in the recommended time period. Improvements are required in the quality of TAB specimen, and in patient information – a leaflet is to be provided to all TAB patients. This audit is part of a larger on-going study into the treatment for GCA and review of the guidelines.



P-466

ORAL MANIFESTATION OF WEGENER'S GRANULOMATOSIS. CASE REPORT

ML Maniegas Lozano¹, S Roson Gomez¹, S Crespo¹, J Rey¹, D Martinez-Perez¹, T Iscar Galan²

¹ *Oral and Maxillofacial Surgery, Fundacion Jimenez Diaz, Madrid, Spain*

² *Pathology, fundación Jiménez Díaz, Madrid, Spain*

Background: Wegener's granulomatosis (WG) is a complex disease characterized by a necrotizing vasculitis that usually involves the upper airway, lungs and kidneys; occasionally other organs may also be affected. Oral mucosal lesions are only found in 2% of cases. Due to the severity and rapid progression of the disease, early diagnosis and treatment are mandatory.

Aim: To show a rare case of oral WG onset and to make a review of literature regarding to current status of WG as to diagnosis, laboratory features and treatment.

Methods: A 68 year old man presented with a main complaint of pain in the malar region on the right side and a gingival mass that appeared 3 months before, with rapid growth and with progressive fourth cranial nerve paresis. No other symptoms were referred.

Results: The lesion was biopsied and the diagnosis was suggestive of WG vs. IgG4 disease. The patient was referred to the Department of Rheumatology and the diagnosis was confirmed and medically treated. The oral lesion disappeared completely.

Conclusion: This case emphasizes the importance of early recognition of the oral manifestations of the disease in order to make a correct diagnosis and to be able to start medication as soon as possible to avoid serious systemic tissue damage.



P-475

INVESTIGATION OF RISK ACCEPTANCE AND EXPECTATIONS? IN FACIAL ALLOTRANSPLANTATION

S.Y. Lee, K. S. Kim, J. H. Hwang

Department of Plastic & Reconstructive Surgery, Chonnam National University Medical School, Gwangju City, South Korea

Objectives : The purpose of this study is to investigate risk acceptance and expectations in Facial allotransplantation.

Methods : In a quantitative assessment of risk versus benefit with respect to FA, from 2004 to 2008, Barker et al. developed and published a questionnaire-based instrument (Louisville Instrument for Transplantation [LIFT]), which contained 237 standardized questions. In the current study, the authors assessed risk versus benefits and expectations of FA using a Korean version of the LIFT. Respondents in three study groups (lay public, n=140; medical students, n=120; doctors, n=34) were questioned about risk acceptance as related to immunosuppression and tissue rejection, and expectations as related to quality of life improvement, and functional and aesthetic outcomes. A summary of the data has been provided and statistical analyses were performed.

Results : Among the three study groups, results indicated that doctors accept the least amount of risk for a facial allotransplant, followed by medical students, and finally lay public. There was a significant statistical difference in three of the four questions regarding risk acceptance between the groups ($p < 0.05$). In general, lay public exhibited higher expectations for facial allotransplantation than the other groups. Additionally, there was a significant statistical difference in the importance of aesthetic outcome between the groups ($p < 0.05$).

Conclusions : The authors' data indicate the three populations have vastly different levels of risk acceptance and expectations with regard to FA. Therefore, it is very important that surgeons establish clear, open, and thorough communication with patients in their consultations regarding FA. This is particularly important with respect to whether or not a patient's level of risk acceptance and expectations are problematic

**P-494****EVIDENCE BASED CONSENT FOR THIRD MOLAR REMOVAL - ARE WE IMPROVING?**

S Kirby, F Dewi, C V Thomas

Department of Oral & Maxillofacial Surgery, University Hospital of Wales, Cardiff, United Kingdom

Aims & Objectives: The extraction of mandibular third molars is one of the commonest maxillofacial procedures and is frequently performed by different grades of operators with greatly varying experience. Although no relevant guidelines currently exist, there are a number of associated risks described in the literature therefore a comprehensive and well documented consent procedure is essential. Risks and incidence figures quoted in the consent process should be evidence-based rather than anecdotal. This audit aimed to compare the quality of the consent process for third molar removal within our department with a predefined standard and to see whether this improved following intervention.

Materials & Methods: Evidence based standards were drawn up locally following a review of the relevant literature. Data were collected prospectively for patients undergoing third molar removal under general anaesthetic at the University Hospital of Wales. An observer listened in on the verbal consent process and assessed the written documentation. 100% compliance was set as the desired standard. Following the first cycle of the audit an *aide-memoire* was posted on the clinic walls and a second cycle performed to close the audit loop.

Results: 47 cases were included in the first cycle and 44 in the second cycle. Compliance varied according to specific warnings and grades of operator, however this improved overall by the second cycle. There was 100% compliance in both cycles for the most significant complication - inferior alveolar nerve numbness. The quoting of incidence figures for this complication from the evidence base improved by the second cycle. Compliance was poorest for warning about damage to other teeth, however this improved by the second cycle. SAS grade surgeons consented for a wider range of complications than consultants and SHOs.

Discussion / conclusion: Although compliance with the desired standard improved by the second cycle, there are areas which still require improvement. The extraction of third molars is a common procedure and audit is an important tool in ensuring a consistently high standard of evidence – based consent.

**P-495****SUBCUTANEOUS EXTENSIVE EMPHYSEMA AND PNEUMOMEDIASTINUM AFTER DENTAL OR MAXILLO FACIAL SURGERY. WHAT ARE THE AETIOLOGY AND MANAGEMENT?**

M. Picard, N. Pham Dang, C. Delbet, JMM. Mondie, I. Barthelemy

Maxillo Facial surgery, CHU Estaing, Clermont-Ferrand, France

Most of the complications after dental extractions or oral surgery are well known and documented. Subcutaneous extensive emphysema and pneumomediastinum is among the rare and serious complications.

Objective

We try to have a better understanding of the emphysema's aetiology to prevent it and improve its management. Our presentation is illustrated by a case report.

Methods

We present a 27 years old with extensive subcutaneous emphysema and massive pneumomediastinum 4 days after a third molar extraction. Symptoms appeared after a mouthwash. The stitches were broken open in his mouth. CT scan showed air in multiples neck and thoracic compartments and under skin up to the hips.

One hundred and thirty two cases are presented in the literature and are reviewed in 2 articles. Several mechanisms of apparition and evolution of the emphysema are described with their management.

Results

In our case the aetiology is clearly a rise of the mouth air pressure during mouthwash. The management consisted of a medical supervision in our maxillo facial department under antibiotics. The open wound was closed and mouthwashes stopped. A control CT scan showed spontaneous absorption of the emphysema.

Most of the cases in the literature occurred during surgery with high speed air/water-cooled hand pieces. There are also cases of emphysema as a result of the patients' actions. Management mainly consists of a simple medical supervision under antibiotics, however there are cases of evolution into extensive cervico-thoracic cellulitis.

Discussion

The aetiology of extensive emphysema after dental and maxillo-facial surgery is the rise of air pressure in the loose connective tissue. Air then spread into cervical dissection compartments through parapharyngeal and retropharyngeal spaces to the carotid sheath and then to the thorax and mediastinum. The rise of air pressure is either due to surgical instrument either to the patient's actions. The evolution of handpieces, conservative mandibular subperiosteal detachment and patient's education are the main factors to prevent such complication.

**P-502****PRELIMINARY FINDINGS OF A POTENZIATED PIEZOSURGICAL DEVICE AT THE RABBIT SKULL**

A. Anesi¹, C. Palumbo², R. Salvatori³, F. Cavani², L. Chiarini¹

¹ *Department of Medical and Surgical Sciences for Children & Adults; Cranio-Maxillo-Facial Surgery, University of Modena and Reggio Emilia, Modena, Italy*

² *Department of Neuroscience, Biomedical and Metabolic Sciences; Section of Human Morphology, University of Modena and Reggio Emilia, Modena, Italy*

³ *Department of Medical and Surgical Sciences for Children & Adults; Biomaterials Laboratory, University of Modena and Reggio Emilia, Modena, Italy*

The number of available ultrasonic osteotomes has remarkably increased. In vitro and in vivo studies have revealed differences between conventional osteotomes, such as rotating or sawing devices, and ultrasound-supported osteotomes (Piezosurgery®) regarding the micromorphology and roughness values of osteotomized bone surfaces.

Objective: the present study compares the micro-morphologies and roughness values of osteotomized bone surfaces after the application of rotating and sawing devices, Piezosurgery Medical® and Piezosurgery Medical New Generation Powerful Handpiece.

Methods: Fresh, standard-sized bony samples were taken from a rabbit skull using the following osteotomes: rotating and sawing devices, Piezosurgery Medical® and a Piezosurgery Medical New Generation Powerful Handpiece. The required duration of time for each osteotomy was recorded. Micromorphologies and roughness values to characterize the bone surfaces following the different osteotomy methods were described. The prepared surfaces were examined via light microscopy, environmental surface electron microscopy (ESEM), transmission electron microscopy (TEM), confocal laser scanning microscopy (CLSM) and atomic force microscopy. The selective cutting of mineralized tissues while preserving adjacent soft tissue (dura mater and nervous tissue) was studied. Bone necrosis of the osteotomy sites and the vitality of the osteocytes near the sectional plane were investigated, as well as the proportion of apoptosis or cell degeneration.

Results and Conclusions: The potential positive effects on bone healing and reossification associated with different devices were evaluated and the comparative analysis among the different devices used was performed, in order to determine the best osteotomes to be employed during cranio-facial surgery.



P-532

GENERAL DENTAL PRACTITIONERS' UNDERSTANDING OF THE REMIT OF ORAL AND MAXILLOFACIAL SURGERY

E Hayes, E Yeung, R Dua, K Fan

Oral and Maxillofacial Surgery, King's College Hospital, London, London, United Kingdom

Objectives

Oral and maxillofacial surgery is both a dental and medical specialty in the UK. In undergraduate training, dental students have the greater exposure to this discipline's sphere of activity. The majority of the referrals to a maxillofacial unit are from general dental practitioners, mainly for dento-alveolar surgery and various conditions involving the oral structures including suspected malignancy.

Methods

A questionnaire was devised to explore primary care dentists' knowledge of the range of conditions diagnosed and treated by our specialty, including trauma, orthognathic/orthodontics, implants, salivary gland, malignancy, TMJ disorders, and other conditions of the oral structures. The questionnaire was completed by both experienced and newly qualified dentists.

Results and Conclusions

Dentists' awareness of the maxillofacial surgeon's role in skin cancers, craniofacial surgery and upper and mid-face trauma is not as well understood by general dental practitioners as some of the other areas such as trauma and implants. In order for patients to receive optimal care, it is essential that their primary care providers, including dentists, are aware of our areas of clinical activity.



P-535

CHANGES IN THE PERCEPTION OF ORAL AND MAXILLOFACIAL SURGERY AMONG DENTAL STUDENTS AS THEY PROGRESS THROUGH THEIR DEGREE

E Hayes, E Wu, K Fan

Oral and Maxillofacial Surgery, King's College Hospital, London, London, United Kingdom

Introduction

Previous studies show that students are aware of OMFS but not the scope of the speciality. This study aims to examine the perceptions of dental students.

Methods

An online survey was constructed to assess not only the students' knowledge of OMFS as a subject but also as a career. It was emailed to all undergraduate dental students at King's College London.

Results

There were 100 responses across all 5 years.

Regarding the scope of OMFS; students were most aware of OMFS managing facial trauma, with 99% of students correctly identifying that the specialty treat fractured mandibles. However, they were less aware of other aspects; some misconceptions include believing OMFS treat cataracts (6%), perform tonsillectomies (38%), and laryngectomies (40%). 9% of students were not aware that the specialty perform dental extractions.

Although 71% of students would consider working as an OMFS SHO, only 31% would consider it as a career. Of the 69% who would not consider it as a career, a quarter would have considered it if university tuition fees in the UK had not been increased.

Conclusion

The complete data shows students' knowledge of OMFS increases from 1st to 5th year but the desire to pursue it as career declines. Despite the increased knowledge it is unclear if they have sufficient knowledge to make appropriate referrals, and they express a desire for more exposure to OMFS.



P-564

PREDICTORS OF LIFE-THREATENING ODONTOGENIC INFECTIONS

C. Delbet-Dupas¹, N. Pham Dang^{1, 2}, M. Picard¹, J.M. Mondié¹, I. Barthélémy¹

¹ *Department of Oral and Maxillofacial Surgery, NHE - CHU de Clermont-Ferrand, Clermont Ferrand, France*

² *INSERM UMR 1107, Trigeminal Pain and Migrain, Université d'Auvergne, Clermont Ferrand, France*

Objective

For 5 years, maxillofacial surgery department of CHU Clermont-Ferrand encountered a sharp increase in cases of surgical odontogenic infections. It is accompanied by an increase in severe cases with head and neck extension and life-threatening obstruction of the upper airways. These cases often require emergency tracheostomy, ICU stay and iterative drainage. With this non-standard situation, we sought to identify predictors of severity present upon admission of the patient to better prevent the risk of acute upper airways obstruction.

Methods

We conducted a retrospective study over 10 years (2004-2013) including 650 cases of surgical odontogenic infections, dividing into two parts:

- A retrospective report with a description of the global epidemiology
- A statistical study of risk factors of need for reoperation, ICU stay or tracheostomy.

Results

The incidence of surgical odontogenic infections in our department since 2009 has doubled compared to the previous five years with an increasing number of life-threatening odontogenic infections.

We have identified three categories of risk factors, some with very significant associations in terms of relative risk of complications:

- Those related to the patient including alcohol, immunosuppressive and psychiatric disorders,
- Those related to the infection itself: the causal teeth (lower molars) , a CRP level > 150, the anatomic space infected and spread of infection with use of a severity score ,
- Those related to care pathways before hospitalization disease duration , numbers of consultations before entering the service and the use of anti-inflammatory drugs .

Conclusions

The identification and understanding of predictors of detectable gravity from the initial management seem essential to any maxillofacial surgeon to better manage the life-threatening risk both the upper airways obstruction as the septic risk. Those related to the care pathway (diagnostic and therapeutic wandering) seem accessible to prevention and nourish the debate on the use of anti-inflammatory in this pathology.



P-572

DOES THE USE OF CONE BEAM CT CHANGE THE MANAGEMENT OF IMPACTED WISDOM TEETH; AN AUDIT

C. Whitaker, K. Hussain

Department of Oral and Maxillofacial Surgery, Kings College Hospital, London, United Kingdom

Objective

This retrospective audit evaluates whether cone beam computed tomography (CBCT) changes the management of impacted mandibular third molar teeth.

Method and Results

All referrals for CBCTs from a busy Oral and Maxillofacial Out Patient Department over the past year were analysed. Of the 63 patients referred for imaging, 23 patients were included. Patients were excluded due to different teeth being imaged, associated pathology or if treatment was not completed. Their records were analysed and the treatment plan was recorded along with the findings of the OPG and CBCT, the treatment carried out and any complications. The data showed of the 23 patients referred all were appropriate and showed high risk for IAN (Inferior Alveolar Nerve) damage on the OPG. The CBCTs showed that 19 patients had an intimate relationship between teeth and the IAN. Of the 23 patients, 19 opted for extractions, while 4 chose to monitor the situation. The mode of extraction ranged from simple elevation to the raising of a flap and tooth division with bone removal. None of the patients have reported any post-operative complications.

Conclusion

Removal of mandibular third molar teeth is the most common procedure performed by Oral and Maxillofacial surgeons and the use of CBCT for imaging is increasing. This audit shows that imaging is unlikely to change management but may alter the patients' decision once more information is provided.



P-574

THE VALUE OF A DENTOALVEOLAR MULTIDISCIPLINARY TEAM MEETING

J Reidy, A Ujam, R Bhandari

Barts Health NHS Trust/The Royal London Hospital, London, United Kingdom

INTRODUCTION:

The concept of a multidisciplinary team (MDT) was developed during the early 1990s in order to improve the diagnostic and treatment planning decisions for cancer patients. Since then the MDT has become the gold standard for planning a patient's therapy, and the greater cohesion and discussion between surgeons, radiologists, pathologists and professionals allied to medicine has improved decision making and overall patient care.

Dentoalveolar surgery is practiced by the majority of Oral and Maxillofacial Surgeons in the UK. There is no reported use in the literature of a dentoalveolar MDT discussion for the treatment planning of complex cases. In the era of advanced radiological investigations, complex cases warrant discussion in an MDT environment.

METHOD:

In our unit we have been piloting a dentoalveolar MDT meeting which is attended by consultant oral and maxillofacial surgeons, radiologists and pathologists, as well as junior trainees.

DISCUSSION:

Here we present 6 examples that have been discussed at our MDT. Treatment planning questions have related to the use of cone beam CT scanning and coronectomy for third molars, We illustrate how such an MDT discussion influences decision making for better patient outcomes and also how it contributes to the teaching of junior trainees. Also this may provide better documentation if medical legal issues arise.

**P-620****AN AUDIT OF ADHERENCE TO NATIONAL GUIDELINES OF PREOPERATIVE INVESTIGATIONS IN ORAL AND MAXILLOFACIAL SURGERY**

A. Rezvani, C. Fowell, D. Snee

Oral and maxillofacial surgery, New Cross Hospital, Royal Wolverhampton NHS Trust, Wolverhampton, United Kingdom

Introduction / Aims:

Clinical investigations in elective surgery play an essential role in patient safety during the perioperative period. Unnecessary investigations increase the cost of treatment provision. Audit allows regular review of compliance with guidelines, permitting change in clinical practice and improving patient care.

By auditing our compliance with National Institute for Clinical Excellence (NICE) guidelines, we aimed to improve service provision and cost effectiveness of treatment.

Materials & Methods:

Retrospective data collection of both doctor and nurse led pre-assessment clinics for patients undergoing elective oral & maxillofacial surgery at Royal Wolverhampton Hospitals NHS Trust.

Data was collected using a standardised proforma including patient demographics, surgery grade, ASA grade, preoperative tests ordered. A gold standard of 95% compliance was established.

Following the first cycle of audit and subsequent teaching of both nurses and junior doctors, re-audit was undertaken using the same methods.

Results:

In both cycles of audit, 50 patient notes were analysed (25 nurse-led, 25 doctor-led).

In the first cycle, 50% of requested investigations (n=3) from the nurse led clinic were "not recommended". With regards to the doctor led clinic, 26% (n=18) were "not recommended".

In the second cycle of audit 25% of requested investigations (n= 11) from the nurse led clinic were "not recommended". With regards to the doctor led clinic, 22% (n= 12) were "not recommended".

Discussion & Conclusions:

Compliance with NICE guidelines for preoperative investigation in elective surgery remains insufficient. Both doctors and nurse-led preoperative assessment requested excessive and unnecessary investigations.

Following the period of teaching, levels of compliance with guidelines had improved. This is likely due to an increased awareness and utilisation of the guidelines.

In both cycles, more investigations were requested in doctor-led clinics, reflecting the higher ASA grade patients attending this clinic. Nurse-led clinics submitted a higher proportion of inappropriate tests in both audit cycles.

Compliance overall is still short of target, reflecting the need for further intervention to improve efficiency and prevent unnecessary investigations.

**P-621****DOES PRE-OPERATIVE TEXT MESSAGING REMINDER REDUCE NON-ATTENDANCE RATES IN MINOR ORAL SURGERY?**

N. Rahman, S. Girgis, P. Lankathilake, R. Qureshi, E. Ali, S. Spencer, L. Cheng

Oral & Maxillofacial Head and Neck Surgery, Homerton University Hospital, London, United Kingdom

Introduction: Non-attendance at minor operating lists has financial costs for the NHS and clinical implications to non-attendees and those on the waiting list. Strategies such as overbooking and appointment reminders have been trialled in hospitals. However, overbooking runs the risk of overrunning staff when all patients attend. Current practice for arranging appointments includes phone calls, letters and more recently text reminders.

Objectives: Our main aim was to assess the impact of short message service (SMS) reminders on non-attendance rates.

Method: Patients who did not attend (DNA) their appointments were contacted to ascertain the reason for their non-attendance. This took place over two six monthly periods. The re-survey was repeated following the introduction of SMS reminders. The DNA patients in the two limbs of the survey were compared.

Results: The first survey revealed that 21% of patients (106 out of 501) DNA. 41% responded to the telephone questionnaire. 26% of the respondents did not receive an appointment letter or phone call due to hospital administrative problems. 58% of missed appointments were patient specific factors such as illness, forgetfulness or work commitments. Since SMS reminders were introduced, the DNA rate increased to 28% (108 out of 381) with a response rate of 46% (50 of 108). 48% of missed appointments were due to patient specific factors. 56% failed to attend due to administrative problems. 69% of non-attenders had received a SMS reminder, of which some patients had ignored as they thought it was sent in error and would have preferred an appointment letter as written confirmation. Some patients tried to cancel their appointment through the text option, which was not received by the hospital.

Conclusions: This survey showed that SMS reminders have not improved the DNA rate due to inefficacy of the system. The following recommendations to improve the SMS system are: informing patients at assessment that an SMS reminder is a valid appointment, cancellations made through SMS responses should be registered and appointment letters should be sent in conjunction with SMS reminders. Another survey will take place after the improvements suggested have been made to re-evaluate the effectiveness of SMS reminders.



P-636

GENERAL MEDICAL PRACTITIONERS UNDERSTANDING OF THE REMIT OF ORAL AND MAXILLOFACIAL SURGERY

E. Yeung, E. Hayes, R. Dua, K. Fan

Department of Oral and Maxillofacial Surgery, King's College Hospital, London, United Kingdom

Background: Oral and maxillofacial surgery is both a dental and medical specialty in the UK. In undergraduate training, medical students have less exposure to this discipline's sphere of activity than dental students. A significant proportion of the referrals to a maxillofacial unit are from general medical practitioners, however the majority are from general dental practitioners.

Objective: To explore primary care doctors' knowledge of the range of conditions diagnosed and treated by our specialty.

Method: A questionnaire was devised to assess general practitioners' knowledge of the range of conditions managed by our discipline, including trauma, orthognathic, implants, salivary gland, malignancy, TMJ disorders, and conditions of the oral structures. Examples of cases were described to doctors' and the best point of referral was also asked.

Results: Doctors' awareness of the maxillofacial surgeon's role in skin cancers is variable. Facial deformity is often considered under the remit of plastic surgery. Doctors appropriately refer dental problems to the general dental practitioner, but can find difficulty with differential diagnosis of facial pain.

Conclusion: In order for patients to receive optimal care, it is essential that their primary care providers are aware of our areas of clinical activity.

**P-708****EVALUATING THE EDUCATIONAL NEEDS OF DENTAL GRADUATES IN MAXILLOFACIAL SURGERY: A QUALITATIVE STUDY**

F Dewi^{1, 2}, L Pugsley², S F Mustafa^{1, 2}

¹ *Oral & Maxillofacial Surgery, Cwm Taf Health Board, Merthyr Tydfil, United Kingdom*

² *Department of Postgraduate Medical and Dental Education, Cardiff University, Cardiff, United Kingdom*

Aim: Maxillofacial senior house officers (SHOs) are a unique yet diverse group, mostly originating from a dental background with some aiming to obtain a second degree in medicine. Their career aspirations range from general dental practice to a career in maxillofacial or other related dental specialties, and this diversity poses a challenge in meeting their learning needs. The aim of this study is to investigate maxillofacial SHOs' perceptions of their educational needs and how they think these needs could be met, with a view to improving future training.

Method: Focus groups were conducted at four different maxillofacial units in Wales. All current maxillofacial SHOs in these departments were invited to participate and the sessions were recorded for analysis of relevant data. Ethical approval was obtained and consent was sought from participants prior to each session.

Results: The focus groups demonstrated a wide range of educational needs dependent on previous experience and career aspirations. Recurring themes included management of acutely unwell ward patients, trauma calls and maxillofacial emergencies including retrobulbar haemorrhage and airway problems. Participants gave positive feedback regarding a 2 day hospital skills course and would like further similarly structured teaching.

Discussion & Conclusion: SHOs from a dental background face numerous challenges in the unfamiliar hospital environment, which makes their needs different from those of medically qualified foundation or core surgical trainees. Identifying such specific learning needs could be used to guide the development of appropriate educational interventions and learning tools to address the perceived challenges within such training posts.



P-720

PENICILLIN ALLERGY AND MAXILLOFACIAL INFECTIONS REQUIRING HOSPITALIZATION

E. Iglesias Candal, R. Luaces Rey, M. Pezzi Rodriguez, R. Sanchez Sanchez, M. Fernandez Dominguez, J. Lopez Cedrun

HM HOSPITALS, La Coruña, Spain

Objective

Our objective is to study the controversy of antibiotic therapy and prophylaxis in the case of penicillin-allergic patients.

Material and methods

We present the reviewed analysis of 89 penicillin-allergic patients admitted to the department of Oral and Maxillofacial Surgery of the University Hospital of La Coruña during a period of five years: in which, hospitalization cause, associated pathology, hospital stay, antibiotic treatment and readmission needed were the factors analyzed.

Results

In our series we reviewed a total of 1218 admissions to our department in the period 2003-2008. Of this total, 89 patients were allergic to penicillin, representing 7.3% of all patients admitted during this time. The overall average stay was 3.95 days. In the non-allergic group (1129 patients) the mean stay was 3.96 days compared with an average stay in the penicillin-allergic group of 7.58 days. In relation to the appearance of complications a total of 14 penicillin-allergic patients suffered complications in their progress.

Conclusions

The choice of antibiotic in oral and maxillofacial procedures has always been a subject of debate. Penicillin is less expensive than most other alternatives (such as clindamycin and cephalosporin); it provides a good spectrum of antimicrobial cover and has less environmental impact on the evolution of resistant bacteria. But the problems arise when faced with patients who are allergic to penicillin. There are a number of different protocols and there is no consensus on the recommendations of antibiotic treatment in these patients.

**P-772****ORAL SCC ORIGINATING FROM MINOR SALIVARY GLANDS SHOWED AGGRESSIVE BIOLOGICAL BEHAVIOR WHEN COMPARED WITH THOSE ORIGINATING FROM ORAL SQUAMOUS EPITHELIUM**

H. Kawamata¹, S. Izumi^{1, 2}, Y. Imai¹

¹ Oral and Maxillofacial Surgery, Dokkyo Medical University School of Medicine, Tochigi, Japan

² Oral and Maxillofacial Surgery, Kamitsuga General Hospital, Tochigi, Japan

Oral cancer massively invades the adjacent tissues and frequently metastasizes to the regional lymph nodes. More than 90% of oral cancer is histopathologically squamous cell carcinoma (SCC). According to its clinical behaviour and histopathological features, we hypothesize that oral SCC can originate from either oral squamous epithelium or the minor salivary glands. In this study, we attempted to clarify the possibility of some oral SCC originating from the minor salivary glands, and to investigate whether these tumours showed particularly aggressive biological behaviour. The mRNA expression profile of samples obtained from 6 patients with SCC of the oral floor (5 men, 1 woman; mean age 62.7 years) was analyzed by microarray containing 29,098 genes. Clustering analysis of the expression level of the 917 genes that were differentially expressed in normal oral squamous epithelium and normal salivary glands revealed that the 6 samples can be divided into 2 groups. The expression profile in four cases was similar to that of normal oral squamous epithelium, and in two cases was similar to that of normal salivary glands. Furthermore, we identified nine genes that reveal the origin of the oral SCC. Subsequently, we examined the expression levels of these 9 marker genes by reverse transcriptase-polymerase chain reaction to determine the origin of 73 oral SCCs. Twelve (16.4%) of the 73 oral SCCs were considered to originate from minor salivary glands, and these tumours showed high metastatic potential (58.3% vs 36.0%, $p < 0.05$) and poor overall survival rate (33.3% vs 21.3%, $p < 0.05$).

In conclusion, determination of the origin of the oral SCC is helpful when making a treatment plan for patients with oral SCC.



P-802

MICROBIOLOGY AND ANTIBIOTICS SUSCEPTIBILITY IN ODONTOGENIC MAXILLOFACIAL INFECTIONS

K. Mikušková (1), E. Nováková (2), D. Statelová (1), M. Janíčková (1), I. Malachovský (1), J. Sitár (1)

¹ *Clinic of Stomatology and Maxillofacial Surgery, Jessenius Faculty of Medicine, University Hospital in Martin, Slovakia*

² *Institute of Microbiology and Immunology, Jessenius Faculty of Medicine in Martin, Slovakia*

Aim: Maxillofacial space infections of odontogenic origin are still frequent diagnoses in the clinical practice of a dentist or a maxillofacial surgeon. Generally, they emerge as an outcome of poor oral health-care. The therapy of the maxillofacial space infections of odontogenic origin leans on the sanitation of the odontogenic cause, surgical drainage of the infectious process and in legitimate cases also on the use of antibiotics. By the selection of antibiotics it is necessary to consider the spectrum of the microbial agents and also the situation in the occurrence of resistant strains. The main goal of this study was to identify the major pathogens responsible for maxillofacial space infections and their current resistance rates to routinely used antibiotics in university hospital setting.

Material and methods: We analysed records of patients with odontogenic maxillofacial space infections requiring hospital care on the Clinic of Stomatology and Maxillofacial surgery at Jessenius Faculty of Medicine and University hospital in Martin in the period of seven years /2007–2013/. Bacterial spectra and antibiograms were analysed in this study under standardized conditions for specimen collection and transport.

Results: The results show that the majority of infections were polymicrobial with predominance of *Peptostreptococcus*, anaerobic gram-negative bacilli and facultative anaerobic oral streptococcus. The most of these major pathogens showed good susceptibility to betalactams, whereas higher rates of resistant strains were found for macrolides and clindamycin, which are favourite and often used empirical antibiotics in daily clinical practice.

Conclusions: By the continual development of bacterial resistance against commonly used antibiotics, the continuous monitoring of resistant strains is an essential assumption for an optimal empirical selection of antibiotics in the therapy of maxillofacial space infections.

Key words: odontogenic infections, microbiology, antibiotic susceptibility, resistance to antibiotics



P-809

TREATMENT TACTIC FOR PATIENTS WITH ODONTOGENIC INFECTIONS

O. Prosycheva, A. Drobyshev

Maxillofacial Surgery, Moscow State University of Medicine and Dentistry named A.I.Evdokimov, Moscow, Russian Federation

Development of odontogenic abscesses in patients accompanied by immunodeficiency, which requires corrective therapy. Hyperbaric oxygenation has nonspecific immunostimulatory impact and effective in treatment of inflammatory diseases. The use of antimicrobial nonwoven wound with desired properties for the direct effects on the microflora of the wound surface is promising.

Aim of our study was to improve the treatment quality of patients with odontogenic infections.

Materials and methods. We treated 60 patients with a diagnosis of odontogenic infection, with immunodeficiency, in different location and extents without significant comorbid somatic pathology. Patients were divided in 2 groups: 1st - patients who received the "traditional" method, 2d - patients who underwent complex treatment with minimized hyperbaric oxygenation and antimicrobial nonwoven wounds. All patients underwent following procedures: surgery, postoperative management of local wound - using daily dressings, the overall antibacterial, desensitizing, symptomatic and detoxifying infusion therapy. Patients of the 2nd group underwent the minimized hyperbaric oxygenation. Sessions were started on the first day after the surgery and performed in single pressure chamber type BLKS 3-01 with modes: pressure izopressii 1.2-1.3 atm, 40 minutes of exposure, the rate of compression and decompression - 0.04 – 0.05 atm/min. Individual tolerance method was evaluated during the first test session duration on izopressii 20 minutes at a pressure of 1.2-1.3 atm, compression and decompression speed - 0.04 - 0.05 atm/min. In this group of patients we used antimicrobial dressings with multilayer nonwoven furagin.

Results. We observe the reduction of pain intensity in 15,6% (3d day after surgery) and 31,3% (5th day after surgery) in 2nd group of patients compared with 1st group. Improvement of the wound cleansing in compare with 1st group for $2 \pm 0,38$ days. Wound epithelialization started in 2nd group for $1,7 \pm 0,38$ days earlier then in 1st, complete wound healing - $3,7 \pm 0,51$ days. In 1st group of patients we observed decrease of microflora amount in 76% and 93% in 2nd group (8th day after surgery).

Conclusion. Application of minimized hyperbaric oxygenation and antimicrobial nonwoven wound dressing are worth-while in treatment of patients with odontogenic infections.



P-857

OPEN EXPOSURE OF MAXILLARY IMPACTED TEETH FOR ORTHODONTIC ALIGNMENT—A COHORT STUDY OF YOUNG PATIENTS TREATED SUCCESSFULLY UNDER LOCAL ANAESTHESIA

Rosemary Sykes, David Grimes, Sunil Sah, Uthaya Selbong, Dilip Srinivasan

Oral and Maxillofacial Surgery, Nottingham University Hospitals - Queens Medical Centre, Nottingham, United Kingdom

Objective

Surgical exposure followed by orthodontic traction is a successful method for treating impacted teeth. The prevalence of impacted canines which constitute the majority of these procedures has been shown to be 1.5% in the UK population. This constitutes a significant workload and expense to the NHS. Nearly all of these procedures are performed under general anaesthesia. There is only one UK study which has looked at the use of local anaesthesia (LA) for this procedure. Our aim is to assess the feasibility and cost implications of performing open exposure of impacted teeth under LA.

Methods

50 consecutive patients referred for exposure of impacted teeth between 2011 and 2013 were included in the study. All the patients were given a choice of local or general anaesthetic but chose to have LA. The patients were seen by a single operator who also performed the procedure. Open exposure was performed for palatal canines and an apically repositioned flap with placement of a gold chain was performed for buccal canines.

Results

All patients (age range 9 to 22 years) were treated under LA without any intra-operative complications. One patient required re-exposure due to overgrowth of mucosa. Use of LA saves the NHS 443.90 per patient.

Conclusions

LA is a satisfactory method of treating this cohort of patients.

**P-879****VISUAL IMPAIRMENT DUE TO ORBITAL CELLULITIS OF DENTAL ORIGIN – A CASE REPORT**

Gy. Molnar¹, L. Seres¹, T. Gyetvai², T. Pető³

¹ *Department of Oral and Maxillofacial Surgery, University of Szeged, Szeged, Hungary*

² *Department of Ophthalmology, University of Szeged, Szeged, Hungary*

³ *NIHR Biomedical Research Centre at Moorfields Eye Hospital NHS Foundation Trust and UCL, Institute of Ophthalmology, London, United Kingdom*

Objectives: Orbital cellulitis is an acute, potentially life and sight threatening disease commonly caused by infection or systemic disease. Rapid, appropriate intervention and treatment can save the life and the sight of the patient, but in some cases despite treatment the vision remains poor. The aim of our paper is to report a case with orbital cellulitis caused by a dental infection.

Patient and methods: A 35-year-old man was referred to our department with periorbital and orbital cellulitis. From his history it was learnt that he had been hospitalized in the Department of Ophthalmology with pain on eye movement and reduction of vision in his right eye. Within 48 hours, the vision had dropped to 0.35 and the pain had intensified while proptosis and swelling had become visible. He had been administered peribulbar dexamethasone and oral non-steroidal anti inflammatory. Apart from his eye problems his medical history was unremarkable. He reported no history of toothache or dental treatment. On examination he had several decayed teeth and periodontal disease but there was no sign of any acute dental infection. X-ray revealed an approximately 8 mm in diameter periapical radiolucency of the upper right first premolar retained root. There was another retained root of the upper right second molar. There was no clinical or radiological sign of a paranasal sinus infection.

Results: Following dental clearance the proptosis and the pain subsided but the vision has not returned yet.

Conclusions: The authors consider that the orbital cellulitis most probably originated from a dental infection through haematogenous spread. Although this is an extremely rare case, it draws attention to the importance of interdisciplinary communication to set up diagnosis and to start immediate treatment to save the patient's life and vision.

**P-884****WANT TO BE AN ORAL AND MAXILLOFACIAL SURGEON.....? I HOPE YOU HAVE DEEP POCKETS.**

D.P. Ramkumar, R.Isaac, J.N. Ban, M.Kittur

Oral and Maxillofacial Department, Royal Gwent Hospital, Newport, United Kingdom

Under the “progressive reform” proposed by Universities Minister David Willetts, from 2012 the UK Government sanctioned transferring much of the expense of University tuition from the state to students. Whilst the predicted student debt, interest rates and the point at which graduates would have to commence repayment of their “tuition fee loan” have varied wildly in the media, it is highly likely that graduates from here on will possess far greater levels of debt than their predecessors.

Oral and Maxillofacial Surgery (OMFS) has developed from the confluence of both Medicine and Dentistry and in the last decade, it has become an established member of the nine SAC-recognised surgical specialities¹. The Postgraduate Medical Education and Training Board (PMETB) review of OMFS asserted the requirement for those training in OMFS to obtain primary qualifications in both medicine and dentistry.

In accordance with the European Professional Qualifications Directive 2005/36, combined undergraduate primary qualifications may range anywhere between 8 to 10 years depending on the institution of study². Further more trainees must endure the cost of recommended courses, exams, educational meetings, professional subscriptions and professional indemnity.

Understandably with the aforementioned tuition fee amendment, the anticipated cost of obtaining a dual primary qualification, in addition to the loss of pay and reduced pension contributions whilst obtaining the second degree, may have detrimental effects on the numbers seeking a career within the field.

In light of such drastic changes, the purpose of this article is to answer: Just how much will it cost to become an Oral and Maxillofacial Surgeon?



P-902

EXPERIMENTAL MECHANICAL BEHAVIOR STUDY OF CADAVERIC MANDIBULAR CONDYLES

A. Ramos, R. J. Duarte, M. Mesnard

TEMA, University of Aveiro, Mangualde, Portugal

Objective

The mandible is a complex bone with a difficult geometry and two different bone structures (cortical and cancellous). Some experimental tests were carried with polymeric model considering a linear behaviour. Therefore, most studies are limited to an examination of one exemplary and simplified model. Other studies with finite element analysis consider the mandible behaviour as isotropic and linear elastic; few others consider non-linear elastic behaviour. The main objective of this experimental work with cadaveric mandibles was to observe the behaviour of the condyle.

Material and methods

The experimental procedure was developed to test three cadaveric mandible condyles of the right face side. The cadaveric mandibles were donated by the University of Bordeaux, according to the rules defined by the internal committee and had different shapes and sizes. The condyles were loaded between 0 and 500N in a continuum process with 1mm/min velocity and stops of 20s when the load increased of 100N, the 500N correspond to the maximum reaction on the condyle. The experimental procedure included four rosettes to analyse the principal strain distribution in the condyle (figure 1). Each mandible was loaded for five successive trials and the condyle displacement was measured.

Results

The condyle displacement pointed out the importance of the mandible size (figure 2). The condyle stiffness changed because the distance between the condyle and its fixation change. After a correction the difference was evaluated around 17% between mandibles #1 and #3. But it was possible to observe the continuous linear behaviour between different load levels. Relatively to the strain distribution, in the strain gauge number #3, the differences between mandibles were between 15% for 100N and 21% for 300N. The other strain gauges presented more difference: 88% of difference for the strain gauge #1. This variation was justified by the local geometric variation between condyles.

Conclusions

The mandibular condyle behaviour is linear elastic at macro scale in all tested condyles, but the local strain deformation is influenced by the geometry of the mandible.



P-929

ANALYSIS OF REFERRALS FROM THE INTENSIVE CARE UNIT FOR SURGICAL TRACHEOSTOMY

EA Gruber, S Bivin, L Al-Qamachi, D Gahir

Oral and Maxillofacial Surgery, University Hospital of North Staffordshire, Stoke on Trent, United Kingdom

Objective

At our Trust, surgical tracheostomies are undertaken for general Intensive Care Unit (ICU) patients by the Oral and Maxillofacial Surgery team. National and Local referral guidelines are in place and recommend that percutaneous tracheostomy should be the first line in management when it is safe to do so, as it is relatively quick, simple and can be performed at the bedside. Surgical tracheostomy should only be considered for specific cases.

The aim of this study was to assess the proportion of ICU patients requiring a surgical tracheostomy, if they were being referred appropriately and to record any surgical complications.

Methods

Retrospective review of all ICU referrals for surgical tracheostomy, over a one year period from October 2012.

Results

147 patients underwent tracheostomy over this one year period. 96/147 (65%) were male. 30/147 (20%) had a surgical tracheostomy, the rest had a percutaneous tracheostomy undertaken by ICU staff. The majority were performed to facilitate weaning from mechanical ventilation or for removal of pulmonary secretions and were temporary. Reasons for referral for surgical tracheostomy included potentially difficult anatomy, such as short neck, prominent vessels or previous neck surgery and bleeding disorder. All patients underwent fiberoptic scoping on the table to ensure correct anatomical placement of the tracheostomy tube, as per the hospital protocol. No immediate complications relating to surgical tracheostomy were recorded.

Conclusions

The majority of tracheostomies for ICU patients at our Trust are currently being undertaken percutaneously by ICU staff. The National and Local guidelines are being followed appropriately.

**P-931****RETROSPECTIVE AUDIT OF SURGICAL EXPOSURE OF IMPACTED MAXILLARY CANINES**

EA Gruber, S Viridi, L Al-Qamachi, D Gahir

Oral and Maxillofacial Surgery, University Hospital of North Staffordshire, Stoke on Trent, United Kingdom

Objective

Maxillary canines are the second most commonly impacted tooth, after third molars, with a prevalence of 2%. These require a multidisciplinary approach for proper management. Surgical exposure of the canine and orthodontic treatment to bring the tooth into the line of occlusion is the most desirable approach when interceptive treatment has failed or is not possible.

The aim of this study was to establish the percentage of impacted maxillary canines exposed using different techniques and compare the success with other published studies as well as completing the audit cycle.

Methods

Patients treated surgically for impacted maxillary canines between January 2012 and December 2013 were identified from theatre logbooks. A proforma was used to collect data on type of canine impaction and treatment.

Results

65 patients were operated on over the two-year period, 44 (68%) female and 21 (32%) male. The mean age was 15 (range 10 to 21 years).

A total of 79 maxillary impacted canines were treated: 51 (78%) unilateral, 14 (22%) bilateral. 64 (81%) of these were palatal, 14 (18%) buccal and one (1%) in the line of the arch. 48 (74%) were deemed to be favourable, 17 (26%) were considered unfavourable.

Surgical exposure of the impacted canine was performed using one of several methods. 60 (92%) were treated closed (with bonding of a bracket and chain), 3 (5%) were treated with an apical repositioning flap and 2 (3%) underwent open treatment. 63 (97%) were successful, 2 (3%) required re-exposure due to gingival overgrowth.

Conclusions

The most commonly performed technique was closed surgical exposure and the overall success rate in our study was 97%. Previously published data states that 5-7% of impacted canines required re-exposure.

**P-937****THE IMPACT OF LOWER THIRD MOLAR POSITION ON THE PROGNOSIS OF LOWER SECOND MOLAR TEETH**

EA Gruber¹, S Lagichetty¹, L Al-Qamachi¹, J Dhanda², D Gahir¹

¹ *Oral and Maxillofacial Surgery Department, University Hospital of North Staffordshire, Stoke on Trent, United Kingdom*

² *Oral and Maxillofacial Surgery Department, University Hospital of Coventry and Warwickshire, Coventry, United Kingdom*

Objective

In the United Kingdom, the NICE Guidance on the extraction of wisdom teeth (March 2000) is widely followed. This states that impacted wisdom teeth that are free from disease should not be operated on, due to lack of reliable research to support benefits and the risks associated with surgery. However, we propose that more conservative management of wisdom teeth could be detrimental to second molars. Impacted third molars can cause food packing and this commonly leads to caries in the second molar tooth.

The aim of this study was to assess if angulation of impaction of third molars affects likelihood of caries in second molars.

Methods

A retrospective audit of 500 cases of third molar extraction during 2012-13. Diagnosis and management of third molars and their relation to caries status of the second molar was recorded.

Results

The main reason for removal of third molars was recurrent pericoronitis. The mean age was 29.9 (range 17-74) years and the female to male ratio was 3:2. Although, only 18.2% cases showed caries in second molars, it was noted that 56% of them were associated with mesially angulated third molars, followed by 27% with horizontally angulated wisdom teeth. A quarter of carious second molars were extracted at the same time as the third molars (half of those second molars removed were associated with mesially impacted third molars).

Conclusions

The prognosis of second molars is worse with mesially angulated third molars. We propose that angulation of impaction should be a major factor when considering extraction of third molars to improve the prognosis of second molar teeth and should be included in the NICE guidelines.

**P-976****TISSEEL FIBRIN SEALANT IN HEAD AND NECK SURGERY**

A.Ujam, P.Hardee

Barts Health, London, United Kingdom

Aim

Tisseel, is a 2 component fibrin sealant that has been used extensively in surgery for over 15 years. Its role within surgery is as an adjunct to conventional techniques of haemostasis, but has added benefits of acting as a sealant. The literature demonstrates its significant benefits within cardiovascular surgery, colonic anastomosis, splenic rupture and other surgical procedures. Within head and neck surgery there is limited case reports or clinical studies on its potential benefits. We present the results of a literature review of published case reports for the use of Tisseel in head and neck surgery and how its use in other surgical specialties may be adopted for maxillofacial surgery procedures.

Material and Method

We undertook an extensive literature review of NCBI PubMed, Embase and the internet including the following key words: maxillofacial surgery, head and neck surgery, Tisseel, fibrin glue, fibrin sealant, surgery.

Results

There are several case studies of the use of Tisseel in head and neck surgery. Its use is variable ranging from sealing potential CSF leaks from skull base fractures, as an adhesive for orbital floor fracture repairs, for wound closure in periodontal surgery to reducing bleeding rates following parotid surgery. Interestingly, its uses in other surgical specialties may provide the basis for similar uses in maxillofacial surgery, an example being the use of Tisseel in peripheral nerve repair. Similar techniques may potentially be applied to cranial nerves.

Discussion and Conclusions

Despite the financial cost of using Tisseel, its use in head and neck surgery appears to be increasing. As well as reducing blood loss there are additional benefits to its use. In particular there appears to be a potential benefit for its use as a sealant in nerve repair; a highly useful application in the head and neck region.

The authors are currently undertaking a clinical trial of its benefit in reducing post-operative pain in patients undergoing wide local resections of small intra-oral malignant lesions. Preliminary results will be discussed.

**P-986****FINANCIAL BENEFITS OF ACCURATE CLINICAL CODING IN MAXILLOFACIAL SURGERY – HOW TO IMPROVE DATA CAPTURE**

A.Ujam, J.Ho, R.Bentley, K.Fan, C.Huppa

Barts Health, London, United Kingdom

Aims

Clinical coding is a complicated but important process. Professional coders rely on information from medical notes to generate a final Human Resource Group (HRG) which then reflects the final payment for a patient episode. Unfortunately, the documents used by coders to generate HRG`s are often written by the most junior surgeon and are not always checked by senior colleagues to confirm accuracy of recorded diagnosis or procedures for a patient.

Our research has already demonstrated that significant differences in HRG`s will be generated if clinicians take an active role in clinical coding. We highlight the common errors and absent data that affect final HRG generation and discuss the benefits of a multidisciplinary approach to capturing data.

Material and Methods

A multidisciplinary team (MDT) training exercise involving financial management, clinical coders, consultant Maxillofacial surgeons and junior surgeons was organised to discuss and improve the capture of clinical data. Specific improvements included the active involvement a senior clinician (egSpR) in the writing of discharge letters, operative and medical notes.

Results

We demonstrate a significant improvement in OMFS income through education of all team members into how coding may be optimised. Even small changes in recording comorbidities, diagnosis and surgical procedures can affect the final HRG generated.

Discussion and Conclusion

Clinical coding through accurate capture of data should involve all members of the OMFS team and should not be the sole responsibility of junior trainees. We recommend an MDT approach with regular education. This approach is now an adopted departmental standard policy.

**P-1052****DENTAL CLEARANCE IN STREPTOCOCCUS MUTANS SEPTICAEMIA**

S. Hotti, L. Grönholm, P. Laine, C. Lindqvist, R. Rautemaa-Richardson

Department of Oral and Maxillofacial Diseases, Helsinki University Central Hospital, and Department of Bacteriology and Immunology, Haartman Institute, University of Helsinki, FIN-00014 HU, Helsinki, Finland.

Objective: Alpha haemolytic streptococci are a common cause of sepsis and infective endocarditis (IE). *Streptococcus mutans* is an alpha haemolytic streptococcus and a major cariogenic bacterium with potential also for systemic spread. This study describes ten patient cases of *S. mutans* septicaemia identified by conventional methods.

Methods: to this retrospective, population-based case-control study subjects with blood-culture verified *S.mutans* sepsis during years 2002-2007 were identified from Helsinki University Central Hospital HUSLAB database. Ten patients gave their consent and the same number of sex, age and social background matched controls were recruited. Data collected included telephone interviews, medical and dental records and panoramic x-rays before and after hospital admission(day zero).

Results: Ten patients(8 men, 2 women)were included to this study. The mean age was 49.8(24-77) years. Most patients were generally healthy before being diagnosed with septicaemia, but systemic diseases such as hypertension and previous septicaemias were recorded. The distant site infection was in most cases (9/10) IE. Six patients had predisposing conditions for IE such as bicuspid aortic valve, mitral valve prolapse and atrioventricular septal defect. In most cases these were diagnosed only during hospital stay. Preceding dental procedures were: surgical third molar extraction, tooth extraction, check up, restorative treatment and removal of dental plaque and calculus. Time interval between dental treatment and day zero was between 2-18 weeks. 5/10 patients had antecedent dental treatment, none received antibiotic prophylaxis. 5/10 patients required extractions in day zero(range 1-8 teeth).

Conclusions: Patients with *S.mutans* septicaemia were previously generally well but most had some previously undiagnosed cardiac condition predisposing to IE. None of them had received antibiotic prophylaxis for their dental care. Half of the patients had chronic dental infection foci requiring extractions. To avoid severe systemic infection complications it would be important to maintain good dental health and clear dental infections as they occur.

**P-1054****ARE WE WASTING THOUSANDS ON UNNECESSARY PREOPERATIVE INVESTIGATIONS?**

A M Henry, F Dewi, N Patel, R Atan, S Bhatia

Oral and Maxillofacial Surgery, Cardiff and Vale University Health Board, Cardiff, United Kingdom

Assaults account for the majority of mandibular fractures. Assaults are usually alcohol related and the most likely patient is a young male. These patients are normally fit and well. We suspected that these patients were being over-investigated prior to undergoing open reduction and internal fixation (ORIF.) The National Institute of Clinical Excellence (NICE) issued the guideline Pre-operative Tests in 2003, which makes recommendations for appropriate pre-operative tests. Over-investigation has implications in terms of patients' satisfaction, doctors' efficiency and cost.

Objective

We audited our compliance with the NICE guidelines on pre-operative investigations (2003) with the aim of reducing the number of unnecessary pre-operative investigations.

Methods

A preliminary audit was completed; case notes and blood test requests were reviewed for 40 consecutive patients undergoing ORIF for mandibular fractures. The blood tests requested were compared with those recommended by the NICE guidelines. Results were presented locally and teaching sessions were established to educate staff on the use of the guideline. Two further audit cycles (60 patients and 55 patients) were completed for all patients admitted under the care of oral and maxillofacial surgery.

Results

The preliminary audit demonstrated that compliance with the NICE guideline was poor. Patients had an average of 1.26 unnecessary tests. No patients were under-investigated and over-investigation was more common in ASA I patients. 54% of FBC requests and 59% of U&E requests deemed inappropriate when compared to the NICE Guideline. In our hospital this equates to over £2000 worth of completely unnecessary blood investigations for trauma patients alone. With staff education, the percentage of inappropriate FBC and U&E investigations performed reduced to 15% on re-audit. The number of inappropriate tests per patient reduced to 0.67. The percentage of patients under-investigated was 0.27%. There were no delays to theatre or adverse outcomes associated with these improvements in compliance with the guideline.

Conclusion

Patients undergoing oral and maxillofacial surgical procedures are over-investigated in terms of routine pre-operative investigations. Adherence to the guideline can be improved by education and has the potential to save thousands of pounds, reduce workload and patient discomfort, without compromising patient care.

**P-1067****CO2 LASER SURGERY IN ORAL CAVITY'S PRECANCEROUS LESIONS: A SERIES OF 115 CASES**

G. Mancini, S. Buonaccorsi, M. Tedaldi, G. Reale

LA SAPIENZA UNIVERSITA' DI ROMA, Rome, Italy

OBJECTIVE

The aim of this study is the prevention of oral cavity precancerosis transformation in malignant conditions. Primary prevention includes clinical observation, stopping smoking, and removing risk factors. New technologies have been introduced to manage such lesions as laser CO2 surgery. It allows removing that precancerosis, through evaporation, thanks to the haemostatic effect and the preserving of muscular layer. Any scar retractions, nor chewing discomfort have been result after laser surgery. This procedure reduces surgical timing and patient's recovery; furthermore the low relapses of diseases should induce to considered this as the primary treatment of oral precancerosis.

METHODS:

Authors show their experience in a series of 115 patients observed (52 female and 63 males, mean age 57 years) from 2002 to 2013. 83 of them underwent to CO2 laser evaporation to remove a total of 169 heterogeneous lesions of oral cavity. Definitive histologic examinations were performed. The procedure included the resection as an excisional biopsy without involving the deep muscular layer.

RESULTS:

In 39% lesions involved the tongue. In 62% pre cancerous lesion were found out and 9% of cases showed squamous cell carcinoma. In a 5 years period of follow up a 5,7% of pathology relapse has been observed. In 93% cases have shown a good wound healing combining mouth washes and hyaluronic therapy via aerosol were carried out during the post operative period for helping wound closure.

CONCLUSION:

Sterilization due to thermic effect results in a better pain control and oedema reduction. Despite of high temperature laser allows to conserve tissue layer and the margin resection, so as histoligical diagnosis can be performed adequately. According to literature our experience could confirm the importance of the laser surgical treatment of all the suspicious lesions of the oral cavity. The histological diagnosis of precancerosis prevents malignant transformation and so avoid reconstructive surgery that may interfere with the patients quality of life.

**P-1157****BUCCAL FILMS AS THE DRESSING FOR TREATMENT OF APHTHOUS STOMATITIS – IN VIVO STUDY**

Z. Daněš¹, J. Štembírek², J. Gajdziok³, H. Landová³, D. Vetchý³

¹ *Department of Oral and Maxillofacial Surgery, University Hospital Brno, Brno, Czech Republic*

² *Department of Oral and Maxillofacial Surgery, University Hospital Ostrava, Ostrava, Czech Republic*

³ *Department of Pharmaceutics, Faculty of Pharmacy, University of Veterinary and Pharmaceutical Sciences, Brno, Czech Republic*

As the exact causes of aphthous stomatitis are as yet uncertain, a completely effective cure or prevention is unknown so far and the treatment remains largely symptomatic, focusing on suppression of the local immunity response, reduction of pain and discomfort and on prevention of secondary infection and recurrence. One way of treatment could be buccal flexible films. They can be used as dressings separating the mucosal lesion from the environment of the oral cavity so they protect the surface of wound and improve effectivity of treatment of oral diseases. Their advantages include flexibility, comfort, patient compliance, and better adhesion of the system to the oral mucosa.

The aim of the study (approved by the ethical commission of University Hospital Ostrava, Approval No. 25/2013) was an *in vivo* clinical study on 30 volunteers suffering from aphthous stomatitis randomly divided into two groups. The first (control) group was treated using standard means, namely by application of disinfectant preparative (Mundisal Gel (active substance: cholinisalicylas; Manufacturer: MundipharmaGmbH, Limburg/Lohn, Germany) directly on the mucosal lesion. The other group was treated by same oral disinfectant, however the lesion with applied preparative was covered with the mucoadhesive film. Upon receiving a set of three stickers per day that they were to apply until the lesion was healed and they were instructed on the application of the film and on filling out the associated study form.

The criteria for statistical evaluation were measurement of the size of the lesions using a caliper in relation to the length of treatment in the groups as well as the subjective perception of the treatment results. The information about the course of treatment was recorded in the question-forms. The measurements were performed upon start of the treatment (Day 1) and on the examinations (Day 3 and Day 5). After data collection statistical evaluation was performed.

The statistical analysis proved a significant reduction in treatment time and in reducing the feeling of pain in the volunteer experimental group. However better recognition of buccal films in treatment of aphthous stomatitis is requested.



P-1169

THE EFFECT OF DIABETES MELLITUS ON BONE HEALING AND LEVEL OF VEGF AND BMP-2 IN RABBIT CALVARIAL DEFECTS

B. Brkovic¹, M. Zivadinovic¹, M. Manojlovic², B. Prokic³, B. B. Prokic³, Z. Stojic¹, M. Vucetic¹, M. Milic¹, V. Biocanin⁴, D. Brajkovic⁵

¹ Oral Surgery, University of Belgrade, School of Dental Medicine, Belgrade, Serbia

² Laboratory for Cell Biology, Institute for Biological Study, Belgrade, Serbia

³ Department for animal surgery, Faculty for Veterinary Medicine, Belgrade, Serbia

⁴ Oral Surgery, Faculty of Medical Science, University of Kragujevac, Kragujevac, Serbia

⁵ Maxillofacial Surgery, Faculty of Medical Science, University of Kragujevac, Belgrade, Serbia

Introduction: Diabetes mellitus (DM), as a metabolic disease associated with the angiopathy, has an influence in the pathogenesis of impaired bone healing and change in the level of bone proteins. The experimental model for the evaluation of bone regenerative potential is the treatment of critical-sized defect.

The objective of this presentation was to show the effect of DM on the healing of critical-sized bone defects grafted with beta-tricalcium phosphate (RTR Syringe®, Septodont, France betaTCP) related to the concentration of vascular endothelial growth factor (VEGF) and bone morphogenetic protein 2 (BMP-2).

Study design: Twenty male chinchilla rabbits were divided in healthy (n=10) and diabetic (n=10) group of animals with symmetrically created calvarial critical-sized bone defects filled with betaTCP and unfilled group, served as a control. DM was induced with intravascular streptozotocin injection. Four weeks after the regenerative treatment bone samples were analysed using histological and histomorphometric evaluation, while concentration (pg/ml) of VEGF and BMP-2 was measured with ELISA test.

Results: Histomorphometry showed no differences between newly formed bone and residual betaTCP in healthy animals (p=0.342), while this difference was seen in diabetic animals (p=0.001). Significant decrease of new bone was measured in diabetic than in healthy animals (p=0.029). The analysis between healthy and diabetic groups showed that DM significantly increased the level of both VEGF and BMP-2 in betaTCP and unfilled defects.

Discussion: The study results showed the significant influence of DM on regeneration capacity of critical bone defect with decrease of new bone formation whether betaTCP was used or not. The major influence of DM on bone healing is the reduction of osteogenesis and decrease of osteoblastic activity. Although the level of both signalling molecules – VEGF and BMP-2 was increase during regeneration, this change was mostly evident in DM groups possible due to ischemic condition.

Conclusion: The regeneration of critical bone defect was affected by DM which significantly reduced the quantity and quality of new bone formation.



P-1174

ORAL AND MAXILLOFACIAL SURGERY IN PATIENTS TREATED BY A NEW PERORAL ANTICOAGULANT

P.Posta, D.Hrusak, L.Hosticka, P.Andrle, L.Hauer, J.Jambura

Department of Maxillofacial Surgery, Clinic of dentistry, University Hospital and Faculty of Medicine in Pilsen, Charles University in Prague, Pilsen, Czech Republic

Objectives: Cardiovascular diseases are a severe problem of a developed countries. In the 1945th the cardiovascular diseases were the main cause of the death in the USA, this trend lasts up to these days and the situation in Europe is not better. Antitrombotic drugs, which we can divide into the group of antiaggregants and anticoagulants are mostly used for treatment and prevention of complications in the majority of cardiovascular diseases. As the incidence of these illnesses rises, we encounter more frequently patients with the medical induced haemostatic disorder. The only used peroral anticoagulants were recently the coumarins, what changed with the income of new peroral anticoagulants (NOAC). Some of the characteristics of these drugs differ from coumarins and also the attitude to surgical procedures in patients cured by NOAC has its specifics.

Material and Method: We explored a wide spectrum of available medical literature about the pharmacological treatment of cardiovascular diseases, current and new anticoagulants and we summarize the acquired informations in this overview. The evaluation of our experiences with treatment of the patients cured by NOAC was also made.

Results: From the available world medical literature and our own experiences we can assume, that the NOAC in spite of some disadvantages (complicated effect monitoring, unknown specific antidotes, high costs) are effective and safe remedies for cardiovascular diseases treatment. In the human medicine, there are registered three representatives – dabigatran from the gatran group and rivaroxaban and apixaban from the xaban group. The specifics of the surgical treatment of the patients cured by gatrans and xabans are presented in this poster.

Conclusion: We will surely encounter more patients cured by NOAC at our practice, that force us to know these drugs better. From the clinical trials we can see, that these drugs are effective and safe as the current anticoagulants or even more. There is no need for. Excellent local dressing of the wound is necessary. Before more excessive surgery some modification of the medication could be needed, but interruption of NOAC medication in common dental surgery procedures as a dental extraction is not necessary.



21. Craniomaxillofacial Traumatology

P-13

FACIAL MAXILARY FRACTURES , THE RESULTS OF A RETROSPECTIVE STUDY

Mimoza Canga¹, Juljana Xhindoli¹, Denada Selfo¹, Brunilda Subashi¹, Vito Malagnino²

¹*Faculty of Public Health, University of Vlora-Albania;*

²*University "La Sapienza" Roma-Italy.*

Aim: To conduct a retrospective evaluation of fractures of maxilla- facial complex during the time period of 2011-2013 in the hospital center of regional hospital in Vlore – Albania.

Materials and methods:

During this time period, in the hospital centre of Vlora have been treated 208 patients with maxillo-facial fractures, and apart from place of living, gender and average age it has also been taken in consideration the fractures' aetiology. From the total of 208 fractures, 125 (60%) were men and 83 (40%) women, with a mean age of 38.5 year. The use of CT scanning, angiography, the orthopantomogram X Ray and TAC has improved the diagnoses procedure.

Results: The most frequent fractured area was the nasal bone with 80% of the cases, a small incidence was seen on the mandibular bone with 6%, maxillary bone with 4%, zygomatic arch with 5.5 %, frontal bone with 0.8%, Le Fort bone with 0.2%, ethmoid bone with 0.2%, temporal bone with 2.5 %. Mandibular fractures have been not favourable, the more fractured were the mandibular condyles and the mandibular angle, where the muscular forces have caused the movement of the bone fragments. The most blunt traumas were seen on the base of the nose, mental area of the mandible, canine area, premolars and coronoid process. The study evidences the damages related to many sectors of the maxillo- facial fractures and significant reduction of the clinical picture. Common injuries to facial bones include parts as the nasal bone, the maxilla and the mandible which are also called maxillo-facial trauma. The cost of health service for these patients was 597 hospital days.

Conclusion: The most frequent facial fractures are to nasal, mandibular, and maxillary bones. The reasons are various and more studies are needed to find out frequency of damages brought from different causes and why men get hurt more than women.



P-20

CLINICAL EVALUATION OF USING DIMAC WIRE FOR INTERMAXILLARY IMMOBILIZATION AT MANDIBULAR FRACTURES

A.El SWIFY

Oral&Maxillofacial Surgery , Faculty of dentistry,Suez Canal University, Ismailia, Egypt

The **aim of this work** was to verify the reliability of using Dimac wire in the intermaxillary immobilization of mandibular fractures.

Methods: Twelve patients (ten males and two females) with almost full dentition suffered from minimally displaced mandibular fractures with age range of 23-40 years old and in whom intermaxillary fixation (I.M.F) was required as a part of the treatment were selected in this study.

Results: The average time required for the application of Dimac wire at both arches was only 20.6 min. (SD 4.5) and for wires removal was 5.2min (SD 2.1). There was no statistical significant difference ($P < 0.05$) between gingival and periodontal assessments preoperatively and after the removal of Dimac wires. No reported cases of wires breakdown or skin penetrating injuries and none of the patients required further application of a new wire.

In addition to the absence of tooth damage at both arches after using Dimac wires. It can be concluded that the use of Dimac wire is a simple and safe technique for intermaxillary fixation at mandibular fracture. But it should be used in minimally displaced fractures with almost full dentition without deep over-bite.

**P-37****TRANSORAL OPEN REDUCTION FOR SUBCONDYLAR FRACTURES OF THE MANDIBLE USING AN ANGULATED SCREWDRIVER SYSTEM**

HG Cha¹, SM Nam¹, YB Kim¹, CY Choi², HY Oh²

¹ *Plastic and Reconstructive Surgery, Soonchunhyang University Bucheon Hospital, Bucheon, South Korea*

² *Plastic and Reconstructive Surgery, Soonchunhyang University Gumi Hospital, Gumi, South Korea*

Background: The management of subcondylar mandibular fractures has been a matter of controversy. Although closed reduction is the most useful method, it can be difficult to achieve anatomical reduction with this technique compared with open reduction and internal fixation (ORIF). The majority of surgeons prefer to treat subcondylar fractures by extraoral approaches rather than intraoral approaches because extraoral approaches provide good visualization of the operative field. The retromandibular, submandibular, and peribulbar approaches are commonly performed in the treatment of displaced condylar or subcondylar fractures and that the functional results of these treatments are good. However, extraoral approaches have a high rate of surgical complications such as salivary fistula formation, visible scarring, and facial nerve injury, compared with intraoral approaches. Therefore, this clinical study evaluated the clinical results of ORIF for mandibular subcondylar fractures through a transoral approach using an angulated screwdriver system without endoscopic assistance.

Methods: A study was conducted between March 2011 and October 2012. Eleven patients with subcondylar fractures of the mandible were treated through a transoral approach using an angulated screwdriver. There were 10 male patients and one female patient aged 21 to 72 years (mean, 38 years). Nine patients had a symphyseal or parasymphyseal fracture, and two patients had isolated subcondylar fractures of the mandible.

Results: Eleven patients with subcondylar fractures of the mandible were treated with a transoral approach using an angulated screwdriver. The subcondylar fracture was on the left side in six patients and on the right in five. All patients achieved satisfactory ranges of temporomandibular joint movement with an interincisal distance of more than 40 mm without deviation and stable individual centric occlusion. The maximum operation duration was 165 minutes, and the average duration of ORIF was 97 minutes. The association between the operation duration and the number of operations was statistically significant.

Conclusion: Our clinical study shows that subcondylar fractures of the mandible can be treated using an angulated screwdriver system through a transoral approach and that this technique provides reliable, satisfactory, and safe clinical outcomes.

**P-39****RETROSPECTIVE ANALYSIS OF ISOLATED AND COMBINED ORBITAL FRACTURES IN LATVIAN PATIENTS, EVALUATION OF SURGICAL ACTIVITY AND OPHTHALMIC SYMPTOMS**

J.Kuznecova¹, G.Salms¹, V.Pimanovs²

¹ Oral and maxillofacial surgery, Riga Stradins University Institute of Stomatology, Riga, Latvia

² Oral and maxillofacial surgery, Paul Stradins Clinical University Hospital Centre of Dentistry and Facial surgery, Riga, Latvia

Objective Orbital fracture (OF) is a common complication of midface trauma (MT). Isolated OF is a rare event, it is usually combined with a damage to other facial bones. OF is quite often complicated by injury to the eye. The objective of the study was to evaluate the incidence of orbital damage in Latvian patients with MT and to identify factors that correlate with OF.

Methods The study included 538 retrospectively analysed patients with MT (fracture of nasal bones, orbital floor and zygoma) – from 31.10.2011. till 01.11.2012. Following data were analyzed - age, gender, diagnosis, radiological findings, indication for surgery and methods used, ophthalmologist's consultation.

Results 436 patients (81%) were males, 19% females (average age 30 vs 37y, $p=0.0008$); males correlated with criminal ($p=0.0004$) and sport trauma ($p=0.006$), females with domestic trauma ($p=1E-8$). 62% patients had nasal fractures, 28% zygoma, 4% both and 6% blowout lesion. OF was found in 133 cases (24.7%). 80% were males. Female were older (49 vs 34 years). OF incidence positively correlated with older age ($p=1E-8$), criminal trauma ($p=0,024$), injuries of zygoma ($p=7E-16$) and negatively with nasal fractures ($p=2E-33$). The lower wall was most frequently fractured (81%), followed by lateral (44%), medial (26%) and upper (4%), several walls - 47%. Only 26 patients (19.6% of OF) had been consulted by ophthalmologist. Eyeball contusion ($n = 10$), subluxation of lens ($n = 2$) and n. opticus compression ($n = 1$) were the most frequently founded. 17 patients underwent orbital surgery, usually by fixation with miniplates or titanium plate. Double vision, enophthalmos ($>2mm$), poor eye movement were the most significant indication ($p=3E-40$).

Conclusions OF is a complicated midface trauma that needs particular attention. It is usually found in younger males with criminal trauma or in older females with domestic trauma. OF is more common in fractures of zygoma than in fractures of nasal bones. Patients with OF and ophthalmic complaints should be seen by ophthalmologist. In case of radiologically proven orbital fracture, indications for surgical treatment mostly depend on ophthalmological symptoms. Orbital floor titanium plate and fixation with miniplates are the most commonly used techniques.

**P-47****MULTIDISCIPLINARY TREATMENT OF THE FRONTAL SINUS AND ANTERIOR CRANIAL BASE FRACTURES. OUR EXPERIENCE**

H. Rotaru¹, C. Dinu¹, C. Abrudan², O. Rotaru³, L. Hurubeanu¹, D. Rosca¹, I. Moldovan¹, G. Armencea¹, M. Baciut¹, Gr. Baciut¹

¹ Department of Oral and Maxillofacial Surgery,, "Iuliu Hatieganu" University of Medicine and Pharmacy, Cluj-Napoca, Romania

² Department of Neurosurgery, "Iuliu Hatieganu" University of Medicine and Pharmacy, Cluj-Napoca, Romania

³ Department of Oral and Maxillofacial Surgery, "Constantin Oprea" County Hospital, Baia-Mare, Romania

Aims. In the last years, the complex fractures of the viscerocranium have become more frequent. Among these, the fractures of the frontal sinus and anterior cranial base represent a significant component. Long-term morbidity of the above-mentioned fractures remains a key issue. On the other hand, the complex multidisciplinary treatment of these fractures, although important for decreasing the morbidity, is still controversial.

Material and Methods. In the vast majority of cases, multiple lesions of the viscerocranium, involving the naso-orbito-ethmoidal, maxillary, zygomatic complex and the anterior cranial base were associated to the frontal sinus fractures. Different therapeutic protocols, depending on the anatomic form and the complexity of these fractures, from observation to open approaches and extensive surgical treatment, were applied to the patients in order to optimize the short and long term cosmetic and functional consequences.

Results. Depending on the clinical situation, the frontal sinus was preserved, reconstructing the anterior wall, or was obturated or cranialized. When involved, the anterior skull base was always reconstructed.

Discussion. The proper treatment of the frontal sinus and anterior skull base fractures is of utmost importance due to the anatomic relations with the brain, nose, orbital cavities and the severe complications, which can appear in this context.

Conclusion. A precise diagnosis must precede the treatment decision, which should be adapted to the clinical situation. The treatment strategies of frontal sinus and anterior cranial base fractures are reviewed in this presentation with a closer look on clinical cases.

**P-64****NEW SOLUTIONS IN THE REHABILITATION OF PATIENTS WITH MANDIBULAR FRACTURES COMPLICATED WITH CHRONIC TRAUMATIC OSTEOMYELITIS**

I. O. Pohodenko-Chudakova^{1, 2}, O. P. Chudakov^{1, 2}, A. Z. Barmutskaya ¹

¹ *Oral Surgery Chair, Belarusian State Medical University, Minsk, Belarus*

² *Belarusian Collaborating Centre of EACMFS, Belarusian Collaborating Centre of EACMFS, Minsk, Belarus*

Aim of study was to examine the results of a complex rehabilitation of patients with mandibular fractures complicated by chronic traumatic osteomyelitis.

Methods and material. We observed 180 patients with mandibular fractures, complicated with chronic traumatic osteomyelitis. 90 patients of them had chronic traumatic osteomyelitis in combination with a non-solid fractures without destruction of the bone defect. Chronic traumatic osteomyelitis of the mandible in combination with a bone defect from 5 to 15 mm was detected in 50 patients. Chronic traumatic osteomyelitis of the mandible with a delay of bone fragments was determined for 40 people. Also was organized as a group of 21 patients which had acupuncture in medical rehabilitation complex. All patients had sequestrectomy operation with extra focal osteosynthesis by device for the treatment of mandibular fractures. If there are complications with the bone defect after 10 days of compression procedures using the device said above, we performed the distraction of the bone reclaim at a rate of 1 mm per day till the final restoration of the original length of the lower jaw followed by a stable rigid fixation of bone fragments till there complete consolidation. All patients received standard complex of anti-inflammatory therapy postoperatively and treatment with drugs aimed to optimize the bone regeneration.

Results. At the same time, it managed to eliminate the effects of inflammation in the bone and surrounding soft tissue structures in 97% of cases. However, it was not possible to completely restore the intermandibular proportions which subsequently require simple orthopaedic correction for the patients with chronic traumatic osteomyelitis combined with non-solid fracture and bone defects in 10% of cases. In 6% of patients it was not possible to provide the consolidation of bone fragments requiring repeated surgery in the future. The positive result was achieved in 95% of cases in the group of patients who had acupuncture in the complex treatment and rehabilitation procedures.

Conclusion. Achieved results allow considering the offered treatment and rehabilitation complex combined with use of the device for the treatment of complicated fractures of the mandible combined with a course of acupuncture as most optimal.

**P-69****FACTORS AFFECTING SURVIVAL FOLLOWING SELF INFLICTED HEAD AND NECK GUNSHOT WOUNDS: A SINGLE CENTRE RETROSPECTIVE REVIEW**

J. Murphy¹, M. Lee¹, X. Liu², G. Warburton¹

¹ *Oral and Maxillofacial Surgery, University of Maryland, Baltimore, United States*

² *Epidemiology, University of Maryland, Baltimore, United States*

Objective: Evaluation of factors affecting patient survival following self inflicted head and neck gunshot wounds (SIHNGSW)

Methods: All patients initially surviving an SIHNGSW and treated at the University of Maryland Adams Cowley Shock Trauma Center between 2002 and 2012 were included. Variables included demographics, gunshot wound characteristics, admission laboratory data and management. Chi square test and Fishers exact test were used for statistical analysis.

Results: One hundred and sixty one patients met the inclusion criteria. Four patients were excluded due to incomplete data. Outcomes were death [n=92] 59%, discharged to long term care/rehabilitation [n=58] 37% or discharged home [n=7] 4%. 45% of patients were aged 35–64, 38% were <35 years and 17% > 64 years. Increasing age was associated with poorer survival (p=0.033). The majority were male (86.6%) and single (55.5%). Sex was not associated with survival (p=0.53). Mortality rates by entry sites were temporal scalp [n=77] 82%, frontal scalp [n=13] 69%, submental/intra-oral [n=63] 30%, and neck [n=4] 25%. Entry wound size (p=0.8) or presence of an exit wound (p=0.62) were not statistically associated with survival, however, avulsive injury was associated with improved survival (p=0.025). An admission GCS < 9 and involvement of the central nervous system [n=127] resulted in a 70% mortality (p<0.001). A tracheostomy within 24 hours of admission [n=26] improved survival (p<0.001). Admission labs were drawn in 138 patients. A haemoglobin<9g/dL (p=0.001) or an INR >1.5 (p<0.001) were correlated with increased mortality, however, transfusing within 24 hours was not statistically associated with improved survival (p=0.089).

Conclusion: Survival following SIHNGSW is influenced by age, entry site, central nervous system involvement, haemoglobin level and coagulopathy, and the performance of an early tracheostomy.



P-84

TREATING FRACTURED MANDIBLES ON ELECTIVE OPERATING LISTS CAN REDUCE LENGTH OF STAY AND COST.

H Katsarelis, N McLeod

Oral and Maxillofacial Surgery, John Radcliffe Hospital, Oxford, United Kingdom

Objective

Controversy surrounds recommended time to treatment of mandibular fractures, but current funding is based on a length of stay of 1 night. Competing for theatre time on a shared emergency list is a recognized limiting factor in achieving this. We examined time to theatre and cost for patients with fractured mandibles before and after a change whereby trauma patients were treated on elective operating lists.

Methods

A retrospective analysis of all mandibular fractures admitted between 1st August and 1st December 2013. Trauma and elective lists were combined from 1st October. We compared time to theatre and length of stay.

Results

29 patients were included. Mean time to theatre was 32hours and 43minutes in the initial cohort. Following the change to using elective lists the average time to theatre was 20hours and 53minutes. This was statistically significant ($p<0.05$). Average length of stay was reduced by 1 day. To accommodate these patients on elective lists 7 booked patients required cancellation on the day. These patients were re-booked within 28 days.

Conclusions

Time to theatre is multifactorial and some delays are unavoidable. In changing practice we reduced the time to theatre for mandible fractures; the length of stay and the cost. Reducing length of stay also released capacity in terms of beds and staff time. Rebooking electives within 28days does not incur a fine. Reduced time to theatre can only lead to better patient outcomes.

**P-110****CLASSIFICATION OF COMPLICATIONS OF TRAUMATIC FRACTURES OF THE LOWER JAW**

I. Pohodenko-Chudakova^{1, 2}, O. Chudakov^{1, 2}, A. Barmutskaya¹

¹ *Oral Surgery Chair, Belarusian State Medical University, Minsk, Belarus*

² *Belarusian Collaborating Center of EACMFS, Belarusian Collaborating Center of EACMFS, Minsk, Belarus*

The purpose of the research is to systematize the complications of traumatic fractures of the lower jaw.

Objects and methods. On the basis of the examination and treatment data of 280 patients with complications of traumatic fractures of the lower jaw we systematized information taking into account the time factor, the etiological factor of complications, the nature of the pathological process, the development of related complications, defects in the bone in the lower jaw.

Results. Complicated fractures of the lower jaw are divided into early and late. Complications developing in 2 months after injury are the earliest (haematoma, malocclusion, paraesthesia of the lower lip, traumatic osteomyelitis, slow consolidation of osseous breakings). Based on clinical and radiologic studies of patients with traumatic osteomyelitis they allocate its clinical forms: acute, chronic, chronic acute stage. Chronic traumatic osteomyelitis may occur with adhesion of fragments of the lower jaw, with a delayed consolidation, without fusion of the lower jaw fragments.

Complications developing from 2 months to 1 year are late (false joints, wrong accrete fractures of the lower jaw, neuritis III branch n. trigeminus).

In the absence of fusion of the fragments of the lower jaw in a period of 3-4 weeks to 2 months since the injury, in clinically determined the mobility of bone fragments, the slow consolidation of bone fragments of the lower jaw is determined.

The lack of consolidation of bone fragments of the lower jaw in over 2 months is defined as false joint.

Chronic traumatic osteomyelitis, false joints and wrong accrete mandibular fractures can occur without clinically significant bone defects and with a clinically significant shortening lower jaw. Mandibular bone defect up to 5 mm at achieving consolidation of bone fragments does not lead to malocclusion and functions of the jaw and in osteosynthesis does not require defect restoration. Mandibular bone defect and development of fracture complications of the lower jaw for 5 mm and more demands restoration of bone defects along with the osteosynthesis.

Conclusion. Classification allows to clearly define the tactics of treatment of patients with complicated traumatic fractures of the mandible.



P-114

THE ELIMINATION OF DEFECTS OF THE JAW BONES USING MATERIAL "COLLOST "

E.Diachkova¹, Yu. Medvedev¹, N.Serova², K.Poliakov¹, D.Ispiryan¹, D.Milyukova¹

¹ *Maxillofacial surgery and hospital surgical dentistry, I.M.Sechenov First Moscow State Medical University of Sechenov, Moscow, Russian Federation*

² *Radial diagnostics and treatment, I.M.Sechenov First Moscow State Medical University of Sechenov, Moscow, Russian Federation*

Objective is to increase the efficiency of surgical treatment of patients with defects of the jaw bone.

Methods: on the base of the clinic of maxillofacial surgery of the I.M.Sechenov Moscow State Medical University under the supervision were 104 patients. In 24 patients were diagnosed radicular cysts upper (7 observations) and lower (17 cases) jaw. In 51 patients were diagnosed mandibular fractures within the dentition. In 18 patients were retention dystopia of third molar teeth. In 11 patients were chronic sinusitis with oroantral fistula.

All patients after a standard amount of research were appropriate operated in accordance with the detected pathology: in mandibular fractures within the dentition was osteosynthesis with titanium miniplates or brackets of NiTi and filling of the tooth socket with material "Collost"; cysts of the jaws - cystectomy, tooth extraction or resection of the roots of teeth, filling the residual bone cavity with material "Collost"; retentive distopic third molars - the tooth extraction and filling residual bone cavity with material "Collost"; sinusitis with oroantral fistula - sinusotomy, elimination of fistula, repairing a defect of the alveolar process socket with material "Collost".

Results: all patients had no specifics in the postoperative period. A complex medication and daily bandaging were done. Sutures were removed on 7-9 days.

When carrying out monitoring of X-ray and CT- scan after 1 month all the patients were showed initial signs of callus formation in the field of the compromised integrity alike the forming of the bone and single newly formed bone beams. In 3 months after the operation a more pronounced x-ray signs of bone regeneration were detected: the number of bone beams were increased, their direction became more regular, the volume of bone tissue defect decreased. Full recovery of the bone tissue in the defect according to the data of x-ray study noted through 4-5-6 months after the operation.

Conclusions: the utilization of osteoplastic material "Collost" was showed good results during filling out the residual bone cavities. Therefore we consider that it is a material of choice in the practice of maxillofacial surgeons and dental surgeons.

**P-115****CONDYLAR HEAD REPLANTATION IN HIGH CONDYLAR MANDIBULAR FRACTURES**

Y.A. Medvedev, O.N.Adygezalov, M.M.Alybekov, X. Yang, P.S. Petruk

First Moscow State Medical university after I.M. Sechenov, Moscow, Russian Federation

Objective: To improve the treatment of patients with high condylar process fractures of the mandible with a complete medial head dislocation and with break capsules of TMJ.

Materials and Methods. We observed seven patients with high comminuted fracture of the articular process of the mandible with a complete medial dislocation of his head and a complete rupture of the capsule of the TMJ. According to the patients underwent surgery with replantation, L-shaped osteotomy and osteosynthesis in condylar processes.

In the submandibular field perform skin incision, the soft tissues dissected layers reveal branches of the mandible. After performing the L- shaped osteotomy of the mandibular ramus perform removal of the head of the mandible. Outside the wound produce osteosynthesis between osteotomised fragment and head of the mandible by means of superelastic mini staples of NiTi. On the side of the thigh performed fascia fence size 3 cm 3 and from the capsule form TMJ. Reconstructed condylar process is fixed to the branches of the lower jaw. Active motion was started on 5 -7 day.

Results. Conduct of clinical and MRI study within 15 months showed complete recovery of all the structural elements of the TMJ, restoration of mobility by opening and closing the mouth.

Discussion and Conclusion. Stable osteosynthesis possible to reduce the average length of stay of patients in hospital with these types of injuries by an average of 5 ± 2 days. All of the above shows that the use of functionally stable osteosynthesis using superelastic structures and the formation of the capsule of TMJ in the treatment of HFAP and fractures with dislocation of the medial head of the mandible allows full reposition fragments, stable internal fixation corresponding biomechanical requirements, preservation of blood supply and innervation in the fracture zone, early activation and mobilization of the facial muscles and TMJ .

**P-117****MAXIMUM FORCES APPLIED TO THE ORBITAL FLOOR AFTER FRACTURES**

Falk Birkenfeld, Martin Steiner, Matthias Kern, Jörg Wiltfang, Björn Möller, Ralph Lucius, Stephan Becker

Department of OMF-Surgery, University Hospital Schleswig-Holstein, Campus Kiel, Kiel, Germany

The objective of this study was to measure the force on and displacement of completely detached intraorbital tissue from the bony orbit, as a worst-case scenario after orbital trauma, to preserve the maximum load and predict the necessary strength of reconstruction materials. Six fresh-frozen human heads were used, and orbital floor defects in the right and left orbits were created by the direct impact of 3.0 J onto the globe and infraorbital rim. The orbital floor defect sizes and displacements were evaluated after performing a Le Fort I osteotomy. In addition, after the repositioning of the completely detached intraorbital tissue, the forces and displacements were measured. The mean orbital floor defect sizes were 208.3 (SD, 33.4) mm² for globe impacts and 221.8 (SD, 53.1) mm² for infraorbital impacts. The mean intraorbital tissue displacement after the impact and before repositioning was 5.6 (SD, 1.0) mm for globe impacts and 2.8 (SD, 0.7) mm for infraorbital impacts. After repositioning, the displacements were 0.8 (SD, 0.5) mm and 1.1 (SD, 0.7) mm, respectively. The measured forces were 0.10519 (SD, 0.00958) N without the incorporation and approximately 0.11128 (SD, 0.003599) N with the incorporation of reconstruction materials. The maximum forces on the completely detached orbital tissue were minimal (~0.11 N) and suggest the use of collagen membranes as reconstruction materials for orbital floor defects, at least in medium-sized fractures.

**P-140****THE CONNECTION BETWEEN MANDIBULAR FRACTURE REGENERATION AND VIOLATIONS OF THE HEPATOBILIARY TRACT**

S. Polishchuk, S. Shuvalov

Department of Oral and Maxillofacial Surgery, Vinnitsa National Medical Univesity named after N.I.Pirogov, Vinnitsa, Ukraine

Comorbidities or functional state of the organism have a significant impact on the healing of mandibular fractures. One of the most common pathologies in the population of Ukraine is the violation of the hepatobiliary system. Considering the importance of the liver for the human body, probably it affects the regenerative processes in the area of fractures of the jaws. This mechanism has been studied not enough for today, especially the relationship of the violation of the hepatobiliary system and osteogenesis.

Objective: to identify the relationship between indicators of regeneration of the mandibular fracture and disorders of the hepatobiliary system.

Methods. While studying there were examined 25 patients with mandibular fractures during hospitalization. The age of patients ranged from 19 to 37 years. All patients were divided into two groups. There was found hepatobiliary dysfunction in the form of increasing level of general bilirubin, direct bilirubin, alanine aminotransferase, creatinine in patients of the first group of investigation (18 - patients, 72%). The second group consisted of 7 patients (28%) whose level of marked indicators was within the permissible limits. Also, all patients were studied to identify the level of the marker of bone matrix formation (Total P1NP) and osteocalcin (OCN).

Results. As a result of the studying, the patients of the first group showed the following: the increase of general bilirubin, direct bilirubin, alanine aminotransferase, creatinine. The patients of the second group had all the indicators within normal limits.

Investigation of the indicators of bone regeneration allowed to get the following results. Level of bone matrix formation marker (Total P1NP) of patients from the first group equaled 18.9 ± 1.87 ng/ml and osteocalcin (OCN) - 2.4 ± 0.57 ng/ml. Level of bone matrix formation marker (Total P1NP) of patients from the second group respectively - 43.4 ± 3.73 ng/ml and osteocalcin (OCN) - 14.1 ± 1.57 ng/ml.

Violation of indicators of regeneration of bone wounds is probably associated with functional state of liver.

Conclusions. It is evident from the research that a large percentage of patients with mandibular fractures which have the violation of the regeneration indicators of fractures suffer from hepatobiliary tract dysfunction.



P-142

ORBITAL DECOMPRESSION AFTER FRACTURE

A. Gomez

Sta Lucia Hospital, Cartagena, Spain

Objective:

Show through a clinical case the different possibilities in the treatment of retrobulbar hematoma.

Methods:

Case report

Results:

The patient retained the vision of your eye.

Conclusions:

Different techniques are good and depends on the preference of each surgeon's experience with each technique. On the other hand, makes no sense creating units of fast intervention in case of retro-orbital hematoma.

**P-143****DIAGNOSING OF THE FUNCTIONAL STATUS OF INFRAORBITAL NEUROVASCULAR BUNDLE IN THE CASE OF THE ZYGOMATIC COMPLEX FRACTURE**

Vladislav Malanchuk, Nataliia Timoshchenko, Roman Mamonov

NMU named after O.Bogomolets, Kiev, Ukraine

In the case of zygomatic complex fractures (ZCF) the bone fragments are displaced resulting in compression of the infraorbital neurovascular fascicle of various degree and in some cases it may lead to the infringement of its integrity.

Objective

is to improve the diagnosing of patients with traumatic neuropathy of infraorbital nerve with ZCF using the methods of electroneuromiography and rheography.

Study materials and methods.

35 patients with fresh ZCFs (M-29, F-6) were examined during the period of 2009 to 2012 according to a single standard. To study the functional status of the neurovascular fascicle in the damaged area, all patients were subjected to rheography in the infraorbital site using the longitudinal bipolar method with RHEOTEST computer-aided rheographer (DX-system, Ukraine) and electroneuromyography (ENMG) with REPORTER computer complex (ESAOTEBIOMEDIKA, Italy).

The analysis of the resulting parameters was performed using a standard technology by assessment of rheographic and electroneuromyographic curves. The symmetric non-damage part was studied for comparison and monitoring.

Results and conclusions

The ENMG study found a M-response with reduced range for all patients. The latency and excitation conduction velocity in the nerve was lowered. It was calculated that the damaged infraorbital nerve lost the functional capacity as compared to the normal one by 36 to 47%. The nerve damage was neuropathic by nature (myelopathy). The nerve integrity was preserved for all patients.

The rheographic study found that the injured side shows a sharp reduction of the range of rheographic curve, the availability of numerous additional waves in the descending and the ascending parts of rheogram, the dicrotic wave almost disappears, indicating the difficulty of passing of the pulse wave to the neurovascular fascicle, i.e. its compression. The basic range of the rheogram was reduced on the average by 70%, and the rheographic index was reduced on the average by 30%. At a constant period of the rheogram duration an increase in the duration of rheographic curve rise was observed.

The patients treated at the earliest stage of the disease showed the positive dynamics of clinical parameters earlier than the patients treated later.



P-145

FIXATION OF CONDYLAR FRACTURES: A BIOMECHANICAL STUDY

A. Bucur, O. Dinca, C. Vladan, T.Nita

Oral and Maxillo-Facial Surgery, Carol Davila University of Medicine and Pharmacy, Bucharest, Romania

An analytical model using the concepts of the mechanics of solids was proposed to help to determine the osteosynthes plates optimized position in condylar fractures, which have the minimum stress distribution for a given load condition. It was shown that von Mises stress distribution in osteosynthes plates cross sections have variations in function of plates positions. As a result of utilization of this finite element model and input data, it was shown the optimal position to attach an osteosynthes plate.



P-171

BICYCLING RELATED MAXILLOFACIAL INJURIES

LM. Gonzalez-Perez, N. Fakh-Gomez, FJ. Montes-Carmona, P. Rodriguez-Jara

Department of Maxillofacial Surgery, Virgen del Rocio University Hospital, Seville, Spain

Objective:

Bicycling is an amazing form of exercise and sport but carries a important risk of injury. In this paper, the cause and epidemiology of bicycling related maxillofacial injuries are reviewed.

Methods:

The present report is an analysis of 65 patients (52 male; 13 female) treated for maxillofacial fractures sustained in bicycle accidents at the Department of Oral and Maxillofacial Surgery, Virgen del Rocio University Hospital of Seville, Spain, between 2010 and 2014.

Results:

These traffic accidents accounted for 8% of all maxillofacial bone fractures treated during the same period. Most of the accidents were single vehicle accidents (90%) and took place between the months of March and November of the years concerned, and predominantly affected young male adults. Fall was the most common mechanism of facial injury, followed by collision. Of the patients, 68% had mandibular fractures, 27% had mid face fractures and 5% had fractures in both the middle and inferior thirds of the face. Condylar fractures were by far the most common of the mandibular fractures (72%), a result which differs from studies concerning the profile of mandibular fractures in general. The majority of the middle third fractures were zygomatic (81%). Multiple injuries were diagnosed in 44% of the cyclist and other head injuries were the most common associated injury. Mean hospitalization of the patients (38%) was 5,2 days.

Conclusions:

Bicycling related maxillofacial injuries accounted for a important proportion of the traumatic patients at our department. The results of this study indicate that the use of helmets should be recommended in bicycling, although the most of available protective helmets do not protect the whole facial area of cyclists.

**P-172****SEVERE BEAN-GUN CRANIOFACIAL INJURIES**

George E. Anastasov

MFSS, New York, United States

Recently, a new weapon has appeared on the streets of the major cities in the United States. It is playfully called a "bean-gun" or a riot gun. A riot gun or "less-lethal" launcher is a type of firearm that is used to fire "non-lethal" ammunition for the purpose of suppressing riots. Many of these weapons are 40 mm or 37 mm (about 1.5 inches) caliber. The bean bag round consists of a small fabric or "pillow" filled with #9 lead shot weighing about 40 grams (1.4 oz.). When fired, the bag is expelled at around 70 to 90 meters per second (230 to 300 ft. /s); it spreads out in flight and distributes its impact over about 6 square centimeters (1 sq. in) of the target. It is designed to deliver a corporal blow that will cause minimum long-term trauma and no penetration but will result in a muscle spasm or other reaction to briefly render a violent suspect immobile. The shotgun round is inaccurate over about 6 meters (20 ft.) and has a maximum range of around 20 meters (70 ft.). Bean bag rounds are used when a person is a danger to themselves or others but is not a direct threat in such a manner that deadly force would be appropriate. The round is intended to disable the person without killing him/her. However, reports of death secondary to haemoperitoneum and severe incapacitation secondary to base of the skull fractures have been reported.

Hereby we present a case of a 45 year-old female patient who was shot into the right orbit by a bean-gun and sustained extremely severe orbital compound, comminuted injuries, which lead to right globe enucleation to prevent sympathetic ophthalmia, with resulting loss of vision. The diagnostic, treatment and reconstructive challenges will be discussed and illustrated with this compelling case. We believe this is the first case of severe orbital trauma caused by a bean-gun.

**P-177****MANAGEMENT OF THE ZYGOMATIC COMPLEX FRACTURES USING MATERIALS WITH SHAPE MEMORY EFFECT**

Yu. Medvedev, P. Petruk, Y. Xin, L. Shamanaeva, A. Solov'eva, O. Adygezalov

Dept. of Maxillofacial Surgery, I.M. Sechenov First Moscow State Medical University, Moscow, Russian Federation

Objectives. Zygomatic complex (ZC) - is anatomical structure, and the part of midface. Comprehensive treatment of patients with facial skeleton fractures is an urgent problem facing the maxillofacial surgeons. The number of patients with such type of injury grows annually. In case of wrong choice in treatment tactics the risk of persistent anatomy disturbances of the midface arise.

Currently, there are many techniques of reposition and osteosynthesis which are used in ZC fractures treatment. However, there is no clear data on the optimal timing of surgery, the extent of intervention.

The aim of this study is to improve methods of osteosynthesis in patients with ZC fractures using materials with shape memory effect.

Methods. 85 patients were admitted with a primary diagnosis of "Zygomatic complex fracture" at the department of maxillofacial surgery, during the period from April 2011 to April 2013. In 82 cases reduction and osteosynthesis were performed.

After standard preoperative preparation under general anesthesia open reduction and internal fixation were carried out using NiTi brackets, titanium mini/micro bone plate screws, TiNi implants and their combination. For additional fixation and haemostasis Foley catheter was placed in the maxillary sinus. The catheter was removed on day 2-5 after surgery.

Results. A total of 85 patients (68 men and 17 women) aged 18 to 64 years were included. Peak incidence was in 20 to 30 years age group. In most patients, 65 (76.47 %) the injury was received as a result of domestic violence. Postoperatively, patients were reexamined clinically and radiographically. In all cases the position of the bone fragments was found as satisfactory. Clinical evaluation shows a high level of ZC stability, the absence of inflammation, complete wound healing, no violations in regard to the organ of vision, as well as ENT organs after performed reduction and osteosynthesis.

Conclusions. The use of shape memory materials in ZC fractures management expands the technical capabilities of the surgeon. Restoring the anatomical integrity of the midface allows to achieve high aesthetic result, and ultimately, full rehabilitation.

**P-181****SYNPlicITi CUSTOMIZED GUIDE-PLATE SYSTEM: CONTROLLING ZYGOMA REPOSITIONING USING A REVERSE PLANNING PROCESS**

R. Khonsari^{1, 2}, P. Nicol¹, P. Goudot^{1, 2}, T. Schouman¹

¹ *Department of maxillofacial surgery, APHP - Pitié-Salpêtrière University Hospital, Paris, France*

² *ParisSorbonne Université, University of Paris 6, Paris, France*

Objective - The results of secondary zygoma repositioning are largely unpredictable due the lack of reliable anatomical landmarks. Image-guided surgery with a navigation system is generally recommended for such procedure but many centers are not equipped with such expensive tool. We present our results of guided zygoma repositioning with SynpliciTi customized guides and plates (OBL, Chatillon, France).

Methods – Surgical planning were done with Surgicase (Materialise, Leuven, Belgium). After performing the virtual osteotomies, the zygoma was repositioned aligned along the contour of the mirrored unimpaired zygoma. Osteosynthesis miniplates and pre-drilling guides were designed onto the virtual planning to allow precise surgical transfer. All the patients who were operated on with the SynpliciTi were included. Postoperative CT-scans were superimposed onto the preoperative planning by means of surface registration of the skull. The distances between each corresponding point of the zygoma in the two models were measured visually by color scale and numerically by the percentage of distances under 1 mm.

Results – Seven repositioning of the zygoma in six patients have been included. Mean operating time was 143 min for the patients who had no other procedure than the repositioning of the zygoma. The color scale outcomes and histograms of the distances between the two models are presented.

Conclusions – In this single center short series, the SynpliciTi seems to offer excellent predictability and accuracy in very short operating time for the treatment of the trauma sequels of the zygoma. In contrast, one should also consider the time needed for surgical planning. However, this planning phase is also required in the navigation approach, which implies longer operating time due to the difficult handling of the system and to the free-hand osteosynthesis phase. Though no specific equipment is required, the cost-effectiveness of the device must be evaluated.

Conflicts of Interest - The author's institutions together with OBL applied for a patent related to the SynpliciTi. T Schouman has a consulting relationship with OBL.

**P-183****EPIDEMIOLOGY AND TREATMENT OF FACIAL FRACTURES AT THE ST. OLAVS UNIVERSITY HOSPITAL (NORWAY)**

C. M. Ziegler, Ø. Skaland, N.-P. Fossland

Dep. for Oral & Maxillofacial Surgery, St. Olavs University Hospital / NTNU, Trondheim, Norway

Objectives: Traumatic injuries in the facial area require often major resources and interdisciplinary treatment including emergency surgery under general anaesthesia.

St.OlavsUniversityHospital (SOHO) in Trondheim is one of only two institutions in Norway recognized for further specialisation in Maxillofacial Surgery. The department of Oral and Maxillofacial surgery at SOHO is main responsible for facial traumatology in Middle-Norway with a population of around 500.000.

Methods: As no priory complete study on facial injuries has existed in Norway, we carried out a retrospective investigation on SOHO`s patients with operative treatment of facial fractures during the time period of 2000 to 2010. Based on the ICD-10 system all relevant patient information including trauma causes, diagnosis, therapy and outcome were registered.

Results: 763 patients of an age between 2 and 97 years (average of 36.7) with facial fractures as primary diagnosis were documented. The highest amount of fractures was found in the age group of 21-30 years (26.9%). 74.3 % of all patients were men according a ratio men-woman of 3-1. The amount of injuries varied and was highest in 2008 and lowest in 2003. During all years we could observe a peak after spring and then again around Christmas and New Year's Eve. Alcohol as cause for injury was seen most often between May and August. Causes like violence, fall and traffic accident were scattered over the year but showed also a higher amount during summer. The most common diagnosis was fracture in the maxilla and zygoma, followed by isolated fractures of the orbit and the mandible. Over 70 % of all cases were treated with open approached and reposition. Complications were found most often at patients affected by high energy and multi-traumas and were also related to the duration of stay at ward.

Conclusions: Violence and alcohol (often combined) are common risk factors for facial traumas. Alcohol is very expensive in Norway and almost only sold in government stores. Nevertheless, more intensive educational measures can be a potential prevention. Regarding sport related injuries like dental traumas we suggest a common use of protective devices such as mouth guards and helmets.



P-198

SURGICAL APPROACH TO THE TMJ IN INTRAARTICULAR CONDYLE FRACTURES

A. Vesnaver, D. Vozlič, V. Didanovič, M. Kočar, A. Kansky

Dept. of Maxillofacial and Oral Surgery, University Medical Centre Ljubljana, Ljubljana, Slovenia

OBJECTIVE: Open reduction and internal fixation (ORIF) of displaced intraarticular condyle head fractures is often not attempted for fear of damage to the overlying vital structures, above all branches of the facial nerve. Indeed, at many institutions, intraarticular fractures are still considered contraindications for surgical treatment.

METHODS: We would like to present the approach to the TMJ in a step-by-step fashion, focusing on possible pitfalls and critical steps of the procedure. Diagnostic CT imaging, absolutely necessary in diagnostics of intraarticular fractures, will also be presented. Tricks in finding the displaced fractured fragment, its repositioning and fixation, will be discussed.

RESULTS: Experiences from our department and results of a 10-year period, will be presented.

CONCLUSION: Results of surgical treatment are far superior to those of conservative treatment, and the surgical procedure, if carried out carefully and systematically, is straightforward, with few postoperative complications.

**P-200****OUTCOMES OF ENDOSCOPICALLY ASSISTED SURGICAL TREATMENT OF MANDIBULAR CONDYLE FRACTURES: A RETROSPECTIVE STUDY ABOUT A SERIES OF 22 PATIENTS**

V.PRADE^{1, 2, 3}, P.SEGUIN¹, T.ALIX^{1, 2, 3, 4}

¹ *Maxillo-Facial Surgery, University Hospital of Saint-Etienne, Saint-Etienne, France*

² *General Surgery - Unit of Reconstructive Surgery, University Hospital of Saint-Etienne, Saint-Etienne, France*

³ *SNA-EPIS EA4607, University Hospital of Saint-Etienne, Saint-Etienne, France*

⁴ *CREATIS-LRMN, CNRS UMR 5220 - INSERM U1044, University of Lyon 1, Villeurbanne, France*

Objective: The condylar region is frequently involved in mandibular fractures, and many types of management exist. Mini-invasive endoscopic surgery is an alternative to open reduction. The goal of this paper was to evaluate the outcomes of this technique that is not performed by every teams.

Methods: This monocentric retrospective work studied patients consecutively operated of a condylar fracture (type II to V of the Spiessl and Schroll classification) by intraoral approach with endoscopic assistance during a period of 30 months. Functionnal and radiological outcomes and complications were evaluated.

Results: 22 patients (25 fractures) were operated. 17 patients (19 fractures) could be followed (mean follow up: 16.7 months). Mean values were, concerning interincisal opening: 45 mm (+/- 8.4); protrusion: 8.3 mm (+/- 1.9); ipsilateral to the fracture excursion of the jaw: 8.6 mm (+/- 2) ; contralateral excursion: 8.7 mm (+/- 4). Three combined approach to a preauricular approach were realized. Reduction of the fracture was good in 10 out 19 fractures and poor in 3. Complications found were : 3 cases of infection, one case of fixation failure with good consolidation, and in combined approaches, 2 cases of temporary facial palsy and 2 cases of Frey syndroms.

Conclusions: Endoscopic assistance in surgical management of fractures of the base and the neck of the mandibular condyle is reliable, with good functionnal outcomes and a low rate of specific complications, with regard to facial nerve lesion and visible scar of open reduction.



P-206

TETANUS: ALMOST GONE BUT MUST NOT BE FORGOTTEN

J. Parekh, R. Pabla, O. Sheikh, T. Lloyd

Queensway Dental Care, London, United Kingdom

Introduction: Tetanus is an infectious, non-contagious disease caused by release of tetanospasmin, a highly potent neurotoxin produced by *Clostridium tetani*. The European Center for Disease Control has indicated that this is an uncommon infection with an overall incidence of 0.02/100000 population in 2010. Tetanus prophylaxis is included in the primary vaccination schedule of most EU countries.

This report highlights cephalic tetanus as a rare form of the disease and re-iterates the importance of tetanus management as a routine part of trauma and wound care.

Case Report: A 76-year old lady presented to the emergency room following a traumatic collision resulting in a forehead laceration. She was subsequently discharged following suturing of this wound. Tetanus status was not determined and prophylaxis was not administered.

10-days later she was admitted to hospital with right-sided facial weakness and a presumptive diagnosis of stroke. This was subsequently superseded by a clinical diagnosis of cephalic tetanus supported by serum antibody levels consistent with a non-immune tetanus status.

Discussion: Tetanus remains a real post-traumatic hazard. This is an important reminder that, despite the low incidence of tetanus in the developed world, on-going vigilance and prophylaxis are of the utmost importance in keeping this potentially life threatening disease at bay. With the low incidence of tetanus and therefore limited clinical experience of healthcare professionals, tetanus prophylaxis must not be complacently overlooked in the routine management of all forms of trauma.

Tetanus prophylaxis is a routine part of trauma and wound-care management and must not be forgotten.



P-216

RECONSTRUCTION OF ISOLATED ORBITAL FLOOR FRACTURES USING THE PREBENT TITANIUM MESH MATRIXORBITAL®

W. Reich, D. Seidel, T. Bredehorn-Mayr, A.W. Eckert

Department of Oral and Maxillofacial Plastic Surgery, Martin-Luther-University Halle-Wittenberg, Halle (Saale), Germany

Introduction

The surgical treatment of isolated orbital floor fractures is controversially discussed. Several treatment modalities concerning safety and efficiency in surgery of these fractures are established. Prefabricated titanium meshes provide significant advantages in intraoperative management. The aim of this study was to analyse the usability of the MatrixORBITAL® plate (Synthes, Tuttlingen, Germany).

Material and Methods

We evaluated 14 patients from 2011 (June) to date with an isolated orbital floor fracture in a prospective pilot study. All patients in the study group had undergone reconstruction with the MatrixORBITAL® plate. The following data were collected and analysed [SPSS 20.0]: age, gender, fracture category according to Jaquiéry et al. (2007), duration of surgery, complications, globe motility (Harms wall), exophthalmometry, infraorbital nerve function, evaluation of facial symmetry and aesthetic, personal contentment of the patient. As a reference we considered patients having been reconstructed by a PDS® sheet, an antral balloon or other materials.

Results

The study group consisted of 5 women and 9 men at the age of 33 to 83 years. All cases presented a large disruption of the orbital floor ($>2\text{cm}^2$ bony defect; category II-III). Volume changes were universally associated with binocular diplopia, only in one case with a severe entrapment of inferior rectus muscle. The mean duration of the operation was 110 minutes (minimum 50, maximum 135 minutes). Postoperatively diplopia was decreasing in all cases. Facial symmetry and aesthetic were restored. None of the patients had a significant impairment of the vision, and all patients were contented without reoperation. The analysis of functional outcomes between the groups "titanium mesh", "PDS-sheet" and "antral balloon" revealed no significant differences.

Conclusions

Based on the present investigation and our experience we recommend this prefabricated titanium plate in the treatment of isolated orbital wall fractures, or in combination with the medial wall. The main advantage is the excellent intraoperative handling. The operating time is expected to be reduced further.

**P-236****EXCEPTIONAL FRACTURES OF THE MAXILLA**

Montacer Bouzaiene

University Hospital Center, Mahdia, Tunisia

There are bone components of the maxilla that have not been previously mentioned in the literature to be an isolated fracture site. These traumatic lesions are characterized by particular mechanisms and circumstances that are related to the existing anatomic conditions. These fractures ought to be cited with definition of their proper clinical implications.

Isolated fracture of the anterior nasal spine happens after, a direct blow on the nasal base and a long piece of bone. Its clinical manifestation is significant swelling of the upper lip and a swelling and ecchymosis of the superior vestibular sulcus. The diagnosis is made by means of a simple radiography of the region.

Isolated fracture of the posterior wall of the maxillary sinus is another rare entity induced by a direct trauma of the maxilla tuberosity with an advocated hypothesis of a high intra-sinus pressure that leads to the rupture of the posterior wall continuity.

Through the description of some cases, the authors try to establish the clinical features of these seldom entities to be part in the panoply of facial trauma lesions.



P-270

CORRECTION OF SEVERE ENOPHTHALMOUS BY SIMULTANEOUS FAT GRAFTING AND ANATOMIC ORBITAL RECONSTRUCTION

P Metzler, M Pfaff, Y Parsaei, D Steinbacher

Plastic and Craniomaxillofacial Surgery, Yale University, New Haven, CT, United States

Background: Secondary enophthalmos correction, especially in severe cases, represents a surgical challenge. The complex injury pattern involving hard and soft tissue warrants individualized multi-modality treatment strategies. Even with seemingly successfully surgical execution, relapse or incomplete correction of globe position is the rule. In attempt to improve ability for correction, we have implemented concurrent endoorbital fat grafting and to orbital framework reconstruction. The purpose of this study is to describe our treatment approach and objectively analyze the results.

Methods: Pre- and postoperative clinical examinations, Hertel measurements and radiologic imaging were recorded. Orbitometric measurements were performed using a 3-D post-processing software SurgiCase; Materialise, Leuven, Belgium). A follow-up period of at least six months was taken for final evaluation.

Results: Post-operatively, all patients showed a significant improvement of the globe's position. Neither visual impairment nor disability of globe motility could be seen. No additional fat augmentation was needed. Clinical examination was proven by Hertel measurements and CT-based orbitometric measurements.

Conclusions: Simultaneous endoorbital fat grafting and orbital plate reconstruction represents a suitable method for antero-superior globe positioning in severe enophthalmos correction.



P-273

COMPARISONS OF OPEN VERSUS CLOSED TREATMENT IN THE MANDIBULAR SUBCONDYLAR FRACTURES

J.Y. Ryu, S.Y. Kim, C.H. Jeong, J.Y. Cho, H.M. Kim

Dept. of Oral and Maxillofacial Surgery, Gachon University Gil Medical Center, Incheon, South Korea

Objectives

To compare open reduction and internal fixation (ORIF) with closed reduction (CR) in the management of subcondylar fractures.

Methods

Forty eight patients with subcondylar fracture from January, 2010 to March, 2013 were evaluated. Fifteen patients were performed with CR and 33 patients with ORIF. The following parameters were measured at follow-up period (3 ~ 36 months; mean 7.06). Clinical parameters included occlusion, maximal mouth opening, temporomandibular joint dysfunction, sensory disturbance. Radiological parameters included shortening of ascending ramus and sagittal deviation of the fragment. Telephone survey was performed for 7 of 15 CR patients, who did not visit the our department between the first visit and 3 months later.

Results

In CR group, all patients did not have any problems in clinical parameters. The average period of maxillomandibular fixation (MMF) was 5.47 days. Radiologically the preoperative average sagittal angulation of subcondylar fragment was 3.67° and ramus height loss was 2.44 mm in CR group. In ORIF group, all patients did not also have any clinical problem and the average period of MMF was 6.33 days. Radiologically the preoperative average sagittal angulation of subcondylar fragment was 8.66° and ramus height loss was 3.61 mm in ORIF group.

Conclusion

CR had the satisfactory result of clinical parameter although ORIF bring about the more accurate reduction of fractured fragment.

**P-277****CLINICAL FOLLOW-UP ON SAGITTAL FRACTURE AT THE TEMPORAL ROOT OF THE ZYGOMATIC ARCH: DOES IT NEED OPEN REDUCTION?**

JY. Yang, BN. Seo, JS. Cheon, KM. Son

Plastic Surgery, Chosun University Hospital, Gwangju, South Korea

Objective: The zygoma is a major portion of the midfacial contour. When deformity occurs in this area, a reduction should be conducted to correct it. If a sagittal fracture at the temporal root of zygomatic arch occurs, this also requires reduction, but it is difficult to approach due to its anatomical location, and the possibility of fixation is also limited. Thus, the author attempted the reduction of sagittal fracture by two- or three-point fixation of the fractured orbitozygomaticomaxilla and the Gillies approach to zygomatic arch fractures without direct manipulation. The preoperative and postoperative results of the patients were evaluated. Follow-up was performed to establish a treatment guideline.

Methods: A retrospective study was done with 40 patients who had sagittal fractures at the temporal root of the zygomatic arch from March 2009 to June 2012. Only two- or three-point fixation was performed for the accompanying zygomatic-orbital-maxillary fracture. The Gillies approach was used for complex fractures of the zygomatic arch, while sagittal fracture at the temporal root of the zygomatic arch was only observed without reduction. All patients were evaluated preoperative and postoperative computed tomography and X-ray scans for the comparison. We measured the bone gap (the length of widest portion of the sagittal fracture), the degree of depression and the degree of temporal protrusion of the zygomatic arch. The result was analyzed by the t-test PASW ver. 18.

Results: Mean difference of degree of bone gap (n=40) was $1.03\text{mm} \pm 0.05\text{mm}$ (95% confidence : 0.67-1.34, p-value <0.05). Mean difference of degree of depression was $1.40\text{mm} \pm 1.26\text{mm}$ (95% confidence: 1.27-4.36, p-value, 0.05). Mean difference of degree of protrusion was $2.22\text{mm} \pm 1.46\text{mm}$ (95% confidence : 1.40-3.04, p-value <0.05). Preoperative and postoperative bone gap differences, the depression level, and the degree of temporal protrusion showed a marked improve in the mean difference at a 95% confidence interval. The results were acceptable.

Conclusions: In the treatment of sagittal fractures at the temporal root of the zygomatic arch, The results were acceptable to use indirect reduction and non-fixation methods by doing two - or three-point fixation of accompanying zygomatic-orbital-maxillary bone fractures.

**P-281****A MINIMUM DATA SET TO IMPROVE CLINICAL DIAGNOSIS AND RECORD KEEPING OF FACIAL INJURIES IN THE EMERGENCY DEPARTMENT**

S Haworth, A Bates, A Beech, G Knepil

Oral and Maxillo-facial Surgery, Gloucestershire Royal Hospital, Gloucester, United Kingdom

Introduction: Targeted history, examination, and detailed record keeping are vital for patients presenting to the Emergency Department (ED) with facial injuries. In the UK, peri-orbital trauma is commonly triaged by junior ED physicians and ED nurses who do not have specialist knowledge of this complex anatomical area. We have therefore identified a minimum clinical data set, which facilitates safe and effective medical examination and record keeping.

Objective: To demonstrate the impact of a minimum data set on diagnosis and medical record keeping for patients with facial injuries

Methods: A prospective audit of the clinical documentation of facial injuries presenting to the ED was undertaken at our institution. All patients who presented to the ED with suspected bony peri-orbital injuries during two sampling periods were included for analysis. Following the initial sampling period, an interventional proforma was introduced, and subsequent patient notes were evaluated for improvement in quality.

Results: Thirty three patient notes were included from two sampling periods. Prior to the introduction of our proforma, negative clinical findings were rarely recorded. Head injuries and the presence of multiple trauma were significantly more likely to be documented than other findings before introduction of the proforma (100 % and 83.3 ± 0.38 % of cases, $p < 0.001$). Prior to the proforma intervention, the presence or absence of bony asymmetry was reported in only 29 ± 0.4 % of cases, and a bony step in 25 ± 0.4 %, clinical swelling in 62.5 ± 0.5 %, malocclusion findings in 16.7 ± 0.4 % and pain on biting in 4.1 ± 0.2 %. Following the introduction of the minimum data set, a significant increase in recording of all criteria of facial injuries was observed ($p < 0.01$).

Conclusions: Prior to the introduction of a proforma for patients presenting with peri-orbital injuries, medical examination and record keeping was often incomplete and negative findings were rarely recorded. The introduction of a minimum data set has facilitated diagnosis and medical record keeping in facial injuries at our institution.

**P-284****RETROAURICULAR TRANSMEATAL APPROACH TO MANAGE MANDIBULAR CONDYLAR HEAD FRACTURES**

A. Benech, M. Nicolotti, M. Brucoli, N. Baragiotta, M. Giarda, A. Gatti, E. Broccardo

Oral and Maxillofacial Surgery, A.O.U. Maggiore della Carità - Eastern Piedmont University - Novara, Novara, Italy

OBJECTIVE : The analysis of the international scientific literature on this argument, shows a multitude of reported surgical approaches and technical variants with some unresolved technical problems to gain direct access to mandibular condylar head fractures; they can be divided into 2 groups: intraoral and extraoral.

In 2005, Neff et al (Mund Kiefer Gesichtschir 2005;9:80), supported by a previous experimental work, reported a successful clinical study of condylar head fractures treated by a retroauricular approach; this article is in German, and the later English-language literature does not mention about this approach to open reduction and internal fixation of mandibular condylar fractures. The aim of our presentation is to illustrate our experience about the retroauricular transmeatal approach.

METHODS : We collected data of 18 consecutive adult patients who, after the discussion about all options, had consented to have 19 mandibular condylar head fractures treated with open reduction and internal fixation by miniplates and screws via a retroauricular transmeatal approach. We exposed the temporomandibular joint area easily and better by dissecting via a retroauricular route with identification, ligation, and transection of the retromandibular vein; because of the posterior access, the frontal branch of the facial nerve and the auriculotemporal nerve are located and protected within the substance of the anteriorly retracted flap, superficial to the retromandibular vein.

RESULTS : Clinical examination during the follow-up showed temporary weakness of the frontal branch of the facial nerve in 1 case with a recovery to normal function of 3 months; no patients had permanent weakness of the facial nerve or injury of the auriculotemporal nerve. There was absence of any salivary fistula, sialocele, and Frey syndrome. Only in one case we found a minimal auditory stenosis but hearing was preserved in all cases. No aesthetic deformity or scarring. There was absence of any infections or hematoma.

CONCLUSIONS : Retroauricular approach provides good exposure of the temporomandibular joint and satisfactory protection from nerve injuries and vascular lesions, allowing an adequate osteosynthesis. The scar is hidden behind the ear, and the morbidity is low in terms of auditory stenosis, aesthetic deformity, and salivary fistulas.

**P-287****EXTRAORAL APPROACH TO MANDIBULAR CONDYLAR FRACTURES: OUR EXPERIENCE WITH 116 CASES**

G. Colletti, V.M.A. Battista, K. Tewfik, F. Allevi, G. Barbera, A. Tagliaferri, F. Biglioli

University of Milan, Milan, Italy

Objective

Mandibular condylar fractures are very common. There still is a lack of consensus in the literature regarding indications for surgical treatment and many approaches have been described. While endoral access may seem ideal in that it is safe for the facial nerve and doesn't leave scars, it can be extremely difficult, it is not indicated for treating "high" fractures and the functional results can be tidal. Many extraoral approaches have been presented in the literature. The Authors of this paper adopt the "mini-retromandibular" approach since its introduction in 2006. The aim of this study is to present the experience of the Authors with 116 consecutive condylar fractures managed by means of this extraoral approach. The long term results are presented as well as the complications. Finally, the role of innovative fixation devices such as delta and trapezoid plates are discussed.

Methods

Between June 2006 and December 2013, 96 patients with 116 extra capsular condylar fractures underwent open reduction and rigid fixation of fractures by means of a "mini-retromandibular" transmassetric approach. All patients underwent postoperative roentgenographic evaluation either with OPG, CT, or both.

Results

Dental occlusion and anatomic reduction were restored in all 116 condylar fractures. Postoperative infection developed in four patients. There was one sialoceles and two cases of plate fracture. One of these patients developed pseudoarthrosis and had to be operated on again. Four patients experienced transient palsy of the buccal branch of the facial nerve. No permanent deficit of any facial nerve branch was observed. No condylar head resorption was noted.

Conclusions

Our favourable experience with the treatment of the first 116 condylar fractures using the mini-retromandibular approach let the Authors infer that it can allow a safe management of extracapsular condylar fractures at all levels. The use of advanced fixation devices such as delta and trapezoidal plates makes fracture manipulation and fixation quicker and easier.

**P-298****THE SUBSTITUTION OF LOWER ORBITAL WALL DEFECT IN THE SURGICAL TREATMENT OF PATIENTS WITH COMPLICATED ZYGOMATICO-ORBITAL FRACTURES**

A.Solov'eva¹, E.Diachkova², V.Volkova², P.Petruk²

¹ *Traumatologic-orthopedic department, Magadan district hospital, Magadan, Russian Federation*

² *Department of Maxillofacial Surgery and hospital surgical dentistry, I.M.Sechenov Moscow State Medical University, Moscow, Russian Federation*

Objectivies. The increasing of the efficiency of surgical treatment of patients with fractures of zygomatico-orbital complex complicated with the lower orbital wall fractures.

Materials and methods. 22 patients with the fractures of zygomatico-orbital complex complicated the comminuted fractures of the lower orbital wall were treated in traumatologic-orthopedic Department of Magadan district hospital from November 2012 and December 2013. The patients were gathered of complaints, anamnesis of the injury, done standard examinations: a visual inspection, percussion, palpation of the region of injury, x-ray of the skull in a direct and Water's views, CT of the midface, consultations of specialists. Surgical treatment was carried out on 20 patients, 2 patients were received conservative treatment. All patients underwent a comprehensive drug therapy.

Results. In all cases (20 patients) the operation was performed in the volume of the osteosynthesis of the zygomatico-orbital complex with titanium micro-plates and (or) TiNi brackets with the shape memory. The lower orbital wall defects were filled in 4 cases with TFPE prostheses of company «Ecoflon», in 4 cases - titanium mesh implants off company «Conmet», in 12 cases the autoplasty of the lower orbital wall was made with cortical transplant from a wing of the Ilium. In all cases the results of surgical treatment were good: there were no posttraumatic deformations, complications of the organ of vision. In aftercare period during control CT after 1, 3, 6, 12 months the position of bone fragments was satisfactory, the graft resorption in a year was less than 2%.

Conclusions. Our experience allows us to consider, that the utilization of cortical plate transplants from the wing of the Ilium for substitution of the defects of the lower orbital wall is the method of choice because of excluding foreign material rejection.

**P-305****NIKELID TITANIUM MESH IN SURGICAL TREATMENT OF ORBITAL FRACTURES.**

L.S.Shamanaeva, Y.A. Medvedev, S.V. Shamanaev, K.A. Polyakov, P.S. Petruk

Maxillofacial surgery, I.M.Sechenov First Moscow State Medical University, Moscow, Russian Federation

Objective: Traumatic damages of midface zone represent one of the most difficult problems of emergency maxillofacial surgery. Misdiagnosis and absence of treatment can be a reason of bone deformations, emergence of permanent aesthetic and functional problems. In this article we present the experience of treatment of patients with orbital floor fractures with the superelastic nikelid titanium mesh.

Material and Method: Nikelid titanium mesh consists of nikelid titanium porous fibers 60-80 nanometers in diameters. A total of 60 patients underwent orbital floor reconstruction from 2009 to 2012. Among those patients 48 had zygoma fractures, 6 – maxillary fractures and 6 – “blow out” fractures. All the patients were treated with a standard protocol – if the orbital floor fracture was diagnosed on CT the subciliary incision was done and the reconstruction was performed using nikelid titanium mesh. This material was created in defect size during surgical intervention and then overlapping the defect to reduce further removal, delicately inserted and does not need to be anchored.

Results: 60 patients were treated using this technique from 2009 to 2012. On the postoperative CT the implant was in a good position in all cases. Clinical evaluation showed no complication due to infection, implant migration or functional disorder of visual organ over the period from 3 months to 3 years follow up. The use of nikelid titanium tissue for orbital floor reconstruction has been shown to be safe and effective. The accurate anatomical reproduction of orbital floor contours is achieved due to superelasticity of nikelid titanium. This generally leads to reduced operation time, and improve in functional and esthetic outcomes in orbital floor fractures.

Discussion: We presented the experience of the nikelid titanium mesh in orbital floor reconstruction. This material can be used in orbital floor reconstruction with good result.

**P-306****ANATOMIC-TOPOGRAPHIC SUBSTANTIATION OF THE LOWER ORBITAL WALL RECONSTRUCTION AFTER FRACTURES OF THE ZYGOMATICO-ORBITAL COMPLEX**

V.A. Volkova, YU.A. Medvedev, V.N. Nikolenko, A.A. Solov`eva

Maxillofacial surgery and hospital surgical dentistry, I.M. Sechenov 1st State Moscow Medical University, Moscow, Russian Federation

Objective. At present, traumas of the middle part of the craniofacial region are presented mainly by fractures of zygomatico-orbital complex with involvement of the orbital walls. These fractures are most often accompanied by damage of the lower orbital wall due to specific anatomical structure and topography of the latter. Timely diagnostics of the damage type, knowledge of the orbital anatomy and topography, complex approach to data evaluation and physician's experience allow determination of the optimal treatment tactics in each individual case of fracture. It allows prevention of development of functional and cosmetic defects. The study was aimed at improvement of treatment efficacy in cases of fractures of zygomatico-orbital complex with damage of the lower orbital wall.

Methods. We studied 165 documentary described skulls (137 male and 28 female) of people 18-70 years old, kept at the Fundamental Museum of the Chair of Normal Anatomy of V.I. Razumovsky Memorial Saratov State Medical University. Choice of the people's age was determined by the fact, that growth and development of the body consummate and become mature at juvenile age of 17-21 years old. Fractures of zygomatico-orbital complex with damage of the lower orbital wall are most prevalent in these age groups.

Results. We measured distance between the inferior lateral orbital point and the inferior orbital fissure in all 165 skulls. This parameter ranged from 10 mm to 23 mm in male skulls (mean value for the right orbit 16.06 mm, left orbit – 16.16 mm), and from 11 mm to 20 mm in female skulls (mean value for the right orbit 15.51 mm, left orbit – 15.00 mm).

Conclusions. Each individual patient, and each case of fracture of zygomatico-orbital complex with damage of the lower orbital wall, trauma type and mechanism of damage are specific and require individual approach to treatment planning. The results of this study give craniofacial surgeons a more precise understanding of anatomical variants and peculiarities of the orbital structure, and help to determine optimal tactics of surgical treatment of such craniofacial damages and minimize the risk of post-surgery complications.



P-312

IS IT SAFE TO USE AN ABSORBABLE PLATE FOR MANDIBLE FRACTURES?: COMPARISON OF STABILITY WITH TITANIUM PLATE AND SCREWS FIXATION

C.H. Jeong, H.Y. Lim, J.Y. Ryu, J.Y. Cho, H.M. Kim

Dept. of Oral and Maxillofacial Surgery, Gachon University Gil Medical Center, Incheon, South Korea

Objective

the purpose of this retrospective study is to compare absorbable plates with titanium plates for treatment of mandible symphysis and angle fractures.

Methods

patients with mandibular symphysis and angle fractures were divided into two groups. the control group received titanium plates while the experimental group applied the absorbable plates. all the procedures were carried out under general anesthesia using standard surgical techniques. frequency of plate/screw breakage or loosening, development of infection, malocclusion, malunion, wound dehiscence, the need for hardware removal and any other technical difficulties were compared between the two groups.

Results

a total of 13 patients were included in the experimental group where 39 absorbable plates were applied. the control group consisted of 16 patients and received 48 titanium plates. the mean age in the experimental group and the control group were 28.29 ± 12.91 and 24.23 ± 6.87 years respectively. there were 4 dehiscence cases(25%) in those in the titanium plate and screws fixation group versus 2 dehiscence cases(15.38%) in the absorbable plate and screws fixation group. all cases was healed favorably within 7days without further infection signs. there was no significant major complications in the both group, which were defined as a need for further surgical intervention.

Conclusions

Absorbable plates can be used as an alternative to titanium plates in mandibular fractures. they are also good means to stabilize fractures in patients treated with simultaneous fractures of the mandible symphysis and angle.

**P-317****THE ESTIMATION OF POST-OPERATIVE BLEEDING AFTER REDUCTION OF BLOW-OUT FRACTURE: THE EFFECTIVENESS OF NEGATIVE-PRESSURE DRAINAGE SYSTEM**

C. W. Park, J. Y. Yang, J. S. Cheon, K. M. Son

Department of plastic and reconstructive surgery, Chosun university hospital, Gwang-ju, South Korea

Objective

Retrobulbar hemorrhage is a rare complication of mid-face injury, blepharoplasty, facial fracture surgery, peri-orbital surgery, and circumbulbar anesthesia. The incidence of post-operative retrobulbar hemorrhage is 0.3-0.4% after the reduction of facial bone fracture. We experienced two cases of retrobulbar hematoma after reduction of blow-out fracture. The authors performed hematoma removal and decompression emergently under diagnosis of the retrobulbar hematoma. The first patient lost his visual sight. The second patient improved his symptoms and vision. After experienced these two cases, we placed negative drainage system routinely regardless of bleeding since 2011 and then checked post-operative bleeding volume. The purpose of this study was to estimate the post-operative bleeding after the reduction of a blow-out fracture and to demonstrate the effectiveness of a negative-pressure drainage system with a scalp vein set tube.

Methods

From January 2006 to July 2013, we handled a total of 1,491 cases of blow-out fractures. Two of them (0.13%) were diagnosed as retrobulbar hematoma in 2011. After experiencing two cases of retrobulbar hematoma, we have been routinely using a scalp vein set tube as a negative-pressure drainage system to check the blood volume after an operation. And this system was maintained for 1 to 2 days after surgery when any post-operative bleeding was not seen anymore.

Result

From January 2012 to July 2013, a total of 131 patients underwent blow-out fracture repair and experienced application of a negative-pressure drainage system using a scalp vein set tube. Their mean total drained amount was 12.6 ml, maximum amount was 47.5 ml in the two days after the surgery. The maximum drained amount was 41.7 ml on the day of the surgery. All the patients had no cardinal signs or symptoms of retrobulbar haematoma and no complications.

Conclusion

Retrobulbar haematoma is a rare but critical surgical complication that leads to permanent visual loss. Considering the limited orbital cavity and post-operative oedema, the volume of post-operative bleeding is thought to be enough to compress the optic nerve if the blood is not drained. Thus, we recommended a simple negative-pressure drainage system to prevent retrobulbar haematoma.



P-318

EUROPEAN MAXILLOFACIAL TRAUMA (EUR.MA.T.) PROJECT: A MULTICENTRE PROSPECTIVE STUDY.

P. Boffano¹, F. Roccia², E. Zavattero², E. Dediol³, V. Uglešić³, Ž. Kovačič⁴, A. Vesnaver⁴, V.S. Konstantinović⁵, M. Petrovic⁵, J. Stephens⁶, A. Kanzaria⁶, N. Bhatti⁶, S. Holmes⁶, P. Pechalova⁷, A. Bakardjiev⁷, V. A. Malanchuk⁸, A.V. Kopchak⁸, P. Galteland⁹, E. Mjøen⁹, P. Skjelbred⁹, C. Koudougou¹⁰, G. Mouallem¹⁰, P. Corre¹⁰, S. Løes¹¹, N. Lekven¹¹, S. Laverick¹², P. Gordon¹², T. Tamme¹³, S. Akermann¹³, K.H. Karagozolu¹, T. Forouzanfar¹.

¹Department of Oral and Maxillofacial Surgery/Pathology, VU University Medical Center and Academic Centre for Dentistry Amsterdam (ACTA), Amsterdam, The Netherlands.

²Department of Maxillofacial Surgery, University of Turin, Turin, Italy

³Department of Maxillofacial Surgery, University Hospital Dubrava, Zagreb, Croatia

⁴Maxillofacial department, UKC Ljubljana, Slovenia

⁵Clinic of Maxillofacial Surgery, School of Dentistry, University of Belgrade, Serbia

⁶Department of Oral and Maxillofacial Surgery, Royal London Hospital, Barts Health NHS, London, UK

⁷Department of maxillo-facial surgery, Medical University, Plovdiv, Bulgaria

⁸Department for Oral and Maxillo-facial Surgery, Bogomolets National Medical University, Kiev, Ukraine

⁹Department of Maxillofacial Surgery, Oslo University Hospital, Oslo, Norway

¹⁰Service de Stomatologie et Chirurgie Maxillo-faciale, Chu de Nantes, France

¹¹Department of Maxillofacial Surgery, University of Bergen, Bergen, Norway

¹²Department of Oral and Maxillofacial Surgery, NHS Tayside, University of Dundee, Dundee, UK

¹³Department of Stomatology, University of Tartu, Tartu, Estonia

Objective

The purpose of this prospective multicentre research project is to describe and assess maxillofacial injuries epidemiology and management at different European Maxillofacial Surgery Centres, in order to decrease the bias of patient's selections, increase the number of study population, and give thorough information about the incidence of facial trauma across Europe.

Methods

This study is based on a systematic computer-assisted database that has allowed to continuously record patients hospitalized with maxillofacial fractures in 13 Maxillofacial Surgery Units across Europe, since Monday 31st December 2012 to Sunday 29th December 2013.

The following data have been recorded for each patient: gender, age, etiology, site of facial fractures, date of injury, timing of intervention, FISS, hospital stay.

Results

A total of 4155 fractures from 3396 patients were recorded over the study period. On the whole male patients (n = 2655, 78.2%) outnumbered female patients (n = 741, 21.8%), with the M:F ratios ranging from 2.2:1 in Amsterdam to 9.4:1 in Kiev. The observed mean age was quite variable with values between 29.9 (Dundee) and 43.9 years (Ljubljana).

On the whole, 39% of injuries were determined by assaults, followed by falls (31%), motor vehicle (11%), sport (11%), and work accidents (3%). However, some differences were observed across Europe, with assaults and falls alternating as the most important etiological factors.



The analysis of etiological subcategories showed the most frequent mechanisms of assaults (fists), falls (falls to ground consciously), motor vehicle accidents (cars), sport (football), and work accidents (farm/forestry workers).

Mandibular fractures were the most commonly encountered injuries (42%), followed by zygomatic (24%) and orbital (16%) fractures. On the whole, most mandibular fractures involved the extracapsular condyle (26%), followed by body (22%) and angle (19%).

Monthly distribution evidenced that July was the month with most injuries (11%), although distribution per months was quite uniform.

Conclusions

This prospective multicentre study with the collaboration of maxillofacial surgery units across Europe has allowed to decrease the bias of patients' selection and increase the number of study population, thus permitting to obtain reliable and uniform epidemiological information about maxillofacial trauma in Europe.

**P-323****ORBITAL WALL RESTORING SURGERY IN THE INFEROMEDIAL ORBITAL WALL FRACTURE**

DH. Kang, NK. Lim.

Plastic Surgery, Dankook University Hospital, Cheonan, South Korea

Background:

An inferomedial orbital wall fracture is accompanied by a wide range of fractures compared to other isolated floor or medial orbital wall fractures. It shows a high rate of complications such as enophthalmos and diplopia and severe volume expansion of the orbital cavity.¹ Therefore, the surgical treatment using the transorbital approach becomes more complicated and technically challenging to the orbital surgeon.

Methods:

We have restored the orbital wall using a combined transnasal and transorbital approach with dual supports from the maxillary and ethmoid sinuses in pure inferior medial wall fracture and compare the result with the conventional method. Fifty patients were categorized into two groups depending on the surgical methods: the conventional transorbital method (Group A, control group) or the combined transnasal and transorbital approaches with dual supports method (Group B, experimental group).

Results:**1. Ophthalmic examinations**

Preoperative enophthalmos measured by a Hertel exophthalmometer was found to be an average of -1.08mm in group A and of -0.92 mm in group B. The postoperative Hertel scale was -0.92 mm in group A and -0.80 mm in group B; the changes in the Hertel scale were 0.16 mm in group A and 0.12 mm in group B. Neither the difference between the preoperative and postoperative Hertel scale in each group nor a comparison between the two groups was statistically significant ($p=0.157$ in Group A, and $p=0.180$ in Group B).

2. CT scans and orbital volume measurements

The preoperative difference in the OVR between the two groups (1.20%) was found to be statistically non-significant (115.92% in group A, 114.72% in group B). Postoperative CT scan taken 6 months after surgery showed a significantly decreased OVR in each groups by volumetric analysis (112.88% in group A, 106.37% in group B); Decrease of the OVR was more significant in group B (8.35%) than group A (3.05%) ($p=0.000$).

Conclusion:

Our surgical results from 50 patients with pure inferomedial orbital wall fractures suggest that the combined transnasal and transorbital approaches with dual additional supports from the maxillary and ethmoid sinus were more effective in restoring the orbital volume than the conventional transorbital method.



P-358

DO SOCIO-ECONOMIC FACTORS AFFECT MAXILLOFACIAL TRAUMA?

G. Venetis, S. Dalabiras, I. Tilaveridis, A. Kyrgidis, G. Karathanos, L. Zouloumis

University Clinic of Oral & Maxillofacial Surgery, Aristotle University of Thessaloniki, Thessaloniki, Greece

Objectives: a) The analysis of the maxillofacial trauma epidemiology with respect to age, gender, residence and etiology of injury. b) The study of trauma distribution according to above parameters during the last four years, in comparison to a similar sample of the previous eleven years, already published in JCMFS (2013Oct;41(7):637-43).

Patients and methods: 429 trauma patients hospitalized in the single tertiary referral hospital department of Oral & Maxillofacial Surgery in Northern Greece from 2009-2012 as an update on the 1239 patients from the same center for the period 1998-2008 mentioned above.

Results: Male patients in their 20-30 years of age, urban residents, suffer most oftenly maxillofacial injury. Traffic accidents is the most common cause of maxillofacial trauma, although reduced when compared to their frequency in the previous years (mean 41% versus 69% respectively). In contrast, assault as a maxillofacial injury cause increased significantly from 7,3% for the years 1998-2008 to 23,3% for the last four years (2009-2012), maintaining a continuous high rate during these years.

Discussion: Economic recession, increase of unemployment and the increment of illegal emigration recorded in Greece during the last four years, might have a possible effect in altering the map of maxillofacial injuries.

Conclusion: These observations are important for health care policy making to better address maxillofacial trauma patients' needs. Preventive measures should be implemented in the populations at risk to further reduce the incidence of maxillofacial trauma.

**P-381****THE PAEDIATRIC ORBITAL FRACTURE: 13-YEAR EXPERIENCE AT A MAJOR UK TRAUMA UNIT**

N. Vig, S. Kane, I. Balasundaram, S. Holmes, C. Bridle

Dept of OMFS, Barts Health, London, United Kingdom

Introduction:

Paediatric orbital fractures are uncommon. The literature often describes the need for prompt treatment to avoid permanent complications. We review our experience in order to add to our understanding of this aspect of paediatric trauma.

Methods:

All patients aged 15 and under, presenting to the Royal London Hospital with orbital fractures from Jan 2002 to Nov 2013, were identified. Patient records were analysed to elicit details of aetiology, presentation time, signs and symptoms, imaging and fracture pattern, time to surgery and clinical outcomes.

Results:

50 patients were identified. Of these, 44 had adequate records for full analysis. 42 patients (88%) were male and mean patient age was 10.4yrs (age range 2-15yrs). The commonest reported cause of fracture was accidents (41.0%), followed by alleged assault (33.4%) and road traffic accidents (20.5%). All children reported pain on presentation, with 68% reporting restricted eye movements and 81% diplopia. Just over half complained of nausea/vomiting, commonly seen in children with orbital injuries.

Most presented on the day of injury but less than half were diagnosed at the time, with a few cases (13%) presenting after 4 weeks. Radiographically, 66.7% had an orbital floor fracture, 11.5% floor and medial wall and 9.5% a roof fracture; two-thirds were trapdoor fractures. About one-quarter were operated upon within 24 hours, and nearly all the remainder within 2 weeks of presentation. Nearly all cases made a full recovery and there was no significant difference in time to resolution of presenting symptoms and the timing of surgery.

Conclusions:

Although orbital fractures may be 'trapdoor' in nature, early (<2weeks) rather than urgent (<48hrs) surgery does not necessarily lead to a poorer clinical outcome, which can guide our practice as well as reassure patients and their families. This challenges orthodox opinion. Diagnosis of paediatric orbital fractures at initial presentation needs to be improved upon, however, in order to allow better treatment planning, and to facilitate urgent theatre if required.



P-384

A RETROSPECTIVE REVIEW OF ZYGOMATIC FRACTURE MANAGEMENT OUTCOME AND THE NEED FOR POST OPERATIVE IMAGES

A. Al-Rikabi, I. Patchell , D. Drake

Oral & Maxillofacial department, Morriston hospital, Swansea, United Kingdom

Zygomatic fractures are among the most common type of fractures that the maxillofacial team face. The surgical management of these injuries is well established.

Although there are no clear guidelines on post operative imaging requirements, it is common practice to take such images after treating these injuries.

In this study we present a retrospective review of the outcome of 100 zygomatic fractures that were treated in our department. We focused our investigation on the need for post operative images following repair and their effect on the overall management and final outcome. We hope that our findings would be useful in decision making when managing such injuries.



P-412

EXTRAORAL VERTICAL RAMUS OSTEOTOMY FOR MANDIBLE CONDYLE MEDIAN DISLOCATION REDUCTION

D.Sirbu, V.Topalo, I.Suharschi, O.Zanoaga, A.Mighic, A.Ghetiu, O.Procopenco, S.Caldarari, Gh.Cucu

Department of Oro-Maxillo-Facial Surgery and oral implantology "Arsenie Gutan", "Nicolae Testemitanu" State University of Medicine and Pharmacy, Chisinau, Moldova

Aim – to study the efficiency of vertical mandible ramus osteotomy for condyle median dislocation reduction.

Material and method: Between 2001-2013 29 extraoral vertical ramus osteotomies for mandible condyle medial dislocation reduction performed at 17 patients. Patients underwent procedure at 10-32 days after trauma due to general contraindications for early or immediate intervention. Through submandibular approach, mandible angle, ramus and notch exposed. In case of condyle median dislocation could not be solved in a classical manner (small fragments, primary consolidation, major dislocation) osteotomy performed. Topographical: from the posterior side of the mandibular notch to mandible angle, with width 1cm inferiorly and 1,5cm superiorly. Osteotomized fragment removed, displaced condyle fragment removed, extracorporal osteosynthesis (bicortical screws) performed, fragment (osteotomised ramus with condyle fragment synthesised) installed in the interest region and synthesised with the mandible (plates). A series of OPG analysed (postop 6 ; 12 month, 2 ; 5 years) for osteotomised fragment resorption.

Results: Average 37% resorption determined during first 12 months. On the second year of follow up - resorption did not progress. At 6th month osteotomy line could be determined on the OPT, at 1 year it was not determined. Posterior ramus margin transforms its shape from concave to convex at 1 year follow up. Fixation plates had their posterior screws outside the projection of the posterior ramus in 12 months (due to resorption). 3 patients underwent OPG at 9 years postop no difference determined between OPG at 12 months follow up. No functional disorders determined. No medication or surgical treatment for TMJ needed during follow up period.

Conclusion: Extraoral vertical ramus osteotomy for mandible condyle median dislocation reduction is an adequate option for upper condyle fractures with median dislocation in cases when it is not possible to get the small fragment for surgical management, thus eliminating the risk of TMJ ankylosis. Bone resorption of the osteotomised fragment determined not to influence function and facial aesthetics. We consider osteotomised ramus and condyle fragment as a free autotransplant. Resorption must be considered in taking decision of plate and/or fixation screws placement.



P-439

DICAPITULAR FRACTURES TREATED WITH RESORBABLE PINS - 12 MONTH FOLLOW UP

N. M. H. McLeod

Oral & Maxillofacial Surgery, Oxford University Hospitals, Oxford, United Kingdom

Objective; To assess the outcome of managing dicapitular fractures of mandibular condyle with ultrasound activated resorbable pins.

Methods; 7 Patients treated with this technique were assessed for pain, function and complications, over a 12 month follow up period.

Results; All patients had good occlusal outcomes. The prevalence of surgical complications was low and comparable to other techniques. No permanent facial nerve injury has occurred. At 12 months follow up no complications related to the resorption process have been identified.

Conclusions; Whilst the benefits of surgically treating dicapitular fractures remain to be clarified, in those patients undergoing surgical treatment, this technique is relatively simple and offers good outcomes, although further follow up until resorption of the pins is complete will be required.



P-446

PRIMARY RECONSTRUCTION OF THE ORBIT IN FACIAL TRAUMA MANAGEMENT

I. Fagetan, M. Margarit, M. Cernusca Mitariu, S. Ibric Cioranu, V. Ibric Cioranu

ULBS, Sibiu, Romania

Objective: The authors present the objectives of treatment for post-traumatic reconstruction of the orbit and the complications associated with incorrect treatment. Orbital reconstruction after traumatic injuries plays an important role in trauma management. Improper or delayed healing can lead to severe ophtalmic complications such as enophtalmos, hypophtalmos or telecanthus. Primary reconstruction allows for anatomical reconstruction of the areas involved and early recovery of affected functions (visual, aesthetics).

Methods: This poster explores the preoperative, intraoperative and postoperative care associated with the surgical management of orbital trauma through a case series.

Results: With advancement of technology, there is an increasing number of materials used in orbital repair: resorbable vs. nonresorbable, natural vs. synthetic. The modern x-ray imaging (CT scan, spiral CT scan) allows for a better visualisation of the reconstructed defect.

Conclusions: The poster is related to the authors' own experience from the maxillofacial surgery department and review of literature.

**P-454****CAUSES AND PREVENTION OF COMPLICATIONS IN ORBITO-ZYGOMATIC COMPLEX FRACTURES**

Mag.Sh. Mustafayev, E.N.Vorokov, F.R. Batyrbekova, Mus.Sh. Mustafaev,

Medical department, Kabardino-Balkarian State University, Nalchik, Russian Federation

Relevance. In the modern world with increasing life intensity, the amount of technogenic injuries including maxillofacial area is growing. Such damages become heavier and more diverse. For this reason there exist considerable difficulties in diagnostics and treatment of such patients, and the number of complications is respectively increasing.

Purpose. Prevention of complications and improvement of the treatment results in patients with orbito-zygomatic complex fractures.

Materials and methods. The analysis of the developed complications in patients with fractures of orbito-zygomatic complex in the Republic Clinical Hospital in Nalchik has been carried out covering the period from 2009 to 2014. For the specified period there were 390 in- patients with bone fractures of orbito-zygomatic complex. Complications were observed in 30 patients (7,7%), 24 of them were hospitalized after having undergone treatment in other clinics.

The following types of complications were revealed:

- 1 . Inflammatory complications – 4 cases;
- 2 . Rough cicatricial changes in postoperative areas causing cosmetic and functional disorders - 8 cases;
- 3 . Metalware eruption - 15 cases
- 4 . Preserved deformations after surgery - 3 cases.

The revealed complications were the consequence of:

- 1 . Inadequate level of diagnostics and errors in treatment planning;
- 2 . High injury on interventions;
- 3 . Contact of metalwork with the environment;
- 4 . Stagnation of wound discharge in paranasalsinusus;
- 5 . Absence of anticicatricial therapy in postoperative period.

Conclusions. Prevention of complications demands strict observance of inspection algorithms, planning and carrying out treatment with taking into account all specific features in each case. Results of our work dictate specification of damages using modern digital diagnostic methods with the subsequent individual planning of operation, strict observance of technique and requirements to carrying out osteosynthesis, prevention of rough cicatricial changes.



P-456

PREVENTION OF THE CONDYLAR PROCESS FRACTURE COMPLICATIONS IN CHILDREN APPLYING MODERN DIAGNOSTIC METHODS

M.Sh. Mustafayev, D.T. Kuzhonov, K.Z. Bekaldiyeva

Medical Department, Kabardino-Balkarian State University, Nalchik, Russian Federation

Relevance. Condylar process fracture complications in children comprise up to 70% of all types of mandibular fractures. This type is the most difficult in respect of diagnostics, treatment method choice, variety of post-traumatic complications due to both various radiological pictures and functional impairments in TMJ disorders. The condylar process trauma with intra joint splintered fracture and dislocated fracture leads to complications as mandible abnormality, deforming arthrosis, temporomandibular joint ankylosis.

Research objective: Elaboration of inspection algorithm applying new diagnostic methods, a multispiral computed tomography in particular to choose an optimal treatment method and prevent post-traumatic complications.

Materials and methods. Research is conducted on the basis of maxillofacial surgery clinic of the Republic Clinical Hospital in Nalchik. The analysis of archival materials from 2010 to 2013 and our own clinical observations of condylar process fracture in children has been carried out. To make a diagnosis and determine treatment scope we carry out: clinical inspection, radiological study including digital orthopantomography, an X-ray analysis in direct projection, and a telex-ray analysis, multispiral computed tomography with 3D - reconstruction.

The study group include 10 children aged from 1 to 15 with condylar process fractures.

Results: All children were given a standard clinical radiological examination. Then MSCT with 3D reconstruction was made. The research conducted revealed fractures without dislocations in 1 case, with dislocation - in 3, dislocated fracture - in 6 cases. Conservative treatment was applied in 8 cases and included the use of intra oral splint device, mechanotherapy. In 2 cases the operation (a metalosteosynthesis, a replantation) was performed. All children were discharged in satisfactory condition. The follow-up in 2 cases makes up 3 years, in other cases - 6-8 months.

Conclusion: Timely and full diagnostics of condylar process fracture using MSCT allows to determine fully and in detail the damage and surgery scale, and in certain cases to refuse surgical treatment in favour of conservative management and follow-up.

**P-457****THE DYNAMICS OF ANAEROBIC MICROORGANISMS COLONIZATION IN PATIENTS WITH FRACTURES OF THE LOWER JAW**

M.Sh. Mustafaev, Z.F.Kharaeva, E.M.Tarchokova, S.M. Mustafaeva

Medical department, Kabardino-Balkarien State University, Nalchik, Russian Federation

The orthopedic treating methods of lower jaw, accompanied by inserting of metal constructions into the oral cavity has an essential influence on oral cavity microflora.

The aim of the search. Studying of the dynamics of the anaerobic microorganisms colonization when using orthopaedic methods of jaws immobilization of patients with lower jaw fractures.

Materials and methods. The biological as a material for carrying out microbiological methods of research served the contents of periodontal pockets in places of splint fixation cases of the lower jaw fractures. The dynamics of growth of strains of strict anaerobes from periodontal pockets

The results of the research. The dynamics of colonization of anaerobic flora is as follows: during the first two days the anaerobic flora didn't sow, beginning with the third day the following anaerobes were revealed: Peptostreptococcus, Veillonella, Bacteroides spp, Peptococcus, Fusobacterium spp. The percent ration for the whole period is the following: Peptococcus make 54%; Peptostreptococcus 21%; Fusobacterium spp 9%; Bacteroides spp 8%; Veillonella 8%. A direct correlative link between microbe association number and the number of immobilization days is shown. The association of two kinds is 20% from the total number, of 3 kinds -30%, 4 kinds - 40%, monocultures - 10%.

Conclusions. The orthopaedic methods of immobilization encourage anaerobic microorganisms colonization, including such kinds of microorganisms as peptococci and bacteroids, not characteristic for a healthy oral cavity and they are risk factors of beginning inflammatory complications of lower jaw fractures.

**P-462****INDICATIONS OF PIEZOELECTRIC SURGERY IN TRAUMA ORAL AND MAXILLOFACIAL SURGERY.**

S. Kane, I. Balasundaram, I. Rahim, A. Kanzaria, C. Bridle, S. Holmes

Royal London Hospital, London, United Kingdom

Objective: A piezoelectric device is an alternative to mechanical and electrical instruments in bone surgery. The device produces ultrasonic vibrations of frequencies between 22-35 kHz. At this frequency the ultrasonic waves act as mechanical wave and enables selective and effective cutting of mineralized tissue without damaging hard tissues. We present a case series of the use of the piezoelectric saw in OMFS trauma surgery over a six month period.

Methods: Maxillofacial surgery using piezoelectric devices on trauma cases over a six month period is described.

Results: To date the piezoelectric saw has been used for the following cases. We present these cases with clinical photographs and videos.

- 1) To shape and cut the inner table of a calvarial bone graft for reconstruction a comminuted frontal bar fracture.
- 2) To osteotomies a healing fracture of the frontal bone to allow accurate reduction without the use of drills or chisels, reducing the chance of intracranial injury.
- 3) To perform a vertical sagittal split of the mandibular ramus to allow access and open reduction with internal fixation of a condylar fracture.

Conclusions: Piezoelectric devices allow precise cutting with minimal bone loss. Cavitation effect of the device limits bleeding of bone tissue and creates a clear surgical site. Damage to adjacent nerves, blood vessels and mucosa is limited as higher frequencies are required to cut these. This comparatively minimally invasive surgery has been shown to reduce post-operative pain, encourage faster bone regeneration and healing process.



P-481

COMPARATIVE STUDY OF FIXATION TECHNIQUES IN ANTERIOR MANDIBULAR FRACTURES USING TWO MINIPLATES VERSUS ONE MINIPLATE AND ONE LAG SCREW

V. PEREZ, A. R. GARCIA, F.J. QUESADA, M.A. SICILIA, Y. HERRERO, F. ESPIN

ORAL AND MAXILLOFACIAL SURGERY, TORRECARDENAS HOSPITAL, ALMERIA, Spain

Objective: To compare the efficacy and surgical outcome of treatment of symphysis and parasymphysis mandible fractures using titanium miniplate or lag screw and one miniplate.

Materials and Methods: A total of 20 patients were treated by open reduction and internal fixation. The patients were divided into two groups. Group I: (10 patients) were managed with two 2.0 titanium miniplates with self-tapping no-locked screws. Group II: (10 patients) were treated with one 2.0 titanium miniplate and one cortical titanium lag screw. During follow up, patients were assessed clinically for infection, malocclusion, neurosensory deficit, masticatory efficiency and mal union or non-union. Pre and postoperative radiographs were taken to measure the gap between fracture segments. The results were evaluated using *t test*.

Results: During the follow up period, the mean postoperative distance between fracture segments was longer in Group I than in Group II. In both groups, no postoperative malocclusion was observed. No permanent nerve damage was reported in any group.

Conclusion: The lag screw combined with one 2.0 miniplate for anterior mandibular fractures offers several advantages over conventional miniplates system: rapid and safe fixation, cheaper and without any major complications.



P-485

THE USE OF TITANIUMCLAMP WITH A POLYMERIC ANTIBACTERIAL SURFACE FOR FIXING OF THE BOTTOM JAW AT ITS FRACTURES.

A.I.Iaremenko, V.N. Matina, K.I. Starkovskii, E.E.Ushakova, V.V. Kislenkov

First Pavlov State Medical University of St.Petersbutg, St.Petersbutg, Russian Federation

Objective. Traumatic damages of maxillofacial area occupy one of the leading places in modern maxillofacial surgery. Despite considerable progress in treatment of jaws fractures, the necessity of jaw fixing clamps development at their fractures remains.

Methods. Miniplates from a powder titanic alloy and a unit-cast titanic alloy with the surface processed by the laser have been developed. The antibacterial polymeric covering of the prolonged action has been put on a surface of miniplates. Influence of the developed titanic clamp with a polymeric covering on bone tissue of a rabbit has been researched. Titaniumminiplate clamps have been fixed to two groups of rabbits in a projection of a fracture of the bottom jaw. In time of 15, 30, 45, and 90 days the miniplates with fragments of bone tissue have been taken out for the subsequent decalcification and histological research.

Results. The analysis of histologic preparations has showed lack of morphological features of an inflammation in bone tissue and adjacent soft tissue. Around a titanumminiplate the presence of a large number of osteoblasts, lack of processes of resorption, formation of a thin connective tissue capsule from loose connective tissue has been observed.

Conclusion. The developed titaniumclamps with a polymeric covering can be recommended for use in maxillofacial surgery for fixing of the bottom jaw at its fractures.



P-486

PSEUDOANEURYSM OF THE SUPERFICIAL TEMPORAL ARTERY: REPORT AND OUTCOME OF FOUR CASES

D. A. Cebreros, N. Ventura, J. D. Morales, M. Villalta, M. Puche

Oral and Maxillofacial Surgery, Hospital Clinico Universitario, Valencia, Spain

Introduction:

Pseudoaneurysm of the superficial temporal artery (STA) is a very rare entity; just almost 400 cases have been reported in the literature, and in most of them the cause was a blunt trauma. They usually present as a painless pulsating mass, with concomitant symptoms according to the location. The diagnosis can be confirmed by ultrasonography, computed tomography, magnetic resonance imaging, or digital subtraction angiography. The treatment of choice is ligation and resection.

Methods:

We present four cases of pseudoaneurysm of the STA, three of them with an obvious history of blunt trauma and one without it. We describe the history, diagnosis, radiologic studies and the outcome of the treatment.

Conclusions:

This entity is one of the differential diagnosis that needs to be considered when a pulsatile swelling presents at the frontotemporal area after a blunt trauma, in order to prevent complications such as pressure symptoms from the enlarging mass or rupture.

**P-506****MANAGEMENT OF PAEDIATRIC ORBITAL FRACTURES**

M. Janíčková, D. Statelová, I. Malachovský, J. Štilla, K. Mikušková, P. Gengelová, J. Jurkemík

Department of Stomatology and Maxillofacial Surgery, Jessenius Faculty in Martin of Comenius University in Bratislava and University Hospital in Martin

Aims

This study was based on the retrospective analysis of 49 paediatric patients with orbital fractures. We investigated the indications for surgery, timing of surgery, surgical methods, choice of reconstruction materials, preoperative and postoperative signs and symptoms.

Material and methods

Data for 49 patients under 18 years with orbital fracture were analysed retrospectively. The orbital floor fractures occurred in 11 (22,4 %), the orbital roof and supraorbital rim fractures occurred in 6 (12,2 %), the frontobasilar and NOE fracture occurred in 2 (4,1%), the zygomatic and orbital floor fracture occurred in 24 (49,0%) and complex facial injury and maxillary fractures occurred in 6 (12,2 %).

Results

The mean age was 13,5. The most common causes of fractures were assault (24%), traffic accident (18%), sports injury (15%), falls (14%). The distribution of the clinical signs and symptoms among the patients was as follows: diplopia 4, hypoesthesia 16, enophthalmos 4, restricted ocular motility 3. Surgical treatment was indicated in 41 % (alloplastic titanium mesh) , in 41% (alloplastic biodegradable mesh) and 18% were observed (without surgery). We investigated the optimal interval between trauma and surgical repair.

Conclusion

The diagnosis and treatment of orbital fractures in children bear great importance because they may result in enophthalmos and diplopia if not treated in a timely manner and with the appropriate construction material. Treatment should be as conservative as possible to minimise the disruption of facial growth and to prevent the formation of new subperiosteal bone.

Key words: orbital fractures, indications for surgery, timing of surgery, surgical methods, reconstruction material.



P-566

POST-TRAUMATIC PSEUDOANEURYSM OF THE FACIAL ARTERY: RESULTS OF EARLY ENDOVASCULAR EMBOLIZATION.

A. Mazarro¹, A. de Pablo¹, M. Artajona¹, A. Tomasello², S. Bescós¹

¹ *Oral and Maxillofacial Surgery, Hospital Vall d'Hebron, Barcelona, Spain*

² *Interventional Radiology, Hospital Vall d'Hebron, Barcelona, Spain*

Objectives: Pseudoaneurysms of the facial territory have been reported following local trauma, especially high-velocity gunshot wounds. When affecting the facial vasculature, they are usually described involving the superficial temporal artery, and occasionally terminal branches of the internal maxillary and facial artery. Their clinical presentation is variable, ranging from asymptomatic to a massive bleeding; however, they are classically described as a pulsating mass with a bruit suggesting its vascular origin. Diagnosis is based on clinical findings and complementary imaging techniques such as colour doppler US and CT angiography. Treatment is mandatory and usually consists on ligation and surgical removal or endovascular management (embolization / stenting).

Methods: We describe the case of a 27 year-old man who developed a sudden paramandibular swelling two days after a mandibular trauma without acute osseous injury. CT angiography revealed a pseudoaneurism depending on the facial artery.

Results: The patient underwent a selective embolization of the distal portion of the facial artery, with a complete recovery and a remarkable aesthetic result.

Conclusions: Endovascular embolization is an effective and low-invasive technique that offers excellent results for the treatment of pseudoaneurysms of the facial artery.



P-580

STICKS AND STONES MAY BREAK BRITTLE BONES; THE IMPACT OF OSTEOGENESIS AND AMEOLGENESIS IMPERFECTA ON MANDIBULAR FIXATION

R. Exley, F. Abbas, S. Holmes

Oral and Maxillofacial Surgery, Royal London Hospital, London, United Kingdom

Introduction

Osteogenesis imperfecta (OI) is a connective tissue disorder, which when involves dentition is termed dentinogenesis imperfecta (DI). In amelogenesis imperfecta (AI), enamel defects are not associated with other systemic disease (1). Non-enamel anomalies such as delayed eruption are exceptionally rare (2).

Blunt trauma may produce mandibular fracture (3). Unerupted teeth and poor occlusion complicate reduction.

Case report

A 23-year-old Asian male without family history of consanguinity presented to Oral and Maxillofacial department at the Royal London Hospital following an alleged assault. He was known to have OI coexistent with AI. He was concurrently undergoing evaluation for dental implants in the hypodontia clinic.

He sustained closed mandibular fracture to the right angle and left parasymphysis, which was mobile and displaced. Multi-modality imaging revealed multiple unerupted defective teeth within the fracture line, consistent with AI.

Due to poor candidacy for IMF, he underwent conventional ORIF mandible. Titanium plates and screws were placed across the right angle and left parasymphysis. Reduction was difficult due to poor occlusion. Postoperative CBCT revealed the plates remained in situ with incomplete bony union of the right angle. This was managed conservatively.

Following elective surgical exposure of his unerupted dentition he entered a programme of ongoing orthodontic treatment.

Clinical relevance

We present the case of OI coexistent with AI, a previously unreported association.

Although mandibular fractures are commonplace for the Maxillofacial Surgeon, some cases pose a challenge. OI patients present particular problems. Occlusion may be poor and nonunion is common within this population (4). There are no reports in the literature regarding the success of ORIF in OI. Notwithstanding, dental implants are initially well tolerated but there is a 50% failure rate at 5 years (5). Therefore extrapolating from this data, the long-term outcomes of ORIF are debatable. Moreover, literature on outcomes of orthodontic treatment in OI is lacking. Orthodontic treatment was further complicated in this case by difficulty in bonding to defective enamel.

Multispecialty expertise is paramount when treatment planning for the complex surgical patient. Effective communication between teams allows circumvention of avoidable pitfalls in rare disorders.

**P-606****TEMPOROMANDIBULAR JOINT ANKYLOSIS IN THE MIDDLE CRANIAL FOSSA OF A 10 YEARS OLD PATIENT**

F. Donoso-Hofer^{1, 2}, G. Zamorano¹, L. Nuñez¹, L. Álvarez¹, F. Oteiza³, MA. Fernández - Toro ^{1, 2, 3}, M. Landaeta²

¹ *Maxillofacial Surgery, Faculty of Dentistry, University of Chile, Santiago, Chile*

² *Maxillofacial Surgery, San Juan de Dios Hospital, Santiago, Chile*

³ *Surgery, Las Condes Clinic, Santiago, Chile*

The temporomandibular joint ankylosis in children can be caused from mandibular trauma. One of its rare complications is the displacement of the mandibular condyle into the middle cranial fossa. Because it is considered an emergency usually is resolved immediately, however, there are some cases in which the absence of pain or functional impairment, patients don't seek for medical attention and temporomandibular joint suffers ankylosis within the middle cranial fossa.

The aim of this report is to show a case of temporomandibular joint ankylosis within the middle cranial fossa in a 10 years old male patient, asymptomatic at the time of trauma but with a significant decrease in mouth opening in a two years period.

At the age of 8 years old he suffered a mandibular trauma secondary to a fall. Because of the lack of symptoms, no emergency care consultation was sought. For a 2 years period of time he presented with progressive decrease in mouth opening, and by the time he could not eat properly, medical attention was required. Oral examination showed a 7 mm aperture without other clinical signs. On the CT, the left condyle was in normal position but decreased in size while the right condyle was observed inside the middle cranial fossa with an increased in size and irregular form. The patient showed no neurological signs.

A temporal region craniotomy and a preauricular access was performed identifying the portion of the condyle in the middle cranial fossa. The condylectomy was made and subsequently the ankylosis was freed. A new condyle was carved in the lower part of the condylar process, the mandibular fossa was remodelled and a temporalis muscle flap was interposed. Then bilateral coronoidectomy was performed, achieving a mouth opening of 40 mm.

Although intracranial temporomandibular joint ankylosis is a rare complication, it should be considered when mandibular trauma is not evaluated at the proper time and there are signs of trismus. It is necessary to instruct the population the importance of the evaluation of trauma by a maxillofacial specialist and avoid complications that may affect the proper growth of the brain in extreme cases.



P-622

PAEDIATRIC FACIAL FRACTURES – SPECIAL FEATURES AND MANAGEMENT?

W. Reich, K. Scheller, C. Scheller, R. Finke, A. W. Eckert

Martin-Luther-University Halle-Wittenberg, University hospital for Oral and Plastic Maxillofacial Surgery, Halle / Saale, Germany

Objectives

The diagnostic and treatment approach of paediatric trauma patients requires some special considerations. In order to avoid abnormal development multiple anatomic, physiological and psychosocial aspects are relevant in the field of cranio-maxillo-facial surgery.

Methods

A prospective analysis of paediatric trauma patients over a two-year period was performed to determine the trauma mechanisms, types of injury, treatment and outcome focusing on growth centers or zones and complications.

Results

Over a period of 24 months a case series of 15 patients (4 female, 11 male) with different typically occurring injuries in the age of 3 to 17 years were evaluated. The following types of fractures were detected:

- orbita n=8 (floor n=4, roof n=3, lateral orbital wall n=1)
- lateral midface n=3
- central midface n=2
- complex centrolateral midfacial trauma n=1
- mandible n=2
- neurocranial injury n=2
- younger patients had a fall-, childhood play- or sport-related injuries
- traffic accident (bicycle and motor-vehicle) occurred mostly in older children.

The interdisciplinary treatment of the craniofacial fractures was specifically elected and was partially conservative and surgically. There were no cases with persistent neurological or growth disturbances.

Conclusions

Accurate and fast treatment of craniofacial injuries in children require familiarity with special issues. Diversity of treatment modalities is particularly challenging in this patient group and depends on the age and therefore on local anatomical conditions. Due to a high skull-to-face ratio in younger children there should be unique awareness for neurocranial injuries. Otherwise, of all facial fractures, the incidence of infections is lower and regenerative capacity is higher. Long-term follow up is recommended.

**P-632****LOW-PROFILE TITANIUM MESH IN THE USE OF ORBITAL RECONSTRUCTION: OUR EXPERIENCE.**

A. Encinas Bascones, E. Fernandez, O. De la Sen, E. Varela, I. Martínez, F. Falahat

Oral and Maxillofacial Surgery, Hospital Clinico San Carlos, Madrid, Spain

Introduction:

In craniofacial trauma, orbital structures are affected up to 40% of cases. Surgical outcomes depend on the maintenance of the orbital volume, to achieve functional and aesthetic results. Post-traumatic orbital deformities caused by incorrect reconstruction of orbital dimensions are severe complications causing enophthalmos, diplopia and visual acuity decrease. To prevent such complications, immediate repair of orbital injuries with the restoration of normal anatomy is indicated in orbital floor fractures. For that purpose, we can use biodegradable materials for small defects, and titanium mesh or autologous calvarian bone for extensive fractures. Calvarian bone grafting presents a difficult technique with donor site morbidity. Orbital reconstruction con titanium low-profile mesh provides easy and reliable technique to restore anatomy and function.

Aims:

To present a series of orbital fractures reconstructed by low-profile titanium meshes, and to evaluate the features, benefits and indications of this material.

Material and Methods:

A series of 4 patients is presented: two orbital extensive fractures with impossibility to use biodegradable material, and one tumour orbital wall affected. Low-profile titanium malleable meshes are used: 0.25 mm height along the border and 0.2 mm in the mesh area. (Modus OPS 1.5; Medartis, Tarma S.A, Bilbao, Spain). Mesh are fixed to orbital rim with 1.5mm titanium miniscrews. Preoperative computed tomography scans were obtained to assess the fracture size and location. Different surgeries were performed by the same maxillofacial surgeon.

Discussion:

All patients had a successful treatment outcome without complications. No displacement or rejection meshes were observed. As well, no diplopia was present and at 12 months, no signs of enophthalmos. Thin titanium mesh is a reliable and safe material for the repair of orbital extensive defects. It main advantages are: easy modelling, high stability, scissors cutting, avoid unpredictable results with resorbable mesh and autologous bone grafting morbidity. However, costs are significantly higher. We recommend using them in extensive orbital wall fractures.



P-644

GANG-VIOLENCE RELATED FACIAL FRACTURES

A. Bardazzi, R. Dua, K. Fan, P. Stenhouse

Oral and Maxillofacial Surgery, King's College Hospital, London, United Kingdom

Background: Gang violence is reported as a constantly increasing complex issue in the UK. It is frequently associated with severe criminal offences involving young people with potentially life-long physical and social consequences.

Objective: We describe our experience in treatment of gang-violence related facial fractures over a period of six months at a major trauma centre in London.

Method: Data on all patients who presented to King's College Hospital with a facial fracture as a result of gang violence over a 6 month period were included. Information collected included age, gender, deprivation scores (IMD), use of alcohol, fractures sustained and their management.

Results: Of the 172 patients who presented to King's College Hospital with facial fractures, 106 patients (61%) were allegedly assaulted. 49 of these patients were assaulted by a gang of assailants. The patient group was overwhelmingly male - 92%. 53% of patients had consumed alcohol within 5 hours of the injury – an average of 15.4 units. 10% admitted to use of recreational drugs around the time of injury. A total of 65 allegedly gang-violence related facial fractures were sustained, with an average Facial Injury Severity Score (FISS) of 2.04.

Conclusion: These results underline the importance of tackling gang violence and not just managing the end result.

**P-648****MAXILLOFACIAL TRAUMA IN WOMEN IN LONDON**

R. Dua, P. Stenhouse, A. Bardazzi

Oral and Maxillofacial Surgery, King's College Hospital, London, United Kingdom

Background: Patterns of trauma in women vary widely between countries due to a variety of cultural and socioeconomic factors. Typically, epidemiology describes the patterns of maxillofacial trauma in the male majority of patients. Worldwide, the commonest cause of maxillofacial injury is due to motor vehicle accidents and interpersonal violence. Conversely, the commonest cause in women is falls. While women are 11 times less likely to sustain injury in Saudi Arabia, they are only half as likely to in Australia.

Objective: This prospective analysis looks at the patterns of maxillofacial trauma in women that have presented to a busy trauma centre in London.

Methods: Data on all women who presented to King's College Hospital with a facial fracture over a 6 month period were included. Information collected included age, aetiology, fractures sustained and management. Use of alcohol at time of injury was also recorded.

Results: 31 women with a mean age of 42 presented with facial fractures. 84% of patients were under the age of 65. Assault and falls were most common cause of injury, accounting for 42% each. 42% of women admitted to drinking alcohol within 5 hours of injury – on average, 13.5 units.

Conclusions: London has a diverse population but socially and culturally, many of the traditional limitations on women do not exist. Our data suggests that the epidemiological characteristics of maxillofacial trauma may be changing. Alcohol appears to play a significant involvement in these injuries.



P-653

MAXILLOFACIAL TRAUMA IN WOMEN IN MILAN

A. Bardazzi¹, R. Dua², R. Bazzacchi¹, P. Stenhouse², D. Rabbiosi¹

¹ *Oral and Maxillofacial Surgery, San Paolo Hospital, Milan, Italy*

² *Oral and Maxillofacial Surgery, King's College Hospital, London, United Kingdom*

Background: Patterns of trauma in women vary widely between countries due to a variety of cultural and socioeconomic factors. Typically, epidemiology describes the patterns of maxillofacial trauma in the male majority of patients. Worldwide, the commonest cause of maxillofacial injury is due to motor vehicle accidents and interpersonal violence. Conversely, the commonest cause in women is falls. While women are 11 times less likely to sustain injury in Saudi Arabia, they are only half as likely to in Australia.

Objective: This prospective analysis looks at the patterns of maxillofacial trauma in women that have presented to a busy hospital in Milan.

Methods: Data on all women who presented to San Paolo Hospital with a facial fracture over a 5 month period were included. Information collected included age, aetiology, fractures sustained and management. Use of alcohol at time of injury was also recorded.

Results: 36 women with a mean age of 41 presented with facial fractures. Only 19% of patients were over the age of 65. Half of the patients had sustained their injuries as a result of falls. Interestingly, 25% of injuries were as a result of assault. Very few women admitted to drinking alcohol prior to their injury.

Conclusions: Women make up a small proportion of the patients who present with facial fractures. There are few works in the literature that focus on the female maxillofacial trauma patient. It is important to be aware of the trends in aetiology, and how they may be evolving.



P-658

POSTRAUMATIC OPEN BITE MANAGEMENT

J. Rey¹, J. Ruiz², L. Pingarron¹, L. Maniegas², S. Crespo¹, JA. Garcia¹, D. Martinez-Perez²

¹ *Oral and Maxillofacial Surgery, Rey Juan Carlos University Hospital, Móstoles, Spain*

² *Oral and Maxillofacial Surgery, Fundación Jiménez Díaz University Hospital, Madrid, Spain*

Objective: Postraumatic sequelae are cases difficult to manage due to the individualised situations we face.

Material and methods: 40 years-old-man presenting 45 days long post traumatic open bite. Patient was not referred to hospital at the time of the initial trauma. He turned up at clinic showing right first to left first molar open bite malocclusion and left lateral deviation of mandible. 45mm maximum mouth opening was observed. X-ray studies showed delayed bifocal (right angle and left subcondyle) untreated painfree mandibular fractures with bone stability. Condyle was laterally displaced originating a 8mm shortening at the mandibular ascending ramus.

Results: Bite patterns were examined for pre-surgical planning, showing unchanged pretrauma occlusion. Open bifocal extraoral approach was performed. Osteotomies including bone removal were done at pre-fractured sites. 2.0mm plates were placed for osteosynthesis in both angle and condyle. Patient was discharged in day 2 in elastic IMF. In 6 months follow up he shows stable occlusion and no mouth opening limitation.

Conclusions: Presurgical planning is essential in sequelae management. Despite multiple options, open extraoral approaches reduce long term comorbidities and achieve stable results.



P-661

OUTCOMES IN ORBITAL BLOW OUT FRACTURES AND INCIDENCE OF SECONDARY CORRECTIVE SURGERY

R Banks, R Williams, M Cobb, D Keith

Oral & Facial Surgery, Sunderland Royal Hospital, Sunderland, United Kingdom

Background

Orbital blow out fractures are a common and regularly treated in Oral & Maxillofacial Surgery Units. Whilst surgical outcomes are regularly recorded and published, little is known about those patients going on to receive secondary corrective surgery.

Materials and Methods

We have submitted all our patients with orbital blow out fractures to BSV testing both pre and post operatively. The results have been coordinated and analyzed in terms of function and with Hess and CT findings.

Results

Patient's records having undergone the surgical correction of a blow out fracture within the department were requested and analysed. CT analysis was in accordance with that described by Harris et al (1998) The Hess charts showed no more than 15 degrees of deviation however the BSV scores ranged from 22 to 57 (un-weighted) and from <60% to 98% weighted. The post surgical scores had improved to a statistically significant degree, with a small cohort going on to further corrective surgery. This group was further analysed.

Conclusion

The optimum treatment of blow out fractures, in terms of timing post injury, approach, materials used for a given defect and duration of follow up have historically been largely ignored with respect to proper statistical analysis of an objective assessment of function. In particular little attention has been paid to the factors leading to the need for further corrective surgery post-blow out repair.



P-667

OPTOMISING THE DESIGN OF TWO PIECE PEEK IMPLANTS IN ORBITO-ZYGOMATIC RECONSTRUCTION

R Banks, R Williams, M Cobb, D Keith

Oral & Facial Surgery, Sunderland royal Hospital, Sunderland, United Kingdom

Background

Polyetheretherketone (PEEK) is derived from the Polyaryletherketone family of linear aromatic polymers. The implantable grade of PEEK demonstrates a number of similarities to bone and has been available for some time as a patient specific implant in maxillofacial reconstruction.

Method

Patient specific implants are created on a virtual stereo lithographic model produced following CT scan carried out using a prescribed protocol (SYNTHESE, UK). The implant is designed via digital subtraction to match the opposite side and discussed and modified to match the clinical scenario via planning webinar. In this poster we demonstrate some of the defects, planning techniques and solutions using various designs of modified "jigsaw piece" to facilitate insertion and fixation in the use of two piece PEEK implants to reconstruct the orbital rim, floor and zygomatic complex.

Results

The relative ease of insertion and fixation, together with the precise anatomical fit and correction of the volume defect provide reduced operating time, improved patient acceptance and accuracy at the initial surgery. This has lead to increased patient satisfaction.

Conclusion

We have demonstrated a novel approach to facilitate inserting relatively large PEEK implants to correct significant post-traumatic deformity through minimal and familiar approaches to the facial skeleton.



P-672

MORE THAN MEETS THE EYE; REPORT OF A CASE OF 'UNIDENTIFIED WOOD' IN THE ORBIT!

N.Berridge, R.Mahal, C.Magopoulos, M.Heliotis

Northwick Park Hospital, Harrow, United Kingdom

Objectives;

Retained wooden foreign bodies following penetrating orbital trauma can present the diagnostic dilemma! The wound of entry may be small and self-sealing. It is well documented that such foreign bodies may remain quiescent for many years. Furthermore, current imaging modalities such as Computer Tomography may not clearly identify retained wooden foreign bodies.

We present an interesting case of orbital trauma, initially managed as acute retrobulbar haemorrhage (RBH) and subsequent surgical exploration/repair of a floor defect, to unexpectedly 'identify' a large piece of wood within the orbital cavity.

Methods;

A 51 year-old man presented to the Emergency Department at Northwick Park Hospital following a 'blunt' injury to the orbit during an alleged assault. Examination revealed clinical signs and symptoms of traumatic RBH including visual loss. Subsequent management involved urgent CT imaging and prompt orbital decompression with lateral canthotomy. The raised intra-ocular pressure was addressed medically days prior to definitive surgery intervention.

Results;

The CT images identified a large orbital floor defect but did not reveal any foreign bodies or blood within the orbital cavity. Although misdiagnosed, the decision to treat as an acute RBH, albeit rare after the 'reported' blunt trauma was based entirely upon the clinical findings.

Conclusions;

This case study highlights the difficulty in appropriately managing orbital trauma secondary to wooden foreign bodies in the event of absent clinical signs and a negative CT scan. Consideration should be given to prompt orbital exploration and serial or alternative forms of imaging should there be a high index of suspicion for a retained wooden foreign body.

**P-691****KINEMATIC ANALYSIS OF JAW FUNCTION IN YOUNG ADULTS WITH FACIAL TRAUMA**

Cheng-I Yen, Shih-Hsuan Mao , Chih-Hao Chen

Chang Gung Memorial Hospital, Taoyuan, Taiwan

Objective: Temporomandibular disorder (TMD) is a multifactorial disease diagnosed based on comprehensive history and clinical examination nowadays. There is still lack of an ideal method and standardized evaluation device for measurement of dynamic function of the TMJ and mandible. The purpose of this study was to develop a clinically applicable, reliable, quantitative and noninvasive system to measure the kinematic TMJ function and jaw movement, in a dynamic and continuous way.

Methods: The study group consisted of 30 young healthy adults, 18 male and 12 female. Zebris jaw motion analyzer (JMA) was used to evaluate their jaw functions, including maximum mouth opening capacity (MOC), condylar path length (CPL), and opening/closing ratio (OCR). Means and standard deviations of data were computed for each independent variable. Differences in mean values were accessed by paired *t*-test. The level of significance was set at $p < 0.05$.

Results: The MOC was 46.70 ± 11.8 mm in men and 46.70 ± 6.3 mm in female group ($p = 0.783$). For condylar range of motion, the mean CPL during mouth opening was 11.10 ± 3.1 mm over right side and 11.80 ± 3.0 mm over left side ($p = 0.076$). There is no significant difference between bilateral condylar and incisal movement. The zebris JMA system showed different kinematic movement and duration of opening and closing phase in a TMJ motion cycle, with OCR about 6:4 in the study group.

Conclusions: The zebris JMA system can evaluate jaw movement in a dynamic and continuous way, and it can offer the kinematic information and also has characteristics of biofeedback. In all, the JMA is a reliable, quantitative and noninvasive system to measure the TMJ function and jaw movement.

**P-693****THE APPLICATION OF 3D IMAGES FOR QUANTITATIVE DETERMINATION OF ZYGOMATIC COMPLEX**

Shih-Hsuan Mao, Yu-Hsuan Hsieh, Chih-Hao Chen, Chien-Tzung Chen

Chang Gung Memorial Hospital, Taoyuan, Taiwan

Objective: Zygomatic complex, a tetrapod-shaped bone located in the upper mid-facial area, is the most frequent bone involved in the facial fractures. 3D images are widespread in clinical use because anthropometry technique and computer-assisted systems are easy, accuracy, reliability, and clinically feasibility. In this study, an objective method was proposed for precisely defining the position of the zygomatic complex on structure of both skeleton and soft tissue.

Methods: Ten male patients and ten female patients were included in this study. 3D facial CT scans of patients with pure mandible fracture or pure orbital fracture were compared. Facial skeleton and soft tissue evaluation of zygomatic complex was based on Frankfurt horizontal (FH) position of head. Distance between zygion (zy) and nasion (n) and maxillozygion (mz) and nasion (n) were measured for determination of the lateral position of zygomatic complex in x plane. Heights in y plane were measured from maxillozygion (mz) to vertex (v) and orbitale (or) to vertex (v). Distance between maxillozygion (mz) and opisthocranion (op) stood for the projection of zygomatic complex in z plane. All data were recorded and compared by independent and blinded investigators and averaged for each group.

Results: The difference between right side and left side of skeleton are not significant. In other words, there are not significant difference of lateral position, height and projection between the left and right side of skeleton. Furthermore, there were no significant difference of soft tissue between the left side and the right side.

Conclusions: The zygomatic complex can be reliably defined in 3D images using the anthropometric methods, which may provide an objective evaluation of the zygomatic complex in traumatic or postoperative facial asymmetry. Defining the position of zygomatic complex would have important applications in reconstructive and aesthetic surgery.



P-701

ALGORITHM FOR MULTIDISCIPLINARY MANAGEMENT OF THE COMPLEX FACIAL INJURIES

D. Alsayed, N. Bhatti, A. Kanzaria, C. Bridle, S. Holmes

Oral and Maxillofacial Surgery, Bart's Health NHS Trust, London, United Kingdom

Introduction

The evolution of trauma care in the United Kingdom has resulted in the formation of Major Trauma Centres (MTC), which recognize survival advantage in grouping key services for patients with high injury severity scores (ISS).

Trauma to the craniofacial region in such patients often results from catastrophic mechanisms with uncontrolled energy transfer with extension into the interface between ophthalmology, neurosurgery, PRS, ENT, and Maxillofacial services.

Coordination of surgical intervention is of primary importance and starts from first point of contact at scene, ending at discharge.

Method

(As a Major trauma centre in the an urban population with a high turnover of patients- 1313 patients with craniofacial trauma over a two year period), The Royal London Hospital has been at the leading edge of management of this type of patient for over two decades, and has evolved care pathways to manage patients with combined injuries with respect to timing and combining of surgical teams to provide best outcome.

We present our time based algorithm in flow chart format which considers management at scene, in the emergency room to coordinated primary and secondary repair. We consider ophthalmological and neurosurgical injuries, burns, major soft tissue loss together with specialized facial skeletal repair, and a planned secondary revision program with skeletal and soft tissue manipulation.

Discussion

It is anticipated that this algorithm will assist colleagues joining MTC status to agree treatment protocols and build functional multidisciplinary teams to manage these complex patients.



P-704

PLANNING TRAUMA SERVICES – CAPACITY AND DEMAND

N. Bhatti, A. Kanzaria, D. Sayed, C. Bridle, S. Holmes

Oral and Maxillofacial Surgery, Bart's Health NHS Trust, London, United Kingdom

Introduction

Resource allocation in the modern NHS is particularly complex around the provision of Trauma services. Following the concept of major trauma centres 'going live' in April 2012 a robust service model is required to manage large numbers of facial injuries, with increasing complexity.

Service capacity is a function of patient numbers (itself a function of social deprivation and crime), complexity of casemix, outpatient and inpatient capacity, theatre utilization, and length of stay.

Outcome metrics include length of stay, return to theatre rate, time to theatre, and revision rate.

Method.

We present a two year retrospective data collection of 1219 admitted patients with facial injuries, managed in an inner city environment with high levels of social deprivation and interpersonal violence, within a MTC.

Model

An all day acute trauma list (80-90 patients) once weekly, together with a once a month MDT group (15-20 patients) fed an operative model of two twelve hour complex trauma lists.

The weekly general trauma list (507 patients) shared with other surgical specialties, managed the low energy trauma.

Results

All patients were successively managed. In 2012 the return to theatre rate was 5 cases, the revision rate was 4 cases.

301 Zygomatic fractures, 108 Middle third, 272 Orbital, and 64 Craniofacial.

For low energy fractures (351) the mean time to theatre was 1.5days.

Conclusion

The structured analysis of quality and quantity of facial trauma allowed precise capacity planning and good outcome metrics. This model could be applied to other trauma centres planning their service



P-709

ASSESSMENT AND CLERKING OF OMFS TRAUMA PATIENT IN A&E AND THE DEVELOPMENT AND IMPLEMENTATION OF A TRAUMA PROFORMA

A. Siddle, I. Balasundaram, Z. Ahmad, C. Bridle, S. Holmes

Oral and Maxillofacial Surgery, Bart's Health NHS Trust, London, United Kingdom

Introduction: The initial clerking documentation of the OMFS trauma patient within A&E is an essential part of the patient's medical record. The aim of this audit is to assess the quality of hand written clerking notes compared with a new clerking proforma developed at the Royal London Hospital.

Methods: The OMFS department developed a trauma proforma based on 25 items that were deemed important to be included. The proforma is completed simply by ticking boxes under certain headed criteria. This has been adapted and used to score the quality of the clerking of 50 notes pre and 50 notes post implementation of the proforma. The Mann Whitney U test was used to statistically identify whether there was a significant difference in documentation.

Results: Of the 25 items scored, after introduction of the OMFS trauma proforma there was a significant improvement ($P < 0.05$) in documentation in 14 of the items. Documentation improved in 3 items but this was not significant. Documentation decreased in seven of the items, however this was not statistically significant. One item showed no difference.

Conclusions: The clerking proforma is advantageous in that it acts as reminder to include all essential information, which should help effective communication between members of the healthcare team, and subsequently improve in the quality of care delivered to the patient. Although we found there was decreased documentation in seven items (although not statistically significant) this was put down to the layout of the trauma proforma, which has since been revised.

**P-742****CHOICE OF REDUCTION METHODS AND EVALUATION OF COMPLICATIONS AFTER MANDIBULAR CONDYLAR FRACTURE TREATMENT.**

A. Kozak¹, M. Kozakiewicz²

¹ *Department of Maxillofacial Surgery, Medical University of Lodz, Lodz, Poland*

² *Department of Maxillofacial Surgery,, Medical University of Lodz, Lodz, Poland*

Aims

The aim of this study was to present the result of closed and open reduction treatment of condylar process fractures.

Material and Methods

Early and late treatment results of 42 patients of the Department of Maxillofacial Surgery at the Medical University of Lodz affected by condylar process fractures were analyzed. Patients underwent both closed and open reduction using various miniplate systems and screws. Presence of complications and their duration were analyzed in three periods: early postoperative, more than 10 weeks and more than 20 weeks after surgery. The evaluated factors were: alcohol and drugs presence, additional mandible injuries, the cause of injury, mouth opening, the lateral pathway, presence of salivary fistula, surgical approach, osteosynthesis material choice, occlusion, TMJ mobility, scar acceptance, facial nerve impairment, duration and type of intermaxillary fixation, presence of paresthesias.

Results

Dislocated and displaced fractures underwent open reduction through preauricular approach. Indications for closed reduction were rare. All patients reached full recovery despite the treatment method. Some varieties between the investigated factors were noticed during the recovery time. None of the complications were permanent. No facial nerve dysfunction was noticed.

Discussion and Conclusion

Indications for closed and open treatment of the condylar neck fracture are controversial subjects. Proper choice of reduction method leads to treatment success. The choice of miniplates shape should be a free surgeons choice.



P-753

PERFORATION OF THE ACOUSTIC MEATUS BY OSTEOSYNTHESIS MATERIAL: A RARE COMPLICATION OF MANDIBULAR CONDYLE FRACTURE.

T. Annussek¹, S. Jung¹, K. Wermker², J. Kleinheinz¹

¹ *Department of Cranio-Maxillofacial Surgery, University Hospital, Muenster, Germany*

² *Department of Cranio-Maxillofacial Surgery, Fachklinik Hornheide, Muenster, Germany*

Aim: For mandibular condyle fracture osteosynthesis, different types of plates are available. We discuss possible complications of rigid fixation using a single miniplate and present a rare case of dislocated osteosynthesis material into the acoustic meatus.

Case report: A 49 year old female patient was treated at our department because of a dislocated mandibular condyle fracture. The fracture was reduced and fixated with a single miniplate, located at the dorsal part of the mandibular neck. While operation and till the postoperative period there were no complications observed. Ten years later the patient was located again at our department and complaint about a purulent flow out of the left ear. The clinical examination showed the perforation of the acoustic meatus by miniplate. After radiologic positioning, the plate and all screws were removed successfully.

Conclusion: Different types and designs of plates are available for rigid fracture fixation of the mandibular condyle. Advantages and disadvantages are discussed in literature. Experimental studies showed that single plates are the less stable configurations for rigid condyle fixation. The present case of dislocation of the single miniplate into the acoustic meatus verifies the insufficient stability. Other plate configurations should be preferred.



P-765

FRACTURES IN THE MAXILLOFACIAL REGION: A FOUR YEAR RETROSPECTIVE STUDY

Kyung-Pil Park, Won-Bae Chun, Dong-Whan Shin, Jun-Young Kim, Ho Lee

SMG-SNU Boramae Medical Center, Seoul, South Korea

Objective

The maxillofacial bones are the most prominent area in the human body, and maxillofacial injuries can cause significant long-term functional, aesthetic, and psychological complication.

The purpose of the current clinic-statistical study was to investigate the pattern of maxillofacial fractures in over a 4-year period

Methods

A retrospective analysis of 1311 patients admitted to SMG-SNU Boramae Medical Center for maxillofacial fracture over a four year period, from January 2010 to December 2013 was carried out.

Results

1. The ratio of men to women was 3.3:1
2. Most fractures occurred in adults with ages ranging from 18 to 39 years.
3. A Most common etiology of fracture were caused by falls (38%), followed by assaults (24%), traffic accidents(14%). Especially, fractures during drunken state were 21%
4. The prevalent anatomic regions of facial fractures were the nasal bones (46.3%), orbital bones (21.2%) zygomatic bones (15.7%), and the mandible (10.8%).
5. Tripod fracture were seen in 92% in zygoma area fracture, however isolated zygomatic arch fracture were only 8 cases.
6. The main fracture site of the mandible was the condyle (32.9%), followed by symphysis (31.6%), angle (21.5%), body (13.9%)

Conclusions

The continuous study for pattern of facial bone fractures and change in trend will be helpful in prevention and treatment of facial fracture.

**P-773****A COMPARISON OF THE ACCURACY OF POSTTRAUMATIC ORBITAL RECONSTRUCTION USING PREFORMED VERSUS NON-PREFORMED ORBITAL PLATES — A PROSPECTIVE MULTICENTRE STUDY**

N.-C. Gellrich, R. Zimmerer, H. Essig, M. Rana, N. Steinfeld

AO Foundation, Dübendorf, Switzerland

Aims/Objectives: Orbital fractures are common injuries after facial trauma. If the orbit is not reconstructed accurately, these injuries may lead to serious complications. The aim of this prospective study is to compare the accuracy of orbital reconstruction in respect of volume and shape after fractures of the medial orbital wall and/or the orbital floor with preoperatively preformed versus non-preformed orbital implants. A more precise reconstruction with preformed implants than non-preformed implants of the orbit is hypothesized.

Methods: A total of 170 patients with fractures of the medial orbital wall and/or the orbital floor, scheduled for reconstruction and at least a partial sight in both eyes before their accident will be enrolled into this study. Patients will be assigned to the study groups by investigator discretion. Patients will be followed from the day of initial treatment to 12 weeks after treatment with follow-up visits after 1, 4 and 12 weeks. Accuracy of reconstruction will be assessed using postoperative CT or cone beam CT (CBCT) scans of both orbits. Specially developed orbita analysing software will be used to compare shape and volume between the reconstructed and the unaffected, contralateral orbit. The primary outcome parameter is defined as the variance of shape and volume between the unaffected and the reconstructed side. An accurate reconstruction should lead to a small variance.

Results: To date, 152 patients aged between 18 and 80 years with a fracture of the medial orbital wall and/or orbital floor were treated in ten hospitals in the US and Europe. Preliminary results point towards an advantage of preoperatively preformed plates; however the final follow-up examinations are expected to be completed by May 2014.

Conclusion: The outcome of this study is expected to point towards a greater accuracy of preformed plates compared to non-preformed plates in the posttraumatic reconstruction of orbital volume and shape. Automated analysing of the orbit is a new and highly promising method for quality control in reconstruction procedures.

**P-776****SURGICAL MANAGEMENT OF PENETRATING ORBITOCRANIAL INJURY BY FOREIGN BODY REACHING THE CAVERNOUS SINUS. REPORT OF A CASE.**

J. Masià¹, M. Munill¹, J. Pamias¹, A. De Pablo¹, A. Mogedas¹, J. Gutiérrez¹, S. Bordonaba¹, A. Tomasello², C. Bescós¹

¹ *Oral and Maxillofacial Surgery, Hospital Vall d'Hebron, Barcelona, Spain*

² *Interventional Radiology, Hospital Vall d'Hebron, Barcelona, Spain*

INTRODUCTION:

Penetrating wounds of the orbit constitute a complex therapeutic problem requiring an adequate diagnostic process and treatment decision, which very frequently involves an interdisciplinary approach. The incidence of central nervous system damage from orbital injury is related to the orbital anatomy and the characteristics of the penetrating object.

OBJECTIVES:

To present an uncommon case of orbital and cavernous sinus injury due to penetrating foreign body and its surgical management.

CASE STUDY:

A 51 year old male came to the emergency department complaining of headache and diplopia after a small trauma in the eyelid while cutting the grass of his neighbour's garden. Physical examination showed a small wound in the medial side of the left upper eyelid. There was no visual loss and extrinsic eye movements were preserved. Neurological examination was normal. An emergent computed tomography of the head was ordered. The computed tomography revealed a large metallic intraorbital foreign body reaching the cavernous sinus. Therapeutic options were discussed with oculoplastics and neurosurgery departments and surgical treatment was decided. The foreign body was extracted through a combined transconjunctival and transcaruncular approach with endovascular support to prevent carotid and cavernous sinus hemorrhage. Intraoperative angiography after foreign body extraction revealed a small pseudoaneurysm of the internal carotid artery with no signs of active bleeding. The pseudoaneurism did not grow in successive controls and no treatment was required.

CONCLUSIONS:

Treatment of intraorbital metallic foreign bodies is controversial. When foreign bodies lie in particularly high-risk locations, surgery may cause considerable morbidity. In our case the foreign body was a contaminated metallic nail and there was high risk of infection so surgical removal was decided. Endovascular support is very important in cases with high risk of intracranial haemorrhage.



P-786

RECONSTRUCTION OF TEMPORAL HOLLOWING DEFECT USING PRE-FABRICATED TITANIUM PLATES.

Mathew Thomas, Vlasios Okseloglou, David Grimes, Dilip Srinivasan

Oral & Maxillofacial Surgery, Queens Medical centre, Nottingham, United Kingdom

Introduction: Temporalis muscle flap has been used to reconstruct Oro-facial defects since almost a century, its reliability and length are a great advantage. The temporalis muscle flap remains a reliable one-stage reconstructive alternative for moderate size oral and midfacial defects. One of the main disadvantages is the hollowing of the temporal area especially at the anterior edge behind the orbital rim, which is an unpleasant aesthetic result.

Aim: Aim of our study was to reconstruct the temporal defect following harvest of temporalis flap

M&M: We have used computer-aided designed / computer-aided manufacturing techniques (CAD/CAM) to print 3D models and construct custom made titanium plates to camouflage the defect. We used this method to fabricate and reconstruct temporal hollowing defects in 5 patients.

Results: All 5 patients were satisfied with the results but one patient had over contouring of the temporal area. There were no complications.

Discussion: The custom-made cast titanium implants have been used for reconstruction of cranium defects since 1998. The use of custom made temporal cranioplasty plate after harvesting the temporalis muscle flap is a simple and effective method for correction of soft tissue deficit in temporal area. This technique is cost effective. The ease of use, reliability and strength of Titanium as a material is an added advantage.

**P-797****KETAMINE SEDATION FOR THE TREATMENT OF NON-COMPLEX PAEDIATRIC FACIAL LACERATIONS**

F H Chan¹, S M Thomas¹, B Costa², M J A Turner¹

¹ *Oral and Maxillofacial Surgery, Peterborough City Hospital, Peterborough, United Kingdom*

² *Oral and Maxillofacial Surgery, Addenbrooke's Hospital, Cambridge, United Kingdom*

Objective: We show that ketamine sedation is a good alternative to general anaesthetic in the treatment of non-complex paediatric facial lacerations. Paediatric facial lacerations are common and children are not always able to tolerate local anaesthesia treatment. We compare the use of ketamine sedation and general anaesthesia for treating paediatric facial lacerations by the Oral and Maxillofacial Surgery (OMFS) Departments at two Cambridgeshire hospitals.

Methods: Retrospective data of paediatric facial laceration patients who were seen by the OMFS team at the Emergency Departments at both Cambridgeshire hospitals from 2012 -2013 were collected. The number of patients who were treated with general anaesthesia and ketamine were analysed.

Results: 20% of procedures were carried out with ketamine sedation and 25% with general anaesthetic, the remaining with local anaesthetic. The use of ketamine was significantly higher in Peterborough City Hospital compared to Addenbrooke's Hospital Cambridge, a regional level 1 trauma centre.

Conclusions: Ketamine sedation has been a successful alternative to general anaesthesia in managing children with non-complex facial lacerations. Although general anaesthesia is often the preferred method, ketamine sedation may be more appropriate for suturing non complex paediatric facial lacerations in children who cannot tolerate local anaesthesia alone. Ketamine sedation is a more cost effective treatment, does not involve and in-patient stay and is less likely to involve the delays in treatment that in-patient emergency list operating often entails. The administration of ketamine however is dependent upon a suitably trained physician. The OMFS team should always consider ketamine sedation as an option in managing children with non-complex facial lacerations if local anaesthesia is deemed unsuitable.

**P-804****TRAUMATIC RECESSION! - A HYPOTHESIS FOR THE REDUCTION IN MAXILLOFACIAL TRAUMA IN THE EAST OF ENGLAND SINCE 2005.**

S M Thomas¹, GN Bourne², M J A Turner¹

¹ *Oral and Maxillofacial Surgery, Peterborough City Hospital, Peterborough, United Kingdom*

² *Oral and Maxillofacial Surgery, Addenbrooke's Hospital, Cambridge, United Kingdom*

Objective: To analyse and provide a hypotheses for the reduction in treated facial trauma in the East of England (EOE) since 2008. The global economic recession that began in mid 2007 largely impacted UK by the summer of 2008. Unemployment in East England rose by 2.2% (from 4.5%) by the summer of 2009. The ripple effect this had on the lifestyle behaviour of the general public was varied. Evidence indicates that overall crime rate and A&E presentation marginally increased since the downturn. Alcohol consumption fell by 6% and drug offences by 2% in 2009.

Method: A retrospective study was done at our unit in Peterborough to quantify the oral and maxillofacial trauma (fractured mandible and zygomatic complex) requiring surgical intervention from 2005 until 2012. These results instigated a closer examination of the numbers of treated trauma by all Oral and Maxillofacial Surgery (OMFS) units in EOE during this period. A comparison to the unemployment rates in the region was used to test our hypothesis.

Results: Although there was a sudden increase in total trauma in 2007/08 when compared to 2005, there was a marked decline henceforth until 2012 (from 612 to 495 cases per year). Correlation of these numbers to unemployment rates revealed an inverse relation, contrary to our initial postulation.

Discussion: Reasons for the downturn in OMFS trauma figures are arguable and include reduced anti-social behaviour, unaffordability to purchase alcohol or changing migrant population. This is vital data that can affect the OMFS specialty if trends continue.

**P-805****MAXILLOFACIAL INJURIES: WILD TIGER ATTACK**

A. Khanal

Department of Oral and Maxillofacial Surgery, College of Medical Sciences, Bharatpur, Chitwan, Nepal

Background: Tiger attacks are an extreme form of human-wildlife conflict that occurs for various reasons, primarily due to close proximity to the animals. The local communities residing near buffer zones of Chitwan National Park in central Nepal who depend on their livelihood are often prone to such conflicts. We present two cases of severe maxillofacial injuries inflicted by tiger attack and its management.

Case Description: The first case of a 25 years old female in July 2012 who was attacked by a Royal Bengal tiger (*Panthera tigris tigris*) sustained injuries to the face, scalp and neck region while collecting grass fodder in the buffer zone. In May 2013, a man-eater tiger pounced on a 31 years old male from a nearby thicket when he joined a group of villagers trying to hunt after it mauled two villagers to death in the fringes of the park. The attack resulted in deep puncture wounds of the scalp, nape and facial region with numerous scratches and abrasions on his chest and arms consistent with the tiger claw injuries. Assessment of maxillofacial injuries requires plain radiographs and computed tomography to evaluate soft tissue and facial bone trauma and to rule out possible injuries to cervical spine and vessels. In both cases, zygomatic bone and subcondylar neck fractures with deep soft tissue lacerations of cheeks and parotid glands were present. Wild animal bites are prone to infection with polymicrobials that mandates consideration of tetanus and rabies prophylaxis.

Results: The patients recovered well with initial intensive care unit treatment followed by internal fixation for facial bone fractures and soft tissue repair. Supportive psychiatric therapy was given. No infection occurred.

Conclusions: The increasing human-wild animal attacks are partly due to various encroachments into their natural habitat. The complex injuries after wild attacks pose a serious health risk and hazard, and challenges to surgeons practicing in a resource limited settings. Further, it is very imperative to know the wounding patterns of tiger attacks and treatment principals. Multidisciplinary approach is required to achieve the best cosmetic and functional results.

Key words: maxillofacial injuries, tiger attack

**P-810****A RETROSPECTIVE STUDY OF MAXILLOFACIAL FRACTURES AND CONCOMITANT INJURIES IN GREECE OVER 28 YEARS. A PRELIMINARY REPORT.**

D. Igoumenakis, C. Krasadakis, E. Parara, C. Mourouzis, M. Meztis, G. Rallis

Oral and Maxillofacial Surgery Department, KAT GENERAL HOSPITAL, ATTICA, GREECE, ATHENS, Greece

Aim

The aim of the study was firstly to investigate the etiology and the pattern of maxillofacial fractures and concomitant injuries in Greece, over a long time period and secondly, to compare the results with data from older studies of the same department and with the literature. The current presentation represents a preliminary report of the study.

Patients and methods

The medical records of the patients, who were hospitalized in our department, due to maxillofacial trauma, over the period 1985 – 2012 were reviewed. A descriptive statistical analysis of the collected data was subsequently carried out.

Results

A total of 5708 cases, with a sum of 9341 maxillofacial fractures and 1028 concomitant injuries, were enrolled in the study. Mean age was 36.3 years. Four thousand six hundred and six (80.6%) of the patients were males, while 1106 (19.4%) were females. The most common site of fracture was the mandible with 5219 (55.7%) cases, followed by the orbitozygomatic complex with 2252 (24.0%), the maxilla with 779 (8.3%), the nasoethmoidal complex with 723 (7.7%) and the frontal sinus walls with 108 (1.2%) cases. The upper extremity sustained the majority of concomitant injuries with 452 (21.7%) cases. The rest of concomitant injuries included the following: cranium with 400 (19.2%), lower extremity with 378 (18.1%), thorax with 326 (15.7%), lumbar spine with 209 (10.0%), cervical spine with 199 (9.5%), abdomen with 40 (1.9%) and Pelvis with 36 (1.7%) cases. Notably, the eye globe was injured in 32 cases (1.5%), with 19 (0.9%) of them leading to permanent blindness. Regarding the etiology of traumatization on average, the leading cause was motor vehicle accidents (MVAs) (53.3%). The second and third place was occupied by interpersonal violence (24.4%) and falls (14.9%) respectively.

Conclusions

A major decrease of MVAs, in conjunction with a noticeable increase of interpersonal violence was observed. The increase of violence is greater in the 3-year period 2010-2012, which coincides with the onset of a dramatic financial recession in Greece. In fact, although MVAs was by far the leading cause for 25 years (1985-2009), in the period 2010-2012 MVAs were virtually equalized with interpersonal violence.



P-811

AN ATYPICAL INJURY TO THE MAXILLOFACIAL AREA

I.Malachovský, D.Statelová, M.Janičková, J.Jurkemík

Department of Stomatology and Maxillofacial Surgery Jessenius Faculty in Martin of Comenius University in Bratislava and University Hospital in Martin

Maxillofacial injuries are of different aetiology and include injuries resulting from different activities. The authors present two cases of an accident at work caused by pliers while repairing tyres in a car service and injury by an arrow during children playing game.

Key words:

maxillofacial area, injury, pliers, arrow.



P-815

TRANSBUCCAL LATERAL CORTICAL PLATE FIXATION OF MANDIBULAR ANGLE FRACTURES: PRELIMINARY STUDY

C. Krasadakis, C. Mourouzis, E. Parara, M. Meztis, G. Rallis

Oral and Maxillofacial Department, KAT GENERAL HOSPITAL, ATTICA, GREECE, ATHENS, Greece

Introduction: Transbuccal cortical plate fixation has gained acceptance among maxillofacial surgeons for management of mandibular angle fractures. It permits placing of a less bent plate deeper within tissues, thus minimizing the risk for postoperative infection. However, longer operating time maybe a fact with the transbuccal approach. This is mainly observed in the beginning of the learning curve. The purpose of the present study is to report preliminary results of the transbuccal approach for angle fractures, in a busy department occupied in training.

Materials and Methods: in the course of a prospective study regarding mandibular fractures, twenty-one angular fractures which were managed with the transbuccal approach were analysed, as a preliminary report. Data recorded were demographic, etiology, co-existence of other mandibular fractures, operating time and outcome.

Results: Most fractures occurred after road traffic accidents or interpersonal violence, in patients with a mean age of 21 years. In ten cases, the third molar tooth was removed, whereas for eleven cases it was retained. Postoperative intermaxillary fixation with elastic bands was considered necessary for all patients, with a median duration of 7 days. No plate removal has occurred.

Conclusions: The transbuccal approach is a well established technique for management of mandibular angle fractures. Trainees should be encouraged to practice the transbuccal approach, because in experienced hands it proves safe and efficient.



P-828

USE OF EXTERNAL FIXATOR IN CHILDREN CONDYLAR FRACTURES

P. Cascone¹, F. Spallaccia², P. Arangio¹, V. Vellone¹, M. Gualtieri¹, R. Pucci¹

¹ *Dipartimento di Scienze Odontostomatologiche e Maxillo-Facciali, Sapienza Università di Roma, Roma, Italy*

² *Dipartimento di Chirurgia Maxillo-Facciale, Ospedale "S. Maria", Terni, Italy*

Objective

The purpose of the study is to evaluate the outcome in child patients underwent to open reposition and external fixation of displaced or dislocated mandibular condyle fractures.

Methods

A retrospective study was performed to assess the use of external fixator for condyle fractures in patients less than 12 years treated at Dipartimento di Scienze Odontostomatologiche e Maxillo-Facciali, Sapienza Università di Roma from 1990 to 2012.

6 patients were selected, respectively of 6, 8, 9, 10 and two of 11 years.

Condyle fractures were classified according to Cascone et al. in treated patients following radiological findings.

According to Zide, in the case of displacement or unstable low condylar fracture or subcondylar fracture open reduction was indicated as the treatment of choice.

Our goal for a good post surgical result has been set to a Maximum Mouth Opening of at least 30 mm, no or minimal latero-deviation in MMO, no chewing problems and no pain.

A clinical (MMO, pain and/or articular noises/rumors, chewing and speech difficulties, facial nerve injuries), functional (gnatography) and morpho-structural evaluation (orthopantomography and 3-dimensional CT scans) was performed in the short-term follow-up at 1, 6 and 12 months after surgery and long-term follow-up at 2, 4, 8, 12 and 15 years.

Results

At the 12-month follow-up, 5 (83%) of treated patients regained their pre-trauma occlusion with good functional results (MMO: 100% >30 mm, 81% >35mm, 59% >40mm).

No patient demonstrated permanent facial nerve palsy.

In 1 patient (17%), orthodontics was necessary to recover pre-trauma occlusion.

Conclusions

In our experience, the use of external fixation is a safe and effective alternative to Open Reduction and Internal Fixation to reduce condylar fractures during the growth age allowing immediate mobility and preserving TMJ morphofunctional integrity even in children with a high local remodelling capacity.

**P-832****APPLICATION OF FOLEY'S CATHETER IN COMMINUTED ZYGOMATIC ARCH FRACTURES**

KN Rajaram, SC Clark

Department of Maxillofacial Surgery, Manchester Royal Infirmary, Manchester, United Kingdom

Zygomatic arch fractures are commonly treated with a simple lift which could be through a Gilles' temporal or an intra-oral approach. Unstable comminuted zygomatic arch fractures are prone to collapse thereby resulting in inadequate reduction and an unaesthetic depression of the cheek. These fractures may then require a coronal approach to achieve the desired result. This procedure is not only complex and time consuming but also carries the risk of damage to the facial nerve and temporal hollowing.

Here we illustrate the technique and our experience in using a Foley's catheter to manage unstable zygomatic arch fracture thereby preventing the comorbidities associated with a complex operation. In our experience we found it to be good tool in achieving a satisfactory result. Foley's catheter in the treatment of fractures of zygoma and orbital floor have been reported as early as the sixties and seventies of the twentieth century. This poster emphasises that in this modern age of innovation and invention, time tested age old techniques which have withstood the test of time are still applicable in surgical procedures when used appropriately.



P-840

THE USE OF "OSTEOMATRIX" BIOCOMPOSITE OSTEOPLASTIC MATERIAL IN COMPLEX THERAPY OF PATIENTS WITH MANDIBULAR FRACTURES.

G.P. Ter-Asaturov, I.V. Korobkov, D.A. Savaschuk

I.M. Sechenov First Moscow State Medical University, Moscow, Russian Federation

Among injuries of the facial skeleton, mandibular fractures happen much more frequently. The use of osteotropic preparations significantly increases the effectiveness of treatment of mandibular fractures.

The aim of this research is to improve the effectiveness of surgical treatment of patients with mandibular fractures by using "Osteomatrix" osteoplastic material.

Materials and methods. "Connectbiopharm" LLC has developed the technology of receiving bone collagen and bone glycosaminoglycans (GAGs), and on their basis "Osteomatrix" biocomposite material has been produced. "Osteomatrix" consists of bone xenocollagen, enriched with bone sulphated glycosaminoglycans (GAGs) and hydroxyapatite (HA) in natural form. The bone collagen received with this technology does not contain any other proteins, so it allows this material to be absolutely inert in relation to immune system of a recipient. The great advantage of this material is that the collagenic and mineral structures of a natural bone is almost completely preserved, and the material has bone GAGs affinely connected with collagen and HA. This is the main characteristic, which significantly distinguishes "Osteomatrix" from the analogues in the world and considerably strengthens its osteogenic properties.

To date, the Clinic of Oral and Maxillofacial Surgery surgery (I.M. Sechenov First Moscow State Medical University) has 8 years of experience in application of "Osteomatrix" both for conservative and operative methods of treatment of mandibular fractures. The conservative treatment of 56 patients and the operative treatment of 55 patients was been carried out in the clinic. In all these cases "Osteomatrix" was applied for filling-in bone defects. In case of intraoral access, "Allomatrix" collagenic, resorbable, multilayered membrane was applied. Immobilization of the bone fragments was carried out in standard ways.

Results. The obtained data represent reduction of terms of the patients' rehabilitation and earlier reparative osteogenesis in the fracture line. The objective investigations of reparative osteogenesis (X-ray study and gnathodynamometry) were carried out during the period of the patients' rehabilitation.

Conclusions. Thus, the use of "Osteomatrix" biocomposite osteoplastic material in complex therapy of patients with mandibular fractures should be included in wide practice of maxillofacial surgeons which will result in improving the quality of treatment.

**P-848****ORBITAL WALL FRACTURES AND TRAUMATIC SUPERIOR ORBITAL FISSURE SYNDROME: A PROPOSAL OF TREATMENT**

F.Terranova, A. D'Agostino, P.F. Nocini, L.Trevisiol

Odontoiatric and Maxill-Facial Clinic, Verona, Italy

INTRODUCTION: Superior Orbital Fissure Syndrome (SOFS) associated with fracture of the orbital walls is rare, the pathogenesis of the traumatic neurophaty is unclear and the optimal treatment is controversial. SOFS resulting from one of the pathological processes involving the superior orbital fissure clinically manifest with ophthalmoplegia, lid ptosis, proptosis, fixed and dilated pupil (III to VI cranial nerve damage).

CASE REPORT: A 12 year old boy sustained an injury to the right periorbital-frontal area. He was examined on the same day, showed a severe periorbital hematoma with enophthalmos, without ocular motility abnormality or optic nerve disturbance. CT showed a fracture to the right orbital floor and medial wall. The patient was treated with steroids and had progressive reduction of periorbital edema with total recovery of visual acuity, but four days after trauma the boy began to complain about diplopia associated with deficits in the right upper eyelid elevation's movement. Ten days after injury the patient underwent surgical reconstruction of the orbital floor followed by corticosteroid therapy. One week after surgery complete ptosis with limitation in the movement of the inferior rectus muscle and mydriasis of the right eye were still present. MRI orbit control performed after surgery showed no alteration. Two years after trauma a latter surgery was performed to correct residual enophthalmos, but ptosis resolved spontaneously one year later.

DISCUSSION: The physical mechanism of the orbital fractures includes three main theories: increased hydraulic pressure, transmitted buckling force and direct globe-to-wall contact. No specific guidelines have been clearly defined due to the small number of reported cases. Spontaneous recovery of motor and sensory functions usually occurs when the syndrome results from trauma; steroid therapy may be beneficial but the protocol of choice is controversial. Surgical intervention facilitates recovery of eye movement ; traumatic neurophaty which accompanies these craniofacial fractures is different from the indirect type of nerve injury, which may respond to steroids; there seems to be no reason to withhold surgery while waiting for a response to steroids therapy. Reduction of the fracture is still required to restore orbital wall alignment, orbital volume, globe position and to remove tensioned periorbital tissues.



P-852

ORBITAL RECONSTRUCTION AFTER MIDFACE TRAUMA - CASE PRESENTATION

M. Ravis, A.N. Valeanu, M. Pricop, S. Talpos, E. Ianes

University of Medicine and Pharmacy "Victor Babes", Timisoara, Romania

Introduction: The fractures of the midfacial bones are caused by direct trauma. Traffic accidents are the most common etiological factor. It affects not only the facial architecture but also the adjacent natural cavities : the orbit, the maxillary sinus, the nasal cavity. Severe midface fractures often lead to residual traumatic deformity and disability.

Case report: We present the case of a 52 year-old patient, victim of a traffic accident. The radiological investigations reveal comminuted fractures in the zigomaticomaxillary complex and nasal bones.

The treatment aimed at both satisfying aesthetic rehabilitation by reconstruction of the facial architecture and functional recovery: masticatory, ocular, respiratory. In this regard, the open reduction and the immobilization of the bone fragments with titanium plates and screws was performed. A titanium mesh was used for the reconstruction of the orbital floor and for the support of the orbital contents, which herniated in the maxillary sinus.

Conclusion: The aesthetic and functional rehabilitation of this case was a challenge , due to the multiple bone lesions. We might compare the restoration of the bone relief to solving a puzzle. After the intervention in the cranio-maxillofacial clinic, the patient was transferred to the ophthalmologic clinic for the surgical intervention at the level of the ocular globe.

**P-864****A CASE OF POST-TRAUMATIC CONDYLAR NECK ANKYLOSIS WITH TMJ IMPAIRMENT**

E. Segna¹, A. Lipari², M. Romano¹, V.A. Combi¹, A. Baj¹, F. Laganà¹

¹ *Maxillo-Facial Surgery and Odontostomatology, Fondazione IRCCS Ca' Granda - Ospedale Maggiore Policlinico, Milano, Italy*

² *private practitioner, Milano, Italy*

OBJECTIVES

We present a case of juxta-articular monolateral TMJ ankylosis in a 14-years-old patient, onset as a consequence of an untreated right condylar head fracture occurred at 4-years. The TC images showed that the ankylotic mass was localized laterally, hindering mandibular movement, and the TMJ was medially positioned, hypoplastic, but structurally preserved and not involved in ankylosis. Starting from this observation we supposed that the articular functionality could be re-established removing the ankylotic mass, maintaining intact the TMJ. We were confident that the TMJ's potential growth could be restored once removed the mechanical obstacle, achieving a normal morphofunctional anatomy, with the help of physiotherapy and odontoiatric treatment.

METHODS

The patient came at our attention in February 2013 complaining of severe reduction in mandibular mobility, became evident gradually. Clinically the patient showed a very low mouth opening (<1cm), leading to several feeding difficulties, poor oral hygiene and impossibility to perform odontoiatric treatment. The surgery consisted in the removal of the osteo-fibrotic ankylotic mass releasing the articular space, then, in order to achieve a mouth opening of approximately 3,5 cm intraoperatively, we performed a bilateral coronoidectomy. The operative time has been 240 minutes, an antibiothic prophylaxis with amoxicillin + clavulanic acid has been administered, the pain has been controlled with Paracetamol (1g every 8 hours). The post-operative period was spent without complications.

RESULTS

The patient started physiotherapy 5 days after surgery and went on to make exercises for about 8 months. One month after the surgery he also started odontoiatric therapy. At the last clinical evaluation in October 2013 he could open his mouth up to 4 cm without pain.

CONCLUSIONS

At 12 months from the surgery, the clinical result shows that our supposition should be considered correct: the TMJ affected by a post-traumatic ankylosis, when the TMJ isn't directly involved in the ankylosis, although hypoplastic and dislocated, conserves his potential of growing, and the removal of ankylotic mass followed by myofunctional and odontoiatric therapy is a good treatment's option for restoring TMJ functional anatomy. We are waiting for radiological confirmation.



P-881

TITANIUM PLATE REMOVAL IN MAXILLOFACIAL TRAUMA PATIENTS

A. Silva, C. Carracha, H. Rodrigues, P. Coelho

Maxillofacial Surgery, Centro Hospitalar de Lisboa Central, Lisboa, Portugal

Objective: To determine the incidence of plate removal in trauma patients with facial fractures in our hospital, treated by osteosynthesis with titanium plates, and to analyze demographic features and possible risk factors.

Methods: Through the analysis of patients' clinical records, we conducted a retrospective study of all patients submitted to open reduction of facial fractures and osteosynthesis with titanium plates in Centro Hospitalar de Lisboa Central, between January 1st 2008 and December 31st 2012. Data collected included gender, age, fracture location, mechanism of trauma, time between application and removal of material and factors determining plate removal.

Results: During this period, 42 patients (6,99%), out of 601 patients, had their titanium plates removed. In all patients under 16 years old, plates were systematically removed. In the adult population, most of the patients who had titanium plates removed were symptomatic (97,62%), with symptoms generally occurring in the first year. Pain associated with inflammation/infection and material exposure was the most common cause. When all factors were considered, mandibular fracture, particularly angle fracture, treated by intraoral approach was the most frequently implicated.

Discussion and Conclusion: Our results are comparable to those in the literature and do not support routine plate removal.

**P-887****LOWER JAW RECONSTRUCTION AND DENTAL REHABILITATION AFTER WAR INJURIES : PAUL TESSIER IN IRAN IN THE 1980S**

S. Ketoff¹, B. Guichard², P. Nicol¹, B. Devauchelle³, P. Goudot¹, C. Bertolus¹, R. H. Khonsari¹

¹ *Service de chirurgie maxillofaciale et stomatologie, Hôpital de la Pitié-Salpêtrière & Université Pierre-et-Marie-Curie Paris 6, Paris, France*

² *Service de chirurgie maxillofaciale et stomatologie, Hôpital Charles-Nicolle, Rouen, France*

³ *Service de chirurgie maxillofaciale et stomatologie, CHU d'Amiens, Amiens, France*

Aims/Objectives

Iran-Iraq war resulted in more than 500.000 casualties and caused many severe facial injuries. Paul Tessier and his team led several missions in Iran in the late 1980s and early 1990s aiming to reconstruct mandibular and dental defects resulting from war injuries using modern techniques. Here we reviewed the files of 44 patients operated on by Dr Tessier.

Material and Methods

We studied a series of 44 patients operated on by Dr Tessier from 1987 to 1993. We collected the following data: number of previous procedures, number of dental implants/patients, bone grafts, lower and upper jaw osteotomies, soft-tissue procedures. Documentation was based on photographs of patients before, during and after the procedures, and on OPGs.

Results

All patients were included in a standard treatment plan involving bone reconstruction, dental implants, soft-tissue management and prosthetic rehabilitation. 75% of patients had bone grafts. The number of implants / patient was 0-10 (average: 3). Failure rate for implants was 3% in the follow-up period (average: 2 years).

Discussion

Iran-Iraq war resulted in numerous severe craniofacial injuries. In the 1990s, lower jaw rehabilitation using implants required an expertise that was brought by Tessier and his team in post-war Iran. At this time, applying a standard protocol based on bone reconstruction and secondary implantation was a pioneering approach.



P-889

MANDIBULAR FRACTURES: REPERCUSSION ON THE ATLANTO-AXIAL JOINT AND ACUTE CERVICAL SPRAIN

T.Cutilli, P.Cargini, M.Civica, E.Pontecorvi, G.Sollecchia, S.Scarsella

University of L'Aquila Maxillofacial Surgery Dpt of Life, Health & Environmental Sciences, L'Aquila, Italy

Objective - Our previous research on facial dysmorphic pathology were able to show that maxillofacial asymmetries are associated with tridimensional modifications of the cranio-axial-cervical structures. These studies also showed that such cranio-cervical alterations, which can lead to arthropathies of the small vertebral articulations and scoliosis, may cause cervical pain syndromes. Facial fractures result in an acute musculoskeletal asymmetry characterized by the spatial modification of the muscular vectors which causes a post-traumatic pathological and asymmetrical rearrangement of facial structures. Therefore we hypothesized that, as in asymmetrical dysmorphism, in facial fractures the musculoskeletal displacement can also cause cranio-axial modifications that could expose patients to subsequent cervical clinical disorders.

Methods - 315 non consecutive cases of displaced mandibular fractures, 193 males (61.26%) and 122 females (38.74%), 18-36 years of age, treated from June 2006 to June 2012, were selected according to the following criteria: absence of direct cervical trauma, absence of preexisting cervical pathologies and facial asymmetric dysmorphism. Single fractures amounted to 220 cases (69.84%), multiple fractures to 95 cases (30.16%).

Results - In all cases CT showed a rotation of the atlas, ipsilateral to the side of single fractures, and the subluxation of the cranio-cervical joint (Kappa Coefficient = 1,000). Parasymphysis fractures showed greater joint dislocation than fractures of the angle and ramus ($p = 0,0001$). In bilateral fractures, joint displacement appeared in the side of greater muscular imbalance. Vertical derangement of the joint has been observed in 79.65% of single fractures and in 20.35% of multiple fractures ($p = 0,0046$). A Control Group made up of 20 patients, 10 males and 10 females, aged from 19-24 (mean-range: 21.6) suffering from acute isolated cervical sprain (whiplash) showed no spatial alterations of the atlanto-axial joint.

Conclusions - Our research showed and delineated the physiopathology of cervical sprain in mandibular fractures. It appears that 16.19 % of all patients with displaced mandibular fractures showed cervical disorders at long-term follow-up ($p=0.0002$).



P-894

REMOVAL OF MINIPLATE FIXATION FOLLOWING ORTHOGNATHIC SURGERY

Rohit Chandegra, El Muiz Mustafa, Liviu Hanu-Cernat

Oral and Maxillofacial Surgery, University Hospital Coventry and Warwickshire, Coventry, United Kingdom

Introduction: Between 3 and 18% of fixation plates are reportedly removed following orthognathic surgery ¹⁻³. The removal rate and indications for plate removal following orthognathic procedures was retrospectively reviewed at the University Hospital Coventry and Warwickshire.

Methods: All patients that underwent single jaw or bimaxillary osteotomies and genioplasties between 2007 and 2014 were included in this study. The indications for plate removal were deduced from the clinical notes. Radiographs and theatre entries were examined for to identify the number and site of plates that were removed.

Results: 172 orthognathic procedures were carried out at our department between 2007 and 2014 by three surgeons. 91 patients underwent bimaxillary osteotomy (of which four included a genioplasty). There were 62 single jaw osteotomies (27 Maxillary, 35 mandibular) and 15 genioplasties.

Plate removal was required in 16 (9.3%) of our patients. The predominant indications for plate removal were infection (n=5), palpability (n=3), sensitivity/paraesthesia (n=2) and plate mobility (n=2). Other indications included plate exposure (n=1), fractured plate (n=2, one due to trauma) and persistent swelling (n=1).

The mean time to plate removal was 9 months (2 – 24 months). Eight plates were removed from the mandible, 14 from the maxilla and one from a genioplasty.

Conclusion: The requirement for plate removal was 9.3% in our series. Most plates were removed within the first year of surgery. Plates were removed more often from the maxilla than from the mandible. The predominant indications were infection and the discomfort of a palpable plate with or without an associated paraesthesia.

Reference:

1. Falter B et al. Plate removal following orthognathic surgery. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod.* 2011 Dec;112(6):737-43. Epub 2011 Mar 31.
2. Kuhlefeldt M et al. Risk factors contributing to symptomatic miniplate removal: a retrospective study of 153 bilateral sagittal split osteotomy patients. *Int J Oral Maxillofac Surg.* 2010 May;39(5):430-5.
3. O'Connell J et al. The fate of titanium miniplates and screws used in maxillofacial surgery: a 10 year retrospective study. *Int J Oral Maxillofac Surg.* 2009 Jul;38(7):731-5. doi: 10.1016/j.ijom.2009.02.016.



P-897

NOMA IN IRAN: THE EXPERIENCE OF PAUL TESSIER IN THE LATE 1970S

F. Simon, B. Guichard, P. Nicol, B. Devauchelle, P. Goudot, C. Bertolus, R. H. Khonsari

Hôpital de la Pitié-Salpêtrière, Paris, France

Objectives

Dr Tessier was a pioneering surgeon who founded craniofacial surgery and had an international influence in the field of reconstructive surgery. We reviewed his techniques in the reconstruction of post-NOMA defects in Iran in the late 70s.

Material and Methods

We studied a series of 23 patients operated on by Dr Tessier from May 1974 to September 1978 in Iran. They all suffered from NOMA in childhood with major facial defects. Tessier wrote in detail the clinical description of the defects and each surgical technique used for the facial reconstruction. We classified the different types of defects using the Montandon classification and then compared the different surgical techniques. We also studied public health in Iran from the 50s to the 70s to understand the factors which led to these NOMA cases.

Results

14 female and 9 male with mean age of 24 were operated on for reconstruction of post-NOMA defects. 11 suffered from simple lip and cheek defects, 9 also from nose defects and 3 from extensive facial defects. Up to 7 of these suffered from severe trismus and 7 other from bone defects. Before meeting Tessier, 13 of the patients had been partially reconstructed using tube pedicles. To reconstruct the lips, Tessier used Abbé flap in 15 patients completed by commissuroplasty in 6 patients. Nose defect were almost always reconstructed with nasofrontal flaps (10 cases). The outer cheek was reconstructed with a rotation flap (6 cases), or with a temporo-frontal flap (6 cases). The inner cheek was reconstructed using a Barron-Tessier myocutaneous flap (10 cases). Bone grafts were used in 10 cases. Out of the 23 patients, flap necrosis occurred in 5 cases (Barron-Tessier in 4 of those cases).

Discussion and Conclusion

Statistics in rural Iran from the 50s to the 70s show high malnutrition and infant mortality which explain the prevalence of NOMA. Tessier used local flaps to reconstruct these important facial defects. He had a high rate of success except for the Barron Tessier island flaps used to reconstruct the inner cheek, nowadays commonly replaced by free flaps.

**P-911****ALGORITHM OF RECONSTRUCTION METHODS AT HIGH COMMUNUTED FRACTURES OF THE CONDYLES PROCESSES OF THE LOWER JAW**

Y.A. Medvedev, O.N.Adygezalov, Y.N. Sergeyev, P.S. Petruk

First Moscow State Medical university after I.M. Sechenov, Moscow, Russian Federation

Objective: analysis of the quality of diagnosis and choice of surgical treatment of patients with high comminuted fractures of the condylar processes of the lower jaw (CPLJ).

Materials and Methods. In the clinic of maxillofacial surgery First MSMU named after. I.M. Sechenov for the period from 2009 to 2013, we observed 30 patients (women 4 /11%/ , men 26 /89%) with HFCP. Comminuted intraarticular fractures of CP were 40% of them. When dislocation of the head with a shift of the articular capsule large fragments we had the following algorithm of diagnostics and treatment. Clinical examination, CT scan, 3D reconstruction and MRI, the results of which was the choice of surgical treatment method, intermaxillary fixation before operations. Under endotracheal anesthesia using external access to the branch of the jaw, we provide (L-shaped) osteotomy of CP with removing CP fragments from the wound. The larger pieces and head we fixing among themselves and to osteotomized CP (using clamps of NI and Titan or titanium plates with screws). Reconstructed CP we fix to the branch of the LJ under the control of the bite and perform restoration of the damaged capsule. When we have a big head condyle defect then resort to the reconstruction of the defect adequate replacement head autograft. At impossibility of plastics destroyed CP we produce arthroplasty of condylar process using an endoprosthesis of Ni and Ti.

Results. Conduct of clinical and MRI study within 15 months showed complete recovery of condylar process , restoration of mobility by opening and closing the mouth

**P-914****COMPLEX SOFT TISSUE FACIAL WOUND – A CASE REPORT**

A. Millán, B. Gomes, A. Silva, C. Carracha, Ó. Costa, P. Coelho

Cirurgia Maxilofacial, Centro Hospitalar Lisboa Central, E.P.E. (Hospital de São José), Lisbon, Portugal

AIMS

The facial soft tissue wounds are, among others, the result of traffic, professional accidents and interpersonal violence. The approach is made according to the depth of the lesions, their association with facial fractures, the integrity of the facial structures, and the aesthetic units implicated.

The main objective in the management of the facial wounds is to achieve the best functional and aesthetic result, by primary closure assuring eventual future reconstruction.

The nose, as the most prominent structure of the face, is the most susceptible to suffer both hard and soft tissue injuries. On the primary approach it is essential the control of the airway as well the potentially lethal nose bleeding.

METHODS

Male, 47 years old, victim of a bike accident without helmet protection. Upon arrival at the trauma room, the patient was evaluated according to Advanced Trauma and Life support protocol.

The clinical findings were a traumatic flap of the middle third of the face involving the upper lip, limited bilaterally by the nasolabial folds, ending at the glabella. The flap included the nasal bones, the bone and cartilaginous nasal septum associated with extreme comminuted fractures. The patient also presented paresis of the upper lip, maintaining, however, the integrity of the remaining structures of the face.

RESULTS

The approach was performed according to soft tissue injuries protocol. The examination showed that the buccal branches of the facial nerve, were totally destroyed, hence the neural anastomosis weren't possible. The suture of the cartilaginous septum and the reparation of the oral and nasal mucosa were performed. Given the comminution of the bone fragments, it was not possible to carry out any osteosynthesis. The wound was closed by layers and the fracture underwent close reduction and external contention.

DISCUSSION AND CONCLUSION

The reduction by layers, the fixation of the septum and the careful repair of the wound allowed a functional and aesthetic satisfactory outcome. On the second month post-surgery the maintains the patency of the nasal cavities, the nasal projection and the integrity of the oral vestibule. The patient is currently in physical rehabilitation of the facial mimics.

**P-917****A RETROSPECTIVE ANALYSIS OF SURGICAL OUTCOMES AND THE USE OF 1.7MM OSTEOSYNTHESIS PLATES IN MANDIBULAR FRACTURE FIXATION.**

M.H. Wilson¹, O. Hammarfjord¹, F. Doyle², L.F.A. Stassen¹

¹ Oral and Maxillofacial Surgery, National Maxillofacial Unit, St James's Hospital, Dublin, Ireland

² Division of Population Health Sciences, Royal College of Surgeons in Ireland, Dublin, Ireland

Aims

The aim of this study was to retrospectively analyse the outcomes of mandibular fracture fixation carried out with 1.7mm osteosynthesis plates designed for the mid-face (Stryker Leibinger® mid-face module).

Material and Methods

The case notes of all patients who underwent ORIF of a fractured mandible at a large urban teaching institution over a two-year period were reviewed retrospectively. The study was limited to those patients who sustained a fracture of the tooth-bearing portion of the mandible. Fractures affecting other parts of the mandible, such as isolated condylar or ramus fractures were not included. Additionally, patients that had associated facial fractures and incomplete follow-up were also excluded. Of the 265 patients initially identified, 61 in total were excluded resulting in a data set of 204. Multivariate analysis was performed using logistic regression to investigate if there were any associations between the type of fixation plate and the development of complications. The analysis included models that controlled for confounding variables.

Results

There were 324 fractures recorded in 204 patients and 188 (92.1%) were male. Assault was the most common mechanism of injury (74%) and the angle of the mandible (39.5%) was the most commonly fractured site. In total, 108 (53%) patients admitted to at least one form of substance abuse. There were 12 (5.88%) patients identified that developed complications.

In total, 156 (76.4%) patients underwent ORIF with a standard 2.0mm mandibular fixation plate whereas osteosynthesis was achieved in 48 (23.5%) patients with 1.7mm mid-face plates. Fixations carried out with 1.7mm plates were not shown to have any statistically significant association with the development of complications (*OR* 0.64, *95% CI* 0 - 2.69, *P* = 0.43).

Discussion and conclusion

Biomechanical studies have shown that thin malleable plates do not tolerate occlusal stresses as well as standard fixation plates and are clinically associated with an increased rate of complications. However, no clinical studies have assessed the use of 1.7mm osteosynthesis plates in mandibular fracture fixation. This study did not show any statistically significant relationship between the use of 1.7mm plates and the development of post-surgical complications.

**P-919****FACIAL WOUND SHOT – A CASE REPORT**

A. Millán, B. Gomes, A. Silva, C. Carracha, Ó. Costa, P. Coelho

Cirurgia Maxilofacial, Centro Hospitalar Lisboa Central, E.P.E. (Hospital de São José), Lisboa, Portugal

AIMS

The current national socio-economic context led to an increase in violence, particularly domestic violence associated with firearms.

The shot gun injuries are associated with the destructive force of the projectiles and their retention in different locations of the body. In the event that the projectile is made of lead, there is the issue of poisoning, leading to Saturnism Syndrome.

METHODS

Female, 47 years old, victim of assault by a shotgun in the context of domestic violence.

Upon arrival at the trauma room the patient was evaluated according to ATLS protocol. The clinical findings were a single entrance wound in the right preauricular area, a wound in the left frontozygomatic (as the result of a rifle butt) and another entrance and exit wound on the right hand (attempt to defend herself with her hand)

The X-ray and the CT-Scan showed, two bullets, one on the right temporal fossa and another on the ipsilateral pterygo-maxillar fossa, as well as a comminuted fracture of the outer wall of the left orbit, with intraorbital fragments. The right hand, presented a fracture of the 2nd metacarpal bone. No lesions associated to vital structures were found.

RESULTS

Through right preauricular approach above the SMAS, the extraction of the projectile in the thickness of the temporal muscle was preformed. To the ipsilateral pterygomaxillary space, a superior vestibular approach was used, with no complications. By supraorbital eyebrow approach the bone fragments on the left orbit were extracted without the need of osteosynthesis to stabilize the fracture. The reduction of the fracture on the right hand was carried out by the orthopedic team.

DISCUSSION AND CONCLUSIONS

It is interesting to highlight in this clinical case that there was no compromise of any of the vital structures, as the hand, in a defensive movement, slowed down the bullet and minimized the destructive capacity of the projectiles.

With the extraction of the projectiles, two possible complications were avoided. First, their displacement, caused by chewing movements, for the lateral, para-pharyngeal spaces potentially fatal by jeopardizing neurovascular structures. Second, the future complications associated with foreign body reactions, mainly Saturnism.

**P-922****PANFACIAL FRACTURE WITH COMINUTION ON THE MIDDLE THIRD OF THE FACE SKELETON – A CASE REPORT**

A. Millán, B. Gomes, A. Silva, C. Semedo, C. Coelho, J. Esteves, P. Coelho

Cirurgia Maxilofacial, Centro Hospitalar Lisboa Central, E.P.E. (Hospital de São José), Lisbon, Portugal

AIMS

The face skeleton is divided in thirds, the upper, middle and lower third of the face. Panfacial fractures are defined as those complex fractures that involve 2 of the 3 facial skeleton areas, and generally are the result of high energy trauma.

METHODS

Male, 31 years old, victim of a workplace accident caused by the falling of a tree in the middle third region of the face.

Upon arrival at the trauma room, the patient was evaluated according to ATLS protocol. The clinical findings identified a panfacial haematoma, pathological mobility in all the thirds of the face skeleton and rupture of both ocular globes.

The CTscan revealed fractures of all the bones of the facial skeleton and extreme comminution of the middle third, as well as a rupture of both ocular globes.

RESULTS

A tracheostomy was performed in the first place followed by the fractures approach. Through coronal, bilateral infraorbital, buccal vestibular superior and inferior bilateral approaches. The reduction and osteosynthesis of the fractures were initiated by the mandibular symphysis reconstruction, dento-alveolar fractures fixation, mandibular-maxillary immobilization with arch bars, reconstruction of bilateral orbit-zygomatic-maxillary complexes from a lateral-medial direction (outside-in) and bottom-up, from the point of major skeleton stability .

The ophthalmology surgical team performed the enucleation of the left ocular globe and the suture of the right ocular globe.

DISCUSSION AND CONCLUSION

Each case of pan-facial fractures should be considered individually. The amount of experience of the trauma surgical team is essential. It is not possible to define strict protocols, and therefore it is always a challenge. The approach of the pan-facial fracture must be supported on solid and up-to-date theoretical knowledge as well as in the experience gained on day-by-day experience on trauma.



P-925

ARE WE MEETING THE SURGICAL TREATMENT WAITING TIME TARGETS FOR EMERGENCY MAXILLOFACIAL PATIENTS?

EA Gruber, A Wright, S Kotecha, L Al-Qamachi, D Gahir

Oral and Maxillofacial Surgery, University Hospital of North Staffordshire, Stoke on Trent, United Kingdom

Objective

At the University Hospital of North Staffordshire, United Kingdom, maxillofacial patients requiring emergency surgical treatment are booked onto an emergency theatre operating list. Sometimes these patients are treated on a Consultant's elective list if there is availability.

The objective was to assess the waiting times for emergency surgical treatment of maxillofacial patients and compare these to the hospital E-rating treatment time targets.

Methods

A retrospective audit over a one year period. Data was collected using the trust's theatre database software. Details of proposed procedure, E-rating, theatre booking date and time and anaesthetic start time were recorded and analysed.

Results

102 patients underwent emergency operations over a one year period. These included fixation of facial fractures, suturing of facial lacerations, incision and drainage of abscesses and ITU tracheostomy cases. The category showing the most breaches per trust target were mandible fractures, with 76% not meeting the target E-rating of 12 hours. The longest mandible wait time was 70 hours. The longest wait time of all categories was a tracheostomy (89 hours). The number of breaches per the trust target overall was 45/100 (45%) compared to 39/100 (39%) using the E-rating given at the time of booking.

Conclusions

The percentage of cases waiting longer than the trust target is extremely high, particularly for mandible fractures. It has been identified that junior maxillofacial doctors are not always using the correct E-rating when booking the patients onto the emergency theatre list and this has been addressed through teaching. Increased waiting times for emergency operating has implications in terms of patient outcome and cost. We recommend that better provision of emergency operating time should be available for maxillofacial patients within the trust.

**P-927****OUTCOMES OF 123 CONDYLAR FRACTURES TREATED WITH OPEN REDUCTION AND FIXATION VIA RETROMANDIBULAR TRANSPAROTID APPROACH**

B. Gurney¹, A. Hancock¹, S. Walsh², D. Coombes¹, J. Collyer¹

¹ Oral and Maxillofacial Surgery, Queen Victoria Hospital, East Grinstead, United Kingdom

² Oral and Maxillofacial Surgery, St. Richard's Hospital, Chichester, United Kingdom

Objective

The treatment of mandible condylar fractures remains controversial with open treatment favoured by comparative studies, despite overall poor quantity and quality of evidence. A conservative approach is often preferred in the first instance to minimise patient morbidity, reduce time of surgery and particularly avoid risk of permanent damage to the facial nerve, but for selected cases, does a standardised and reproducible retromandibular transparotid approach and open fracture fixation performed in the main by oral and maxillofacial surgery (OMFS) trainees prevent these goals from being achieved?

Methods

Analysis of our unit's trauma database and clinical casenotes revealed outcomes from all patients with mandibular condylar fractures treated with open reduction and internal fixation via a retromandibular transparotid approach between November 2006 and January 2012. This captured 112 patients with 123 fractures treated. During follow up, post-operative functional parameters considered were: restoration of occlusion, mandibular protrusion, mouth opening, temporomandibular joint (TMJ) dysfunction and pain. Any adverse complications were also recorded and monitored.

Results

76.4% of cases were performed by a trainee surgeon as the primary operator, with the majority using the retromandibular transparotid approach to access the condylar fracture. 10.7% of patients reported temporary weakness of the facial nerve, but in all of these cases, nerve function fully recovered within three months of follow-up. Other complications included salivary collection in 3 patients (2.7%). and infection in 4 patients (3.6%). Excellent recovery of masticatory function was observed in most patients. TMJ problems were reported by some patients on follow up (5.4% pain and stiffness, 11.7% reduced mouth opening). Five (4.6%) patients were reported to have a degree of malocclusion post-operatively, three of which underwent corrective orthodontic treatment. No patients required orthognathic surgery.

Conclusions

Mandible condylar fracture open reduction and fixation via a retromandibular transparotid approach is a reproducible and safe technique for OMFS trainees to employ under supervision for selected cases. Although the risk of damage to the facial nerve clearly exists, in our experience, full facial nerve function has always returned after the use of this technique by a varied cohort of surgical trainees.



P-932

SELECTIVE EMBOLIZATION AS A TREATMENT MODALITY IN EMERGENCY MAXILLOFACIAL SETTING

D. Noy, Y. Amsalem, O. Emodi, A. Rachmiel

Rambam Health Care Campus, Haifa, Israel

Background. Intractable bleeding from the maxillofacial region, although uncommon, may be potentially life threatening mainly due to rich vasculature and the presence of vital structure such as the airway and brain. Such bleeding may arise from trauma, surgery, neoplasms, and chemo-radio therapy, and, if unattended may lead to airway compromise, hypovolemic shock, and death.

Objectives. The purpose of this study was to assess the effects of Trans Arterial Embolization (TAE) as a treatment modality for maxillofacial haemorrhage in light of classic haemorrhage control techniques. We review the possible treatment modalities and suggest guidelines for the use of TAE in the treatment of intractable maxillofacial haemorrhage.

Materials and methods. We report our experience with 10 patients treated for potentially life threatening haemorrhage in the maxillofacial region using TAE. The therapeutic technique was chosen after a discussion of the maxillofacial surgeon and the endovascular neuroradiologist. We used either embolic agents (PVA particles, n-butyl cyanoacrylate (*NBCA*) *glue*, Onyx), coils, or stents.

Results. All patients underwent a diagnostic angiography. Various methods were used for bleeding control including embolic agents for 8 patients (PVA particles- 2 patients, NBCA glue- 2 patients, Onyx- 3 patients) and coils for 2 patients. In all cases bleeding was controlled following TAE. Some cases required a second intervention (2 out of 10). No major postoperative complications were noted. Minor postoperative complications such as pain and skin pigmentation were noted in 2 patients.

Conclusions. TAE has become an acceptable treatment modality for haemorrhage control in the emergent setting. Selection of the embolic material depends on safety and effectiveness. Major complications such as stroke and palsies must be kept in mind, in light of the vicinity of vital structures in the head & neck region (cerebrum, eyes, cranial nerves) and multiple anastomoses. Minor postoperative complications as pain, fever, and local wound healing problems may be encountered in face of trauma, and history of radiation therapy.

TAE seems both effective and safe minimizing potential morbidity involved with classic hemorrhage control techniques and the need for prolonged airway control via tracheostomy.



P-953

COMPARATIVE EVALUATION OF DIFFERENT OSTEOSYNTHESIS SYSTEMS FOR MANDIBULAR ANGLE FRACTURES

S. Enzinger, J. Hachleitner, C. List, A. Gaggl

SALK, Salzburg, Austria

Objective:

There is a large variety in treatment of mandibular angle fractures. Lag screws, Mini plates, Reconstruction plates and so on. In this study the different methods and their complication rates have been compared.

Methods:

In this retrospective study the management of 325 patients with 538 mandibular fractures has been compared. The observation period was 10 years (2002-2012). All mandibular angle and mandibular body fractures were included.

Results:

32% have been treated with mini plates only, in 28% the fractures have been stabilized with lag screws, in 30% a combination of lag screws and mini plates was used. Reconstruction plates, titanium functionally dynamic bridging plates or external fixator have been used as well. The complication rate overall was very low. Most complications were in cases with mini plates only, namely non-infection or instability was found in treatment with lag screws.

Conclusions:

The lag screw osteosynthesis seems to have advantages through the compression at the fracture line that is why in our opinion the complication rate was the lowest.

**P-961****MANDIBULAR ANGLE FRACTURES: TREATMENT RESULTS IN VARIABLE CLINICAL CONTEXT**

P. Schütz, H.H.H. Ibrahim, B. Rajab, K. El-Bassuoni, J. Thomas, B. Al-Hakim

Ministry of Health, OMFS department, Salmiya, Kuwait

Objectives

We describe demographics, treatment methods and complications in patients diagnosed with mandibular angle fractures in a regional hospital. Emphasis is placed upon analysis of complications and influence of different clinical scenarios on their incidence.

Material and methods

Computer database of all patients admitted to Oral&Maxillofacial Surgery Unit of Al-Adan Hospital in Kuwait since 2004 was used to extract data on patients' demographics and treatment. Outpatient charts were reviewed regarding treatment results and complications. The data were tabulated in Microsoft Excel spreadsheet and analyzed using database functions.

Results

From 2004 until 2012, 93 patients were diagnosed with mandibular angle fractures. They were 82 males and 11 females, aged between 3 and 65 years (average 26, SD 6). The most frequent mechanisms of injury were road traffic accidents (n=37), falls (n=19) and assaults (n=15). Twenty four patients (28%) were polytraumatized.

For different reasons, 5 patients were not treated, one of them died before treatment. Open reduction and internal fixation (ORIF) was employed in 78 patients. One upper border miniplate according to Champy's principles was used in 69 cases, 2 miniplates in 3 cases, combination of upper border plate with lag-screw in 2 cases and reconstruction plate in one case of iatrogenic fracture after extirpation of large cyst. Ten patients with undisplaced fractures were treated by maxillo-mandibular fixation only.

Complications were encountered in 12 patients (15%) treated by ORIF. Infection was noted in 6 cases, exposure of miniplate in 4 cases and open bite on the side of a fracture in 2 cases. All infected and/or exposed miniplates were removed. Three of infected cases had to be re-operated due to non-union: they received debridement and reconstruction plate and they all healed without consequences. Only one of non-union cases was originally treated with upper border miniplate.

Discussion and conclusion

Methods for open treatment of mandibular angle fractures were extensively analyzed in the literature and the use of single miniplate was regarded the easiest to perform and was associated with the lowest number of complications. Single upper border miniplate is also our preferred method, but clinical situations sometimes preclude its successful application.



P-965

MAXILLOFACIAL INJURIES: TEN – YEAR ANALYSIS (2003-2012) OF EPIDEMIOLOGY AND TREATMENT

N. Aljinović Ratković, K. Hat

Department of maxillofacial surgery, University Hospital Dubrava, Zagreb, Croatia

Objective: The epidemiology patterns of maxillofacial fractures differ in reports from various countries and are related to socioeconomic factors and geographic location. During last twenty years the countries of Eastern Europe, including Croatia have experienced the transition in economy, changing from central planning to free markets, but also the change in road traffic legislation.

The aim of the study was to compare the data on maxillofacial injuries in to find out the changes in epidemiology pattern.

Method: From January 1st, 2003 to December.31th, 2012, 2660 patients were admitted for maxillofacial injury treatment at the Department of Maxillofacial Surgery, University Hospital Dubrava. The analyzed data were collected from the prospective input of medical data using hospital-purpose computer data storage.

Results: The most frequent were zygomatic fractures (846, 31.80%), followed by mandible (751, 28.23%), Le Fort (206, 7.74%) and orbital floor fractures (152, 5.71%). A number of injuries per year was from 304 (year 2004) to 219 (year 2010).

Conclusions: The slight decrease in number of patients was observed for mandible and zygomatic fractures and a slight increase of Le Fort fractures. Considering aetiology the most pronounced decrease was in road traffic victims since 2010.

**P-978****STABILITY IN PAEDIATRIC CONDYLAR FRACTURES, THE FIRST PERMANENT MOLAR PRESENCE AND ITS RELATION TO BONE REMODELING**

R. Osben, C.Vidal, O.Badillo, V.Duarte, M.Arriola

Hospital Carlos Van Buren, Valparaiso, Chile

Introduction: The treatment of mandibular condylar fractures is one of the most debated and full of controversy within the facial trauma issues. Lindahl and Kaban, have demonstrated the ability of the mandibular condyle remodeling in paediatric patients . Condylar fractures treated improperly produce secondary growth disorders caused by injuries over the germinal centers of the condyle, manifest as a severe alteration of mandibular growth, and can cause hemarthrosis or even ankylosis Conservative techniques with a short period of intermaxillary fixation, patient`s cooperation and a good dental support of the posterior segments, since otherwise a shortening of the mandibular height is encouraged.

Objective: To determine whether the presence of the first permanent molar eruption , and how it affects the height and remodeling of condylar fracture.

Materials and Methods: Paediatric patients with a diagnosis of fracture of mandibular condyle and mixed dentition period. We compare the images (CAT) of the fracture, six and twelve months afterwards. Considerations: presence of the first permanent molar in (partial or complete eruption), posterior mandibular height and changes of the condylar structure, (total, moderate and low remodeling according Gilhuus –Moe) .

Results: Fifteen paediatric patients, six have mixed dentition. All treated orthopedically, independent of the type of fracture or associated fractures . 60% have first molar occlusion. At six months, two patients have low condylar remodeling with shortening of the mandibular posterior height , since the six-year molar is not fully in occlusion . This situation changes when comparing scans at twelve months, where five of six have a complete condylar remodeling and one moderate. No asymmetries between the two ramus are appreciated. Clinically asymptomatic patients.

Conclusions: During bone remodeling, the presence of the six-year molar involves minor changes of the condylar morphology without changing mandibular vertical height, independent of the type of fracture. There is a low correlation between clinical and imaging findings. Patients do not have clinically facial alterations, occlusal discrepancies or alterations in mandibular dynamics, even though the imaging results do not present a complete remodel morphologically



P-992

CLINICAL AND RADIOLOGICAL CORRELATION IN MONITORING ORBITAL FRACTURES.

I. Page, P. De Leiva, K. Sagüillo, D. Villegas, G. García Serrano, F. Pérez-Flecha, JM. Eslava, E. Sánchez-Jauregui, J. Gonzalez, J. Acero

Oral and maxillofacial surgery, Hospital Ramón y Cajal, Madrid, Spain

Objective: Computed tomographic scan (CT) is currently the gold standard in the diagnosis and postoperative follow up of orbital fractures. The aim of our study was to evaluate the postoperative clinical and radiological postoperative control after orbital fractures treatment.

Materials and Methods: Clinical and radiological data obtained from 35 patients with orbital fractures from January 2011 to December 2013 at the Maxillofacial Surgery Department of the Ramón y Cajal Hospital were reviewed retrospectively. All patients were surgically treated using the same reconstruction procedure with titanium mesh. We classify the radiological postoperative findings in regarding the correct placement of the meshes in excellent, acceptable and poor. We analyzed the correlation of these CT results with their clinical findings in response to the correct orbital volume restoration and normalization of ocular motility.

Results: 28 out of 30 patients classified as acceptable or excellent reduction had a satisfactory clinical outcome with adequate ocular motility and correct restoration of orbital volume. 3 out of 5 patients with poor radiological results, presented satisfactory clinical evolution. 2 out of 5 patients classified as poor radiological results showed also an unacceptable clinical result and they needed further mesh reposition.

Conclusions: Only two patients showed an unacceptable clinical outcome, both showed a poor placement of the titanium mesh. Therefore considering the cost-benefit ratio and in order to decrease the radiation dose to our patients we suggest performing postoperative CT only in cases of poor clinical outcome



P-993

THE ENDOSCOPIC ASPECTS OF MANDIBULAR CONDYLE FRACTURE SURGICAL TREATMENT

A. NEROBEEV, G. CHKHAIDZE

MINISTRY OF HEALTH AND SOCIAL DEVELOPMENT OF THE RUSSIAN FEDERATION FEDERAL STATE BUDGETARY, Moscow, Russian Federation

Objectives:

Presently the amount of traumatic facial bones injury is steadily growing. In more than half of accidents the operative therapy is necessary to prevent posttraumatic deformations and malocclusion.

The mandible anatomical restoration in dentition area is always made by intraoral access osteosynthesis, but in case of condyle fracture the access is usually made externally by retromandibular or preauricular approach. This in turn is accompanied by dysfunction and paresis of facial nerve branches, as well as unsatisfactory aesthetic results because of the postoperative scars left.

The new operative surgery concept helps to minimize skin damage. Thereby widespread introduction in mandibular condyle fractures osteosynthesis has the endoscopic intraoral access techniques use. Such operations help to reduce the amount of postoperative scars, to achieve full recovery of the treated area and make rehabilitation period shorter.

Material and Methods:

We operated 42 patients with mandibular condyle fractures and fragments displacement. 15 of them had isolated condylar fractures, 23 had double fractures of the condyle and mandibular body or angle. 3 patients had triple fractures of the condylar processes in both sides, as well as fractures of the mandibular angle or body. 1 patient had a double fracture of both condyle process.

For all the patients we used intraoral approach osteosynthesis with endoscopic assistance. We used titanium miniplates and miniscrews fixation. Endoscopic control was necessary to estimate the fragments position before and after fixation.

Results:

All patients had had good fixation stability of fragments. Functional rehabilitation was achieved on 2-3 weeks after operation with normal occlusion and had no posttraumatic deformities.

Conclusions:

1. Intraoral osteosynthesis with endoscopic assistance allow us to achieve good fixation results and prevent posttraumatic deformations and malocclusion, like in use of retromandibular or preauricular approaches.
2. Intraoral approach excludes scars and skin incisions as well as gives excellent aesthetical results, besides it prevents dysfunction and facial nerve branches paresis
3. The use of endoscopic equipment is always necessary for making fragment position control because the operative area is hard to visualize

**P-1010****LOSS OF VISION FOLLOWING SURGICAL REPAIR OF ZYGOMATIC-ORBITAL FRACTURE AND VISUAL RECOVERY DURING COMBINED STEROID AND SURGICAL TREATMENT: CASE REPORT**

J. Kuznecova¹, I.Bagante², G.Salms¹

¹ Oral and maxillofacial surgery, Riga Stradins University Institute of Stomatology, Riga, Latvia

² Oral and maxillofacial surgery, Paul Stradins Clinical University Hospital Centre of Dentistry and Facial surgery, Riga, Latvia

Background A case of visual loss associated with surgical repair of zygomatic-orbital floor fracture is presented. Numerous case reports, series and retrospective analyses have been published in literature before, with a reported incidence up to 3%.

Objective To investigate causes of blindness occurring after maxillofacial trauma or surgery and present single case report of connected topic.

Methods Retrospective analysis of 48-years-old female patient with unilateral zygomatic-orbital floor fracture treated by our surgeons and observed from 15.11.2013 till 24.01.2014.

Results A 48-years-old woman was referred to Paul Stradins Clinical University Hospital Centre of Dentistry and Facial surgery in Riga, with a history of seven days old criminal trauma in the region of right midface and eye, treated before in emergency department, where CT scan was provided. After clinical examination, no evidences of indications for orbital floor reconstruction where found. Reposition of zygomatic bone and osteosynthesis of frontozygomatic suture was performed. On postoperative day 3, the patient reported that she was unable to see with her right eye. Ophthalmologist consultation and following CT scan for orbit, was done immediately. Massive defect of orbital floor and displacement of bone fragments till the apex of right orbit where found. Papilledema, damage signs of right optic nerve fibres with visual acuity - hand movements in right eye, where diagnosed. Patient received treatment with corticosteroids and anti-inflammatory oral medication and with improving of visual status was checked-out. During follow-up period, patient underwent MR scan examination (03.01.2014.) and ophthalmologist consultation (13. 01.2013.) Reconstruction of orbital floor with titanium mesh where suggested. Orbital floor reconstruction (20.01.2014.) with titanium mesh (20x25mm) and postoperative CT scan (22.01.2014.) where performed. On second day after surgery patient reported better vision on right lateral segment. Patient was recommended visit ophthalmologist and maxillofacial surgeon control after two weeks.

Conclusion Loss of vision after surgical intervention is unlikely, rare but very important status that must be treated and react immediately. Combination of steroid therapy with surgery must be considered individually. The patient's ocular status and CT examination should be evaluated before and after facial surgery for best results and recovery.

**P-1022****AVOIDING SYSTEM FAILURE IN THE DETECTION AND PREVENTION OF BLINDNESS AS A RESULT OF RETROBULBAR HEMORRHAGE AND ORBITAL COMPRESSION SYNDROME**

J K Muhammad¹, B Ali¹, L Hernandez², C Rao³, S Lal⁴, H Eatamadi¹

¹*Ophthalmology Service, Al Rahba Hospital, Abu Dhabi, UAE*

²*Nurse Informatics, Al Rahba Hospital, Abu Dhabi, UAE*

³*Cerner Centre, Bangalore, India*

⁴*SEHA Corporate, Office, Abu Dhabi, UAE*

One of the most serious complications of craniofacial trauma and orbital surgery is retrobulbar haemorrhage, which when confined to the orbit can lead to an acute increase in intraorbital pressure and orbital compression syndrome (OCS). A prolonged period of OCS can result in optic nerve ischemia and possible blindness.

Swift recognition of the signs and symptoms associated with OCS followed by prompt intervention can restore sight. It is therefore imperative that a system of monitoring should be deployed which offers opportunities to detect a sight deteriorating condition and facilitate the development of the competences of those assigned to carrying out the observations.

A previous study based on total quality principles (TQM) highlighted that compliance with an orbital observation chart could be improved through the input of all stakeholders involved in the care of patients undergoing orbital surgery. It suggested that minimizing system failure in the detection and treatment of retrobulbar haemorrhage could be achieved through the integration of an orbital observation chart into the electronic medical record (EMR) alongside the introduction of the required clinical competences for those assigned to use the chart.

Whereas a multidisciplinary approach was used to develop the chart, the transformation of the chart into a robust tool incorporating important elements of quality control required the formation of an interdisciplinary team made up of IT application specialists, Nursing Informatics, IT Solution Architects and healthcare professionals.

The purpose of this paper is demonstrate how the systematic use of quality tools and the leveraging of interdisciplinary support to develop an electronic orbital observation chart may not only contribute to the early detection of OCS but also save sight.

**P-1042****THE SIGNIFICANCE OF THE SUTURES OF THE LATERAL ORBITAL WALL IN THE STAGED RECONSTRUCTION OF THE CRANIOFACIAL SKELETON FOLLOWING TRAUMA**

J K Muhammad¹, L Kaka¹, B Ali², I Khoury³, B Ittimani³

¹*Neurosurgery, Al Rahba Hospital*

²*Ophthalmology, Al Rahba Hospital*

³*Anesthesiology, Al Rahba Hospital*

The rehabilitation of patients with complex craniofacial injuries is a challenge for the multidisciplinary team. Although the immediate treatment aims of the poly trauma patient relate to managing the airway, breathing, circulation and the cervical spine it should be recognized that early reconstruction of the upper craniofacial region may prevent long term disfiguring upper face soft tissue and bony deformity.

Opportunities may exist for the craniofacial team to reconstruct the frontal bar especially if patients require a craniectomy to arrest cerebral bleeding, repair dural tears, create space for cerebral expansion and insert devices for intracranial pressure monitoring.

During this brief window of opportunity, surgery must proceed with speed, accuracy and safety in order not to compromise the neurological status of the patient. Time constraints dictate that in patients with complex pan facial trauma and severe head injuries, complete reconstruction of the craniofacial skeleton in one sitting is both unrealistic and unsafe. Indeed, surgery with the exception of craniectomy maybe contraindicated from the onset. This is an important judgment call.

In order to avoid prolonged operating time the surgeon must rapidly and correctly align the fragments of a fractured craniofacial skeleton. This task can only be achieved if the fragments of bones are assembled in a defined anatomical sequence. The purpose of this article is to illustrate how the sutures of the lateral orbital wall may play an important anatomical role in the early reconstruction of the upper facial skeleton. Case reports and a discussion of the literature will be presented.

**P-1050****OPTIMIZATION OF DIAGNOSIS AND TREATMENT OF INJURIES OF THE MAXILLARY SINUS.**

A. Kurus, E. Katinas, M. Solovyov, H. Hatskevich

St Petersburg Pavlov State medical University, St Petersburg, Russian Federation

Objective. Different fractures of a midface becomes more frequent from year to year due to increasing of the car accident and rising of violence. Zygomatico-orbito-maxillary complexes fractures are most common types of such damages. Mechanism of injury assumes the displacement of the zygomatic bone in the direction of the maxillary sinus. But the condition of the maxillary sinus is not always taken into consideration both in radiation diagnosis and further treatment. Damage to the walls may lead to occurrence of posttraumatic maxillary sinusitis.

Materials and methods. The X-ray and spiral computed tomography pictures of 170 patients with zygomatico-maxillary fractures accompanied by damage of the maxillary sinus walls were analysed. Comparison was made between X-ray and SCT pictures after the primary injury (116 X-ray and 54 CT), and again after the surgery (63 X-ray and 54 CT). Groups of patients with such different types of examination were comparable in character of injury.

Results. Displacement of bone fragments as an indication for surgical treatment was found on 89% primary X-ray and 83% primary CT pictures. Presence of displacement after surgical treatment was found on 10% X-ray and 57% CT pictures. Also the frequency of haemosinus in different stages of treatment was studied. Haemosinus was identified in 45% of zygomatico-maxillary complex fractures according to data of primary posttraumatic radiation diagnostic. Sinus opacification was found after 68% close reduction and after 31% open reduction with internal fixation. Thus the surgery could be an additional trauma for maxillary sinus. 15 patients underwent infundibulotomy. This led to cleansing of sinus from blood and reducing of inflammation.

Conclusion. We proposed the use of radiography in early posttraumatic period and computed tomography in post operating period. Using of endoscopic endonasal approach to expand natural sinus ostium may be way to prevent posttraumatic sinusitis.



P-1051

CRANIO-MAXILLO-MANDIBULAR FRACTURES IN CHILDREN: PECULIARITIES

S.F.M. Marino, L. Santecchia, P. Cecchi, P. Ascenzio, G. Ciprandi, G. Proia, G. Palmieri, S. Latorre

Children's Hospital Bambino Gesù, Rome, Italy

Objective:

Our study aims to observe the incidence and classification of fractures involving the cranio maxillofacial in children. The clinical features that peculiarity.

Methods:

250 children were examined from January 2011 to January 2014, he arrived in the emergency room of Children's Hospital Bambino Gesù

All patients were subjected to clinical examination general, maxillofacial, supported by eye exam, neurological, neurosurgical, dental). Where it was necessary, it is required CT scan through the procedure of deep sedation

Results:

The incidence of fractures and splanco neurocranio reported in our series is similar to that described in the literature, certainly the peculiarities distinguish them from adults.

Were divided according to age, traumatic event, the anatomical site of fracture.

Patients who underwent surgical treatment were 41 (age between 2 years and 17 years) had: fracture of the orbital floor, jaw, orbital floor fracture associated with the nasal bones, orbital complex and zygomatic complex fractures of the orbital roof.

Another 40 patients were not treated surgically had: 25 mandible fractures, 15 fracture orbiatrio roof composed, without head trauma.

Conclusion:

The analysis of the observed data, we can say that the child with facial trauma, presents some peculiarities objective:

lack of a clear history of cooperation, be examined, (cries , moves, confuse the clinical symptoms). the visit must take from other specialists (ophthalmology , neurology, neurochiruchirurgia , dentist).

ACT scan last generation made under sedation, is crucial. Surgical treatment is different than in adults. The observation surgical stresses that fractures of the condyle are never treated , that there is often the combination of orbital roof fracture and fracture of the frontal bone, for lack of development of the frontal sinus, which does not protect the base of the skull ; therefore the energy traumatic be distributed all his strength on the roof and the anterior cranial base and the media.

In addition, surgical treatment should take into account the anatomical development of the face and then use the most appropriate means so that from happening

**P-1055****RETROSPECTIVE ANALYSIS OF ORBITAL FLOOR FRACTURES AT A LONDON TRAUMA CENTRE OVER 12 MONTHS: DEMOGRAPHICS, MANAGEMENT AND OUTCOMES.**

A. Patel, F. Ryba, K. Fan

Oral and Maxillofacial Surgery, King's College Hospital, London, United Kingdom

Aims

To assess the management of orbital fractures at King's College Hospital, including indications for surgery, surgical management and post-operative outcomes.

Methods

All patients with orbital floor fractures were identified from the department database over a 12 month period. Retrospective data was collected from patient records, operating notes and imaging. Aetiology, patient demographics, details of injury, management and outcomes were analysed.

Results

40 patients were identified with orbital fractures, of which 87% were male. The average age is 29.

The most common mechanism was interpersonal violence (71%), of which 43% were punches and 28% assault with weapons. Road traffic collisions and sport related accounted for 15% and 8% respectively.

On presentation, 71 % of patients had diplopia of which 18% had restriction of eye movement, and 24% had enophthalmos. 95% of patients had an ophthalmic assessment prior to surgery.

The majority of patients were managed operatively, only 13% managed conservatively. 79% of orbital fractures were repaired surgically within 2-3 weeks of injury. The most commonly used material was pre-formed titanium plates (64%). 15% of fractures were treated with PDS sheet and 12% with titanium mesh. Post-surgery, 93 % of patients had resolution of eye signs.

Discussion

Orbital floor fractures are the cause of enophthalmos and diplopia. These were managed surgically within 2-3 weeks of injury and the majority improved with treatment.

Patients presenting with no eye signs and minimally displaced orbital fractures were conservatively managed. All cases were reviewed after three months with no complications.

Patients with postoperative diplopia (7%) were discharged and subsequently reviewed by ophthalmology.

Conclusion

In our trauma unit, the majority of orbital injuries are caused by interpersonal violence in young men. The most common indication for surgery was diplopia (71%) and the majority of patients (95%) were seen by ophthalmology prior to their procedure. Our unit favours the use of preformed titanium plates and has achieved good success in improving diplopia.



P-1059

THE 'TRAUMA REGISTRAR' MODEL

C.K. Lau, C.J. Bridle, S.B. Holmes

Department of Oral & Maxillofacial Surgery, Royal London Hospital, Barts Health NHS Trust, London, United Kingdom

Introduction: The Specialist Advisory Committees has recently published indicative logbook requirement for trainees in Oral and Maxillofacial surgery. These numbers signifies the minimum operative numbers necessary to be awarded the Certificate of Completion of Training (CCT). Since the quality of surgical training is thought to have deteriorated with the introduction of the European Working Time Directive (EWTD), many trainees have opted out of the Directive in order to gain additional training.

Materials: We present a pattern of training in which a single trainee is nominated as the 'trauma registrar' over a six-month period. He/she would receive intensive training on all aspects of maxillofacial trauma at a level 1 trauma centre. The 'trauma registrar' is fully supported to become the main decision maker on all admissions, management and discharges. This experience is "totally immersive", allowing the trainee to obtain the indicative requirement for both trauma and temporomandibular joint surgeries in this short timeframe.

Conclusion: This model offers trainees an ideal learning opportunity through management of maxillofacial trauma of varying complexities, allowing the continuity of care from admission to outpatient reviews in all cases. By enabling trainees to obtain the required surgical case number in trauma for CCT application in such a small fraction of their training rotation, more time can be spent on experiencing other surgical facets of OMFS.



P-1071

BONE GRAFT COFFERING TECHNIQUE IN THE MANAGEMENT OF ATROPHIC MANDIBLE FRACTURE

T.TAYEB¹, M.A.DENUNCQUES¹, C.DENGLEHEM¹, L.MYON², T.DUMOUSSEAU¹

¹ *Oral and Maxillofacial Surgery, SECLIN HOSPITAL CENTER, SECLIN, France*

² *Oral and Maxillofacial Surgery, UNIVERSITY HOSPITAL CENTER, LILLE, France*

Aim: Management difficulties of atrophic mandible fractures in the elderly are related to anatomic and physiologic particularities. We propose a novel technique adapted in such cases.

Patients and Methods: A 77-year-old woman was referred to our department after a fall. Maxillofacial exam and mandibular X-rays revealed two minimally displaced bilateral fractures of the mandibular bodies. According to Luhr classification, the patient presented a class III atrophic mandible. The height of residual bone, at the fracture sites, was 5 mm. Perimandibular ligature of the patient dental prosthesis using an iron wire was attempted first under general anaesthesia but this technique failed, and we noticed an important displacement of bone fragments after a period of 3 weeks. Two independent submandibular approaches were then made. The fractures were reduced and stabilized with non compression screw-fixed miniplates and calvarial bone graft disposed on a coffering manner. The patient recovered well in the postoperative period. Radiologic control was satisfactory.

Results: Successful bone union was achieved and stable prosthetic rehabilitation was realized 1 year after the operation. No complications or sequelae were reported until now.

Conclusion: Although the level of scientific evidence for the treatment of atrophic mandible fractures is low, the association of open reduction, miniplating internal fixation and bone graft seem to guarantee a better chance for healing.

**P-1090****FRONTAL SINUS TRAUMA: CLINIC, DIAGNOSIS AND TREATMENT – A STUDY OF FOUR CASES.**

S. Przywitowski, R. Nowak, M. Kubiak, E. Zawiślak, M. Gara

Department of Maxillofacial Surgery, Wroclaw Medical University, Wroclaw, Poland

Objective

The frontal bones represent one of the strongest structures in the face. Frontal sinus fractures account for 5-15% of all facial fractures and are frequently associated with multiple concomitant injuries, including intracranial injuries. Injuries to the frontal sinus can be categorized into fractures that involve the anterior wall, the posterior wall, the outflow tract, or combined. We present a successful treatment of four patients with frontal sinus fractures in Maxillofacial Surgery Department, Wroclaw Medical University.

Material and Methods

Four patients presenting frontal sinus fractures were hospitalized in our Department in 2013. Two of them had anterior wall fractures involving outflow tract and other two had anterior and posterior wall fractures. All patients presented upper face trauma with frontal region soft tissue swelling and deformation. To properly assess the fractures, CT scans were obtained.

The goal for treating frontal sinus anterior table fractures is to restore form and improve appearance.

It is important to allow the soft-tissue swelling to resolve, (7-10 days), to determine the severity of the contour irregularity. In these two cases with severely displaced fractures of the anterior table, both open access to the bony fragments and extended drainage of frontal sinus were performed.

In two patients with anterior and posterior wall fractures, both presented active rhinorrhea. A trial of conservative treatment for spontaneous CSF leak closure was attempted, with a continuous lumbar drain. In both cases the leak persisted, and interdisciplinary treatment with identification and repair of the dura followed by obliteration was performed.

Results

All patients left hospital in good overall condition. Follow-up examinations showed good aesthetic effects and no complications.

Conclusions

The primary goal when treating frontal sinus fracture depends on its type and severity. The correction of contour irregularities and cosmetic outcomes are a priority in the treatment of isolated anterior table fractures. If the posterior table is involved, the primary treatment goal is to separate the intracranial contents from the sinus, minimizing the risk of complications such as cerebrospinal fluid leaks, intracranial infections and sinusitis. A cooperation of maxillofacial surgeons and neurosurgeons is essential in frontal sinus posterior wall fractures.



P-1109

CT SCAN USE IN PRE SURGICAL PLANNING OF INTRACAPSULAR CONDYLE FRACTURES OPEN TREATMENT

R OSBEN, O BADILLO, V DUARTE, C VIDAL, M ARRIOLA

Hospital carlos van buren, Chile

INTRODUCTION: The development of osteosynthesis materials and imaging techniques have allowed us to treat intracapsular fractures surgically without inconvenience. CT scan has allowed us to perform exact pre surgical measures related with the type of osteosynthesis materials and to assess the pre surgical local conditions.

Materials and methods: using the CT scan information in DICOM format, and posteriorly analysed with Osirix software (OsiriX for MAC OSX) we performed standardized measures of the inter cortical width and also of both cortical thickness, we make a more accurate pre surgical planning, mainly related with the type of OTS plates and screws, also we measure the fractured condylar fragment dimensions, angulation and dislocation and or displacement grade of the fractured segment according to the Hospital Carlos Van Buren condylar fractures treatment protocol.

Results: This tool has helped us provide a surgical treatment more predictable and accurate, with better anatomical and functional results.

Conclusion: pre surgical objective method in the surgical treatment of intracapsular fractures.

**P-1151****FRONTO-ORBITAL FRACTURES, DIAGNOSTICS, TREATMENT AND PERMANENT EFFECTS**

A. Jenča, P. Poništ, J. Jenča, A. Jenča, jr.

Department of Stomatology and Maxillofacial Surgery, University of Pavol Jozef Šafárik, University Hospital of Louis Pasteur, Košice, Slovakia

Objectives

Fronto-orbital fractures with their character belong to the group of injuries of craniofacial accidents with a long lasting or permanent lesion after their creation and treatment. Reason of these injuries are on a large scale caused by force in car accidents and in a large percentage as accompanying polytraumatism. In this retrospective study we monitor reasons, types, incidence, patients' age, gender, diagnostic management, treatment interactivity in relation to craniomaxillofacial syndrome effects and compare the results with literary data.

Methods

The evaluated group comes from injuries that accured in the East Slovak region and were treated in UHLP Košice in years 1990-2013. The affected patients were brought to the traumatic center by the ambulance service, where in participation of all departments, the maxillofacial surgeon gave primal and specialized treatment. The observed collection of patients was evaluated in stages i.e.: in years 1990-2000 and 2001-2013. The monitored parameters were age, gender, cause of injury, management, treatment interactivity with polytraumatism, treatment means, social-economic factors.

Results

The middle third of the face and mainly the fronto-orbital plane is exposed to injuries in car accidents in 37%, in 25% it is accidents on motorcycles and bicycles, 11% are work injuries, 17% are criminal injuries. The occurrence in polytrauma is in the range of 27% - 53%. The representation in connection to the gender is 6:1 in favour of men. Complications of a permanent character occurred in 5,9%.

Conclusion

In this study the authors compared their own results with literary data, mainly the cause of the injuries, incidence, position of fronto-orbital fractures in completion of craniomaxillofacial injuries. The results of the study can be guides in preventive measures of injury causes management providing health care, particularity of treatment of different socio-economic patient groups taking into account the personification.

**P-1215****A CLINICAL CASE OF ORBITAL RECONSTRUCTION**

M. Maglione, D. Sossi, E. Salvador, R. Rizzo

Oral surgery, University Of Trieste, Trieste, Italy

Objective: Blowout fractures of orbital bone may be cause of important facial asymmetry . Significant complications can occur as a result of these injuries, including enophthalmos, persistent diplopia, vertical dystopia, and restriction gaze. Recommendation for surgical fracture repair depend on a combination of clinical and imaging studies to evaluate the muscle and the nerve entrapment and periorbital tissue herniation. There are many techniques and biomaterials for reconstructing the original bony contour and restoration of proper orbital volume. Often a second surgery intervention may be required to solve the clinical case.

Methods: A male 21 -year-old patient suffered frontal anterior cranial vault injuries and facial pan trauma. A first surgical intervention was performed to fracture reduction of frontal bone and zygomatic suture, supraorbital reconstruction with frozen bone, orbital floor reconstruction with durapatch membrane and reduction of maxillo-zygomatic process on the left. Reduction of frontal bone and zygomatic fracture, orbital floor and medial orbital frame reconstruction on the right. Than the patient's anatomy was assessed in multiplanar (axial, coronal, sagittal) and 3D computed tomography. Stock titanium mesh was then preformed to the stereolitographic model to reproduce optimal orbital contour. A second surgical intervention was performed after 6 months to resolve left diplopia and the facial asymmetry of the patient. The orbital floor on the left was 7,4mm deeper than contralateral one. An orbital floor reconstruction with iliac crest graft bone was performed. A 1,5cm length and 1,2 deep graft bone was shaped and fixed with titanium mesh plate and screws.

Result: Preoperative computer modeling provides useful guide for and presumably more accurate reconstruction of complex orbital injuries.

Conclusions: The combined use bone grafts of titanium mesh plate could be an effective technique for the orbital floor reconstruction in severe asymmetry.

**P-1226****SURGICAL DISCIPLINES FOR COMBINED MEDIAL AND INFERIOR BLOWOUT FRACTURE**

S.W.Hur, Y.H. Kim, K.R. Park

Plastic surgery, Yeungnam university medical center, Daegu, South Korea

Objective: Reconstruction of combined medial & inferior blowout fracture (BOF) is challenging and the surgical discipline is not settled. A controversy remains between techniques and ideas as follows: (1) one piece vs. two piece reconstruction, (2) First repair floor vs. medial wall, (3) Complete vs. incomplete reconstruction. The authors develop a treatment algorithm in determining the surgical method and investigate the usefulness of this treatment principle.

Methods: We reviewed 156 patients with combined medial & inferior BOF who had surgical treatment in our hospital. All patients were classified into 4 group based on which wall is large fracture. We defined the large fracture as defect size over 2cm² or displacement over 3mm. We choose management method following treatment algorithm. When both wall fractures were large, two walls were repaired separately. If there was maxilloethmoidal buttress broken, we did sequential repair as strengthening floor first and repairing medial wall second in a same time. When one wall is large and the other wall is small, only main defected wall was repaired. When both walls were small fracture, decision depends on the surgeon's preference. In all cases, preoperative and postoperative CT scan were checked and orbital volume measurement was obtained using Aquarius program (TeraRecon, Inc.®, California, U.S.A.).

Results: Postoperative CT scans demonstrated complete reduction and accurate reconstruction of BOF. After the operation, average orbital volume was corrected to normal range, and limitation of eyeball movement, diplopia and enophthalmos were resolved and preventable in most cases. Enophthalmos with 3 mm remained in 2 patients and 3 patients had persistent diplopia for more than 6 months, which eventually decreased with time. Complications related to the operation were not observed.

Conclusions: By following algorithm oriented method, author could simplify reconstruction process of combined inferior & medial BOF and could get satisfactory result. Using sequential repair with two or more pieces of implants instead of large one piece, we could save time and repair easily and correctly. It is expected that the treatment algorithm and surgical discipline developed by the author can be considered as a natural and useful surgical technique for complete reconstruction.

**P-1228****MANDIBULAR ANGLE FRACTURE TREATED WITH A NEW DESIGN MINIPLATE: A CASE REPORT**

S. Kaman¹, N. Akay¹, F. Atıl¹, B.T. Suer², İ.D. Kocyigit¹, U. Tekin¹, H.H. Tuz³

¹ Oral and Maxillofacial Surgery, Dentistry Faculty of Kirikkale University, Kirikkale, Turkey

² Oral and Maxillofacial Surgery, GATA Haydarpaşa Training Hospital Dentistry Service, Istanbul, Turkey

³ Oral and Maxillofacial Surgery, Dentistry Faculty of Hacettepe University, Ankara, Turkey

Fracture of the mandibular angle deserves particular attention because they represent the highest percentage of mandibular fractures and have the highest postsurgical complication rate, making them the most challenging and unpredictable mandibular fractures to treat. Despite the evolution in the treatment of maxillofacial trauma and fixation methods, no single treatment modality has been studied with great variation in complications rates, especially postoperative infections. Recently, in vitro studies have shown a new 'k' shaped miniplate more stability to lateral forces than a single 2.0 mm miniplate fixation on mechanical study. The aim of this clinical report was to describe a case of a patient with a unilateral mandibular angle fracture treated by a new design miniplate via intraoral approach. The authors show a follow-up of 12 months, without infection and occlusal stability.



P-1232

EXTRAORAL VERSUS INTRAORAL SURGICAL TREATMENT OF CONDYLAR FRACTURES: TECHNIQUES AND INDICATIONS.

M Gessaroli, M. Bassi, , PR Giacomini, G Lombardi ^{{1}, {1}}, M Manfredi, N. Tomasetti, A Campobassi.

Maxillo-Facial Unit, Bufalini Hospital, Cesena, Italy

Purpose: to draw from the experience some guidelines in the surgical treatment of condylar fractures.

Methods: Review of 20 cases of low condylar fractures. The level of the fracture, the kind of condylar displacement, the dentition and the intermaxillary relationship were recorded. The surgical approach, the means of rigid fixation, the instruments needed, the functional results were investigated.

Results: At the beginning the surgical approach at the fractured condyle was always extraoral. We utilized the intraoral approach to the condylar process only when it was impossible to put the lower screws from the pre-auricular way.

The introduction of the endoscopy and right angle drill and screw driver made us try the surgical reduction from the beginning intraorally. Nowadays we decide just looking the x-rays which kind of surgical approach utilize at the start of the operation, utilizing the sigmoid notch as a landmark for the decision: if the fracture line is up the lower part of the sigmoid notch the approach will be pre-auricular, if it is down, the approach will be intraoral, most of all in a long face patient, being ready to switch in the other one if necessary. We do not use nor endoscopy neither right angle instruments, but transbuccal system with a new handmade device, applied behind and over the parotid gland, to reach the fracture in case we decide to perform the intraoral approach.

Summary: The treatment of condylar fractures is always a challenge for the maxillo-facial surgeon. We have to consider many factors in order to make the best decision in each case. First decision concern if the treatment will be surgical or functional. If the treatment is surgical, which kind of approach is the good one? The aim of this paper is to understand the decision making path looking inside to our last five year experience, since we start the intraoral approach as well.



P-1234

RESULTS OF TREATMENT OF DIACAPITULAR CONDYLAR FRACTURES.

M. Bassi, M .Gessaroli, P.R.Giacomini, G.M. Lombardi, Manfredi M, N. Tomasetti, A. Campobassi

Maxillo facial Unit, Bufalini Hospital, cesena, Italy

Objectives:

To evaluate and compare the post-operative functional outcomes after open or closed treatment of a particular type of diacapitular (high condylar) fractures, type VI, subtype A and B, according to the Spiessl & Schroll and Neff & Co-workers classification.

Methods: Twenty patients with diacapitular fractures were treated in the Bufalini Hospital. The fracture line was determined by conventional radiographs on two levels: standard x-rays and CT scan. 10 patients were treated using closed functional methods and 10 were treated using a pre-auricular open approach. Internal fixation was obtained using bicortical titanium screws and titanium plates.

We compared the two series of cases both clinically and functionally.

Clinical observation: malocclusion, TMJ e masticatory muscle pain, TMJ noise and other dysfunction;
X-rays: form and position of mandibular condyle;

Functional measurements: lateral deviation of the mouth opening, length of the maximum interincisal opening, protrusion and laterotrusion, occlusal disturbances and analysis of kinesiographic recordings and masticatory .

Results: Surgically treated temporomandibular joints presented the same condylar mobility in terms of functional movements of the mandible. In particular in all cases, we recorded a lateral deviation toward the fractured side in the mouth opening.

Conclusions. There are not important differences in terms of functional results, in open and closed treatment of diacapitular fractures.



P-1235

RECONSTRUCTION OF THE FLOOR OF THE ORBIT WITH NASAL CARTILAGE

M. Gheorghita¹, R. Hainarosie², V. Zainea²

¹ *Oral and Maxillo Facial Surgery, UMF Craiova, Craiova, Romania*

² *ORL, I.F.A.C.F. ORL "Prof. dr. D Hociota", UMF Carol Davila, Bucuresti, Romania*

The fracture of the floor of the orbit is an often association that we find with the mid-face fractures. For the blow-out fractures we find in the literature multiple ways of reconstruction of the floor of the orbit with alloplastic materials. I report some cases in which I reconstructed the floor of the orbit with nasal cartilage.

This are selected patients that arrived in the emergency room with blow-out fractures of the orbit (posttraumatic) and following the CT scan they also presented lateral deviation of the nasal septum. They all had nasal obstruction prior to the trauma. The surgery was scheduled within 24 hours from presentation and after the reduction of the fracture of the floor of the orbit by transconjunctival or subciliary approach the defect was repaired with the nasal cartilage and bone that I carefully harvested during FESS for the nasal latero-deviation, associated with turbinoplasty.

The follow up showed no complication with the blow-out fractures and remission of the nasal obstruction.



P-1248

NAVIGATION-ASSISTED ZYGOMATIC BONE REPOSITIONING OSTEOTOMY : METHOD AND RESULTS ABOUT 3 CASES

M. Benassarou, E.Weber, B. Chatelain, C. Meyer

Oral and Maxillofacial surgery, University Hospital of Besançon , Besançon, France

Introduction : Non-or insufficiently treated maxillozygomatic bone fractures sequelae can be corrected by a zygomatic bone repositioning osteotomy. This repositioning usually requires tridimensional movements. Intraoperative monitoring of the positioning can be difficult due to : fracture remodeling, the need of minimal invasive surgical access and intraoperative oedema. Surgical planning and surgical navigation are useful tools to help the surgeon compare the position reached intraoperatively to the position planned preoperatively.

Patients and method : Three patients underwent a navigation-assisted zygomatic bone repositioning osteotomy. Preoperative planning was done by mirroring of the healthy side using iPlan CMF® software (Brainlab, Feldkirchen, Germany). The intraoperative position of the bone segment was checked using VectorVision²® system (Brainlab, Feldkirchen, Germany).

Results : Intraoperative navigation could be implemented in all cases. Morphologic and CT-scan postoperative results were favourable.

Discussion : iPlan CMF® software allows the surgeon define a target for the optimal positioning of the bone segment from preoperative imaging data. Mirroring helps restore symmetry in unilateral cases. Surgical navigation allows checking the correct positioning intraoperatively.

**P-1273****COMBINATION OF ABSORBABLE MESH AND DBM (DEMINERALIZED BONE MATRIX) IN ORBITAL WALL FRACTURE FOR PREVENTING HERNIATION OF ORBIT**

H. Jeong, I. Suh, D. Ahn, M. Jung, B. Lee, J. Kim

Plastic and Reconstructive Surgery, Kangnam Sacred Hospital, Hallym University, College of Medicine, Seoul, South Korea

Purpose

After restoration of orbit wall fracture, preventing sequelae is important. An absorbable mesh is commonly used in orbit wall fracture, yet it has limitation due to orbit sagging when bony defect is larger than moderate size (1 x 1 cm²). In this study, the authors present a satisfactory result in treating larger than moderate sized orbit wall fracture with combination of absorbable mesh and demineralized bone matrix.

Material & Methods

From 2009 to 2012, 63 cases with more than moderated sized bony defect, were reviewed retrospectively, who were treated with combination of absorbable mesh and demineralized bone matrix. The site of bony defect, size and applied amount of demineralized bone matrix were being reviewed, and 2 year follow up were done. Facial computed tomography scans were checked preoperative, immediate postoperative and 2 year postoperative.

Results

Among 63 patients, there were 52 males and 11 females. Mean age was 33.3 years old. The most common cause was blunt blow (35 cases), mean defect size was 13.36 X 12.82 mm² in inferior wall fracture and 20.69 X 14.41 mm² in medial wall fracture, each. There was no complication except for 3 cases of infraorbital nerve hypoesthesia . A 2 years follow up CT showed that the surgical site preserved bony formation without herniation.

Conclusion

In treating moderate sized bony defect in orbit wall fracture, absorbable mesh and demineralized bone matrix can maintain structural stability through good bony formation even after degradation of absorbable mesh.

**P-1313****TREATMENT OF THE SUBCONDYLAR MANDIBULAR FRACTURES THROUGH INTRAORAL APPROACH BY ENDOSCOPY**

O.DUNAUD, J DAVROU, S.DAKPE, C.NEIVA, J.BETTONI, B.DEVAUCHELLE

Maxillofacial surgery departement, university hospital, amiens, France

The challenge of less invasive approach is also true in traumatology and particularly to reach the deep area of the face. For many years, the authors used the transparotid approach thanks to a rhythidectomy line and a retrograde facial nerve dissection with the risk of temporary facial palsy . It seemed obvious that the intraoral approach should be emphasized but a new technical procedure should be designed. That way, thanks to the development of new technologies and specific tools, the subcondylar area could be reached by intraoral approach and endoscope. At the beginning of this procedure, in the literature and for all teams ,the approaches were both external and intraoral to control the displacement of the condyle and its reduction. Soon it became only intraoral thanks to very precise and specific management of the gesture and the patient.

Since 3 years , more than 30 patients were treated that way with a good functional result and rather less morbidity. More than the analysis of the series, the authors would like to point out and precise the surgical procedure (step by step) both in terms of technical conditions and management of the patient during the operation (position , anaesthesiology) with the potential help of preoperative radiographic (o'arm) control of the condylar position .



P-1314

COMPLICATION OF FRONTO BASAL FRACTURE

G. Stojkovic

Maxillofacial surgery, Clinical centre of Serbia, Belgrade, Serbia

Case report:

A patient who was injured in a car accident in 1976. diagnosed fracture of anterior and posterior table of frontal sinus, had neurosurgical treatment when dura was sutured without removing of whole sinus mucosa. In 1987. patient was hospitalized because of purulent meningoencephalitis and on CT has found communication between frontal sinus and anterior cranium. Communicatio was closed with fascia lata, bone defect was reconstructed with Palacos and again mucosa was not removed.

In 2009. when patient was 49 years old, he was hospitalized in Clinic of ENT and Maxillofacial surgery, with fistula on frontal bone and osteomyelitis in that region. Surgical treatment has done with approach through previous scar of coronal incision. Revision of whole frontobasal region and reconstruction of anterior table of frontal sinus was performed. Palacos and complete mucosa was removed and communication between sinus and nose was achieved. Bone defect has been reconstructed with titanium mesh.

On follow up CT scan 2 years after, there was no signs of any early or late complications.

**P-1339****CORRECTION OF MEDIAL ORBITAL WALL FRACTURE BY USING BIODEGRADABLE SYNTHETICS POLYURETHANE FOAM(NASOPORE®) THROUGH MODIFIED ENDOSCOPIC TRANSNASAL APPROACH**

S. Park, S. Choi, J. Choi

Department of plastic and reconstructive surgery, School of Medicine Pusan National university, Busan, South Korea

Purpose : Recently, endoscopic reconstruction for medial orbital wall fracture has provided good functional and cosmetic result. We found that the method of using non-biodegradable synthetic material(Merocel[®] and silastic sheet) with mucosal incision has some problem such as haemorrhage, pain and bleeding due to mucosal adhesion. We discussed surgical procedure of modified method with using biodegradable synthetic polyurethane foam(Nasopore[®]), which is biodegraded within 2 weeks, has benefits in correction of medial orbital wall fracture.

Method : We retrospectively studied 39 pure blowout fracture patients who had been operated using Nasopore[®] without mucosal incision for correction of medial orbital wall fracture instead of using Merocel[®] and silastic sheet with mucosal incision. Their records were reviewed according to symptom, operation method and follow up results.

Results : Using Nasopore[®] without mucosal incision for correction of medial orbital wall fracture has same result with using Merocel[®] and silastic sheet with mucosal incision. 7 cases of diplopia, 5 cases of gaze limitation was corrected after surgery. There are no persistent complication after surgery.

Conclusion : We surveyed the information of blowout fracture patients and believe that using Nasopore[®] for correction of medial orbital wall fracture has benefit to patient and surgeon. The modified method, without incision, has improvement in comparison of previous method with incision. But more larger group and strict application of disease are needed for evaluation

Key word : Blowout fracture, Nasopore, Endoscopic transnasal approach



P-1340

THE TRANSNASAL ENDOSCOPIC APPROACH IN THE PURE INFERIOR BLOW-OUT FRACTURE CORRECTION BY FOLEY CATHETER BALLOONING PROCEDURE USE

T. Park, S. Choi

Department of Plastic and Reconstructive Surgery, School of Medicine Pusan National university, Busan, South Korea

Purpose: Inferior blow-out fracture should be treated appropriately, otherwise it cause unsatisfactory functional and aesthetic outcomes. There are several methods to treat inferior blow-out fracture. The purpose of this study was to evaluate reduction technique of pure inferior blow-out fracture with Foley catheter ballooning through endoscopic transnasal approach only.

Method: A retrospective study was performed on 30 patients with pure inferior blow-out fracture who underwent ballooning of Foley catheter through endoscopic transnasal approach without any material implantation between January 2008 and January 2011. Medical records were reviewed for estimating preoperative and postoperative data for enophthalmos, diplopia, limitation of extraocular motion. Preoperative and postoperative CT scan were also checked.

Results: The curvature of inferior orbital wall in the postoperative CT seemed to be anatomically restored in integrity of inferior orbital soft tissue and bony structure. The enophthalmos was corrected in all patients. Postoperative complication of infection, extraocular muscle movement limitation were absent. There were a few persisted diplopia and hypoesthesia, but these symptoms were resolved about three months after operation.

Conclusion: The use of Foley catheter for inferior blow-out fracture can be one of the appropriate technique. It is effective, inexpensive and doesn't leave a scar.



P-1352

INTRA-ORAL APPROACH FOR SUBCONDYLAR FRACTURE REDUCTION AND INTERNAL FIXATION: CASE REPORT

H. Marques, R. C. Sousa, R. Saleiro, F. Pimentel, A. Luís, C. Monteiro

Cirurgia Maxilofacial, Centro Hospitalar do Porto, Porto, Portugal

Objectives: Dislocated subcondylar fractures often require open reduction and internal fixation. This treatment modality results in better anatomy restoration and early function. Ideal stable fixation is obtained by use of two miniplates to control the tension zone in the sigmoid notch area and stabilize the posterior border region or, if there is not enough space, one stronger plate. That is most commonly achieved through extra-oral approaches.

Results: We report on a 32 year old male who had a subcondylar fracture associated with a mandibular body fracture on the same side. We first reduced and fixated the body fracture and then the subcondylar fracture was treated through an intra-oral approach. A transbuccal system was used to fixate the screws. Stable occlusion was achieved with normal mouth opening and lateral excursions. Facial and jaw symmetry were also achieved. A post-operative CT showed excellent fracture reduction. The stab incision for the transbuccal system resulted in unnoticeable scar. No facial nerve injury occurred.

Conclusions: Although we think that an endoscope would be helpful in the reduction of the fracture, good fracture reduction can be achieved under direct vision. The transbuccal system was useful for screw fixation in this area because of the restricted surgical field.

Although this approach is more demanding it offers the advantages of unnoticeable scarring and minimal risk of facial nerve injury.

**P-1383****DOES THE DIRECTION OF FORCE AND FRACTURE PATTERN INFLUENCE THE SEVERITY OF HEAD INJURY IN SKULL BASE TRAUMA?**

J. Stephens¹, A. Kanzaria², S. Holmes², D. Bulters¹, B. Evans¹

¹ Dept. Oral and Maxillofacial Surgery, University Hospitals Southampton NHS Foundation Trust, Southampton, United Kingdom

² Dept. Oral and Maxillofacial Surgery, Barts Health NHS Trust, London, United Kingdom

Objectives: To assess the relationship between the direction of force, skull base fracture pattern and severity of head injury in a consecutive series of patients who sustained combined injuries to the cranium and face.

Methods: The clinical records and CT images of 81 patients who had sustained fractures of the anterior cranial fossa were assessed. The direction of force was divided into either a predominantly anterior or lateral direction. Three factors were considered when assessing the severity of the head/brain injury:

- First recorded GCS
- Need for intubation
- Need for decompressive craniectomy

In addition the fracture patterns produced by both anterior and lateral impacts were assessed further with regard to their propagation into the middle and posterior cranial fossa.

Results: The median GCS in patients who sustained a lateral impact to the skull base was 5 compared to a GCS of 14 in patients who sustained an anterior impact to the skull base. Furthermore, fracture propagation into the middle and posterior fossae was associated with a more severe head injury irrespective of the predominant direction of impact force.

Conclusions: Our results suggest that the predominant direction of the impact force to the frontal bone can influence the severity of the head injury sustained by the patient. Furthermore, fractures that propagate to the middle and posterior fossae are associated with a severe head injury irrespective of the direction of the impact force.



22. Craniomaxillofacial Varia

P-54

SEVERE ODONTOGENIC INFECTIONS - RETROSPECTIVE EVALUATION OF CLINICAL DATA AFTER SURGICAL MANAGEMENT FROM 2004 -2011

N. Adolphs, D. Opitz, D.M. Kim, C. Camerer, N. Ernst, J.D. Raguse, B. Hoffmeister

Department of Craniomaxillofacial Surgery, Campus Virchow Klinikum, Universitätsmedizin Charité Berlin, Berlin, Germany

Aims & Objectives:

The management of odontogenic infections is part of the typical maxillofacial spectrum. Normally these infections can be managed in a straight forward way however under certain conditions severe and complicated courses can arise which require interdisciplinary treatment including means of intensive care.

Materials & Methods:

A retrospective analysis of all patients affected by an odontogenic infection that received surgical therapy from 2004 to 2011 under stationary conditions was performed. Surgical treatment consisted in incision and drainage of the abscess supported by i.v. antibiotic medication in all patients. Clearing or removal of the dental focus was either performed during initial surgical procedure or after decrease of the acute inflammatory situation. Further detailed analysis of all patients that required intensive medical care after surgery was additionally realised with respect to special risk factors.

Results:

During 8 years in 814 patients affected by odontogenic infections stationary surgical therapy was required representing 4% of all patients that have been treated during that period (n = 18981). In 15 patients (1,8%) intensive medical care after surgery was required, one lethal outcome was documented (0.12%). According to this evaluation two patients per week affected by an odontogenic infection require surgical in-house treatment, about two patients per year are likely to have a complicated course afterwards. If so one or more typical risk factors (Diabetes, immunosuppression, adiposity, art. hypertony) were present, an additional history of either smoking or chronic alcohol abuse contributed to a reduced immunocompetence.

Discussion:

Despite modern options for diagnostic and treatment of odontogenic infections in almost 2% of affected patients there were general complications after surgical therapy that required intensive medical care. All of these patients had well known risk factors that certainly contributed to that fact. If a typical risk profile is present in a patient affected by an odontogenic infection therapeutic strategy should be adapted to an interdisciplinary approach from the very beginning in order to avoid prolonged courses.

Conclusion:

Severe complications after odontogenic infections are rare and occur mainly under predisposing conditions. Appropriate initial assessment and interdisciplinary therapy is favourable for the management of these patients.

**P-70****ROUTINE HEPATITIS C AND HIV SCREENING OF ORAL AND MAXILLOFACIAL SURGERY IN-PATIENTS**

K. Stein, P. Riedel, M. Kriwalsky, M. Kunkel

*Klinik für Mund-, Kiefer- und Plastische Gesichtschirurgie, Universitätsklinikum
Knappschaftskrankenhaus Bochum Universitätsklinikum der Ruhr Universität Bochum, Bochum,
Germany*

Objective:

To immediately start a post exposure prophylaxis after needle stick or other injury, it is important to verify a potential Hepatitis or HIV infection of the index patient as soon as possible. Moreover, in case of a positive screening test it is possible to initiate anti-viral treatment for the hitherto unknown infection. Therefore we performed a systematic pre-surgery screening for Hepatitis C and HIV of in-patients in our clinic for oral and maxillofacial surgery.

Methods:

From January 2010 until June 2013 blood was acquired from in-patients scheduled for elective or urgent surgery. After written informed consent samples were tested for Hepatitis C and HIV antibodies. In case of a positive serological result a confirmatory test using PCR was performed.

Results:

Out of 3130 patients tested for hepatitis C antibodies 67 (2%) had positive screening results. An infection was confirmed in 28 patients by PCR (prevalence 0.9%). Only 17 patients with confirmed hepatitis C showed an increase in liver transaminases.

Out of 3191 patients tested for HIV-antibodies 17 (0.5%) showed a positive screening test. HIV infection could be confirmed in 3 patients (prevalence 0.09%).

Conclusion:

Prevalence of hepatitis C in the study population was twice as high as the estimated overall prevalence in the regional population. This result suggests that either our study population represents a high-risk group or the overall prevalence of hepatitis C is underestimated. Furthermore our study shows that it is not sufficient to limit screening to patients with elevated liver transaminases, as almost one third of patients with confirmed hepatitis C infection had normal liver enzymes. Prevalence of HIV was very low and did not differ from the estimated overall prevalence.

**P-97****A CASE OF ORAL INVOLVEMENT IN SARCOIDOSIS AND MANAGEMENT OF FACIAL CUTANEOUS LESIONS**

T. Schembri, L. Cheng, E. Ali, R. Bull, G. Bothamley

Oral and Maxillofacial Department, Homerton University Hospital, London, United Kingdom

Introduction

Sarcoidosis is a relatively rare systemic granulomatous disease which can affect multiple organs especially lungs and thoracic lymph nodes. Oral involvement is even more uncommon and to our knowledge, there have been only 64 cases of oral sarcoidosis reported in the English literature. Diagnosis is by exclusion due to the lack of specific tests. There is no standardised management and therefore treatment is often tailored to specific patient needs. We present our management of a case of oral and cutaneous sarcoidosis.

Case report

A 45-year-old Afro-Caribbean woman, referred by her dentist, presented with soft non-tender, well-circumscribed nodules on the soft and hard palate, pharyngeal wall, uvula, lip, and rather disfiguring skin lesions on the face, limbs and trunk. Asymptomatic cervical and mediastinal lymphadenopathy was noted on CT image. However, there was no other major organ involvement.

Incisional biopsies of the oro-pharyngeal lesions and surgical excision of two of the larger facial skin masses confirmed sarcoidosis with typical non-caseating granulomata. Blood levels of serum ACE (106) and blood calcium (2.24) were recorded.

Intralesional steroid injections were carried out on her facial, limb and trunk cutaneous lesions, with satisfactory effect. Multidisciplinary teams of respiratory, ocular and dermatological departments were also involved.

Discussion

Oral sarcoidosis is rare and chronic with no reports of adverse symptoms. Facial, head and neck cutaneous sarcoidosis can increase in size and affects cosmetics. Surgical excision, intra-dermal steroid injections, corticosteroid ointment or systemic steroid are treatment options. Possible depigmentation of Afro-Caribbean skin can occur after intralesional injection of steroid of sarcoidosis. For systemic sarcoidosis, systemic corticosteroid with chloroquine, methotrexate, infliximab and thalidomide has been used. As sarcoidosis is a chronic condition, corticosteroid-sparing agents are indicated.

Conclusions

Surgical excision of cutaneous sarcoidosis is indicated when systemic steroid is not advised or other less invasive treatment fails. As the patient was not keen on oral therapy, we have been successful in managing this case with local treatment options.

**P-469****ANTIBIOTICS IN MANDIBULAR THIRD MOLAR SURGERY. A SURVEY AMONG SWISS DENTISTS**

J.Kuttenberger, D. Vlcek, A. Razavi

Clinic for Oral and Maxillofacial Surgery, Luzerner Kantonsspital, Luzern, Switzerland

Objectives:

Removal of wisdom teeth is frequently performed in oral and maxillofacial surgery. The aim of this survey was to assess the knowledge and practice of Swiss dentists focusing on the use of antibiotics in prophylactic surgical removal of lower wisdom teeth.

Methods:

A postal survey was conducted among all 3288 dentists who are members of the Swiss Dental Society (SSO) representing nearly all dentists in Switzerland. The questionnaire consisted of 13 questions with mostly multiple-choice answers. Demographic profile, surgical experience, the use of antibiotics, and wound management, i.e. wound closure and the use of mouth rinse were assessed.

Results:

A response rate of 55% was obtained. Most Swiss dentists perform surgical extractions in their practices. Of all Swiss dentists, 18.6% used antibiotics routinely, but a large variation was found comparing the three linguistic regions of Switzerland with the highest prescription rates of 48% in the French-speaking south-west of Switzerland. Fifty-two percent of dentists prescribed amoxicillin in a dose of 750 mg. Most often three daily doses were prescribed (47%). A postoperative regime was prescribed by 54.4% of dentists. French language ($p=0.003$), graduation from the university of Geneva ($p=0.007$), foreign diplomas ($p<0.001$), and dentists with diplomas awarded from 2001-2006 ($p=0.004$) showed a highly significant correlation with the use of antibiotics.

Conclusions:

In Switzerland, prophylactic antibiotics are used in third molar surgery. Antibiotic prescription however largely depends on geographical situation and dentist profiles. The assessment of antibiotic use in private practices is important in the light of growing evidence that antibiotic overuse may lead to development of multiresistant bacterial strains.

**P-725****MADELUNG'S DISEASE; THE POTENTIAL MALIGNANT EFFECTS OF A 'BENIGN' CONDITION**

C. Harrington, T. Mirza, P. Ameerally

Oral and Maxillofacial Department, Northampton General Hospital, Northampton, United Kingdom

Madelung's disease is a rare condition, characterised by the symmetrical distribution of non-encapsulated adipose tissue generally located in the neck and shoulders, rarely involving the mediastinum. It is also known by several other names including Multiple(or Benign) Symmetrical Lipomatosis, and Leunio-Bersaud disease. There are numerous theories regarding potential causes however the aetiology still remains largely unknown. The highest incidence is in males from Mediterranean and Eastern European regions. It is a slowly progressive disease with a strong association with alcohol consumption as well as liver disease, abnormal glucose tolerance, hyperuricemia, hypothyroidism, hypertension, and hyperlipidemia.

We present the case of a 45 year old lady with bilateral swelling in the anterior neck and shoulders causing obstruction when lying flat. In this case we discuss the diagnostic pathway with relevant imaging demonstrating the diagnostic features of this rare condition.

Along with having obvious aesthetic implications, there can be direct compressive effects on the upper aerodigestive tract causing dyspnoea, dysphagia and dysphonia. Infiltration of the larynx and pharynx may even necessitate tracheostomy. Superior vena cava syndrome, somatic and autonomic neuropathy have all been reported and patients with this condition must be evaluated for obstructive sleep apnoea. Therefore there can be significant morbidity and mortality associated with this rare disease.

The head & neck surgeon must be aware of this condition and consider it as a differential diagnosis for any patient presenting with progressive bilateral soft tissue swelling in the head & neck region. We discuss key management strategies that include alcohol abstinence, liposuction and lipectomy. A review of the literature is included which highlights why Madelung's disease should no longer be considered a benign condition as it may cause significant morbidity and mortality, as well as present a diagnostic challenge due to its rarity.



P-865

MADELUNG'S DISEASE (MULTIPLE SYMMETRIC LIPOMATOSIS) : A REPORT OF A CASE

I. ASTREIDIS, C.GEORGIOU, M. LAZARIDOU, K. KONTOS, D. MANGOUDI

Department of Oral & Maxillofacial Surgery, Cancer Hospital of Thessaloniki 'Theageneio', Thessaloniki, Greece

Introduction: Madelung's disease or Multiple symmetric lipomatosis (MSL) is a rare disease mainly characterized by benign, non-encapsulated, large subcutaneous fatty masses distributed around the neck, shoulders and upper extremities, in a symmetrical manner. The aims of this article are to report the sequential management of a patient with MSL that agrees with previous data linking this disease with male alcoholics.

Case report: A 69-year-old man, was referred with a 5-year history of massive, painless lipomas diffusely distributed over his neck limiting head motion. Clinical examination revealed multiple, large disfiguring soft masses involving neck, upper arms and hips. The masses were soft and non-tender. There were no signs of dyspnoea, dysphagia, or dysphonia but a history of alcohol abuse was present. One stage lipectomy was performed via open cervical approaches under general anaesthesia. Histology revealed adipose tissue.

Discussion: Lipomas in Madelung's disease are characterized by multiplicity, non-encapsulation and invasiveness. Over the years, the fat deposits enlarge significantly, that result in cosmetic disfiguration and functional impairment. The aetiology of benign symmetric lipomatosis remain undetermined, although hereditary reasons are involved.



P-877

CLINICAL FEATURES OF CERVICOFACIAL NECROTIZING FASCIITIS – CASE REPORT

E.Zawiślak, R.Nowak, Sz.Przywitowski, M.Kubiak, M.Gara-Rucińska

Maxillofacial Surgery, University Clinical Hospital, Wrocław, Poland

Objective: To describe the clinical features and CT image of cervicofacial necrotizing fasciitis in 26-year-old women.

Methods: Surgical treatment included remove of offending teeth and drainage in combination with intravenous broad-spectrum of antibiotics.

Results: Remove of offending teeth, drainage combined with broad-spectrum of antibiotics showed satisfying result for the management of cervicofacial necrotizing fasciitis of dentogenous origin. Complications resulting from the inflammatory process include facial hemiplegia due to the effect of damage to the facial nerve and loss of facial skin.

Conclusions: Necrotizing fasciitis is known as “flesh-eating-disease” is an inflammatory process in deep fascia with necrosis of the subcutaneous tissue. It is rare but life-threatening infection resulting in high mortality rates, ranging from 19% to 40%. One of the NF's characteristic symptoms is subcutaneous deposit of gas which may be noticed during the physican examination and CT scans with contrast.



P-1000

THE VALUE OF EARLY INTERVENTION IN THE MANAGEMENT OF NECROTIZING FASCIITIS OF THE NECK AND ANTERIOR MEDIASTINUM OF ODONTOGENIC ORIGIN

J K Muhammad, H Al Madani, General Surgery, Mafraq Hospital, B Al Hashemi, Maxillofacial Surgery, Mafraq Hospital, M Liaqat, Anatomical Pathology, Mafraq Hospital

Maxillofacial Surgery, Al Rahba Hospital, Abu Dhabi, United Arab Emirates

Necrotising fasciitis is a serious clinical condition which if diagnosed late can lead to a fatal outcome. A high index of suspicion with knowledge of the clinicopathological processes that underline its aggressive nature should prompt early surgical intervention.

We would like to report our experience of managing a young adult male who presented with aggressive necrotizing fasciitis affecting the neck and anterior mediastinum, which was of odontogenic origin. A multidisciplinary approach ensured that the patient received optimum care in a timely manner. The psychological, clinical, radiological, pathological and microbiological aspects of the patient's care which have been carefully documented will be presented together with a literature review of this very challenging condition.



P-1013

ODONTOGENIC INFECTION OF ORBITAL SPACE - CASE REPORT

Z. Sejfi^{ja}, Z. Agani, B. Maloku, O. Sejfi^{ja}, A. Sejfi^{ja}

Oral and Maxillofacial Surgery Department, University of Prishtina-Medical Faculty, Prishtina, Albania

Objective: Treatment of odontogenic infections

Odontogenic infections of oral and maxillofacial region are relatively common in our pathologies. After adequate diagnosis and appropriate therapy these infections successfully heal. In some cases, due to unsuitable diagnosis and inappropriate therapy these cases can get complications and also expand in to the surrounding tissue.

Methods: Case report-clinical study

A patient at the age of 8 years was treated due to the orbital infection outside our clinic but with no success. After initial examination from our side it was concluded that the infection of the orbital cavity is of odontogenic background – the tooth that is the cause of infection is the deciduous maxillary lateral incisor.

Result: After appropriate, tooth extraction which was the cause of infection, draining the focal point of infection and ordination of antibiotics the infection is completely eliminated.

Conclusion: Appropriate diagnosis is crucial for successful treatment of odontogenic infection.



P-1045

MEDIASTINITIS SECONDARY TO AN ODONTOGENIC INFECTION – A CASE REPORT.

M. Kubiak, S. Przywitowski, R. Nowak, E. Zawiślak, M. Gara

Department of Maxillofacial Surgery, Wroclaw Medical University, Wroclaw, Poland

Objective

Descending mediastinitis (DM) is a serious infection of the mediastinal connective tissues and the adjacent structures, which usually occurs as a complication of peritonsillar abscess or odontogenic infection. Most odontogenic infections are self-limiting. Exceptionally, they can spread through the fascial and deep neck spaces inferiorly into the mediastinum. DM is characterized as polymicrobial infection by organisms indigenous to the oral cavity. Even with advancements in antibiotics, diagnostic imaging, and surgical management, the mortality rate is 20-40%. We present a successful treatment of DM case in Maxillofacial Surgery Department, Wroclaw Medical University.

Material and Methods

A 28-year-old man was admitted to the Emergency Department with facial swelling and mild odynophagia and dyspnoea. On physical examination, he was febrile and hemodynamically stable. He had firm, non-fluctuant, erythematous, and palpably warm bilateral submandibular swelling. There was also submental space involvement. Intraorally: several roots of the decayed mandibular molars, slightly raised and painful floor of the mouth, and symmetrical and mobile tongue. His oropharynx revealed mild peritonsillar oedema and erythema, with normal appearing tonsils. His uvula was midline.

The CT scan revealed diffuse neck oedema, and air in the parapharyngeal, submandibular, and submental spaces, and also, anterior to the thyroid gland, and extending into the anterior superior mediastinum.

He was then sent to the Maxillofacial Surgery Department where the causative roots were extracted and incision and drainage of bilateral submandibular, sublingual, and submental spaces were performed, intraoperative cultures were sent, and the patient was started on i.v. Vancomycin. Because of increasing dyspnoea intubation via tracheostomy was performed, and the patient was transferred to Thoracic Surgery Department, where mediastinal abscesses were drained via videothoracoscopy.

Results

Over the next few days, patient's clinical exam improved and he was extubated. Control CT scans showed no new collections. The drains were backed out over another days. He was left in good condition with mild pharyngeal dysphagia.

Conclusion

DM is a serious complication that can occur from a common odontogenic infection. The practitioner should be sensitized to this potentially fatal complication. Management of DM includes airways management, wide-range antibiotics and surgical drainage of the cervical and mediastinal collections.

**P-1098****EARLY DIAGNOSIS OF CERVICAL NECROTIZING FASCIITIS, A DIAGNOSIS CHALLENGE FOR THE MAXILLOFACIAL SURGEON**

B. Apellaniz Aguirre, E. Gomez Garcia, J. Guiñales Diaz de Cevallos, PM. Losa Muñoz, JM. Nieto Fernandez Pacheco, MA. Burgueño Garcia

Hospital Universitario La Paz, Madrid, Spain

Cervical Necrotizing Fasciitis (CNF) is an uncommon infection. It is characterised by a rapidly progressive polymicrobial infection that spreads along the deep fascial planes of the neck. Its fulminant course and high mortality makes this disease a diagnostic challenge for the maxillofacial surgeon. Therefore, when clear clinical signs and suspicious images are available, the patient must be taken to the operating room for surgical treatment.

The incidence in the head and neck is relatively lower compared with other areas of the body. It is usually associated with immunocompromised patients; diabetes in most of the cases. The CNF has a odontogenic origin mainly. Due to its fast course, the infection can progress to descending mediastinitis or septic shock in few days. Although the diagnosis is based on the clinical and analytic findings combined with imaging, surgical exploration never has to be delayed when there is a high diagnostic suspicion. Aggressive repeated surgical treatment combined with broad-spectrum antibiotic and intensive medical care improves the survival rates.

We present a case of a 29 year old woman with no comorbid conditions who presented to the emergency room with progressive hemi facial and high hemi cervical swelling and fever of 3 days of duration. The clinical examination revealed swelling and erythema that extended from the helix to the mid cervical area. No odontogenic infection was found, and the only possible infection gateway was wound in the pinna. In the CT images subcutaneous swelling and deep cervical fascia were found. Within 4 hours of the admission, the patient was taken to the operating room where several skin incisions were made in preauricular and cervical area. Blunt dissection was made in the subplatysmal plane, but no necrosis was found. After 4 days in the ICU under Clindamycin, Meropenem and Vancomycin the patient was discharged to the hospitalization floor. No reoperation was required.

Cervical Necrotizing fasciitis has a potential lethal clinical course. Early aggressive surgical treatment associated with intensive medical care gives the best chance for survival.



P-1323

AN UNUSUAL CASE OF CERVICAL SYPHILIS WITH PIRINGER-KUCHINKA-LIKE LYMPHADENITIS

M. Moreno Sánchez, C. Moreno García, R. González García, I. Rubio Correa, C. Hernández Vila, F. Ramírez Pérez, J. Mateo Arias, A. Morillo Sánchez, F. Monje Gil

Department of oral and maxillofacial surgery, University Hospital Infanta Cristina, Badajoz, Spain

Introduction. Syphilis, a sexually transmitted disease caused by infection with the spirochete *Treponema pallidum*. Primary lesions found most often are genital (85%) and anal (10%), but only rarely appear as a cervical lymphadenopathy, with less than 1% of incidence.

Methods. We report the case of a 35-year-old man who was referred to the Department of Oral and Maxillofacial Surgery with a 3-week history of a persistent and isolated mass in the left neck, associated with weight loss, asthenia, fever and night sweats. Physical examination showed a palpable, firm, non-tender level II/III mass, without adhesions or alteration of skin colour.

Results. While no primary tumour was observed, the mass was excised surgically through a lateral cervicotomy approach for diagnostic and therapeutic purposes. Histologic examination was compatible with Piringer-Kuchinka lymphadenitis. The serologic results and PCR amplification were positive for syphilis. Consequently, the patient was referred to the Department of Infectious Diseases and treated with intravenous injection of penicillin G for 14 days.

Conclusions. Clinicians should have a high index of suspicion of syphilis in patients with unexplained lymphadenopathy.



WWW.EACMF52014.COM