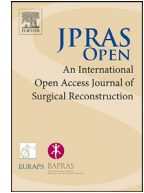




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Review Article

Pedicated extensor digitorum brevis flap for the distal third lower limb reconstruction: A review of the literature

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ABSTRACT

Introduction: Reconstruction of the distal lower limb is often complex due to limited local tissues. The pedicated extensor digitorum brevis (EDB) flap is a reliable, loco-regional option for small- to medium-sized ankle and foot defects. This review summarizes literature on pedicated EDB flaps, focusing on indications, outcomes, and donor-site morbidity.

Materials and methods: A search of PubMed, Embase, and Scopus (1987–2024) using predefined terms identified studies on pedicated EDB flaps for lower limb reconstruction. Exclusions included anatomical studies, case reports, and free or multiple flaps. Out of 88 records, 26 met criteria, covering 296 patients.

Results: Trauma was the leading indication for reconstruction (31.4%), followed by postsurgical dehiscence, infections, and chronic ulcers. Most flaps were pure muscle with an average size of 14.55 cm², covering defects of about 11.89 cm². Complications included total necrosis (4.4%) and partial necrosis (3.7%), all in antegrade flaps. Donor-site issues were limited, mainly delayed healing (5.1%) and wound dehiscence (5.1%), rarely causing major problems.

Discussion: The pedicated EDB flap offers predictable anatomy, easy harvest, and minimal functional issues, ideal for small- to medium-sized defects when microsurgery isn't available. However, necrosis risk and trauma links emphasize the need for careful patient selection and vascular assessment.

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Conclusion: The pedicled EDB flap is a reliable option for distal lower-limb reconstruction, showing good results with manageable complications. More studies are needed to define its long-term role.

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Introduction

Reconstruction of defects involving the distal third of the lower limb represents a significant challenge for plastic surgeons, primarily due to the limited availability of local donor tissues. As a result, microsurgical free flaps are frequently required to achieve adequate coverage in this region. Nevertheless, in selected clinical scenarios, a loco-regional approach may offer a more practical, safer, and time-efficient alternative, as it does not require microsurgical expertise.

The extensor digitorum brevis (EDB) muscle, uniquely characterized by its muscle belly on the dorsum of the foot,¹ can be employed either as a pedicled or free flap.² When used as a microsurgical flap, it has been described for functional reconstruction following facial paralysis,^{3,4} for soft tissue coverage of the hand,⁵ and for restoring hand function.^{6,7} As a pedicled flap, it provides a reliable and practical loco-regional solution for small to medium-sized defects of the ankle and foot.⁸

Despite its advantages, the EDB flap remains controversial due to the relatively high rate of donor-site complications,⁹ although it generally does not result in significant functional morbidity.⁸

The present review analyzes the current literature on the use of the pedicled EDB flap in lower limb reconstruction, with particular attention to clinical indications, surgical outcomes, donor-site morbidity, and its potential value in plastic and reconstructive surgery.

Materials and methods

A systematic descriptive review was conducted in accordance with the PRISMA guidelines (Figure 1). PubMed, Embase, and Scopus databases were searched to identify all studies reporting the use of the extensor digitorum brevis (EDB) muscle flap for local reconstruction, published between January 1, 1987, and September 30, 2025. The search strategy employed Boolean operators to maximize sensitivity. For PubMed, the following string was used: (“EDB flap”[Title/Abstract] OR “EDB muscle flap”[Title/Abstract] OR “Extensor digitorum brevis flap”[Title/Abstract] OR “Extensor digitorum brevis muscle flap”[Title/Abstract]). Filters were applied to include studies written in English, Spanish, or French. A review protocol was not prospectively registered in databases such as PROSPERO; this is acknowledged as a methodological limitation.

Titles and abstracts were screened independently by two reviewers. Full texts of potentially eligible studies were then assessed for inclusion based on the predefined criteria. Any disagreements were resolved through discussion or by consulting a third reviewer.

Inclusion criteria included studies that described the use of the EDB muscle as a pedicled flap for lower limb reconstruction and reported postoperative outcomes. Exclusion criteria included single-case reports, inaccessible full texts, cadaveric or anatomical studies, and studies involving free or multiple simultaneous flaps. Studies lacking information on postoperative outcomes or complications were also excluded. From an initial pool of 88 records, 36 duplicates were removed. The remaining 52 articles underwent full-text screening, and 26 were excluded based on the criteria described above, resulting in a final sample of 26 studies (Figure 1).

Data extraction was performed using a standardized form. Extracted variables included publication year, level of evidence, number of patients, sex distribution, mean age, anatomical site and size of the defect, flap dimensions, donor-site morbidity, types and rates of complications, flap survival, need for

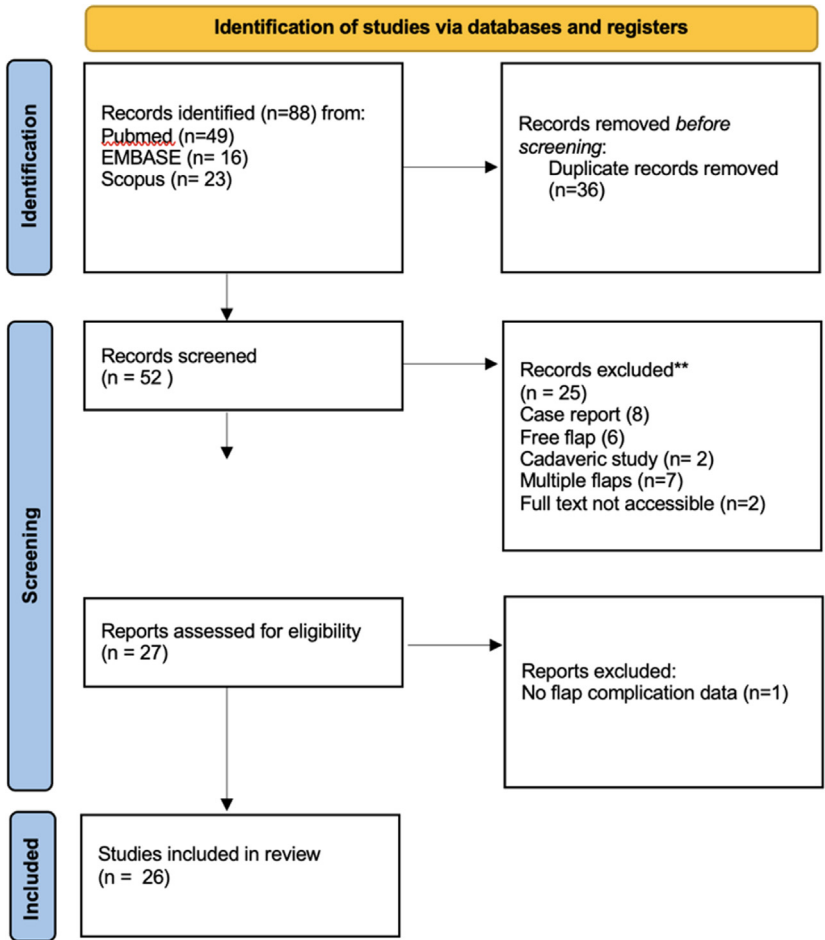


Figure 1. PRISMA flow diagram.

revisional surgery, and duration of follow-up. The data were organized into tables and independently cross-verified by two reviewers to ensure accuracy and consistency. A qualitative synthesis of the data was performed. Quantitative variables (e.g., patient age, defect size, flap dimensions) were calculated as weighted averages to account for the varying sample sizes of the included studies, rather than simple means.

Due to the heterogeneity of the included studies and lack of uniform quantitative data, a meta-analysis was not performed; therefore, the results are presented as a systematic descriptive review.

Results

The studies analyzed included 17 case series and 9 retrospective studies, totaling 296 patients. The weighted average age was 48.2 years; 198 patients were male, 86 female, and 12 unspecified.

Where reported, the average follow-up period after reconstruction with the EDB muscle flap was 16.6 months. In all studies except one,¹⁰ the flap was raised as a pure muscle flap; in those two patients, it was used as a musculocutaneous flap.

The weighted average flap size was 14.55 cm², while the weighted average size of the reconstructed defect was 11.89 cm². Blood flow was antegrade in 253 flaps, retrograde in 41, and unreported in 2 cases.¹¹

Etiology of defects

The primary reasons for needing an EDB flap were trauma (93 cases, 31.42%), followed by postsurgical dehiscence (18, 6.08%), osteomyelitis and other infections (15, 5.07%), burns (12, 4.05%), chronic ulcers (10, 3.38%), fixation device exposure (6, 2.03%), cancer (4, 1.35%), arteriovenous malformations (2, 0.68%), steroid injections (2, 0.68%), and individual cases of Ledderhose disease, lymphoblastic leukemia, and Morton's neuroma (each 0.34%). The cause was not reported in 131 cases (44.26%). Detailed information is provided in [Tables 1 and 2](#).

Recipient sites

The most common recipient sites were the medial malleolus (19.93%), the distal third of the leg (19.59%), and the lateral malleolus (12.16%). Other reconstruction sites included the Achilles tendon, dorsum of the foot, ankle, hallux, calcaneus, middle and proximal third of the leg, tibialis tendon, lateral or medial borders of the foot, plantar arch, extensor retinaculum, first and fifth metatarsals, second and fourth toes, and the first web space of the toes. In one case, both the dorsum and lateral malleolus were reconstructed; in another, both the dorsum and medial malleolus were reconstructed. In two cases, respectively, the side of the malleolus reconstructed and the toe were not specified. In 34 cases, the reconstructed sites were not reported. For key details, refer to the [Tables 1 and 3](#).

Flap complications

Complications occurred in 48 cases. The most common were total flap necrosis (13 cases)^{18,25,27,31,33} and partial necrosis (6 cases).^{9,33} Less frequent complications included infection,²¹ bleeding,⁹ wound dehiscence,³³ fistula formation,³³ pyoderma gangrenosum,³¹ chronic pain,²⁵ chronic osteoarthritis,⁹ and septic pseudoarthrosis.⁹ Additionally, graft necrosis over the muscle flap was observed in 9 cases ([Table 4](#)).

All flaps with total or partial necrosis had antegrade flow. Regarding flap size, Abdelrahman et al.³³ examined the relationship between flap size and flap failure in their study of 64 patients but found no significant correlation.³³

Donor site morbidity

The most common donor site complications included delayed wound healing (15 cases)^{10,20,21,33} and wound dehiscence (15 cases).^{9,25,31,33,34} Other reported donor site morbidities included skin necrosis,^{22,23,27,30} hypertrophic scarring,³⁴ seroma formation,²⁵ fistula formation,³³ and cellulitis²⁵ ([Table 5](#)).

Surgical revisions

Twelve cases required surgical revision. One recipient site was regrafted,³² and one necrotic donor site was grafted.²⁷ Following flap necrosis, free flaps were performed in three cases,²⁵ and sural flaps in two instances.³¹ In one case, only the necrotic portion of the flap was excised.²⁷ One donor site wound dehiscence was sutured,²³ and one case required revision for hemostasis⁹ ([Table 6](#)).

Discussion

The extensor digitorum brevis (EDB) muscle is the only muscle with its belly located on the dorsum of the foot. It has a thin, trapezoidal, multipennate structure, and its function is generally considered redundant, acting synergistically with the extensor digitorum longus muscle²⁰ and inserting

Table 1

Summary of articles on EDB flap reported in the literature used for distal third lower limb reconstruction.

Author (first listed), year	Study design	No. Of Patients	Age (Mean)	Sex (M:F)	Follow up average (months)	Flap components	Flow direction	Defect location	Cause of defect	Defect size (cm ²)	Flap size (cm ²)
A Landi, 1985 ¹²	Case series	2	41	1:1	16	Muscle	2 A	2 medial malleolus	Traumas	\	\
D N Hing, 1987 ¹³	Case series	2	27	1:1	24	Muscle	2 A	medial malleolus, lateral malleolus	2 traumas	\	24
F N Gahhos, 1989 ¹⁴	Case series	3	58.6	3:0	3.3	Muscle	3 A	3 distal tibial region	\	\	18.8
P A Giordano 1989 ¹⁵	Case series	6	34.3	4:2	21	Muscle	6 A	4 ankles, 1 heel, 1 Achilles tendon	5 traumas, 1 postoperative dehiscence	8	\
S Kurata, 1991 ¹⁶	Case series	2	44.5	2:0	33.5	Muscle	2 R	dorsum of the foot, first metatarsal	2 burn injuries	\	20
V Babu, 1994 ¹⁰	Case series	2	17.5	1:1	10	Muscle + skin paddle	2 A	Achilles tendon	2 traumas	40	\
L A Gibstein, 1996 ¹⁷	Case series	5	32.4	4:1	\	Muscle	3 A; 2 R	2 lateral malleolus, second toe, fifth metatarsal, dorsolateral foot	2 traumas, 1 AVM, 2 rheumatoid arthritis-related ulcers	\	\
H Nettelblad, 1997 ¹⁸	Retrospective study	16	40.8	12:4	\	Muscle	16 A	7 Achilles tendon, 5 tibia, 1 tibial tendon, 1 ankle, 1 malleolus, 1 talus	13 postoperative dehiscence, 2 steroid injection, 1 electric burn	\	\
J Bakhack, 1998 ¹⁹	Case series	4	23	4:0	\	Muscle	2 A; 2 R	fourth toe, 2 big toes, medial foot	4 traumas	\	\
C H Pai, 2000 ²⁰	Retrospective study	10	50	8:2	12	Muscle	10 A	3 distal leg, 4 lateral malleolus, 1 medial malleolus, 1 anterior ankle, 1 anterolateral ankle	6 traumas, 3 ulcers, 1 osteomyelitis	26.6	\
Fouad M Ghareeb, 2002 ²¹	Retrospective study	12	\	\	19.5	Muscle	11 A; 1 R	\	6 traumas, 3 burns, 1 tumor, 2 ulcers	\	8

(continued on next page)

Table 1 (continued)

Author (first listed), year	Study design	No. Of Patients	Age (Mean)	Sex (M:F)	Follow up average (months)	Flap components	Flow direction	Defect location	Cause of defect	Defect size (cm ²)	Flap size (cm ²)
X. Martinet, 2003 ²²	Case series	15	48.6	10:5	\	Muscle	9 A; 6 R	5 medial malleolus, 1 lateral malleolus, 1 dorsum of foot, 2 big toes, 1 tibia, distal leg, base of 5th metatarsal, middle third of leg, plantar arch, lateral border of foot	3 tumors, 1 electric burn, 1 osteitis on hallux valgus, 4 open fractures, 1 third-degree burn, 1 exposure of fixation device, 1 fistulized osteitis, 1 ulcer, 1 vascular malformation, 1 Ledderhose disease	\	\
Y Hirase, 2003 ²³	Case series	8	30.5	8:0	8	Muscle	8 R	\	\	\	\
A Belmahi, 2005 ²⁴	Case series	6	20	2:4	48	Muscle	3 A; 3 R	3 big toes, 1 lateral border of the foot, 1 dorsum of foot, 1 burn toe	4 traumas, 1 osteomyelitis, 1 burn	27.5	\
D Chattar-Cora, 2006 ²⁵	Retrospective study	20	46.7	10:10	7.2	Muscle	20 A	1 Achilles tendon, 4 dorsum of the foot, 4 lateral malleolus, 5 medial malleolus, 6 anterior ankle	7 traumas, 4 postoperative arthroplasty dehiscence, 1 burn, 3 osteomyelitis, 1 pressure ulcer, 4 exposure of fixation device	\	\
AR Koul, 2008 ²⁶	Case series	2	30	2:0	13	Muscle	1 A; 1 R	1 big toe, 1 dorsum of the foot	\	\	\

(continued on next page)

Table 1 (continued)

Author (first listed), year	Study design	No. Of Patients	Age (Mean)	Sex (M:F)	Follow up average (months)	Flap components	Flow direction	Defect location	Cause of defect	Defect size (cm ²)	Flap size (cm ²)
A R Koul, 2009 ²⁷	Retrospective study	10	28.1	9:1	17.5	Muscle	5 A; 5 R	1 lateral malleolus, 3 medial malleolus, 2 dorsum of the foot, 1 extensor retinaculum, heel, 2 big toes	Traumas	19.7	\
C De Lope Falcón, 2009 ²⁸	Case series	2	43	1:1	6	Muscle	2 A	2 dorsum of the foot	lymphoblastic leukemia, postoperative Morton's neuroma	\	\
J K Kim, 2009 ²⁹	Case series	3	35	3:0	21	Muscle	3 R	3 big toes	1 electric burn, 1 friction burn, 1 diabetic ulcer	\	4.5
F Chateau, 2012 ³⁰	Retrospective study	52	58	35:17	\	Muscle	47 A; 5 R	22 medial malleolus, 10 lateral malleolus, 9 lower fourth of the leg, 4 Achilles tendon, 2 fifth metatarsal, 2 first metatarsophalangeal joint, 2 plantar arch, 1 lateral border of the foot	\	\	\
L R Torres, 2014 ³¹	Case series	11	38.9	9:2	30	Muscle	9 A; 2 R	4 lateral malleolus, first web space of the foot, 5 distal third of the leg, 1 dorsum of the foot	2 traumas, 8 post-traumatic osteomyelitis, 1 exposure of fixation device	9.8	\

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Table 1 (continued)

Author (first listed), year	Study design	No. Of Patients	Age (Mean)	Sex (M:F)	Follow up average (months)	Flap components	Flow direction	Defect location	Cause of defect	Defect size (cm²)	Flap size (cm²)
MT Houdek, 2016 ³²	Case series	11	48	6:5	10	Muscle	11 A	4 medial malleolus, 2 anterior ankle, 2 lateral malleolus, 1 dorsum of the foot + medial malleolus, 1 dorsum of the foot + lateral malleolus, 1 dorsum of the foot	Traumas	29	\
TM Noblet, 2018 ¹¹	Case series	2	84.5	0:2	12	Muscle	\	\	\	\	\
I Abdelrahman, 2018 ³³	Retrospective study	64	60	42:22	\	Muscle	64 A	23 distal tibia, 10 medial malleolus, 10 Achilles tendon, 7 lateral malleolus, 6 heel, 4 dorsum of the foot, 4 proximal tibia	\	\	12
A Woussen, 2021 ⁹	Retrospective study	14	51.4	11:3	\	Muscle	14 A	6 medial malleolus, 8 distal fourth of the leg	Traumas	\	\
A Haq, 2021 ³⁴	Retrospective study	12	30.8	10:2	\	Muscle	12 R	\	Traumas	20.2	\

M, Male; F, Female; A, Anterograde; R, Retrograde.

Table 2
Number of cases and percentage of defect causes.

<i>Cause of defects</i>	<i>N. of cases (n = 296)</i>	<i>Percentage (%)</i>
Trauma	93	31.42%
Post-surgical dehiscence	18	6.08%
Osteomyelitis/infection	15	5.07%
Burns	12	4.05%
Chronic ulceration	10	3.38%
Exposure of fixation device	6	2.03%
Cancer	4	1.35%
Arteriovenous malformation	2	0.68%
Steroidal injection	2	0.68%
Ledderhose disease	1	0.34%
Lymphoblastic leukemia	1	0.34%
Morton's neuroma	1	0.34%
Unknown indication	131	44.26%

Table 3
Number of cases and percentage of defect location.

<i>Defect location</i>	<i>Number of cases (n = 296)</i>	<i>Percentage (%)</i>
Medial malleolus	59	19.93%
Distal third of the leg	58	19.59%
Lateral malleolus	36	12.16%
Achilles tendon	25	8.45%
Dorsum of the foot	19	6.42%
Ankle	15	5.07%
Hallux	15	5.07%
Calcaneus	9	3.04%
Proximal third of the leg	4	1.35%
5th metatarsal	4	1.35%
Plantar arch	3	1.01%
Lateral border of foot	3	1.01%
Middle third of the leg	1	0.34%
Tibialis tendon	1	0.34%
Extensor retinaculum	1	0.34%
Medial border of foot	1	0.34%
Dorsum of foot + lateral malleolus	1	0.34%
Dorsum of foot + medial malleolus	1	0.34%
Unspecified malleolus	1	0.34%
1st metatarsal	1	0.34%
1st web space of toes	1	0.34%
2nd toe	1	0.34%
4th toe	1	0.34%
Unspecified toe	1	0.34%
Not specified site (lower limb)	34	11.49%

into the long extensor tendons of the four medial toes.⁸ Anatomically, it lies deep to the extensor digitorum longus tendons and lateral to the extensor hallucis longus tendon.⁸ The muscle originates from the superolateral surface of the calcaneus and from the lateral talocalcaneal and cruciate crural ligaments, collectively referred to as the “tarsal sinus”, and divides into four bellies, each terminating in a tendon that inserts on the lateral aspect of the tendons of the long extensors of the hallux and the middle three toes.^{20,35}

The EDB is typically supplied by a dominant pedicle (the lateral tarsal artery) and up to four minor pedicles, corresponding to a type II vascular pattern according to the Mathes-Nahai classification.^{36,37} In certain anatomical variants, a type III vascular pattern may be present, with a codominant pedicle

Table 4
Number of cases and percentage of flap complications.

<i>Flap complications</i>	<i>N. of cases (n = 296)</i>	<i>%</i>
Total necrosis of the flap	13	4.39%
Partial necrosis	6	2.02%
Graft necrosis	9	3.04%
Infection	4	1.35%
Wound dehiscence	4	1.35%
Bleeding	2	0.68%
Fistula	1	0.34%
Pyoderma gangrenosum	1	0.34%
Chronic pain	1	0.34%
Chronic osteoarthritis	1	0.34%
Septic pseudoarthrosis	1	0.34%

Table 5
Number of cases and percentage of donor-site morbidities.

<i>Donor site morbidities</i>	<i>N. of cases</i>	<i>%</i>
Delayed wound healing	15	5.07%
Wound dehiscence	15	5.07%
Skin necrosis	6	2.03%
Hypertrophic scarring	4	1.35%
Graft necessity	3	1.01%
Sieroma	3	1.01%
Fistula	2	0.68%
Cellulitis	1	0.34%

Table 6
Number of cases and percentage of surgical revision management.

<i>Surgical revision</i>	<i>N. of cases (n = 296)</i>	<i>Percentage (%)</i>
Donor site regrafting	1	0.34%
Recipient site regrafting	1	0.34%
Free flap	3	1.03%
Lororegional flap (Sural Flap)	2	0.68%
Hemostasis	1	0.34%
Surgical toilette	1	0.34%
Recipient Site Suture	1	0.34%
Not specified (NS)	2	0.68%

originating from a perforator of the peroneal artery,² allowing the harvesting of a laterally based pedicled flap.^{12,14,35,36,38} Venous drainage occurs via the venae comitantes of the dorsalis pedis artery,³ and innervation is mainly supplied by the lateral branch of the deep peroneal nerve, with potential accessory innervation from the accessory peroneal nerve in rare cases.³

Although the EDB has been used as a free flap for facial reanimation,^{3,4} hand soft tissue coverage,⁵ and functional restoration of the hand,^{6,7} its most established indication remains its use as a pedicled flap for small- to medium-sized defects in the distal lower limb, especially in the ankle and foot region.⁸

This systematic review analyzed 26 studies published from 1987 to 2024, aiming to evaluate the clinical applications, outcomes, and complication rates of pedicled EDB flaps. Its goal was to highlight the effectiveness of this pedicled flap in reconstructing small to medium defects in the distal third of the lower limb.

The weighted average age of patients undergoing EDB flap reconstruction was 48.2 years, reflecting a predominantly middle-aged population, frequently affected by trauma or chronic ulcers in the distal

lower limb. Flap sizes varied considerably, but the average flap size was 14.55 cm², confirming its suitability for relatively small defects.

Although the risk of complications and donor site morbidity has limited the widespread use of the EDB flap, our findings suggest that these risks can be mitigated through appropriate patient selection and careful preoperative planning.

In our review, total flap necrosis occurred in 13 cases (4.39%) and partial necrosis in 6 cases (2.2%). These rates align with those reported by Moura et al.,³⁵ who noted a total and partial flap failure rate of 5.2% and 4%, respectively. Notably, in both analyses, all cases of flap necrosis were exclusively associated with antegrade-flow flaps.³⁵ Flap size was not significantly associated with flap failure.³³

Although donor-site complications were frequently cited as a concern in the literature,⁹ most studies report low rates of significant functional morbidity. In our data, delayed wound healing and wound dehiscence at the donor site occurred in 5.07% of cases, respectively, findings consistent with previous reports³⁵ (7.3% and 5.4%, respectively), supporting the flap's acceptable donor site profile. These complications can typically be managed with advanced dressings for autolytic or enzymatic debridement or negative pressure wound therapy (NPWT), often without the need for major additional surgeries.³⁹ While donor site complications have historically raised concerns,⁹ most studies included in this review reported low rates of functionally significant morbidity.

Although anatomical variations exist, the vascular inflow to the EDB is generally reliable. Therefore, preoperative imaging is not mandatory in patients without severe peripheral arterial disease (PAD).⁴⁰ However, given the risk of necrosis and the frequent traumatic context, we recommend at least a preoperative Doppler ultrasound. In cases of high-energy trauma or suspicion of vascular injury, a CT angiogram is recommended to assess for single-vessel status, particularly involving the anterior tibial artery, which is susceptible to early atherosclerotic changes.¹⁸

Contraindications for EDB flap include high-energy open trauma or comminuted foot fractures (due to potential EDB muscle damage), recent compartment syndrome, and advanced PAD.³²

Reconstruction of the distal third of the lower limb is inherently difficult, and microsurgical free flaps are often necessary. Nevertheless, compared with free tissue transfer, the pedicled EDB flap offers several advantages, including reduced operative time and hospital stay, avoidance of microsurgical expertise, and ease of harvest due to its superficial location and consistent blood supply.^{2,8,35}

Moreover, the role of the EDB flap can be better appreciated when compared with other commonly used locoregional options for distal lower limb reconstruction, such as the reverse sural flap and perforator-based propeller flaps. The reverse sural flap provides a wide arc of rotation and a large skin paddle, making it suitable for extensive defects, but at the expense of bulkier appearance and more evident donor-site morbidity. In contrast, the EDB flap offers a thinner and more pliable tissue, better suited for ankle and foot reconstruction, with limited donor-site impact. Although propeller flaps allow tailored reconstruction based on individual perforators, they require meticulous dissection and are affected by considerable anatomical variability. Owing to the consistent anatomy of the lateral tarsal artery, the EDB flap represents a technically simpler and more predictable option for small-to-medium defects, particularly in patients for whom lengthy or complex microsurgical procedures are not advisable.

Nonetheless, the flap has limitations: its arc of rotation is limited, anatomical variability can affect its feasibility, and donor site healing must be carefully considered. However, with appropriate patient selection, preoperative planning, and technical precision, the EDB flap remains a reliable and effective option for covering medium-to-small defects of the distal leg and foot, particularly when microsurgery is not feasible. Its straightforward harvesting and low functional morbidity further reinforce its value.

This review has some limitations. Single-case reports were excluded, and outcome reporting across studies lacked standardization. A significant limitation is the low level of evidence of the included literature, which consisted primarily of retrospective case series (Level of Evidence IV). This lack of prospective data and control groups introduces potential selection and recall bias, implying that the conclusions drawn regarding the efficacy of the EDB flap should be interpreted as descriptive trends rather than high-grade evidence-based recommendations. Additionally, due to data heterogeneity, we could not calculate pooled complication rates or standard deviations, reducing the quantitative strength of the analysis. Future prospective studies with standardized outcome measures are needed to better define the role of the EDB flap in lower limb reconstructive algorithms.

Conclusion

The pedicled extensor digitorum brevis (EDB) flap represents a valuable reconstructive option for small- to medium-sized soft-tissue defects of the distal lower limb, particularly in the ankle and foot regions. Its predictable anatomy, ease of harvest, and low functional morbidity make it an effective alternative to free flaps, especially in patients who are not ideal candidates for microsurgical procedures.

Despite historical concerns about donor-site morbidity and flap viability, our review reveals complication rates consistent with those reported in the literature. Notably, flap necrosis was limited to antegrade-flow flaps, and donor-site complications were typically minor and easily managed.

With appropriate patient selection, preoperative vascular assessment, and adherence to surgical principles, the EDB flap remains a safe and effective option. It should be considered a first-line or valuable alternative in resource-limited settings where microsurgical equipment is unavailable, for elderly or comorbid patients who cannot tolerate the prolonged anesthesia times required for free tissue transfer, and in cases requiring coverage of small-to-medium defects of the ankle and foot. Further high-quality prospective studies are required to better define its role in modern reconstructive algorithms.

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Ethical approval

Not required.

Declaration of competing interest

None declared.

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