



A STUDY ON THE UTILITY OF DISTALLY BASED PERONEUS BREVIS MUSCLE FLAP IN LOWER LIMB RECONSTRUCTION IN A TERTIARY CARE HOSPITAL

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ABSTRACT

Background: Soft tissue defects in distal one-third of leg and ankle have always been a challenge for reconstructive surgeons. Limited options of loco-regional flaps, scars of previous surgeries, prolonged operative time, and limited number of vessels for free flap transfer are the major concerning factors in these defects. The use of local pedicled flaps for coverage is one option for treatment in patients who are not willing or fit enough to undergo free tissue transfer. We have used the Distally Based Peroneus Brevis Muscle Flap as a good option for coverage of small to medium-sized defects of lower leg and heel, thereby reducing the risk of osteomyelitis, protracted hospital stay and early mobilization. **Study design:** Prospective, interventional, institution based, conducted at Apollo Multispeciality Hospitals, Kolkata, India. **Method:** Our study includes 10 patients operated over a period of 1 year; all patients underwent wound coverage with distally based Peroneus Brevis muscle flap; all patients were followed up for 1 year, without any significant complications. **Conclusion:** The distally based peroneus brevis muscle flap is a safe option with reliable anatomy for small to moderate sized defects around the distal 1/3rd leg defects.

KEYWORDS : lower limb defects, distally based, peroneus brevis muscle.

INTRODUCTION

Soft tissue coverage of defects of distal third of leg and heel poses a challenge to the plastic surgeons in view of limited elasticity of the local skin, scanty soft tissue and precarious vascularity.[1] Despite a number of local cutaneous, fascial, fascio-cutaneous, muscle and free flaps, reconstruction of these defects is associated with a high rate of complications. [2] The peroneus brevis muscle flap has not only been proved to be a valuable option but also a standard workhorse flap for coverage of small to moderate sized defects around the ankle.

Peroneus brevis muscle flap has reliable anatomy, robust vascular supply, acceptable donor site scar and can be easily harvested. Hence it has wide application in lower limb reconstruction.[3,4] The muscle has been successfully applied for coverage of small and moderate sized defects of the posterior heel, Tendo Achilles, medial and lateral malleoli, and exposed implants.[5]

Peroneus brevis is located in the lateral compartment of leg, deep and anterior to the Peroneus Longus. Muscle origin is from the middle and lower one-third of the lateral surface of fibula, anterior and posterior inter-muscular septum, and inserts at the styloid process at the base of the fifth metatarsal. Nerve supply is by the superficial peroneal nerve (L5, S1). Peroneus brevis is classified as both type II and type IV muscle in literature [6]. This flap was originally thought of having class II vascular pattern but was later reclassified to type IV. Various cadaveric studies also supported this type IV vascular pattern.

We present our experience with 10 patients who underwent successful coverage of soft tissue and bony defects of distal third of leg and ankle using distally based peroneus brevis muscle flap.

METHODOLOGY:

This prospective, interventional, institution based study was conducted at Apollo Multispeciality Hospitals, Kolkata, and included 10 patients with soft tissue defects in the distal third of leg, in the age group of 20-70 years, operated over a period of 1 year – during January 2021 to December 2021 and were followed up for 1 year without any serious complications. All the defects were covered by a distally based peroneus brevis muscle flap followed by split skin grafting. All patients were recorded for flap failure, early and late postoperative complications, and long-term ambulatory status.

RESULTS

The mean operating time was 75 (60–90) min for flap harvest and inset. All the flaps survived well, only one patient developed partial skin graft loss and achieved complete healing by regular dressings. No donor site morbidity was observed. Long term follow up demonstrated all patients ambulating independently after an average of 6 months.

Table 1 – General Details

SERIAL NO	AGE IN YEARS	SEX	LOCATION OF DEFECT	COMPLICATIONS
1	22	M	MEDIAL MALLEOLUS	NIL
2	25	M	TENDO ACHILLES	NIL
3	38	M	TENDO ACHILLES	NIL
4	42	F	DISTAL 1/3 TIBIA	PARTIAL SKIN GRAFT LOSS
5	35	M	LATERAL MALLEOLUS	NIL
6	26	M	TENDO ACHILLES	NIL
7	28	M	LATERAL ANKLE	NIL
8	51	M	TENDO ACHILLES	NIL
9	47	M	TENDO ACHILLES	NIL
10	65	M	TENDO ACHILLES	NIL

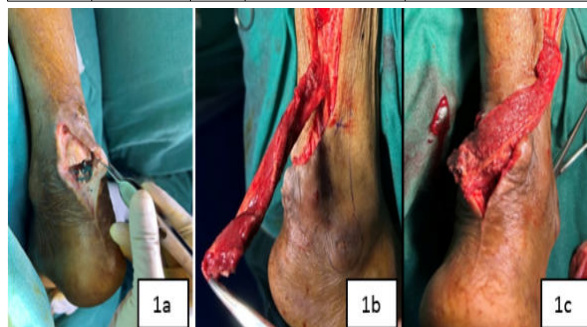


Figure 1a – non healing wound overlying Achilles tendon, 1b – distally based peroneus brevis muscle harvest, 1c – muscle flap covering the defect.



Figure 1d – after flap inset and split skin grafting on muscle, **1e** – healed wound after 6 weeks.

CONCLUSION

The distally based peroneus brevis flap is a useful reconstructive option for small to medium-sized distal one-third leg defects, with acceptable complications and high degree of reliability, versatility, minimal donor site morbidity, less operating time, low cost and good functional gain. As surgeons consider the reconstructive ladder for lower extremity trauma, a distally based peroneus brevis muscle flap might be a more suitable option in certain patients and should not be overlooked in the modern era of microvascular reconstruction.

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