

A Thin and Short Muscle Flap Acted as a Savior for A Child's Calcaneal Defect: A Case Report

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Abstract

Case Report

Managing, a distal leg defect is reconstructive challenge for any plastic surgeon. With the advent of microsurgery, the work horse flap for this area shifted from cross leg to free and local perforator flaps. Children with such defects pose a bigger problem because of smaller caliber of vessels, difficult immobilization and poor compliance. We, hereby, report a case of a 12 year old child who had an exposed distal half of calcaneum, which warranted a cross leg or free flap, but was managed successfully by distally based peroneus brevis muscle.

Keyword: peroneus brevis flap, calcaneal defect in child, muscle flap.

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INTRODUCTION

Managing, a distal leg defect is reconstructive challenge for any plastic surgeon. With the advent of microsurgery, the work horse flap for this area shifted from cross leg to free and local perforator flaps. Children with such defects pose a bigger problem because of smaller caliber of vessels, difficult immobilization and poor compliance. We, hereby, report a case of a 12 year old child who had an exposed distal half of calcaneum, which warranted a cross leg or free flap, but was managed successfully by distally based peroneus brevis muscle

CASE REPORT

A 12 year old child reported to emergency of our hospital with history of degloving injury over right distal leg and ankle. He was unable to bear weight on that leg. His x rays showed fracture of calcaneum and medial cuneiforms. After initial emergency management, the child was taken to OT, where the wound was washed, debrided and orthopedic team, under General Anesthesia did K wire fixation. Regular dressing were done for 2

days but the child compliance was very poor. There after 2 cycles of Negative Pressure Wound Therapy were applied on the wound on out patient basis. At the end of 15 days, the wound had healthy granulation tissue with distal part of calcaneum and small part of cuboid bone exposed (Picture-1). Because of child's uncooperative nature, decision about flap surgery was careful analysed. The child was taken under general anesthesia and both legs were cleaned draped. We extended the proximal margin of already existing wound and opened lateral compartment of leg. Saving peroneus longus and superficial peroneal nerve, we dissected distally based peroneus muscle in the suprapariosteal plane till 6cm from head of lateral malleolus (Picture-2). The reach of Peroneus brevis was sufficient to cover the exposed calcaneum (Picture-3) and rest of raw area was skin grafted (Picture-4).

Postoperatively the muscle flap healed very well and the child was discharged on 5th postoperative day. 6 months follow up shows well healed area with good weight bearing.



Picture: 1) Defect showing exposed distal calcaneum and part of cuboid bone on right foot picture, 2) Raised peroneus brevis by extending the incision proximally and saving peroneus longus tendon picture. 3) Muscle flap reaching to cover the defect fully picture. 4) Final picture after putting meshed split thickness skin graft

DISCUSSION

Decision on flap cover depends on multiple factors like type of defect, structures exposed, need of secondary surgery etc. Concepts like reconstructive triangle or elevator helps us at reaching to the final flap choice. In spite of this sometimes, worry some situation as an uncooperative child warrants our decisions. In this case, distal calcaneum was the critical defect portion needing flap cover. A thin short muscle like peroneus brevis raised from the locoregional area and sufficing the critical portion of the defect, proved to be a savior for us. The literature [1, 2] depicts usefulness of this flap in lateral malleolus, anterior ankle, anterior lower 1/3rd leg. Bajantri et al do not support the use of this flap for medial malleolus defect, because of shortness in length [3]. This flap is very robust for patients with diabetes as it is proposed that diabetic angiopathy affects minimally on perforators of peroneus brevis as compared to other cutaneous or muscular perforators in this area [4]. Though mentioned as type 2 muscle flap by Mathes and Nahai classification [5], the blood supply of this muscle is now considered neither type 2 nor type 4. Taylor et al., [6] and Lyle et al., [7] suggests that this muscle has an axial vessel system on the posterior side of the muscle. Our decision to use distally based peroneus brevis flap, in this child was very successful and comfortable, both to us as well as patient. By doing this flap, we were able to decrease the operative time to 40 minutes, avoid

immobilization and meticulous free flap microsurgery. The functional and cosmetic result of the flap remained satisfactory. No functional instability is shown to have occurred in past, if peroneus longus tendon is preserved [8]. We suggest the use of peroneus brevis distally based flaps for defects around ankle were critical defect is less than 4cm, as also suggested by Bajantri et al., [3].

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