



A Case Report of a Double Intrinsic Muscle Flap for the Reconstruction of Lateral Forefoot Wound in a High Risk Patient: Extensor Digitorum Brevis and Abductor Digiti Minimi

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Statement of Purpose

Wound defects to the distal foot remain a challenge to heal especially with exposure of tendon and/or bone. Both the extensor digitorum brevis (EDB) and the abductor digiti minimi (ABDM) muscle flaps are often small in bulk. Although they can be used in isolation to cover a wound, we have found favorable results with using them in conjunction for lateral forefoot wounds to increase durability to withstand weightbearing stresses to the forefoot. This case study demonstrates how both the extensor digitorum brevis and the abductor digiti minimi can be used in conjunction to more sufficiently cover a lateral forefoot wound.

Case Study

One patient who developed a lateral forefoot wound secondary to gas gangrene is included in this study. Due to destruction of the tissue from the infectious process, a large lateral wound measuring 4 x 4 x 1.5 cm including 5th metatarsal head resection was the result after debridement. Due to the depth and size of the wound after removal of infection, decision was made to perform a combined flap for quick and adequate closure of defect.

Procedures

Reverse abductor digiti minimi flap and extensor digitorum brevis flap while elevating the plantar lateral fascia to further decrease the size of the wound prior and provide a vascularized wound bed prior to applying a synthetic bilayer graft.

Results

100% survival of the compound flap without recurrence of ulceration at 15 month follow-up. Unfortunately, patient did have a charcot event following the healing of the wound although this did not result in recurrence of ulceration.

Discussion

There are several surgical techniques described by the orthoplastic literature that can be utilized to cover forefoot wounds. Some included, although not limited to, are anterograde and reverse-flow dorsalis pedis fasciocutaneous flaps, lateral tarsal artery flap, isolated intrinsic muscle flaps, and dorsal metatarsal V-Y advancement flaps. Fasciocutaneous and adipofascial flaps have advantage of less morbidity from no biomechanical influence, however muscle flaps have been proven to be better vascularized especially for those with peripheral arterial disease and can provide more bulk for deep defects than fasciocutaneous flaps. In the foot, especially with diabetics, unfortunately this is not always true and muscle flaps can be atrophic and/or fatty infiltrated. In this case study, with a patient with peripheral arterial disease and poorly-controlled diabetes mellitus, doing a combined intrinsic muscle flap optimized the patient for healing a deep lateral forefoot wound. Together they had the benefit of good perfusion being both muscle flaps, as well as offering dual bulk considering the diabetic atrophy of the muscles.

References

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Financial Disclosures

None

Figure 1. Pre-operative clinical picture



Figure 2. Proximally released muscle flaps



Figure 3. Turn-down of ABDM & EDB



Figure 4. Inset of both flaps



Figure 5. Healed

