

STATEMENT OF PURPOSE

Lateral midfoot wounds are common in neuropathic patients. The purpose of this study is to present a technique for double local foot muscle flaps (abductor digiti minimi and flexor digitorum brevis) for coverage of soft tissue defects at the lateral midfoot.

Level of Evidence: V, Case Study

INTRO

- Neuropathy can be present for a multitude of reasons, with the most prevalence being in patients with diabetes
- In patients with diabetes, ulcerations precede 85% of amputations.
- Common locations for neuropathic foot ulcers include the digits, the 5th metatarsal base, and heel ulcerations.
- Ulcer located at the plantar lateral 5th metatarsal base are may be due to biomechanical deformities such as a cavovarus foot type or from pressure

CASE STUDY

87M with history of vascular disease and neuropathy and prior right below knee amputation presented with a left foot wound at the lateral 5th metatarsal base. There had been prior attempts at conservative management with clinic wound debridements and synthetic grafting but the wound would recur once the patient began weightbearing, even in custom shoe gear. The patient presented with a wound that probed to bone but did not appear acutely infected (figure 1). We discussed conservative versus surgical options and the patient opted for surgical management at this point.

CASE STUDY

In the OR, exposed 5th met base was excised and bone biopsies (figure 2) were performed and sent for culture and pathology. Both were negative for infection/osteomyelitis.



Figure 1. Aug 2021
Clinical Presentation



Figure 2. Aug 12, 2021
S/p Bone excision and biopsy

Vascular surgery performed an angiogram showing patent posterior tibial and peroneal arteries. We decided to pursue limb salvage and use local muscle flaps for wound coverage - flexor digitorum brevis and abductor digiti minimi muscles, as they were in close proximity and are both supplied by branches of the posterior tibial artery.

No tourniquet used. Our technique used an incision distal to the wound along the glabrous junction of the 5th metatarsal to expose the abductor digiti minimi (ADM) and flexor digitorum brevis (FDB) muscles. We isolated FDB (figure 3), dopplering the dominant pedicle. FDB was reflected at the most distal segment to allow enough length to be rotated 180 degrees, while continuing to have dopplerable signal. This covered the superior portion of the defect.

The ADM muscle pedicle was then dopplered out and the muscle was reflected and lateralized, covering the remaining inferior aspect (figure 4). The glabrous junction was primarily closed (figure 5).

CASE STUDY



Figure 3. Aug 18, 2021
Flexor Digitorum Brevis



Figure 4. Aug 18, 2021
Abductor Digiti Minimi



Figure 5. Aug 18, 2021

One week later, we returned to the OR for a split thickness skin graft (figure 6).



Figure 6. Aug 24, 2021
Split thickness skin graft

At 1 year, limb salvage is successful. Patient weight-bears on left foot and ambulates with cane and right prosthetic leg.

LITERATURE REVIEW

- Lower extremity wounds are notoriously difficult to heal in patients with neuropathy and deformity
- Coverage options for wounds include: synthetic and skin grafting, free flaps, pedicled flaps, and perforator propellor flaps
- Propellor perforating flaps have become a great alternative for wound coveragesince they allow for use of local muscle and have low donor site morbidity

CONCLUSION

- Ulcerations located at the lateral 5th metatarsal styloid process are often due to pressure in a neuropathic patient with a prominent 5th metatarsal base or a cavovarus foot deformity
- With infection and bone resection, the peroneus brevis insertion is often lost, only potentiating the cavovarus deformity
- Traditional lower limb reconstruction includes muscle, microvascular, and perforator flaps.
- To reduce donor-site morbidity, local foot flaps have become good options for limb salvage.

REFERENCES

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