

Definitive Coverage and Closure of a Full-Thickness Diabetic Foot Ulcer with a Next Generation Decellularized Dermal Allograft

Randal Lepow, DPM, FACFAS, WCC
Houston, TX
Board Certified, American Board of Foot & Ankle Surgery

Akashdeep Singh, DPM
Houston, TX
Podiatric Medicine and Surgery Resident PGY-II

Surgical Summary

Clinical Presentation:

- 42-year-old male with significant medical history of diabetes and a non-healing diabetic foot ulcer of one year duration presented to the Emergency department with complaints of chills and fever.
- Physician exam revealed a necrotic, full-thickness diabetic foot ulcer involving the lateral dorsal aspect of the left foot. The ulcer extended from the base of the proximal phalanx and encompassed the fifth metatarsal. (Figure 1)
- Other findings included:
 - Malodorous purulent exudate
 - Erythema
 - Crepitus
- Standard radiographs revealed soft tissue emphysema within the lateral aspect of the left foot and osseous erosions of the fifth metatarsal suggesting osteomyelitis.
- MRI revealed osteomyelitis of the fifth metatarsal.

Intraoperative Findings:

- Surgical debridement revealed a full-thickness ulcer with extensive necrotic tissue. The DFU measured 7 cm x 4 cm x 3 cm. (Figure 2)
- Fifth metatarsal noted to have black discoloration with surrounding tissue gray and nonviable. The bone was soft in nature and nonviable, consistent with MRI findings.



Figure 2. Initial surgical debridement.



Figure 1. Initial clinical presentation.



Figure 3. Subsequent surgical debridement.

Surgeon Perspective:

“DermaPure[®] facilitates the body to engage in the repair process by initiating a cellular response.”

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Surgical Procedure:

- Surgical debridement completed to remove extensive necrotic tissue. (Figure 2)
- Four days post initial surgical debridement, a subsequent surgical debridement performed to remove additional necrotic tissue with amputation of the fifth metatarsal. (Figure 3) Due to the need for coverage and closure, DermaPure[®] decellularized dermal allograft was applied. (Figure 4)
- The surgical site was dressed with Adaptic[®] nonadherent contact layer, followed by a gauze bolster.



Figure 4. Application of DermaPure[®].



Figure 5. Week one post application of DermaPure[®].



Figure 6. Week five post application of DermaPure[®].



Figure 7. Week 17 post application of DermaPure[®].

Post-Operative Notes:

- Week one post-op: DermaPure[®] appeared to be taking well, firmly adhered to wound bed. (Figure 5) Bolster discontinued. Subsequent dressings maintained a moist wound environment.
- Week five post-op: DermaPure[®] showed substantial integration with reduction in surface area and significant depth fill. (Figure 6)
- Week 17 post-op: 100% closed with healthy regeneration of tissue, minimal fibrosis and cosmetically pleasing results. (Figure 7)

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