

# Utilization of a Next Generation Decellularized Dermal Allograft to Provide Coverage and Closure in a Right Lower Diabetic Foot Ulcer (Secondary to a Suspected Brown Recluse Spider Bite)

Abhin Kumar DPM, Mansfield, TX *Board Certified, American Board of Podiatric Medicine*

## Surgical Summary

### Clinical Presentation:

- A 59-year-old male with a medical history of type 2 diabetes mellitus, hypertension, hyperlipidemia and glaucoma presented to the emergency department with fever, erythema and swelling to his right lower leg and foot. He stated his symptoms began 4 days prior while moving heavy furniture. He denied any trauma to his right lower leg and foot, and was unsure of any insect bites.
- Initial exam of his right foot revealed erythema that was warm to touch across the dorsum and streaked proximally. There was desquamation and a necrotic area with underlying fluctuance on the dorsum of the right foot (Figure 1). No malodor noted. X-rays were negative for any osseous involvement.
- He was initiated on intravenous (IV) antibiotics and was taken to the OR for multiple incision and drainage (I & D) procedures. These were performed every three days while hospitalized. He was discharged home with no signs or symptoms of wound infection and was seen in the office for follow-up wound care. VAC® therapy was added to promote healing. Despite four weeks of VAC® Therapy, the wound failed to progress.
- A decision was made to add DermaPure®, a decellularized dermal allograft, to provide coverage and closure.

### Intraoperative Findings (in the OR, DermaPure® application):

Full-thickness ulceration to the dorsal aspect of the right foot with exposed extensor tendons, with 50% fibrotic and 50% granular wound base. The wound measured 6.0 cm x 6.0 cm x 0.4 cm (Figure 2).

DERMA [PURE]  
dCELL technology

Figure 1.



Figure 2.



Figure 3.



# Utilization of a Next Generation Decellularized Dermal Allograft to Provide Coverage and Closure in a Right Lower Diabetic Foot Ulcer (Secondary to a Suspected Brown Recluse Spider Bite)

Abhin Kumar DPM, Mansfield, TX *Board Certified, American Board of Podiatric Medicine*

## Surgical Procedure:

- The right lower extremity was draped/prepped in the usual sterile fashion.
- The right dorsal foot soft tissue deficit was debrided and irrigated with a pulsed lavage unit. Surgical debridement revealed a full-thickness ulceration to the dorsal aspect of the right foot with exposed extensor tendons, with 50% fibrotic and 50% granular wound base. The wound measured 6.0 cm x 6.0 cm x 0.4 cm (Figure 2).
- One 4 cm x 6 cm DermaPure® decellularized dermal allograft, meshed 2:1 was applied to the soft tissue deficit. A second 4 cm x 6 cm DermaPure® decellularized dermal allograft, meshed 2:1 was applied as a bilayer due to the extent of the exposed extensor tendons. The grafts were affixed with staples at the wound margins (Figure 3). A non-adherent contact layer and Bacitracin were applied, then bolstered with VAC® Therapy.

Figure 4.



Figure 5.



Figure 6.



Figure 7.



Figure 8.



## Post-Operative Notes:

- Week one post-op, good graft take noted. VAC® Therapy continued.
- Week three post-op, graft 80% integrated and wound showed significant decrease in size. VAC® Therapy discontinued (Figure 4). Performed a surgical debridement and applied a 4 cm x 6 cm DermaPure® decellularized dermal allograft, meshed 2:1 for added soft tissue supplementation. The graft was bolstered with a non-adherent contact layer and a moistened gauze dressing. Good graft take noted one week later (Figure 5).
- Week seven post-op, significant integration of DermaPure® noted, with robust granular tissue (Figure 6).
- Week 12 post-op, full integration of DermaPure® noted. Significant decrease in wound size (Figure 7).
- Week 16 post-op, wound completely epithelialized with slight hyperpigmentation on dorsal foot (Figure 8).

## Surgeon Perspective:

*“DermaPure® provided excellent coverage for this extensive wound needing replacement of tissue. In my experience with this type of soft tissue defect, this patient experienced a faster rate of healing.”*