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Utilization of a Next Generation Decellularized Dermal Allograft to Provide Coverage and Promote Angiogenesis in a Lower Extremity Soft Tissue Defect after Aggressive Debridement for Necrotizing Fasciitis

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Surgical Summary

Clinical Presentation:

- 58-year-old male, with diabetes, developed a rapidly progressing necrotizing soft tissue infection to his left lower extremity after wade fishing in salt water.
- Treatment consisted of systemic antibiotics and, for one week, daily aggressive surgical debridements to remove necrotic soft tissue.
- As a result of the necrotizing infection, the patient sustained significant soft tissue loss involving more than 85% of his left lower extremity, rendering exposed tendon, muscle, and fascia, with a depth of 8mm.
- At week four of hospitalization, the patient underwent tissue replacement surgery, utilizing DermaPure® (a decellularized dermal allograft) to provide coverage of these structures.

Intraoperative Findings (Tissue Replacement Surgery):

- Soft tissue defect to left lower extremity with exposed tendon, muscle, and fascia (Figures 1 and 2).

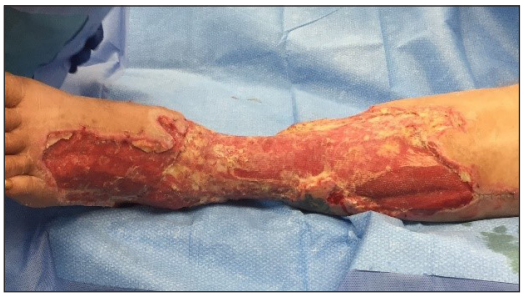

Figure 1. In the O.R. prior to application of DermaPure®.

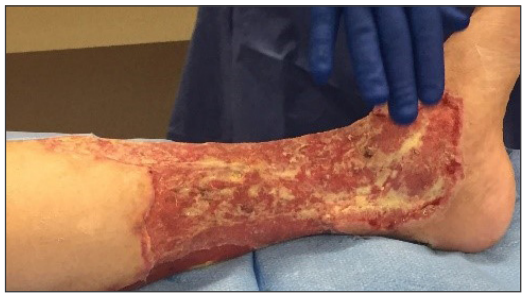

Figure 2. In the O.R. prior to application of DermaPure®.

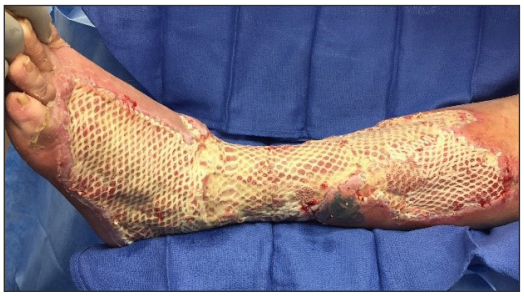

Figure 3. DermaPure® Week 1 Post Application.

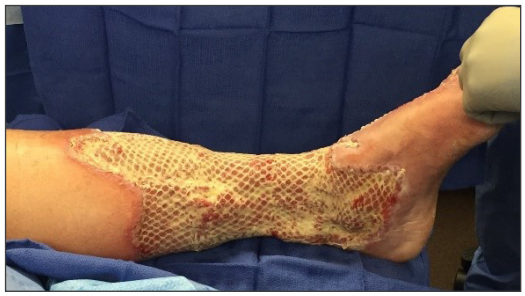

Figure 4. DermaPure® Week 1 Post Application.

Surgeon Perspective:

"I believe using DermaPure® definitely sped up the healing process in this diabetic patient by several weeks, if not months. It also allowed for improved aesthetic results by decreasing the wound depth prior to coverage with a split thickness skin graft."

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Surgical Procedure:

- Six DermaPure® decellularized dermal allografts (7 cm x 10 cm) meshed 3:1 using a non-crushing mesher were applied to the left lower extremity (Figures 3 and 4). Meshing was done to expand the surface area coverage.
- All dermal allografts were secured with absorbable sutures. A non-adherent contact layer was placed over the allografts. The entire area was bolstered with V.A.C.® Therapy for seven days.

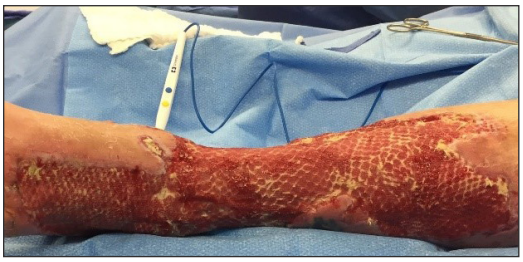

Figure 5. Week two, post-application of DermaPure®.

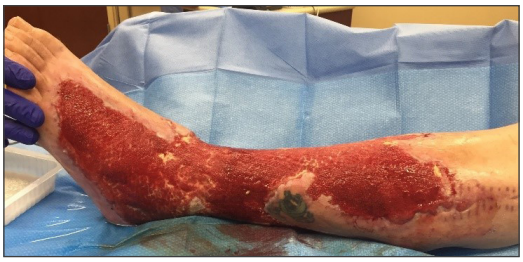

Figure 6. Week three, post-application of DermaPure®.

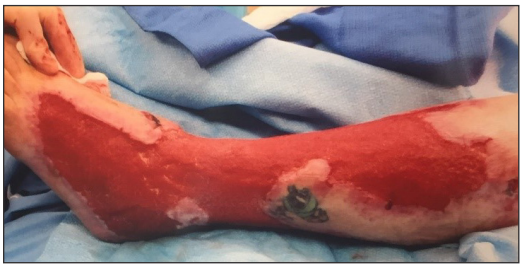

Figure 7. Week seven, post-application of DermaPure®.

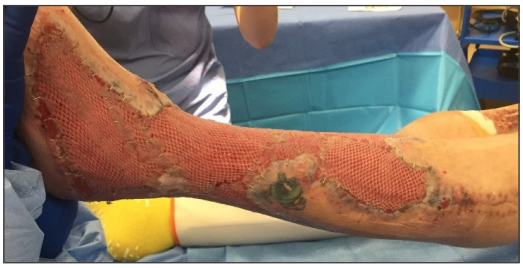

Figure 8. Week seven, post-application of DermaPure®, definitive closure with STSG.

DermaPure® Application

(6) 7 cm x 10 cm, Meshed 3:1

Basement Membrane Outer-Most

Post-Operative Notes:

- V.A.C.® Therapy dressing changed every seven days for eight weeks.
- Discharged home nine days after application of DermaPure® due to significant reduction in pain.
- Successful integration of DermaPure® was noted at week two, with substantial angiogenesis and depth fill by week three and beyond (Figures 5, 6, and 7).
- Definitive closure with STSG at week seven, post-application of DermaPure® (Figure 8).

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