

Limb Salvage in an Elderly Patient with Extensive Lower Extremity Burns with Bioresorbable Antimicrobial Matrix Over Dermal Matrix

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Introduction

- Limb salvage in patients with extensive lower extremity burns is particularly challenging due to **high infection risk and limited options for durable coverage** and functional restoration.
- Published data has demonstrated the **potential for an antimicrobial bioresorbable matrix to enhance healing** in diabetic patients with lower extremity ulcers at high risk for infection and limb loss.
- This case highlights the application of such a matrix with the primary goal of limb salvage in an elderly patient with complex burn injuries.

Methods

- Serial excisions were performed with debridement of necrotic skin, tendon, muscle, and bone.
- Temporary allograft coverage was unsuccessful.
- Management included **two separate applications of bovine collagen dermal substitute under the bioresorbable antimicrobial matrix**, with adjunctive negative pressure wound therapy.
- During acute infection, daily wet-to-moist dressings with sodium hypochlorite solution were employed for a total of three days.



Representative image of matrix application

Results

74-year-old male with 15% TBSA fourth-degree burns to lower extremities; hx of obesity, CAD, renal failure



Presentation 1.5 Mon Post-Injury



Serial Excisions & Failed Allograft



Hemorrhage Due to Anticoagulants



Prior to Matrix & Dermal Sub App



14 Days After First Application



1 Month Post-application

- Consulted 6 weeks after admission, at which point he had developed septic shock and multi-organ failure due to wound infection and osteomyelitis
- Exposed muscle remained pale and nonviable with both limbs critically threatened following failed allograft coverage, repeat excisions, and complicated daily dressing changes
- Skin substitute placement attempted 25 days after index excision; < 5 days of second application of the bioresorbable matrix over dermal matrix, both limbs demonstrated progressive vascularization and granulation tissue
- One month following matrix application, patient was discharged to a skilled nursing facility with full coverage of tendon, muscle, and bone and a clean, well-granulating wound bed

Conclusions

Limb salvage was achieved through aggressive infection control, with the antimicrobial matrix playing a substantial role. Although allograft and other skin substitutes had been previously applied, no meaningful wound progression occurred until after matrix placement, demonstrating its **potential to enhance healing in extensive, high-risk burn wounds**.