

Case Report: Successful Burn Wound Management with Bioresorbable Antimicrobial Matrix Over Split-thickness Skin Graft

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Introduction

- Infection is an **independent predictor of graft loss**; up to 75% of burn mortality is attributable to infection
- Prior evidence shows that a fully synthetic, bioresorbable antimicrobial matrix containing metallic and ionic silver can **reduce surgical site infection risk** in complex patients
- This report describes its use in a severely burned patient with a complicated pre-transfer course, recurrent infection, and delayed closure



Methods

- Excision of open burn and DSWs on the posterior torso and sacral ulcer
- **Interventions: epidermal autograft spray, skin substitute, and antimicrobial matrix**
- Torso dressed in methylene blue/gentian violet foam and absorptive dressings; NPWT applied to sacral wound
- Concurrently, sheet autografts were placed to the left hand and forearm, right buttock, and neck
- Antimicrobial matrix immediately applied over autografts and covered with silver nitrate wet-to-moist dressings
- Additional applications of the matrix and autografts required due to healing complications

Results



21-year-old male with 70% TBSA thermal burns to the face, neck, and extremities following MVA with explosion

- Over next 5 months prior to transfer to our facility, course complicated by Stage IV pressure ulcers of the head, sacrum, and feet, recurrent infections, autograft failures, and exposed avascular structures. Upon transfer, only ~10% of burns closed
- The patient required two return trips to OR to close his pre-existing posterior torso DSWs, which were infected at transfer
- **Following repeat matrix application and adjunctive measures, infection resolved, and the wound bed was optimized for autografting**
- 7 weeks post-index operation: autografting for areas complicated by shearing and infection related to difficulty with offloading torso
- 9 weeks: remaining open DSWs successfully grafted
- **Discharged to rehab three months after the first operation at our facility**

Conclusions

- Combined with multimodal wound care strategies, the bioresorbable antimicrobial matrix provided **effective empiric coverage of autografts in previously infected, hypergranular beds, supporting graft take**
- On donor sites of the posterior torso, it also facilitated wound bed preparation, reduced graft requirements, and improved closure outcomes
- This case demonstrates that the bioresorbable matrix can **complement or replace standard antimicrobial approaches, reduce infection risk, and support autografting readiness** in complex burn management