

Peptide-Based Biomimetic Matrix Moves Chronic Wound from Failed Skin Substitute Therapy to Rapid Closure

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Introduction

Squamous Cell Carcinoma (SCC) is the second most common type of skin cancer¹. It presents as a superficial, non-healing chronic rash or an invasive red papule, nodule, or plaque. Wounds after SCC resection and chemo/radiotherapies are not uncommon and often require supportive wound care².

This case report describes the use of a novel **biomimetic matrix (BMM*)** in managing a chronic wound post-SCC resection that failed to progress after repeated skin substitute therapy in a patient with several risk factors for impaired healing and wound recurrence. BMM is an FDA-approved flowable antibacterial polypeptide technology designed to prevent infection and support tissue regrowth while conforming to irregular, deep, and hard-to-access wounds.

Methods

The patient was a 78-year-old female with a medical history of diabetes, venous disease, Parkinson's disease (and reduced mobility), lymphedema, hemosiderosis, psoriasis, skin fibrosis, and previous skin cancer. She developed a chronic wound in the right anterior leg, mid-tibia, post-excision of a large squamous cell carcinoma.

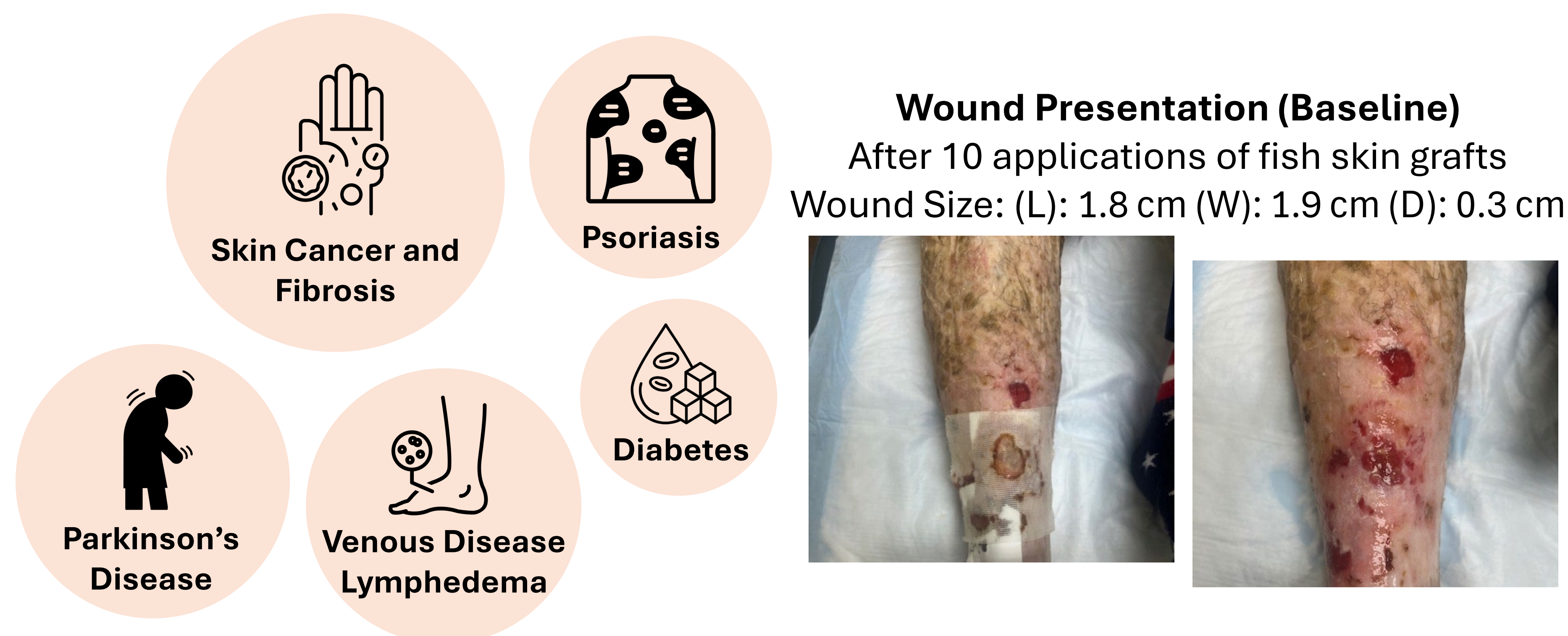


Fig. 1: Patient comorbidities (left panel) and photographs of wound presentation after 10 applications of fish skin grafts (right panel).

The wound remained chronic despite the diligent "Prepare for Repair" protocol³ and repeated applications of a fish-derived skin substitute. After 10 applications of failed treatment with fish skin grafts, the patient was switched to BMM, applied topically per manufacturer's instructions, alongside continued standard of care including multilayer compression. Wound healing progression, peri-wound skin condition, and adverse events were monitored throughout the study.

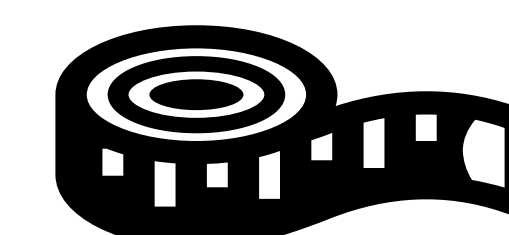
Results



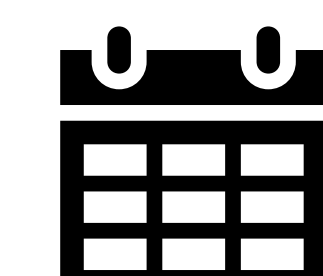
Fig. 2: Significant reductions in wound size and wound depth were noted after a single BMM application. Five applications of BMM resulted in **complete wound closure**. A substantial **improvement in peri-wound skin** appearance and integrity was also noted. **No recurrence** was observed during the 10 weeks follow-up period. No adverse events.

Discussion

BMM successfully facilitated healing a chronic wound that failed to respond to repeated treatment with advanced fish skin grafts, in a patient with several comorbidities, achieving **complete wound closure with only five applications**. BMM also improved the overall appearance and integrity of the peri-wound skin. These findings highlight BMM's potential for rapid healing progression in chronic wounds unresponsive to traditional interventions and advanced skin substitutes, which could signify a change in clinical practice. Further studies are necessary to confirm these results and determine BMM's efficacy in a larger patient population.



Significant **reductions in wound size and depth** were noted after a **single BMM application**.



Complete **wound closure** was achieved with **five BMM applications** without recurrence at follow-up.

References

- ¹Fania L, et al. Cutaneous Squamous Cell Carcinoma: From Pathophysiology to Novel Therapeutic Approaches. Biomedicines. PMID: 33572373.
 - ²Kim P, et al. Guidelines of care for the management of cutaneous squamous cell carcinoma. J Am Acad Dermatol. 2018. PMID: 29331386.
 - ³Regulski, M. Preparing to Repair in Diabetic Wound Care: Insights from an Expert | Podiatry Today (hmpgloballearningnetwork.com)
- *BMM:** G4Derm™ Plus, Gel4Med Inc. MA, USA.