Restoring the Healing Trajectory in a Refractory Traumatic Leg Ulcer Using a Borate-Based Bioactive Glass Fiber Matrix

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INTRODUCTION

Chronic traumatic lower-extremity wounds that fail to progress despite standard wound care remain a significant clinical challenge. In non-diabetic patients, these wounds may persist due to impaired perfusion, repeated mechanical stress, bioburden, or inadequate host response.[1] Traditional therapies including collagen dressings, silver alginates, antimicrobial foams, medical-grade honey, enzymatic debridement, and topical antibiotics often provide limited benefit once a wound becomes refractory. Borate-based bioactive glass fiber matrix (BBGFM) dressings have emerged as a novel therapeutic modality providing an environment conducive to appropriate inflammation, granulation, and re-epithelialization. This case report described the healing trajectory of a chronic traumatic wound treated with a BBGFM following multiple unsuccessful interventions.

METHODS

A non-diabetic adult patient presented with a chronic traumatic wound on the right lateral extremity (RLE) that had failed to improve after months of comprehensive treatment, including advanced dressings and four-layer compression therapy. After reassessment and confirmation of non-response to previous modalities, BBGFM was selected as the next intervention. The first application occurred on March 25, 2025. Standard wound care practices including wound cleansing, moisture balance, and ongoing compression were continued in conjunction with the BBGFM. The wound was assessed at routine follow-up visits for changes in size, tissue quality, granulation, and epithelial advancement.

RESULTS

Following the application of BBGFM, the wound demonstrated progressive improvement in granulation and epithelialization after previously showing minimal change. Over the subsequent weeks, the wound area steadily decreased, with visible quality tissue and reduction in slough. Complete wound closure was achieved on August 5, 2025, approximately 19 weeks after initial BBGFM placement.

Initial Presentation
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DISCUSSION

This case illustrates that BBGFM facilitated closure of a chronic traumatic non-diabetic leg wound that had been refractory to multiple advanced therapies. The observed healing trajectory suggests that the matrix may have contributed to a favorable wound environment. While single-patient outcomes cannot be generalized, this case adds to the growing evidence that BBGFM may represent a valuable option for treatment-resistant wounds.

REFERENCES

1. Wolny D, Štěpánek L, Horáková D, et al. Risk Factors for Non-Healing Wounds — A Single-Centre Study. J Clin Med. 2024;13 (4):1003.

ACKNOWLEDGEMENTS

*Mirragen Advanced Wound Matrix, ETS Wound Care, LLC. This poster was prepared in collaboration with ETS Wound Care, LLC. All protocols and clinical assessments were conducted and reported independently by Ankle & Foot Centers of America without any financial compensation from the manufacturer. For application instructions and risks of this device, please refer to the Mirragen Instructions for Use.