

Bioactive Glass Skin Substitute – An Accelerating Mediator for Complex Wound Healing



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INTRODUCTION

Chronic wounds typically arise secondarily to comorbidities such as diabetes mellitus and cardiovascular conditions. Although many treatment modalities exist for persistent wounds, product efficacy data is often from limited study designs. Here, we investigated how a bioactive glass skin substitute, an advanced wound care product, would affect the rate of healing of chronic/complex wounds in a rural wound care practice setting. The goal was to apply this product to accelerate the rate at which wounds of varying complexities would heal and follow their progression over time. Targeted wounds included pilonidal abscesses, neuropathic ulcers, puncture wounds, venous stasis ulcers, diabetic ulcers, and dehisced amputation sites that have been present for at least three months.

METHODS

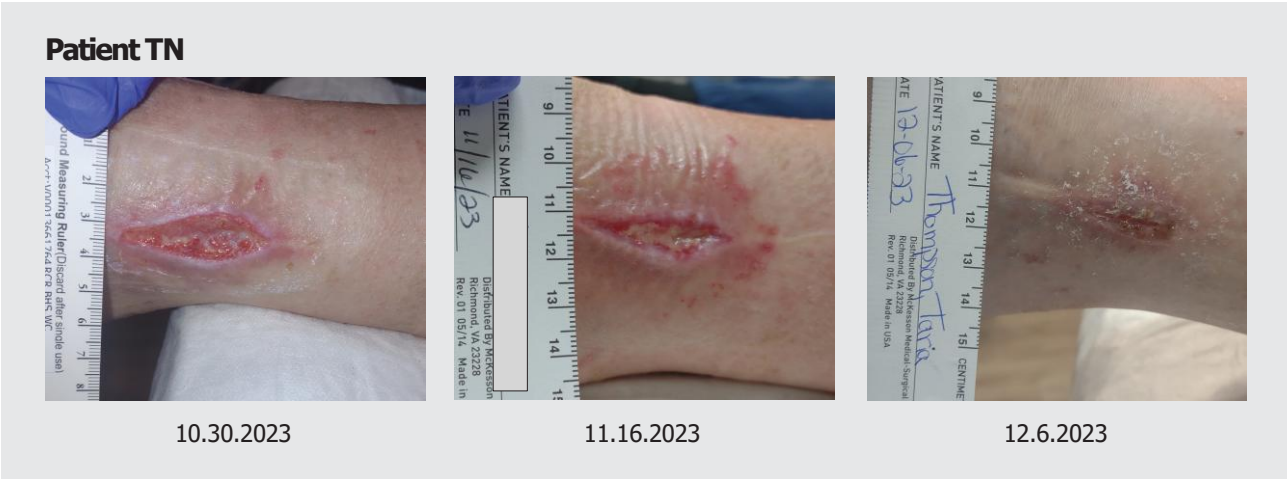
Twelve patients (6 female, 6 male, 43-78 yo) with a total of 12 distinct wounds were evaluated weekly for wound management, including treatment with and maintenance of the bioactive glass skin substitute, dimension measurements, and appropriate secondary dressing changes. The patients studied ranged in age from 43-78 years old; these patients suffered from the following comorbidities: hypertension, morbid obesity, neuropathy, hyperhomocysteinemia, and Type 2 diabetes mellitus.

RESULTS

All twelve wounds studied achieved 50% wound closure to complete resolution within a range of 3-12 weeks of treatment with the bioactive glass skin substitute. Each patient was evaluated every week; at these visits the graft was examined - either a new graft was applied or the previous graft was resecured with a soft silicone dressing and multilayer compression wrap. The twelve wounds demonstrated significant healing within the first weeks of treatment, including the largest wound (6.02 cm²) that completely healed by 6 weeks of treatment.

DISCUSSION

This case series studied the use of a bioactive glass skin substitute to promote healing in various chronic wounds. While this graft was reapplied for the majority of the total wound care duration, at some of the follow-up appointments the matrix that was placed at the previous visit only needed to be resecured with a soft silicone dressing and multilayer compression wrap. This study supports the fact that this graft accelerates wound healing rates in cases where other advanced wound care methods and products have failed to produce results.



*Mirragen® Advanced Wound Matrix, ETS Wound Care, Rolla, Missouri

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Patients:

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|-----------------------|------------------------|
| AA (Healed – 7 weeks) | WC (Healed – 6 weeks) |
| RK (70% - 3 weeks) | AF (64% - 5 weeks) |
| PL (70% - 12 weeks) | BM (Healed – 4 weeks) |
| AM (Healed – 5 weeks) | TN (Healed – 7 weeks) |
| DM (50% - 3 weeks) | AH (Healed – 10 weeks) |
| RL (Healed – 9 weeks) | TM (60% - 6 weeks) |