Continued Recalcitrant Wound Healing Using a Biocompatible Glass Fiber Matrix

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BACKGROUND

- MIRRAGEN® Advanced Wound Matrix (ETS Wound Care, Rolla, Missouri) is a biocompatible glass fiber matrix (BGFM) made of resorbable borate-based bioactive glass.[1]
- As the product slowly degrades, it releases biologically active ions into the wound bed, stimulating proliferation and angiogenesis as well as reducing inflammation and preventing infection.[1]
- In a case series performed at our institution, highly recalcitrant wounds that had failed a minimum of three other biologics were treated with eight weekly applications of BGFM. All wounds showed dramatic wound area reductions and three DFUs closed.[2,3]
- We aimed to assess if the wounds that remained open after our initial study would continue to improve if BGFM applications were continued past eight weeks.
- We also used BGFM on 2 additional VLUs to further assess the slower healing trajectory we observed in VLUs compared to DFUs in our initial case series.

METHODS

- 8 wounds (2 DFUs and 6 VLUs) from our initial study remained open after eight-weeks.
- 2 additional patients with VLUs were treated with BGFM.
- All patients came to our vascular office on a weekly basis for wound cleansing and debridement, followed by the application of a thin layer of BGFM and the placement of a nonadherent dressing.
- An offloading device or compression bandage was applied when appropriate.
- Weekly wound measurements, images, and characteristics were recorded for up to 26 weeks.
- Subjective pain scores and amount of drainage were noted.

RESULTS

- All wounds from our initial study continued to show weekly wound area reductions and five wounds (3 VLUs and 2 DFUs) closed.
- DFUs had a greater percent wound area reduction compared to VLUs (63% versus 26%).
- DFUs underwent an average of 4 BGFM applications prior to closure.
- The number of BGFM applications varied among VLUs, with one patient closing after 25 applications.
- Among the 2 newly included VLUs, 2 BGFM applications led to an average wound area reduction of 23.6%, closely mirroring the rate of observed VLU healing in our initial case series.
- All patients with VLUs noted a decrease in drainage and pain after an average of 3 applications.
- All patients tolerated weekly BGFM applications well and had no adverse reactions or recurrences after closure.

Recalcitrant VLU for 5 years that closed at 26 weeks

Week 0 Week 1 Week 18 Week 26

DFU Closure after 10 weeks

Week 0 Week 2 Week 4 Week 9

6-year-old VLU with 33% reduction after 3 weeks

Week 0 Week 1 Week 2

Nonhealing VLU showing 23.7% area reduction 5 weeks

Week 0 Week 1 Week 2 Week 3

CONCLUSIONS

- In combination with appropriate debridement and offloading, BGFM is highly effective in promoting wound area reductions and closures in highly recalcitrant VLUs and DFUs that have failed other biologics
- Considering the degree of senescence in these wounds, a standardized number of product applications cannot be predetermined and the number of necessary BGFM applications must be decided on a wound-by-wound basis.
- BGFM seems to promote more rapid healing in DFUs compared to VLUs, but a additional experience and product applications will help better evaluate the extent of this observation will be essential for a better understanding of the product's benefits and limitations.

REFERENCES

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