



Use of an Antimicrobial Synthetic Skin Substitute on an Advanced Age Laceration



Leslie Morris PA-C, WCC
R3 Wound Care and Hyperbarics, Dallas TX

BACKGROUND

A 70-year-old female patient presented with a painful (8/10) 20.37 cm² partial-thickness skin tear after strong winds knocked over a wrought iron planter onto her left leg above the ankle. This patient had multiple comorbidities including hypertension, Chron's disease, Celiac disease, arthritis, osteoporosis, and a previous Covid-19 diagnosis. She was also on oxygen and multiple inhalers. After 2 weeks of standard-of-care treatment, her wound became full-thickness and measured 34.29 cm². She was recommended for HBOT but was denied due to her complex pulmonary history. Three days later, an antimicrobial synthetic skin substitute (Microfilm Matrix) was added to her treatment plan to support reepithelialization and manage bioburden.

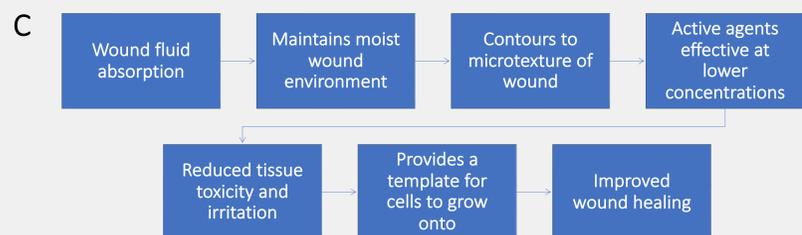
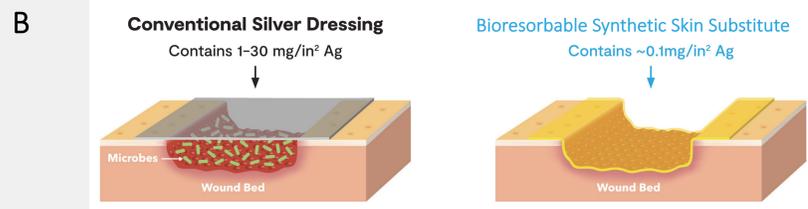
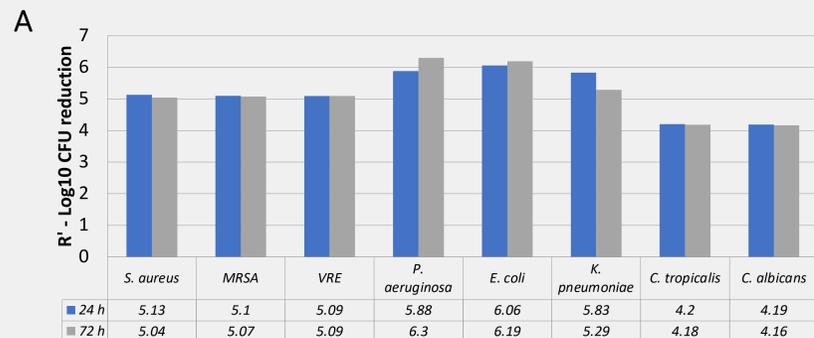


Figure 1: A) The Matrix provides a 4- to 6-log reduction in a variety of bacteria and yeast, including MRSA and VRE.^{2,3} B) Mechanism of action of a bioresorbable silver matrix. Unlike conventional silver dressings, the Matrix contours to the microtexture of the wound bed allowing active ingredients to be effective at low doses.⁴ C) The mechanism of action of the Matrix is designed to facilitate improved wound healing.⁴

METHODS

Microfilm Matrix was applied as the contact layer 2-3 times per week for 6 weeks, then once a week for 5 more weeks. Adjunctive therapies included an enzymatic debrider, gauze, and an absorbent dressing.

RESULTS

After one month of Microfilm Matrix treatment, her wound decreased by 70% measuring 10.24 cm², down from 34.29cm². Granulation tissue was healthy and pink. By month 3, wound reduction was 99% measuring 0.35cm². After antibiotic and Microfilm Matrix treatment, the patient's pain level decreased to 0-1/10 which allowed her to sleep and return to normal daily activities.



Figure 2. (A-F) The healing trajectory of the wound over 6 months.

RESULTS

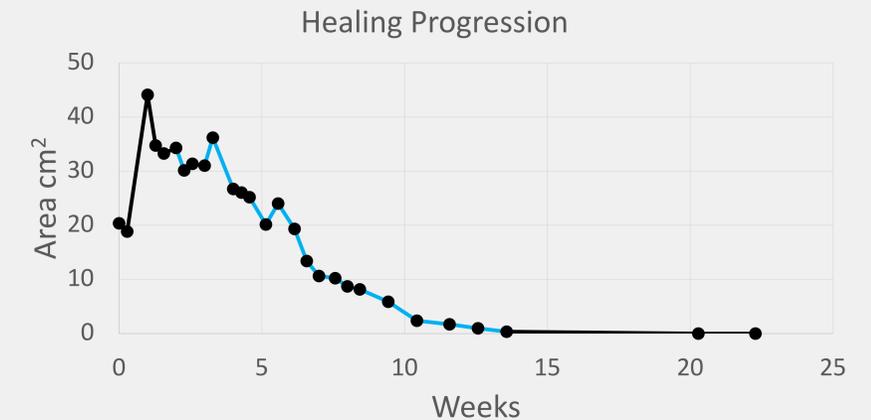


Figure 3: The healing trajectory of the wound over 6 months. Bright blue lines indicate period of Matrix application.

SUMMARY

Microfilm Matrix was able to jump-start healing in a deteriorating wound on a patient with several co-morbidities who unfortunately was not a candidate for HBOT. The quick turn-around in the patient's pain and drainage, as well as management of infection was remarkable. Within several applications of the Microfilm Matrix, the biofilm and slough had been replaced with healthy, non-infected granulation tissue that filled in quickly.

CONCLUSIONS AND FUTURE DIRECTIONS

Using the Microfilm Matrix helped this high risk patient heal effectively and timely. Having multiple co-morbidities, and a complex wound left us with few options, but Microfilm Matrix helped immensely.

REFERENCES

1. A Agarwal, et al., Surfaces modified with nanometer-thick silver-impregnated polymeric films that kill bacteria but support growth of mammalian cells. *Biomaterials*, 2010. 31(4): p. 680-690.
2. M Herron, et al., Reduction in wound bioburden using a silver-loaded dissolvable microfilm construct. *Advanced healthcare materials*, 2014. 3(6): p. 916-928.
3. SW Manning, et al., Efficacy of a bioresorbable matrix in healing complex chronic wounds: An open-label prospective pilot study. *Wounds*, 2020. 32(11).