

Use of a Bioresorbable Silver Matrix on a Non-Healing TMA Site

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BACKGROUND

A 69-year-old diabetic male presented with a non-healing transmetatarsal amputation (TMA) site with exposed bone on distal metatarsals two and four, as well as undermining of the skin. His past medical history included gangrene, osteomyelitis, hypercholesterolemia, coronary artery disease, and peripheral arterial disease, and his past surgical history was significant for coronary bypass, femoral bypass, and stenting. To support granulation tissue formation over exposed bone, reepithelialization and bioburden management, a bioresorbable silver matrix (Microfilm Matrix) was used.

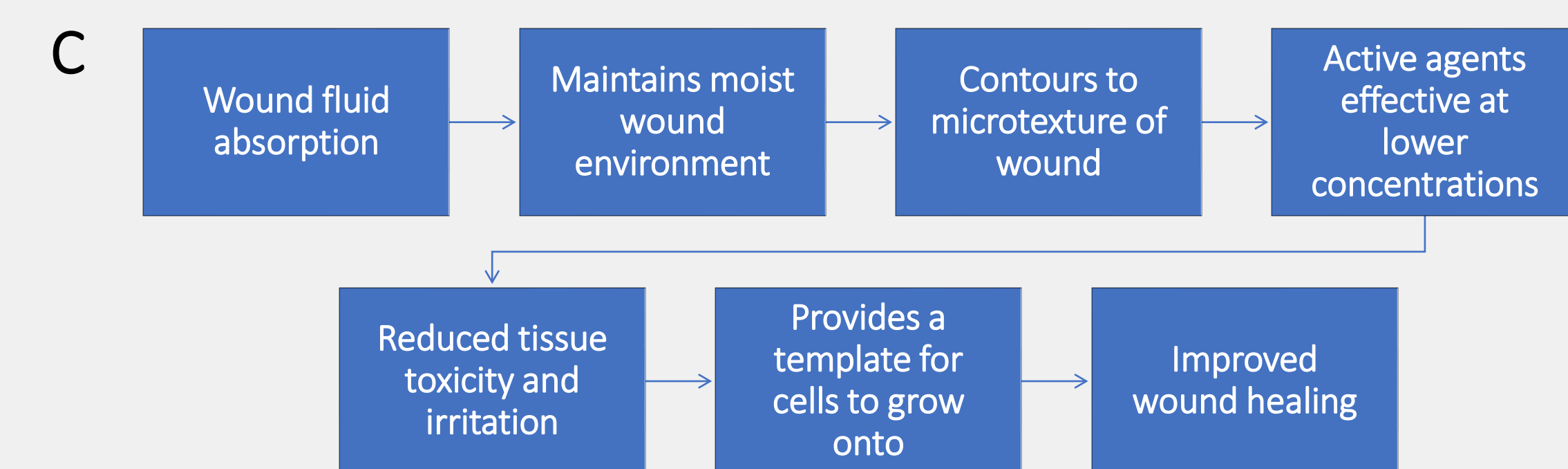
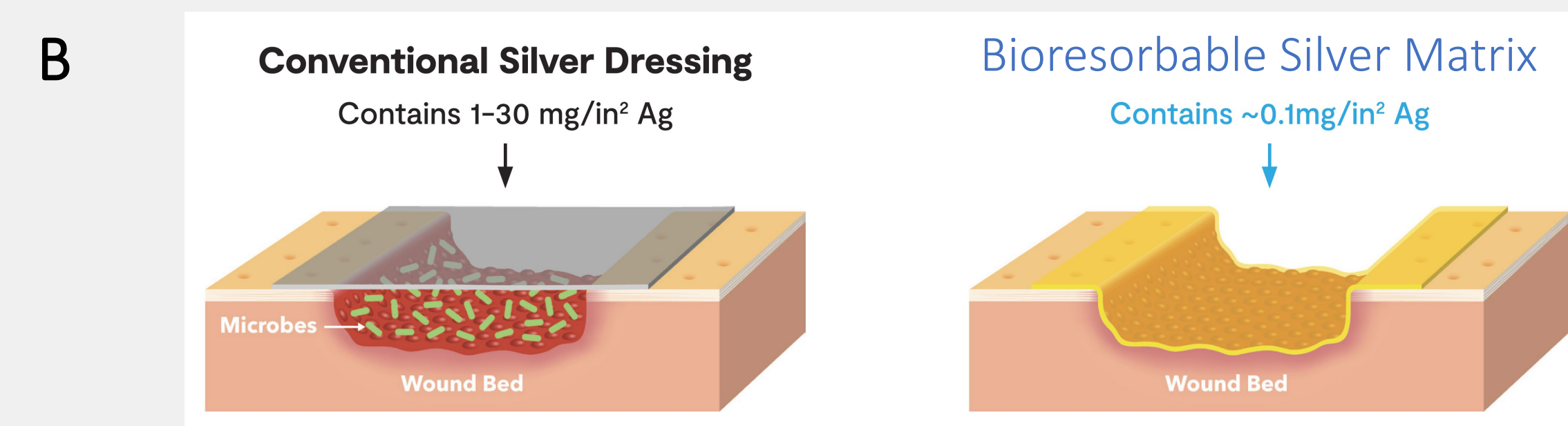
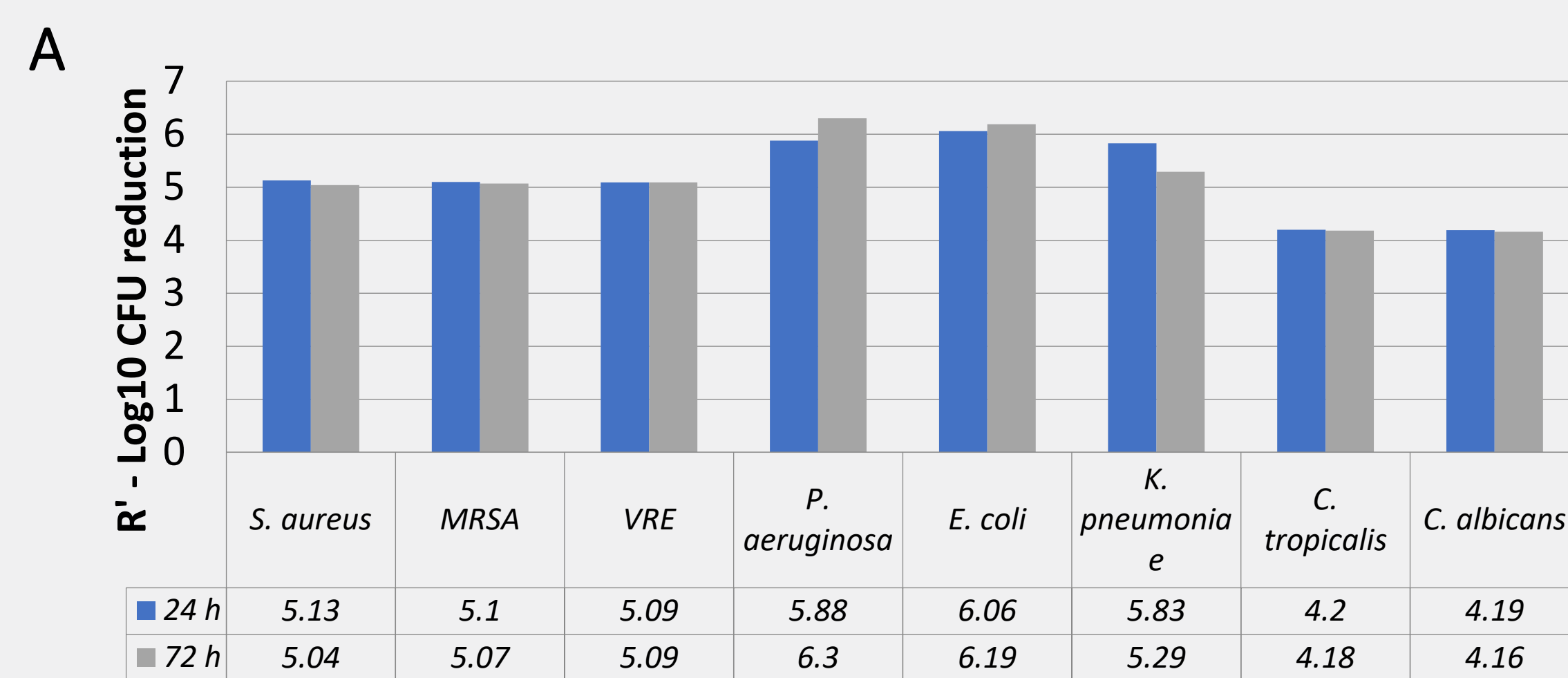


Figure 1: A) The Matrix provides a 4- to 6-log reduction in a variety of bacteria and yeast, including MRSA and VRE.^{1,2} B) Mechanism of action of a bioresorbable silver matrix. Unlike conventional silver dressings, the Matrix contours to the microtexture of the wound bed allowing active ingredients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

METHOD

Microfilm Matrix was applied once a week for 17 weeks in conjunction with our standard wound care protocol, which involves control of diabetes, treatment of chronic osteomyelitis, and vascular consultations. Microfilm Matrix was applied to the wound using sterile cotton swabs, tucked into the undermining region, and then dampened with sterile saline. A non-adhering dressing was applied and tacked down with thin adhesive bandages, then an outer bolster dressing was applied. No negative pressure wound therapy (NPWT) and no hyperbaric oxygen therapy (HBOT) were utilized in this case, and offloading was performed to further help close the wound.

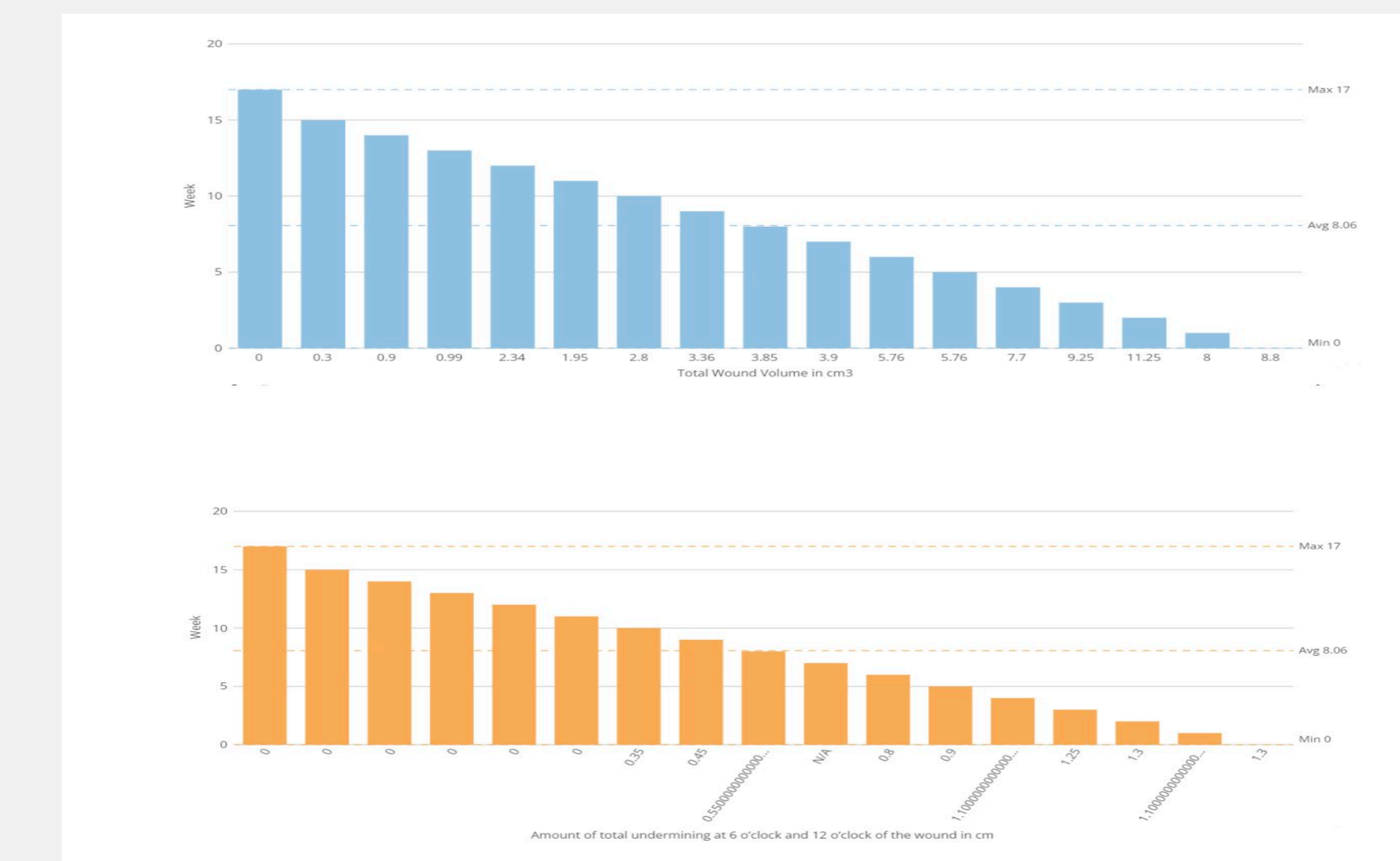
RESULTS

Each week, the wound contracted in size with improvement of the undermining skin. Granulation tissue grew over the exposed bone, and eventually, the wound epithelialized and fully closed on week 17. There were no additional wound care costs associated with NPWT and HBOT.



Figure 2: Demonstration of how Microfilm Matrix was applied to the wound and the wound size decreased over time. Q-tip on the bottom two middle pictures points to exposed metatarsal bones. Wound is closed at week 17.

RESULTS



Week	Total wound volume in cm ³	Amount of total undermining at 6 o'clock and 12 o'clock of the wound in cm	Bone exposed
0	8.8	1.3	yes
1	8	1.1	yes
2	11.25	1.3	yes
3	9.25	1.25	yes
4	7.7	1.1	yes
5	5.76	0.9	yes
6	5.76	0.8	yes
7	3.9	-	yes
8	3.85	0.55	yes
9	3.36	0.45	yes
10	2.8	0.35	yes
11	1.95	0	yes
12	2.34	0	yes
13	0.99	0	yes
14	0.9	0	no
15	0.3	0	no
17	0	0	no

Figure 3: The healing trajectory of the wound over 17 weeks. Top blue bars show the trajectory of wound volume over time. Orange bars show trajectory of undermining over time.

CONCLUSIONS AND FUTURE DIRECTIONS

Rapid wound closure is vital in preventing further amputation and potential for loss of life. Furthermore, healthcare dollars are limited. In our case, we demonstrated that 1) the synthetic matrix helped close a non-healing wound despite having exposed bone utilizing standard wound care protocol, and 2) that Microfilm Matrix may offer cost and time savings for both insurers and patients. Microfilm Matrix is a fully synthetic and bioresorbable polyvinyl alcohol wound matrix with ionic silver that can be used on surgical and nonsurgical wounds, including burns, diabetic wounds, venous ulcers, abrasions, lacerations, and pressure injuries.

REFERENCES

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