

# Addition of a Bioresorbable Silver Matrix to Close a Non-Healing Transmetatarsal Amputation Site on a Diabetic Patient

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## BACKGROUND

An 81-year-old female diabetic patient presented with a gangrenous non-healing transmetatarsal amputation site that was open for 5 months. In the final two months, her wound grew from 10.7 cm<sup>3</sup> to 31.7 cm<sup>3</sup>, a 196% increase in wound volume. She also had several co-morbidities including end-stage renal disease, peripheral vascular disease and had a history of osteomyelitis. Her previous treatments included debridement, negative pressure wound therapy and total contact casting (TCC), antibiotics and adjuvant HBOT. To help manage any potential wound bioburden, support granulation tissue generation, and promote re-epithelialization of her amputation site, a bioresorbable antimicrobial silver matrix (Matrix) was added to her treatment plan, and used in conjunction with a dermal matrix substitute and TCC.

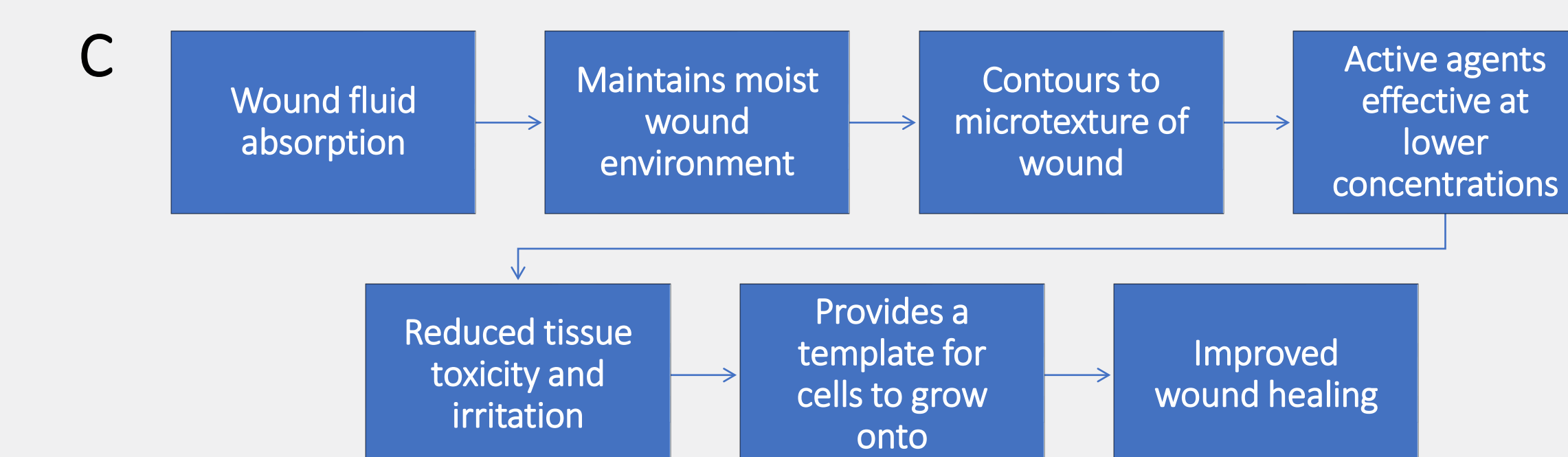
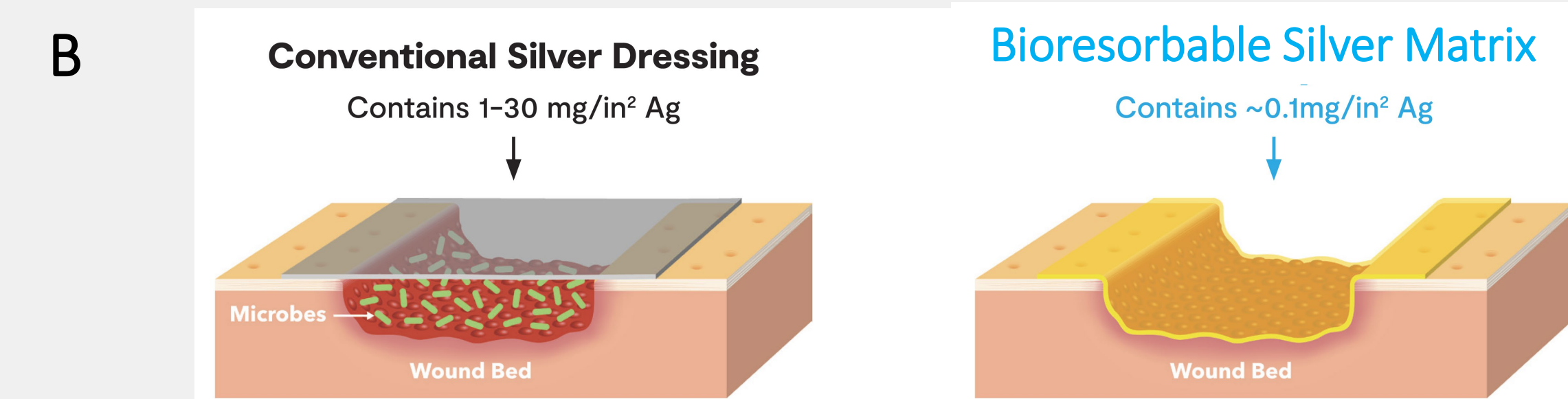
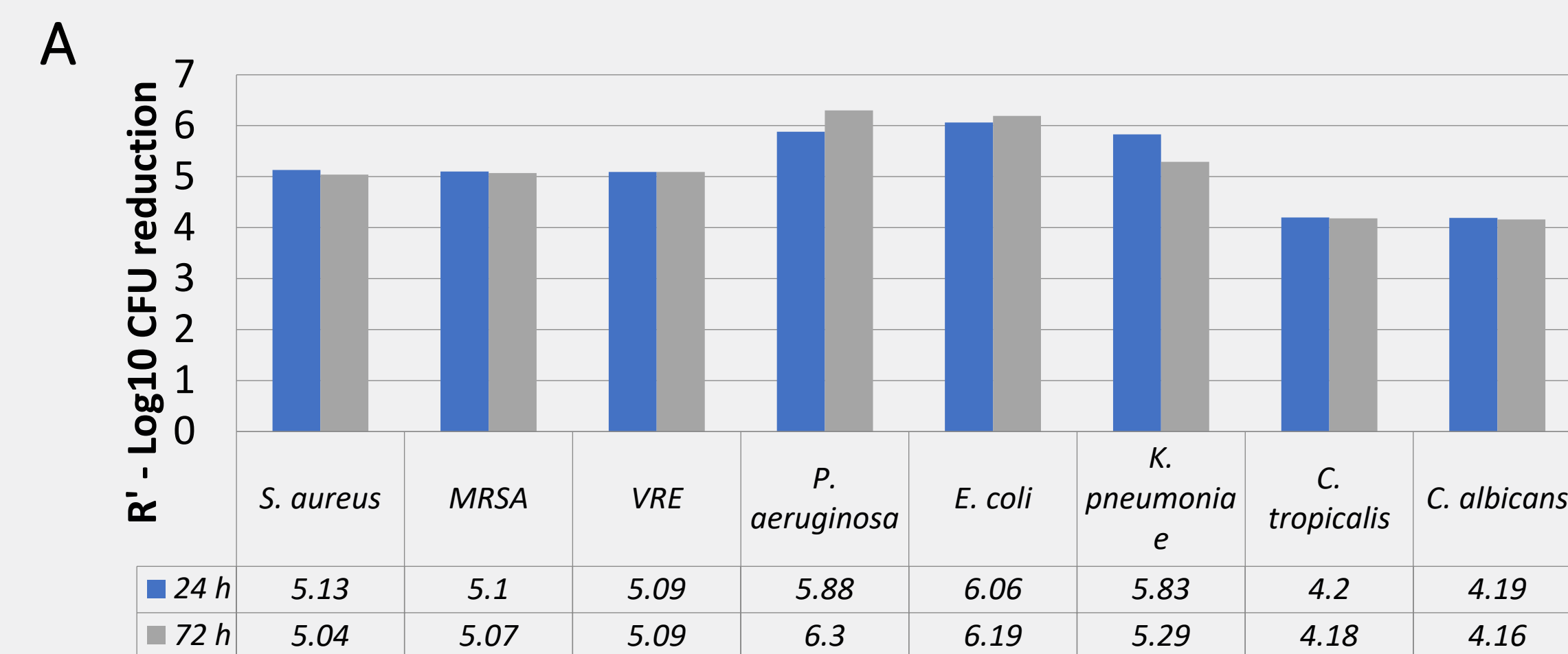


Figure 1: A) The Matrix provides a 4- to 6-log reduction in a variety of bacteria and yeast, including MRSA and VRE.<sup>1,2</sup> B) Mechanism of action of a bioresorbable silver matrix. Unlike conventional silver dressings, the Matrix contours to the microtexture of the wound bed allowing active ingredients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

## RESULTS

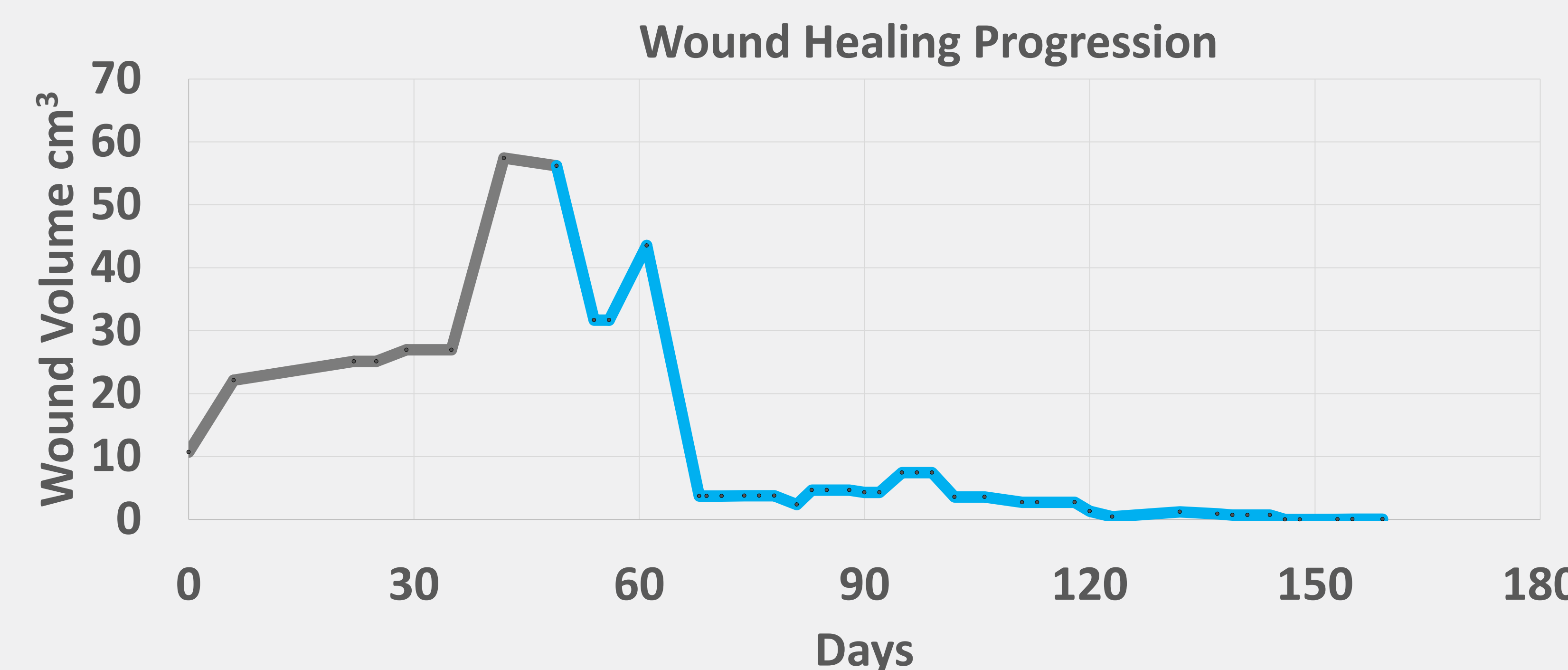


Figure 1. A) Healing trajectory of a non-healing trans-metatarsal amputation site over 34 weeks. One month after the matrix was added to her treatment plan, her wound decreased from 31.4 cm<sup>3</sup> to 7.4 cm<sup>3</sup>, a 76% decrease in wound volume. At month 2, her wound measured 0.4 cm<sup>3</sup> and at month 4, her wound measured 0.04 cm<sup>3</sup>, a 99% decrease in wound volume. Patient's wound is fully closed at week 23, and durable wound closure is evident at week 34. B) Graphical depiction of wound healing progression; bright blue lines indicate period of the Matrix application.

## METHODS

The Matrix was used as the contact layer starting at month 5 (presentation directly to escharotic plaque) and was continued for 4 months with application every 2 to 9 days (serial debridement along with silver matrix resulted in granulation tissue throughout to allow placement of CTP), and according to placement of dermal matrix substitute and or TCC placement.

## SUMMARY

After just one month of adding the Matrix to the patient's wound treatment plan, her wound decreased dramatically by 76%. This is especially remarkable given that her wound was actively increasing for the previous 5 months. At week 23, the patient's wound is 100% closed, and durable wound closure is noted at week 34. The Matrix appeared to prepare the wound bed for successful graft take and shows promise as an adjunct therapy in treating non-healing TMAs in diabetic patients.

## CONCLUSIONS AND FUTURE DIRECTIONS

- At week 33, the TMA surgical site completely resolved and remained resolved. Patient reports increasing travel now that the wound is resolved. She proudly reported that she traveled to see her granddaughter perform in a theatrical play.
- More clinical trials utilizing this novel wound matrix on necrotic escharotic ulcers with adequate blood supply would be beneficial. Microlyte mitigates need for wide excisional debridement and is an effective tool for limb salvage clinics.

## REFERENCES

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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).

