

Combination Use of a Bioresorbable Silver Matrix and NPWT following Wide Excisional Debridement of a Pilonidal Cyst

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BACKGROUND

A 23-year-old male patient presented with an inflamed non-healing pilonidal cyst complicated by fistula that was re-occurring and or open for approximately 4 years. Previous three surgeries for less significant wounds at other comprehensive wound centers took an average healing time of nine months. The wounds were previously treated with antibacterial foam dressing; betadine wet to dry and chemical cautery. Following his fourth and most recent wide excisional debridement, his full thickness wound measured 259 cm³. The patient reported pain at the surgical site and was given oral pain medication accordingly. To support growth of granulation tissue within his cavernous wound, promote re-epithelialization, and manage wound bioburden, a bioresorbable antimicrobial silver matrix (Matrix) was used.

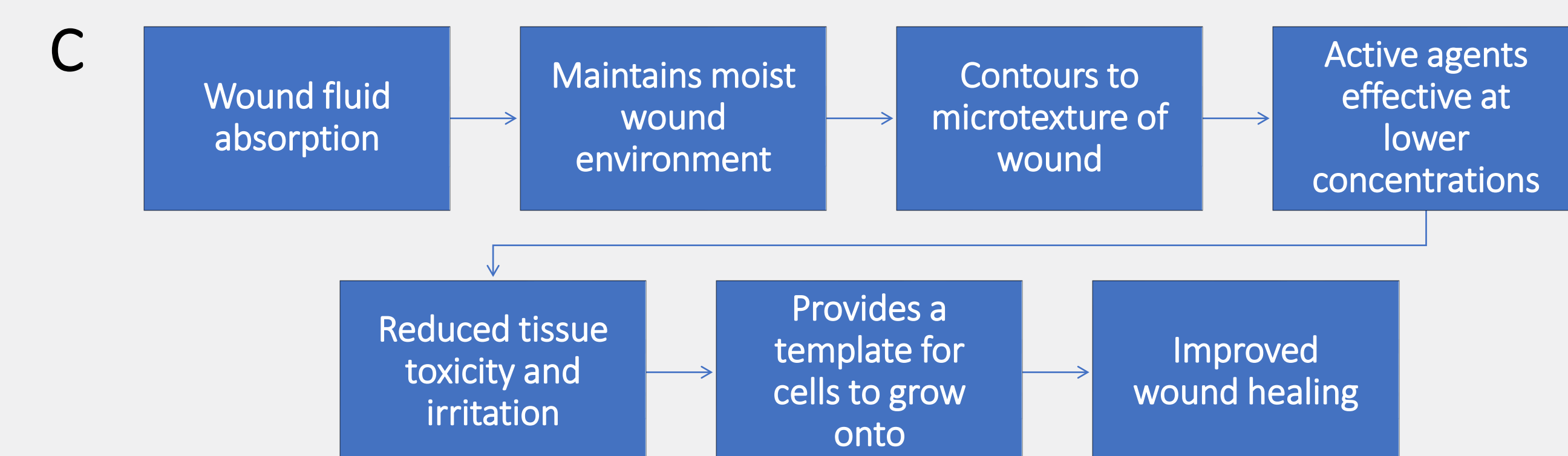
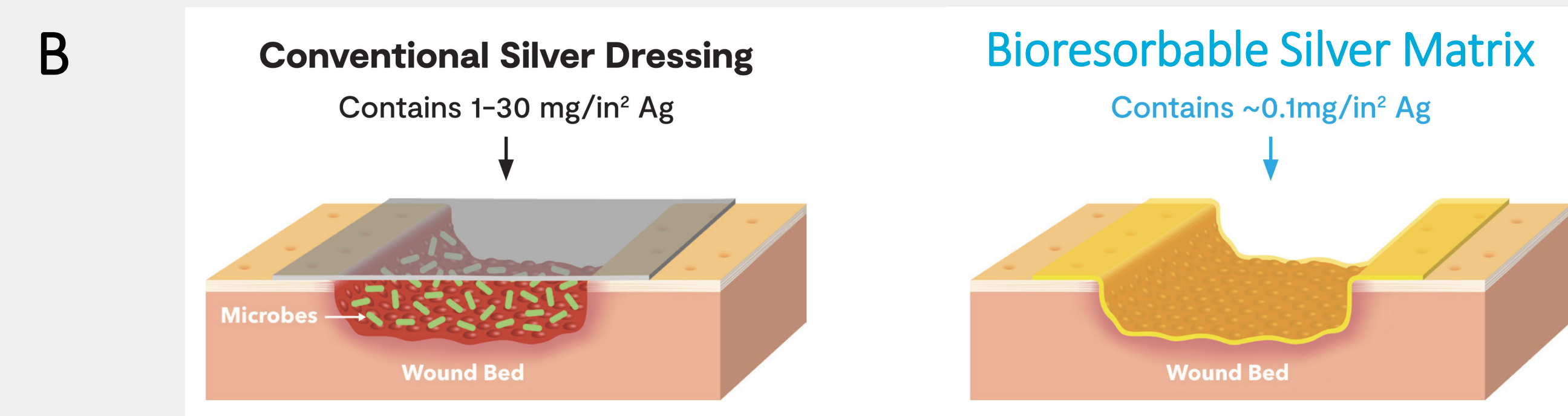
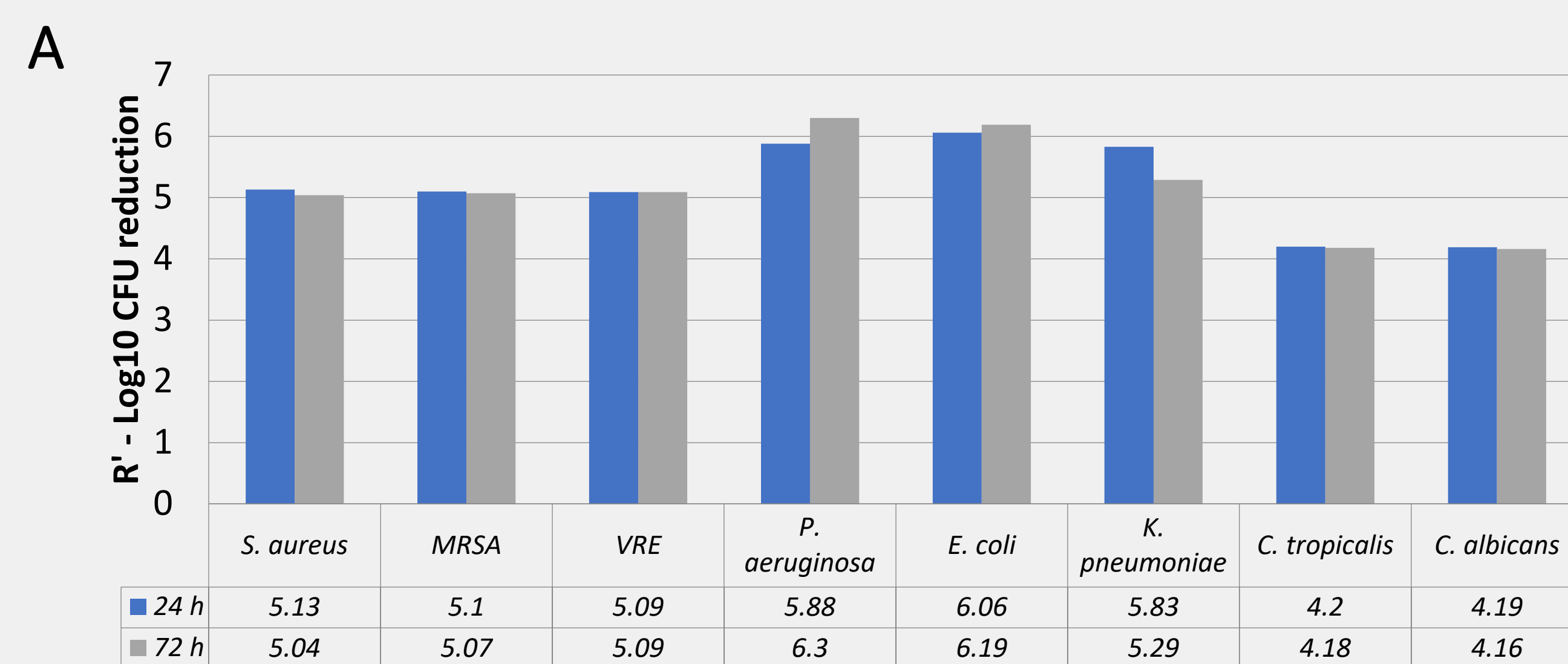


Figure 1: A) The Matrix provides a 4- to 6-log reduction in a variety of bacteria and yeast, including MRSA and VRE.^{1,2} B) Mechanism of action of a bioresorbable silver matrix. Unlike conventional silver dressings, the Matrix contours to the microtexture of the wound bed allowing active ingredients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

METHODS

The patient's wound dressing was changed every 2 to 5 days over a 4-week period and was treated with the Matrix at each dressing change for a total of 9 dressing changes. Negative pressure wound therapy (NPWT) was placed at week 2 and reapplied every 2 to 5 days until week 4. A similar schedule was followed from week 4 to week 17. The patient was also nutritionally supplemented with antioxidants and amino acids to further support wound healing.

RESULTS



Figure 2: Healing trajectory of a non-healing pilonidal cyst. After one week of Matrix treatment, the patient's wounds closed by 15%, and by week 2, his wound closed by 50%. One week after NPWT was added to his treatment plan; the patient's wound decreased by 80%, and has remained at 80% at week 4, measuring 54 cm³. Patient's wound is 99% closed at week 17. Importantly, the patient reported decreased pain at the surgical site and his wound did not become infected.

RESULTS

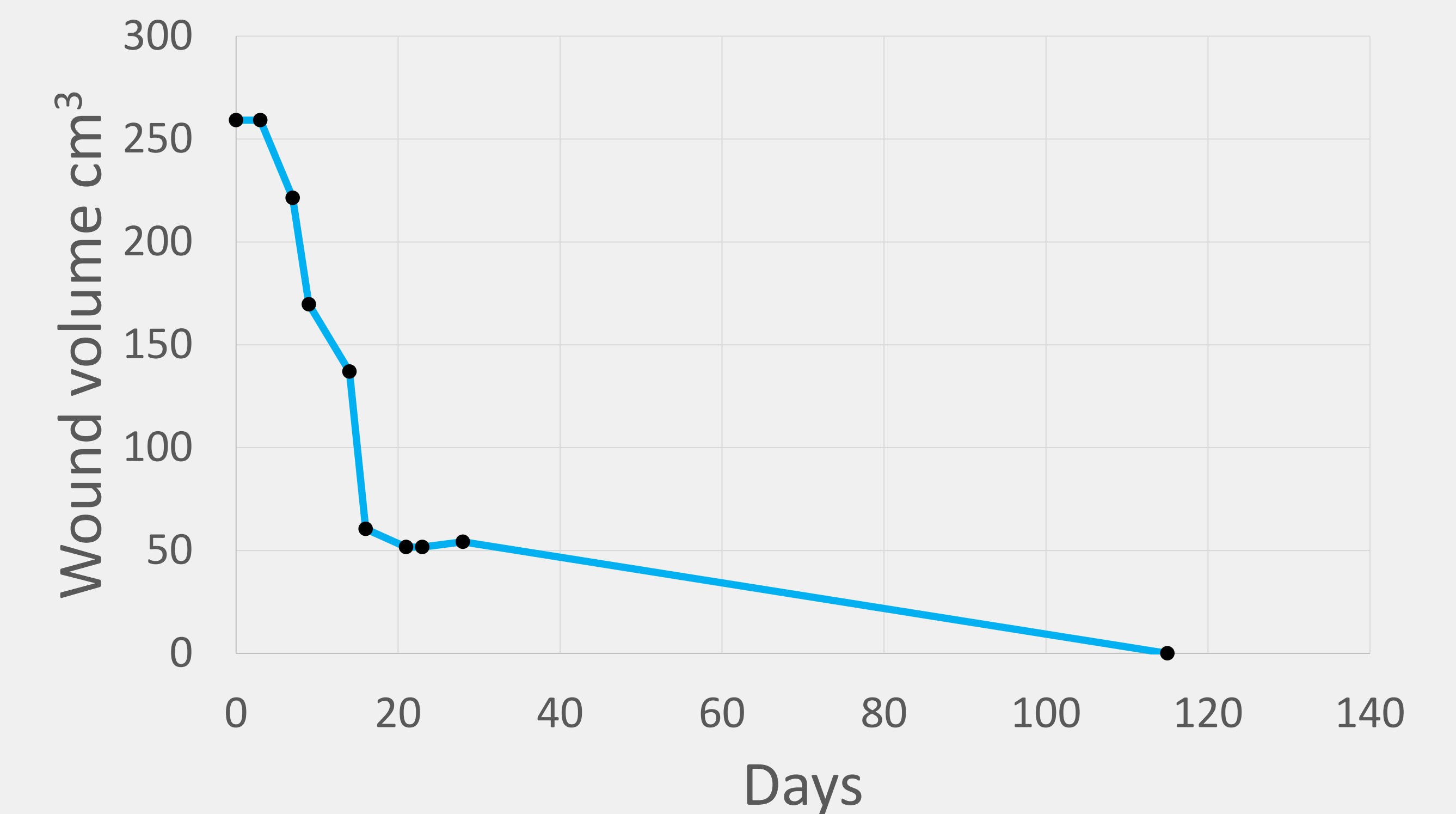


Figure 3: The healing trajectory of the wound over 16 weeks. Bright blue lines indicate period of Matrix application.

SUMMARY

In just 4 weeks, the Matrix and NPWT worked synergistically to jumpstart the patient's wound healing process leading to an 80 % decrease in wound volume and significantly reduced the patient's levels of pain. At week 17, the patient's wound is 99% closed, and he has returned to his normal activities, which include driving and attending school. His quality of life is greatly improved. The Matrix therefore shows promise as an adjunct therapy in treating chronic pilonidal cysts.

CONCLUSIONS AND FUTURE DIRECTIONS

As an adjunct wound healing therapy, the Matrix was able to expedite healing and shows promise in treating chronic pilonidal cysts.

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. SWM Herron, et al., Reduction in wound bioburden using a silver-loaded dissolvable microfilm construct. *Advanced healthcare materials*, 2014. 3(6): p. 916-928.
3. Manning, et al., Efficacy of a bioresorbable matrix in healing complex chronic wounds: An open-label prospective pilot study. *Wounds*, 2020. 32(11).

