

# Use of a Bioresorbable Polymeric Matrix with Silver during the Proliferation Phase: An Effective Treatment Regimen



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## BACKGROUND

During the proliferation phase of wound healing; granulation and re-epithelialization process is often delayed or stalled due to the bacterial contamination. Furthermore, this bacterial contamination produces a number of proteases including the MMPs, which degrade the extracellular matrix and growth factors present within the wound bed. Bioresorbable Polymeric Matrix with Silver layer was applied to (3) different presented clinical cases: 1) Surgical Wound – Toe Amputation Site 2) Surgical Wound - S/P CABG Chest Wound 3) Surgical Wound - S/P Surgical repair Left Shin.

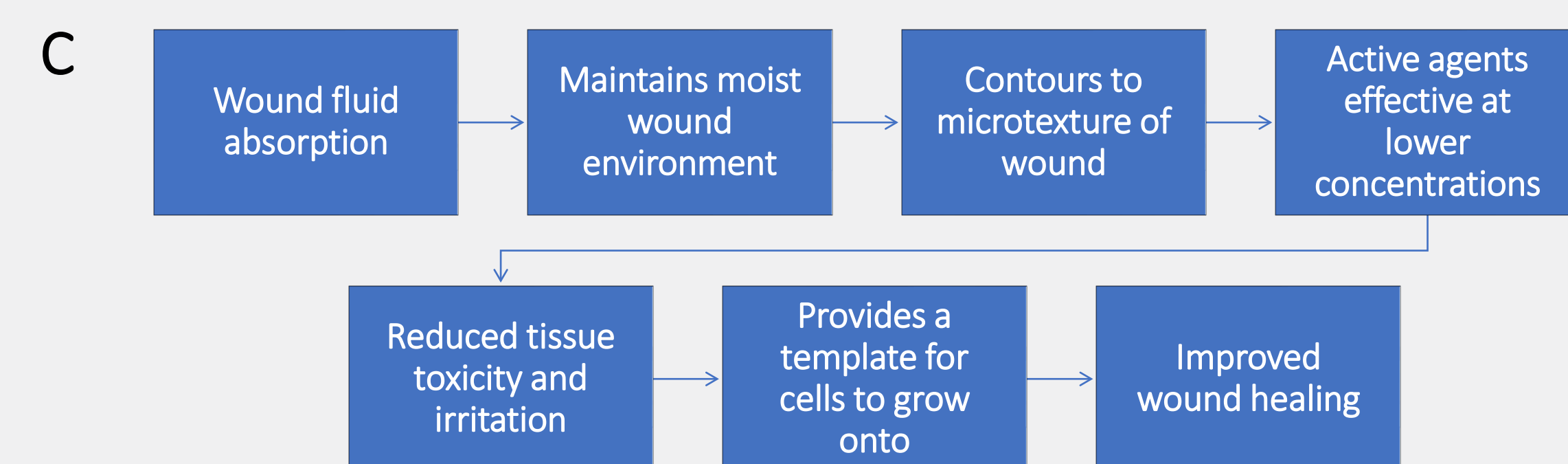
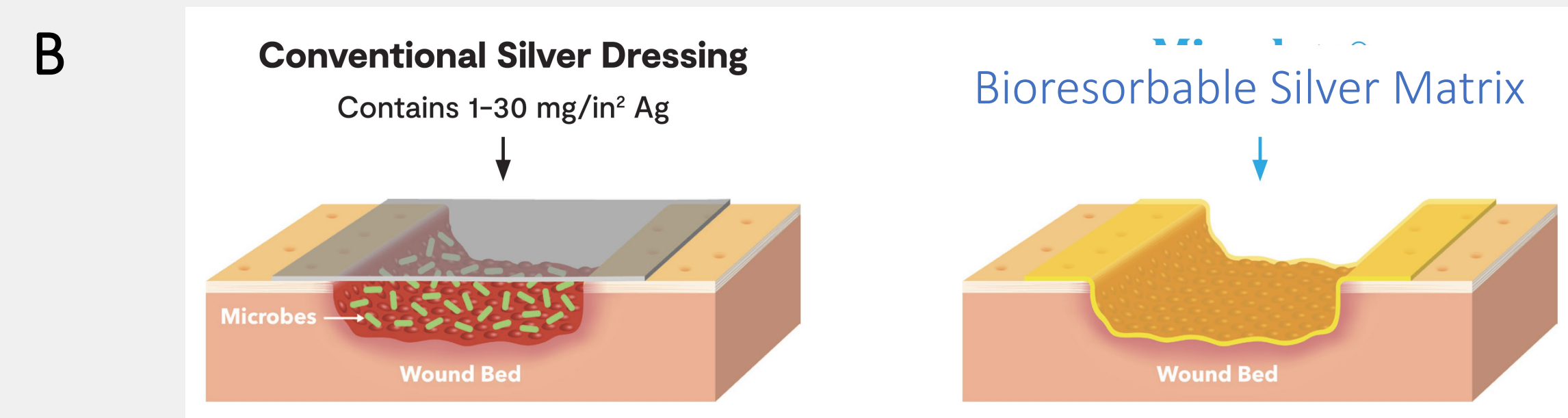
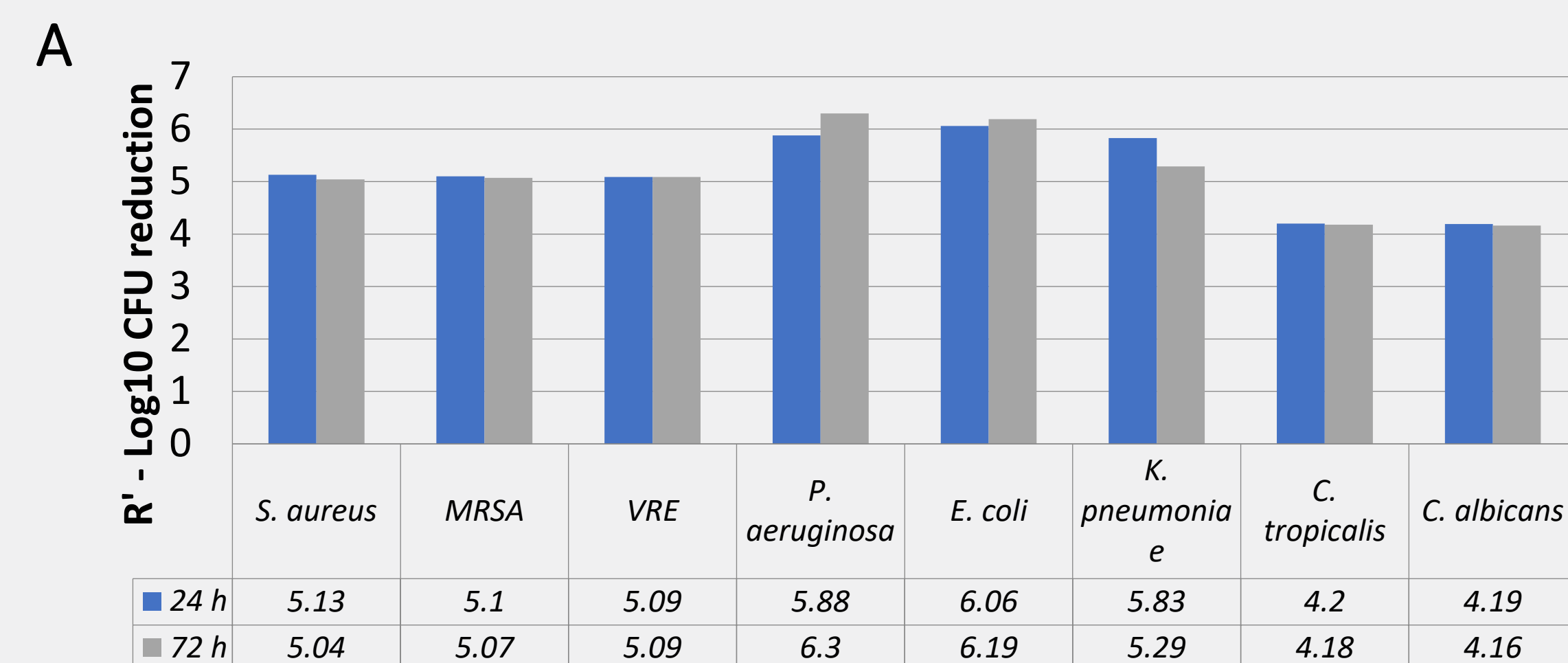


Figure 1: A) The Matrix provides a 4- to 6-log reduction in a variety of bacteria and yeast, including MRSA and VRE.<sup>1,2</sup> B) Mechanism of action of a bioresorbable silver matrix. Unlike conventional silver dressings, the Matrix contours to the microtexture of the wound bed allowing active ingredients 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>

## METHODS

In all three presented cases Bioresorbable Polymeric Matrix with Silver layer was applied to the wounds and dressing was changed (2) times each week. Evaluation was performed on the following basis: (1) Wound Dimensions (2) Presence of Inflammation (3) Cost of treatment.

## RESULTS

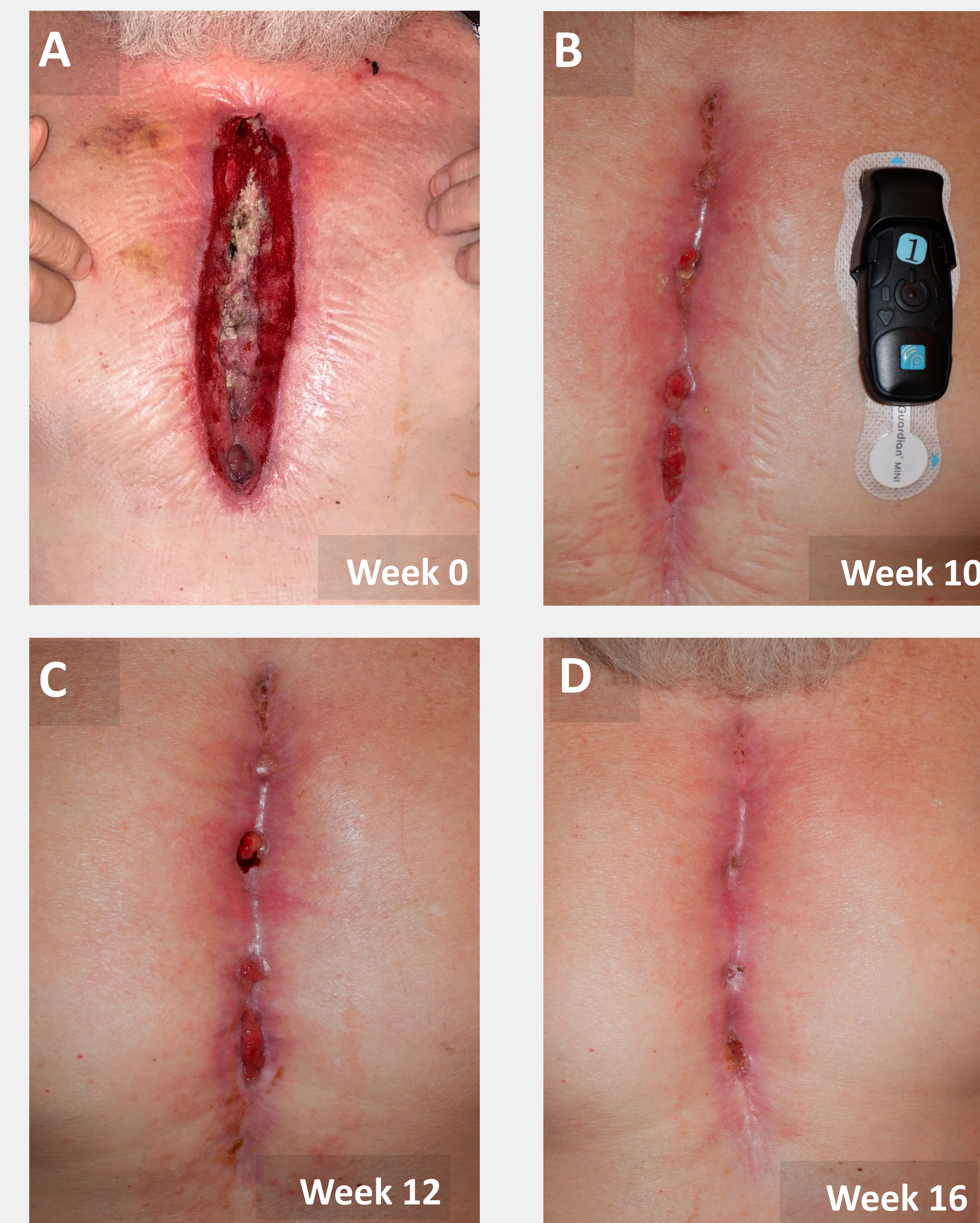


Figure 2. After wound edge approximation was achieved with NPWT, the bioresorbable polymeric matrix assisted with the management of hypergranulation tissue, and managed therapeutic vapor transfer rate (VTR) during the proliferation phase of wound healing. There was no incidence of infection due to optimal bioburden management. Re-epithelialization was achieved in 6 weeks.

## RESULTS



Figure 3. After protease activity was controlled with a moistened collagen foam dressing, the bioresorbable polymeric matrix assisted with bioburden management, and increased re-epithelialization rate due to minimal dressing changes. Wound closure was achieved in 8 weeks.

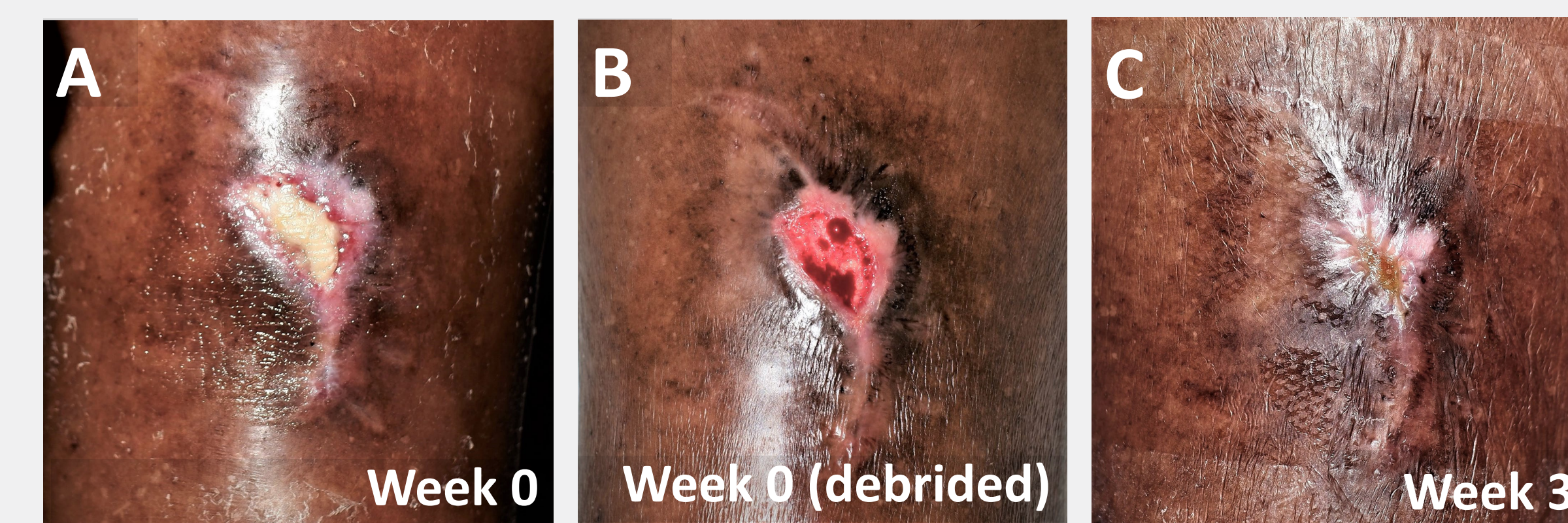
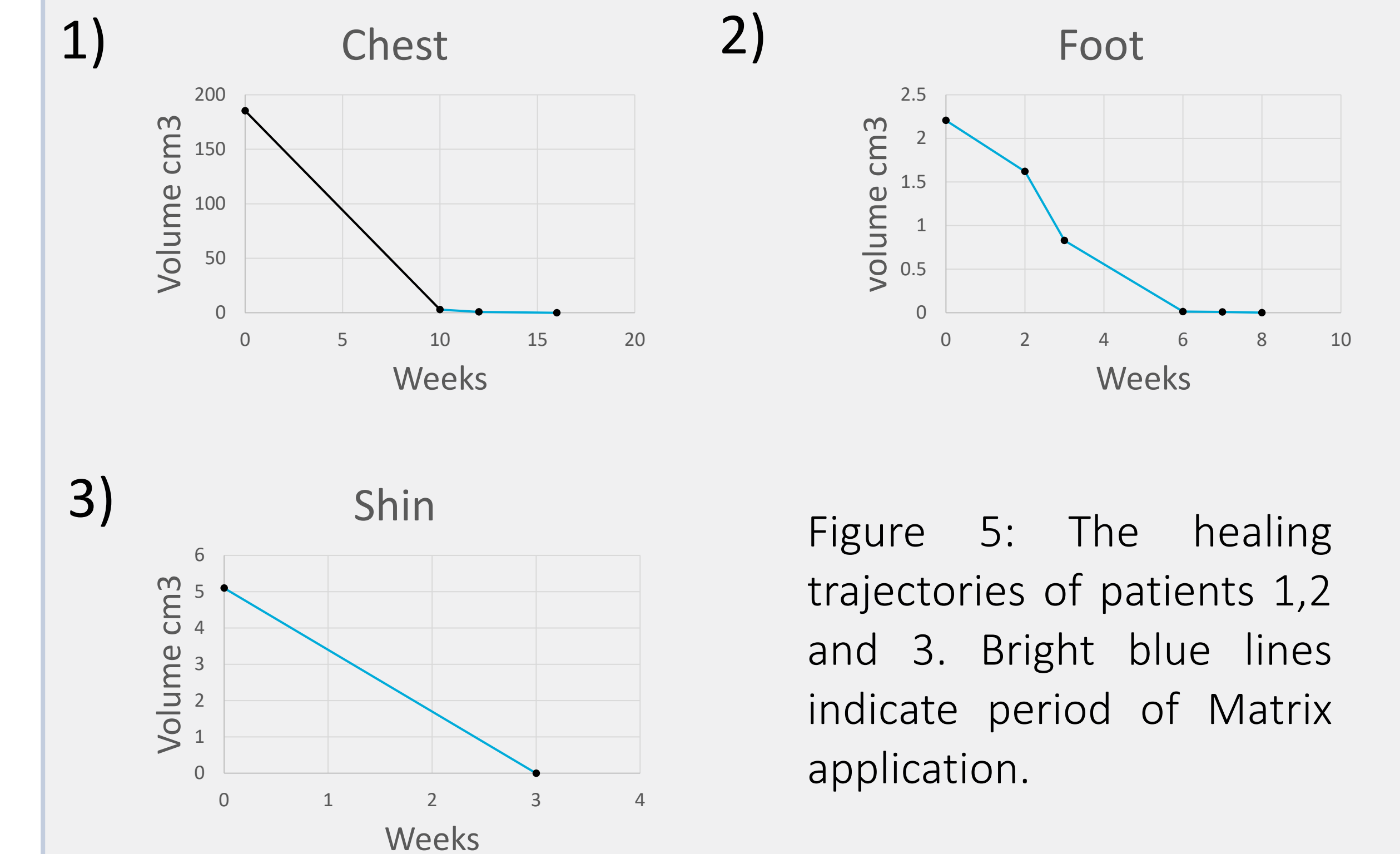


Figure 4. After osteomyelitis was managed with IV Vancomycin for 8 weeks, and nonviable tissue removed with sharp debridement, the bioresorbable polymeric matrix maintained a protective layer over the wound margins and facilitated epithelial cell migration and contraction. There was no incidence of infection, and wound closure was achieved in 3 weeks.

## RESULTS



## DISCUSSION

The Bioresorbable Polymeric Matrix comprises a polyelectrolyte multilayer (PEM) nanofilm of cationic and anionic polymers, which together act as a functional molecular template and facilitates the granulation in the wounds. The nanofilm matrix is coated with a 20-micron layer of resorbable polyvinyl alcohol (PVA) which provides optimal moisture management thus promoting proliferating phase of wound healing. The nanofilm matrix contains a low level of ionic and metallic silver (< 25µg/sq cm) which maintains microbial contamination and prevents critical colonization in wounds.

## REFERENCES

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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).

