

# A THREE-STEP MULTIMODAL BIOFILM MANAGEMENT ENHANCING HEALING IN ACUTE AND CHRONIC WOUNDS: CASE SERIES

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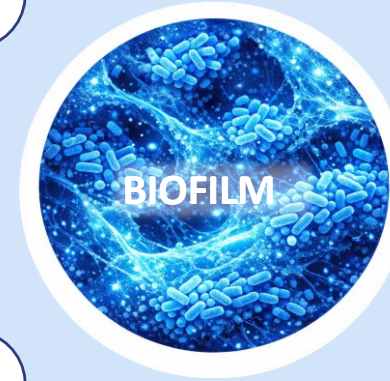
## INTRODUCTION

Rapid formation

Healing delay

Persistent inflammation

Resistance to antibiotics



STERISENT\*

Active ingredient –HOCl pH 2.5  
 High oxidation reduction potential (ORP)  
 Production by phagocytes in human tissue

PRONTOSAN\*

PHMB 0.1% + Betain

SILVERSTREAM\*

AgNO<sub>3</sub> 0.01% + Menthol + Glycerol + Tris buffer  
 Neutral pH  
 Reducing MMP's levels

## METHODS

**6 Patients with acute and chronic complex wounds underwent a Three - step Wound Treatment Protocol**

**Step 1** - Cleansing and moistening wounds with Sterisent\* solution based on active substance HOCl Ph 2.5 for at least half an hour. Pure hypochlorous acid rapidly kills microbes and supports healing while remaining non-cytotoxic to human cell.

**Step 2** - Cleansing and moistening wounds with Prontosan\* solution, left in the wound for 15 minutes and then cleaned with pad. Unique mix of Betaine and PHMB allows it to break down biofilm while simultaneously reducing microbial burden.

**Step 3** - Application of SilverStream\* liquid dressing solution with unique properties and antimicrobial preservative. Wet pads impregnated with the solution were left in the wound bed for the remainder of the day, establishing a sustained therapeutic moist liquid dressing environment conducive to granulation and angiogenesis.

## DISCUSSION

**Three – step method for treatment of complex wounds of various origins:**

Elimination of infection

Enhanced granulation tissue formation Prevention of amputations

Prevention of life – threatening infections

## REFERENCES

Jalem SR & Usharani P. Effect of hypochlorous acid in open wound healing. Bioinformation. 2024 nov 30; 20(11):1619-1622.  
 Ryan SQ, et al. Therapeutic indices of topical antiseptics in wound care: a systematic review. Advances in skin and wound care. 2025;38:10-8.  
 Rippon MG, Rogers AA, Ousey K. Polyhexamethylene biguanide and its antimicrobial role in wound healing: a narrative review. Journal of Wound Care. 2023;32(1):5-20. <https://doi.org/10.12968/iowc.2023.32.1.5>. Kumar A, Bajaj SS, Bajaj JK. A comparative study of efficacy of silver stream versus povidone iodine in healing diabetic ulcers. Int Surg J. 2022;9(6):1174-1178.

## RESULTS

TRAUMATIC AND BLAST INJURY

- 20 years old male
- Several traumatic open wounds across the lower limb following a high-energy blast injury
- The wounds varied in depth and configuration, with irregular edges, exposed soft tissue, heavy contamination, and clear signs of early biofilm

1



2



10 October 2023

15 October 2023

14 November 2023

BILATERAL FUNGAL HEEL INFECTION

- 24 years old male
- Highly complicated bilateral heel condition characterized by extensive maceration, fungal overgrowth, and epidermal breakdown resulting from prolonged use of tight, non-ventilated military boots



13 September 2025

17 September 2025

30 September 2025

NECROSIS OF THE ABDOMINAL WALL AND THIGHS

- 43-year old female
- 5 days after abdominal wall and bilateral thighs liposuction
- Small intestine perforations
- Septic shock + acute renal failure
- Admission to ICU



12 January 2025

20 January 2025

15 April 2025