

# Evaluating the Synergetic Effect of the Synthetic Hybrid-Scale Fiber Matrix\* and Topical Antibiotics in Contaminated Post-Operative Wounds of the Lower Extremity

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## Introduction

Many factors contribute to a healthy environment for wound healing, such as the quality of tissue present, amount of moisture, and condition of wound edges. Wound healing can be complex under any circumstance but can be particularly problematic when the area is contaminated. Contaminated post-operative wounds can lead to further complications, such as infection, poor or chronic wound healing, or the need for revision surgery.<sup>1</sup> Commonly, intractable surgical site infections after lower extremity amputations can result in a higher level of amputation if not effectively managed.

Studies have shown that the use of a synthetic hybrid-scale fiber matrix (SHSFM) for wound care decreased overall wound closure time, granulation tissue formation in wound beds, and increased epithelialization without most complications attributed to wound care matrices containing biologic materials.<sup>2,3</sup> Faster wound closure correlates with less time the wound is exposed to environmental contaminants.

## Methods

Seven patients underwent guillotine transmetatarsal amputations treated with the synthetic hybrid-scale fiber matrix at a single academic medical center. Following guillotine amputation of the forefoot, the SHSFM was applied over both the exposed metatarsals and surrounding soft tissue, particularly under the resulting suture line during primary closure. Vancomycin powder was applied in conjunction with SHSFM when placed over surrounding soft tissue to reduce bacterial activity and contamination. Surgical site sizes ranged from 8cm x 4cm to 12cm x 8cm. Outcomes measured included surgical site complication rates and time to complete wound closure.

## Results

Due to post-operative vascular complications, two patients required BKAs after their guillotine TMA surgeries. None of the patients in this preliminary study developed a surgical site infection after the initial amputation and treatment using SHSFM and topical vancomycin.

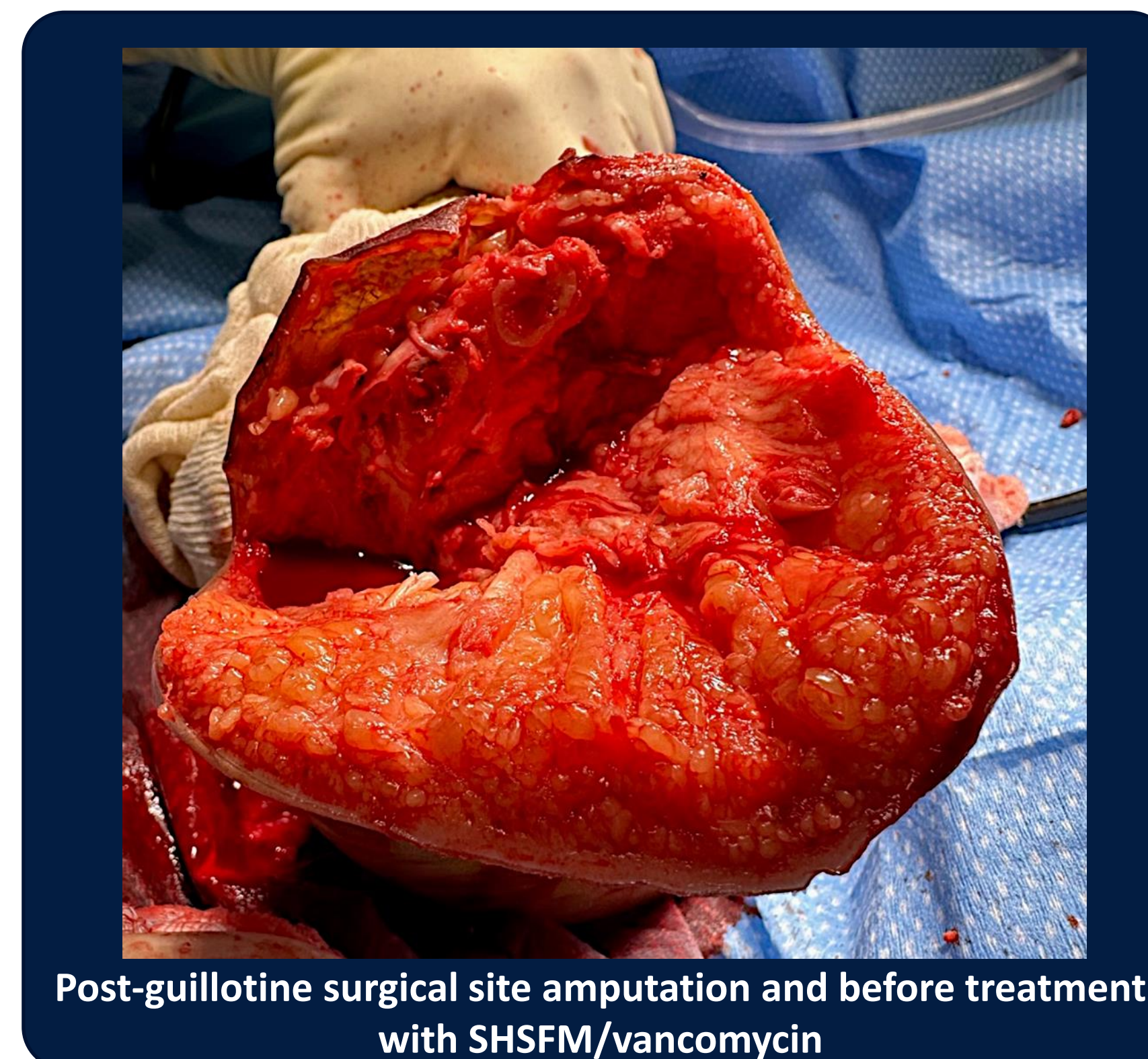
## Surgical Technique



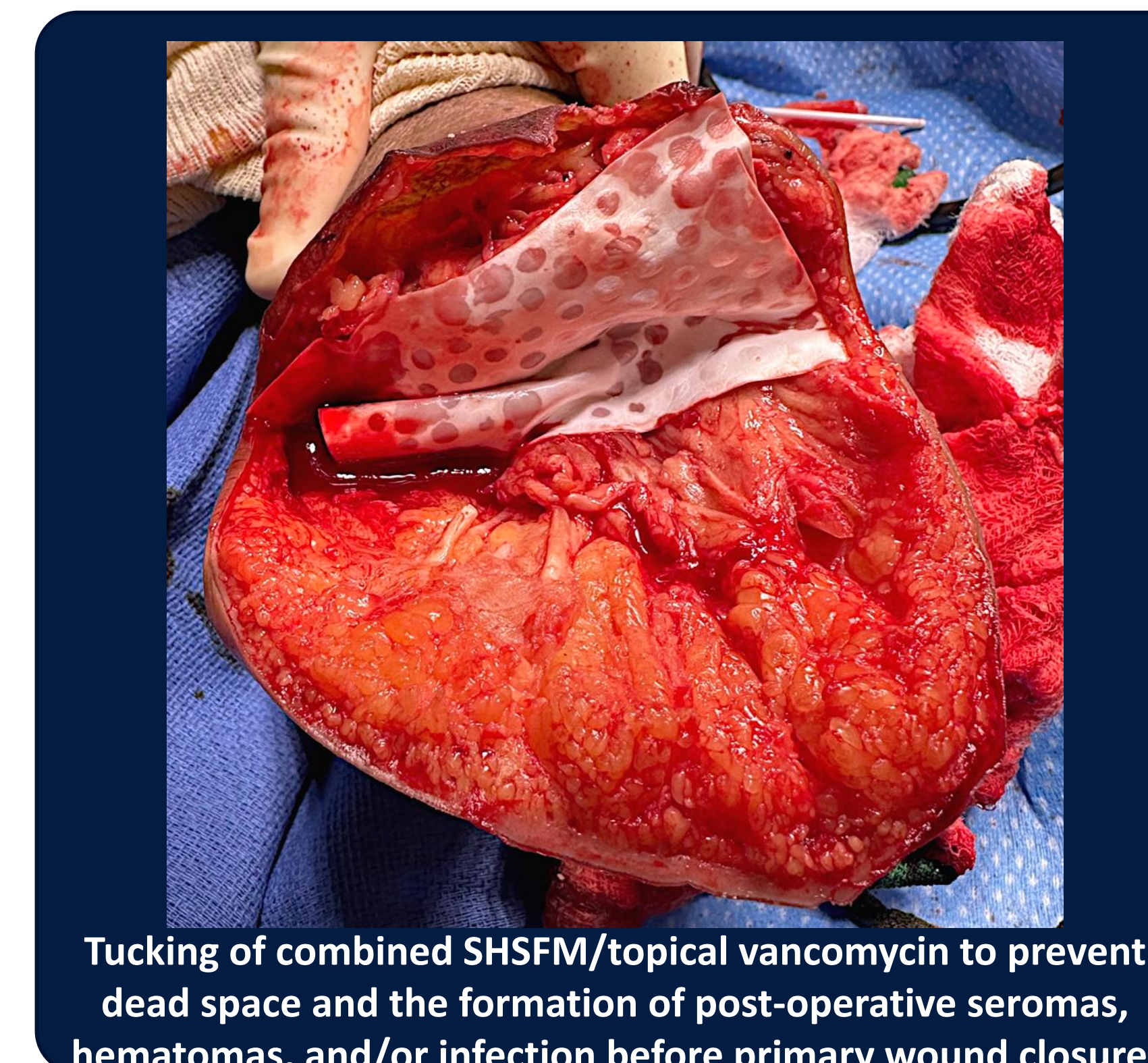
SHSFM sheet before hydration



Topical vancomycin positioned on SHSFM sheet before placing in surgical site



Post-guillotine surgical site amputation and before treatment with SHSFM/vancomycin



Tucking of combined SHSFM/topical vancomycin to prevent dead space and the formation of post-operative seromas, hematomas, and/or infection before primary wound closure.

## Conclusions

Revision surgery requiring a higher level amputation is a common complication in lower extremity amputations<sup>1</sup>, especially in those with comorbidities that affect post-operative healing. The prophylactic usage of topical vancomycin, in conjunction with the SHSFM, was proven to successfully deter surgical site infection in the clinical setting. The results of this preliminary study indicate that this technique should be investigated further on a larger scale.

## References

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\*Restrata®, Acera Surgical Inc., St. Louis, Missouri, USA

Restrata® is not indicated for implanted use nor in conjunction with antibiotics. The opinions expressed in this research are solely those of the author: Dr. Wenjay Sung, DPM, FACFAS.