

# Clinical Application of a Synthetic Hybrid-Scale Fiber Matrix\* in the Pediatric Trauma Patient

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## Introduction

Complex soft tissue wounds resulting from trauma can be difficult to heal and may require advanced treatment options. Split thickness skin grafts (STSGs) and other allogeneic and xenogeneic skin substitutes are limited in their ability to manage these lesions. A synthetic hybrid-scale fiber matrix\* (SHFM) has been shown to have excellent structural durability and does not carry the risks of disease transmission and the inflammatory response associated with biologic materials. The SHFM may offer a new option for managing complex wounds. In this case study, the synthetic SHFM was used to treat a complex traumatic wound in a pediatric patient.

## Methods

A retrospective case study of a single patient treated with the SHFM was conducted. A pediatric female presented to a trauma center with a burn and Morrell-Lavallee lesion to the right lower and medial thigh after a motor vehicle accident. The patient underwent a standard trauma work up and was taken to the OR for surgical debridement followed by negative pressure wound therapy with instillation-debridement (NPWT-id). The patient's parents declined a STSG to avoid additional surgery. The SHFM was selected as an alternative. Wound healing was monitored at outpatient follow-up visits and the SHFM was reapplied as clinically indicated.

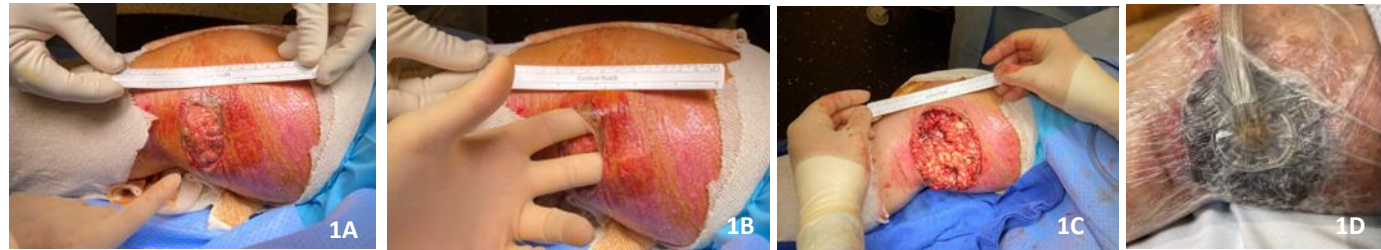


Figure 1A-1B: Index burn, Morrell-Lavallee lesion. Figure 1C: Surgically debrided wound. Figure 1D: Immediate post operative dressing: NPWT – id.



Figure 2A: Fenestration of SHSM. Figure 2B: Securing the SHSM with broad adhesive strips. Figure 2C: Application of non-adherent dressing. Figure 2D: Application of NPWT to -125 mmHg.



Figure 3A: Immediately prior to SHSM application. Figure 3B: 1 week post SHSM application, with the matrix resorbing into the wound bed. Figure 3C: 2 months following first SHSM application. Figure 3D: 4 months after first SHSM application, wound healed.

## Results

One pediatric female patient who sustained a complex traumatic motor vehicle accident wound was treated in this case study. The patient received serial applications of the synthetic hybrid-scale fiber matrix in conjunction with NPWT-id and outpatient NPWT. Four months after initial application of the synthetic hybrid-scale fiber matrix, the wound achieved complete closure.

## Discussion

Complex cutaneous wounds resulting from disease or injury may be difficult to heal. These types of wounds can result in long hospital stays, considerable health care costs, and high morbidity and mortality. The ability to rapidly re-epithelialize and promote healing is essential for improving both clinical and economic outcomes. Use of the synthetic matrix enabled healing of the wound, including epithelialization. The successful clinical application of a synthetic hybrid-scale fiber matrix in this pediatric patient suggests that its use may be a reasonable alternative to STSG where STSG may not be the preferred option.

Trademarked Items

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