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Use of a Synthetic Hybrid-Scale Fiber Matrix* in the Treatment of Surgical Wounds

Introduction

Complex wounds arise due to various etiologies and can require surgical intervention. These wounds can be difficult to heal and often require advanced therapies [1]. Current therapies such as biologic skin substitutes are limited in their availability to treat these wounds due to the risk of inflammatory response and disease transmission [2]. A synthetic hybrid-scale fiber matrix*, with an architecture similar to native extracellular matrix, offers an alternative in the treatment of complex surgical wounds [2]. In this case study, 13 patients with a total of 15 wounds were treated with the synthetic hybrid-scale fiber matrix in the surgical setting.

Methods

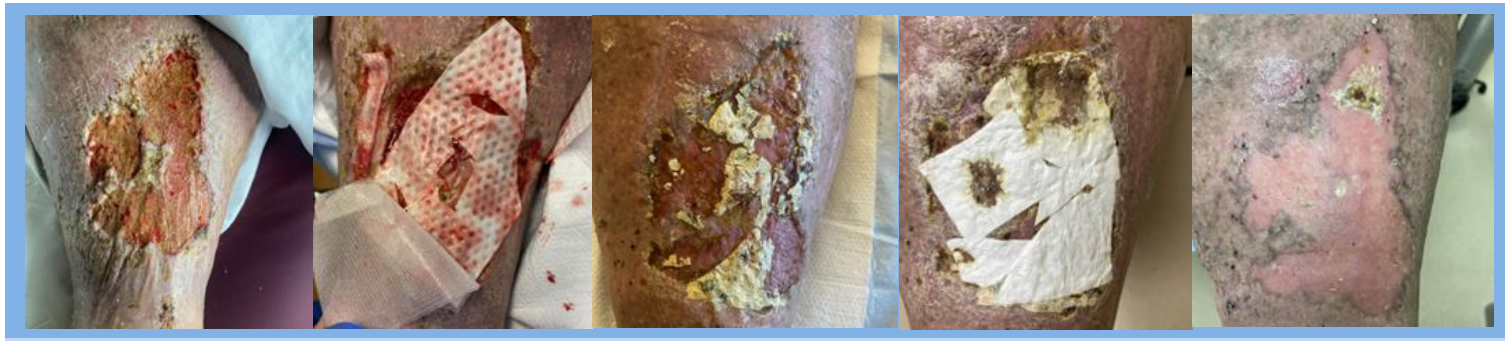
A retrospective study of 13 patients with a total of 15 complex surgical wounds treated with the synthetic hybrid scale fiber matrix was conducted. Wound healing progress was observed, and the synthetic hybrid-scale fiber matrix was reapplied as deemed appropriate by the physician.

Results

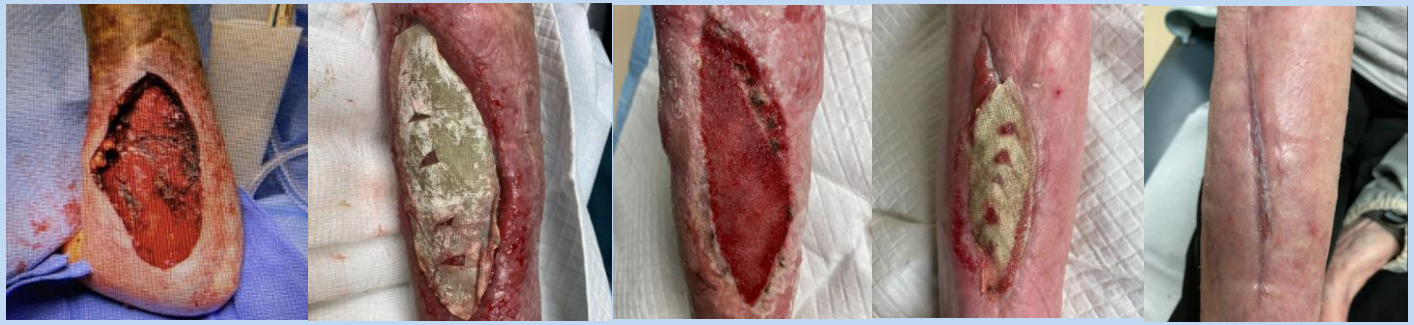
The average patient age was 60 years old. Wound etiologies included venous leg ulcers, infections, Mohs surgery, trauma, calciphylaxis, and frostbite among others. Patients had many co-morbidities including cancer, obesity, hypertension, diabetes, and chronic kidney disease. The average starting wound size was 115.4 cm². Seven wounds achieved complete closure in 77 days, with one being successfully bridged to a split thickness skin graft after regranulation of the wound bed. The remaining 8 wounds decreased in size by an average of 59% in 76 days. The average number of synthetic hybrid-scale fiber matrix reapplications was 3.3.

Discussion

Complex surgical wounds, particularly in patients with multiple co-morbidities, can be difficult to manage. In this present study, all wounds treated with the synthetic hybrid-scale fiber matrix achieved decrease in total wound size, and 5 wounds completely healed. While this is a retrospective study with a small sample size, this demonstrates the ability of the synthetic hybrid-scale fiber matrix to re-granulate and re-epithelialize difficult to treat wounds.



Progressive healing of a venous leg ulcer. The wound initially measured 142.5cm². Complete healing was observed 39 days after initial application. The patient received 2 applications of the synthetic hybrid-scale fiber matrix.



Progressive healing of a trauma wound in an 89-year-old female with multiple co-morbidities. The wound initially measured 81cm². The synthetic hybrid-scale fiber matrix was applied twice to the wound in conjunction with negative pressure wound therapy. The wound achieved complete closure in 90 days.

Progressive healing of a Post-Mohs wound with exposed bone. The initial wound size was 90cm². The wound healed 175 days after initial application of the synthetic hybrid-scale fiber matrix, with a total of 12 applications.

Progressive healing of breast cancer wound dehiscence. The initial wound size was 32.5 cm² and the patient was on active chemotherapy. The patient received a total of 12 applications of the synthetic hybrid-scale fiber matrix. The wound was closed 124 days after initial application

Trademarked Items
Restrata* Acera Surgical, Inc., St. Louis, Missouri
Results updated since original abstract submission

References
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2. Fernandez L, Shar A, Matthews M, Kim P, et al. Synthetic hybrid-scale fiber matrix in the trauma and acute care surgical practice. Wounds. 2021;33(9):237-244