Use of a Synthetic Hybrid-Scale Fiber Matrix in the Treatment of Chronic Ulcers and Complex Wounds

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Introduction

Chronic and complex wounds can be difficult to treat, regardless of etiology [1]. These wounds cause a burden to both the patient and healthcare system, with wound care costs estimated to be over 28 billion per year [1]. Advanced treatment options are needed to address these challenges and improve patient outcomes. A synthetic hybrid-scale fiber matrix* has shown positive results in the treatment of complex and chronic wounds [1]. In this present case series, patients with chronic and complex wounds of various etiologies were treated with the synthetic hybrid-scale fiber matrix.

Methods

A retrospective review of 18 patients with a total of 28 wounds was conducted via a review of patient charts. Patients who received at least one application of the synthetic hybrid-scale fiber matrix were included in the case series review. The synthetic hybrid-scale fiber matrix was cut to size, fenestrated or meshed as appropriate, and applied to the wound bed. The wound healing process was monitored at follow up visits, and the matrix was reapplied as clinically indicated to achieve the appropriate clinical outcome.

Results

The average patient age was 59 years, and average initial wound size was 43.4 cm². Wound types included diabetic foot and venous leg ulcers, surgical and trauma wounds, and necrotic infections. Several patients had failed other advanced therapies including collagen and wound vacs, and the average wound duration prior to first synthetic hybrid-scale fiber matrix application was 134 ± 180 days. 89% of wounds achieved complete healing via re-epithelialization, or regranulation of the wound bed to stage to a split-thickness skin graft. The average time to heal was 196 days, and the number of applications ranged from 1 – 11.

Conclusion

This retrospective case series demonstrates the efficacy of the synthetic hybrid-scale fiber matrix in the treatment of chronic and complex wounds. Despite previous advanced treatment failures, the synthetic hybrid-scale fiber matrix was able to re-granulate or re-epithelialize 89% of wounds in the case series. This limited case series demonstrates the versatility of the synthetic hybrid-scale fiber matrix to achieve the appropriate clinical outcomes depending on the wound and patient.

	Total Wounds (n = 28 wounds)	Ulcers (n=6 wounds)	Infection (n=9 wounds)	Surgical (n=6 wounds)	Trauma (n=4 wounds)	Other Wounds (n=3 wounds)
Primary healing (%)	89%	83%	78%	100%	100%	100%
Time to heal, mean ± SD (days)	196 ± 146.7	187 ± 97.7	298.7 ± 167.1	138 ± 157.2	151.3 ± 94	147.3 ± 25
Range of applications (number of applications per wound)	1 - 11	1 - 4	1 - 11	1 - 5	1 - 3	1 - 5

Patient age, years	
Mean ± SD	59.2 ± 11.4
Ulcer duration prior to application, days	
Mean ± SD	133.9 ± 180.3
Wound surface area, cm²	
Mean ± SD	43.4 ± 52.7
Diabetes history, %	
Yes	33%
No	67%
Peripheral vascular disease, %	
Yes	67%
No	33%
Location of wound, %	
Foot	25%
Lower Extremity	54%
Upper Extremity	11%
Other	11%
Previous treatments, %	
Collagen	35%
Wound Vacs	21%
Hydrofera	17%
Microlyte	17%
other	6%

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

1. Barton EC, Abicht BP. Lower extremity wounds treated with a synthetic hybrid-scale fiber matrix. Foot & Ankle Surgery: Techniques, Reports & Cases. 2021. 1(3)10076.

A soft tissue infection requiring surgical debridement. The resulting wound measured 240cm² The wound healed on 131 days after one application of the synthetic hybrid-scale fiber matrix.

A non-healing surgical wound resulting from a ganglion cyst removal. The wound initial measured 9cm² with exposed structure. The wound received 4 applications of the synthetic hybrid-scale fiber matrix and healed in 73 days.