

A Case Report: Utilizing Ovine Forestomach Matrix in the Subacute Treatment of Fascial Thermal Burn

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INTRODUCTION

Thermal burn injuries are common, devastating, and challenging medical emergencies. Timely and effective treatments are paramount to both the short-term and long-term outcomes for the patient. Contemporary medical providers and healthcare facilities across the globe are emphasizing cost-efficient and accessible treatments. OFM is a decellularized extracellular matrix (ECM) bioscaffold that has been utilized extensively a range of soft tissue reconstructions including chronic lower extremity wounds to acute surgical wounds^{1,2,3}. OFM is composed of >150 bioactive secondary proteins⁴ which demonstrate anti-inflammatory properties^{5,6}, stimulate blood vessel formation⁶, and is ultimately remodeled into functional soft tissue over time^{6,7}. The OFM scaffold is additionally available in an antimicrobial variant, impregnated with 0.3% ionic silver.

While the use of OFM in the management of chronic wounds has been widely published, there are few reports describing its use in burns treatment. This case series documents the successful use of OFM for the treatment of challenging facial thermal burns in two patients.

METHODS

Use of images and data for research and publication purposes was obtained with informed consent from the patient, or the patient's caregiver. All procedures were performed in accordance with the ethical standards of the respective institution and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. OFM* (Endoform® Natural Dermal Template) and OFM+0.3% ionic silver (Endoform® Antimicrobial Dermal Template) was supplied by Aroa Biosurgery (Auckland, New Zealand). The burn wound was managed with current best practice, including debridement during the initial consultation and maintenance of a moist wound environment. Prior to application, OFM was cut to size as needed and then rehydrated in sterile saline. The wound was dressed using a non-adherent petrolatum dressing and secured using a gauze bandage. At follow-up visits (every 2-5 days), wounds were debrided and irrigated (aqueous hypochlorous solution) as required. Wound dimensions were obtained using a paper ruler and recorded and the wound photographed. Patient pain was subjectively assessed by the surgical team, patient and caregivers using a 0-10 grading system (0='no pain or discomfort'; 10='worst possible pain'). The wound was considered resolved when there was 100% re-epithelialization and no drainage.

RESULTS

OFM was easy to handle and cut to size as needed and conformed well to the affected area. The conformance of the product was especially relevant given the contours of the facial injuries, as well as the pain and discomfort endured by the patients. Both cases responded well to treatment with robust granulation tissue forming in 1 to 2 weeks, leading ultimately to closure via secondary intention by 2 to 8 weeks. The surgical team noted minimal scarring in both patients with regrowth of hair follicles and good skin pliability.

CONCLUSION

OFM provided a cost-effective advanced therapy to provide coverage of the defect, modulate inflammation, and accelerate granulation tissue leading to full closure of the wound with minimal long-term scar tissue. Treatment with OFM negated the need for a STSG, which was otherwise unavailable to these patients.

REFERENCES AND DISCLOSURES

Product was provided by Aroa Biosurgery Limited (New Zealand); *Endoform Natural Dermal Template (Aroa Biosurgery Limited, New Zealand); †Endoform Antimicrobial (Aroa Biosurgery Limited, New Zealand)

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CASE 1: 9-month-old Male Subacute Thermal Burn (Refugee Camp Fire). 9-Month-old-male with no significant medical history sustained thermal burns from a cooking fire in refugee camp. Due to his circumstances, initial evaluation was conducted remotely and then in-person 8 days after the initial injury. The wound measured 167.6 cm² (10% Total Body Surface Area for an infant <1 year old) and the patient experienced significant discomfort, damaged hair follicles, and suspected wound infection



Initial Presentation: ~13.2 cm x 12.7cm (167.6 cm²)



Week 2: Pre-Debridement, ~75% fibrotic



Week 3: Pre-Debridement, (25% granular, 75% fibrotic)



Week 3: Post-Debridement, ~12.5 cm x 10.6 cm (132.5 cm²)



Week 7: 4.3 cm x 3.8 cm (16.3 cm²)



Week 8: 100% epithelialized, hair re-growth noted

CASE 2: 38-year-old Male Partial-Thickness Thermal Burn (Gas Explosion). 38 year-old male with no significant past medical history sustained a partial-thickness thermal burn injury to the majority of the forehead and both cheeks of this face secondary to a gas explosion. In-person exam was performed 2 days after the injury. The wound measured 424.1 cm² (4.5% Total Body Surface Area) and the patient experienced significant discomfort (8/10) with notable drainage and suspected infection.



Initial Presentation: Post-Debridement



Week 0 (Day 4): 27.9 cm x 15.2 cm (424.1 cm²)



Week 0 (Day 6): Pre-Debridement



Week 2: Final application of OFM



Week 3: 100% epithelialized