Multi-Centre Clinical Evaluation of a Cell Conductive Extracellular Matrix Surgical Mesh in Plastics and Reconstructive Surgery – A Case Series

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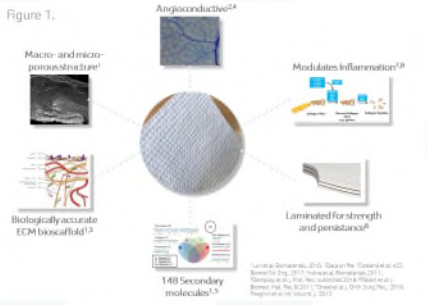
Multi-laminate ovine forestomach matrix (OFM) PRS mesh# is indicated for both implant applications and dermal regeneration, and is a biologically accurate scaffold for soft tissue repair. The non-crosslinked extracellular matrix biomaterial is rapidly infiltrated, vascularized and remodeled (Fig. 1). A multi-centre evaluation of the OFM PRS mesh was initiated to evaluate the performance of the device in a range of PRS procedures.

Figure 1.



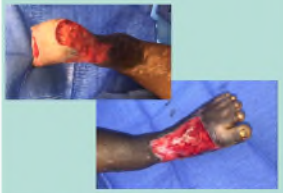
- OFM PRS mesh was used for deep partial burns, complex dermal reconstruction, surgical repair of chronic wounds, tumor excision, and cosmetic procedures (n=16 cases total)
- The mesh handled well, conformed easily to the underlying soft tissues and could be shaped to the deficit
- Sutures, staples and NPWT were compatible with the mesh
- Blood and blood components where wicked into the porous structure once placed in the deficit.
- Granulation tissue and a robust blood supply formed within seven days.
- Where patients received a STSG, graft take was excellent (90-100%).
- Participants reported no pain or adverse events and were satisfied with their surgical outcomes

#Endoform® Surface (Aroa Biosurgery Limited, New Zealand); ^Integra Bilayer (Integra); ϕ Hydrofera Blue (Hydrofera LLC); Financial support provided by Aroa Biosurgery Limited (New Zealand); BCHM is a shareholder in Aroa Biosurgery Limited

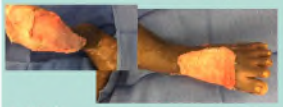
Dermal Reconstruction – Pediatric Surgical Dehiscence

Patient: 3 y/o, ♀. Surgical dehiscence following orthopaedic implants. Exposed bone and tendon. Failed collagen/CS^ graft.

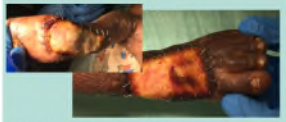
Pre-op:



Procedure: defect debrided. OFM PRS 'Thick' applied and stapled. Non-adherent/silver alginate and cast/splint.

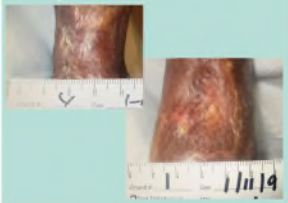


1 Week: – granulation tissue budding. Debridement, STSG applied.



2 Week: 100% graft take.

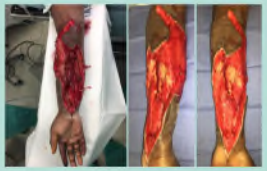
12 Week: Equivalent movement to pre-op status. Regenerated dermis had good elasticity.



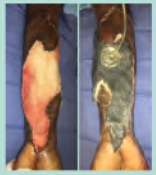
Complex Dermal Reconstruction

Patient: 25 yo, ♀, diabetic. Compression injury with DKA. Fasciotomies, multiple necrotic muscle and soft tissue debridements. Thin coverage over radial and ulnar arteries. Patient refused below elbow amputation.

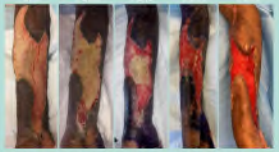
Pre-op:



Procedure: debridement and partial complex closure at the antecubital fossa and wrist. OFM PRS 'Thick' shaped, joined (4-0 chromic catgut) and stapled. Non-adherent dressing + NPWT (75 mmHg, continuous).

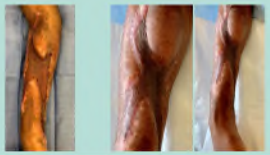


1-6 Week:



6 Week: fully granulated, 12/1000" STSG placed.

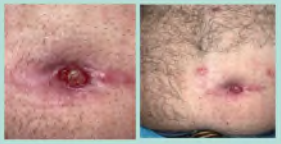
9 Week: 100% epithelization.



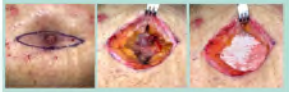
Flap Stabilization - Surgical Closure of Chronic Dehisced Wound

Patient: 53 yo, ♂. Previous surgical removal of lap-band resulting in 5 m/o dehisced surgical wound.

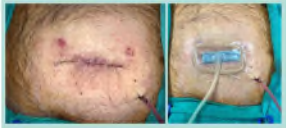
Pre-op:



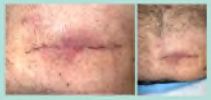
Procedure: Surgical incision at the margins, through the sub-cutaneous adipose tissue and down to the fascia. OFM PRS 'Thick' – trimmed to size, and placed onto the fascia. Two additional devices placed on top of the first.



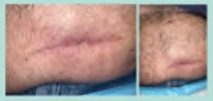
Flap advancement to cover surface. Drain placed and site managed with incisional NPWT.



1 Week : drain and NPWT removed. Good apposition of the cutaneous tissues. No redness or swelling.



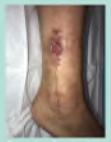
3 Week : no evidence of incisional dehiscence or wound recurrence.



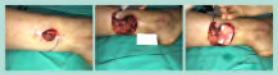
Surgical Closure of Chronic Dehisced Wound – Flap Stabilization and Topical

Patient: 26 yo ♀. Nonhealing surgical wound following ORIF left ankle.

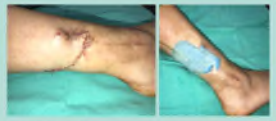
Pre-op:



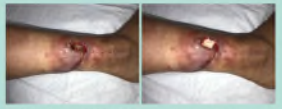
Procedure: Surgical excision of the ulcer with partial ostectomy. Placement of OFM PRS 'Thick'.



Flap advancement to cover OFM PRS. Non-adherent and incisional NPWT.

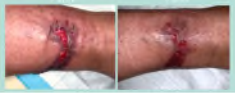


1 Week: Infection and dehiscence. OFM PRS applied the wound bed.



2 Week: OFM PRS applied, with non-adherent and antibacterial foam^.

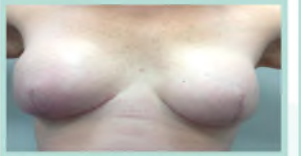
3 to 9 Week: Wound managed with reconstituted collagen dressing and antibacterial foam. Continuous improvement in granulation tissue and epithelialization.



Nipple Reconstruction

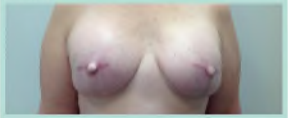
Patient: 56 yo ♀. Previous (1 year) bilateral breast reconstruction.

Pre-op:



Procedure: OFM PRS 'Thin' fashioned into a cylindrical form and placed sub-cutaneous to create projection. Flap advancement to cover the implant.

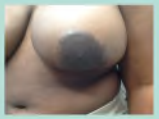
8 Week: Nipple projection deemed satisfactory by patient. No pain or discomfort.



Nipple Reconstruction

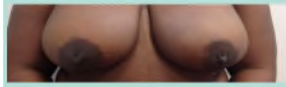
Patient: 32 yo ♀. Bilateral breast reduction with loss of all projection.

Pre-op:



Procedure: OFM PRS device, 'Thin', (~2 x 5 mm) and passed through the nipple after release and elevation.

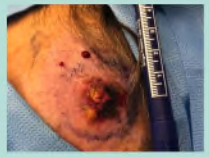
4 Week: Nipple projection deemed satisfactory by patient. No pain or discomfort.



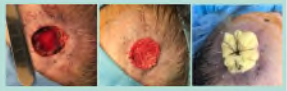
Tumor Resection

Patient: 98 yo ♀. Bowenoid Squamous Cell Carcinoma (~1.5 x 1.5 cm) in-situ.

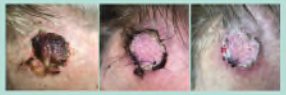
Pre-op:



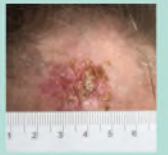
Procedure: Full thickness scalp resection down to periosteum, 2.1 cm x 2.7 cm. OFM PRS 'Thick', cut and placed on the periosteum. Bolster dressing applied.



2 Week: Removal of the bolster. OFM PRS mesh was visible and becoming vascularized and integrated.



6 Week: Deficit is completely filled and 80% re-epithelialized.



8 Week: Deficit maturing. No additional grafting required. Patient very satisfied with cosmetic outcome.