Multi-Center Evaluation of an Advanced Extracellular Matrix Technology for the Management of Chronic Wounds - A Canadian Experience

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INTRODUCTION

The aim of this case series was to clinically evaluate an advanced extracellular matrix (ECM#) technology across different Canadian care settings for the management of chronic wounds. ECM technologies works as a scaffold to help rebuild missing or damaged tissue. Unlike traditional collagen dressings, ECM is entirely natural, and is an accurate mimic of the scaffold found in healthy tissue[1]. ECM contains collagen, but also a range of other secondary molecules that are important for healing. Additionally, ECM has been shown to modulate wound proteases[2].

METHODS

30 patients were recruited from three sites. Wound etiology included pressure injuries, diabetic foot ulcers, skin tears, pilonidal sinus, necrotizing fasciitis, venous leg ulcers, dehisced abdominal and traumatic wound. Care settings included in patient, out patient and home health. All wounds were managed with best practice, including debridement, maintenance of a moist wound environment and appropriate compression and off loading All wounds were managed with an ECM applied every 2-7 days to the wound bed. Wounds were visually inspected, imaged and measured over the course of management with ECM.

RESULTS

A total of 33 wounds (n=30; participants) were enrolled in the study with different types of wounds, including 8 PIs. Most wounds showed improved healing rates and decreased frequency of dressing changes when managed with ECM compared to standard of care. Average times to wound closure was 52 days (from 19 to 133 days). Once hydrated the ECM easily conformed to wounds and was easy to apply. No adverse events were observed.

Wounds closed:

70%

(By week 12; n=23/32)

Average % wound size at 4 weeks:

36%

(SD=33%; range, 0% to 96%)

'Respondents' at 4 weeks:

63%

(>50% reduction in area at 4 weeks; n=20/32)

CONCLUSIONS

This represents the first Canadian evaluation of an ECM for the management of wounds, including PIs. Improvements to the granulation tissue were observed, and otherwise stalled chronic wounds began to resolve. The availability of this advanced technology to Canadian wound specialists provides another tool for the management of these complex pathologies.

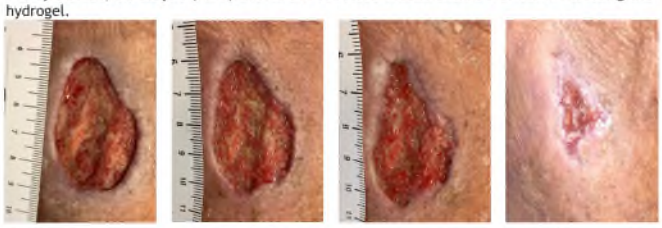
REFERENCES AND DISCLOSURES

Product was provided by Aroa Biosurgery Limited (New Zealand);
ECM#: Endoform® Natural Dermal Template (Aroa Biosurgery Limited, New Zealand).
GV/MB*: Hydrofera Blue Classic (www.appulsemed.com)

1. Bohn, G.A. and K. Gass, Leg ulcer treatment outcomes with new ovine collagen extracellular matrix dressing: a retrospective case series. Adv Skin Wound Care, 2014. 27(10): p. 448-54.
2. Bohn G.A., et al., Proactive and Early Aggressive Wound Management: A Shift in Strategy Developed by a Consensus Panel Examining the Current Science, Prevention, and Management of Acute and Chronic Wounds. Wounds, 2017. 29(11): p. 537-54

CASE 1: Full Thickness Wound

Patient: 67 Year old female with profound cellulitis on left leg and foot, resulting in blistering on dorsal aspect of foot. Wound deteriorated and became a black eschar. **Medical History:** Atrial fibrosis, aortic valve sclerosis, chronic CHF, rheumatoid arthritis, CA bladder, chronic kidney disease, on dialysis (MWF) and MPGN. **Previous Treatments:** Silver barrier dressing and hydrogel.



Week 0: 4.6 × 2.7 cm. Thin layer of slough present. Wound very painful touch or debride.

Week 2: 4.5 × 2.5 cm. Granulation tissue evident, reduction in pain reported.

Week 4: 4.2 × 2.5 cm. Granulation tissue 100%. Edges flattened and minimal pain reported.

Week 10: 2.3 × 1.0 cm. Reepithelialization occurring.

CASE 2: Surgical wound -> chronic wound

Patient: 54 Year old female with Celiac disease, hypertention, idiopathic neutropenia. Surgical repair of left resulted in 8 week old chronic wound with dry eschar. **Previous Treatments:** Patient applied polysporin.

Prior Treatment: Conservative sharp debridement to eschar. Treated with Iodine.

Week 0: 5.8 × 2.0 cm. Full thickness wound, 10% slough, 90% granulation tissue. Treated with ECM, GV/MB and light compression sock.

Week 2: 3.8 × 1.7 cm. 100% granulation tissue.

Week 4: Closed.

CASE 3: Pressure Injury

Patient: 60 Year old female with a painful, exudative and macerated wound. **Medical History:** Surgeries on right foot 3 years prior. Infected lateral MTP, purulent, mild streaking up the saphenous distribution. **Previous Treatments:** Polysporin and frequent dressing changes. Started on oral antibiotics.

Week 0: 1.0 × 1.0 cm. Slough noted in the wound bed, ECM and silicone foam bordered dressing applied.

Week 1: 0.4 x 0.3 cm. Wound edges improving

Week 2: 0.1 × 0.1 cm. 100 % granulation tissue. Wound edges healthy, minimal maceration. Treatment reportedly less painful

Week 3: Wound closed. Protective dressing provided

CASE 4: Lower Leg Trauma Wound

Patient: 82 Year old female with full thickness, fascial plane noted in some areas, painful - very light compression. **Medical History:** Rheumatoid arthritis, COPD, atrial fibrillation, smoker - approx. 10 cigarettes/day. **Previous Treatments:** GV/MB PVA foam, silver barrier dressing, hydrogel

Week 0: 8.0 × 3.0 cm. Minimal granulation tissue observed. Has mixed arterial and venous lower leg issues. Very painful (8/10). ECM, HFB & Foam and single layer compression applied.

Week 8: 3.8 x 3 & 1.6 x 1.5 cm. Improved granulation tissue and comfort level - less pain.

Week 19: 1.3 × 0.5 cm. 100% granulation tissue and no pain. Still in therapy.

CASE 5: Pressure Injury

Patient: 55 Year old male discovered a pressure injury to right anterior ankle after removal of a cast used to treat a right tibial plateau fracture. Traditional treatment and dressings for 10 weeks. Wound was debrided and treated with ECM and HFB weekly. **Medical History:** Rheumatoid arthritis.

Week 0: 2.2 × 1.5 cm. Exposed tendon. Rolled wound edge. ECM & HFB applied weekly.

Week 2: 2.2 × 1.5 cm. ECM incorporating into wound bed

Week 4: 2 × 1.4 cm. Granulation tissue, attached wound edge.