

Innovative Dressing Option: Use of a collagen dermal template with extracellular matrix (ECM)* in the management of lower extremity wounds

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Introduction:

With the growing arsenal of advanced wound healing products, clinicians are challenged to select the best treatment option. Chronic wounds often present with high levels of a variety of matrix metalloproteinases (MMPs) which has been shown to result in delayed wound healing.^{1,3} In excess, these proteases degrade the viable structures, including the extracellular matrix. This may result in delays in the use of optimal wound therapies which may extend the time to heal and may contribute to the development of further complications. One purpose of using of a collagen dermal template with extracellular matrix (ECM)* is to reduce the activity of a broad spectrum of MMPs and provide an extracellular matrix to help support the structure of the wound.²

Method:

Patients presented at an outpatient wound healing center with lower extremity wounds consisting of a variety of etiologies and had failed to progress over a period of months, despite utilization of a number of advanced topical treatments. Use of a collagen dermal template with EMC* was initiated. The collagen dermal template with ECM* was applied by treating physician at the wound healing center as deemed necessary. Due to socio-economic circumstances, the patients' return-to-clinic visits were sporadic. Therefore the collagen dermal template with ECM* application was restricted by the patients' ability to return

to the wound healing center. Home care services were necessary in between clinic visits. Wounds were assessed and documented on a weekly basis for measurement of size, pain, progression to healing, and granulating wound base.

Outcome:

Clinicians observed consistent progress toward wound closure with the use of the collagen dermal template with ECM* based on an increase in granulation tissue formation in the wound bed as well as reductions in wound size through wound measurement tracking. Patients also reported a reduction in pain.

Conclusion:

Collagen dermal template with ECM* dressings are a valuable addition to the advanced wound product arsenal. In this case series, the chronic wounds exhibiting delayed wound healing advanced to wound closure while utilizing this treatment modality. The use of this option of a collagen dermal template with ECM* may have helped optimize the wound healing environment of lower extremity wounds consisting of a variety of etiologies. When considering the chronic wound environment, this modality may be considered as a first choice dressing for the progression toward healing the chronic wounds we treat.

Case Study 1 - Right dorsal foot wound

42-year-old who presented to the wound clinic with an open wound of two months duration to the right dorsal foot as a result of a full thickness burn.

- Past medical history includes: Peripheral Arterial Disease (PAD), Type II Diabetes Mellitus with sensory neuropathy, and left trans-metatarsal amputation.
- Previous wound care treatment: Split-thickness skin graft, topical treatment included silver foam dressing, and honey hydrocolloid dressing.

Day 1: Onset of Care
Wound Dimensions: 3.0 cm X 1.5 cm X 0.3 cm



Wound description-treatment:
Wound bed dark red with serous drainage, 30% slough, no pain, or odors were noted. Wound margins macerated. Cleansed wound with normal saline solution, applied collagen dermal template with ECM*, and a border foam dressing to secure in place on initial visit.

Day 12: Wound after first collagen dermal template with ECM* application
Wound Dimensions: 2.2 cm X 0.9 cm X 0.2 cm



Wound description-treatment:
Wound bed is red and pink with healing edges. Dimensions decreased with a decrease noted in serous fluid drainage. Cleansed wound with normal saline solution, applied collagen dermal template with ECM*, and a border foam dressing to cover.

Day 22: Wound after 2 collagen dermal template with ECM* applications
Wound Dimensions: 1.6 cm X 0.7 cm X 0.1 cm



Wound description-treatment:
Wound bed progressed to 90% granulation tissue. Minimal serous fluid noted. Cleansed wound with normal saline solution, applied collagen dermal template with ECM*, and a border foam dressing to cover.

Day 29: Wound after 3 collagen dermal template with ECM* applications
Wound Dimensions: 0.5 cm X 0.2 cm X 0.1 cm



Wound description-treatment:
Wound bed progressed to further granulation with healed pink tissue noted to 95% with minimal serous fluid drainage. Cleansed wound with normal saline solution, applied collagen dermal template with ECM*, and a border foam dressing to cover.

Day 43: Wound after 4 collagen dermal template with ECM* applications



Wound Healed

Case Study 2 - Left heel ulcer

65-year-old resident of long-term care facility presents with a one month old ulcer to the left heel.

- Past medical history includes: Peripheral Vascular Disease (PVD), right below knee amputation, Coronary Artery Disease (CAD), Coronary bypass graft, and hypertension (HTN).
- Previous wound care treatment: Wound previously treated with silver hydrogel and other collagen dressings.

Day 1: Wound prior to first collagen dermal template with ECM* application.
Wound Dimensions: 3.0 cm X 1.2 cm X 0.2 cm



Wound description-treatment:
Scant amount of clear sero-sanguineous drainage with no odor noted. Patient insensate with wound pain rated as a zero. Wound bed had 50% yellow slough, 50% pink granulation tissue, and no sinus tract or undermining noted. Cleansed wound with normal saline solution, applied collagen dermal template with ECM*, and a border foam dressing to cover.

Day 9: Wound after 9 days of initial collagen dermal template with ECM* application.
Wound Dimensions: 0.7 cm X 0.4 cm X 0.1 cm



Wound description-treatment:
Minimal amount of clear sero-sanguineous drainage with no odor noted. Patient insensate with wound pain rated as a zero. Wound bed had 25% yellow slough, 75% pink granulation tissue, and no sinus tract or undermining noted. Wound significantly reduced from previous dressing change. Cleansed wound with normal saline solution, collagen dermal template with ECM*, and a border foam dressing to cover.

Day 23: Wound after 2 collagen dermal template with ECM* applications.
Wound Dimensions: 0.2 cm X 0.2 cm X 0.1 cm



Wound description-treatment:
Minimal amount of clear sero-sanguineous drainage with no odor noted. Patient insensate with wound pain rated as a zero. Wound bed with pink granulation tissue and no sinus tract or undermining noted. Wound significantly reduced from previous dressing change. Cleansed wound with normal saline solution, applied collagen dermal template with ECM*, and a border foam dressing to cover.

Day 44: Wound after 3 collagen dermal template with ECM* applications.
Wound Dimensions: 0.2 cm X 0.2 cm X 0.1 cm



Wound description-treatment:
Minimal amount of clear sero-sanguineous drainage with no odor noted. Patient insensate with wound pain rated as a zero. Wound bed with pink granulation tissue and no sinus tract or undermining noted. Wound significantly reduced from previous dressing change. Cleansed wound with normal saline solution, applied collagen dermal template with ECM*, with border foam dressing to cover.

Case Study 3 - Left medial ankle wound

82-year-old who presented to the wound clinic with a 6-month-old, non-healing wound to the left medial ankle.

- Past medical history includes: Type II Diabetes Mellitus, hypertension, venous insufficiency, and gout.
- Previous wound care treatment: Various silver foam dressings, honey hydrocolloid dressings, and multilayer compression wraps.
- Diagnostics performed at initial visit: Ankle-Brachial Indices (ABI) with arterial dopplers of bilateral lower extremities were completed with normal limits to extremity noted. Venous dopplers reflected mild greater saphenous reflux on left lower extremity.

Day 1: Wound prior to first collagen dermal template with ECM* application
Wound Dimensions: 2.0 cm X 0.8 cm X 0.1 cm



Wound description-treatment:
Minimal amount of clear sero-sanguineous drainage with no odor, no complaint of pain, or signs of infection noted. Wound bed had 10% pink granulation tissue with 75% brown slough upon assessment. Cleansed wound with normal saline solution, applied collagen dermal template with ECM*, foam dressing, and multilayer compression wrap applied.

Day 14: Wound after first collagen dermal template with ECM* application
Wound Dimensions: 1.4 cm X 0.6 cm X 0.1 cm



Wound description-treatment: Minimal amount of clear sero-sanguineous drainage with no odor noted. Wound bed with 100% pink granulation tissue noted. Wound edges assessed for sinus tract and undermining with no sinus tract or undermining noted. Cleansed with normal saline solution, applied collagen dermal template with ECM*, foam dressing, and multilayer compression wrap applied.

Day 21: Wound healed



REFERENCES

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*Endoform® dermal template, AROA BIOSURGERY