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

Kathy Wright, RN; OCN-AP, ACHRN; Debbie Hastings, RN; Wendy Dukes, RN; Dr. Khalil Garap, M.D. Nartcoxe Wound Care and Hyperbaric Center

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. 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 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.

Method:
Patients presented at our 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 ECM was initiated. The collagen dermal template with ECM was applied by treating physician at the wound healing center as deemed necessary. Due to socioeconomic 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. Studies showed 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 help aide 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 foot heel wound
42-year-old male presented to the wound clinic with an open wound of the left foot extending from the right heel to the left heel.
• Ulcerative porphyrin ulcer
• Peripheral arterial disease (PAD)
• Type 2 diabetes mellitus with sensory neuropathy and left lower extremity edema
• Previous wound care treatment:
  • Split thickness skin graft
  • Applicated dermal template in a left leg brace dressing, and honey hydrogel dressing.

Day 1: Out of care
Wound Dimension: 3.2 cm x 3.2 cm
Wound description:
Wound bed area with necrotic tissue, 55% slough, 20% purulent, and 25% wound base.

Day 12: Wound after first collagen dermal template with ECM application
Wound Dimension: 3.2 cm x 3.2 cm
Wound description:
Wound bed area with necrotic tissue, 55% slough, 20% purulent, and 25% wound base.

Day 1: Wound prior to first collagen dermal template with ECM application
Wound Dimension: 3.2 cm x 3.2 cm
Wound description:
Wound bed shows signs of tissue sloughing with no edema noted.
Patient treated with wound post-grafted by a surgeon. Wound has 25% yellow slough, 5% pink granulation tissue, and 25% wound base.

Day 8: Wound after 8 days of initial collagen dermal template with ECM application
Wound Dimension: 3.2 cm x 3.2 cm
Wound description:
Wound bed area with necrotic tissue, 55% slough, 20% purulent, and 25% wound base.

Day 2: Wound after 2nd collagen dermal template with ECM application
Wound Dimension: 1.3 cm x 1.3 cm
Wound description:
Wound bed area with necrotic tissue, 55% slough, 20% purulent, and 25% wound base.

Day 12: Wound after 4th collagen dermal template with ECM application
Wound Dimension: 0.3 cm x 0.3 cm
Wound description:
Wound bed area shows signs of tissue sloughing with no edema noted.

References: