Aseptically Processed Pre-Meshed Human Reticular Acellular Dermal Matrices* Support Wound Closure in Lower Extremity Wounds Lawrence A. DiDomenico, DPM, FACFAS, FACFAOM, CWS, FCCWS

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INTRODUCTION

Complex wounds negatively impact patient lives and can be challenging to close. Aseptically processed pre-meshed human reticular acellular dermal matrices (HR-ADMs) can provide the native architecture for host cell infiltration and aid with natural wound closure [1]. This study examines how meshed HR-ADMs can facilitate in closing complex wounds.

METHODS

A 77 year old female had multiple large wounds on both lower extremities after a motor vehicle accident. Another 72 year old female presented with an infected open wound of her right lower extremity and had been unsuccessfully treated in the wound care center with multiple modalities. In both cases, the wounds were to the level of the deep fascia tissue and bone, with significant presence of malodor with the necrotic tissue. Incision and drainage with aggressive debridement removing all the necrotic tissue was performed, and negative pressure wound therapy was used. Once the infection cleared, meshed HR-ADM was sutured in place to assist with granulation and help fill in the depth of the wound. Subsequently, the patients underwent split thickness skin grafts (STSG) to close the wound.

RESULTS

Full wound closure was achieved in both cases after application of the pre-meshed HR-ADM and STSG. The patients have maintained active lifestyles with no ulcer recurrence.

DISCUSSION

The pre-meshed HR-ADM assisted in wound closure. The meshed pattern of the allograft allows the tissue to stretch significantly from its original size and conform to wounds while allowing the patient's own cells to rebuild the tissue.

REFERENCES

[1] Dasgupta A, et al. A novel reticular dermal graft leverages architectural and biological properties to support wound repair. Plast and Reconstr Surg Glob Open. 2016. 4(10).

*SomaGen® is a registered trademark of the Musculoskeletal Transplant Foundation.

CASE 1

<u>Patient Information:</u> 77 year old female in a motor vehicle accident that resulted in bilateral lower extremity paralysis presented with multiple large wounds of both lower extremities.

Patient History/Initial Examination:

- Full thickness wounds to the level of the deep fascia tissue and bone and were tender to touch. The wounds had a significant malodor with necrotic tissue present.
- . There was surrounding peri-wound erythema. Culture and sensitivities were positive and intra venous antibiotics were provided.
- · Vascular status was evaluated and was noted to be intact and capable of closing the wounds.

Treatment:

- . Incision and drainage with an aggressive debridement removing all necrotic tissue at all wound sites along with deep tissue culture.
- Aerobic, anaerobic, fungus and acid fast cultures were performed.
- . An infectious disease consult was made and the infectious disease team began intravenous antibiotic treatment based on the culture and sensitivities and the pathology report.
- . Negative pressure therapy was applied along with offloading bandages to both lower extremities.
- . As the infection cleared, clean margins and a good granular base became present.
- . Meshed HR-ADM was utilized to provide a scaffold for support and to assist with granulation as well as filling in the depth of the wound in preparation for split thickness skin grafting.
- · Once the wound granulated, the depth filled in, and no evidence of infection was present, the patient underwent a split thickness skin graft

Outcomes:

- . Full wound closure after application of Meshed HR-ADM and subsequent STSG.
- . The skin integrity is intact and well closed.
- . All wounds fully closed.

Open wounds of the lower extremity following incision and drainage, aggressive debridement, intravenous antibiotics, Negative Pressure Therapy and off loading Application of meshed HR-ADM—would you like to add anything else here? Application of meshed HR-ADM—would you like to add anything else here? Application of meshed HR-ADM—would you like to add anything else here? Application of meshed HR-ADM—would you like to add anything else here? Do you have a picture of the original wound for this set?

CASE 2

<u>Patient Information:</u> 72 year old female who presented with an infected open wound of her right lower extremity that had been present for several months. She had been treated in the wound care center with multiple modalities with no success. The Patient was overweight and had significantly large edematous bilateral lower extremities with a chronically infected large deep wound to the right lower extremity.

Patient History/Initial Examination:

- Full thickness wound to the level of the deep fascia tissue, wound was tender to touch.
- · Significant malodor with necrotic tissue. Surrounding erythema and undermining.
- Duplex scan was performed to rule out a deep venous and was negative.

Treatment:

- Incision and drainage with an aggressive debridement removing all necrotic tissue along with a biopsy of the tissue and deep tissue cultures were performed.
- . A biopsy of the tissue was sent to pathology and aerobic, anaerobic, fungus and acid fast cultures were performed.
- . An infectious disease consult was made and the infectious disease team began antibiotic treatment.
- . Negative pressure therapy was applied along with an entire leg compression bandage.
- As the infection cleared and clean margins and a good granular base became present, meshed HR-ADM was sutured in place to provide scaffold to support and assist with increase in granulation as well as to assist in filling in the depth of the wound in preparation for split thickness skin grafting.
- Once the depth of the wound granulated, filled in, and demonstrated no evidence of infection, the wound was prepared for a split thickness skin graft
- . The patient underwent a split thickness skin graft and closed the wound completely.

Outcomes:

- . Complete closure of the wound following meshed HR-ADM and STSG placement.
- . The patient has maintained an active lifestyle and has not broken down or had a recurrence of the wound of the right lower extremity.
- . She continues to use compression garments on a daily basis to prevent reoccurrence.

