Management of Deep Tunneling Wounds with Novel Allograft Adipose Matrix*: A Natural Off-The-Shelf Treatment Modality

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INTRODUCTION

Chronic non-healing wounds present a substantial economic burden with a reduction in patient quality of life, and often result in limb amputations or even premature deaths. This burden may increase with a larger proportion of elderly population and increasing prevalence of life-style diseases such as obesity and diabetes.

There are fewer effective clinical options for the treatment of deep tunneling chronic wounds, when debridement, skin grafting, or vacuum-assisted closure dressings fail. Autologous fat grafting has only recently been applied to chronic wounds that fail conservative management. This study aims to evaluate the efficacy of Allograft Adipose Matrix (AAM), an aseptically processed "off-the-shelf", ready to use allograft, to provide a scaffold and cushion to support the wound bed.

METHODS

This case series examined 11 patients with deep tunneling and cavitation within their chronic wounds. AAM was injected into the subcutaneous space to fill the adipose tissue deficits within the wound bed. Patients were followed up for evaluation of their chronic wounds and possible complications.

RESULTS

The eleven patients (seven males; four females) that were treated had an average age of 65 years (ranging from 35-78 years). Of the 11 wounds in this case series, the etiologies were post-surgical (n=7), traumatic (n=2), and foot ulcer (n=2). Ten patients had only one application of the AAM, and one patient had two treatments. The volume of AAM applied was 2cc to fill the adipose tissue deficit and the average follow-up after AAM application was 6.6 weeks. Observations indicated that tunneling and cavitation in the wound subsided. Seven patients (63%) went on to achieve complete wound closure.

DISCUSSION

AAM is a novel use of an off-the-shelf allograft tissue, targeted towards a very frequently occurring pathology. AAM does not present the challenges associated with autologous fat grafting. The use of AAM provided a physical cushion and scaffold for deep tunneling and cavitation within these chronic wounds. This increased padding within the wound bed ultimately supported wound closure.

*Leneva® (MTF Biologics, Edison, NJ)

CASE STUDIES

CASE STUDY 1 — Diabetic Foot Ulcer

Initial Examination/Wound History: 75-year old male, with a PMH of Type II Diabetes and Prostate Cancer with recent complications of osteoarthritis and a Diabetic Foot Ulcer coming in for follow-up.
Treatment: 2cc AAM injected into the subcutaneous space, no debridement
Outcome: Offloaded, cavitation in the wound subsided over time. Patient back to daily activities.


Figure 1A. 3/12/18 (Application of AAM)


Figure 1B. 3/19/18 (Day 7)


Figure 1C. 3/29/18 (Day 17)


Figure 1D. 4/9/18 (Day 28)


Figure 1E. 5/7/18 (Day 56)


Figure 1F. 5/14/18 (Day 63)


Figure 1G. 5/21/18 (Day 70)


Figure 1H. 7/9/18 (Day 119)

CASE STUDY 2 — Post-Surgical Wound

Initial Examination/Wound History: 56-year old female with a recent surgical history of abdominoplasty, bilateral breast reduction/ mammoplasty, and liposuction of abdomen & thighs, who presents residual abdominal wound.
Treatment: Excision was performed, 2cc AAM injected into the subcutaneous space
Outcome: Cavitation in the wound resolved over time, facilitating wound closure.


Figure 2A. 2/26/18 (Pre-Procedure)


Figure 2B. 2/26/18 (Post application of AAM)

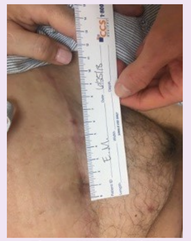
Figure 2C. 6/25/18 (Day 119)

CASE STUDY 3 — Foot Ulcer

Initial Examination/Wound History: 78-year old female with NO PMH of Diabetes presenting with right foot wound infected with Pseudomonas.
Treatment: Initially the wound bed was debrided, unresponsive to mupirocin. Single application of 2cc AAM injected into the subcutaneous space
Outcome: Cavitation in the wound bed reduced and culminated in wound closure. Patient back to daily activities.


Figure 3A. 1/29/18 (Application of AAM)


Figure 3B. 2/19/18 (Day 21)


Figure 3C. 3/5/18 (Day 35)


Figure 3D. 3/19/18 (Day 49)