USING DEHYDRATED HUMAN AMNIOTIC MEMBRANE ALLOGRAFT TO SUPPORT WOUND HEALING OF DIABETIC FOOT ULCERS

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BACKGROUND
Advanced wound care modalities and treatments are frequently used to facilitate healing of chronic lower extremity ulcers in patients with diabetes. Dehydrated human amniotic membrane allograft (DAMA) provides a matrix for cellular migration and proliferation with essential growth factors. It has been used to treat a variety of wounds due to its non-immunogenic, anti-inflammatory and anti-bacterial properties. This case series includes 3 patients with chronic diabetic foot ulcers (DFUs) treated with DAMA.

METHODS
DAMA was applied after a failure to demonstrate a 50% reduction in wound size after 4 weeks of treatment with advanced wound care, off-loading and other standard treatments. This is based on the literature which demonstrates 50% area reduction as an effective predictor for treatment success.1 DAMA was applied every other week for a period of 4 weeks. Wound thickness ranged from 0.2 mm to 1 cm. All wounds were examined clinically as needed to achieve a clean wound bed prior to application. Non-adherent dressing was applied over the product and then bordered with a foam dressing. Patients were seen weekly in the clinic for wound assessment, measurement, photography and documentation of appearance.

RESULTS/CONCLUSION
These three patient cases illustrate the benefit of an advanced wound care with standard wound care and advanced modalities such as negative pressure wound therapy (NPWT), and bi-layered skin substitute, application of DAMA led to a mean wound volume and area decrease which was clinically significant. This case series illustrates the positive impact of DAMA on advanced healing, supporting the utility of this product in advanced wound care, particularly DFUs that have stalled or have slow healing and when other risk factors and co-morbidities make quick closure a priority.

CASE 1
69 year old male with past medical history of diabetes, PAD and heart disease seen initially for evaluation on consultation for diabetic infection of the right foot with underlying PAD. After successful re-vascularization, the patient underwent fourth and fifth ray resections with digital amputation. Given the large defect, the patient was placed on NPWT and partial closure of the wound was accomplished during his initial resection. The patient continued on NPWT and referred to a skilled nursing facility. After completion of five weeks of NPWT and surgical debridement of wound, Dehydrated human amniotic membrane allograft (DAMA)* provides a matrix for cellular migration and proliferation with essential growth factors.

DATE WOUND MEASUREMENT DATE WOUND MEASUREMENT
2/14/14 – Initial DAMA application 2/21/14 3.5 x 1.5 x 0.9 cm 4/4/14 0.5 x 0.4 x 0.4 cm
2/28/14 – 2nd DAMA application 3.0 x 2.0 x 0.8 cm 4/11/14 0.3 x 0.3 x 0.4 cm
3/7/14 2.8 x 1.6 x 0.8 cm 4/18/14 0.3 x 0.3 x 0.3
3/14/14 2.0 x 1.5 x 0.7 cm 4/25/14 0.2 x 0.2 x 0.2
3/2/14 – 3rd DAMA application 1.3 x 1.0 x 0.6 cm

Patients were seen weekly in the clinic for wound assessment, measurement, photography and documentation of appearance.

CASE 2
45 year old female with past medical history of diabetes, hypertension and renal disease seen for evaluation of recurrent left hallux ulceration. Patient was treated by outside physician for this ulceration for greater than three weeks with conservative modalities, including damp to dry dressing without off-loading. Patient had history of osteomyelitis in the same foot, which was treated with bone grafting and wound bed debridement and improved wound bed. The patient also has osteomyelitis in the right foot with an open wound. The patient was placed on DAMA with bi-layered bioengineered skin substitute***, application of DAMA over the course of eight weeks until closure, use of ALH dressing and proper off-loading was incorporated.

DATE WOUND MEASUREMENT DATE WOUND MEASUREMENT
3/10/14 – Initial application DAMA 4.4 x 2.0 x 1.0 cm 4/10/14 – 3rd DAMA Application 0.8 x 1.0 x 0.2 cm
3/25/14 – 2nd DAMA Application 1.0 x 2.7 x 0.3 cm 4/22/14 – 4th DAMA Application 0.4 x 0.4 x 0.1 cm
5/6/14 0.2 x 0.1 x 0.1 cm
5/13/14 Wound Closed

CASE 3
68 year old male with past medical history of diabetes, hypertension and foot ulceration seen for evaluation of slow healing wound. Patient’s foot ulcers failed to respond to standard wound care modalities, including daily dressing changes and off-loading. Patient had history of osteomyelitis in the left foot, which was treated with bone grafting and wound bed debridement and improved wound bed. The patient also has osteomyelitis in the right foot with an open wound. The patient was placed on DAMA with AMNIOEXCEL® and referred to a skilled nursing facility. After completion of five weeks of NPWT and surgical debridement of wound, Dehydrated human amniotic membrane allograft (DAMA) was applied and the patient took a collagen dressing for 4 weeks. Treatment with AMNIOEXCEL® led to a mean wound volume and area decrease which was clinically significant.

DATE WOUND MEASUREMENT DATE WOUND MEASUREMENT
5/05/14 5.4 x 2.8 x 0.4 cm 8/13/14 1.2 x 0.3 x 0.2 cm
6/6/14 – 2nd DAMA Application 5.0 x 1.1 x 0.4 cm 8/13/14 1.2 x 0.3 x 0.2 cm

Patients were seen weekly in the clinic for wound assessment, measurement, photography and documentation of appearance.

References:

*AMNIOEXCEL® is a registered trademark of BioD, LLC made available by Derma Sciences Inc, Princeton, NJ
**and bi-layered bioengineered skin substitute***, application of DAMA
***Apligraf® Organogenesis, Canton MA
**** MEDIHONEY® Active Leptospermum Honey Dressings, Derma Sciences Inc., Princeton NJ
***** Gel dressing and dry protective dressing to aid wound healing
******INTEGRA™ Integra Life Sciences. Plainsboro NJ

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