



(CASE REPORT)



The use of Dermacell® Allograft in a diabetic patient with critical limb ischemia

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Abstract

Diabetes is a group of metabolic disorders characterized by poor insulin secretion or impaired insulin function both leading to hyperglycemia. One of the long-term complications of this disease process is neuropathy. Neuropathy, particularly in the extremities, leads to poor sensation, which contributes to the occurrence of ulcers typically observed on the feet of diabetic patients. Current treatments for diabetic ulcers include wound dressing, hyperbaric oxygen therapy, negative pressure therapy, and, in advanced cases, amputation of the limb.

Keywords: Wound Healing; Diabetes; Chronic Wounds; Skin Substitutes; Skin Dressings; Matrices; ADM; Dermacell.

1. Introduction

An alternative treatment for diabetic foot ulcers is a matrix scaffold for new tissue generation, an acellular human dermal matrix (ADM) allograft as reviewed by Wainwright and Bury. Decellularized human skin has been used for a variety of medical procedures, primarily involving wound healing, soft tissue reconstruction, and sports medicine applications [2][3][4][5][6][7][8].

The following case report involves treatment of a diabetic foot ulcer with this human ADM, Dermacell [1].

2. Patient

An 82-y old male diabetic patient was urgently admitted with rest pain and acute on chronic ischemia of this right lower limb. He had developed wet gangrene extending from the toes to the lateral palmar and dorsal surface of the forefoot. He was started on broad spectrum antibiotics and submitted to CT angiogram that revealed multi-level peripheral arterial disease with lesions causing more than 90% stenosis of his superficial femoral artery (SFA), popliteal, anterior tibialis, and popliteal arteries. The ankle-brachial pressure index (ABPI) in the right was 0.2.

The patient was submitted to angioplasty of the tibial vessels with a 3-150mm drug-eluting balloon and of the SFA and popliteal artery with a 6-40mm balloon. The final angiogram showed an excellent revascularization with fully patent 3-vessel run-off. Post-operatively his dorsalis pedis was palpable, ABPI of the right foot increased to 1, and the patient managed to mobilize.

He was discharged home with antibiotics for 2 weeks. He was then readmitted in the day-case unit and was submitted to wide wound debridement (fig. 1). The deep tissues were viable but the patient had major skin loss of the lateral palmar and dorsal surface of the forefoot.

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Two weeks following the initial debridement, the patient was submitted to implantation of Dermacell decellularized regenerative human tissue matrix allograft. Within 3 weeks the wound had nicely healed.



Figure 1 Pre -op



Figure 2 Post-op



Figure 3 1 week post-op



Figure 4 3 weeks post-op

3. Conclusion

- Unenetful post-operative course with no swelling or major exudate (Fig. 3-4)
- Wound closed at 3 weeks post-op.
- The Use of Dermacell was successful in treating chronic diabetic foot ulcer.

Compliance with ethical standards

Acknowledgments

We thank Lifenet Health, Virginia Beach, Virginia, USA, for providing Decellularized Dermal Matrix (Dermacell).

Dermacell is a technologically advanced Acellular Dermal Matrix that is used to treat diabetic foot ulcers, chronic non-healing wounds, and supplemental tissue support.

Disclosure of conflict of interest

The Authors declare that there is no actual or potential conflict of interest in relation to this case study.

Statement of informed consent

Informed consent was obtained from the participant included in the study.

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