

Treatment of Diabetic Foot Ulcer with Human Acellular Dermal Matrix (ADM)

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CASE STUDY

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.¹ Current treatments for diabetic ulcers include wound dressing, hyperbaric oxygen therapy, negative pressure therapy,²⁻⁴ and, in advanced cases, amputation of the limb.

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 Moore et al.⁵ Decellularized human skin has been used for a variety of medical procedures, primarily involving wound healing, soft tissue reconstruction, and sports medicine applications.⁶⁻⁸

The following case presentation involves treatment of a diabetic foot ulcer with this human ADM, DermACELL.[®]

Patient

- A 65 year old male patient diagnosed with diabetes mellitus and received oral hypoglycemic agents and insulin on a daily basis.

Procedure

- The patient presented with edematous of the right foot, and an infected wound on the right leg. Upon examination, palpable pedal pulses, pitting edema of the right foot and leg, blister formation, and gangrenous ulcer on the right big toe with spreading necrotizing fasciitis were all noted.
- The patient underwent immediate incision and drainage with debridement of the right foot under ankle block (**Fig. 1**). After an arterial Doppler, a successful angioplasty followed by amputation and debridement were performed.
- The wound was managed by dressing with debridement twice a week and antibiotics according to the pus culture continuity report.
- DermACELL graft was applied to his right foot (**Fig. 2**).

Results

- Patient experienced marked improvement of the foot with diminished edema and decrease in cellulitis (**Figs. 3 & 4**).



Figure 1.
Wound before DermACELL application



Figure 2.
DermACELL graft

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Figure 3.
21 days post-operative



Figure 4.
45 days post-operative

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