

# Treatment of Plantar Diabetic 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.<sup>1</sup> Current treatments for diabetic ulcers include wound dressing, hyperbaric oxygen therapy, negative pressure therapy<sup>2</sup>, and, in advanced cases, amputation of the limb.

An alternative treatment for plantar ulcers related to diabetes involves the use of an Acellular Dermal Matrix (ADM), which has demonstrated application in a variety of medical procedures, including wound healing, soft tissue reconstruction, and sports medicine applications.<sup>5-8</sup> These dermal matrices have been demonstrated to support cellular and vascular in-growth in vitro and in vivo.<sup>9-11</sup> One particular human allograft ADM, DermACELL<sup>®</sup>, is uniquely prepared, resulting in at least 97% DNA removal, and provided sterile at room temperature, ready to use.

**The following case presentation involves treatment of a plantar ulcer using this novel human ADM allograft, Dermacell.**

## Patient

- 41 year-old, Male, type-2 diabetic

## Diagnosis

- Left plantar diabetic ulcer
- Caused by soft tissue trauma
- Resulted in blister formation with an underlying grade 2 ulceration

## Treatment

- After four weeks without significant improvement, Dermacell was applied
- Non-adherent dressing applied and changed daily
- Foot immobilized with surgical shoe
- Weekly follow-up until wound closure

## Conclusion

- Progressive reduction in wound length and width over approximately one month
- The wound's area and volume had significant reductions of 92.4%
- Reduction in all dimensions, including depth, were observed after one week post-application of ADM
- In this case study, ADM was successfully used to provide wound resurfacing to correct a plantar diabetic ulcer

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**Day 7.**  
Sharp debridement of the necrotic tissue



**Day 16.**  
Excisional debridement, level skin/subcutaneous tissue



**Day 31.**  
Dermacell application – 16 cm<sup>2</sup>



**Day 38.**  
Excisional debridement, level skin/subcutaneous tissues

**Table 1. Wound dimensions and percent reduction from initial observation**

Day of Study	Length (cm)	Width (cm)	Depth (cm)	Area (cm <sup>2</sup> )	Volume (cm <sup>3</sup> )
0	2.1 (0%)	5 (0%)	0.1 (0%)	8.25 (0%)	0.82 (0%)
7	3 (-42.9%)	3.5 (30%)	0.1 (0%)	8.25 (0%)	0.82 (0%)
16	2.1 (0%)	3.1 (38%)	0.1 (0%)	5.11 (38%)	0.51 (38.1%)
31	0.6 (71.4%)	2.5 (50%)	0.2 (-100%)	1.18 (85.7%)	0.24 (71.4%)
38	0.5 (76.2%)	1.6 (68%)	0.1 (0%)	0.63 (92.4%)	0.06 (92.4%)

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