Using a Biomimetic Matrix in Treatment-Resistant Wounds with Autoimmune Etiologies

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INTRODUCTION

Gel4Derm Plus™ has a 3D matrix structure that provides a non-immunogenic, antibacterial barrier that emulates the extracellular matrix properties of human skin (1). This product is stored at room temperature and does not require reconstitution, making it an accessible, easy to use product for chronic wound management. This product is commonly administered in the operating room setting and used only once at the time of operation.

In this study, we aimed to evaluate if weekly application of Gel4Derm PlusTM could promote wound healing in two persistent wounds with autoimmune etiologies that had previously received several different wound healing agents and skin substitutes.

METHODS

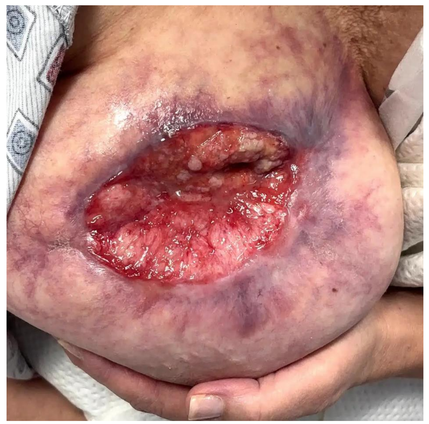
We applied Gel4Derm Plus™ once weekly to two refractory wounds (2 total patients) - one secondary to rheumatoid arthritis and the other to pyoderma gangrenosum. These patients presented to our vascular office for debridement and irrigation, followed by application of Gel4Derm Plus™ using the provided pre-filled single- use syringe. The wounds were covered with a non-adherent dressing. Weekly measurements, wound characteristics, and photos were gathered for up to 6 weeks.

REFERENCES

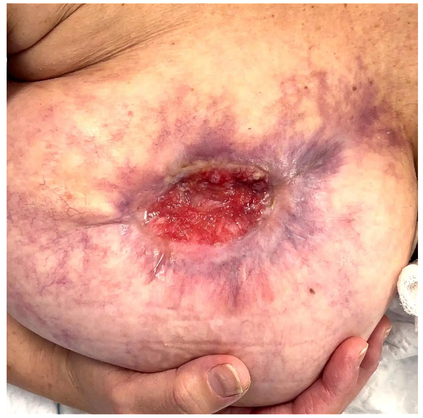
1. https://www.gelformed.com/product.html

RESULTS

Patient 1: Autoimmune Wound Secondary to Pyoderma Gangrenosum (with medial tunnelling)

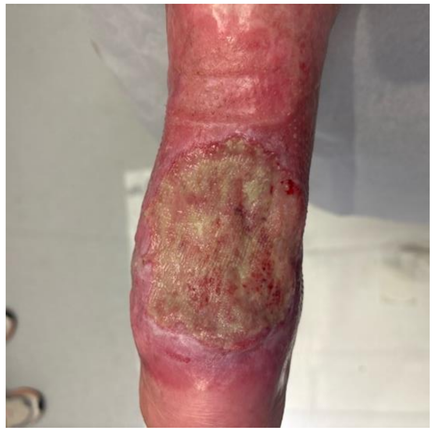


Week 1

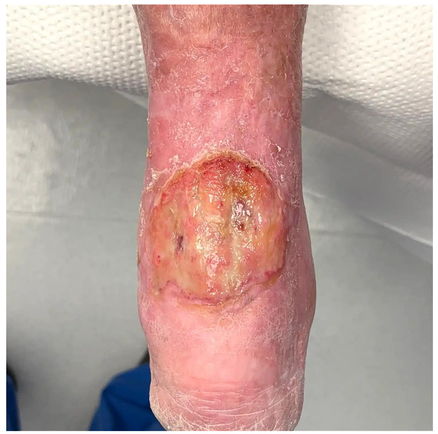


After 5 Applications

Patient 2: Autoimmune Wound Secondary to Rheumatoid Arthritis



Week 1



After 4 Applications

- Both patients had a clinically meaningful acceleration of wound size reduction after application with Gel4Derm Plus™.
- The patient with pyoderma gangrenosum had a wound area reduction of 40.8% after 5 applications of Gel4Derm Plus™.
- The patient with rheumatoid arthritis has had a noticeable decrease in wound surface area as well.
- Both wounds had an improvement in granulation bed and decreased slough after multiple applications.
- In addition, both patients tolerated application of Gel4Derm Plus™ well and did not report increased pain in between applications, despite having significant chronic pain from their respective underlying autoimmune conditions.

CONCLUSIONS

Treatment with Gel4Derm Plus™ in two difficult-to-treat wounds resulted in a clinically meaningful acceleration in reduction in wound size and improved granulation. Despite multiple prior treatment failures, weekly application of Gel4Derm resulted in marked progression toward closure, representing a major clinical improvement for both of these patients. This may be due to the biocompatibility of the scaffold that emulates native human skin extracellular matrix, or the non-immunogenic antibacterial barrier that prevents biofilm reformation. Further use of this product on other non-healing wounds with similar etiologies is necessary to better understand the benefits and limitations of this product.