

Elastomeric Skin Protectant Use for Periwound Skin Protection in Highly Exudative Diabetic Foot Ulcers

Emily Greenstein, APRN, CNP, CWON-AP, FACCWS

Introduction

- Diabetic foot ulcers (DFUs) can be difficult to manage.
- Additionally, in some patients, high levels of wound exudate can further complicate wound healing due to periwound skin breakdown, irritation, or maceration.¹
- Typical wound care for highly exudating DFUs includes highly absorbent dressings, periwound skin protectants, and frequent dressing changes.²
- Traditional skin protectants include petrolatum, zinc oxide pastes/ointments, and film barriers.³
- An elastomeric skin protectant* offers long-lasting film-based periwound skin protection that can be applied to delicate periwound skin to help protect against maceration.

Purpose

- Use of an elastomeric skin protectant was assessed in 4 patients with DFUs.

Methods

- All DFUs underwent sharp debridement followed by a 5- to 10-minute soak with a hypochlorous acid wound cleanser.
- The wound and periwound skin were gently wiped dry and an elastomeric skin protectant was applied to the periwound skin.
- Silver-collagen or iodine impregnated dressings were used along with gauze or foam-based secondary dressings.
- Dressing changes ranged from every day to twice a week.
- The skin protectant was reapplied once per week for 3 patients and twice a week for 1 patient.
- Wound healing and periwound skin condition were monitored at each dressing change.
- Off-loading was provided by a custom orthopedic medical shoe.

Results

- Four patients with highly exudating DFUs were managed (**Table 1, Figures 1-4**).
- Patient ages ranged between 38 and 77 years old.
- Common comorbidities included type 2 diabetes, chronic kidney disease, venous insufficiency, and hypertension.
- The development of granulation tissue was observed in all 4 wounds.
- Periwound skin maceration was resolved in all patients without further re-occurrence.

Table 1. Patient demographics

Case	Age	Sex	Comorbidities
1	77	Male	Diabetes; Stage 3 Chronic Kidney Disease; Venous Insufficiency
2	63	Female	Diabetes; Stage 3 Chronic Kidney Disease; Venous Insufficiency
3	38	Male	Diabetes
4	60	Male	Diabetes; Stage 3 Chronic Kidney Disease; Hypertension

Conclusions

- In these 4 patients, use of the elastomeric skin protectant along with wound dressings resulted in granulation tissue development and improved periwound skin condition.

References

1. Rowledge A, Frescos N, Miller C, et al. The diabetic foot ulcer periwound: a comparison of visual assessment and a skin diagnostic device *Wound Pract Res.* 2016;24(3):160-168.
2. Freitas A. Periwound maceration skin management strategies using a skin barrier film on diabetic foot ulcers. *Diabetic Foot J.* 2022;25(3):34-41.
3. Schuren J, Becker A, Sibbald RG. A liquid film-forming acrylate for peri-wound protection: a systematic review and meta-analysis (3M Cavilon no-sting barrier film). *Int Wound J.* 2005;2(3):230-238. doi:10.1111/j.1742-4801.2005.00131.x

Case 1. A 77-year-old male presented with a 1st metatarsal head DFU with the fat layer exposed. Iodine-based dressings with gauze secondary dressings were applied. Dressing changes occurred twice per week.



Fig 1A. Day 0; 2.0 x 2.2 x 0.3 cm³



Fig 1B. Day 7; 2.0 x 2.0 x 0.3 cm³



Fig 1C. Day 14; 2.0 x 2.0 x 0.2 cm³

Case 2. A 63-year-old female presented with a 1st metatarsal head DFU with the muscle layer exposed. Silver-collagen dressings with foam-based secondary dressings were applied. Dressing changes occurred every other day.



Fig 2A. Day 0; 2.3 x 2.0 x 1.0 cm³



Fig 2B. Day 7; 1.5 x 1.0 x 1.0 cm³



Fig 2C. Day 21; 1.0 x 1.0 x 0.5 cm³

Case 3. A 38-year-old male presented with a 1st metatarsal head DFU excessive synovial fluid drainage. Silver-collagen dressings with foam-based secondary dressings were applied. Dressing changes occurred daily.



Fig 3A. Day 0; 1.2 x 1.2 x 2.2 cm³



Fig 3B. Day 4; 1.3 x 1.4 x 2.0 cm³

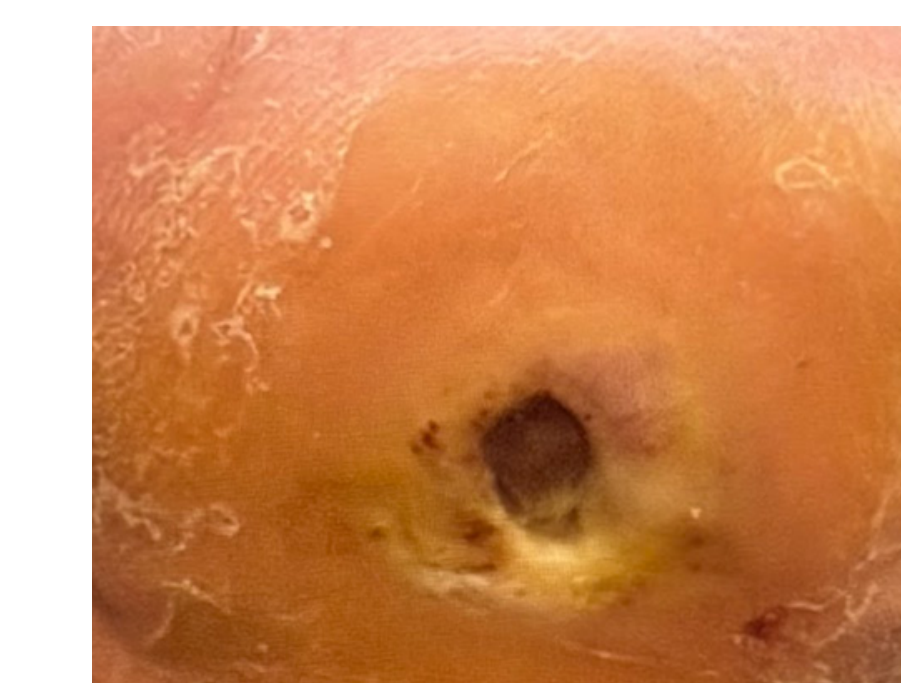


Fig 3C. Day 7; 1.2 x 1.4 x 2.0 cm³

Case 4. A 60-year-old male presented with a 1st metatarsal head DFU with the fat layer exposed. Silver-collagen dressings with foam-based secondary dressings were applied. Dressing changes occurred twice per week. Wound edge staining is from silver nitrate.



Fig 4A. Day 0; 1.4 x 1.4 x 0.1 cm³



Fig 4B. Day 7; 1.4 x 1.4 x 0.1 cm³

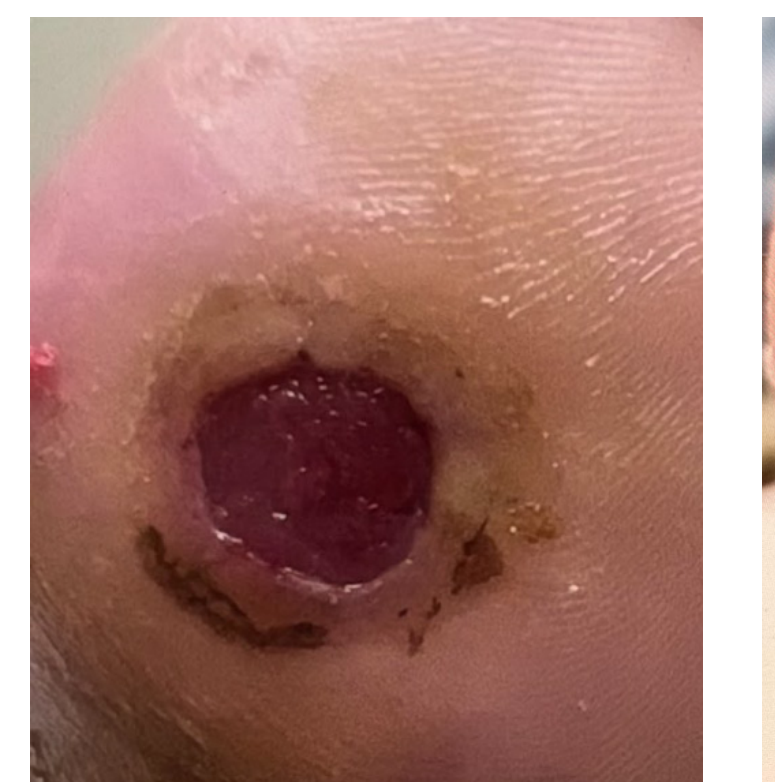


Fig 4C. Day 14; 1.2 x 1.4 x 0.1 cm³



Fig 4D. Day 21; 1.0 x 1.0 x 0.1 cm³