

Heel Ulcer in Hospice Patient Closed Quickly Using Polymeric Membrane Dressings*

Diane J. Yastrub, APRN-BC, CWCN, CDE, DAPWCA, CHCQM, 159 St. Andrews Lane, Glen Cove, NY 11542

PROBLEM

A frail but alert woman with end-stage dementia, peripheral arterial disease, peripheral venous disease, a nutrition deficit and a compromised immune system who was close to 100 years old developed a 3 cm x 3 cm blister to her R heel which was initially treated with a transparent dressing. The heel was floated, thereby redistributing the weight, and the patient was placed on systemic antibiotics. The blister broke open spontaneously after a week. For the next ten days various clinicians tried differing wound treatments, each for only a few days, including collagenase covered with a thin film dressing, hydrocolloids, polymeric membrane dressings, and hydrogels. The woman appeared to be in pain and the wound, which probed to bone, was increasing in size. At that point the author was able, with a two-day exception, to choose a consistent treatment.

This case study was unsponsored. Ferris Mfg. Corp. contributed to this poster design and presentation.

*Shapes™ by PolyMem® Silver™ Dressings, PolyMem Dressings, PolyMem Silver Dressings Ferris Mfg. Corp., Burr Ridge, IL 60527

RATIONALE

This patient was so debilitated that her heel ulcer was not expected to close. Her foot was cold, with poor capillary refill and an absent pedal pulse. Dressings were needed to prevent any infection from becoming systemic and to contain the wound exudate. Bordered polymeric membrane dressings conform well to heels and have a semipermeable membrane to protect wounds from contamination. They contain glycerol, a surfactant, and a super-absorbent starch. Polymeric membrane dressings' ingredients draw and concentrate natural healing substances from the body into the wound bed to promote rapid healing while facilitating autolytic debridement directly by loosening the bonds between the slough and the wound bed. The liquefied slough is absorbed by the dressing, often eliminating the need for potentially damaging and painful manual wound bed cleansing during dressing changes. Together the dressing's components reduce wound pain by inhibiting nociceptor activity at the wound site.

In the absence of sufficient nutrients from the bloodstream, the glycerol in polymeric membrane dressings can be utilized by the body as an energy source and a component of new cells. The decision was made to use only silver or standard polymeric membrane dressings, depending upon the condition of the wound bed.

METHODOLOGY

The author used silver polymeric membrane dressings initially. The wound bed contained 100% granulation tissue after ten days, so the silver was discontinued in favor of standard polymeric membrane dressings. Silver polymeric membrane dressings were used a month later for five more days when the exudate quantity increased slightly, indicating possible increased bioburden. Dressings were changed when 75% saturated or every 7 days. No wound bed cleansing was done at dressing changes. Polymeric membrane dressings were continued to complete wound closure.

OBJECTIVES

1. Discover that polymeric membrane dressings contain glycerol, which is released into the wound bed and can be utilized by the body as a component for new cells or as an energy source directly at the wound site.
2. Consider the advantages of using polymeric membrane dressings in terms of passive continuous cleansing of the wound bed (which often eliminates painful, wound cooling and time-consuming wound cleansing during dressing changes).
3. Review evidence for the use of silver polymeric membrane dressings in the treatment of wounds in immune compromised patients.

RESULTS

The wound closed without further antibiotics in only ten weeks and remained closed. The patient was placed in hospice during the wound treatment. Dressing changes were very quick and used very few supplies because no manual wound bed cleansing was needed.

CONCLUSION

Consistent use of polymeric membrane dressings resulted in this wound closing, which was far beyond the expectations of the patient's caregivers. Because no wound bed cleansing was needed, the delicate new structures in the wound bed were not disturbed and the wound was not cooled at dressing changes. Since the patient had very little circulation to the area and was nutritionally compromised, glycerol from the dressings may have been metabolized in the wound bed to provide energy and some of the cell components needed to close the wound.

BIBLIOGRAPHY

1. Goldberg S. Clinical Biochemistry Made Ridiculously Simple. Miami, FL: MedMaster, Inc., 1999.
2. Frank MSB, Nahata MC, Hilty MD. Glycerol: a review of its pharmacology, pharmacokinetics, adverse reactions and clinical use. *Pharmacotherapy* 1981; 1(2):147-160.
3. Driver VR. Silver dressings in clinical practice. *Ostomy Wound Manage.* 2004 Sept;50(9A Suppl):11S-15S.
4. Burd A, Kwok CH, Hung SC, Chan HS, Gu H, Lam WK, Huang L. A comparative study of the cytotoxicity of silver-based dressings in monolayer cell, tissue explant, and animal models. *Wound Repair and Regeneration* 2007;15:94-104.
5. T Togo, JM Alderton, GQ Bi and RA Steinhardt. The mechanism of facilitated cell membrane resealing. *Journal of Cell Science* 1999; 112(5) 719-731.
6. Blackman JD, Senseng D, Quinn L, Mazzone T. Clinical evaluation of a semipermeable polymeric membrane dressing for the treatment of chronic diabetic foot ulcers. *Diabetes Care.* 1994;17(4):322-5.



May 4: 3 cm x 6 cm
Heel ulcer open one month; polymeric membrane dressings for two weeks.



May 25: 2 cm x 5 cm
Silver polymeric membrane dressings for five days due to increased exudate.



June 4: 1.2 cm x 5 cm
Polymeric membrane dressings are keeping the deep structures moist.



June 11: 1.5 cm x 5 cm
The wound has divided into two areas and the structures are mostly covered.



June 15: 1.2 cm x 5 cm
Routine cleansing, which cools and can slow healing, was not performed.



June 25: 0.9 cm x 0.5 cm
Glycerol from the dressings can be converted to energy at the wound site.



July 5: Almost closed
Polymeric membrane dressings keep wound moisture appropriate.



July 11: Closed in 10 weeks
Patient is almost 100 years old and in hospice, but her wound closed!