

# Use of Polymeric Membrane Dressings\* for Debridement of Wounds in Extreme Premature Infants <25 Weeks Gestation

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## Introduction

Debridement is a cornerstone foundation for effective wound care. However, in the extreme neonatal patient <25 weeks gestation, no standard intervention is currently recommended for wound debridement. Fragile and immature skin prohibits traditional methods for debridement. Whereas the utility and efficacy of medical grade honey and surfactant gels have been proven as an effective form of debridement in the neonatal population<sup>1,2</sup>, the risk for complications secondary to these products is high when applied on the extreme premature infant <25 weeks gestation. Recognizing that polymeric membrane dressings are designed to continuously cleanse, debride, facilitate healing, relieve pain and control inflammation<sup>3,4</sup>, we sought to assess how such dressings would function in extreme premature infants.

## Purpose

In this case series study, polymeric membrane dressings were applied to wounds in extreme premature infants to determine their safety and efficacy as a mechanism of debridement in this fragile patient population.

## Background

Unlike foam dressings, whose primary purpose is to absorb, polymeric membrane dressings are designed to continuously cleanse, debride, facilitate healing, relieve pain and control inflammation.

Polymeric membrane dressings comprise a hydrophilic polyurethane that contains a mild, non-toxic wound cleanser (surfactant), soothing moisturizer (glycerine), superabsorbent and a semi-permeable film backing.

The positive effects of polymeric membrane dressings are observed to occur without additional debridement agents or products.



Polymeric membrane dressing

## Patient Characteristics

Patients included premature neonates < 25 weeks with a wound that would require debridement for best outcome.

Four patients are illustrated. All patients were managed in a neonatal intensive care setting.

### Patient 1

22-week premature infant with skin breakdown and nonviable epidermis on the abdominal wall. Injury likely occurred secondary to caustic effects of skin preparation for umbilical catheter placement.



### Patient 2

22-week premature infant with IV extravasation of the left forearm. TPN/IL infusing at the time of injury.



### Patient 3

25-week preemie with PICC line extravasation injury LUE. TPN/IL infusing at the time of injury.



### Patient 4

23-week preemie with invasive mold of the upper back



## Methods

- Patients included premature neonates <25 weeks with a wound that would require debridement for best outcome.
- Wounds were cleaned and irrigated with normal saline with each dressing change.
- Treatment included direct application of the polymeric membrane dressing over the wound bed. No additional dressings were applied directly over the wound.
- The polymeric membrane dressings were individually cut to accommodate the size of each wound.
- Dressings were replaced daily to assess the periwound and wound bed for complications.
- In the case illustrations, the dressings were secured to the wounds either using light conforming gauze or by wrapping the dressing circumferentially. Tape was applied circumferentially on top of the dressing, which holds the dressing securely while preventing adhesive contact with the fragile skin.



## Results

### Patient 1

Nonviable tissue was gently debrided resulting in a healthy wound bed. Healthy periwound was not affected. The open wound promptly epithelialized utilizing polymeric membrane dressings thereafter without complications.



### Patient 2

Nonviable eschar was slowly and gently debrided from the wound bed. The surrounding tissue was not affected by the polymeric membrane dressing. The open wound epithelialized utilizing collagen dressing covered with a secondary dressing thereafter without complications.



### Patient 3

Nonviable eschar was slowly and gently debrided from the wound bed. The surrounding tissue was not affected by the polymeric membrane dressing. The open wound epithelialized utilizing collagen dressing covered with a secondary dressing thereafter without complications.



### Patient 4

Invasive mold tissue was gently debrided from the skin avoiding additional infectious complications from arising. The open wound epithelialized utilizing collagen dressing covered with a secondary dressing thereafter without complications and with minimal scar tissue.



## Conclusions

- In each case the polymeric membrane dressing effectively debrided nonviable tissue and eschar in extreme premature infants <25 weeks gestation without the application of additional advanced wound dressings.
- Surrounding tissue was not affected and remained intact and healthy.
- The treatment was safe in this fragile patient population and no complications were encountered.
- Polymeric membrane dressing should be considered when debridement is necessary for wound management in infants <25 weeks gestation.

## Bibliography

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