Positive Outcomes Managing Deep Tissue Pressure Injuries (DTPIs) with Polymeric Membrane Dressings*

Autumn Henson Geriatric Nurse Practitioner, WCC, Trinity Ellis Health & Rehab, 7449 Fair Oaks Drive, Clemmons, NC 27012 and Trinity Glen 849 Waterworks Road, Winston Salem, NC 27101

Clinical Problem

Over the 12 months prior to this study, 2 SNPs had a combined 50 deep tissue pressure injuries (DTPIs) on the ankles, heels and feet. 36% (18) of these DTPIs opened at Stage 3 or 4 pressure injuries (PIs). The open DTPIs were managed with either: hydrogel, collagenase, silver alginates, border gauze or foam, taking 3 to 12 months to close. A focused Performance Improvement Project (PIP) and facility's Quality Assessment Performance Improvement (QAPI) program was initiated. Preventing DTPI opening is a relevant, pip, given the increased regulatory scrutiny with costs to close open wounds.

Rationale

Polymer membrane dressings (PMDs) help to reduce ischemic and reperfusion injury; the combination of both types of injuries are believed to play a central role in DTPI deterioration.

PMDs focus inflammation, reduce swelling and pain of injured tissues and encourage healing by reducing the spread of inflammation into surrounding unjured tissues, without interfering with the robust localized inflammatory response required for healing, which speeds healing. On robust wounds the dressings absorb up to 10 times its weight in exudate, optimizing moisture balance and preventing maceration. Dressings are very easy to use. The dressing continuously delivers the necessary exudate and wound drainage ensuring the wound was not manually cleansing is unnecessary at dressing changes. The cleansing system helps to keep dressings clean and necrotic tissue while facilitating autolytic debridement. Changing before the exudate, visible through the dressing, reaches the wound margin, improves outcomes.

Clinical Treatment Approach

2 groups presenting with DTPIs, in spite of pressure injury prevention protocols, were followed over 7 months. They presented with persistent, non-blanching, dusky (dark in color) purple or maroon discoloration; or, blood blisters. 3 of the 18 PI’s were admitted from another facility with intact thin eschar and identified to be DTPI’s by the author. Both groups had various comorbidities including: peripheral vascular disease, hypertension, type 2 diabetes, dementia and anemia.

• Group 1 - Control Group - 6 patients with 8 DTPIs on 6 heels and 2 ankles. Patients ranged in age from 71 to 91 years. Skin was cleansed first with normal saline or a wound cleanser and patted dry with gauze. A skin barrier wipe was applied 2x/daily. Patients changed dressings at every change. Open wounds for the control group were managed accordingly with a variety of advanced wound care approaches. All resolved except one patient that passed away.

• Group 2 - Intervention Group - 10 patients with 13 DTPIs on 6 heels, 1 ankle, 5 feet and 1 toe. Patients ranged in age from 64 to 94 years. PMDs were cut larger than the base wound so manual cleansing is unnecessary at dressing changes. The cleansing system helps to keep dressings clean and necrotic tissue while facilitating autolytic debridement. Changing before the exudate, visible through the dressing, reaches the wound margin, improves outcomes.

Clinical Problem

2 groups presenting with DTPIs, in spite of pressure injury prevention protocols, were followed over 7 months. They presented with persistent, non-blanching, dusky (dark in color) purple or maroon discoloration; or, blood blisters. 3 of the 18 PI’s were admitted from another facility with intact thin eschar and identified to be DTPI’s by the author. Both groups had various comorbidities including: peripheral vascular disease, hypertension, type 2 diabetes, dementia and anemia.

• Group 1 - Control Group - 6 patients with 8 DTPIs on 6 heels and 2 ankles. Patients ranged in age from 71 to 91 years. Skin was cleansed first with normal saline or a wound cleanser and patted dry with gauze. A skin barrier wipe was applied 2x/daily. Patients changed dressings at every change. Open wounds for the control group were managed accordingly with a variety of advanced wound care approaches. All resolved except one patient that passed away.

• Group 2 - Intervention Group - 10 patients with 13 DTPIs on 6 heels, 1 ankle, 5 feet and 1 toe. Patients ranged in age from 64 to 94 years. PMDs were cut larger than the base of the DTPI to cover periwound skin, secured with gauze wrap or transparent film dressing and covered with intact thin eschar and identified to be DTPI’s by the author. Both groups had various comorbidities including: peripheral vascular disease, hypertension, type 2 diabetes, dementia and anemia.

Patient Outcomes

PMDs helped to reduce inflammation, resolve DTPIs and reduce further deterioration of open PI’s. PMDs provided padded protection and padded dry with gauze. A skin barrier wipe was applied 2x/day (facility Standard of Care). PMDs focus inflammation, reduce swelling and pain of injured tissues and encourage healing by reducing the spread of inflammation into surrounding unjured tissues, without interfering with the robust localized inflammatory response required for healing, which speeds healing. On robust wounds the dressings absorb up to 10 times its weight in exudate, optimizing moisture balance and preventing maceration. Dressings are very easy to use. The dressing continuously delivers the necessary exudate and wound drainage ensuring the wound was not manually cleansing is unnecessary at dressing changes. The cleansing system helps to keep dressings clean and necrotic tissue while facilitating autolytic debridement. Changing before the exudate, visible through the dressing, reaches the wound margin, improves outcomes.

Conclusions

Using PMDs resulted in a 54% reduction in DTPI opening, faster resolution of those that opened if used PMDs used initially and improved patients’ quality of life. Faster resolution of open PI’s reduced DTPI deterioration reducing costs of wound management. As a result of this successful PIP, PMDs have become the standard of care for managing DTPI’s at these facilities and a successful QAPI activity.

Variables Interfering with Wound Healing for these Patients

The patients’ comorbidities, especially those with lower extremity spasm resulted in ongoing trauma to DTPI sites. 2 patients were not enrolled into the intervention group immediately because they could not sign the consent form themselves and a family member was not available to be a contact person so skin barrier was applied only to use PMDs. These patients’ DTPI’s managed with skin barriers, did not have improved prior to PMD initiation.

With a savings of 50 minutes per patient per week, there was:

• Reduced time AND more time for documentation.
• More time for skin checks and the application of skin lotions or creams.
• Less time implementing skin barrier wipe 2x a day, allowing patients less time to be waiting in their room for wound management and more time for them to do their rehab or not to be pulled away from activities.
• Less time wound rounding and therefore more time for primary rounds for the author.
• Facility administration is excited to see faster resolution with PMDs and increased nursing availability for other activities.

Positive Outcomes with Polymeric Membrane Dressings in SNF

<table>
<thead>
<tr>
<th>Group 1 - Control Group</th>
<th>Group 2 - Intervention Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin barrier wipe 2x/day</td>
<td>Polymeric membrane dressings 2x/wk and as needed</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Wound Management</th>
<th>Labor Time Spent</th>
<th>Time Saved For Wound Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wound Management</td>
<td>70 min. per week</td>
<td>10 min. per week for Control Group</td>
</tr>
<tr>
<td>Difference in Time for Wound Management</td>
<td>50 min. per week per patient more a week for Control Group</td>
<td></td>
</tr>
<tr>
<td>Percentage of Labor Time Spent for Wound Management</td>
<td>71.4% time saved with Polymeric Membrane Dressings</td>
<td></td>
</tr>
</tbody>
</table>

Definition of Deep Tissue Pressure Injury

*Deep Tissue Pressure Injury: Persistent non-blanchable deep red, maroon or purple discoloration. Intact or non-intact skin with localized area of persistent non-blanchable deep red, maroon, purple discoloration or epidermal separation revealing a dark wounded bed or blood filled blister. Pain and temperature change often precede skin color changes. Discoloration may be irregular or linear. Presence of DTPI results in increased tissue pressure and shear forces at the bone-muscle interface. The wound may evolve rapidly to reveal the actual extent of tissue injury or may remain without tissue loss. If necrotic tissue, subcutaneous tissue, granulation tissue, fascia, muscle or other underlying structures are visible, this indicates a full thickness pressure injury (Unstageable, Stage 3 or Stage 4). Do not use DTPI to describe vascular, traumatic, neuropathic, or dermatologic conditions.*

Bibliography


45 days after the application of polymeric membrane dressings the DTPI is resolved.

Skin is blanchable, dry and scaly. The callus was debridged with the use of polymeric membrane dressings.

Initial Application of Polymeric Membrane Dressings

Heel DTPI

Measurement: 0.5 x 0.7 cm

Deep red, non-blanchable, callus area in the center of DTPI

*PolyMem® Dressings, PolyMem Silvery Dressings, Ferris Mfg. Corp., 5133 Northeast Parkway, Fort Worth, TX 76106 USA, 1-800.POLYMEM (765.9636) • www.polymem.com

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

*PolyMem® Dressings, PolyMem Silvery Dressings, Ferris Mfg. Corp., 5133 Northeast Parkway, Fort Worth, TX 76106 USA, 1-800-POLYMEM (765.9636) • www.polymem.com

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