The use of an ionic silver hydrogel impregnated gauze for autolytic debridement in three wounds of various etiologies
Describe experience with an ionic silver hydrogel impregnated gauze dressing to clean and debride wounds in 3 patients. This research was industry sponsored. The intellectual property contained herein is property of its respective owners and has been republished with permission. Republishing these research findings does not constitute endorsement of any product or treatment plan by the authors, investigators, or their institutions.

Melissa Young, MSPT, CWS; Melissa Murphy, MSN AGNP-BC, and Andi Heinemann PT, DPT, CLT-LANA
MEND Clinic, Blount Memorial Hospital

**Methods**

- Retrospective case study approved by Blount Memorial Hospital Institutional Review Committee
- Identified 3 patients with 90 – 100% slough or necrotic tissue where study dressing was clinician’s choice
- **Dressing Protocol**
  1. Wounds cleaned with sterile saline, sharps debrided as needed
  2. Study dressing was cut to fit the wound bed as primary dressing with caution to avoid peri-wound tissue
  3. Secondary dressing used to cover study dressing
  4. Dressing changes occurred at least twice weekly for 7 – 14 days
- At each visit, wounds were photographed, measured, and characterized for presence of necrotic tissue and slough
- Wounds were transitioned to standard wound care procedures after two weeks

**Advantages to using the ionic silver hydrogel impregnated gauze® dressing**

- Moisture donating, facilitates autolytic debridement
- Absorbs excess wound exudate
- Ionic silver in dressing reduces bioburden and wound odor

**Introduction**

Debridement is necessary for proper wound healing\(^1\)^\(^2\)

- Removes necrotic tissue
- Reduces bioburden
- Stimulates granulation tissue formation and healing

Autolytic debridement is the body’s natural process to remove necrotic tissue utilizing proteolytic enzymes\(^3\)

- Driven by proteolytic enzymes produced by the body
- Highly specific, but slow process
- Wounds often need catalyst through interventional debridement
  - Sharp debridement is fast and effective but painful and risks damaging healthy granulation tissue\(^2\)^\(^3\)
  - Moisture Donating Dressings helps to soften necrotic tissue facilitating autolytic debridement but may not address bioburden\(^3\)
  - Enzymatic debridement applies additional proteolytic enzymes to the wound but is expensive and can only be applied to necrotic tissue\(^3\)
  - Maggot debridement utilizes maggots to remove sloughy and necrotic material. Effective but patient acceptance is limited due to aesthetic and psychological reasons\(^3\)

Advantages to using the ionic silver hydrogel impregnated gauze® dressing

- Moisture donating, facilitates autolytic debridement
- Absorbs excess wound exudate
- Ionic silver in dressing reduces bioburden and wound odor
Representative Cases

case 1: traumatic hand wound

Day 0
Pre Sharp Debridement

Day 0
Post Sharp Debridement

Day 7
2 Applications

- Three week traumatic wound caused by hydroveyor with no involvement of tendon or bone.
  ➢ Male 3rd decade of life; BMI 25.5
  ➢ Prior smoker and no comorbidities
  ➢ Prior treatment: Cleaning with soap and water and left open to air

- Study dressing applied 2 times; foam and rolled gauze as secondary dressings.

<table>
<thead>
<tr>
<th>Wound Measurements:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 0** Day 4 Day 7</td>
</tr>
<tr>
<td>W* L* D* Area* S/N</td>
</tr>
<tr>
<td>2.3 8.2 0.3 18.86 50%</td>
</tr>
<tr>
<td>2.5 6.5 0.3 16.25 N/A</td>
</tr>
<tr>
<td>1.7 5.7 0.3 8.55 10%</td>
</tr>
</tbody>
</table>

- Wound experienced 40% reduction in size and 90% granulation coverage in 7 days.


case 2: three post-op spinal wounds

Day 0

Day 5

Day 13

- Four week post-op wound following spinal surgery with infection present and wound dehiscence.
  ➢ Female 6th decade of life; BMI 36
  ➢ Hypertension, Diabetes, and Hyperlipidemias
  ➢ Prior treatment: Wounds cleaned with hydrogen peroxide and left open to air

- Study dressing applied 3 times; adhesive foam as secondary dressing; systemic antibiotics to treat infection; sutures removed day 5 causing increase in wound size.

<table>
<thead>
<tr>
<th>Wound Measurements:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wound  Day 0 Day 5** Day 13</td>
</tr>
<tr>
<td>W* L* D* Area* S/N</td>
</tr>
<tr>
<td>A 1.5 1.2 0.1 1.8 100%</td>
</tr>
<tr>
<td>B 3.2 2.5 1.5 8 100%</td>
</tr>
<tr>
<td>C 3.5 2.5 0.5 5.25 100%</td>
</tr>
</tbody>
</table>

- All three wounds increased granulation tissue coverage and decreased in wound depth between day 5 and day 13.


case 3: calciphylaxis leg ulcer

Day 0

Day 2

- Eight week calciphylaxis leg ulcer diagnosed by biopsy.
  ➢ Female 5th decade of life; BMI 49.1
  ➢ Comorbidities: Stage III chronic kidney disease, livedo reticularis with ulceration, hypertension, diabetes mellitus, neuropathy, anemia, myasthenia gravis
  ➢ Prior treatment: Vaseline, triple antibiotic ointment, gauze

- Study dressing applied three times; hydrogel and foam adhesive used as secondary dressings.

<table>
<thead>
<tr>
<th>Wound Measurements:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 0 Day 2 Day 8</td>
</tr>
<tr>
<td>W* L* D* Area* S/N</td>
</tr>
<tr>
<td>4.9 6.7 0.3 32.83 90%</td>
</tr>
</tbody>
</table>

- Difficult to treat calciphylaxis wound experienced 21% reduction in size and 10% increase in granulation coverage in 8 days.

Excellent Autolytic Debridement Observed with Study Dressing*

- Wound slough/necrotic tissue coverage decreased on average by 60%.
- Slough/necrotic tissue replaced by healthy granulation tissue.
- Observed debridement with study dressing helped convert wounds to healing wounds.
conclusions

- Study dressing* aided in effective removal of necrotic and slough from wound bed simplifying sharps debridement.
  - An increase in granulation tissue coverage and overall improvement in condition was observed for all three cases.
  - Case 1 and 3 had a 40% and a 20% reduction in wound surface area in only 7 and 8 days.
  - All Case 2 wounds experienced a decrease in depth after wound dehiscence with suture removal.
- Dressing has been used for cleaning and debridement in over 70 wounds to date.
  - Successfully used on a wide variety of wounds.
  - Easy to apply and remove.
  - The use of an additional hydrogel as a secondary dressing in wounds with low exudate has proven beneficial to treatment regime.
  - Clinical experience indicates that pain is reduced compared to other dressings.
- The dressing provides an effective, economical, and readily available first line product for debridement option in advanced wound care.

*Algidex Ag Hydrogel Gauze (DeRoyal Industries, Inc. - Powell, TN)

References –
4: Sibbaid et al. Wounds UK (2007), 25 – 46, 3.2

Acknowledgement. This work was partially funded by DeRoyal Industries, Inc. and its employees contributed to this analysis.

Disclaimer. The views expressed in this work are those of the and do not necessarily represent the views of the hospital or its leadership. Copyright to this work belongs to its authors, and it is reproduced with permission. No other endorsement or relationship between these parties is express or implied.