

DRUG-FREE ODOR AND SLOUGH REDUCTION AND ACCELERATION OF GRANULATION WITH SELF-ADAPTIVE DRESSINGS IN CHRONIC EXTREMITY WOUNDS

MICHAEL ROTHSTEIN
MSN, FNP, WCC, DAPWCA
Foot Center of New York,
New York, NY

OBJECTIVE

TO EVALUATE THE EFFECTIVENESS OF A NEW SELF-ADAPTIVE ADVANCED WOUND DRESSING* WITH RESPECT TO EXUDATE CONTROL, WOUND ODOR, PAIN, GRANULATION TISSUE FORMATION, RE-EPITHELIALIZATION AND PERI-WOUND MACERATION IN CHRONIC ULCERS WITH UNDERLYING VENOUS INSUFFICIENCY

BACKGROUND

- Wicking and sequestering excess exudate away from the wound has been found to reduce biofilm formation, decrease wound edge maceration and accelerate wound healing [1].
- Reduction of inflammation as well as certain bacteria and biofilm in wounds can lead to drastic decreases in wound odor and pain [2,3].
- Paradoxically, most dressings leak exudate when placed in draining wounds.
- A self-adaptive advanced wound dressing with enhanced wicking capabilities and a microbial/strike-through barrier is recently available for treatment over wounds of various etiologies and exudate levels [4,5].
- Proposed mechanisms of the self-adaptive advanced wound dressing include simultaneous absorption of fluid and release of water vapor designed to facilitate proper moisture balance.

RESULTS

- 4 patients with 5 wounds were treated.
- Within three weeks post initiation of self-adaptive dressings, no wound odor or pain was detected in any of the wounds, even in three wounds that were extremely painful (7/10) and malodorous at the start of treatment.
- All dressings remained securely in place with no leakage at each dressing change, even in wounds with high levels of exudate that previously could not be contained with any prior attempted absorptive dressing.
- Wound edges and peri-wound skin remained healthy and not macerated throughout treatment for all wounds.
- Granulation and epithelial tissue formed at an accelerated rate, compared to prior anecdotally observed rates with previous dressings.
- Dressing change frequency was reduced in all patients with self-adaptive dressings, compared to prior dressings.
- Patients reported high satisfaction with the dressing due to elimination of wound odor and pain, control of wound drainage, and gradual reduction in wound size.
- Marked reduction in wound odor and pain restored patient confidence and quality of life.

METHODS

- With patient consent, consecutive wounds, regardless of etiology or amount of exudate, were included in the evaluation.
- Wounds were cleansed with soap and water, sharp debrided when appropriate, and re-cleansed.
- Self-adaptive advanced wound dressings were applied, overlapping 2 to 3 cm onto intact skin.
- Self-adaptive dressings were covered with cling gauze, followed by co-flex wrap, and a tubular stocking when appropriate.
- Dressings were changed 1-2 times per week.

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CONCLUSIONS

- Use of these self-adaptive wound dressings resulted in major odor and slough reduction in large surface area ulcers without use of topical medication or antimicrobials.
- Even in heavily exuding wounds, the self-adaptive dressing isolated the drainage and remained leak-free, reducing the required dressing change frequency in all wounds to 1-2 times per week.
- Acceleration of granulation tissue formation and re-epithelialization occurred with self-adaptive dressings, despite complex comorbidities and poor perfusion in each of the extremity wounds.
- Odor, drainage, and pain control achieved with the self-adaptive dressings dramatically improved patient quality of life, allowing faster return to work and other normal daily activities.
- In the clinician's experience, the absorption and wicking properties of the self-adaptive dressing are superior to all other known wound dressings, as evidenced by the consistently healthy wound edges and weight of the dressing at removal.
- Self-adaptive dressings simplified care for these patients in numerous ways, including containment of wound exudate, ease of application, and reduced dressing change frequency.

CASE 1

Multiple malodorous, painful arterial/venous ulcers in patient with HIV, hepatitis C and chronic venous insufficiency

61-year-old male with multiple large mixed arterial/venous ulcers that have been present for over 2.5 years. Patient's quality of life has been severely compromised due to offensive wound odor, inability of conventional dressings to manage leak effectively, and pain (7/10).



A Day 0 Malodorous, painful and heavily draining bilateral ulcers Left leg ulcer extends from above medial malleolus to foot.



B Day 0 Largest right leg ulcer extends from medial to lateral portions of the lower leg.



C, D Day 18 Drainage is controlled, and wound pain and odor are no longer present. Wound edges are healthy and not macerated. Wound dimensions are decreased, and epithelial tissue is present all around wound edges.



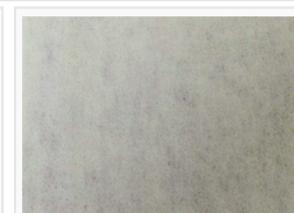
E, F Day 90 Wound edges remain moist and pliable, and wound is gradually epithelializing. Wound remains odorless and patient is pain free. Patient's self-confidence is restored and patient has returned to work.



G, H 8 months Wound remains clean and drainage is controlled.



I Self-adaptive dressings are applied side-by-side, overlapping 2 to 3 cm onto intact skin.



J Wound-facing side of dressing.



K Two 15 x 15 cm self-adaptive dressings contain approximately 1.2 lb of exudate at each dressing change.

CASE 2

Non-healing extremity wounds in patient with chronic venous insufficiency

57-year-old male with two chronic wounds on his left lateral lower extremity that developed secondary to a gunshot wound sustained 10 years prior. Patient has hepatitis C and a history of chronic venous insufficiency.



A Day 0 Chronic extremity wounds measured 4.5 x 2.5 x 0.3 and 8.0 x 4.5 x 0.3 cm with exposed healthy tendon.



B Day 14 Both wounds are 100% granulated, including over tendon. Wound edges are flattened, moist and re-epithelializing toward the center. Wound dimensions are reduced to 4.5 x 1.5 x 0.1 and 7.4 x 4.0 x 0.1 cm.



C Day 21 Wound edges remain healthy and dimensions are reduced to 4.1 x 1.1 x 0.1 and 7.0 x 4.0 x 0.2 cm.



D 3 months Wound is granulated and re-epithelializing normally.



E 5 months Wound is almost 100% epithelialized.

CASE 3

Chronic foot ulcer caused by pyoderma gangrenosum

67-year-old male with draining left lateral foot ulcer of eight months duration caused by pyoderma gangrenosum. Patient is morbidly obese, insulin-dependent diabetic with history of controlled hypertension and psoriasis. At initial presentation, ulcer was very painful and small, and treated with oral and potent topical steroids with zinc oxide cream around wound edges, and a non-adherent layer dressing and gauze. Narcotics were administered to control pain; patient could not tolerate compression. Ulcer size increased steadily at a rate of 1 cm/week in length and width for 3 weeks prior to self-adaptive dressing use.



A Day 0 Ulcer is painful with serous drainage, slough and inflamed edges. Wound measures 8.5 x 4.5 x 0.2 cm. Topical lidocaine and zinc oxide are applied around wound border. Steroid cream and a non-adherent layer are applied to the wound, followed by the self-adaptive wound dressing and gauze, with dressing changes every 2-3 days.



B Day 14 Slough is considerably reduced, wound edges are flattened and bed is well granulated. Wound measures 8.0 x 5.0 x 0.2 cm.



C Day 60 Wound pain and drainage are controlled and patient is tolerating compression.



D 3.5 months Patient stable with 9.0 x 5.0 x 0.2 cm ulcer. Wound is ready for bi-layered skin substitute.