Effectiveness of a Self-Adaptive Advanced Wound Care Dressing in Multiple Wound Types

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ABSTRACT:
The purpose of this study was to determine the effectiveness of a novel humifiber advanced wound dressing for achieving optimal moisture balance in multiple wound types. The subject dressing had the potential to be used on varied amounts of exudate or conversely prevent desiccation of a dry wound. The dressing was applied one to three times per week either in clinic or in home settings based on wound conditions and in conjunction with local best practices throughout the entire study. Our overall approach was to use this dressing on any wound regardless of etiology or amount of exudate, and to decrease dressing changes to a minimum (once a week) until the wound was completely re-epithelialized. Several patients were treated with the humifiber dressing once per week and showed a good healing response with extended use in patients with once per week dressing changes without increased drainage. Utilization of a one-fit dressing for multiple wound types, regardless of wound levels, simplified wound care. This dressing improved the quality consistency of practical moist wound healing and facilitated care continuity in the clinic, home and facility settings.

OBJECTIVE:
To evaluate the effectiveness of a new self-adaptive advanced wound dressing in achieving optimal moisture balance in multiple wound types.

PROBLEM:
- The growing number of available dressings makes choosing the correct dressing for each wound an increasingly challenging and time-consuming task.
- The various dressing properties needed to treat different wound types and conditions generally prompts a regular exchange of dressings for each wound, based on qualitative evaluation.
- The selection process among hundreds of dressings can lead to confusion, and sometimes, an unstable type of dressing for a particular wound.

BACKGROUND:
- Use of one single dressing type capable of maintaining optimal moisture balance in all wound types and conditions would likely allow healthcare setting to simplify equipment, decrease cost, and reduce inventory costs.
- We evaluated a unique use of a new synthetic polymer AmiNer® dressing, that was designed to be self-adaptive to any wound condition (wet- or non-exuding) to facilitate proper moisture balance in all wound types.

METHODS:
- We prospectively evaluated effectiveness of a novel humifiber advanced wound dressing in patients with chronic, subacute and acute wounds.
- With patient consent, consecutive wounds, regardless of etiology or amount of exudate, were included in the study.
- Wound was debrided of all necrotic tissue, and culture-specific topical antibiotics were applied when appropriate.
- A humifiber dressing (5 x 10.2 x 10.2 or 15.2 x 15.2 cm) was placed over the wound, overlapping 2.5 cm into intact skin. When more than one dressing was required, dressings were placed side by side, secured with tape or cotton. Dressings were secured with a Seri® wrap or tape.
- Initial dressings were changed daily in wounds with moderate to heavy drainage and changed every other day in wounds with minimal drainage.
- Goal was to gradually reduce dressing change frequency to once per week when appropriate.
- Patients were evaluated by clinic once per week or every other week.

RESULTS:
- 17 patients with 22 wounds were evaluated.
- 10 patients were male and 7 were female, average age was 63 years old (range 30 to 84 years).
- Wound types consisted of pressure ulcers (n=6), diabetic foot wounds (n=4), chronic radiation wound (n=1), venous leg ulcers (n=4), and dehisced surgical incisions (n=2).
- The humifiber dressing was effective on all wounds with no need for dressing customization.
- In the majority of cases, formation of biofilm was reduced over time.
- The various dressing properties needed to treat different wound types and conditions generally prompts a regular exchange of dressings for each wound, based on qualitative evaluation.
- Several patients were treated with the humifiber dressing once per week and showed a good healing response with extended use in patients with once per week dressing changes without increased drainage.

CONCLUSIONS:
- Dressing selection to multiple wound conditions—from minimal to severely exuding wounds—and to effective in all wound types with no need for dressing customization.
- Notable improvements of wound edge conditions were observed during use of humifiber dressing.
- Healthy periwound skin was preserved in all cases with humifiber dressings.
- In the majority of cases, formation of biofilm was reduced with the humifiber dressing, therefore reducing the need for debridement over time.
- The humifiber dressing appeared to prevent accumulation of fluid and desiccation in all chronic, subacute and acute wounds in this series.
- Study patients reported high satisfaction based on painless dressing change, improved fluid and desiccation in all chronic, subacute and acute wounds in this series.
- A switch to this one-fit-all dressing simplified wound care, helped ensure standardization of care, reduced inventory costs, and diminished workflow and potential human error that can be associated with traditional dressing selection.
- In our opinion, the new humifiber self-adaptive dressing satisfies the vast majority of patient and wound requirements and can be used in lieu of a wide array of wound care products to simplify wound care in any healthcare setting.

Case 1: Chronic lower extremity venous stasis ulcer

53-year-old male with a draining talor-U burn lesion venous stasis ulcer that had been present for several months

A. Chronic venous leg ulcer with edematous raised bed after 4 months of advanced wound care and prior to humifiber application. After debulking, ulcer measured 4.0 x 4.0 x 0.5 cm.

B. Two weeks following initial use of humifiber dressing, drainage is considerably decreased and peri-wound erythema is completely resolved. Signs of inflammation are no longer present and the wound is nearly level with the periwound skin.

C. After 1 month of humifiber dressings, wound size was reduced to 0.5 x 0.25 x 0.25 cm with no edema or drainage. The wound appeared optimally moist.

D. Venous ulcer is completely closed with minimal drainage after 2 months of humifiber dressings.

Case 2: Diabetic foot ulcer secondary to gout

65-year-old diabetic female with a draining foot ulcer secondary to gout and neuropathy on her right foot great toe

A. Wound secondary to gout at initial presentation, following debridement. Edges were undermined, edematous, and erythematous.

B. One week after initial use of humifiber dressing, wound margins and peri-wound erythema are considerably decreased, bone is exposed.

C. After 2 weeks of humifiber dressings, the wound is 100% granulated, including over tendon, with no edema or drainage. Wound and periwound area remain optimally moist.

D. After 6 weeks of humifiber dressings, ulcer area is reduced > 65% with minimal drainage.

Case 3: Fistula wound healing following amputation

75-year-old diabetic male presented with a diabetic wound of the left foot that met criteria for following treatment amputation 7 months prior

A. Diabetes foot ulcer with several periwound maceration after 7 months of advanced wound care and prior to humifiber dressing application

B. Three weeks following initial use of humifiber dressings, maceration is considerably decreased; wounds and edges of callus are no longer present.

C. After 2 months of humifiber dressings, the wound is 100% granulated, including over tendon, with no edema or drainage. Wound and peri-wound area remain optimally moist.

D. After 8 weeks of humifiber dressings and two debridements, the wound size has minimally decreased to 1.0 x 0.5 x 0.5 cm with minimal drainage and desiccation. Wound and peri-wound area remain optimally moist.

E. At the 2-month follow-up post study period, the wound bed and periwound area remain optimally moist and 100% granulated.