

A novel dressing technique for the management of highly exudating lower extremity wounds utilizing gauze-based negative pressure wound therapy

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Introduction

Highly edematous and highly exudating lower extremity wounds can be a challenge for both the patient and the caregiver. Frequency of dressing changes, maceration of healthy skin, potential for infection, odor and leakage are all factors that need to be considered in the management of patients presenting with these wound types. A patient's quality of life can also be severely compromised whilst living with this type of wound and often patients resort to sleeping in the chair at night, reclusive behavior, immobility, depression and anxiety due to the inability of conventional dressings to manage leakage effectively. Negative pressure wound therapy (NPWT) has emerged as an effective and novel technique that can be applied to a wide range of wounds, from clean fasciotomy wounds and skin grafts, to venous, arterial and mixed-etiology leg ulcers¹. Patients with diabetes, who often have neuroischaemic ulcers, also benefit from the therapy².

Conclusion

The gauze based dressing kit was applied to a number of lower extremity wounds using a novel circumferential application technique. The ability of the gauze-based NPWT to be applied to this type of wounds demonstrates its versatility, flexibility and ease of application. NPWT helps to reduce the frequency of dressing changes by managing exudate effectively and also helped to facilitate a marked decrease in edema. Mobile patients could remain ambulatory as the device did not interfere with movement and their quality of life was greatly enhanced.

References

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2. McCallon, SK et al. (2000). Vacuum-assisted closure versus saline moistened gauze in the healing of postoperative diabetic foot wounds. *Ostomy Wound Management* 2000; 46: 8, 24-32. 34.

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Case study 1

Wounds
Bilateral lower extremity venous insufficiency ulcers

History
81y/o, male with reoccurring ulcer ulcers over the past 3 yrs

Comorbidities
Diabetes mellitus, obesity, anemia, peripheral artery and venous diseases, osteoarthritis, spinal stenosis, lower extremity edema

Treatment
NPWT to bilateral lower extremities using gauze-based dressing kit* with circumferential technique, -80mmHg, flat drains, Y-connector, dressing change 2x/wk

Results
Total resolution of wound on left lower leg in 11 days. 43.7% resolution of the wound on the right lower leg in 14 days



Case study 2

Wounds
Venous insufficiency pressure ulcers on right top of foot and right heel

History
62 y/o male with pressure ulcers due to T-12 paraplegia. History of ulcers related to non-compliance with pressure relief

Comorbidities
T-12 paraplegia, HTN, venous insufficiency

Treatment
NPWT using gauze-based dressing kit* with circumferential technique, -80mmHg, flat drain, dressing changes 2x/wk

Results
Wound on right top of foot underwent a 39.8% resolution in 11 days. Wound on right heel underwent a 20.7% resolution in 11 days.



Case study 3

Wound
Multiple open wounds on bilateral lower extremities.

History
Elderly female with edema, open wounds with copious serous drainage, and complicated by CHF. Compression contraindicated.

Treatment
NPWT to bilateral lower extremities using gauze-based dressing kit* with circumferential technique, flat drain, -80mmHg, Y-connector for addressing both extremities simultaneously

Results
Removed 250cc serous exudate in first 24hrs. Patient states: "first time I have slept in a dry bed in 3 months"



Circumferential technique

- Apply moisture barrier to intact skin
- Do not apply to open areas
- Do not apply to areas that will be covered with transparent film

- Cover open areas with non-adherent gauze
- If multiple areas, use one larger sheet
- Will protect wound bed and peri-wound skin from maceration

- Moisten AMD gauze with saline
- Gauze should be moist not wet
- Start wrapping extremity at most distal end of involvement
- If wounds are open on foot, begin wrapping just proximal to toes
- Wrap gauze normally, do not wrap tightly — this is not a compression dressing

- Place drain on top of moistened gauze and secure with ostomy paste
- Add additional layer of saline moistened AMD gauze over drain
- Drain does not have to be placed directly on top of wound/s
- Drain should exit proximal to the foot if possible

- Cut large transparent film into two 4-inch wide strips
- Begin wrapping extremity with transparent film approximately 1-2 inches/2-4cm below level of gauze
- Continue to apply transparent film in an overlapping fashion
- Do NOT stretch transparent film around extremity — this is NOT a compression dressing

- Continue transparent film wrap until all gauze is covered
- As with the distal positioning of transparent film, extend transparent film 1-2in/2-4cm past end of gauze
- Cover ostomy paste with transparent film

- Connect drain to system via connective tubing
- Apply vacuum between 40-80mmHg
- Secure top and bottom of dressing with waterproof tape to prevent transparent film from rolling
- Secure drain with waterproof tape using Chevron technique

