

Disposable, Mechanical Negative Pressure Wound Therapy Use in Three Patients with Lower Extremity Wounds

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Background

- Disposable mechanical negative pressure wound therapy (dNPWT*) can be used in the outpatient setting for the management of small to medium-sized lower extremity wounds.
- The small, disposable unit for administering dNPWT can be worn underneath clothing and allows the patient to be fully ambulatory.

Purpose

- The use of the disposable dNPWT is described in 3 patients with lower extremity wounds.

Methods

- Antibiotics were given as necessary.
- Wounds were debrided followed by the application of silver dressing or povidone-iodine use for 7-10 days.
- dNPWT was then initiated with dressing changes every 2-3 days.
- A hydrocolloid ring, placed 1 cm from the periwound skin, was utilized with dNPWT to help maintain a negative pressure seal.
- dNPWT was discontinued once the wound size decreased to less than 4 cm² (approximately 16-34 days).
- Oxidized regenerated cellulose (ORC)/collagen (C)/silver-ORC dressings† were initiated and reapplied every 3 days until wound closure was observed.

Results

- Three patients presented for care (age range: 57-67).
- Patient comorbidities included diabetes, former tobacco use, obesity, peripheral vascular disease, cancer, and corticosteroid use (**Table 1**).
- Previous medical histories included gangrene of the left foot, and chronic diabetic foot ulcers (DFUs).
- Wounds managed using dNPWT included wound dehiscence and Wagner Stage I DFU.
- Case images are shown in **Figures 1-3**.

Table 1. Patient demographics and wound types

Case	Age	Gender	Comorbidities	Wound Type
1	59	Male	Former Tobacco Use; Diabetes mellitus; Peripheral vascular disease; Obesity; Hypertension; Hyperlipidemia; Previous Gangrene of left foot	Wound Dehiscence
2	57	Male	Diabetes mellitus; Coronary heart disease; Prostate Cancer; Chemotherapy; Corticosteroid use; Obesity; Hypertension; Charcot Foot; Peripheral Neuropathy; ESRD; Hypercholesterolemia	Wagner Stage I DFU
3	67	Female	Diabetes mellitus; Hypertension; Peripheral neuropathy; Heart disease; Fatty liver disease; COPD	Wound Dehiscence

COPD= Chronic obstructive pulmonary disease; DFU= Diabetic foot ulcer; ESRD= End stage renal disease

Results (Cont'd)

- **Case 1.** Wound care included sharp debridement, povidone-iodine dressings (20 days), ORC/collagen silver-ORC dressings (7 days), dNPWT with dressing changes every 3 days (23 days), and ORC/C/silver-ORC dressings (23 days). The wound was fully healed 84 days after presentation.



Figure 1A. Wound 7 days after sharp debridement, povidone-iodine dressing, and ORC/C/silver-ORC dressing use.



Figure 1B. Application of dNPWT.

- **Case 2.** Wound care included sharp debridement, antibiotic therapy, ORC/collagen/silver-ORC dressings (10 days), dNPWT use with dressing changes every 2-3 days (16 days), ORC/C/silver-ORC dressings (14 days) and povidone-iodine dressings (7 days). The wound was fully healed 63 days after presentation.



Figure 2A. Wound at presentation.



Figure 2B. Application of dNPWT.



Figure 2C. Wound after 6 days of dNPWT.

Results (Cont'd)

- **Case 3.** Wound care included sharp debridement, dNPWT with dressing changes every 2-3 days (34 days), and ORC/C/silver-ORC dressings (17 days). The wound was fully closed 51 days after presentation.

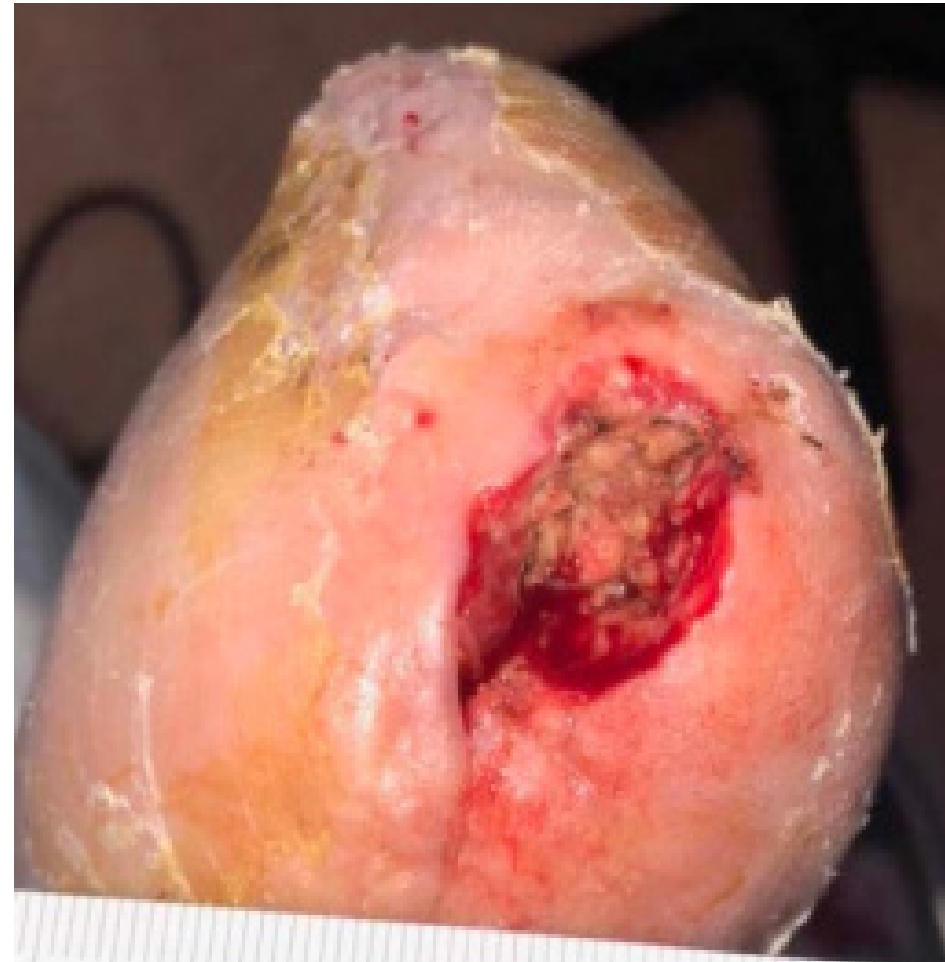


Figure 3A. Wound at presentation.



Figure 3B. Application of dNPWT.



Figure 3C. Wound after 3 days of dNPWT.



Figure 3D. Wound fully healed 51 days after presentation.

- Use of the dNPWT system was associated with wound size reduction and the development of healthy granulation tissue.
- All wounds were closed within 47-84 days.

Conclusions

- The use of a disposable dNPWT system (as part of a treatment protocol) in these 3 patients, with small to medium-sized lower extremity wounds contributed to complete wound healing.