

Initial Experience with Novel Negative Pressure Wound Therapy Peel and Place Seven-Day Dressing

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Background

- While reticulated open cell foam (ROCF)* is a well-established dressing for negative pressure wound therapy (NPWT),¹ granulation tissue ingrowth can occur if the dressing is left in place longer than 72 hours, potentially causing wound bed disruption, bleeding, and pain upon dressing removal.
- Additionally, dressing change frequency and sizing ROCF to fit the wound can be time-consuming.
- A novel multilayer peel-and-place dressing (MPPD) with a polyurethane foam manifolding core and hybrid silicone-acrylic adhesive drape^{2,3} has been developed to remain in place for longer wear time.

Purpose

- We report our initial experience with NPWT and MPPD for adjunctive management of lower extremity wounds.

Methods

- Excisional debridement was performed as appropriate to remove devitalized tissue.
- Systemic antibiotics were prescribed as needed.
- Dressing release liners were removed, and MPPD[†] was applied with the foam core portion extending ≥ 1 cm past the wound perimeter.
- The dressing was connected to the NPWT device via multi-lumen tubing, and -125 mmHg continuous pressure was applied.
- Imaging technologies (non-contact real-time fluorescence wound imaging and non-contact near infrared spectroscopy studies) were used at each dressing change to guide clinical decision making.
- MPPD was changed at least once per 7 days.

Results

- Five patients (3 female and 2 male; age range: 23-69) with 5 complex lower extremity wounds were treated.
- Compared to traditional ROCF dressings, MPPDs were easier and faster to apply and remove.
- The dressings remained sealed without leakage for the intended dressing duration.
- Patient satisfaction was higher with MPPD vs ROCF dressings due to fewer dressing changes.
- All wounds exhibited a positive wound healing progression during therapy, as evidenced by granulation tissue formation and wound area reduction (Cases 1-4).

Conclusions

- The extended wear time of MPPD reduced cost in terms of labor and dressings, compared to traditional ROCF dressings.
- The simplicity of MPPD application saved time.
- NPWT with MPPD was favored over NPWT with ROCF by patients due to quicker dressing changes and lower dressing change frequency.
- Use of MPPD in appropriate wounds may improve patient and clinician experience with NPWT.

Cases

Case 1. Pyoderma gangrenosum ulcer. 69-year-old female with significant past medical history of ulcerative colitis and hypertension presented with a chronic infected full thickness pyoderma gangrenosum ulcer with exposed tendon on her left dorsal foot. Patient reported wound pain of 5/10. NPWT with instillation of hypochlorous acid solution was applied for 2 weeks, then therapy was switched to adjunctive NPWT with MPPD. Multiple placental allografts were also applied.



A. At presentation. Ulcer was debrided and NPWT with instillation of hypochlorous acid was initiated
B. MPPD Day 0. After 2 weeks of NPWT with instillation, NPWT with MPPD was initiated. Wound area: 25.4 cm²
C. 2 weeks. Wound area decreased to 18.5 cm²
D. 5 weeks. Granulation tissue formation continues. Wound area: 15.1 cm²



E. 8 weeks. Granulated over tendon. Wound area: 9.5 cm²
F. 8 weeks. Post debridement
G. 10 weeks. Healthy wound edges; wound area decreased to 6.2 cm²
H. 11 weeks. Wound area: 5.7 cm². NPWT discontinued due to ulcerative colitis flareup. Collagen & antibacterial foam dressings started.

Case 2. Traumatic wound. 64-year-old female with history of hypothyroidism, hypertension and prediabetes presented to the emergency room with cellulitis and an associated abscess on her right shin, resulting from a laceration sustained during a fall 3 weeks prior. The wound was worsening and cultured positive for Pseudomonas Aeruginosa. Incision and drainage performed in hospital, followed by application of NPWT with ROCF for 2 weeks. Upon discharge home, therapy was switched to NPWT with MPPD.



A. NPWT initiated with ROCF for 1 week. Wound area: 37.5 cm²
B. MPPD Day 0. Wound is 100% granulated and area: 25.2 cm²
C. Dressing size selected to ensure foam extended ≥ 1 cm past wound perimeter
D. MPPD placed over wound and periwound; ≥ 5 cm drape border left for sealing
E. Wrinkles & drape border smoothed; handling bars removed



F. TRAC pad applied over pre-cut hole
G. MPPD connected to NPWT unit
H. Negative pressure applied at -125 mmHg
I. First dressing change at 1 week
J. Moist wound edges and decreased area to 19 cm²

Case 3. Diabetic foot ulcer. 49-year-old male with significant past medical history of hypertension, chronic kidney disease and diabetes mellitus type 2 presented with a right dorsal foot diabetic ulcer initially caused by blunt trauma 2 weeks prior. The wound was surgically debrided and collagenase was applied for enzymatic debridement. Ulcer was treated with collagen and hydroconductive wound dressings for 2 months, then NPWT was initiated with MPPD.



A. 1 month after injury, wound managed with collagen and hydroconductive wound dressings
B. MPPD Day 0. 3 months post injury, wound surgically debrided and NPWT with MPPD initiated. Wound area: 10.2 cm²
C. Application of MPPD
D. 1 week. Wound area decreased to 8.2 cm²



E. 4 weeks. Switch to small size MPPD
F. 6 weeks. Wound size continued to decrease. Wound area: 1.3 cm²
G. 7 weeks. Wound area: 0.8 cm²
H. 11 weeks. Wound closed and NPWT with MPPD discontinued

Case 4. Diabetic Foot Ulcer. 23-year-old male with significant past medical history of anxiety, diabetes mellitus type 1 (uncontrolled) with complications of neuropathy presented with a large, infected Wagner Grade 4 diabetic foot ulcer on the dorsum of his right foot. The ulcer was associated with an acute calcaneus fracture from a physical altercation. Imaging showed acute osteomyelitis; ulcer was excisionally debrided and irrigated. NPWT with instillation of hydrochlorous acid solution was initiated for 2 weeks. A meshed human allograft dermal matrix was applied, and NPWT with MPPD was initiated 2 weeks later.



A. At presentation. NPWT with instillation initiated
B. Allograft dermal matrix applied after 2 weeks (medial view)
C. MPPD Day 0. 5 weeks after injury, NPWT with MPPD initiated
D. MPPD applied to wound on dorsal foot surface, extending from medial to lateral aspect
E. 2 weeks. Sloping wound edges and wound size decrease



F. 4 weeks. Wound contracted (lateral aspect)
G. 6 weeks. Wound area decrease (medial aspect)
H. 8 weeks. Lateral and medial aspects of healing wound. NPWT with MPPD at 10-week followup
I. Wound closed at 10-week followup with cadexomer iodine gel or collagen covered with hydroconductive wound dressing and compression.

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NOTE: Specific indications, contraindications, warnings, precautions and safety information exist for these products and therapies. Please consult a clinician and product instructions for use prior to application. Rx only.

*Solventum™ V.A.C.® Granufoam™ Dressing; †Solventum™ V.A.C. Peel and Place Dressing, Solventum Corporation, Maplewood, MN

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