

# Use of Negative Pressure Wound Therapy With Instillation with a Reticulated Open Cell Foam for Hydromechanical Debridement for Wound Bed Preparation in Complex Wounds

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## Background

- Negative pressure wound therapy (NPWT) with instillation and dwell time (NPWTi-d\*) using reticulated open cell foam dressing with through holes (ROCF-CC<sup>†</sup>) has been reported to help solubilize and soften non-viable tissue, wound debris, infectious materials, and thick exudate.<sup>1-4</sup>
- Recently, an indication of hydromechanical removal by ROCF-CC dressing has also been described. Utilizing ROCF-CC with NPWTi-d has been useful in wound bed preparation and may help reduce the frequency of operative debridement prior to surgical closure.
- NPWTi-d with ROCF-CC use for hydromechanical removal of devitalized tissue is presented in 11 patients with complex wounds.

## Methods

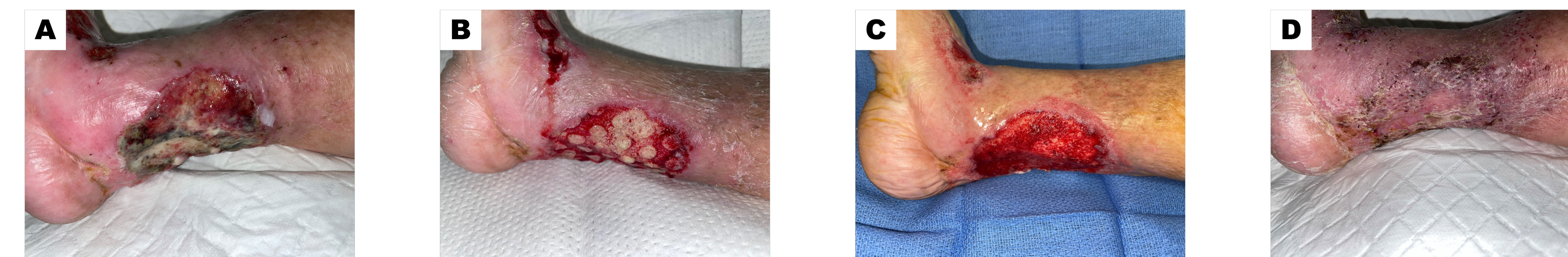
- Antibiotics were initiated, if necessary.
- NPWTi-d and ROCF-CC dressing use was selected according to the presence of thick fibrinous exudate and slough within the wound bed.
- Normal saline or 0.125% hypochlorous acid solution was instilled into the wound bed with a 20-minute dwell time, followed by 2 hours of continuous negative pressure (-125 mmHg).
- Dressing changes occurred every 24 to 72 hours.
- Patients underwent targeted surgical debridement.
- Once healthy granulation tissue was observed, NPWT<sup>‡</sup> was used as a bolster over protected dermal matrix or skin graft with dressing changes every 3 to 7 days.

## Results

- Eleven patients presented for care.
- Wound types included lower extremity arterial ulcers, (n=1), dorsal foot ulcer (n=1), venous stasis ulcers (n=2), hematoma (n=1), necrotizing infection (n=1), graft versus host disease (n=1), abdominal wall (n=1), right groin infection with necrosis (n=1) and pressure injury (n=2).
- NPWTi-d with ROCF-CC dressing and hybrid drape resulted in softening thick fibrinous exudate and slough, which allowed for targeted debridement, and helped reduced planned operating room visits.
- The hybrid drape<sup>§</sup> helped maintain periwound skin integrity. All wounds demonstrated reduced necrotic debris and increased granulation tissue development.
- Eight patients underwent surgical reconstruction during hospitalization, while 2 patients transitioned to NPWT upon discharge, and 1 patient elected hospice care.
- Here, 3 representative cases are presented (Figures 1-3).

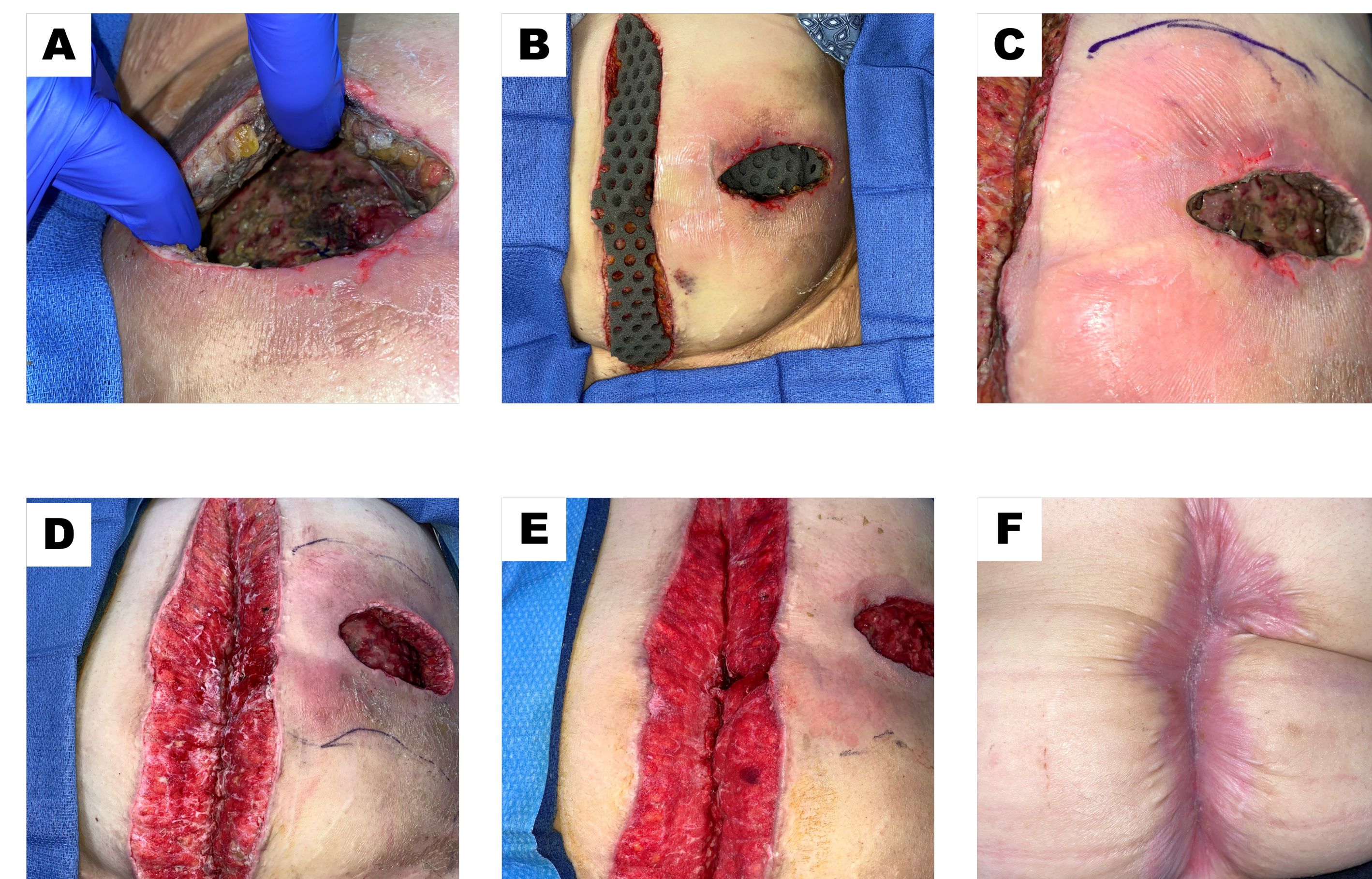
## Representative Cases

**Case 1:** A 69-year-old female was admitted for an acute infection to a right lower extremity (RLE) wound. Patient has previously undergone multiple surgical procedures to their RLE resultant of Charcot neuroarthropathy. NPWTi-d with ROCF-CC dressing was initiated for RLE wound bed preparation. On Day 17 patient was taken to OR for split thickness skin graft placement to the RLE.



**Figure 2.** Non-healing wound of right lower extremity with Charcot deformity. **A.** Wound with acute infection at presentation (Day 0). **B.** Wound at Day 3. **C.** Wound at Day 10 with sufficient granulation tissue for subsequent placement of split-thickness skin graft. **D.** Wound at 4-week follow-up appointment.

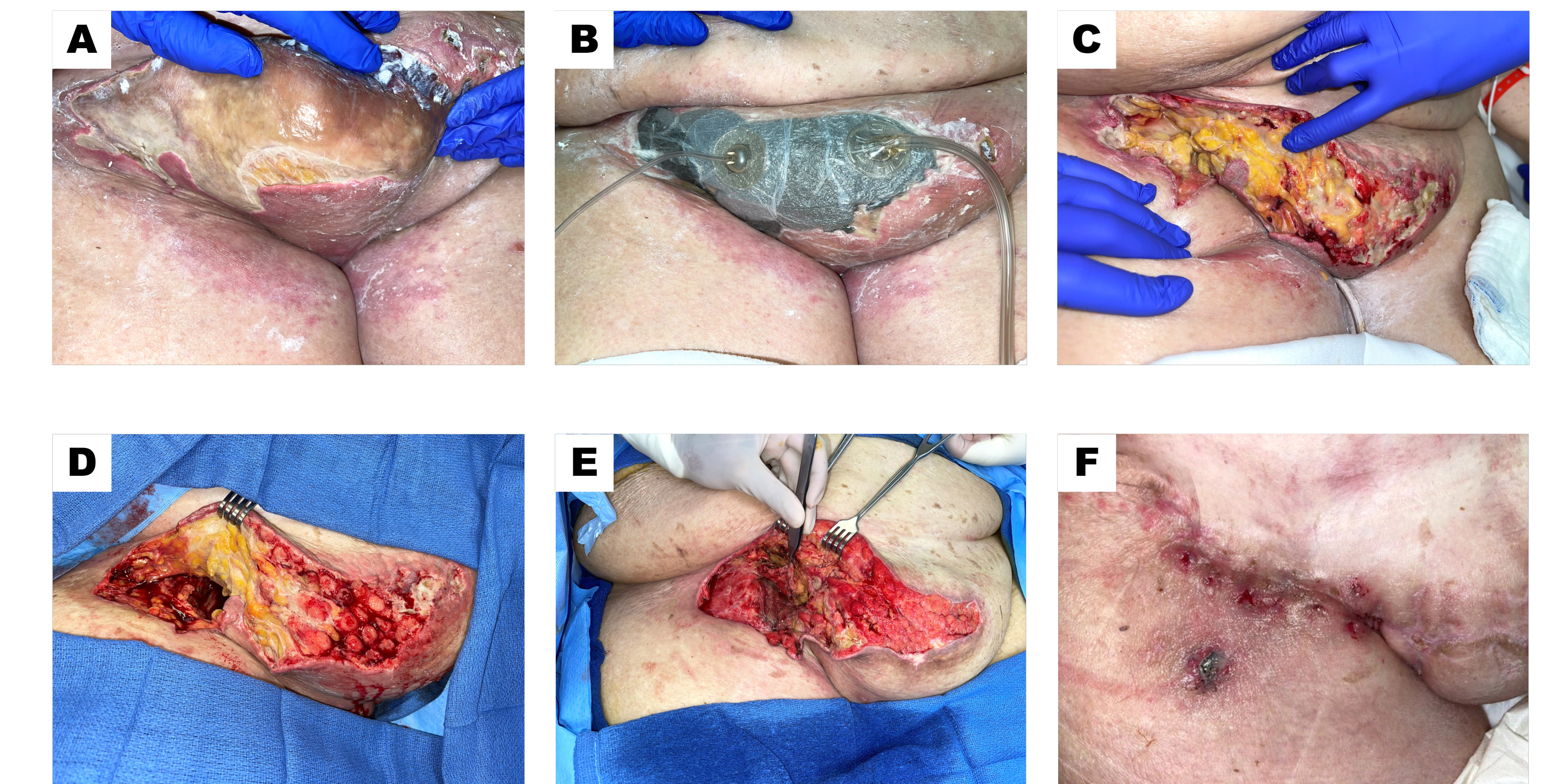
**Case 2:** A 33-year-old female with no comorbidities presented with complex wounds to her abdominal wall resultant of bowel perforation during robotic hysterectomy. In order to help prevent necrotizing infection, patient was taken to the OR for serial debridement. NPWTi-d with ROCF-CC dressing was initiated using normal saline and then hypochlorous acid solutions for hydromechanical removal of any nonviable tissue. When NPWTi-d was discontinued, dressings saturated with hypochlorous acid solution were used for ongoing fistula. Patient healed secondarily and required no further surgical intervention.



**Figure 3.** Complex wounds of the abdominal wall. **A.** Wound at presentation (Day 1). **B.** Intraoperative application of ROCF-CC dressings to wounds (Day 1). **C.** Wound at Day 2. **D.** Wound at Day 5. **E.** Wound at Day 10. **F.** Healed wound at 6-month evaluation.

## Cases (Cont'd)

**Case 3:** A 79-year-old female presented with full thickness necrosis localized to the groin status post percutaneous aortic valve repair complicated by hemorrhage and hematoma. NPWTi-d with ROCF-CC dressing was initiated bedside prior to patient being taken to OR for staged debridements. Definitive closure was subsequently performed with a dermal matrix applied as scaffolding for soft tissue replacement. Closed incision negative pressure therapy was used to manage the closure.



**Figure 3.** Full thickness necrosis of the groin. **A.** Wound at presentation (Day 1). **B.** Application of NPWTi-d (Day 1). **C.** Wound evaluation after ROCF-CC dressing change on Day 3. **D.** Wound evaluation on Day 5. **E.** Wound prior to primary closure (Day 14). **F.** Wound at 3 months.

## Conclusions

- In these 11 patients, NPWTi-d with ROCF-CC dressing use allowed for the hydromechanical removal of non-viable tissue, thick fibrinous exudate, and slough.
- The number of operating room trips, the extent of surgical excisional debridement, and time needed for adequate wound bed preparation prior to surgical closure were reduced.

## References

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\*3M™ Veraflo™ Therapy, †3M™ V.A.C. Veraflo Cleanse Choice™ Dressing, ‡3M™ V.A.C.® Therapy, §3M™ Dermatac™ Drape (Solventum Corporation, Maplewood, MN)

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