

Managing Diverse Wounds in Comorbid Patients Using a Reticulated Open Cell Foam Dressing With Through Holes During Negative Pressure Wound Therapy with Instillations

Michael D. Kalos, BSN, RN, CWOCN and Maryanne Obst, BSN, RN, CWON, CCRN
Regions Hospital, St. Paul, MN, USA

Problem

- Attaining positive therapeutic objectives in wound resolution are thought to be preempted by complex contamination or chronicity of the wounds.
- Negative pressure wound therapy with instillation and a dwell time (NPWTi-d*) is reported effective in the cleansing of complex and recalcitrant wounds.¹
- Reticulated open cell foam dressings with through holes (ROCF-CC†) complemented with NPWTi-d has demonstrated effective and precise removal of thick wound exudate.²

Methods

- Here, we evaluated NPWTi-d with ROCF-CC in the management of wounds of varying complexity in 4 patients with comorbidities and diverse wound types.
- If applicable, patients received antibiotics and underwent selective debridement to prepare for NPWTi-d with ROCF-CC.
- Wound care entailed instillation with 10-80 mL of a topical irrigant solution (hypochlorous acid solution‡ or normal saline solution) with a 3- to 10-minute dwell time, followed by 3 to 4 hours of continuous NPWT (- 75 mmHg to -125 mmHg).
- Dressings were changed every 2-3 days.

Results

- Two female and 2 male patients with a mean age of 62.0 ± 14.5 years were included.
- Mean duration of NPWTi-d with ROCF-CC for these patients was 8.0 ± 2.0 days.
- Upon development of healthy and stable granulation tissue, healthy wound edges and wound bed preparation, all patients transitioned to conventional NPWT at discharge.
- Cases 1-4 highlight each patient (Figures 1-4).

Conclusions

In these four patients, NPWTi-d with ROCF-CC was an effective adjunctive intervention in the management of complex wounds for these patients with comorbidities.

References

- Gupta S, Gabriel A, Lantis J, Téot L. *Int Wound J*. 2016;13:159-174.
- Téot L, Boissiere F, and Fluieraru S. *Int Wound J*. 2017;14:842-848.

Case 1: A 49-year-old, wheelchair-bound male with a prior medical history of multiple sclerosis and asthma was admitted to the hospital for concern of seizure and was noted to be febrile. He was treated for sepsis, stemming from a left ankle wound infection. The patient presented with a stage-3 pressure injury of the left lateral trochanter, which was initially treated with conventional NPWT (-125 mmHg) for 14 days. Wound management transitioned to NPWTi-d using ROCF-CC, which instilled 65 mL of normal saline or hypochlorous acid solution for 5 minutes every 3 hours followed by continuous subatmospheric pressure. On Day 10, the wound exhibited 75% pink granular tissue. On Day 11, patient was discharged to the transitional care unit (TCU) with a 6 x 8 cm² absorbent foam dressing. Conventional NPWT was reapplied at the TCU.

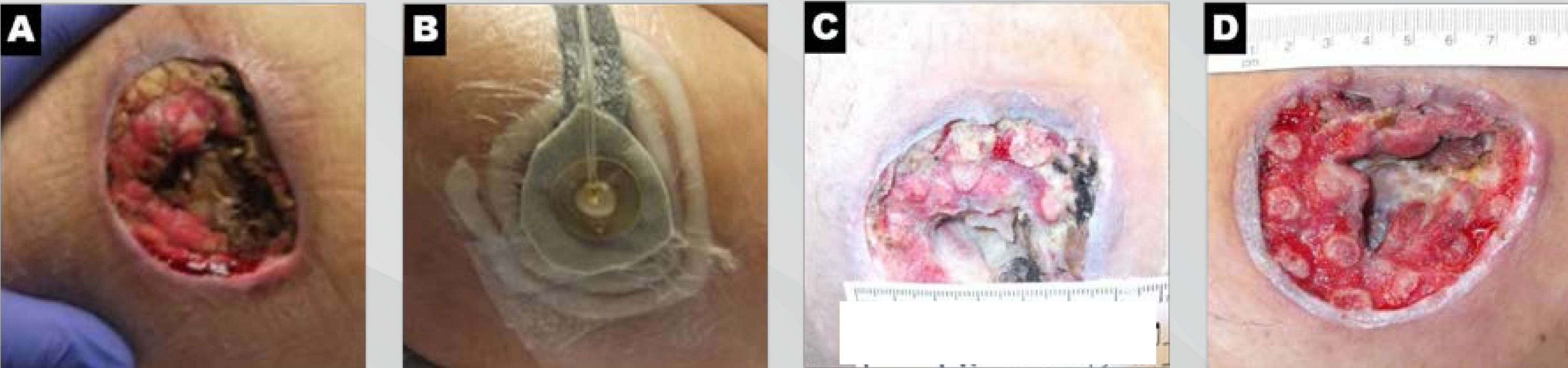


Figure 1. Pressure injury of the left lateral trochanter. **A.** Stage 3 pressure injury (6.5 x 6.0 x 3.0 cm³) on the left lateral trochanter. **B.** NPWTi-d using ROCF-CC applied to the wound. **C.** Wound after 3 days of NPWTi-d using ROCF-CC. **D.** Wound (5.2 x 6.7 x 2.1 cm³) after 10 days of NPWTi-d using ROCF-CC.

Case 3: A 51-year-old female presented to the ED with a complaint of generalized abdominal pain, nausea, emesis, and pain to the right lower extremity (medial midfoot). Her medical history included type 2 diabetes mellitus and morbid obesity status post gastric bypass procedure. The patient was admitted for septic shock (*Escherichia coli* bacteremia) and administered ceftriaxone. She presented with neuropathic foot ulcer that was treated with conventional NPWT for 11 days. Therapy transitioned to NPWTi-d with ROCF-CC, instilling 10 mL of hypochlorous acid solution with a dwell time of 3 minutes every hour followed by continuous subatmospheric pressure. Mechanical debridement was performed at bedside. On hospital Day 18, the patient was discharged to outpatient podiatric care where conventional NPWT was resumed.

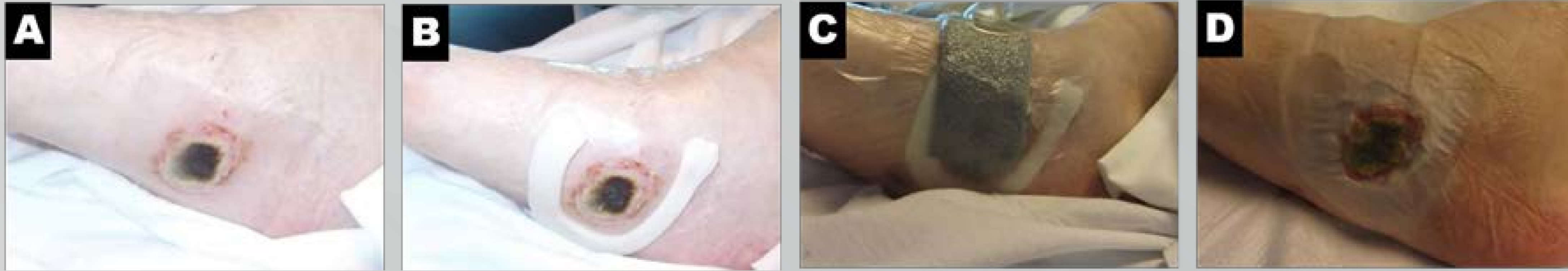


Figure 3. Wound on the medial midfoot. **A.** Neuropathic foot ulcer **B.** Protecting periwound area prior to applying NPWTi-d using ROCF-CC. **C.** NPWTi-d using ROCF-CC applied to the wound. **D.** Wound after 3 days of NPWTi-d using ROCF-CC.

Case 2: A 69-year-old male with a recent medical history of multiple spinal surgeries (thoracolumbosacral fusion and decompressive laminectomies) was transported from TCU to the emergency department (ED) after developing a fever. Patient comorbidities included hypertension, dyslipidemia, type 2 diabetes mellitus, and gastroesophageal reflux disease. Twenty-four hours later, the patient underwent incision and drainage by Neurosurgery. Antibiotics were administered to manage methicillin-resistant *Staphylococcus aureus*, which was cultured from the posterior thoracic wound. NPWTi-d using ROCF-CC was initiated instilling 65 mL of hypochlorous acid wound solution with a dwell time of 10 minutes every 4 hours followed by continuous subatmospheric pressure. The patient was then transitioned to conventional NPWT.

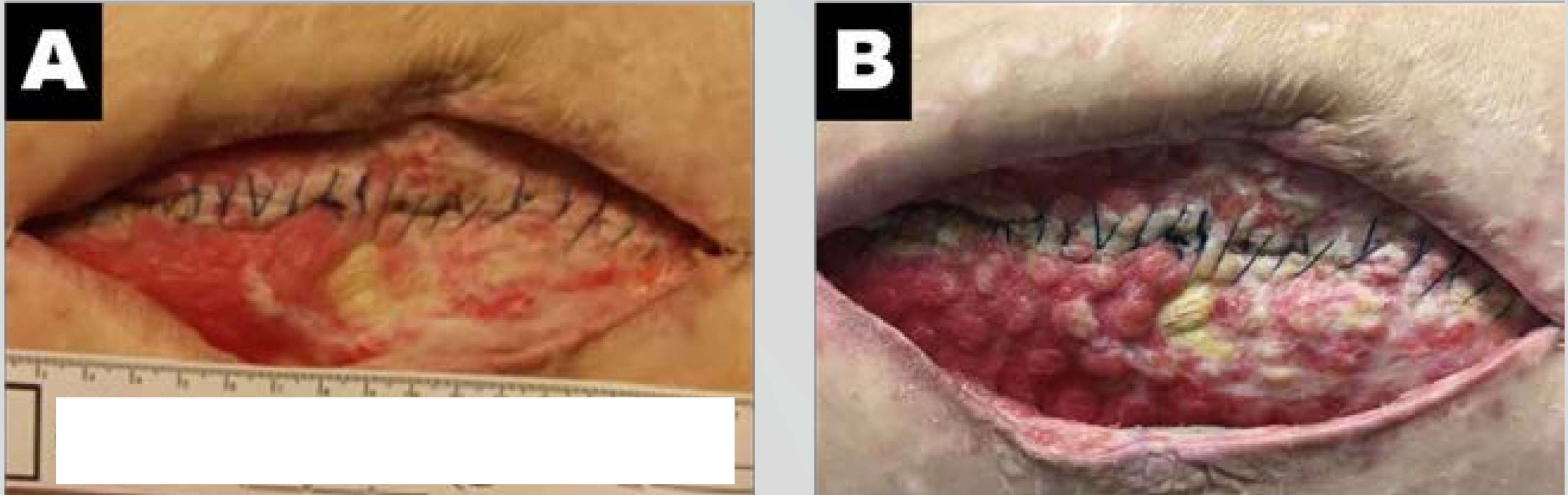


Figure 2. Surgical site complication post spinal surgery. **A.** Posterior thoracic wound (26.0 x 11.0 x 2.0 cm³) post debridement without granulation tissue. **B.** Wound demonstrating increased development of healthy granulation tissue after 3 days of NPWTi-d using ROCF-CC.

Case 4: A 79-year-old female was admitted for bilateral buttock wounds accompanied by pain and wound drainage. Patient comorbidities included hypertension, hyperlipidemia, and type 2 diabetes mellitus. She was previously seen in the clinic for tenderness and redness on the pannus and buttocks. An antibiotic (sulfamethoxazole/trimethoprim) was prescribed. While in the ED, bedside debridement was performed. NPWTi-d using ROCF-CC was initiated instilling 80 mL of hypochlorous acid wound solution with a dwell time of 5 minutes every 3.5 hours followed by continuous subatmospheric pressure. After 6 days of NPWTi-d using ROCF-CC, the patient transitioned to conventional NPWT until discharge.

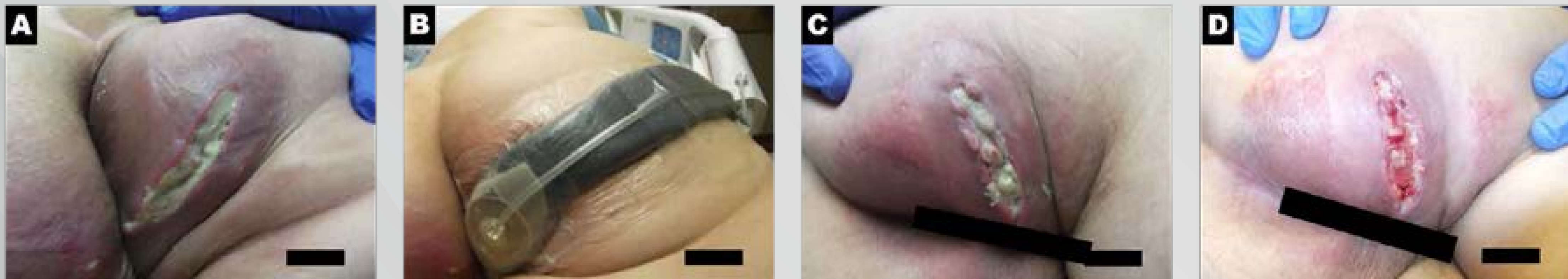


Figure 4. Wound on the right ischial tuberosity and buttocks. **A.** Surgically debrided wound (1.5 cm x 7.0 cm x 0.1 cm) occupied with slough. **B.** NPWTi-d using ROCF-CC applied to the wound. **C.** Wound after 4 days of NPWTi-d using ROCF-CC. **D.** Wound (1.0 x 6.5 x 0.3 cm³) with 96% granulation tissue after 6 days of NPWTi-d using ROCF-CC.