Clinical Evidence
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With V.A.C.® Therapy

Posters Presented at SAWC Spring 2020
Introduction

- Large randomized, controlled trials that evaluate the effects of negative pressure wound therapy with instillation of a topical solution and dwell time (NPWT-i) are lacking.
- There is a need to synthesize existing data across multiple studies to provide a more precise estimate of the clinical effects of NPWT-i.

Purpose

- A systematic literature review and meta-analysis of comparative studies were performed to determine the effects of NPWT-i versus control therapy in the adjunctive management of complex wounds.

Methods

- We performed a systematic literature review and meta-analysis according to PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines.
- Weighted standardized mean difference or odds ratios and 95% confidence intervals were calculated to pool study and control group results in each publication for analysis.
- Thirteen studies comprising 720 patients were included in the analysis.

Results

- Endpoint results of the meta-analysis are shown in Table 1.
- Significantly fewer surgical debridements were performed in NPWT-i-d patients versus control patients (p=0.01) (Figure 1).
- Wounds in the NPWT-i-d group were ready for closure faster than control wounds (p=0.03) (Figure 2).
- The odds of reducing bacterial count from baseline in the NPWT-i-d group was 6.4 times greater than control group wounds (p=0.003) (Figure 3).
- Percent reduction of bacterial count in NPWT-i-d wounds was evident in all studies that captured that endpoint (Figure 4).
- Wounds in NPWT-i-d group were 2.39 times more likely to close than control group wounds (p=0.03) (Figure 4).
- There was a significantly shorter length of therapy in NPWT-i-d patients versus control patients (1.5 days vs 3.5 days, p=0.03).

Conclusions

NPWT-i, when used in conjunction with good clinical practice (e.g., debridement, appropriate antibiotics), was more beneficial than the comparator with respect to number of surgical debridements during therapy, time to readiness for final wound closure, duration of therapy, number of wounds closed, and number of patients with reduced bacterial burdens.

References

Early-Stage Management of Wounds With Nonviable Tissue Using Negative Pressure Wound Therapy With Instillation

Saeed A. Chowdhry, MD, FACS
Rosalind Franklin University of Medicine and Science, Chicago Medical School, Chicago, IL

Introduction

- Early-stage cleansing and debridement have long been known as crucial steps in treatment wounds, since nonviable tissue and slough can delay healing.
- Negative pressure wound therapy with instillation and dwell time (NPWTi-d) — the cyclic delivery, dwell, and removal of topical wound solutions — using a reticulated open-cell foam dressing with through holes (ROCF-CC) was reported to aid in loosening and removing thick exudate such as slough and nonviable tissue from wounds.

Purpose

- In this study, we describe the adjunctive use of NPWTi-d between surgical debridements in patients with necrotic wounds.

Methods

- After initial surgical debridement, NPWTi-d using ROCF-CC dressings was used on 4 patients, and NPWTi-d using ROCF dressing without through holes (ROCF-V) was used for 3 patients.
- NPWTi-d consisted of the following:
  - Instillation of Dakin’s solution (1/8-strength)
  - A 20-minute dwell time, followed by
  - Negative pressure at -125 mmHg for 2 hours.
- The total duration of NPWTi-d ranged from 6-10 days with ROCF dressings changed every 2-3 days.
- Surgical debridement was performed at dressing changes.
- Antibiotics were prescribed for 3 patients with positive bacterial cultures.

Results

- The mean patient age was 40 ± 11.4 years (Table 1).
- Comorbidities included hypertension and diabetes mellitus (Table 1).
- Wound types included post-surgical and trauma wounds.
- The initial wound surface area that required debridement before NPWTi-d was 34.2 ± 117 cm², while the final area, after NPWTi-d, requiring debridement was 7.3 ± 20.9 cm² (Figure 1).
- After NPWTi-d was discontinued, 4 wounds were closed with flap reconstruction, and 3 wounds were covered with split-thickness skin grafts (STSG).
- Complete wound closure was achieved in each case (Figures 2-4).

Representative Cases

Necrotizing Soft Tissue Infection. A 53-year-old female, with a history of morbid obesity, diabetes mellitus, hypertension, and hyperlipidemia, presented for care with a necrotizing soft tissue infection of the left groin. Initial debridement was performed by the General Surgery service but a subsequent STSG failed. Antibiotics were administered throughout NPWTi-d use. After 3 days of NPWTi-d, the patient underwent a skin graft reconstruction.

Sternalotomy Revision. A 44-year-old male, with a medical history of coronary artery disease, previous myocardial infarction, morbid obesity, diabetes mellitus, hyperlipidemia, and prior coronary artery bypass graft, presented with sternal dehiscence and subsequent infection. Antibiotics were administered throughout NPWTi-d use. ROCF-CC dressings were used for 3 days then ROCF-CC dressings were applied. After 3 days of NPWTi-d with ROCF-CC dressings, targeted excision of nonviable tissue was performed followed by wound closure with a muscle flap reconstruction.

Sternotomy Revision. A 44-year-old male, with a medical history of coronary artery disease, previous myocardial infarction, morbid obesity, diabetes mellitus, hyperlipidemia, and prior coronary artery bypass graft, presented with sternal dehiscence and subsequent infection. Antibiotics were administered throughout NPWTi-d use. ROCF-CC dressings were used for 3 days then ROCF-CC dressings were applied. After 3 days of NPWTi-d with ROCF-CC dressings, targeted excision of nonviable tissue was performed followed by wound closure with a muscle flap reconstruction.

Conclusions

- In these cases, the adjunctive use of NPWTi-d was a viable option in the early-stage management of wounds, potentially helping to reduce the surface area of the wound that required surgical debridement.
- In addition, the use of NPWTi-d in these cases allowed us to be selective and targeted in our approach to surgical debridement.

References


Table 1. Patient and wound characteristics

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Mean ± SD</th>
<th>Sex, n</th>
<th>Comorbidities/Medical History, n</th>
</tr>
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<td>Age (Years)</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td>Coronary Artery Disease 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Hypertension 2</td>
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<td></td>
<td></td>
<td></td>
<td>Trauma 4</td>
</tr>
<tr>
<td>Wound Type, n</td>
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<td></td>
<td>Dressing Changes/Debridements, n</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Mean ± SD 2.71 ± 0.76</td>
</tr>
</tbody>
</table>

Results (Cont’d)

NPWTi-d consisted of the following:

- Instillation of Dakin’s solution (1/8-strength)
- A 20-minute dwell time, followed by
- Negative pressure at -125 mmHg for 2 hours.
- The total duration of NPWTi-d ranged from 6-10 days with ROCF dressings changed every 2-3 days.
- Surgical debridement was performed at dressing changes.
- Antibiotics were prescribed for 3 patients with positive bacterial cultures.

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<td></td>
<td>Coronary Artery Disease 1</td>
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<td>Hypertension 2</td>
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<td>Wound Type, n</td>
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<td></td>
<td></td>
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<td>Post-surgical 3</td>
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<td>Trauma 4</td>
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<td>Wound Type, n</td>
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<td>Dressing Changes/Debridements, n</td>
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<tr>
<td></td>
<td></td>
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<td>Mean ± SD 2.71 ± 0.76</td>
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Conclusions

- In these cases, the adjunctive use of NPWTi-d was a viable option in the early-stage management of wounds, potentially helping to reduce the surface area of the wound that required surgical debridement.
- In addition, the use of NPWTi-d in these cases allowed us to be selective and targeted in our approach to surgical debridement.

References


Figure 1. Use of surface area debridement.
Background

- Use of negative pressure wound therapy (NPWT) with instillation and dwell time (NPWTi-d) to deliver, dwell, and remove topical solutions from the wound bed can assist health care practitioners in preparing a clean surface for successful closure.
- By promoting wound healing, NPWT technologies have the potential to help reduce the total treatment-associated costs over conventional therapies, despite having a higher unit price.1-6

Purpose

- We present our experience using NPWTi-d* to manage lower extremity wounds in 3 patients and discuss the feasibility of improving cost efficiency.

Methods

- All patients underwent surgical debridement and partial closure with sutures.
- NPWTi-d was applied for 6-7 days in a traditional hospital inpatient setting.
- Normal saline was instilled into the wounds, with a dwell time of 5-10 minutes, followed by a 3.5-hour NPWT cycle at -125 mmHg.
- Dressings were changed every 2-3 days.

Results

- In each case, extensive wound bed preparation was required.
- Patient 1 was a 83-year-old male with mild comorbidities that presented with a crush injury resulting in a gelatinous hematoma and soft tissue necrosis of the right medial calf (Figure 1).
- Patient 2 was a 51-year-old male with multiple sclerosis and profound lower extremity lymphedema, who presented with a deep tissue injury and tissue loss of the right medial calf (Figure 2).
- Patient 3 was a 65-year-old female with recurrent right foot diabetic ulcers and infection ultimately requiring below-knee amputation. She developed a dehiscence at the amputation site 2 weeks after the amputation surgery (Figure 3).
- Upon discharge from the hospital, Patients 1 and 2 were transitioned to conventional NPWT for 3 weeks; Patient 3 underwent primary closure.
- Upon follow-up 2-6 months later, all wounds were closed with no signs of complication.

Results (Cont’d)

- On average, complications such as surgical site infection extend hospital stay by 9.7 days.4 In a private, non-profit hospital in Ohio, the hospital adjusted expenses per inpatient day is $2,842, meaning a 9 to 10-day extension of hospital stay would cost an additional $25,578 to $28,842.5 Providing adequate wound management that supports complication-free recovery can help reduce costs sustained by both hospital and patient.

Conclusion

- In these patients, use of NPWTi-d assisted in cleansing the wound surface and produced a positive healing outcome.
- Patients 1 and 2 had a single operation whereas patient 3 required a second surgery for complete delayed closure. None required readmission, potentially saving on time and cost.
- On average, complications such as surgical site infection extend hospital stay by 9.7 days. In a private, non-profit hospital in Ohio, the hospital adjusted expenses per inpatient day is $2,842, meaning a 9 to 10-day extension of hospital stay would cost an additional $25,578 to $28,842. Providing adequate wound management that supports complication-free recovery can help reduce costs sustained by both hospital and patient.

Acknowledgements

- Nicholas A. Cheney, DO (OrthoNeuro, Columbus, OH) provided initial surgical care for case 3.

References


*U.A.C. VERAFLD™ Therapy. “A.C.” Therapy (KD, San Antonio, TX)

The author wishes to thank 3M for the preparation and production of this poster.

Wound Bed Preparation of Lower Extremity Wounds Using Negative Pressure Wound Therapy With Instillation: Taking Cost Into Consideration

Ralph J. Napolitano, Jr., DPM, CWSP, FACFAS; OrthoNeuro, Columbus, OH

Table 1. Patient characteristics and treatment outcomes.

<table>
<thead>
<tr>
<th>Case</th>
<th>Sex</th>
<th>Age</th>
<th>Comorbidities</th>
<th>Wound Type</th>
<th>Outcome</th>
<th>Follow-Up</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>M</td>
<td>83</td>
<td>Hypertension, coronary artery disease, venous insufficiency</td>
<td>Night leg infection with gelatinous hematoma</td>
<td>Transferred to NPWT, closed</td>
<td>5 months (no complications)</td>
</tr>
<tr>
<td>2</td>
<td>M</td>
<td>51</td>
<td>Multiple sclerosis, limb gridle weakness, profound lymphedema, wheelchair bound</td>
<td>Deep tissue injury</td>
<td>Transferred to NPWT, discharged to SNF</td>
<td>4 months (no complications)</td>
</tr>
<tr>
<td>3</td>
<td>F</td>
<td>65</td>
<td>Recurrent diabetic foot ulcers, progressive vascularopathy</td>
<td>Dehisced right below knee amputation</td>
<td>Flap closure</td>
<td>2 months (no complications)</td>
</tr>
</tbody>
</table>

NPWT = negative pressure wound therapy, SNF = skilled nursing facility

Figure 1. Traumatic injury with gelatinous hematoma. A) Wound at presentation. B) Application of NPWTi-d after surgical debridement. C) Wound after 10 days of NPWTi-d. D) Complete wound healing and return to normal function at 6 months. Initial amputation surgery and performed by Nicholas A. Cheney, D.O., OrthoNeuro, Columbus, Ohio.

Figure 2. Deep tissue injury of the right leg. A) Wound at presentation. B) Wound after surgical debridement and partial closure. C) Wound after 6 days of NPWTi-d. D) Completed healing after 1 week of NPWTi-d, followed by 3 weeks of conventional NPWT.

Figure 3. Flap dehiscence after right below knee amputation. A) Wound at presentation. B) Application of NPWTi-d after flap revision and surgical debridement. C) Flap closure after 6 days of NPWTi-d. D) Follow-up at 1 month.

Presented at the Symposium on Advanced Wound Care/Wound Healing Society, July 22-26, 2020

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Table 1. Patient characteristics and treatment outcomes.
**Management of Nonviable Tissue Buildup in Abdominal Wounds**

Mary Anne R. Obst, RN, BSN, CWON; Michael D. Kalos, BSN, RN, CWOCN; Kaitlin Nelson BSN, RN, PHN, CWOCN

Regions Hospital, St. Paul, MN

**Introduction**

- In cases where full closure is not achieved after open abdominal surgery, patients are left with open cutaneous wounds with knotted, heavy sutures at the wound base, providing fascial closure.
- The goal for these wounds is secondary wound closure; however, nonviable tissue and slough readily develops around the suture knots and delays healing.
- Repetitive sharp debridement is needed to remove the nonviable tissue, so minimizing nonviable tissue buildup would benefit patients tremendously.

**Purpose**

- At our hospital, negative pressure wound therapy (NPWT*) is the standard care for managing closure of abdominal wounds. However, NPWT with instillation and dwell time (NPWT†) using a reticulated open cell foam dressing with through holes (ROCF-CC‡) has shown advantages over conventional NPWT in multiple wound types.
- In this study, we retrospectively compared the impact of these two forms of negative pressure therapies on the outcomes of patients undergoing abdominal surgical repair.

**Methods**

- The patients were divided into two groups: NPWT and NPWT† with ROCF-CC.
- In the NPWT group, 11 patients received continuous NPWT at -125 mmHg.
- In the NPWT† group, 9 patients received NPWT† using ROCF-CC dressings. Normal saline (30-60 mL) was instilled onto the wounds with a dwell time of 10 minutes followed by 3.5 hours of NPWT at -125 mmHg. No saline was able to enter the abdominal cavity.
- In both groups, dressings were changed 2-3 times per week.
- Group characteristics are shown in Table 1.

**Table 1. Patient demographics & wound types.**

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>NPWT n=11</th>
<th>NPWT† with ROCF-CC n=9</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years), mean ± SD</td>
<td>57.0 ± 14.6</td>
<td>55.0 ± 17.0</td>
<td>.780</td>
</tr>
<tr>
<td>Sex, n</td>
<td>6</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>5</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Wound size (cm²), median (range)</td>
<td>270 (90-1680)</td>
<td>172.6 (45-744)</td>
<td>.445</td>
</tr>
</tbody>
</table>

NPWT = negative pressure wound therapy; NPWT† = NPWT with instillation and dwell time; ROCF-CC ‡ = reticulated open cell foam dressing with through holes; SD = standard deviation

**Results**

- The fascial closure remained intact in both groups.
- A summary of patient outcomes for each group is shown in Table 2.
- In the NPWT group, 100% of patients developed nonviable tissue, requiring up to 23 weekly postoperative sharp debridements. In the NPWT† group, no patients experienced nonviable tissue buildup (P<.001).
- After negative pressure therapy, all patients in the NPWT group required at least one debridement to remove nonviable tissue. No sharp debridements were required (P=.001).
- The number of days to wound healing was significantly fewer in the NPWT† group compared to the NPWT group (P=.028).
- Representative cases are shown in Figures 1-3.

**Table 2. Procedures & patient outcomes.**

<table>
<thead>
<tr>
<th>Procedure/Outcome</th>
<th>NPWT n=11</th>
<th>NPWT† with ROCF-CC n=9</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonviable tissue formation, n</td>
<td>11</td>
<td>0</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Number of debridements, mean ± SD</td>
<td>3.13 ± 1.73</td>
<td>0.0 ± 0.0</td>
<td>.001</td>
</tr>
<tr>
<td>Days to healing, mean ± SD</td>
<td>163.9 ± 109.0</td>
<td>63.3 ± 44.4</td>
<td>.028</td>
</tr>
</tbody>
</table>

NPWT = negative pressure wound therapy; NPWT† = NPWT with instillation and dwell time; ROCF-CC ‡ = reticulated open cell foam dressing with through holes; SD = standard deviation

**Representative Cases (NPWT Group)**

**Representative Cases (NPWT† Group)**

**Representative Cases (NPWT Group)**

**Conclusions**

- In this patient population, use of NPWT† with ROCF-CC over abdominal wounds was associated with a significant reduction in nonviable tissue, fewer debridements, and a shorter time to healing.
- NPWT† using ROCF-CC dressings is a valid option for helping manage abdominal wounds with heavy sutures applied, which prevents instillation solution from entering the abdominal cavity (instillation into the open abdomen is contraindicated by the manufacturer).
- The authors now use NPWT† with ROCF-CC dressings to cleanse complex wounds that are at risk for development of nonviable tissue.

*V.A.C.® Therapy; †V.A.C. VERAFL O™ Therapy; ‡V.A.C. VERAFL O CLEANSE CHOICE™ Dressing (KCI, San Antonio, TX)

The authors thank 3M for assistance with the preparation and production of this poster.

**Figure 1.** Abdominal wound after fascial closure. Panels A-C show three separate patients with visible buildup of nonviable tissue at the wound base needing repetitive sharp debridement and delayed wound healing.

**Figure 2.** (A) Abdominal closure after fistula repair and abdominal wall reconstruction - note knotted suture at base. (B) Placement of ROCF-CC dressing immediately after repair. (C) Full healing without any sharp debridement, 51 days to complete healing.

**Figure 3.** (A) Abdominal wound after traumatic injury, with closed fascia. (B) Placement of ROCF-CC dressings. (C) Healed wound at 3-month follow-up.

Presented at the Symposium on Advanced Wound Care/Wound Healing Society: A Virtual Experience, July 24-26, 2020

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Cleansing Trauma Wounds Using Negative Pressure Wound Therapy With Instillation and Dwell Time

Elizabeth Faust, MSN, CRNP, CWS, CWOCN-AP, DAPWCA
Reading Hospital, West Reading, PA

Introduction

• Negative pressure wound therapy (NPWT) combined with the instillation and dwelling (NPWTi-d) of topical wound solutions onto the wound bed enables wound cleansing via the solubilization and removal of infectious materials from the wound surface.

Purpose

• We present a case series demonstrating the use of NPWTi-d in the management of 3 trauma wounds.

Methods

• In all cases, patients received antibiotics.
• Debridements or incision & drainage were performed as necessary.
• Patients 1 and 3 were initially treated with conventional NPWT*.
• All patients were treated with NPWTi-d†, instilling normal saline with a dwell time of 5-10 minutes, followed by 2-3.5 hours of -125 mmHg negative pressure.
• Dressing changes were performed every 72 hours.

Results

• Patient 1 (Case 1) was a 41-year-old male with a history of opioid abuse and type II diabetes, who presented to the emergency department after a motor vehicle collision. In addition to bilateral rib fractures and hemoperitoneum without solid organ injuries, he was found to have a 3-day old wound with purulent drainage on the ventral aspect of the right forearm, which, upon examination, revealed a necrotizing soft tissue infection.

• Patient 2 (Case 2) was a 66-year-old female with hypertension, smoking, and past abdominal surgery, who presented with 2-week-old fall injury with worsening flank edema and swelling.

• Patient 3 (Case 3) was an 84-year-old male with a history of cervical disc disease, degenerative joint disease, coronary artery disease, hepatitis, hyperlipidemia, hypertension, myocardial infarction, obesity, venous insufficiency, and multiple cardiac and orthopedic surgeries. He presented with a large right knee hematoma with superficial eschar.

Conclusion

• The use of NPWTi-d in the management of these trauma wounds supported wound healing in these patients.

Results (Cont'd)

Case 1. A 41-year-old male with diabetes and history of tobacco use presented with necrotizing soft tissue infection.

Case 2. A 66-year-old female with hypertension, past abdominal surgery, and recent tobacco use presenting with worsening flank edema after a fall 2 weeks prior.

Case 3. A 65-year-old male with multiple serious comorbidities and previous surgeries presenting with a large right knee hematoma.

*V.A.C.® Therapy, †V.A.C. VERAFL O™ Therapy (KCI, San Antonio, TX)

The author wishes to thank 3M for the preparation and production of this poster.
Use of Negative Pressure Wound Therapy with Instillation and Closed Incision Negative Pressure Therapy for Complex, At-Risk Colorectal Patients: A Case Series

Rosemary Hill, BSN, CWOCN, WOCC (C)
Lions Gate Hospital, Vancouver Coastal Health, North Vancouver, BC, Canada

Introduction

• Complex open infected wounds of varying etiology have benefited from negative pressure wound therapy (NPWTi) with instillation and dwell time (NPWTi-d) using a reticulated open-cell foam dressing with through holes (ROCF-CC), in conjunction with debridement and antibiotic therapy.1
• There are growing numbers of cases for using NPWTi-d with ROCF-CC dressing for complex wounds when debridement is not appropriate or readily available.2
• Colorectal surgical procedures are impacted by high rates of surgical site infections, as high as 45%.3
• Recent randomized controlled trials within this population have shown reduced complications compared to the standard of care when closed incision negative pressure therapy (ciNPT) is applied to closed incisions.

Purpose

• We present a case series of 6 high-risk patients benefiting from the use of negative pressure devices: 3 of whom received NPWTi-d using ROCF-CC and 3 who received ciNPT.

Methods

• Three patients aged 58, 78, and 89 years, presented with wound infections (2 were positive for methicillin-resistant *Staphylococcus aureus*) and need for debridement, received NPWTi-d using ROCF-CC.
  – Instillation of saline with 5-minute dwell time, followed by 2-3 hours of NPWT over a 10 to 14-day period with dressing changes 3 times per week.
  – These patients received antibiotics but were unable to undergo further surgical debridement.
• Three additional high-risk patients with rectal cancer (ages: 63, 84, and 94 years) received continuous ciNPT (125 mmHg) over their closed surgical incision lines of the perineal region.
• Antibiotics were administered as needed in these patients.

Results

• Representative cases are shown in Cases 1-3.

Results (Cont’d)

Case 1. An 89-year-old male presenting with a right leg hematoma.

A. Knee at presentation.

B. Wound after initial surgical debridement.

C. Wound after 5 days of NPWTi-d with ROCF-CC dressing.

D. Wound after 1 week of NPWTi-d.

E. Wound after transitioning to 8 days of conventional NPWT.

F. Wound 5 weeks after closure with a split thickness skin graft.

Case 2. A patient presenting with a pressure ulcer and superficial and deep heavy growth methicillin resistant *Staphylococcus aureus*.

A. Pressure injury at presentation.

B. Wound after initial surgical debridement.

C. Initiation of NPWTi-d with off-loading and antibiotic therapy.

D. Wound after 2 weeks of NPWTi-d.

Case 3. A 63-year-old patient with abdominal perineal resection for rectal tumor.

A. Incision with application of ciNPT.

B. Incision appearance after 7 days of ciNPT.

C. Healed incision at 6-week follow-up.

• Wound bed preparation and removal of infectious material, such as slough, occurred in three cases with 90% granulation tissue noted before switching to portable NPWT.
• All closed incisions in perineal region remained approximated and closed permanently following 7 days of ciNPT.
• Health practitioners are challenged with patients who have multiple comorbidities and large wounds that require surgical debridement.

Conclusions

• Consideration should be given to incorporate advanced technologies such as NPWTi-d using ROCF-CC that help cleanse the wound bed and prepare the wound bed for eventual closure.
• Additionally, the use of ciNPT over closed incisions for patients at risk for dehiscence should be incorporated into patient care in the surgical setting.

References


*V.A.C. VERAFLO™ Therapy, V.A.C. VERAFLO CLEANSE CHOICE™ Dressing, PREVENA® Therapy (KCI, San Antonio, TX)*

The author wishes to thank 3M for the preparation and production of this poster.

Presented at the Symposium on Advanced Wound Care/Wound Healing Society: A Virtual Experience, July 22–24, 2020

NOTE: Specific indications, contraindications, warnings and precautions, and safety information exist for these products and therapies. Please consult product labeling prior to use.
Use of a Novel Silicone-Acrylic Drape With Negative Pressure Wound Therapy in Anatomically Challenging Wounds

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Abstract

• Negative pressure wound therapy (NPWT) utilizes a polyurethane drape with an acrylic adhesive over foam dressings to create a seal.

• In anatomically challenging areas, it can be difficult to create a seal without the use of ancillary products.

• Additionally, healthcare providers are often unable to remove and reposition the drape once it has been placed.

• A novel hybrid drape (HA-drape) consisting of a polyurethane film with acrylic adhesive and a silicone perforated layer has been developed for use with NPWT to allow for repositioning after initial placement and easy removal.

Purpose

• This 6-patient case study reports on the use of the HA-drape with NPWT over anatomically challenging wounds.

Methods

• Three males and three females were treated with NPWT using the HA-drape.

• Dressing changes occurred every 2-3 days.

• Ease of application, repositioning, and ability to maintain a seal under negative pressure were evaluated by the healthcare providers following each dressing change.

• Intravenous and/or oral antibiotics were administered, if necessary.

Results

• Wound types treated included trauma, abdominal wall abscess, infected femoral popliteal bypass graft and site, transmetatarsal amputation, and below-the-knee amputation.

• Previous medical history included diabetes (type 1 and 2), hypertension, peripheral arterial disease, obesity, and chronic kidney disease (stage 4).

• Representative cases are shown in Figures 1-3.

Conclusions

• In these patients, healthcare providers were able to:

  – Reposition the HA-drape upon initial placement without periwound skin irritation.

  – Successfully create a negative pressure seal without the need of ancillary products in anatomically challenging wound locations.

*V.A.C.® Therapy System with V.A.C.® GOAT™ Dressing, V.A.C.® Drape, QUMA™ Drape (KCI, San Antonio, TX)

NOTE: Specific indications, contraindications, warnings and precautions, and safety information may exist for these products and therapies. Please consult product labeling prior to use.
Use of a Novel Silicone-Acrylic Drape With Negative Pressure Wound Therapy in Four Patients With Periwound Skin Breakdown

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Introduction
- Negative pressure wound therapy (NPWT*) is applied using a foam dressing and an adhesive acrylic drape to create a seal.
- Removal of this drape can be painful and may play a role in periwound skin breakdown during dressing changes.
- A novel silicone-acrylic hybrid drape (HA-drape**) has been developed for use with NPWT to allow for repositional placement and ease of removal.

Purpose
- This 4-patient case series reports on the use of the HA-drape in patients who developed periwound skin breakdown.
- The goal was to protect the periwound skin during NPWT while maintaining a seal on the dressing.

Methods
- Four patients with mild to moderate periwound skin breakdown were selected to receive NPWT with HA-drape.
- NPWT was applied utilizing a reticulated open cell foam dressing followed by placement of the HA-drape to create a seal.
- NPWT was initiated at -125 mmHg with dressing changes occurring every 2 days.
- Wound healing, periwound healing, and patient reported pain were assessed at dressing changes.

Case 1
- A 77-year-old male with history of an above-the-knee amputation developed a Stage 4 pressure injury to the left thigh and buttock due to prolonged sitting.
- The wound underwent surgical debridement followed by application of NPWT.
- Initial NPWT use resulted in the development of periwound skin erythema and irritation.
- Periwound skin erythema and irritation resolved after 2 days of HA-drape use.
- The periwound skin continued to show improvements throughout the NPWT with HA-drape use period.

Results
- Patient demographics and previous medical history are shown in Table 1.
- All patients reported a decrease in the pain with dressing removal.
- Cases 1-3 are shown in Figures 1-3.

Case 2
- A 68-year-old male with history of paraplegia developed a Stage 4 pressure injury to the coccyx, post failed rotational flap.
- Initial NPWT use resulted in the development of periwound skin erythema and irritation.
- Periwound skin erythema and irritation resolved after 2 days of HA-drape use.
- The periwound skin improvements continued throughout the NPWT with HA-drape use period.

Case 3
- A 62-year-old female with history of hernia repair complicated by infection developed a wound with an enterocutaneous fistula.
- Initial NPWT use with fistula isolation resulted in the development of periwound skin erythema and irritation.
- NPWT with HA-drape use over the wound with fistula isolation was initiated.
- Continued improvements in the periwound skin were observed throughout the NPWT with HA-drape use period.

Conclusion
- In these 4 patients, use of NPWT with the HA-drape resulted in an intact periwound with improved periwound skin protection and reduced patient reported pain associated with dressing changes.

Table 1. Patient demographics

<table>
<thead>
<tr>
<th>Case Number</th>
<th>Age</th>
<th>Sex</th>
<th>Previous Medical History</th>
<th>Wound Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>77</td>
<td>Male</td>
<td>Above-the-Knee Amputation</td>
<td>Stage 4 Pressure Injury</td>
</tr>
<tr>
<td>2</td>
<td>68</td>
<td>Male</td>
<td>Paraplegia</td>
<td>Stage 4 Pressure Injury</td>
</tr>
<tr>
<td>3</td>
<td>62</td>
<td>Female</td>
<td>Hernia Repair</td>
<td>Surgical</td>
</tr>
<tr>
<td>4</td>
<td>65</td>
<td>Male</td>
<td>Exploratory Laparotomy for Necrotizing Pancreatitis</td>
<td>Surgical</td>
</tr>
</tbody>
</table>

Results (Cont’d)

Evaluation
- Wound healing, periwound healing, and patient reported pain were assessed at dressing changes.

Table 1

- A 65-year-old male with history of neonatal necrotizing pancreatitis developed a wound with an enterocutaneous fistula.
- Initial NPWT use with fistula isolation resulted in the development of periwound skin erythema and irritation.
- NPWT with HA-drape use over the wound with fistula isolation was initiated.
- Continued improvements in the periwound skin were observed throughout the NPWT with HA-drape use period.

Figures 1-3

- Case 1
  - Figure 1a. Periwound skin prior to NPWT with HA-drape use.
  - Figure 1b. Application of NPWT with HA-drape.
  - Figure 1c. Periwound skin erythema and irritation 2 days after HA-drape use.
  - Figure 1d. Continued periwound skin improvement after 4 days of NPWT with HA-drape use.

- Case 2
  - Figure 2a. Wound prior to application of NPWT with HA-drape.
  - Figure 2b. Application of NPWT with HA-drape.
  - Figure 2c. Periwound skin after 2 days of NPWT with HA-drape use.
  - Figure 2d. Periwound skin after 4 days of NPWT with HA-drape use.

- Case 3
  - Figure 3a. Wound prior to NPWT with HA-drape use.
  - Figure 3b. Application of NPWT with HA-drape.
  - Figure 3c. Periwound skin after 2 days of NPWT with HA-drape use.
  - Figure 3d. Periwound skin after 4 days of NPWT with HA-drape use.
  - Figure 3e. Periwound skin after 21 days of NPWT with HA-drape use.

**Note:** Specific indications, contraindications, warnings, precautions and safety information exist for these products and therapies. Please consult product labeling prior to use.

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*V.A.C.® Therapy; †V.A.C.® Drape; ‡V.A.C. DERMA T A C™ Drape, § V.A.C.® GRANUFOAM™ Dressing; KCI, San Antonio, TX*

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V.A.C. VERAFLÓ™ Therapy Dressing selection guide

This guide may be used in deciding which V.A.C. VERAFLÓ™ Dressing to use in conjunction with V.A.C. VERAFLÓ™ Therapy

<table>
<thead>
<tr>
<th>Wound Characteristics</th>
<th>V.A.C. VERAFLÓ™ Dressings</th>
<th>V.A.C. VERAFLÓ™ Large Dressing</th>
<th>V.A.C. VERAFLÓ CLEANSE™ Dressing</th>
<th>V.A.C. VERAFLÓ CLEANSE CHOICE™ Dressing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open wounds, including wounds with shallow undermining or tunnel areas where the distal aspect is visible</td>
<td>Large open wounds, including wounds with shallow undermining or tunnel areas where the distal aspect is visible</td>
<td>Wounds with complex geometries, including explored tunnels or undermining where the distal aspect is not visible</td>
<td>Wounds with thick wound exudate, such as fibrin, slough, infectious material</td>
<td></td>
</tr>
</tbody>
</table>

Key Goal(s) of Therapy

- When used in conjunction with V.A.C. VERAFLÓ™ Therapy, to facilitate the removal of wound exudate and infectious material
- Generation of granulation tissue

Shape

- Tubular shape
- Block foam pre-split into two layers

Application Characteristics

- Easy application:
  - Single pad application
  - Precut area for pad application when used for bridging

Easy application:

- Ideal for large surfaces areas with shallow depths
- Provided with V.A.C. VERAFLÓ™ DUO Tube set for extended surface area coverage

Application flexibility:

- Ideal for addressing wounds with complex geometries (eg, tunnels, undermining)
- Single pad application

Indications for Use:

The V.A.C. ULTA™ Therapy System is an integrated wound management system that provides Negative Pressure Wound Therapy with an instillation option. Negative Pressure Wound Therapy in the absence of instillation is intended to create an environment that promotes wound healing by secondary or tertiary (delayed primary) intention by preventing the wound bed from closing, reducing edema, promoting granulation tissue formation and perfusion, and by removing exudate and infectious material. The instillation option is indicated for patients who would benefit from vacuum assisted drainage and controlled delivery of topical wound treatment solutions and suspensions over the wound bed. The V.A.C. ULTA™ Therapy System with and without instillation is indicated for patients with chronic, acute, traumatic, sub-acute and dehisced wounds, partial thickness burns, ulcers (such as diabetic, pressure and venous insufficiency), flaps and grafts.

To learn more about V.A.C. VERAFLÓ™ Therapy, please visit VERAFLO.com

As with any case study, the results and outcomes should not be interpreted as a guarantee or warranty of similar results. Individual results may vary depending on the patient’s circumstances and condition.

References


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