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UTILIZING SILVER-PLATED FABRIC WITH NEGATIVE PRESSURE WOUND THERAPY: IMPROVING OUTCOMES AND REDUCING COSTS IN HEALING ACUTE AND CHRONIC WOUNDS

PURPOSE

To investigate whether utilizing a 7-day silver-plated fabric* specifically designed for use under Negative Pressure Wound Therapy (NPWT) would improve patient outcomes and result in cost savings for the author's facility.

BACKGROUND

Acute and chronic wounds pose numerous challenges, including microbial load, healing efficacy, patient comfort, and costs to healthcare systems. Traditionally, NPWT has required dressing changes three times per week. The author was introduced to a study (Siegel et al, 2013) in which patients treated with a silver-plated fabric under NPWT had dressings changed only once per week, yet experienced fewer debridements, shorter hospital stays, and overall reduced length of treatment. Intrigued by the possibility of achieving similarly favorable results, the author trialed this product and treatment strategy in her facility.

METHOD

Patient 1 was an 86 year-old female with an infected hematoma secondary to an extensive crush injury to her right thigh; co-morbidities included diabetes, Warfarin therapy, and right total knee replacement. The goal was to achieve granulation formation as well as limb and joint salvage. Treatment entailed surgical debridement and NPWT with the silver-plated fabric.

Patient 2 was a 66 year-old male with non-healing fractures to his left ankle; relevant co-morbidities included congestive heart failure, chronic obstructive pulmonary disease, diabetes, and liver failure. Prior NPWT without the silver-plated fabric resulted in no significant improvement. The goal was to achieve granulation formation utilizing NPWT with the silver-plated fabric.

Patient 3 was a 29 year-old female with an ileostomy takedown and post-operative infection and wound dehiscence; co-morbidities included lupus and an anastomotic leak after previous colostomy takedown, resulting in the ileostomy. Treatment included interventional radiology/pelvic drains and antibiotics, with a goal of achieving granulation formation utilizing NPWT with the silver-plated fabric.

RESULTS

Patient 1

- Patient achieved rapid granulation formation and decreasing necrotic fat
- **Wound volume decreased by two-thirds in 6 weeks**
- No bleeding with dressing changes, despite being on Warfarin
- Decreased pain during dressing changes
- Time frame to limb and joint salvage and grafting: 8 weeks

Patient 2

- Patient achieved healthy granulation
- **Wound began to granulate only after initiating the silver-plated fabric**
- Time frame for response to this chronic wound: 2 weeks

Patient 3

- Patient achieved good granulation
- **Tunnels were resolved; one closed, the other decreased to only 1 cm**
- Patient reported less pain with silver-plated fabric
- Time frame for response to this acute wound: 10 days

****For each patient, dressings were usually changed only once per week instead of the typical 3 times per week when not utilizing the silver-plated fabric.**

CONCLUSION

The silver-plated fabric has transformed the author's management of patients requiring NPWT and has become part of the NPWT standard of care at her facility. Key takeaways include the following:

- Better granulation and overall healing, with no new wound infections or bleeding
- Improved patient comfort, decreased pain during dressing changes
- Significant savings due to reduced supply costs and decreased nursing labor

INVESTIGATOR

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PATIENT 1

Photo 1: November 23rd
Eschar formed over previous blister. Area was erythematous and fluctuant throughout wound area and over knee joint. Surgical consult requested.



Photo 2: December 6th
First dressing change after OR; with saline gauze, eschar had re-formed over a majority of the wound bed. This was debrided by the surgeon at bedside.



Photo 3: December 6th
Post bedside debridement. NPWT initiated using the silver-plated fabric.
Wound 40 x 23 x 3 cm (deepest at 1:00).



Photo 4: December 16th
2nd NPWT dressing change with silver-plated fabric. Dramatic granulation formation, necrotic fat autolytically decreasing.



Photo 5: January 12th
Healthy granulation; necrotic fat and slough resolving with only minor bedside debridement using scissors and forceps.
Wound 34 x 19 x 1.5 cm (deepest at 1:00).



Photo 6: January 25th
Excellent wound bed for grafting. Photo taken under the OR lights.



PATIENT 2

Photo 1: February 20th
Wound at initiation of NPWT; (no silver-plated fabric) 7.5 x 1.8 x 0.8 cm



Photo 2: March 7th
Wound after 2 weeks NPWT at skilled nursing facility. Fibrinous, very little granulation. Sutures loose proximally. 9 x 2.5 x 0.4 cm. Silver-plated fabric started under NPWT.



Photo 3: March 23rd
Wound after 2 weeks at skilled nursing facility using silver-plated fabric. 8 x 3 x 0.3 cm



Photo 4: March 30th
After another week of (hospital) NPWT with silver-plated fabric. Returned to skilled nursing facility to continue NPWT; lost to follow up. 8 x 2.5 x 0.3 cm.



PATIENT 3

Photo 1: May 5th
At start of NPWT with silver-plated fabric. 9.5 x 8 x 1.3 (includes both wounds). Tunnel 3 cm at 12:00, 1 cm at 6:00.



Photo 2: May 15th
8.5 x 2.5 x 0.4 cm. Tunnel at 12:00 decreased to 1 cm; tunnel at 6:00 closed. NPWT discontinued.



* Silverion[®] NPD by Argentum Medical, LLC. The support of Argentum Medical, LLC for this project is gratefully acknowledged.

Reference
Siegel NA, Herrera DS, Gay L. Silver negative pressure dressing with vacuum-assisted closure of musculo-pelvic and extremity wounds. Clin Orthop Relat Res. 2014 Mar; 472(1): 830-5.