International Journal of Research and Review
[Indexed, Peer Reviewed Journal]
Volume 12; Issue: 1; January 2025
Website: www.ijrrjournal.com
Case Report *E-ISSN: 2349-9788; P-ISSN: 2454-2237*

Cheaper Vacuum Assisted Closure: Reducing Costs Without Compromising Efficacy

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DOI: https://doi.org/10.52403/ijrr.20250123

ABSTRACT

Open wounds that do not heal tend to have high infection rates. It is extremely important to implement proper antibiotic cover and thorough debridement irrigation irrespective of the fixing method. One popular technique for hastening wound healing and reducing infection in nonhealing ulcers is VAC therapy. The main drawback of VAC therapy is the high cost and need for special equipment. Our hospital has found very positive outcomes in wound healing and infection control when we use low-cost, custom-made VAC therapy for non-healing ulcers in lower socioeconomic groups.

Keywords: VAC therapy, negative pressure wound therapy (NPWT), vacuum aided closure (VAC), micro deformational wound therapy (MDWT), Open wounds.

INTRODUCTION

Wounds that are infected present a serious surgical challenge. Treatment typically lasts a long time, is expensive, and has a high rate of problems and therapy failures. Over the past 25 years, negative pressure wound therapy (NPWT), also known as vacuum aided closure (VAC) or micro deformational wound therapy (MDWT), has changed wound care. One By exerting constant sub-atmospheric pressure to the wound, it effectively eliminates extra interstitial fluid, which reduces the risk of infection and growth of bacteria. Negative pressure wound care significantly reduces wound complications, speeds up healing, and facilitates early discharge following proper debridement. Application and maintenance need trained staff, and the total cost of therapy may be rather significant. We present the findings of our investigation into cheaper modified negative pressure wound care with easily accessible materials for any surgeon. The study's objective was to evaluate, using readily accessible, reasonably priced resources, the effectiveness of modified negative pressure dressings in wound healing in patients with open fractures and infected wounds. Reducing the wound surface area over time, achieving total wound closure either surgery or secondary purpose, and assessing the system's cost-effectiveness were the main goals.

CASE REPORT

A 70-year-old patient presented to our institution with a painful, slowly expanding non-healing ulcer on his left lower leg just above the ankle (figure 1). The ulcer initially appeared approximately 4 months ago after a minor trauma while walking. He states that the wound failed to heal despite routine wound care, and over time, it has increased in size and depth. The ulcer had a foul odor and was producing a moderate amount of purulent discharge.

VAC Apparatus

In hospital the central negative suction in the ward was applied to create negative pressure around the non-healing wound. The suction unit present in ward has the meter used to monitor the pressure and regulate it. Sterile foam, suction tube with side pores and ioban are the things used for creating the cheaper VAC. Since using negative pressure continuously can often produce pain surrounding the wound, we used intermittent negative pressure in our investigation.

TECHNIQUE OF VAC APPLICATION

1. The wound was carefully cleaned and debrided prior to the application of the low-cost VAC used in the hospital.
2. The wound was effectively covered with a sterile foam dressing of the appropriate size, allowing for even distribution of negative pressure across the entire area. Suction tube was integrated into the foam and connected to a vacuum pump equipped with a pressure control meter (Figure 3).
3. To ensure that the wound was adequately covered, the foam was then coated with an adhesive dressing (Ioban) that covers at least 5 cm of healthy skin. At least 5 cm of tubing was covered with a special adhesive drape for embedded tubes.
4. The interior surface of the wound was subjected to controlled negative pressure. Foam compresses and wrinkles form in the Ioban when negative pressure is applied, indicating that the wound is under negative pressure. Since traumatic wounds are linked to a high rate of wound oedema, negative pressure of greater than 120 mmHg is advised. Less negative pressure can be applied to persistent, painful, non-healing ulcers since high negative pressure frequently results in pain surrounding the site.

VAC Dressing was replaced every 48 to 72 hours. The application of controlled negative pressure facilitated both macro and micro molecular alterations in the wound, contributing to a reduction in infection and a decrease in wound size. We replaced the VAC dressing at least 3 times after which the patient was taken for skin grafting.

Figure 1 NON-HEALING ULCER

Figure 2 VAC MATERIAL

Figure 3 VAC APPLICATION

CONCLUSION

Our case report outlines an inexpensive and efficient technique for applying negative pressure dressings, which could be useful in settings with few resources. The price for VAC machines in India ranges from 75000 to as high as 2 lakhs but we were able to complete the same procedure in as less as 300 Indian rupees and were able to achieve satisfactory results. In addition, being both cost-effective and successful in wound care, our approach is simple to replicate.

VAC therapy, negative pressure wound therapy (NPWT), vacuum aided closure (VAC), micro deformational wound therapy (MDWT), Open wounds.

Declaration by Authors

Acknowledgement: None
Source of Funding: None

Conflict of Interest: No conflicts of interest declared.

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How to cite this article: Snehal Mhetre, Alina Shaikh, Bhavesh Choudhary, Arya Patil, Durva Dighe, Shruti Rajas, Suraj Jadhvar, Ananta Kulkarni. Cheaper vacuum assisted closure: reducing costs without compromising efficacy. *International Journal of Research and Review*. 2025; 12(1): 190-193. DOI: *https://doi.org/10.52403/ijrr.20250123*

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