

# Negative pressure wound therapy (NPWT) in the treatment of an infected traumatic vascular lesion

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## Introduction

The first modern studies in the literature on the application of negative atmospheric pressure to the wound bed (negative pressure wound therapy or NPWT) go back to the period after the second world war<sup>1</sup>. Interest in this type of treatment grew in the 1980s, and nowadays very many studies are available that unequivocally document its positive effect in terms of acceleration of the healing process, although there are few studies that clarify the exact physico-chemical mechanisms of this action.

Modern NPWT generally involves the use of an electrical suction unit connected to the wound through a small tube that is attached to a sealed dressing. There are a number of suppliers of NPWT equipment that differ mainly in the ways in which the negative pressure is applied to the wound bed, and there is ongoing debate about which way is more efficacious<sup>2</sup>.

The two principal methods are the Argenta-Morykwas method, which uses a polyurethane foam dressing, and the Chariker-Jeter method, which uses a silicone drain and moistened antimicrobial gauze. In both cases a transparent dressing is used to seal the wound.

The aim of this study is to document our experience managing an infected traumatic wound using the VENTURI™ NPWT system produced by British company Talley Medical.

## Assessment of the patient and wound

The patient, an 83 year old woman with a history of hypertension, suffered a vascular trauma to the left leg in the summer of 2008 and this developed into an infected wound. Treated as an outpatient with silver-based hydrofibre every three days, the wound showed no signs of improvement.

On admission of the patient to the study, the wound was about 13cm in diameter and 1cm deep, with abundant yellow exudate with a strong odour indicated pyogenic infection. The tissue presented no signs of granulation. On 10/6 the decision was taken to treat the wound with NPWT using the Talley VENTURI™ system, and the development of the wound was documented photographically.

## Method

Talley VENTURI™ is an NPWT system with a mains or battery suction pump that uses the Chariker-Jeter method (moistened gauze and silicone drain) to apply negative pressure to the wound.

Once the wound was cleaned, an antimicrobial gauze moistened with saline solution was placed on it. The flat silicone drain contained in the wound sealing kit, trimmed to fit and wrapped in additional gauze, was positioned over this layer. Given the



Initial appearance of the wound



Appearance of the wound after 10 days

conditions of the skin around the wound, a protective zinc-oxide based gel was also applied. The whole dressing was then sealed to the skin with a transparent film dressing. To seal the tubing, part of the gel patch supplied was applied at the exit point of the suction tube. The suction was then applied, setting the Talley VENTURI™ system on continuous therapy mode at 80mmHg. The dressing changes were every 2-3 days and the canister was changed when it became full.

After 10 days excellent granulation tissue had formed: the NPWT was then discontinued and the wound reclosed with the application of a skin substitute.

## Results

The VENTURI™ negative pressure system allowed us to obtain excellent tissue granulation, creating a positive wound healing environment to be able to cover the wound with skin substitute. The images show the evolution of the wound.

## Evaluation

The medical staff found the method of applying the moistened gauze dressing simple and fast, and the VENTURI™ suction unit proved easy to use. Talley VENTURI™ proved to be an effective aid in the preparation of the wound bed prior to grafting.

## Conclusions

Exudating infected lesions are often hard to manage. However, we have noted how the use of NPWT can provide valid assistance in speeding up the healing process and helping to manage large quantities of exudate. In this field, Talley VENTURI™ is an alternative to the traditional treatment methods, proving to be efficient, easy to use and economical.

## References

1. Kamolz, L. P., Andel, H., Haslik, W., et al. (2004) Use of subatmospheric pressure therapy to prevent burn wound progression in human: first experiences. *Burns* 2004; 30(3): 253-58.
2. Miller, M.S., Lowery, C.A. (2005) Negative Pressure Wound Therapy: "A rose by any other name". *Ostomy Wound Management*, 2005 Mar; 51(3):44-6, 48-9

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