

A clinical case study of an abdominal wound using the VENTURI™ Negative Pressure Wound Therapy system

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Introduction

Negative Pressure Wound Therapy (NPWT) involves the application of negative pressure to the wound bed and is intended to promote healing in acute and chronic wounds. The concept is to turn an open wound into a controlled closed wound while removing excess fluid from the wound bed.

This technique is usually considered for the following wound types¹:-

- Chronic wounds, i.e. those that fail to progress through the normal phases of healing (inflammation, proliferation, maturation), and thus do not heal.
- Acute wounds, i.e. wounds that are expected to heal and demonstrate evidence of progression through the phases of healing.
- Difficult wounds, i.e. wounds with such associated factors as diabetes, arterial insufficiency and venous insufficiency).

Assessment of the Patient

This case study follows an emergency re-admission of a 55 year old lady following two weeks post para-umbilical hernia repair with pain and swelling of peri-wound area. The diagnosis of necrotising fasciitis was reached immediately so she was commenced on intravenous antibiotics and taken to theatre for radical debridement. Further debridement of adipose tissues and excision and trimming of the rectus muscle was performed.

Assessment of the Wound

When the wound was first assessed, it measured 77cm length x 17cm width x 10cm depth (see Fig. 1). The wound was

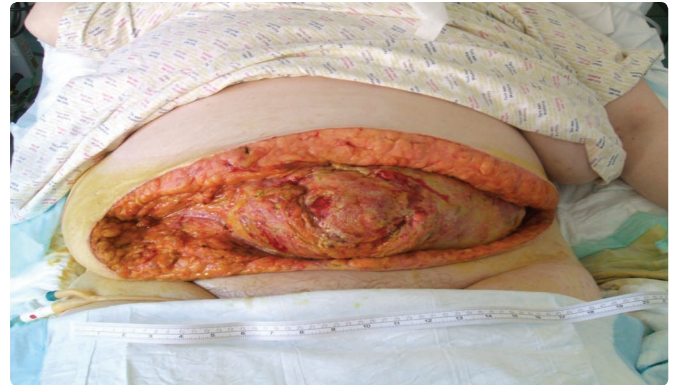


Fig. 1

managed with Betadine® (Purdue) soaked gauze packed into the cavity and secured with a film dressing post-operatively. This dressing had to be frequently renewed as it could not cope with the exudate levels leading to increased infection risk for the patient and increased nursing time spent managing the wound. Due to the extensive size of the wound it was agreed that NPWT would be beneficial in managing this wound.

The TVS at UHBFT have extensive experience with using NPWT but were keen to trial the VENTURI™ as this was a new addition to the market. As the wound bed was uneven with protruding abdominal muscle it was felt that the gauze would be easier to mould into the contours of the wound and would require less application time than cutting a sponge type dressing. Patient consent was obtained and the VENTURI™ was provided with support and training available from Talley Medical.

The aim of the treatment was to focus on the following:-

- management of exudate
- promote angiogenesis
- splinting of wound edges to aid patient comfort
- reduce risk of infection
- wound bed preparation ready for plastics intervention

Method

The VENTURI™ NPWT system utilises the therapy application technique first described by Chariker and Jeter et al. in 1989², where NPWT is applied using saline-moistened gauze and a silicone drain which is then covered with clear, semi-permeable adhesive film to ensure an air tight seal and moist healing environment are maintained.

Due to the size of the wound, two flat drains were inserted from the central part of wound spreading outwards in opposite directions. It was felt that this would provide a more even delivery of 90mmHg continuous negative pressure to the wound bed and effectively manage exudate.

Results

The wound was reassessed 3 days following the initial application of VENTURI™ NPWT. There was no reduction in wound size but the amount of granulation tissue had increased. Effective exudate management kept the surrounding skin healthy.

On the 6th day of treatment the wound measured 70cm x 10cm in diameter with 10cm depth at its deepest point, a 7cm reduction in wound length. It was noted that the removal of the gauze helped to debride the slough that was present to the wound bed.

On day 10 the wound measured 65cm x 13cm in diameter with 10cm depth. Continuous improvement of the wound was noted with the increase of granulation tissue, wound edges becoming more stable and less protrusion of abdominal muscle (Fig. 2).

Betadine is a registered trademark of Purdue Pharma L.P.



Fig. 2

Discussion

Particularly in this case, the ease of using a moistened gauze technique allowed for the dressing to be applied to the deep contours of the wound and in conjunction with the lower pressures allowed for successful growth of strong granulation tissue without damage to any other aspects to the wound. It also leant well to successfully draining the excessive amount of exudate, therefore achieving the initial aims and objectives.

Conclusion

The VENTURI™ managed to achieve a significant reduction in wound size and good granulation tissue with no complications. The patient felt very comfortable with the therapy in situ and was pleased with the portability of the machine.

References

1. BioMechanics. Michael S. Miller, DO, Rhonda Brown, LPN, and Cheryl McDaniel, LPN, Negative pressure wound therapy options promote patient care.
2. Chariker, M.E., Jeter, K.F., Tintle, T.E., Bottsford, J.E. (1989) Effective management of incisional and cutaneous fistulae with closed suction drainage. *Contemporary Surgery* Vol. 34, 59-63.

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