



ORIGINAL RESEARCH PAPER

Medicine

A STUDY OF VACCU ASSISTED CLOSURE THERAPY IN DIABETIC FOOT PATIENTS

KEY WORDS: VAC, NPWT, Diabetic foot ulcer, debridement, vacuum

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ABSTRACT

Foot ulceration is the precursor to approximately 85% of all diabetic amputations, with an estimated 14% to 20% of patients with foot ulcers undergoing an amputation. Research estimates that the lifetime incidence of foot ulcers within diabetic community is around 15% and may become as high as 25%. Negative-pressure wound therapy (NPWT) is a therapeutic technique using a vacuum dressing to promote healing in acute or chronic wounds and enhance healing of first and second degree burns.

NPWT appears to be useful for diabetic ulcers and management of the open abdomen(laparotomy).

Conclusion: VAC is useful tool for bad exudative wounds after a good debridement and promotes healing.

INTRODUCTION

Diabetic foot disease is a major health problem, which affects up to 15% of the more than 200 million patients with diabetes worldwide and is associated with an increased risk of amputation. Wound healing is an innate mechanism of action that works reliably most of the time. A key feature of wound healing is stepwise repair of lost extracellular matrix (ECM) that forms the largest component of the dermal skin layer. Diabetes Mellitus is one such metabolic disorder that impedes the normal steps of the wound healing process. Many studies show a prolonged inflammatory phase in diabetic wounds, which causes

a delay in the formation of mature granulation tissue and a parallel reduction in wound tensile strength.

Negative-pressure wound therapy (NPWT) is therapeutic technique that enhances healing of first and second degree burns and promotes healing in acute or chronic wounds using a vacuum dressing. The use of this technique in wound management increased dramatically over the 1990s and 2000s. The therapy involves the controlled application of sub-atmospheric pressure to the local wound environment using a sealed wound dressing connected to a vacuum pump. NPWT appears to be useful for diabetic ulcers and management of the open abdomen (laparostomy). NPWT promotes wound healing by applying a vacuum through a special sealed dressing.

In 1995, Kinetic Concepts was the first company to have a NPWT product cleared by the US Food and Drug Administration. Following increased use of the technique by the hospitals in the US, the procedure was approved for reimbursement by the Centres for Medicare and Medicaid Services in 2001.



General technique for NPWT is as follows: A dressing or filler material is fitted to the contours of the wound and the overlying foam is then sealed with a transparent film. A drainage tube is connected to the dressing through an opening of the transparent

film. A vacuum tube is connected through an opening in the film drape to a canister on the side of a vacuum pump or vacuum source, turning an open wound into a controlled, closed wound while removing excess fluid from the wound bed to enhance circulation and remove wound fluids. This creates a moist healing environment and reduces edema. The technique is usually used with chronic wounds or wounds that are expected to present difficulties with healing such as those associated with diabetes.

Three types of filler materials are used over the wound surface: open-cell foam, gauze and transparent film or honey-combed textiles with a dimpled wound contact surface.

With both these techniques, once the dressing is sealed the vacuum pump can be set to deliver continuous or intermittent pressures with levels of pressure depending on the device used, varying between -125 and -75 mmHg depending on the material used and patient tolerance. Pressure can be applied constantly and intermittently.

INCLUSION CRITERIA :

- 1) Patients with Diabetes Mellitus
- 2) Infected Wounds.
- 3) Debridement done.

EXCLUSION CRITERIA :

- 1) Non-Diabetic patients
- 2) Presence of necrotic tissue/malignancy
- 3) Patients with inadequate nutritional status

PROCEDURE :

STEP 1 – The foam dressing is cut to the approximate size of the wound with scissors and placed gently into position.

STEP 2 – The perforated drain tube is then located on the top of the foam and a second piece of foam is placed over the top. For the shallower wounds, a single piece of foam may be used and the drainage tube is inserted inside it.

STEP 3 – The foam, together with the first few inches of the drainage tube and the surrounding area of healthy membrane supplied. At this stage, it is important to ensure that the membrane forms a good seal both with the skin and the drainage tube.

STEP 4 – The distal end of the drain is connected to VAC unit, which is programmed to produce the required level of pressure.

STEP 5 – Once the vacuum is switched on, the air is sucked out of the foam causing it to collapse inwards drawing the edges of the

wound in with it.

STEP 6 – Fluid within the wound is taken up by the foam and transported into the disposable container within the main vacuum unit.

INTERVENTION :

Patient will be admitted to the hospital for debridement and vac therapy.



PRIMARY OBJECTIVE :

- 1) To study effect of vacuum assisted closure in Diabetic foot patients.
- 2) To get good granulation tissue.

SECONDARY OBJECTIVE :

- 1) Time taken for the wound healing and active mobilization.

RESULTS :

After 2 sittings of VAC, 80% of the wound showed granulation and a good bed.



CONCLUSION :

- 1) VAC is a useful tool for bad exudative wounds after a good debridement.
- 2) Promotes healing, may prevent amputation.
- 3) May do away with skin grafting.
- 4) Cost is a major concern.

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