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RESEARCH PAPER

GATA Negative Pressure Wound Therapy System

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Abstract The use of negative pressure wound therapy (NPWT) systems has been shown to promote wound healing. NPWT systems promise a fast and efficient way of preparing wounds for closure by either secondary intention or delayed primary closure, as well as for skin grafting and flap covering. While many of its benefits are established, commercial NPWT systems are not readily available and may be extremely costly for the patient. In the current report, we describe an equivalent alternative of NPWT at a substantially lower cost.

Introduction

The use of negative pressure wound therapy (NPWT) systems has been shown to promote wound healing. Negative pressure removes excess fluid and exudate from the wound and thereby sustains an optimum moist environment, helps control bacterial burden and restores microcirculation by decreasing interstitial pressure.[1] NPWT has also been shown to stimulate cells involved in the healing process and furthermore has been suggested to induce endothelial progenitor cell mobilization in diabetic patients with foot infections.[2] In a multicenter, randomized controlled trial NPWT has been shown to be a relatively safe and efficient treatment modality for complex diabetic foot wounds with a faster healing rate and higher proportion of healed wounds.[3] Taken together, the NPWT system promises a fast and efficient way of preparing wounds for closure by either secondary intention or delayed primary closure, as well as for skin grafting and flap covering.[1] While many of its benefits are established, commercial NPWT systems are not readily available and may be extremely costly for the patient.

Figure 1 The hospital vacuum system.

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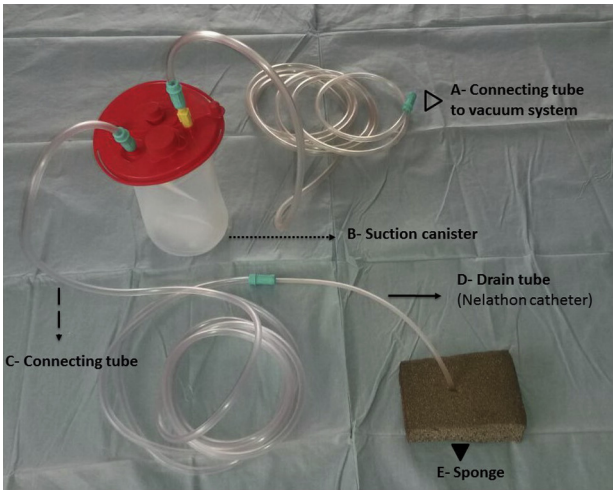

Figure 2 Components of the GATA-NPWT system. A: Connecting tube to vacuum system; B: suction canister; C: connecting tube; D: drain tube; E: sponge.

The system developed in our center (GATA-NPWT) provides an equivalent alternative at a substantially lower cost.

Figure 3 Non-adherent antibiotic-impregnated tulle wound dressing placed over the wound.

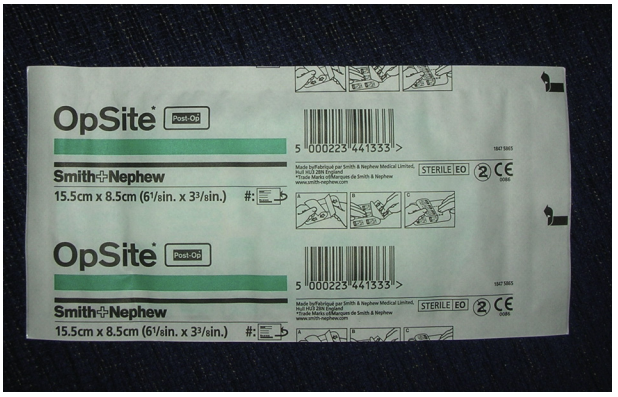

Figure 4 Adhesive transparent dressing.

Method

The GATA-NPWT system constitutes a substitute for each of the components of the commercial NPWT system. Accordingly, the hospital vacuum system (Figure 1) is used in lieu of the original suctioning device; a surgical suction canister (Figure 2, dotted arrow) is used for the collection of the drained fluid, a 16Frg Nelathon catheter (Figure 2, regular arrow) for exudate drainage and finally a regular sponge to be connected with the catheter (Figure 2, closed arrowhead). The corresponding lid of the canister has two connections: one connected to the drain tube (Figure 2, dashed arrow) and the other to the vacuum system (Figure 2, open arrowhead). A base layer of a non-adherent antibiotic-impregnated tulle wound dressing (Figure 3) is sized to fit the wound borders onto which the sponge is placed. Adhesive transparent dressings (Figure 4) are used to seal the wound and provide a closed environment (Figure 5). The system is checked for any leakage from any of the connections prior to covering the dressing with a second line bandage. Collapse of the sponge while the vacuum system is on is considered a successful

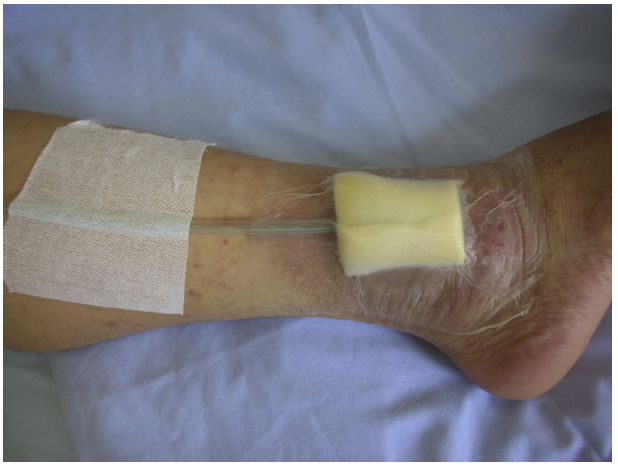

Figure 5 GATA-NPWT system at the wound site.

sealing. The vacuum system is set at a pressure of 125 mm Hg and works on a continuous mode.

Conclusion

GATA-NPWT is a safe and non-expensive alternative to the commercially available NPWT systems. Its efficiency, however, has to be evaluated and compared with established NPWT systems through well-structured randomized controlled studies.

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