Advantages of using V.A.C. VERAFLO™ Therapy in Treatment of Traumatic Lower Extremity Wounds

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Lower extremity wounds resulting from trauma are a common clinical problem encountered by the plastic and reconstructive surgeon. This includes lacerations, avulsions, and open fractures that are often heavily contaminated. Multiple irrigation and debridement procedures are often performed in order to obtain a stable wound before definitive closure. The use of vacuum-assisted closure (V.A.C.®) devices aids in promoting granulation tissue and in removing exudates and infectious materials. V.A.C. VERAFLO™ Therapy (instillation) consists of negative pressure wound therapy (i.e., V.A.C.® Therapy) coupled with controlled delivery and drainage of topical wound solutions and suspensions over the wound bed. In this article, I will discuss uses of the V.A.C. VERAFLO™ Therapy in these traumatic lower extremity wounds.

The mainstays of management of contaminated traumatic lower extremity wounds with compromised tissue include serial surgical debridements and irrigations. Multiple procedures over several days are often needed to remove contamination, foreign bodies, and necrotic tissue and to decrease bacterial colonization. One study by Allen et al[1] showed less tissue trauma with the use of V.A.C. VERAFLO™ Therapy compared to high-pressure lavage and an equivalent cleansing of the contamination. These injuries are often associated with vascular injuries, fractures, and nerve injuries. Negative Pressure Wound Therapy (NPWT) removes exudates and infectious materials and promotes granulation tissue formation and perfusion. The next advancement in this therapy is the instillation of topical wound solutions into the wound.

There are different variables in the use of the V.A.C. VERAFLO™ Therapy including type of antiseptic, time of instillation, duration of NPWT and pressure settings. Kim et al[2] attempted to develop consensus guidelines for the use of NPWT with instillation. I would agree with their statement that NPWT can be used with traumatic wounds in the presence of orthopedic hardware and as a bridge between staged or delayed amputation. For lower extremity wounds, the main solutions that are used are polyhexanide 0.04% (Lavasept®, B.Braun), polyhexanide 0.1% plus betaine (Prontosan®, B.Braun) and super oxidized water (Microcyn®, Oculus Innovative Sciences, Inc.). I personally have used sodium hypochlorite 0.125%, (Dakin's) in lower extremity wounds for many years. I believe Dakin's solution provides good treatment to control Pseudomonas aeruginosa. Pseudomonas is an organism often found in lower extremity wounds associated with farm injuries, motor vehicle injuries and boating injuries. I also find Dakin's solution to decrease bacterial colonization in those same wounds.

Another variable often considered is the instillation dwell time. Kim et al,[2] in their consensus statement, proposed a range of 10 to 20 minutes. The dwell time is the length of time the solution is in the wound bed without negative pressure. There are no clear studies showing optimal dwell time to achieve antimicrobial activity. In clinical practice for smaller wounds, I use a dwell time of 10 minutes and for larger wounds, 20 minutes. Another consideration would be the depth of the wound, where a longer dwell time may be preferable.

The appropriate amount of negative pressure time and the appropriate volume of instillation solutions are other variables that must be considered. In general, a larger volume will be considered for larger sized wounds. Most clinicians use an end point of instilling solution until the foam is saturated. I would also agree with the consensus statements of using negative pressure therapy for two hours. I also use a continuous negative pressure of -125 mmHg. Fluieraru et al[3] showed the benefit of V.A.C. VERAFLO™ Therapy in wounds that have stalled with traditional NPWT. They had good results with the use of a sterile saline instillation solution.

Another consideration is cost. Gabriel et al[4] showed decreased cost of V.A.C. VERAFLO™ Therapy versus NPWT as time to closure was less. In summary, V.A.C. VERAFLO™ Therapy offers a good option for managing wounds in preparation for closure in the lower extremity.

References:

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