

Vacuum-Assisted Wound Therapy Uses Expanded

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CHICAGO — The indications for negative-pressure wound therapy are expanding to include infected wounds and complicated wounds with exposed bone, tendon, or even orthopedic hardware, Dr. Anton Sidawy said.

“While it’s not a cure-all, this device can be applied to a variety of wounds caused by many etiologies,” he said at a symposium on vascular surgery sponsored by Northwestern University.

“It is not,” Dr. Sidawy cautioned, “going to substitute for a good blood supply to the wound area and appropriate local wound therapy.”

Negative-pressure wound therapy, also known as vacuum-assisted closure (VAC) therapy, was developed roughly two decades ago, and involves the application



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of subatmospheric pressure to a wound through a pump attached to a foam sponge with an adhesive dressing. VAC is thought to accelerate wound contraction, increase local blood flow, and promote wound drainage and edema resolution.

Its widespread success in the diabetic population with microcirculatory pathology also suggests that the microdeformations of the wound surface caused by the negative pressure act on a cellular level to stimulate cell proliferation, angiogenesis, and granulation tissue formation, said Dr. Sidawy, chief of surgical services, Washington VA Medical Center, and professor of surgery at Georgetown and George Washington University Medical Centers, Washington.

Infected wounds typically do not do as well with VAC therapy, but progress has been made with recent studies demonstrating decreased bacterial burden after VAC therapy. Management of infected wounds has been aided by the use of VAC devices that allow for the instillation of fluids so contaminated wounds can be continuously irrigated with antibiotic fluids and by silver-impregnated dressings (GranuFoam Silver Dressing, KCI Inc., San Antonio, Texas) that have antimicrobial effects (Ann. Plast. Surg. 2007;59:58-62).

Physicians in the Iraqi theater have turned to VAC to manage contaminated soft-tissue injuries caused by the blast effect of high-energy missiles. Dr. Sidawy cited a retrospective pilot study of 88 high-energy, contaminated soft-tissue injuries in 77 patients in which all wounds treated with VAC were closed definitively before discharge, with no wound complications (J. Trauma 2006;61:1207-11).

Large, complex circumferential soft tissue defects or burns can be managed with

VAC to facilitate the coverage of exposed vessels and stimulate the growth of granulation tissue, Dr. Charles Fox of the Walter Reed Army Medical Center in Washington said in an interview. At times, maintaining a seal on a VAC can be challenging, particularly with external fixation or wounds of the hands and feet.

“An impervious stockinette sealed at either end with a Coban [compression wrap] may be substituted for the large Op-Sites [dressings] that do not adhere to a

very wet cavitary wound,” Dr. Fox said. “This strategy has been used for some complicated wounds in the Iraqi theater.”

By reducing tissue edema, and thereby reducing the circumference of the extremity and the surface area of the wound, VAC therapy has also revolutionized how physicians treat wounds with exposed bone, tendon, or orthopedic hardware. Such complicated wounds, particularly on the lower third of the leg, traditionally required microvascular free-tissue transfer

for coverage of the defect. Now, both small and large defects can be treated with VAC, although larger surface wounds still need free-tissue transfer, Dr. Sidawy said.

In a landmark study, VAC therapy was used to obtain successful coverage without complication in 71 of 75 open wounds of the lower extremity with exposed bone, tendon, or hardware. Of these wounds, 52 were below the knee and orthopedic hardware was exposed in 12 (Plast. Reconstr. Surg. 2001;108:1184-91). ■



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