

THE VAC PROCEDURE

VACUUM-ASSISTED CLOSURE (ALSO CALLED VACUUM THERAPY, VACUUM SEALING OR TOPICAL NEGATIVE PRESSURE THERAPY) IS A SIMPLE TECHNIQUE WHERE A PIECE OF FOAM WITH AN OPEN-CELL STRUCTURE IS INSERTED INTO THE WOUND, AND A WOUND DRAIN WITH LATERAL PERFORATIONS IS LAID ATOP IT. THE ENTIRE AREA IS THEN COVERED WITH A TRANSPARENT ADHESIVE MEMBRANE, WHICH IS FIRMLY SECURED TO THE HEALTHY SKIN AROUND THE WOUND MARGIN. WHEN THE EXPOSED END OF THE DRAIN TUBE IS CONNECTED TO A VACUUM SOURCE, FLUID IS DRAWN FROM THE WOUND THROUGH THE FOAM INTO A RESERVOIR FOR SUBSEQUENT DISPOSAL.

THE PLASTIC MEMBRANE PREVENTS THE INGRESS OF AIR AND ALLOWS A PARTIAL VACUUM TO FORM WITHIN THE WOUND, REDUCING ITS VOLUME AND FACILITATING THE REMOVAL OF FLUID. THE FOAM HAS A FEW IMPORTANT FUNCTIONS: IT ENSURES THAT THE ENTIRE SURFACE AREA OF THE WOUND IS UNIFORMLY EXPOSED TO THIS NEGATIVE PRESSURE EFFECT, IT PREVENTS OCCLUSION OF THE PERFORATIONS IN THE DRAIN BY CONTACT WITH THE BASE OR EDGES OF THE WOUND, AND IT ELIMINATES THE THEORETICAL POSSIBILITY OF LOCALIZED AREAS OF HIGH PRESSURE AND RESULTANT TISSUE NECROSIS.





The application of negative pressure in vacuum-assisted closure removes edema fluid from the wound through suction. This results in increased blood flow to the wound (by causing the blood vessels to dilate) and greater cell proliferation. Another important benefit of fluid removal is the reduction in bacterial colonization of the wound, which decreases the risk of wound infections. Through these effects, vacuum-assisted closure enhances the formation of granulation tissue, an important factor in wound healing and closure.



Length of Treatment

The length of treatment depends on the size and depth of the wound. Naturally, smaller, shallower wounds will require shorter treatment periods. One study in the United States evaluated the effectiveness of vacuum-assisted closure among patients with chronic, nonhealing wounds. In this study, the application of vacuum-assisted closure lasted for 6 weeks, in which 80 to 90 percent wound closure was achieved. The authors of the study estimated that complete wound closure would take approximately 16 to 20 weeks for large chronic wounds.



Uses of Vacuum-Assisted Closure

This technique has been used increasingly over the past decade for acute and chronic wounds, and animal studies have demonstrated improved wound healing. Its use has been extended to other types of wounds, such as surgical wounds from abdominal, chest and cardiac (heart) surgical procedures. Currently, vacuum-assisted closure can be used on all types of wounds: acute, subacute or chronic.