Letter to the Editor

Letter to the Editor: Negative Pressure Wound Therapy in Grade IIIB Tibial Fractures: Fewer Infections and Fewer Flap Procedures?

Sandeep Mehrotra MS, MCh, Sunil Anand MS

To the Editor,

We read the article by Schlatterer and colleagues [3] with great interest. Negative pressure wound therapy (NPWT) is a proven treatment option for Gustilo-Anderson III fractures [1]. Applying NPWT over complex wounds in orthopaedic trauma patients when they are being treated with external fixators, however, is difficult and requires innovation [2]. High

equipment costs and an inability to maintain negative pressure often precludes NPWT in such situations. We would like to offer a simple and innovative approach in delivering the benefits of NPWT to such wounds. The technique is effective, economical, and easily reproducible.

After wound débridement, suction drain tubes with Vaseline gauze or hydrogel sheets cover the wound. The fixator pin ends are covered with adhesive plaster to avoid cutting in through the film. Commercially available cellophane film wraps the limb and fixator assembly. The suction tube ends are brought out from under the cellophane film and the opening sealed with stomahesive paste. Application of negative pressure is done using a suction unit to test the air proofing. The film allows visualization of the wound and monitoring. Dressings are changed as per needed—generally beginning at day 3 (Fig. 1A–D).

This technique promotes suction of infective secretions, promotion of healthy granulation, and angiogenesis, all with few dressing changes and minimal morbidity and cost. The economic advantage gained is noteworthy, especially in third-world countries, with the whole assembly and bellows suction costing less than USD 20.

If a commercial NPWT machine is unavailable, intermittent high-pressure suction (300 mm Hg applied for 30 minutes every 4 hours to 6 hours) employing a standard suction apparatus also is effective. We connect the suction tubes to a standard bellows suction, which gives effective negative pressure without the need for an electrical device, while also permitting free ambulation.

Open lower-limb fractures with fixators in situ pose challenging problems in wound management. Difficult or incomplete débridements, painstaking and time-consuming dressing applications and changes all can lead to suboptimal outcomes. NPWT, though desirable, is difficult to apply using the standard equipment. With simple innovations, the benefits of NPWT can be used judiciously in this subset of patients.

(RE: Schlatterer DR, Hirschfeld AG, Webb LX. Negative pressure wound therapy in Grade IIIB tibial fractures: Fewer infections and fewer flap procedures? *Clin Orthop Relat Res.* 2015;473:1802–1811).

The authors certify that they, or any member of their immediate families, have no funding or commercial associations (eg, consultancies, stock ownership, equity interest, patent/licensing arrangements, etc) that might pose a conflict of interest in connection with the submitted article.

All ICMJE Conflict of Interest Forms for authors and *Clinical Orthopaedics and Related Research*® editors and board members are on file with the publication and can be viewed on request.

The opinions expressed are those of the writers, and do not reflect the opinion or policy of *CORR*® or The Association of Bone and Joint Surgeons®.

S. Mehrotra MS, MCh,
S. Anand MS (✉)
Department of Surgery, Armed Forces
Medical College, Sholapur Rd., Pune,
Maharashtra 411040, India
e-mail: sunilanand12@gmail.com

Letter to the Editor

Fig. 1A–D (A) Extensive soft-tissue trauma with exposed segmental fractures, tissue necrosis, and skin loss is shown. (B) Surgeons apply NPWT over fixator assembly. (C) After three sessions of NPWT, there is healthy bleeding granulation with minimal sloughing. (D) The healed wound after Stage 2 surgery employing two flaps and split-skin graft.

References

1. Arti H, Khorami M, Ebrahimi-Nejad V. Comparison of negative pressure wound therapy (NPWT) & conventional wound dressings in the open fracture wounds. *Pak J Med Sci.* 2016;32:65–69.
2. Bulla A, Farace F, Uzel AP, Casoli V. Negative pressure wound therapy and external fixation device: A simple way to seal the dressing. *J Orthop Trauma.* 2014;28:e176–177.
3. Schlatterer DR, Hirschfeld AG, Webb LX. Negative pressure wound therapy in Grade IIIB tibial fractures: Fewer infections and fewer flap procedures? *Clin Orthop Relat Res.* 2015;473:1802–1811.