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Comparison of Vacuum-Assisted Closure Therapy and Conventional Dressing on Wound Healing in Patients with Diabetic Foot Ulcer: A Randomized Controlled Trial.

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Abstract

BACKGROUND: Vacuum-assisted closure (VAC) therapy has been shown to be beneficial in a variety of wounds. However, evidence of its benefit in diabetic foot ulcers (DFUs), especially with respect to Indian population, is sparse.

METHODOLOGY: This randomized controlled trial included DFUs of Wagner's Grades 1 and 2. Patients were further stratified with respect to DFU size <10 cm and ≥10 cm. Patients with vascular disease, osteomyelitis, and bilateral DFUs were excluded from the study. The enrolled patients were randomized to receive VAC therapy or conventional dressing. The time to wound healing, granulation tissue formation, and complications such as pain, infection, and bleeding were compared between the two groups. **RESULTS:** A total of sixty patients were randomized, of which 27 in each group were analyzed. The mean time to healing in days was significantly less in VAC group (22.52 vs. 38.85; $P < 0.0001$). Mean time to achieve 75%-100% granulation tissue cover was significantly less in VAC group (23.33 vs. 32.15; $P < 0.0001$). Rate of granulation tissue formation was also found to be significantly better in VAC group (2.91 cm²/day vs. 2.16 cm²/day; $P = 0.0306$). There was no difference between the two groups with respect to wound infection and bleeding which are commonly attributed to VAC therapy. VAC therapy group had significantly lesser pain at week 3 (Visual Analog Scale score 3 vs. 4; $P = 0.004$). **CONCLUSION:** VAC therapy significantly decreases the time to complete wound healing, hastens granulation tissue formation, and reduces the ulcer area compared to conventional dressing. The study did not find any significant increase in the bleeding and infection in the VAC therapy group.

KEYWORDS: Diabetic foot ulcer; granulation; negative pressure wound therapy; vacuum-assisted closure therapy; wound healing

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