

The Effect of Lower Extremity Amputation Level with the use of an Intermittent Compression Pump in the High Risk Foot The Mayo Clinic Experience (1998 –2003)

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Background

The objective of this retrospective observational study was to review the results of surgical amputations of the forefoot with the use of an intermittent pneumatic compression device (pump). Patients evaluated had non-healing wounds, osteomyelitis and severe to critical limb ischemia at Mayo Clinic Rochester.

Methods

The setting was a community and referral orthopedic surgical and multidisciplinary wound care clinic. The authors analyzed 24 patients, median age 72, with severe to critical limb ischemia and active ulcer, osteomyelitis or gangrene started using a compression device between 1998 and 2003. 17% had a history of amputation (contralateral limb), 67% had diabetes, 100% with severe to critical limb ischemia, 17% with chronic renal failure on hemodialysis, 70% with osteomyelitis, and 58% had previous vascular reconstructive surgery. Of all the wounds, 70% were multifactorial in etiology, and 60% had associated transcutaneous oxygen tension levels below 20 mmHg. Patients were typically asked to use the pump at home on the affected limb for 6 hours daily, this was for both the pre and postoperative periods.

Results

The median follow-up after initiation of treatment was 12 months. Primary intention healing with limb preservation was achieved by 62% of patients. Secondary intention healing was achieved in an additional 17% with limb preservation. 21% of the patients went on to below knee amputation after failure of the initial local foot amputation. 70% of the patients had active osteomyelitis and 33% with TcPO₂ levels below 20 mmHg. Of the patient subgroup (17%) that had a previous contralateral below knee amputation prior to the study, none went on to a below knee amputation of the effected study limb. All patients used the intermittent compression pump preoperatively and postoperatively for until healed of further surgical intervention.

Conclusion

Patients with severe and critical limb ischemia may benefit from the use of an intermittent compression pump as adjunctive therapy when considering a local foot amputation. Limb preservation and function can be achieved in the high-risk individual by using an intermittent compression device and reduce the level of lower extremity amputation.