Use of The Circulator Boot in the Successful Treatment of Complex Limb Threatening Lower Extremity Ulcers

Jennifer Zink OTC, HBT, Kathleen M. Nelson, RN, CWCN, Jeffrey A. Niezgoda, MD, FACEP, Dawn Walek, RN

The Center for Comprehensive Wound Care and Hyperbaric Medicine, St. Luke's Medical Center, Aurora Health Care & Hyperbaric and Wound Care Associates, Milwaukee, Wisconsin, USA

Introduction

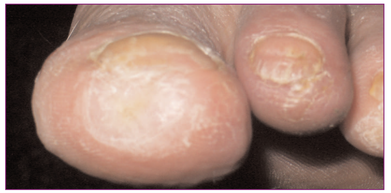
The Circulator Boot® (CB) is a device used to treat non-healing lower extremity wounds. The system consists of an adjustable boot, valve assembly, compressor, and heart monitor. The affected extremity is placed in a mini-bag (leg) or long-bag (leg/thigh) and then placed in the boot. Three cardiac electrodes attach the patient to the system cardiac monitor. The Circulator Boot® is designed to synchronize compression of the patient's extremity with end diastole of the heart cycle. The goal of this therapy is to enhance distal blood flow. The therapy is not limited to patients with peripheral arterial occlusive disease (PAD), but successful outcomes can be achieved in patients with severe PAD who have no option for revascularization or endovascular intervention. The typical treatment lasts 40 minutes. The system can also be used with the extremity immersed in a sea soak solution to enhance debridement.

Case Report #1

HS is a 77-year-old male with a history of type 2 diabetes mellitus, severe PAD, and CRF. The patient presented to the Center for Comprehensive Wound Care on 5/17/02 with bilateral non-healing great toe wounds. Vascular evaluation found no options for improvement of PAD. After 6 weeks of traditional therapy the patient demonstrated minimal progress toward healing. On 7/2/02 Circulator Boot® therapy was initiated with combined use of Sea Soaks. The patient completely healed after 18 CB treatments (9/10/02). A 4-month follow up visit found no wound recurrence.

5/17/02

7/2/02

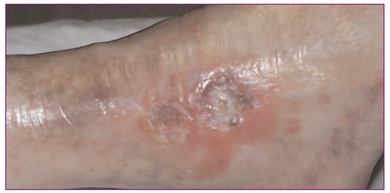


9/10/02

1/20/03

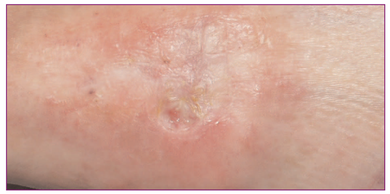
Case Report #2

SK is an 84-year-old male with a history of end-stage PAD (S/P left BKA) and hypertension. The patient was referred to the Center for Comprehensive Wound Care with a recalcitrant wound due to arterial insufficiency involving the right lateral malleolus. The patient did not heal despite aggressive use of advanced therapies. On 8/06/02 Circulator Boot® therapy with Sea Soaks was initiated. The patient healed after 24 treatments (10/14/02). The patient remains healed at 3-month follow up.



2/11/99

8/6/02



10/14/02

1/21/03

Conclusion

Successful healing in patients with lower extremity wounds compromised by severe peripheral arterial occlusive disease can be challenging. Patients with no option for vascular intervention, including revascularization or endovascular procedure, are at significant risk for complications leading to amputation. Circulator Boot® therapy can be an option for patients in this high-risk group. Early consideration and initiation of this adjunctive treatment modality can result in wound healing as well as limb preservation. Excellent outcomes in patients with severe peripheral arterial occlusive disease suggest that the wound care community consider expanded utilization of this modality.

References

1. Vella A Carlson LA, Blier B, Felty C, Kuiper JD, Rooke TW. Circulator Boot Therapy alters the natural history of ischemic limb ulceration. Vascular Medicine. 2000:5: 21-25.
2. Dillon RS. Fifteen years of experience in treating 2177 episodes of foot and leg lesions with the Circulator Boot Angiology. The Journal of Vascular 48: 517-533.
3. Dillon RS. Successful treatment of osteomyelitis and soft tissue infections in ischemic diabetic legs by antibiotic injections and the end-diastolic pneumatic compression boot - case studies. Ann Surg 204: 643-649, 1986.

Presented at the 16th Annual Symposium on Advanced Wound Care. April 28-May 1, 2003, Las Vegas, Nevada