

Nonoperative Active Management of Critical Limb Ischemia: Initial Experience Using a Sequential Compression Biomechanical Device for Limb Salvage

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Critical limb ischemia (CLI) patients are at high risk of primary amputation. Using a sequential compression biomechanical device (SCBD) represents a nonoperative option in threatened limbs. We aimed to determine the outcome of using SCBD in amputation-bound nonreconstructable CLI patients regarding limb salvage and 90-day mortality.

Thirty-five patients with 39 critically ischemic limbs (rest pain = 12, tissue loss = 27) presented over 24 months. Thirty patients had nonreconstructable arterial outflow vessels, and five were inoperable owing to severe comorbidity scores. All were Rutherford classification 4 or 5 with multilevel disease. All underwent a 12-week treatment protocol and received the best medical treatment.

The mean follow-up was 10 months (SD \pm 6 months). There were four amputations, with an 18-month cumulative limb salvage rate of 88% (standard error [SE] \pm 7.62%). Ninety-day mortality was zero. Mean toe pressures increased from 38.2 to 67 mmHg (SD \pm 33.7, 95% confidence interval [CI] 55 – 79). Popliteal artery flow velocity increased from 45 to 47.9 cm/s (95% CI 35.9 – 59.7). Cumulative survival at 12 months was 81.2% (SE \pm 11.1) for SCBD, compared with 69.2% in the control group (SE \pm 12.8%) ($p = .4$, hazards ratio = 0.58, 95% CI 0.15 – 2.32). The mean total cost of primary amputation per patient is €29,815 (\$44,000) in comparison with €13,9000 (\$20,515) for SCBD patients.

SCBD enhances limb salvage and reduces length of hospital stay, nonoperatively, in patients with nonreconstructable vessels.