

Non-operative Active Management of Critical Limb Ischaemia (CLI): Initial Experience Using a Sequential Compression Biomechanical Device (SCBD) for Acute Limb Salvage in CLI

Esan, O; Mahendran, B; Fahy, A; Hynes, N; Tawfik, S; Zalatel, E; Sultan, S. Western Vascular Institute, University College Hospital Galway, Ireland.

Introduction: CLI patients are at risk of primary amputation in the absence of reconstructible outflow vessels in prohibitive cardiovascular risk factors. SCBD epitomises a worthwhile non-operative prospect in threatened limbs. Composite primary endpoints were limb salvage, resolution of rest pain, increase in toe pressures and 90-day mortality. Secondary endpoints were popliteal flow velocity, healing of ulcers or gangrene and cost effectiveness over primary amputation.

Material/Methods: 35 consecutive patients with 39 critically ischaemic limbs (rest pain = 12, tissue loss = 13, rest pain and tissue loss = 14) presented over a 24-month period. All but 9 were males. Mean age 74.3 years. All were Rutherford classification IV/V. Patients underwent a 12-week treatment protocol with SCBD and given best medical treatment. Follow-up was done at 4-week intervals with duplex scan, laser Doppler and digital pressures.

Results: One-year Cumulative Limb salvage rate was 88% (+/-SE 7.62%). Mean follow-up 10 months (+/-SD 6 months). There were 4 amputations. Ninety-day mortality was zero. Toe pressures ($p < 0.0001$) increased while analgesia requirements decreased from the 1st week. Mean toe pressures increased from 38.2 to 61.9 mm Hg (95% CI (33.19-14.19)). Popliteal flow velocity increased from 43.8 to 45.5 cm/s² (95% CI (18.56-8.089)). Mean hospital stay was 15 days.

In comparison to matched cohort of SCLI patients in the preceding 24 months, 45 primary amputations were performed with one-year mortality rate of 84.4% (+/-SE 5.41%) in comparison to one-year mortality rate of 84.5% (+/-SE 8.00%) in the SCBD study cohort ($p = 0.93$, hazard ratio = 0.95, 95% CI [0.30 to 2.98]). The estimated median cost of managing a primary amputation patient due to critical ischaemia is US\$14,815 compared to US\$4900 for the SCBD.

Conclusions: SCBD enhanced limb salvage, reduced length of hospital stay and imparted prompt relief of rest pain without surgical intervention in patients at the end of their life in a cost effective manner.

Presented at the Society for Clinical Vascular Surgery, Orlando, FL. March 2007 and at the European Society for Vascular Surgery, Prague, September 2006.