Haemodynamic optimisation in lower limb arterial surgery: room for improvement?

Bisgaard J(1), Gilsaa T, Rønholm E, Toft P. Acta Anaesthesiol Scand. 2013 Feb;57(2):189-98. doi: 10.1111/j.1399-6576.2012.02755.x. Epub 2012 Sep 4.

BACKGROUND: Goal-directed therapy has been proposed to improve outcome in high-risk surgery patients. The aim of this study was to investigate whether individualised goal-directed therapy targeting stroke volume and oxygen delivery could reduce the number of patients with post-operative complications and shorten hospital length of stay after open elective lower limb arterial surgery.

METHODS: Forty patients scheduled for open elective lower limb arterial surgery were prospectively randomised. The LiDCO™plus system was used for haemodynamic monitoring. In the intervention group, stroke volume index was optimised by administering 250 ml aliquots of colloid intraoperatively and during the first 6 h post-operatively. Following surgery, fluid optimisation was supplemented with dobutamine, if necessary, targeting an oxygen delivery index level ≥ 600 ml/min(/) m(2) in the intervention group. Central haemodynamic data were blinded in control patients. Patients were followed up after 30 days.

RESULTS: In the intervention group, stroke volume index, and cardiac index were higher throughout the treatment period (45 ± 10 vs. 41 ± 10 ml/m(2), P < 0.001, and 3.19 ± 0.73 vs. 2.77 ± 0.76 l/min(/) m(2), P < 0.001, respectively) as well as post-operative oxygen delivery index (527 ± 120 vs. 431 ± 130 ml/min(/) m(2), P < 0.001). In the same group, 5/20 patients had one or more complications vs. 11/20 in the control group (P = 0.05). After adjusting for pre-operative and intraoperative differences, the odds ratio for ≥ 1 complications was 0.18 (0.04-0.85) in the intervention group (P = 0.03). The median length of hospital stay did not differ between groups.

CONCLUSION: Perioperative individualised goal-directed therapy may reduce post-operative complications in open elective lower limb arterial surgery.