Can J Anesth/J Can Anesth (2017) 64:335–336
DOI 10.1007/s12630-016-0785-9

CORRESPONDENCE

Axillary-femoral bypass in a high-risk patient: a novel anesthetic approach

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Received: 29 September 2016 / Revised: 5 November 2016 / Accepted: 23 November 2016 / Published online: 29 November 2016

To the Editor,

Vascular surgery patients are commonly afflicted by a multitude of comorbidities, including pulmonary hypertension, that render them a fragile population. Their five-year mortality rate after surgical intervention ranges up to 28%.[1] Pulmonary hypertension has become a familiar challenge for anesthesiologists. Studies investigating the outcome of these patients undergoing non-cardiac surgery have demonstrated a morbidity rate ranging from 14% to 42% and a mortality rate of 0.9% to 7.0%.[2] Recommendations have been made that, when possible, epidural anesthesia be used instead of general anesthesia.[3] Axillary–femoral bypass may be chosen for lower limb revascularization over the preferred aorto–femoral bypass in high-risk patients.

We present the case of a 77-yr-old patient with severe pulmonary hypertension (right ventricular systolic pressure 88 mmHg) who underwent axillary–femoral bypass solely with regional anesthesia that was administered *via* two intrathecal catheters. The patient described gave written consent for this report.

The original plan was to use a thoracic epidural catheter and a lumbar intrathecal catheter. The plan was modified, however, after an inadvertent dural puncture in the thoracic area resulting in placement of a thoracic intrathecal catheter. A fentanyl infusion was started and titrated up to 7.5 $\mu g \cdot hr^{-1}$ through the thoracic catheter followed by a 1-mL bolus of 0.5% bupivacaine *via* the lumbar catheter (which was placed intrathecally, as planned). Subsequently, an infusion of 0.25% bupivacaine was started at 2 $mL \cdot hr^{-1}$. The patient was under sedation with a dexmedetomidine infusion throughout. No loading dose was used. The dexmedetomidine was initially started at 0.2 $\mu g \cdot kg^{-1} \cdot hr^{-1}$ and then titrated up to 0.4 $\mu g \cdot kg^{-1} \cdot hr^{-1}$ to attain adequate sedation (modified Ramsay score 2–3).[4] The patient remained appropriately responsive and hemodynamically stable throughout. Notably, there was minimal discomfort associated with graft tunnelling. At follow-up visits, he described the experience as "pleasant" and "would recommend it to others."

A literature search through PubMed and EMBASE found a few examples of managing high-risk patients undergoing axillary–femoral bypass using regional and/or local anesthesia techniques, but none described the simultaneous use of two neuraxial catheters. Various other combinations have been suggested, such as sedation and local infiltration, subarachnoid block and local infiltration, and brachial plexus block with a subarachnoid single shot or a continuous infusion.

Whilst supplementation with a brachial plexus block would have been a good option in terms of hemodynamic stability, its effects on respiratory function could have been catastrophic for our patient. Although intrathecal placement of the thoracic catheter had not been planned, we obtained a good clinical effect by reducing our intended thoracic epidural opioid dose by a factor of ten.

Thoracic intrathecal infusions (T8-10) have been used previously with no significant complications reported – including no spinal cord injuries. Han *et al.* described T10 nerve root entrapment by a coiled catheter that migrated.[5] This type of catheter was different from the one we used and was attached to an implantable drug delivery system in a patient with chronic back pain.

Given the management complexity of these high-risk patients, who are unlikely to tolerate general anesthesia,

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our case included an alternative regional anesthesia technique that can be used safely for axillary−femoral bypass without compromising hemodynamic and respiratory stability.

Conflicts of interest None declared.

Editorial responsibility This submission was handled by Dr. Philip M. Jones, Associate Editor, *Canadian Journal of Anesthesia.*

Funding No funding source. No commercial or non-commercial affiliation.

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