Regional anesthesia and dexmedetomidine as primary anesthetic for femoral endarterectomy and femoral-popliteal bypass in a patient with severe COPD

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Case Background: An 80 year old male presented to our medical center for treatment of multilevel peripheral arterial occlusive disease in his right lower extremity. He has a past medical history of severe COPD, with a 60 pack year smoking history. The patient is a current smoker; he uses oxygen at night and, at times, during the day. After investigation into his underlying pulmonary status, surgical plans were delayed due to concerns over his ability to tolerate a general anesthetic. His FEV1 was 34% of predicted value, FEV1/FVC was 43.7, and his DLCO was 19% of predicted value. In addition, he desaturated significantly with mild exercise. Upon further investigation, he was found to have moderate aortic stenosis, with a valve area of 1.12 cm2. His right calf claudication was limiting preventing him from walking more than 50 yards at a time.

Anesthetic Management: In order to minimize risk of postoperative pulmonary complications, a regional technique was planned as the primary anesthetic. Immediately upon arrival to the operating suite, a dexmedetomidine infusion was started. This was initially loaded, and an infusion was then started at 1 mcg/kg/hr and was continued for 4.5 hours, and then weaned off over the next hour. A spinal anesthetic was placed, with 1.9 mL of 0.75% bupivacaine with dextrose and 200 mcg of epinephrine placed at the L3-L4 level using a 25 gauge Whitacre needle. Given that the procedure involved a re-exploration of the right groin with complex femoral artery reconstruction, there was concern that a spinal anesthetic would not last long enough. Therefore, a femoral nerve block was also performed under ultrasound guidance along with the femoral branch of the genitofemoral nerve. The block was accomplished using 20 mL of 0.5% bupivacaine with 1:200,000 epinephrine, combined with 8mg of dexamethasone, and 6mg of preservative free morphine. The patient remained on supplemental oxygen via nasal cannula throughout the procedure, and has a RASS score of -2 throughout most of the case. No additional local anesthetic was given by our surgical colleagues, nor did he require additional opioid administration. Upon arrival to the post anesthesia recovery unit (PACU), the patient was without pain. At that time, he was moving his leg without difficulty. His highest pain score was 2 during the first 24 hours after surgery and returned to 0 following treatment with acetaminophen. He was discharged home on post-operative day three.
Discussion: Management of patients with very severe COPD can pose a challenge, especially when the usual anesthetic plan consists of providing a general anesthetic. This case is an example of combining multiple regional techniques with peri-procedural sedation to provide a high risk patient with an alternative option.