



Primary Neuraxial Anesthetic for Elective Robotic Total Knee Arthroplasty in Patient with Left Ventricular Assist Device

Julia I. Klein, MD, Hanin Sheikh, BS, Kenneth E. Higgins, MD, John W. Patton III, MD, MBA, Benjamin Chu, MD

Department of Anesthesiology & Perioperative Medicine, David Geffen School of Medicine, UCLA



Introduction:

- Given advancements in left ventricular assist device (LVAD) models, patients with LVADs are now living longer (1,2)
- While monitored anesthesia care may be done safely for some patients with LVADs (3), there is limited literature on other anesthetic techniques

Case Presentation:

60-year-old male with history of dilated non-ischemic cardiomyopathy secondary to aortic valvulopathy status post LVAD placement in 2018 and severe osteoarthritis presented for robotic left TKA

Pre-op:	- Medical clearance from orthopedics, primary care, cardiology, infectious disease, and anesthesiology - Anticoagulation plan for bridge from Warfarin to Lovenox - Pre-operative echo demonstrating stable ejection fraction
Day of Surgery:	<u>Surgical anesthesia</u>: L4-L5 lumbar epidural catheter placement with test dose and intermittent bolusing (15mL total of 2% Lidocaine) and 2mg of epidural morphine <u>Hemodynamic monitoring</u>: Left radial arterial line and perfusionist present for LVAD monitoring <u>Airway management</u>: Spontaneous respiration with high flow nasal cannula <u>Sedation</u>: Mild sedation with 15mcg/kg/min of Propofol and 0.1-0.3 mcg/kg/hr of Precedex <u>For post-operative pain control</u>: Ultrasound-guided left adductor canal peripheral nerve block catheter
Post-op:	<u>Pain management</u>: Multi-modal strategy involving basal infusion of 6mL/hr of Ropivacaine 0.2% from POD0-POD3 via adductor canal catheter and IV/PO medications <u>Anticoagulation Management</u>: Aspirin and Warfarin were resumed on POD0

Neuraxial anesthetics should be considered on a case-by-case basis for LVAD patients undergoing TKA and THA procedures with appropriate preoperative planning and perioperative management. Neuraxial anesthetics may be performed safely with close coordinated care in these patients.



Clinical considerations preoperatively:

- Assessment of clinical stability including cardiac function and patient’s functional status
- Perioperative management of anticoagulants
 - Day of surgery coagulation studies
 - LVAD model may affect risk of thrombosis

Clinical considerations intraoperatively:

- Maintenance of preload to maintain LVAD pressure
- Avoidance of hemodynamic fluctuations associated with anesthetic induction or maintenance of general anesthesia
 - Close hemodynamic monitoring
 - Judicious use of vasopressors
- Use of shorter acting local anesthetics in neuraxial techniques
- Accessibility of ECMO and perfusionist services

References:

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