

Continuous Spinal Anesthesia as Primary Anesthetic for Femur Fixation with Intramedullary Rod Insertion in a Patient with an Intra-Aortic Balloon Pump: A Case Report

Mary Carter Mullen, MD, Nicholas Wegener, MD, Connor Singrey, MD, Neil Borad, MD

INTRODUCTION

- 72-year-old man with multiple severe comorbidities including ischemic cardiomyopathy (EF <10%), CAD with drug-eluting stents, low-flow-low-gradient moderate aortic stenosis (AVA Index 0.74 cm²/m², mean gradient 12 mmHg), T2DM, CKD, and atrial fibrillation on anticoagulation. Patient presented after a mechanical fall and was found to have an intertrochanteric femur fracture requiring repair.
- Admitted to the cardiac ICU prior to orthopedic surgery, where an intra-aortic balloon pump (IABP) was placed for mechanical support.

SPECIAL CONSIDERATIONS

- Positioning
 - Careful lateral decubitus positioning required for neuraxial placement due to femur fracture and IABP with limb immobilizer in place
- Anticoagulation
 - Apixaban and clopidogrel held > 7 days
 - Heparin infusion held > 10 hours
 - Normalized aPTT and platelet count confirmed prior to neuraxial blockade

REFERENCES:

1. Messina A, Frassanito L, Colombo D, et al. Hemodynamic changes associated with spinal and general anesthesia for hip fracture surgery in severe ASA III elderly population: a pilot trial. *Minerva Anesthesiol.* 2013;79(9):1021-1029.

2. Thompson, A, Fleischmann, K, Smilowitz, N. et al. 2024 AHA/ACC/ACS/ASNC/HRS/SCA/SCCT/SCMR/SVM Guideline for Perioperative Cardiovascular Management for Noncardiac Surgery: A Report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines. *JACC.* 2024 Nov, 84 (19) 1869–1969. <https://doi.org/10.1016/j.jacc.2024.06.013>

3. Minville V, Fourcade O, Grousset D, et al. Spinal anesthesia using single injection small-dose bupivacaine versus continuous catheter injection techniques for surgical repair of hip fracture in elderly patients. *Anesth Analg.* 2006;102(5):1559-1563. doi:10.1213/01.ane.0000218421.18723.cf

4. Saber R, El Metainy S. Continuous spinal anesthesia versus single smalldose bupivacaine – Fentanyl spinal anesthesia in high risk elderly patients: A randomized controlled trial *Egypt J Anaesth.* 2015;31:233–8

5. Zhang, Hongye M.D.; Wu, Jinyu M.D.; Ni, Dongmei M.D.; Sun, Yanxia M.D.; Ren, Yi M.D.; Miao, Yongsheng M.D.; Jia, Na M.D.; Zhang, Yuelun Ph.D.; Qu, Zongyang M.D.; Wang, Dong-Xin M.D.; Hua, Zhen M.D.. Association of Peripheral Nerve Block with Postoperative Myocardial Injury in High-risk Cardiac Older Adults Undergoing Hip Fracture Surgery: A Two-center Retrospective Cohort Study. *Anesthesiology* (J);10.1097/ALN.0000000000005921, February 25, 2026. | DOI: 10.1097/ALN.0000000000005921

Case Presentation:



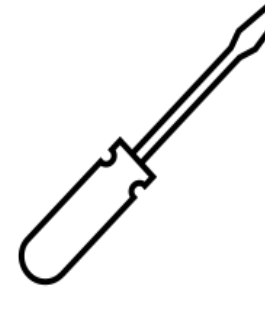
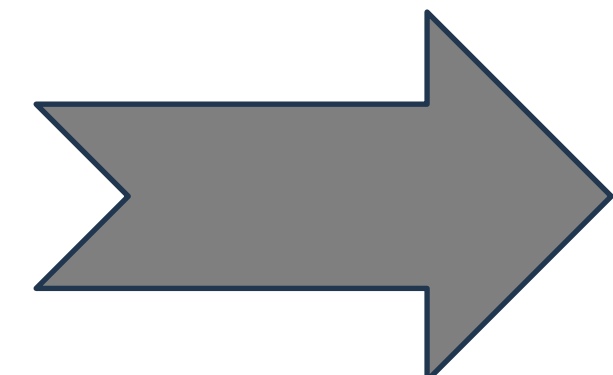
PMH

- CAD with stents
- Atrial fibrillation
- T2DM
- CKD



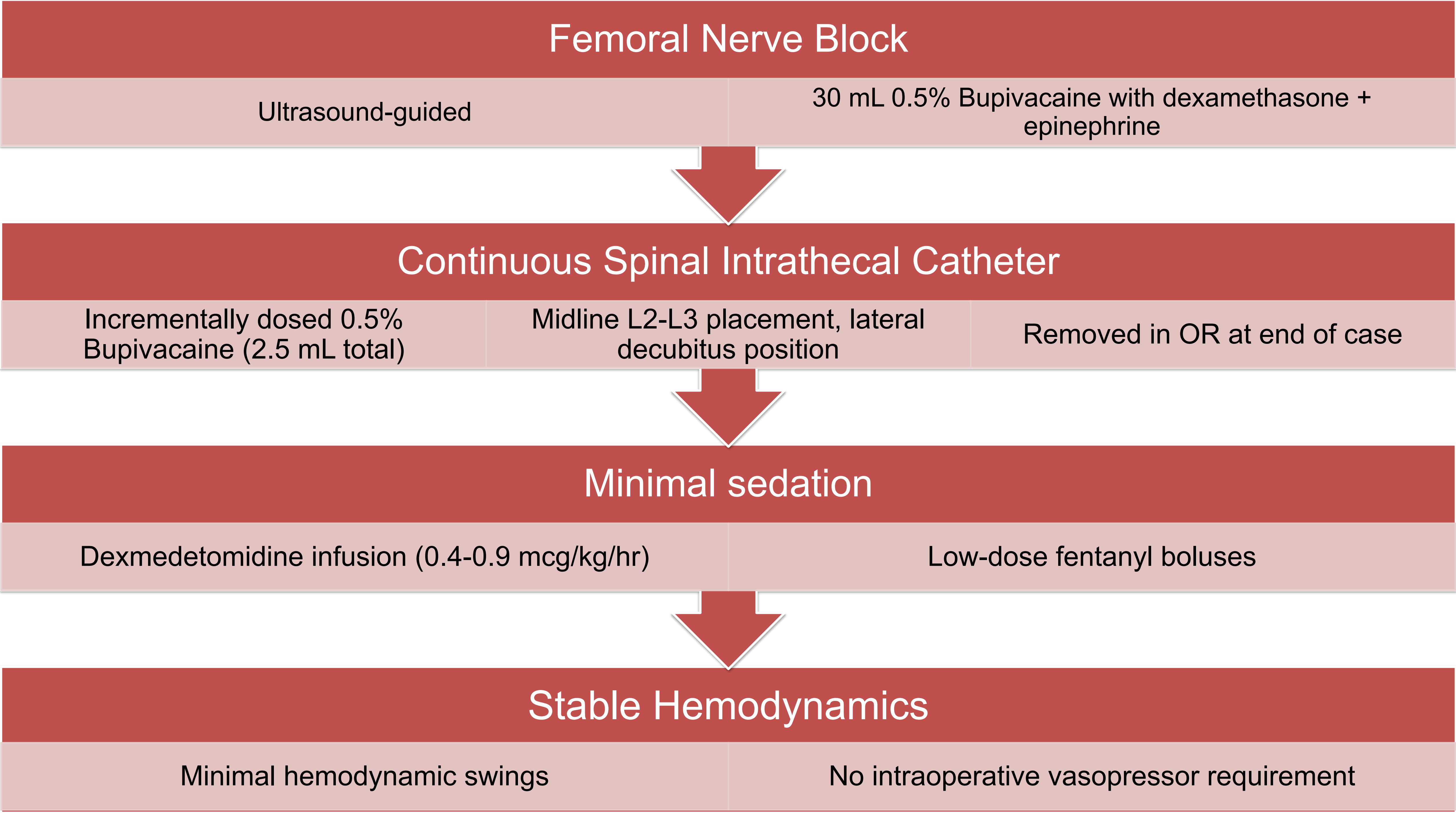
Mechanical Support

- HFrEF, EF 9%
- Aortic Stenosis
- IABP in situ



Surgical Intervention

- Intertrochanteric femur fracture
- Repair with intramedullary rod



DISCUSSION

- Neuraxial anesthesia was selected to lessen intraoperative hemodynamic instability compared to general anesthesia^{1,2}.
- Intrathecal catheter was preferred vs. single injection spinal for incremental dosing and reduced hypotension risk^{3,4}.
- Peripheral nerve blockade was performed for postoperative analgesia, also shown to reduce postoperative myocardial injury risk⁵.
- Combined technique of neuraxial with peripheral nerve blockade optimized both surgical anesthesia and hemodynamic stability

KEY TAKEAWAYS

- Continuous spinal anesthesia allows **titrated neuraxial blockade**, reducing risk of hemodynamic swings
- Continuous spinal anesthesia** may be a valuable option for high-risk hip fracture patients **requiring mechanical circulatory support**

