

A Hip Outlook on Neuraxial: A Case Report Examining a Total Hip Arthroplasty Performed Under Continuous Spinal Anesthesia

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Case Presentation

87 yo M had a fall from standing due to syncope resulting in a periprosthetic left femur fracture
PMH: CAD (s/p 3-vessel CABG) Aortic stenosis 4.9 cm ascending aortic aneurysm
 HFpEF (55-60%) • Mean gradient 19 mmHg CKD
 • Aortic valve area 1.2 cm² HTN

Hospital course prior to DOS:

Day 0	• Admitted to hospital
Day 1	• Surgery cancelled • Hypotension and NSTEMI • Cardiology consulted • Managed with blood and fluid administration
Day 7	• Recent apixaban use • High risk of epidural hematoma with neuraxial • Proceeded with surgery under general anesthesia • Aborted for intolerance of minimal anesthesia
Day 12	• LHC with patent grafts • Mean gradient across aortic valve 21 mmHg • No indication for balloon aortic valvuloplasty • Not a candidate for transcatheter aortic valve replacement • Cleared for surgery from cardiac standpoint

Perioperative Risks & Considerations

Scoring System	Components	Patient's Score	Predictive values
Nottingham Hip Fracture Score (NHFS)	• Age (66-85 and ≥86 yo) • Sex (Male); # of comorbidities • Admission MMSE (≤6/10) • Admission Hgb (≤10g/dL) • Living institution • Malignancy	8	24% 30-day mortality after hip surgery
Clinical Frailty Scale (CFS)	• Ordinal scoring system • 1 (least) to 9 (most frail) • Mobility • Independence • Cognition • Symptom burden 2 weeks prior to hip fracture	4 – Living with very mild frailty (Vulnerable)	77% probability of survival at 30 months
Revised Cardiac Risk Index (RCRI)	• Ischemic heart disease • Congestive heart failure • Cerebrovascular disease • Preoperative insulin therapy • Preoperative creatinine > 2mg/dL • High risk surgery (intraperitoneal, intrathoracic, suprainguinal vascular)	2	10.1% risk of major cardiac events

Anesthetic Options

Technique	Pros	Cons
General Anesthesia	• Akinesis • Amnestic effect • Secured airway	• Hemodynamic perturbations • Positive pressure ventilation
Neuraxial anesthesia	• No need for airway instrumentation • Shorter PACU stay • Improved pain control	• Hemodynamic compromise • Possible epidural hematoma formation • Potential need to convert to general anesthesia • Unsecured airway
Regional anesthesia	• Prolonged analgesic effect • Motor sparing blocks • ↓ chance of hemodynamic compromise • No need for airway instrumentation • Shorter PACU stay	• Unpredictable local anesthesia spread • Potential need to convert to general anesthesia • Possible injury from needle placement • Possible hematoma formation
No anesthesia due to no surgery	• Avoids risks of undergoing anesthesia and surgery	• Morbidity and mortality related to pathology

Discussion

- ↑ **mortality in nonoperative hip fracture patients** compared to those in operative cohort
 - 17.1% vs 4.4% in-hospital, 31.4% vs 10.2% at 30 days, and 48.5% vs 19.9% at 1 year^{1,2}
- Ideal modality of anesthesia for geriatric hip fracture surgery? Unclear
- **Benefits of neuraxial** compared to general anesthesia
 - ↓ blood loss, ↓ incidence of thromboembolic disease, ↓ effects on pulmonary function^{3,4}
 - Improvement of postoperative analgesia
 - **May only be seen in critically ill patients**⁵
- Continuous spinal anesthesia was the anesthetic of choice because:
 - Greater hemodynamic stability
 - Rapid and more reliable onset
 - Better control of anesthetic level
 - Without sympathetic activation of intubation
 - Without respiratory effects of mechanical ventilation
 - Allows for titration of small amounts of local anesthetic
 - Minimizes changes expected with single shot techniques

Summary Statement

- Total hip arthroplasty is preferred management for hip fractures
 - Risks of cardiopulmonary events and death
- Decision to proceed must be balanced with surgical and anesthetic risks and patient's goals of care
- Poor outcomes can still occur postoperatively despite careful perioperative planning and successful surgery

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