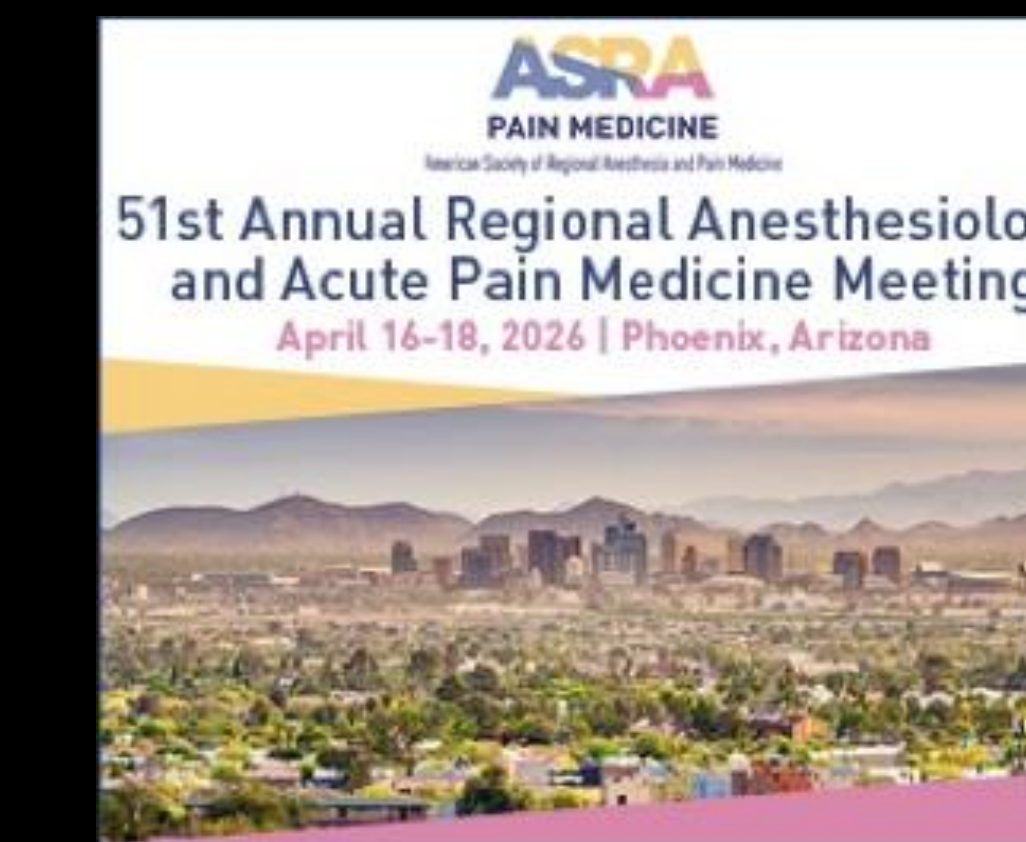


Elective Total Knee Arthroplasty in Severe Thromboembolic Pulmonary Hypertension: A Case of Multidisciplinary Risk Assessment

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Background

- Epidural anesthesia may benefit patients with severe pulmonary hypertension (PH)
- Gradual titration minimizes abrupt hemodynamic shifts that may precipitate right ventricular failure. [1]
- Permit more incremental sympathetic blockade compared to single shot spinal or GA. [2]
- Preserves RV perfusion, reducing risk of cardiovascular collapse in high-risk patients undergoing surgery. [1]

Methods

- Literature review for the safest anesthetic in patients with severe PH, including: GA, regional, or neuraxial.
- The patient consented to having this case presented, deidentified, in this report.
- A thorough review of their medical record was performed.
- In accordance with the Colorado Multiple IRB policies, this individual case report does not require review given identifiable patient information is not reported.

Key Points

- Regional and neuraxial are both reasonable in PH
- Cardiology Clearance Letter:
 - "I see no reason that the patient cannot have a knee replacement from a cardiac standpoint."
- Pulmonology Clearance Letter:
 - "Due to severe PH, the patient is not a candidate for general anesthesia and would require a regional anesthetic."
- This case highlights
 - Thoughtful risk assessment
 - Transparent communication
 - Alignment with patient goals is paramount when disease severity increases perioperative risk
 - Anesthetic feasibility does not correspond with safety or good outcomes.

Case Presentation

- 79 M with chronic thromboembolic pulmonary hypertension (CTEPH) presenting for Elective total knee arthroplasty
- Echo:
 - Systolic PA pressures of 96 mmHg
 - Severe RV enlargement
 - Severe pulmonic regurgitation.
- Denied surgery at several other locations in Colorado.
- Anesthesia Plan
 - Adductor Canal block for analgesia
 - Pre-induction arterial line
 - Lumbar epidural as primary anesthetic
- After extensive risk benefit discussion with anesthesia and surgery, the patient elected to **permanently forego** surgery in favor on nonoperative management.
- Despite multidisciplinary planning and optimized hemodynamic goals, substantial morbidity and mortality risk remained.

Resources

1. Rajagopal S, Ruetzler K, Ghadimi K, et al. Evaluation and Management of Pulmonary Hypertension in Noncardiac Surgery: A Scientific Statement From the American Heart Association. *Circulation*. 2023;147(17):1317-1343. doi:10.1161/CIR.0000000000001136
2. McLaughlin VV, Shah SJ, Souza R, Humbert M. Management of pulmonary arterial hypertension. *J Am Coll Cardiol*. 2015;65(18):1976-1997. doi:10.1016/j.jacc.2015.03.540