

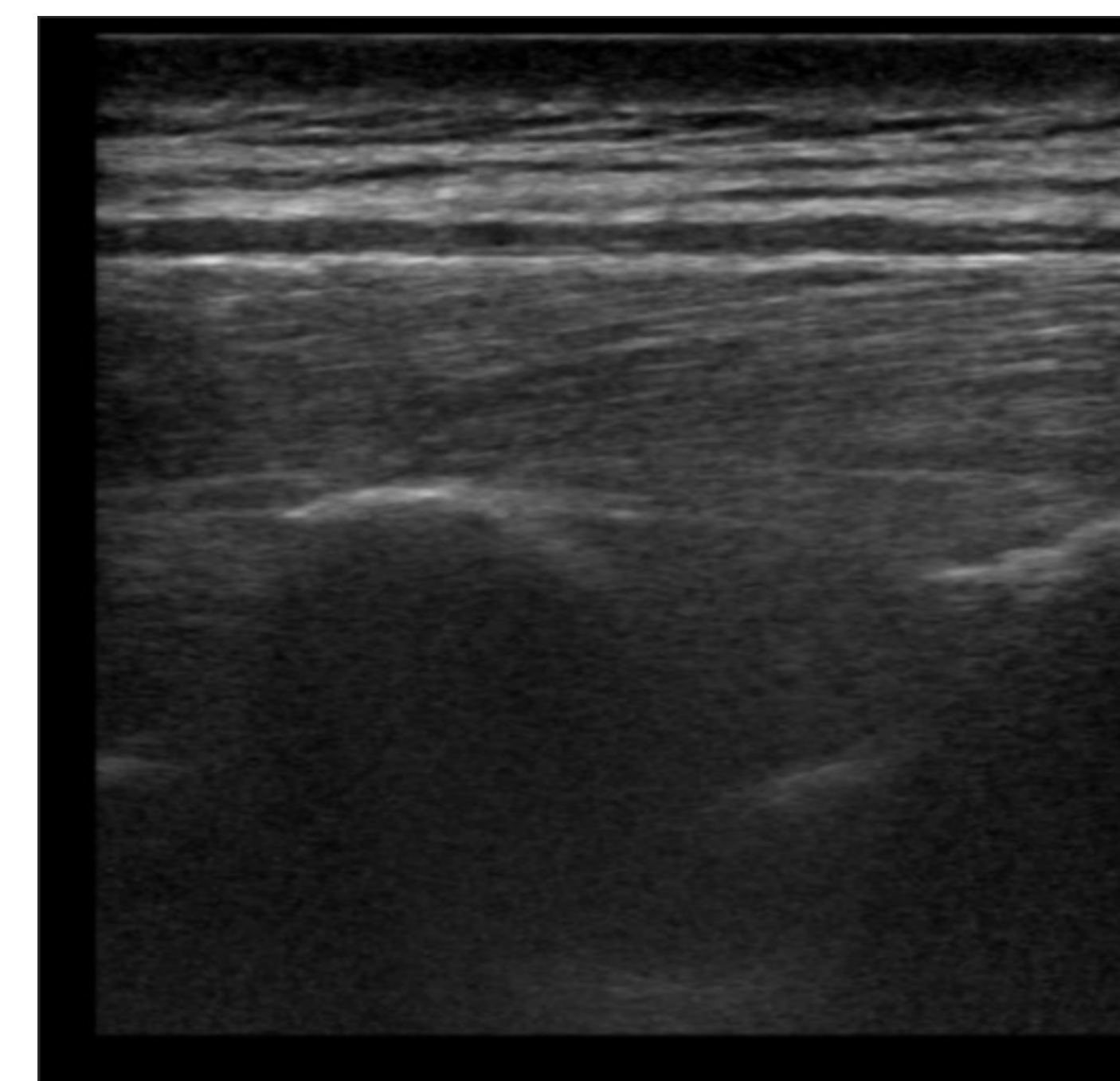
Surgical Paravertebral Blocks Combined with Low Dose Spinal to Avoid General Anesthesia in a Patient with Acute on Chronic Respiratory Failure: A Case Report

Aidan Hoie, MD; Jacob Loyd, MD; Andrew Hennigan, MD; Olivia Romano, MD
University of Colorado



Introduction

- Paravertebral block is the technique of injecting local anesthetic lateral to the vertebral body adjacent to the site where the spinal nerves exit the intervertebral foramina¹
- This space contains dorsal and ventral rami and the sympathetic chain- infiltration results in unilateral sensory, motor, and sympathetic blockade in contiguous dermatomes above and below the site of injection²
- Thoracic paravertebral blocks are commonly performed to provide analgesia for surgeries involving the breast and axilla and have also been used to relieve acute chest wall pain from rib fractures, herpes zoster, and postthoracotomy pain²
- There has been increased interest in the use of paravertebral blocks as a primary anesthetic
- We report a patient with tenuous respiratory status who received paravertebral anesthesia combined with a low dose spinal for axillary and chest skin grafts



Case Report

- 71-year-old 60-kilogram female with past medical history significant for chronic obstructive pulmonary disease (COPD) on 3L of oxygen at home, hypertension, anemia, and type 2 diabetes
- Admitted to the burn intensive care unit (BICU) after a 9% total body surface area full-thickness burn to the chest and neck
- Previously underwent multiple excision and debridement procedures under general anesthesia without complication
- Patient developed an increased oxygen requirement up to 50L/60% high-flow nasal cannula secondary to pulmonary edema and hospital-acquired pneumonia
- Scheduled for a final skin graft procedure, Acute Pain Service consulted for assistance with an anesthetic plan to avoid intubation
- Surgical Site: right axilla and flank with plan to harvest the skin graft from the right thigh
- Plan: surgical paravertebral blocks to cover burn sites and low dose spinal to cover site of skin graft
- Goal: minimal sedation to avoid respiratory depression
- Total of 15 mL of 0.5% bupivacaine and 10 mL 2% lidocaine was used for ultrasound-guided paravertebral blocks at two levels and 1.3 mL 0.75% hyperbaric bupivacaine was used for the spinal
- Patient received 16 mcg of dexmedetomidine for the blocks and tolerated procedure well
- Transported back to the BICU at the completion of the case without perioperative complications
- One week after the procedure patient's pulmonary status continued to worsen
- Patient elected to pursue comfort measures only, ultimately passing on postoperative day 9.

Discussion

- Much of the literature concerning paravertebral anesthesia has focused on elective breast and inguinal hernia surgery^{2,3}
- Coveney et al.: retrospective study of 145 patients- 85% of breast procedures were successfully completed using paravertebral block while 91% were completed with paravertebral block supplemented with local anesthetic²
- Thavaneswaran et al.: systematic review of peer reviewed literature- failure rate of paravertebral anesthesia was not >13% and patients were more satisfied compared to general anesthesia³
- Other anesthetic options:
 - Neuraxial alone: risk of affecting the accessory respiratory muscles
 - Regional alone: allowable volume of local anesthetic limited by patient weight, risk of inadequate blockade
- Risks of chosen anesthetic plan: block failure necessitating sedation and/or intubation, pneumothorax, local anesthetic systemic toxicity
- Overall, success of this case expands upon previously documented advantages of paravertebral anesthesia in the literature
- Demonstrates that paravertebral blocks with minimal sedation can be an alternative to general anesthesia in a patient with acute on chronic respiratory failure motivated to avoid intubation

References

1. Batra, R. K., Kumar, K., & Agarwal, A. (March 2011). *Paravertebral Block*. *Journal of Anaesthesiology Clinical Pharmacology*. LWW. Accessed at <https://journals.lww.com/joacp/fulltext/2011/27010/Paravertebral>
2. Coveney, E. et al. (1998, April). *Use of Paravertebral Block Anesthesia in the Surgical Management of Breast Cancer*. *Annals of Surgery*. LWW. Accessed at https://journals.lww.com/annalsofsurgery/fulltext/1998/04000/use_of_paravertebral_block_anesthesia_in_the_8.aspx
3. Thavaneswaran, P. (2010, June). *Paravertebral Block for Anesthesia: A Systematic Review*. *Anesthesia & Analgesia*. LWW. Accessed at https://journals.lww.com/anesthesia-analgesia/FullText/2010/06000/Paravertebral_Block_for_Anesthesia_A_Systematic_36.aspx

Materials and Methods

- A literature review was performed investigating the use of paravertebral blocks as a primary anesthetic.
- At the time of surgery, the patient gave verbal consent to write this case report to the attending anesthesiologist and acute pain fellow.
- The patient's chart was thoroughly reviewed, and her course is reported here.
- This case report does not contain any patient identifiable information; therefore, it is exempt from IRB review as per Colorado Multiple Institutional Review Board (COMIRB) policy.