

“Challenging” Thoracic Epidural Abandoned For Bilateral Rectus Sheath Catheters: Time To Elevate Understudy To Leading Role?

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Background and Block Technique

- Thoracic epidural analgesia (TEA) has long been considered the gold standard regional technique for postoperative pain management after midline laparotomy surgery with established superiority over systemic opioid analgesia.
- However, challenges associated with TEA placement include:
 - Technical difficulties in accessing the epidural space
 - Complications such as hypotension and urinary retention
 - ASRA neuraxial anticoagulation guidelines
- Studies suggest rectus sheath catheters (RSCs) offer similar pain relief with fewer side effects. We report three cases from our acute pain service (APS) in which, for different reasons, bilateral RSCs were utilized in place of a thoracic epidural catheter.
- Bilateral RSCs were inserted with sterile technique using ultrasound guidance (**Figure 1**). A 2-inch, 18-gauge Tuohy needle was used to inject 30ml of 0.25% bupivacaine between the rectus anterior muscle and the posterior rectus sheath, and a 20-gauge closed-tip catheter was then advanced and secured. Each set of RSC was connected to an infusion of 0.125% bupivacaine at a rate of 8ml/hour unless otherwise documented.
- *Patients were consented for inclusion in this case series.*

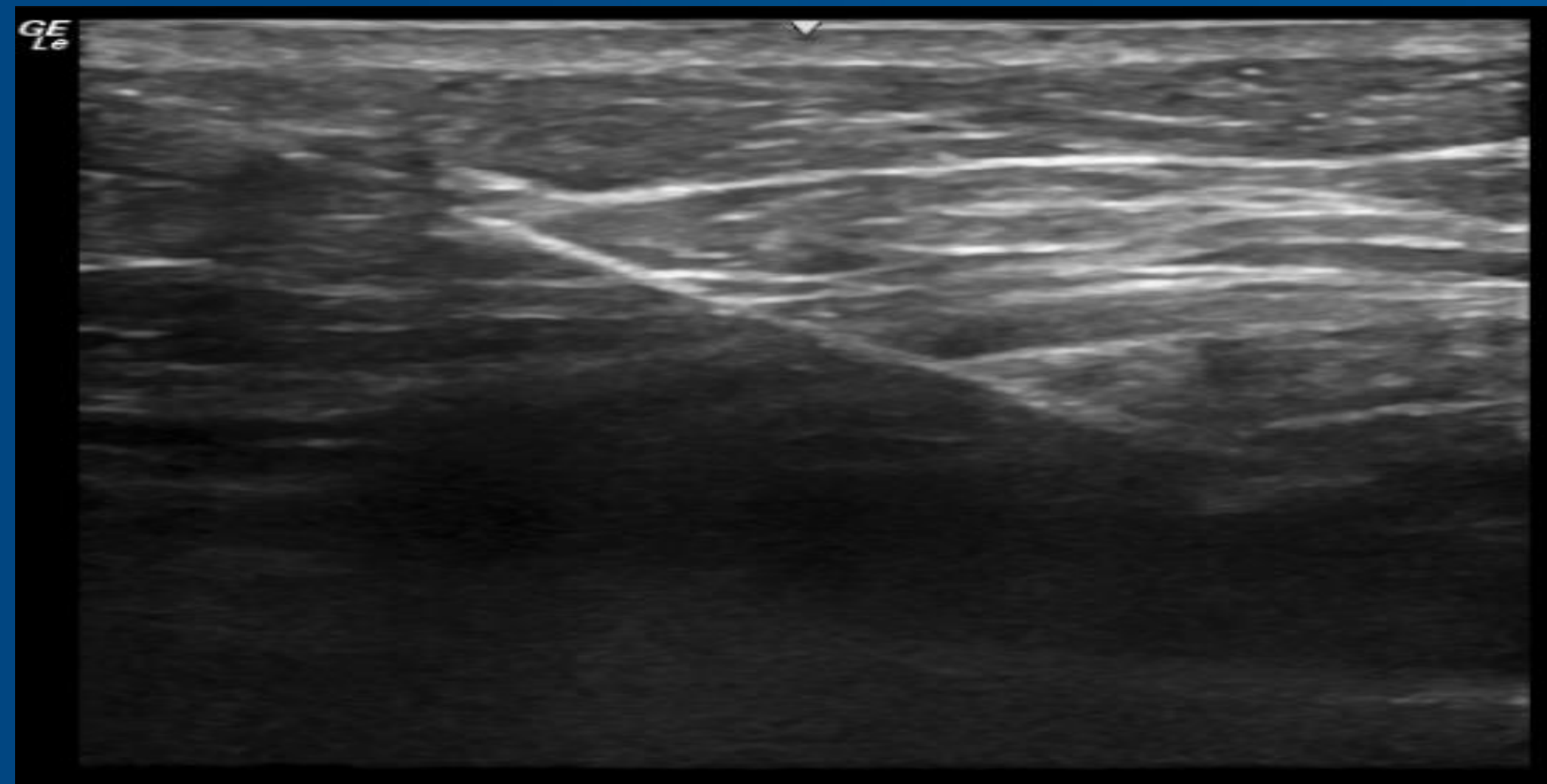


Figure 1. US image of a 2-inch, 18g Tuohy needle, with local anesthetic spreading between the rectus abdominus muscle and the posterior rectus sheath

Case 1

31-year-old patient presenting for retroperitoneal lymph node dissection. TEA was placed preoperatively by APS at T7-8 level but malfunctioned intraoperatively with the anesthesia team noting resistance when attempting to bolus catheter and infusion pump alarming for occlusion. TEA was removed and replaced with bilateral RSCs at the conclusion of surgery. Patient requested no analgesic medication for the first 12 hours post-op and overall received 252 OME in the 72 hours following surgery while endorsing pain relief with daily boluses of 10 cc of 0.25% bupivacaine per each catheter by APS during rounds. Catheters were removed on POD 3.

Case 2

59-year-old patient presenting for an aortobifemoral bypass graft. Preoperative TEA was placed at T9-10. On POD 1, patient reported ongoing abdominal pain. Despite epidural boluses by APS and an increase in infusion rate, the patient continued to report high pain scores with no discernable dermatomal level of sensory analgesia. Over this initial timeframe (through midday POD 1) the patient received 36 OME. APS then replaced TEA with bilateral RSCs, improving analgesia and reducing opioid utilization by half with OME over the first 72 hrs post-op totaling 60. Catheters were removed on POD 4.

Case 3

46-year-old patient presenting for retroperitoneal lymph node dissection. TEA was offered and patient refused—preferring the alternative option of bilateral RSC. Given the extent of incision, APS elected to place bilateral superior and inferior RSC (four catheters) with an infusion rate of 4ml/hour. On POD 1, the superior left-sided catheter become detached and was removed, after which patient reported pain in that quadrant of their abdomen. The infusion rate of the remaining left-sided catheter was subsequently increased. Over the ensuing 24 hours the patient was increasingly unstable with episodes of hypotension, tachycardia, and tachypnea; ultimately on POD 3 he was admitted to the ICU with concern for sepsis, intubated for respiratory failure, and RSCs were removed. He was discharged from the ICU 11 days later.

Discussion

- Rectus sheath block is an alternative method for providing analgesia to the medial anterior abdominal wall, and studies comparing the effectiveness of rectus sheath catheters to thoracic epidural analgesia suggest they provide similar analgesia with fewer side effects
- Cases 1 and 2 highlight the use of RSC as a rescue alternative for malfunctioning (Case 1) or otherwise failed (Case 2) TEA.
- Case 3 displays a progressively unstable patient in whom TEA—had it been present—could very plausibly have worsened the clinical outcome due to worsening hemodynamic instability and increased infection risk given concerns for underlying sepsis.
- Our case series corroborates evidence that RSCs are a reliable alternative to TEA for acute pain management of major midline laparotomies.
- APS teams may increasingly consider RSC to be a preferred technique over TEA, as RSCs are relatively easy to place and do not carry the same risks of hemodynamic instability, neurologic complication, or catastrophic CNS sequelae from neuraxial infection or bleeding.

References

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