

Erector Spinae Plane Block Catheter for Respiratory Rescue Following Open Nephrectomy

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Introduction

Erector spinae plane block (ESP) block provides segmental analgesia with cranial-caudal spread of local anesthetic into the paravertebral and epidural spaces.

- Low thoracic ESP blocks have the potential to provide both somatic and visceral analgesia for abdominal surgery.
- For nephrectomy surgery, several studies have demonstrated the benefit of utilizing ESP blocks for perioperative pain management.

Methods

Linear ultrasound probe was placed in the sagittal orientation lateral to the spinous process at the mid-thoracic level. Once the transverse processes (TP) was identified at T9 with the overlying erector spinae muscle group, a 20G needle was advanced in-plane to contact the corner of the TP (**Figure 1**). Local anesthetic (20 ml of 0.5% Ropivacaine) was injected followed by advancement of the catheter along the fascial plane.

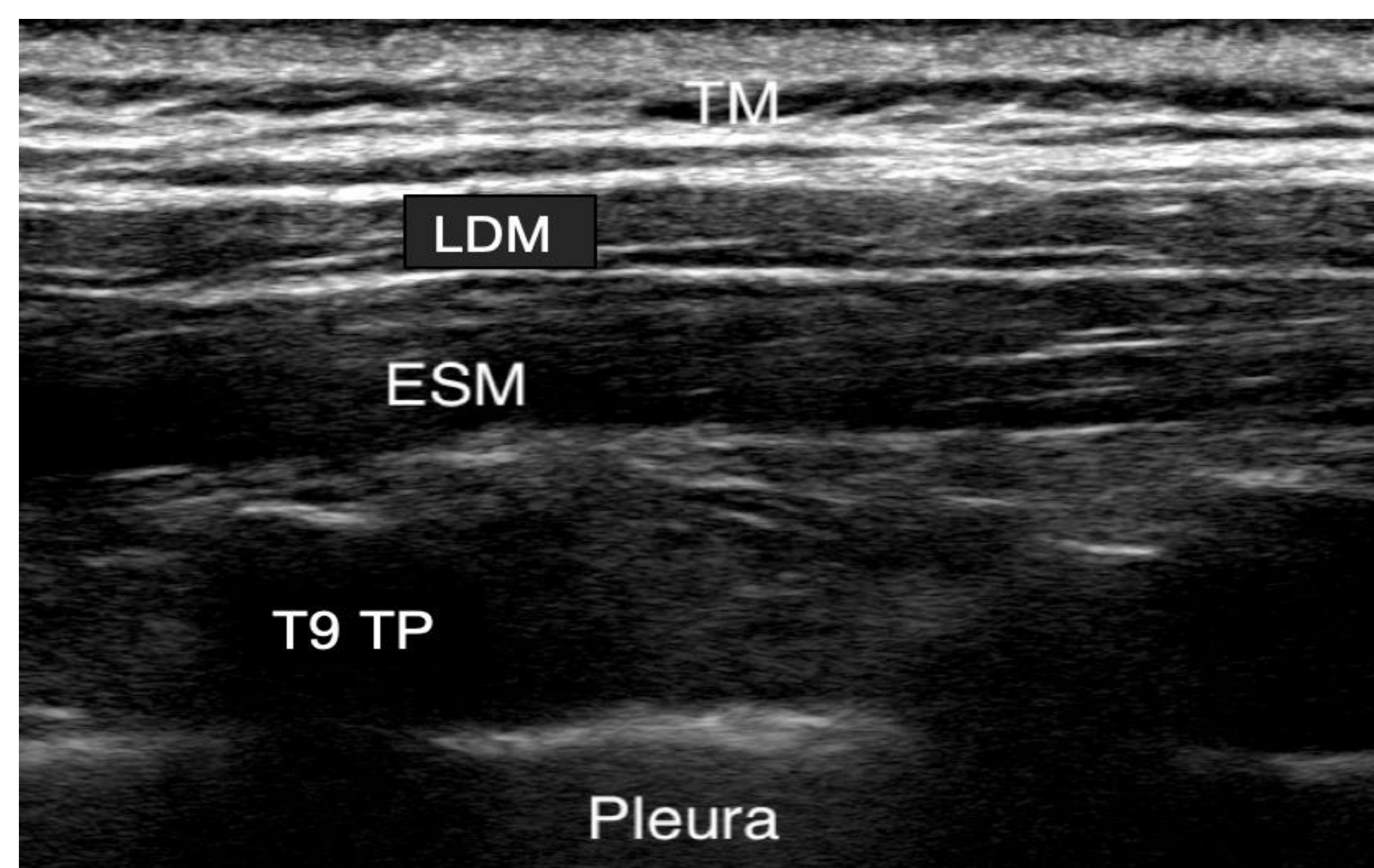


Figure 1: T9 Erector Spinae Plane (ESP) Block Ultrasound Anatomy. TM: Trapezius muscle; LDM: Latissimus dorsi muscle; ESM: Erector spinae muscle; T9 TP: Ninth thoracic vertebrae transverse process

Case Report

43 year-old male with obesity, HTN, DM, and Von Hippel-Lindau disease s/p multiple abdominal surgeries presented for an open partial nephrectomy to remove additional renal masses.

- Postop, he endorsed severe abdominal pain, requiring escalating doses of opioids without relief.
- Liposomal bupivacaine infiltrated by the surgical team intraop, so additional local anesthetic techniques were contraindicated.
- POD 3, patient decompensated with persistent hypoxia (atelectasis and pleural effusions) requiring HFNC. This further limited the utility of potentially sedating opioids, thus complicating pain management efforts.
- **POD 4, right T9 ESP catheter was placed with intermittent bolus infusion schedule (0.2% Ropivacaine, 15 mL every 3 hours)**
- Significant improvement in pain control over the course of 24 hours, with expedited weaning from respiratory support.

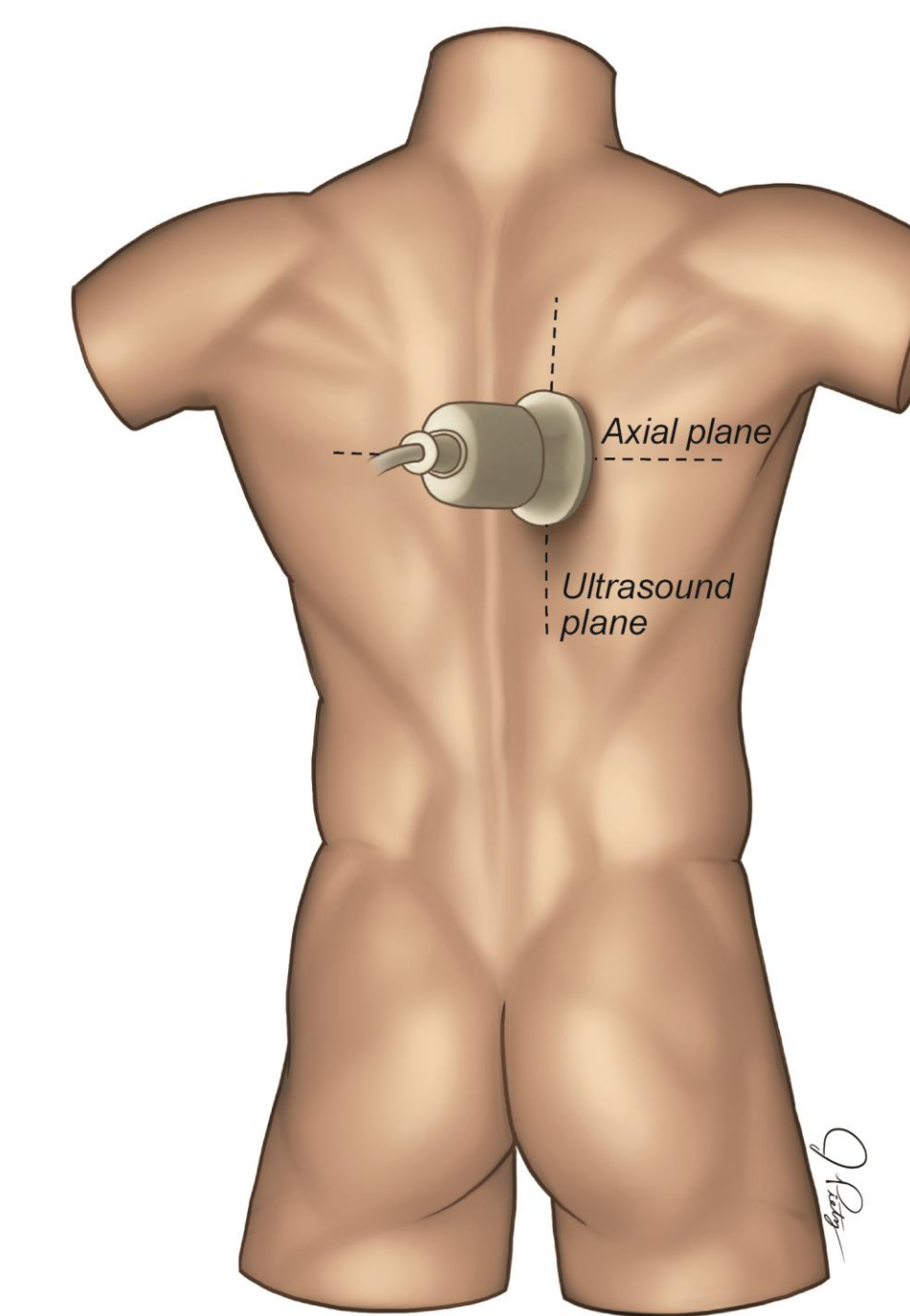
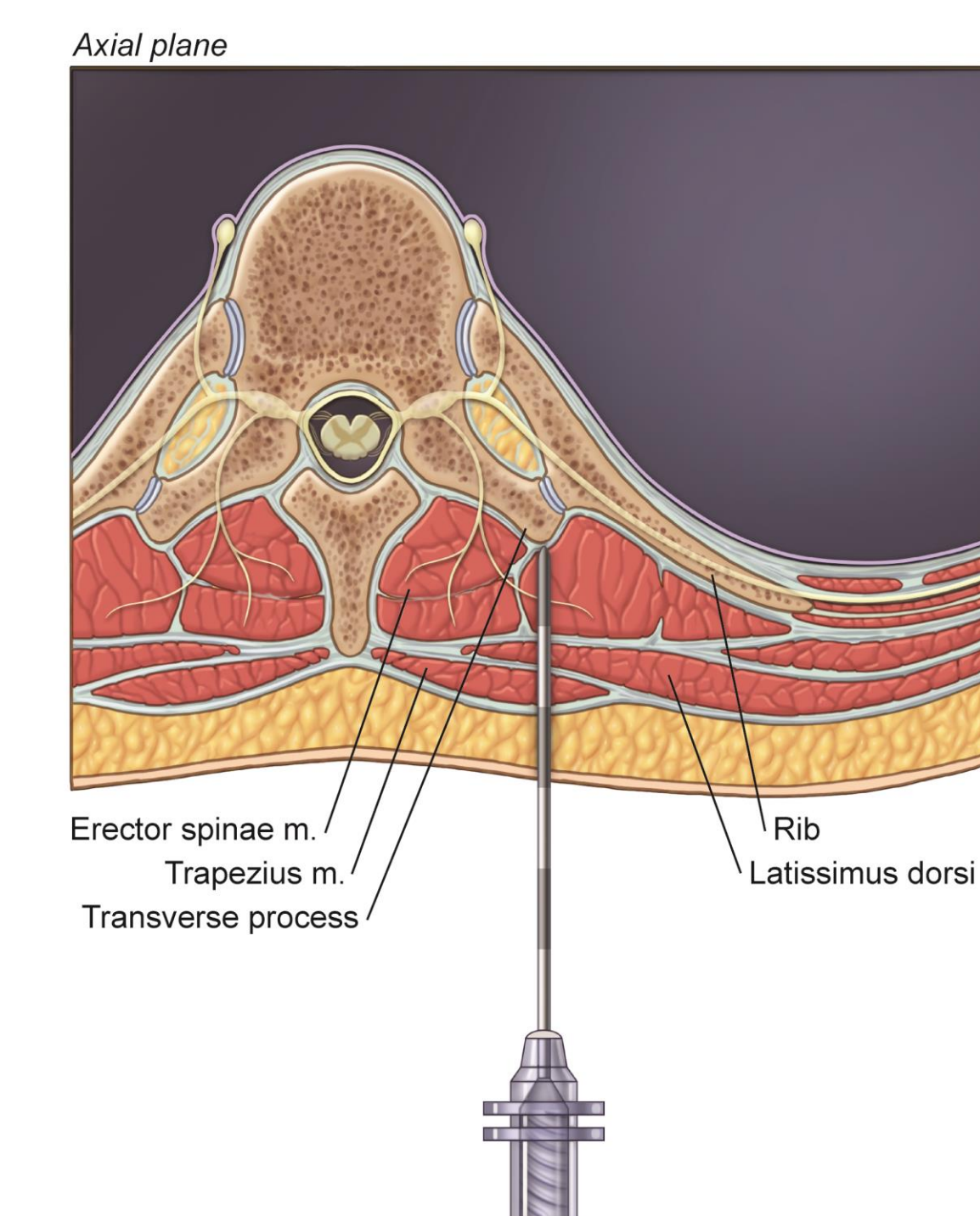
The ESP catheter remained in place for 48 hours with notable progression in the patient's recovery and respiratory status. Pain scores were consistently low, and he required minimal opioids for breakthrough pain over the next three days.

On POD 6, the catheter was removed after an additional bolus, and the patient was discharged the following day without complications.

Discussion

- The ESP block can provide significant analgesia, reduce opioid consumption, and prevent pain-related complications in patients after major abdominal surgery.
- Evidence demonstrating the benefit of ESP blocks for nephrectomy surgery, providing significant analgesic contribution.
- ***In our patient, the ESP block was beneficial in reducing opioid requirements, improving mobilization and respiratory effort, and preventing potential escalation of respiratory support.***
- Catheter placement allowed for extended analgesic impact, thus providing prolonged benefit in reversing our patient's worsening clinical progression and preventing further complications.

Abstract & References



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