

Ultrasound-guided paravertebral block: A valuable armamentarium for post-operative pain management

Sir,

There is a need to formulate an alternative opioid-sparing strategy to epidural analgesia (EA) following major thoracoabdominal surgeries.^[1] With the use of ultrasound (USG), regional anaesthesia techniques have become safer and with fewer complication rates.^[2] The pain management of two major cases, with unilateral incisions, and in whom EA was not feasible, is discussed.

A 37-year-old male, a known case of von Hippel–Lindau syndrome, was posted for partial nephrectomy for left renal cell carcinoma. Magnetic resonance imaging of spine revealed multiple haemangiomas. EA was not attempted in view of risk of bleeding and intravascular placement.^[3] The patient was administered general anaesthesia, and at the end of an uneventful surgery, the left paravertebral space at T₈₋₉ level was located using 16-gauge Tuohy needle under USG guidance. A sterile USG probe-38x (13–6 MHz) linear array transducer (M-Turbo USG system; Sonosite, Bothell, WA, USA) was used. Colour Doppler mode was used to avoid any vascular puncture, and the epidural catheter was threaded in the paravertebral space for 2 cm after confirming needle placement on USG. Post-operative pain was managed with bolus of 8 mL of 0.1% bupivacaine, followed by continuous infusion of 0.1% bupivacaine at 8 mL/h through the epidural catheter which was removed on post-operative day 4. Paracetamol 1 g 8 hourly was continued as coanalgesic medication, and the patient did not need any rescue opioid analgesics.

A 54-year-old male patient, with no other medical illness, was posted for video-assisted thoracoscopic removal of the right lower lobe for carcinoma of the lung. On pre-operative epidural catheter placement, the patient experienced sharp-shooting nerve pain along his chest. He refused any further awake needling, and the procedure was abandoned. At the end of surgery, USG-aided paravertebral catheter was placed at T₇₋₈ level. After negative test dose, a bolus of 8 mL of 0.25% bupivacaine followed by a continuous infusion

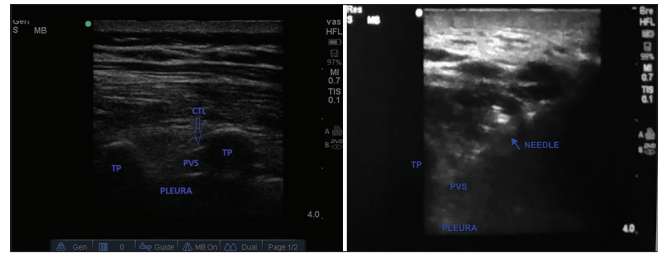


Figure 1: Image on left shows sonoanatomy of paravertebral space: TP – Transverse process; CTL - Costotransverse ligament; PVS – Paravertebral space. Image on the right shows the Tuohy needle tip in the paravertebral space

of 0.2% bupivacaine at 6 mL/h was started along with tablet paracetamol 1 g TDS for 3 days. Post-operative pain relief was satisfactory, and catheter was removed on post-operative day 4.

Thoracotomy and upper abdominal incision pain is one of the most intense post-operative pain experiences. Analgesia with paravertebral blocks is comparable to that obtained with EA with fewer side effects such as hypotension and urinary retention.^[4] Various techniques of insertion of paravertebral catheters have been described.^[4] We used the classical ‘in-plane’ technique with the patient in lateral position.^[5] The USG probe was held parallel to the spine and appropriate paravertebral space viewed [Figure 1]. A Tuohy needle (hyperechoic on USG) was used and introduced using ‘in-plane’ approach to ensure visualisation of entire needle length. On reaching the paravertebral space - beneath the costotransverse ligament, local anaesthetic (LA) was deposited, and the epidural catheter was threaded through the needle. Continuous LA leads to somatic block in 4–6 dermatomes^[4,6] and hence the needle placement should be at same dermatome as the surgical incision to ensure good pain relief. For continuous LA infusions, a rate of 0.1 mL/kg/h is recommended,^[4] and the extent of block should be checked using ice test. The concentration and volume of LA can be appropriately changed; ensuring that maximum permissible dose of LA is not exceeded.

The cases described are representative cases and such patients are often offered opioid-based pain management. USG helped in avoiding vascular complications in the first case and safely placing catheter under anaesthesia in the second case.^[4] Expertise in USG-guided blocks is essential to ensure success of such procedures.

In conclusion, USG-guided paravertebral block is a valuable armamentarium for post-operative pain

management and must be considered following major thoracoabdominal surgeries with unilateral incisions.

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Conflicts of interest

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