

IPSILATERAL ARM PARESTHESIA AND WEAKNESS AFTER SINGLE SHOT PARAVERTEBRAL BLOCK

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Introduction

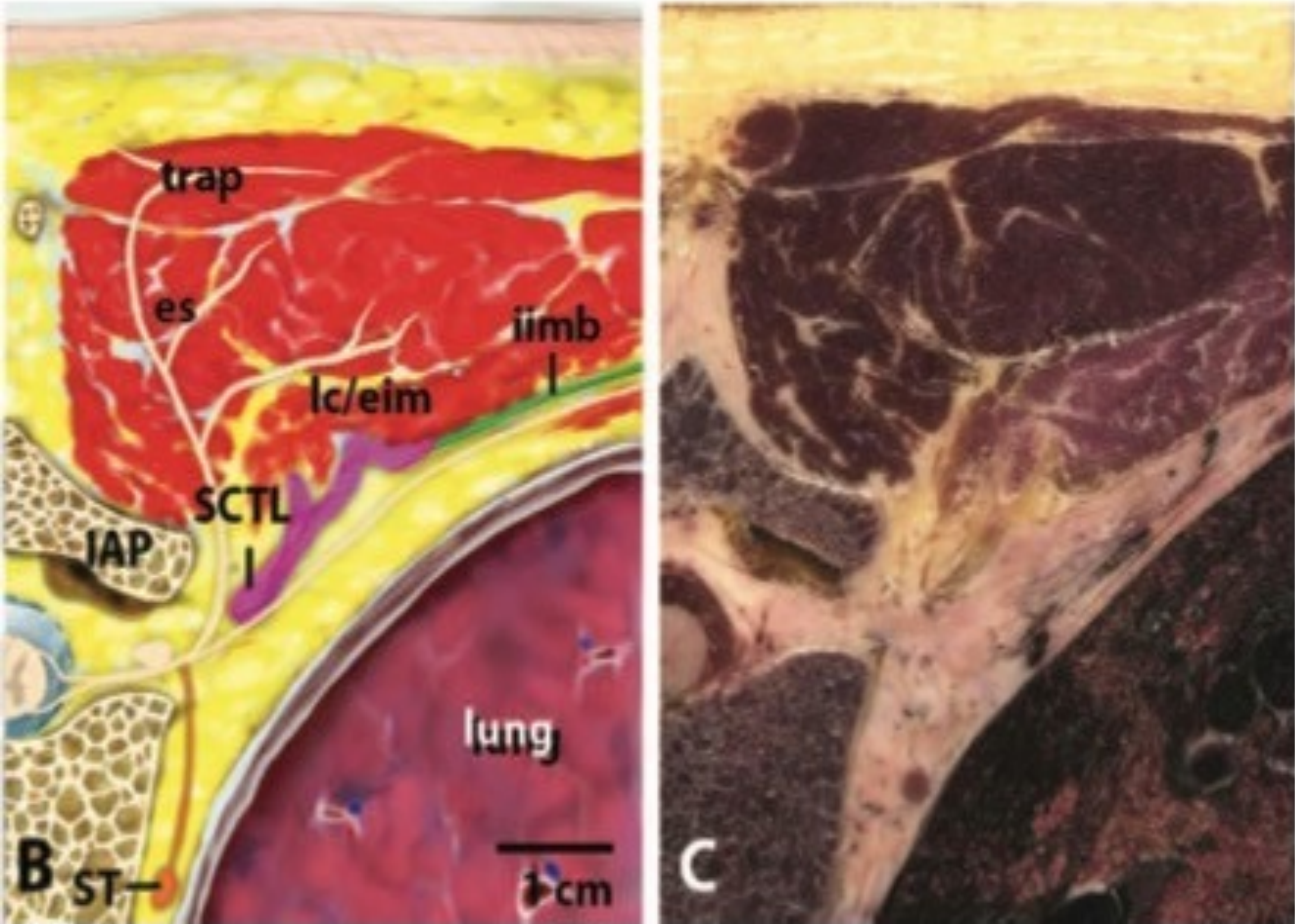
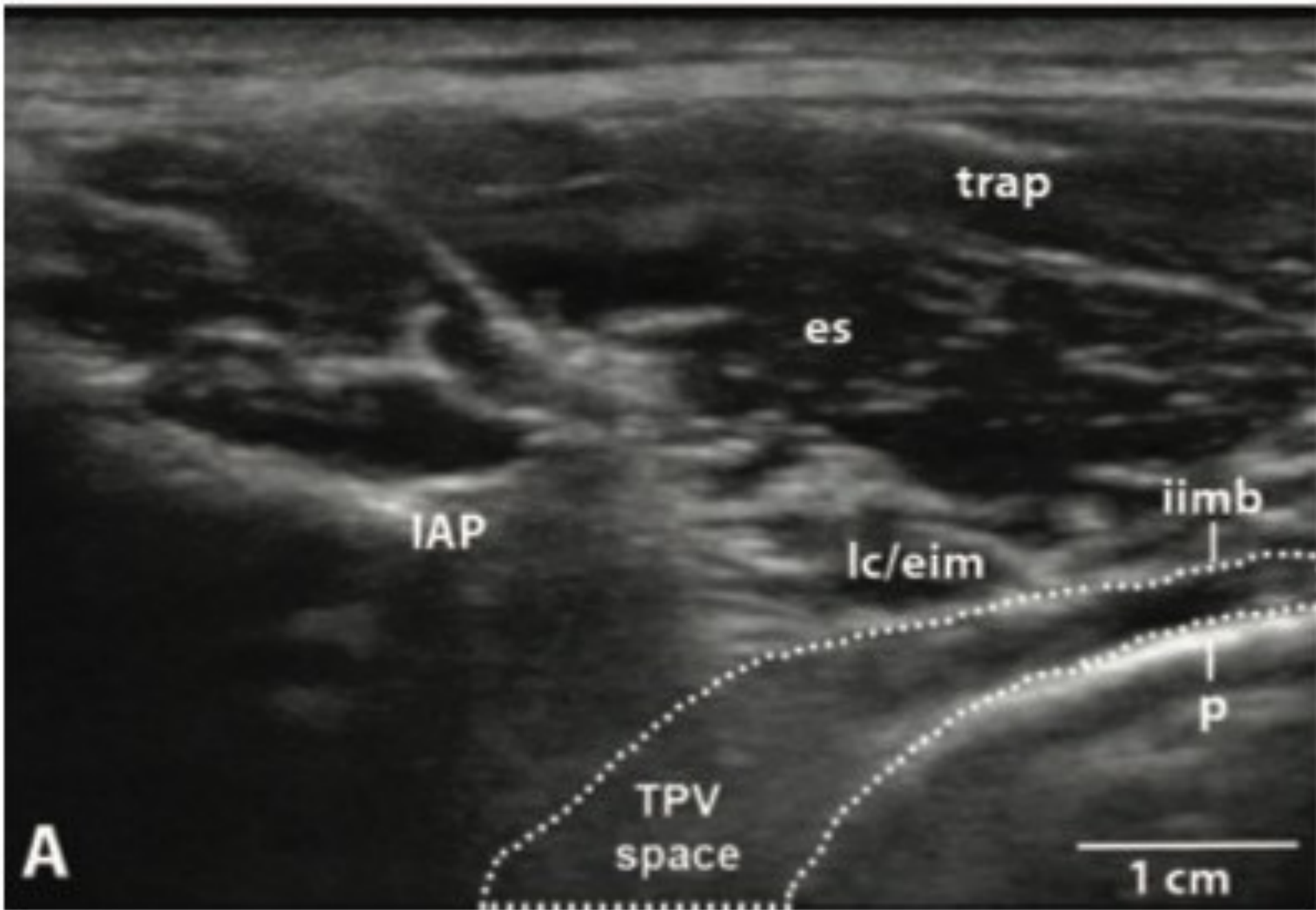
- **Thoracic paravertebral block (TPVB)** is the technique of injecting local anesthetic adjacent to the thoracic vertebra close to where the spinal nerves emerge.
- This results in ipsilateral **somatic and sympathetic** nerve blockade in multiple contiguous thoracic dermatomes above and below the site of injection.
- It is effective in treating **acute and chronic pain** in the chest and abdomen.
- The factors responsible for the **spreading pattern** of a single paravertebral injection are still uncertain.

Case presentation

- A44 years old patient was presenting for left mastectomy.
- A single shot left paravertebral nerve block was offered for post-operative pain.
- In a sitting position and under ultrasound guidance, left paravertebral space was identified at the T3-T4 level and 20 mL of 0.5% Bupivacaine was injected using 100mm, 20G, insulated bevel tip needle. Aspiration was negative for heme and the injection was given incrementally.
- Local anesthetic was observed spreading within the paravertebral space under ultrasound.
- Intra-operatively, arms were padded and adducted less than 90 degrees.
- In PACU, patient experienced diffuse left arm **numbness and mild weakness** that could not be explained by intraoperative positioning or surgery.
- Sensation to **pin-prick and cold** was decreased over the left anterior chest wall that extended distally to anterior and posterior aspects of the arm, forearm and hand.
- Patient reported a pain score of 4/10 at the left surgical incision site.
- Symptoms continued over the next 18 hours.
- Both numbness and weakness of the upper extremity wore off as pain levels increased gradually.

Discussion

- Complications after paravertebral (thoracic and lumbar) blocks included vascular puncture, 3.8%; hypotension, 4.6%; pleural puncture, 1.1%; and pneumothorax, 0.5%.
- No reports to date of temporary ipsilateral upper extremity weakness/paresthesia



Discussion

- Our clinical findings suggest the spread of local anesthetic cephalad to cervical area that wore off within the expected time frame.
- The **cranial extension** of the TPVS is still not defined, but radiologic spread of contrast medium has been observed into the cervical region after thoracic paravertebral injection.
- The **concentration** of local anesthetic has not been found to be implicated in affecting the spread.

Conclusion

- Thoracic paravertebral block is perhaps one of the most advanced blocks
- Technically challenging but, versatile and easy-to-learn
- Unilateral somatic and sympathetic nerve blockade
- Safe and effective for surgical anesthesia/analgesia in patients undergoing major breast surgery with minimal complications
- Same segmental spread of sensory block with different local anesthetic concentrations
- Yet to be defined physical properties and anatomical factors are probably key determinants of the spread of bupivacaine in the paravertebral space

References

- Karmakar et al (2001) Anesthesiology September 2001, Vol. 95, 771–780
- Yoshida et al (2014) Anaesthesia, 69, 231–239
- Cheema et al (2003), Anaesthesia, 58, pages 684–711
- Krediet et al (2015), Anesthesiology, 123:459-74