

Serratus Anterior Plane (lateral rib fractures)

low
risk



Preparation: Select appropriate needle / catheter and ensure full aseptic technique. Drapes and probe cover are not shown in images to allow for clearer interpretation of needle position.

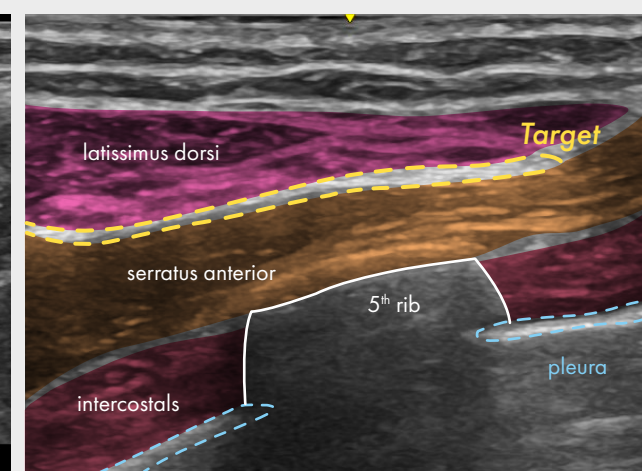
Identify: Starting with the probe in a transverse plane in the mid-axillary line, scan posteriorly until the latissimus dorsi muscle appears. There is usually an artery in the serratus anterior plane (a branch of the thoracodorsal artery).

Target: The aim is to inject in the fascial plane between latissimus dorsi and serratus anterior. "Deep" serratus anterior catheters

can also be inserted where local anaesthetic is deposited between the ribs / intercostal muscle and serratus anterior, this is a more advanced technique.

Tips: This block relies on adequate volume for spread eg 30ml of local anaesthetic. An intermittent bolus regime can be used post procedure. Continuous infusion regimes can also be used but boluses for breakthrough pain may be required.

Avoid: Vascular puncture, intravascular injection, pneumothorax.



Erector Spinae Plane (posterior rib fractures)

medium
risk



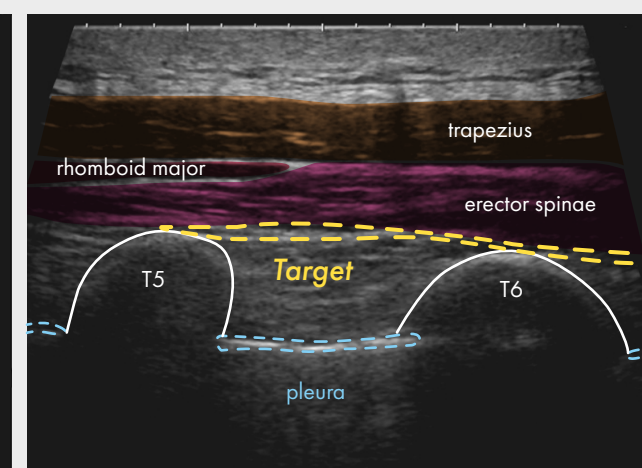
Preparation: Select appropriate needle / catheter and ensure full aseptic technique. Drapes and probe cover are not shown in images to allow for clearer interpretation of needle position.

Identify: Count the spinous processes to identify the correct spinal level. In the paramedian plane identify the corresponding muscle layers and underlying pleura.

Target: Using an in-plane approach from the cephalic end of the probe, the target is the fascial plane deep to the erector spinae muscle.

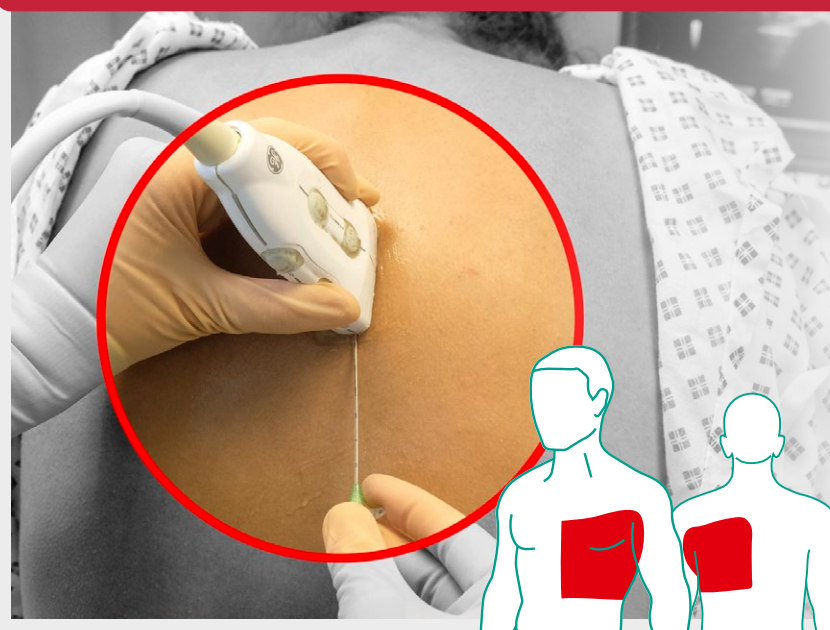
Tips: Choose a site where the needle track would hit the transverse process if it was inserted too far - this acts as a safety net. Look for free spread of local anaesthetic in the fascial plane and use ultrasound to assess the segmental spread up and down the spine. An intermittent bolus regime can be used post procedure. Continuous infusion regimes can also be used but boluses for breakthrough pain may be required.

Avoid: Lateral injection - be sure to identify transverse processes not ribs.



Thoracic Paravertebral (unilateral rib fractures)

high
risk



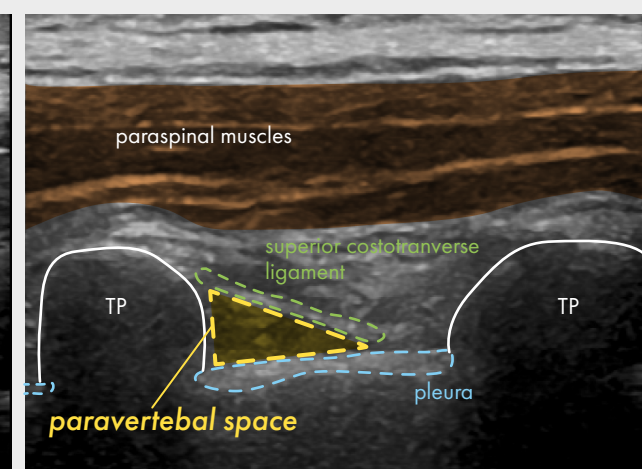
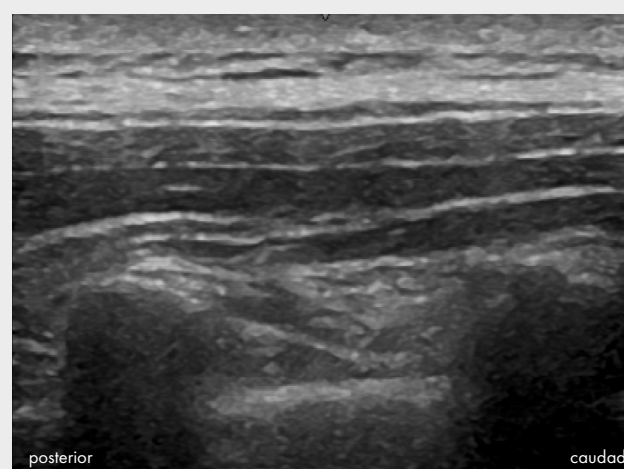
Preparation: Select appropriate needle / catheter and ensure full aseptic technique. Drapes and probe cover are not shown in images to allow for clearer interpretation of needle position.

Identify: In a parasagittal plane identify the ribs at the level you wish to block, then trace medially until the bony shadow changes to the more superficial and squarer outline of the transverse processes (described as tombstones). Tilt the probe laterally to demonstrate the pleura and superior costo-transverse ligament in the same image.

Target: The small triangular paravertebral space lies between the superior costo-transverse ligament and the pleura.

Tips: While maintaining the same probe orientation, angle the caudad end of the probe away from the midline to improve the needle access past the rib and transverse process below.

Avoid: Keep the needle tip in view at all times to avoid pneumothorax, never advance the needle if you cannot see the tip.



Thoracic Epidural (bilateral rib fractures)

high
risk



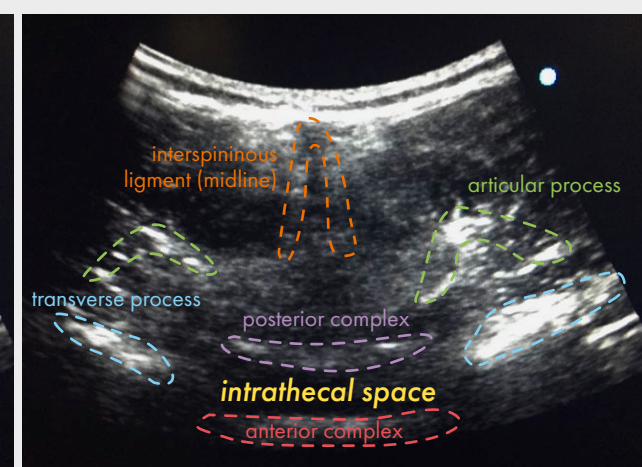
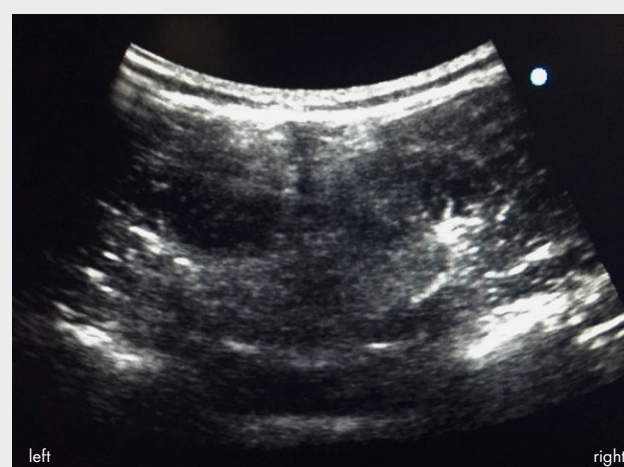
Preparation: Select appropriate needle / catheter and ensure full aseptic technique. Drapes and probe cover are not shown in images to allow for clearer interpretation of needle position.

Identify: The same scanning technique for the lumbar spine can be used. The transverse view shown can be used to identify midline and angle of needle insertion. A view of the anterior complex (anterior dura / posterior longitudinal ligament / posterior border of vertebral body) confirms correct probe position. The posterior complexes (ligamentum flavum / epidural space / posterior dura) will give an estimation of needle depth.

Target: This is an ultrasound assisted technique, epidural insertion will be by standard methods.

Tips: Paramedian views of the lamina with oblique angulation can also be used to identify the correct level and estimation of epidural space depth. Traditionally lumbar scanning is done with a curvilinear probe due to the increased depth of the lumbar spine, however a linear probe may be suitable for some patients.

Avoid: The steeper angle and longer length of the spinous processes in comparison to the lumbar region needs to be considered when scanning and orientating the probe.



Pajunk Products

Continuous Nerve Block



E-Cath

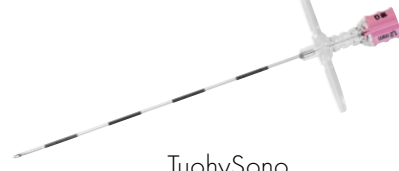


Epilong Soft Sono

Single Shot



SonoTAP



TuohySono

Level of Risk Associated

- Low Risk**
Fascial plane block. Simple and effective (volume dependent).
- Medium Risk**
Fascial plane block. Closer proximity to neuraxial structures and pleura.
- Higher Risk**
Advanced block for experienced practitioners. Risks are multiple. Patient's coagulation status and catheter selection should be given careful consideration.

Multi Modal Analgesia

Pain associated with thoracic trauma should be managed with a multimodal approach. Regional analgesia is one component along with simple analgesics, neuropathic agents and opioids.



FOR FURTHER INFORMATION
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