

Paravertebral Block (PVB)

Ultrasound-Guided Paravertebral Block

The paravertebral block involves injecting local anesthetic into the paravertebral space, producing unilateral analgesia across multiple thoracic or lumbar dermatomes.

□ Anatomy

- **Paravertebral space:**
 - Lateral to the vertebral body and intervertebral foramen
 - Boundaries:
 - Anterior: Parietal pleura
 - Posterior: Superior costotransverse ligament
 - Medial: Vertebral body
 - Lateral: Rib
- Contents:
 - Spinal nerve (dorsal and ventral roots)
 - Sympathetic chain
 - Fat and connective tissue

□ Technique

- **Patient position:** Sitting or lateral decubitus
- **Ultrasound:**
 - Linear probe (thoracic), curvilinear for deeper/lumbar levels
 - Parasagittal view, lateral to spinous processes
- **Landmarks:**
 - Transverse process (hyperechoic line with shadow)
 - Pleura (mobile with respiration)
 - Superior costotransverse ligament (target for needle entry)
- **Needle:**
 - In-plane, cranial-to-caudal approach
 - Advance through the ligament into the space
- **Inject:**
 - 10–20 mL of local anesthetic
 - Observe pleural displacement (anterior) or hydrodissection

□ Indications

- Thoracic surgery (e.g., VATS, mastectomy)
- Rib fractures
- Chronic thoracic pain (e.g., post-herpetic neuralgia)
- Abdominal or lumbar surgery (for lumbar PVB)

□ Advantages

- Strong unilateral analgesia
- Less risk of hypotension than epidural
- No significant motor block
- Suitable for high-risk surgical patients

⚠ Complications

- Pneumothorax
- Vascular puncture
- Epidural or intrathecal spread
- Local anesthetic systemic toxicity (LAST)
- Incomplete block if spread is limited

📄 Comparison</tab>

Feature	PVB	ESP Block	Intertransverse Block
Target	Paravertebral space	Erector spinae plane	Between transverse processes
Nerve coverage	Dorsal + ventral rami	Mainly dorsal ± ventral	Dorsal + ventral (variable)
Complexity	Intermediate	Easy	Moderate
Pleural puncture risk	Moderate	Low	Low
Spread to sympathetic chain	Yes	Rare	Possible

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