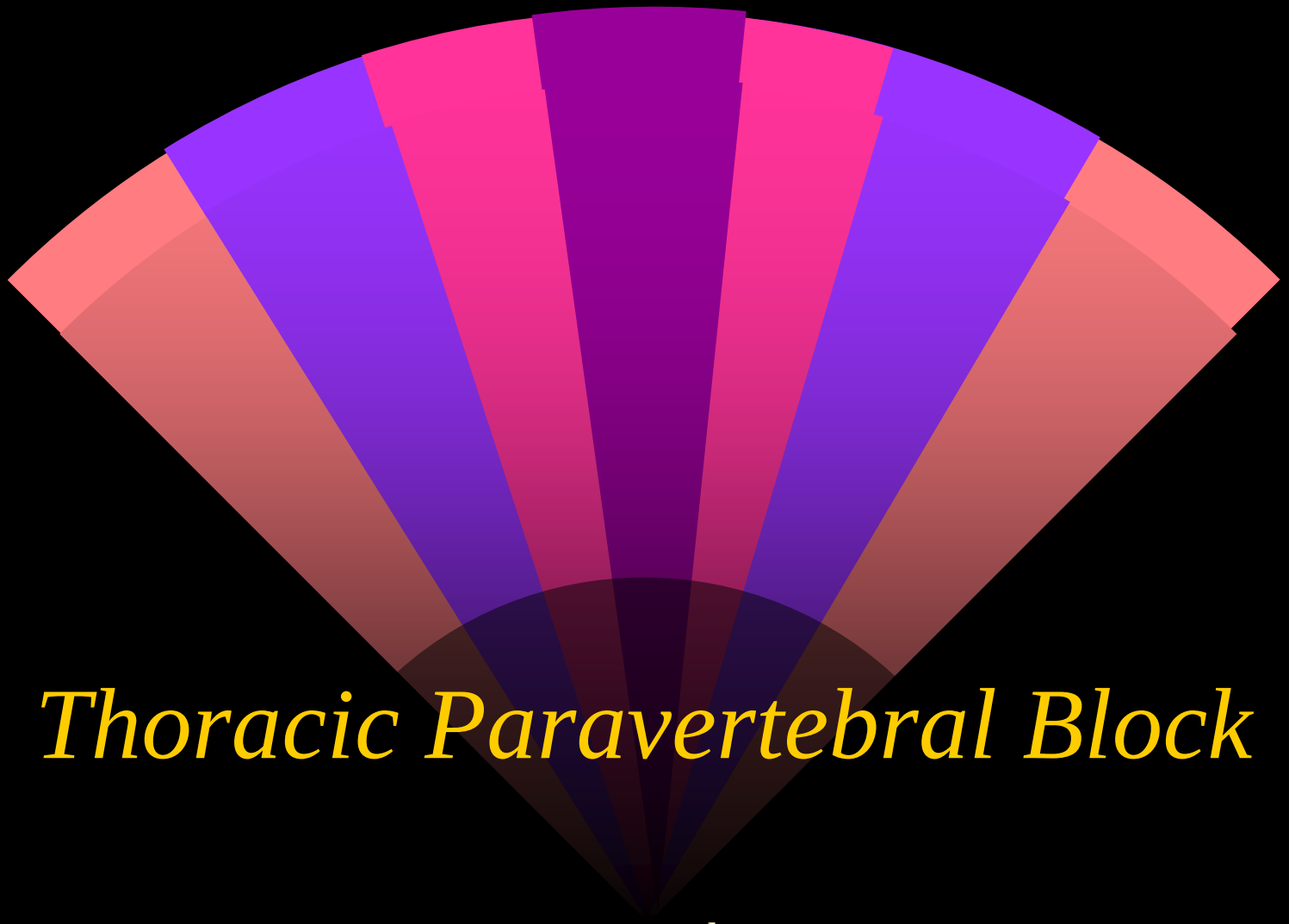

Thoracic Paravertebral Block

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Acute Pain Management

Aims

- Introduction of Acute Pain Team
- History and anatomy of Thoracic Paravertebral Block
- Indications for use
- Contraindications and complications
- Nursing care and safety
- Troubleshooting

Paravertebral Block

- A method of providing effective analgesia using local anaesthetic.
- It works by blocking nerve impulses that are carried by mixed spinal nerves as they emerge from the vertebral column unilaterally into the paravertebral space.

Background

- First performed by Hugo Sellheim in 1905
- In 1911 Arthur Lawen named the technique as ‘paravertebral conduction anaesthesia’
- During 1950s and 1960s publication about this technique almost completely disappeared, but in late 1970s started to reappear.

Indicators

Post - operatively (usually continuous inf.)

- Thoracic surgery
- Breast surgery
- Renal surgery
- Cholecystectomy

Trauma (usually continuous inf.)

- Multiple rib fracture
- Pathological fracture

Anatomy of the Paravertebral Space

- It is a wedge - shaped space lying between the heads and necks of the ribs, the vertebral body and the parietal pleura.
- Contained within the paravertebral space are: - spinal intercostal nerve, dorsal ramus, sympathetic chain

Insertion

- Under direct vision during a surgical procedure.
- Injection technique - catheter may be inserted while the patient is awake,e.g. trauma.

Position of a paravertebral catheter

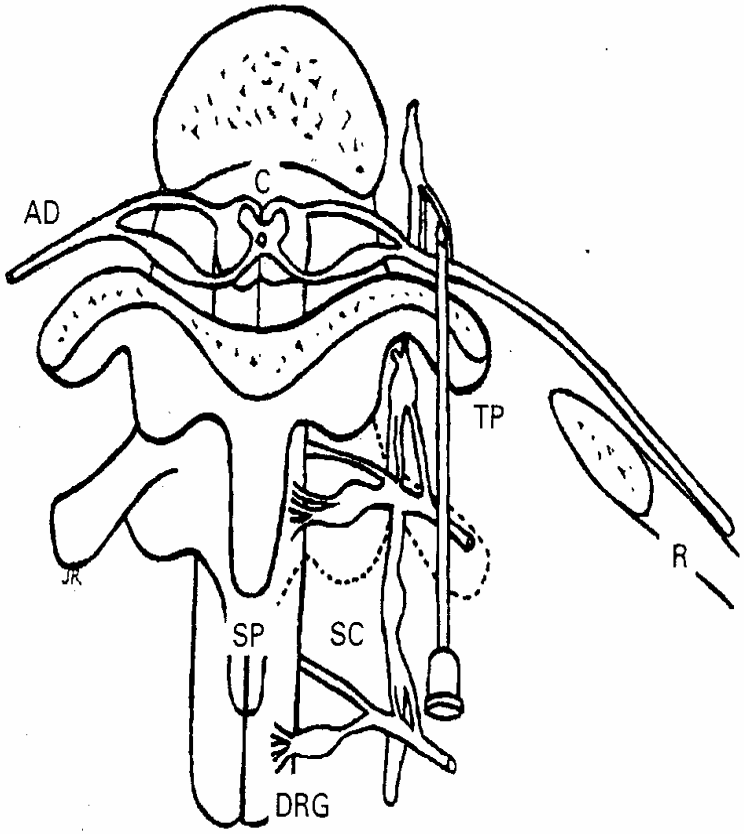
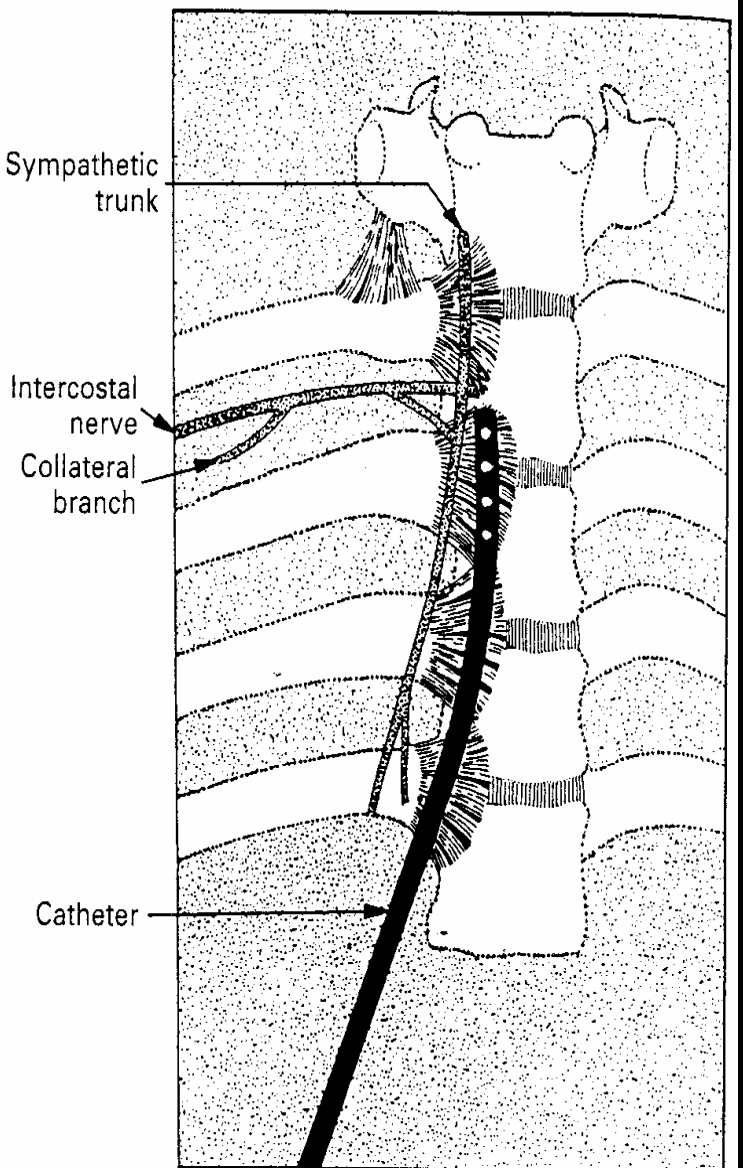


Figure 2 Optimal needle position in relation to the transverse process of the vertebra (TP) and the nervous structures of the thoracic paravertebral space (Adapted from Mandl[51]). R=rib, AD=anterior division, SP=spinous process, SC=sympathetic chain, DRG=dorsal root (spinal) ganglion, C=spinal cord.



Modes of action

- 1% Lidocaine (lignocaine)

- Blocks nerve impulses by direct penetration of local anaesthetic into the intercostals nerve, including its dorsal ramus, the rammi communicantes and sympathetic chain

Contraindications & Complications

- Infection at entry site
- Infection within the chest cavity (empyema)
- Widespread tumor within paravertebral space
- Chest wall deformity (scoliosis, kyphosis)
- Hypotension
- Vascular puncture
- Pleural puncture
- Pneumothorax

Patient monitoring

- Cardiovascular obs.
- Pain score
- Sedation score
- Observation of catheter site
- Respiratory function
- Observe for L.A. toxicity

Discontinuation of PVB infusion

- The infusion will be discontinued on the advice of the anaesthetist or acute pain team, usually after removal of chest drains.
- Simply remove the catheter and apply sterile dressing.
- Ensure regular multimodal analgesia.

Troubleshooting

- Leakage around site of insertion
- Occlusion
- Haemorrhage
- Dislodged catheter

Advantages of Thoracic Paravertebral Block

Technical

- Simple and easy to learn
- Safer and easier than thoracic epidural
- Safe to perform in sedated and ventilated patients
- Catheter placement under direct vision during thoracic surgery is safe and accurate

Clinical

- Single injection produces multidermatomal ipsilateral somatic and sympathetic nerve block
- Reliably blocks the posterior primary ramus
- Abolishes cortical responses to thoracic dermatomal stimulation
- Reduces opioid requirements

Advantages of Thoracic Paravertebral Block

- Low incidence of complication
- Preserves bladder sensation
- Preserves lower limb motor power
- Promotes early mobilisation
- No additional nursing vigilance required