

# Thoracic Paravertebral Block: Provided By Nysora - New York School Of Regional Anesthesia

A Hadzic, J Vloka

## Citation

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## Abstract

Demonstration of Thoracic Paravertebral Block

## Figure 9



Patient Position: Sitting with the neck flexed

Common Indication: Surgery (Total mastectomy and/or axillary dissection), Pain management (Cholecystectomy, thoracotomy)

Needle: 22 gauge 3 1/2 inch spinal needle (Quincke type)

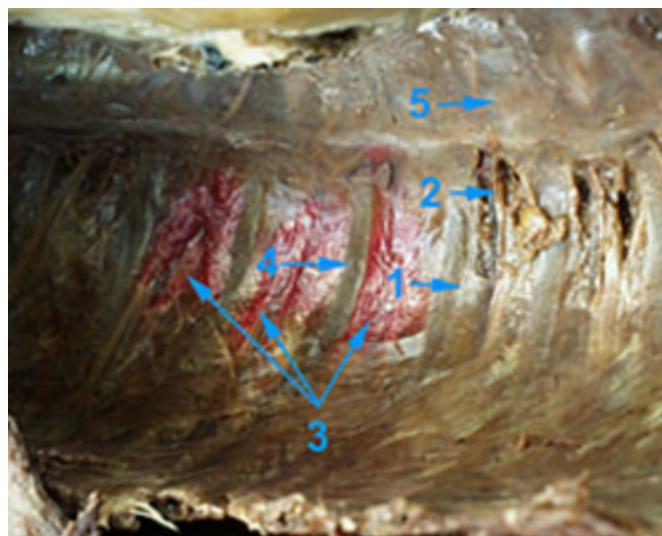
Volume: 5-6 ml per level

## ANATOMICAL LANDMARKS

Paravertebral space is limited anteriorly by the parietal pleura (Figure 1), posteriorly by superior costotransverse ligament and medially by the postero-lateral aspect of the vertebra and the intervertebral foramen (Figure 2). Spinous process is the main landmark for this block (Figure 3).

## Figure 2

Figure 1. Paravertebral space: A view from inside the chest cavity.



- (1) Parietal pleura
- (2) After the parietal pleura is removed, a nerve root is exposed in the paravertebral space.
- (3) Spread of a solution of dye in the paravertebral space.
- (4) A rib seen through the parietal pleura
- (5) A body of the vertebra covered with parietal pleura

**Figure 3**

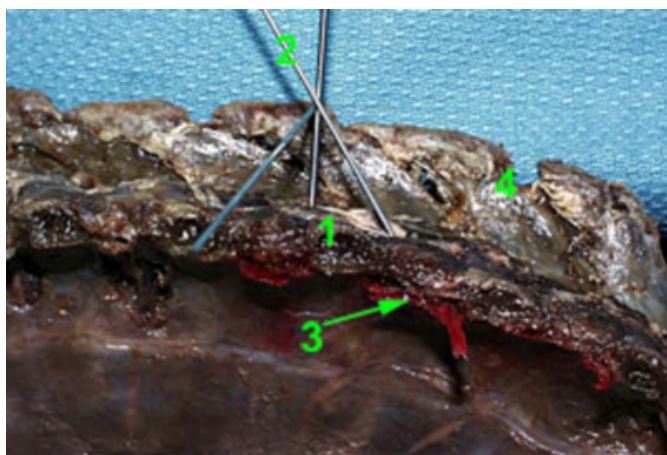
Figure 2. Paravertebral space: Posterior aspect



- (1) Superior costotransverse ligament
- (2) Paravertebral space
- (3) Dispersion of a solution within the paravertebral space
- (4) Distances between transverse processes 2.5 cm lateral to the superior aspect of the spinous process.

**Figure 4**

Figure 3. Simulation of the paravertebral block in a cadaver.



- (1) The simulation needle is in contact with the transverse process
- (2) The needle is redirected to walk off the superior aspect of the transverse process
- (3) The needle is redirected to walk off the superior aspect of the transverse process

the transverse process

(3) Parietal pleura stained with red dye injected during paravertebral block simulation

(4) Spinous process

## APPROACH AND TECHNIQUE

The patient is in the sitting position and the neck flexed, so that the chin touches the chest. The spinal processes are palpated and marked with a skin marker (Figure 4).

**Figure 5**

Figure 4: Marking of spinal processes



The insertion points are marked 2.5 cm lateral to the superior border of the spinal process (Figure 5), and infiltrated with local anesthetic.

**Figure 6**

Figure 5: Insertion points



Twenty-two gauge 3 1/2 inch needle attached to a tubing and syringe with local anesthetic is inserted perpendicular to the skin and advanced 2-4 cm until the transverse process of the respective vertebra is contacted (Figure 6).

**Figure 7**

Figure 6: Insertion of needle



The needle is then withdrawn to the skin, and re-inserted to walk off the superior aspect of the transverse process (Figure 7). The needle is advanced 1-1.5 cm past the pre-measured skin-bone distance. After negative aspiration, 5-6 ml of local anesthetic is injected at each level to be blocked.



**Figure 8**

Figure 7: Injection



**TIPS**

Total mastectomy requires blockade extending from C7 to T6 level.

A fast onset and the most consistent results for surgical anesthesia is achieved with a mixture with equal volumes of 1.5% alkalized mepivacaine (1 mEq of NaHCO<sub>3</sub> per 30 mL of mepivacaine) with 1:200,000 epinephrine and 0.5% bupivacaine.

Resistance on injection of the local anesthetic is likely due the needle tip position in the superior costotransverse ligament. In this case, the needle should be simply advanced 2-3 mm.

{image:9}

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**References**

1. Richardson J, Sabanathan S. Thoracic paravertebral analgesia. *Acta Anaesthesiol Scand* 1995;39:1005-15.
2. Coveney E, Weltz CR, Greengrass R, Iglehart JD, Leight GS, Steele SM, Lysterly KH. Use of paravertebral block anesthesia in the surgical management of breast cancer. *Ann Surg* 1998;227:496-501.

**Author Information**

**A. Hadzic, MD, PhD**

Co-director, Regional Anesthesia, Anesthesiology, Anesthesiology, St. Luke's-Roosevelt Hospital Center

**J. D. Vloka, MD, PhD**

Director, Regional Anesthesia, Anesthesiology, Anesthesiology, St. Luke's-Roosevelt Hospital Center