

Preventing Intubation with the Transverse Thoracic Muscle Plane Block

To the Editor,

Bilateral transverse thoracic muscle plane (TTMP) block plays an important role in the recovery of poststernotomy patients. The degree of pain that patients experience after sternotomy can be severe, leading to thoracic splinting and poor ventilatory effort, resulting in atelectasis. The ventilation and perfusion mismatch worsen hypoxemia, requiring supplemental oxygen, and mechanically assisted ventilation. This, in turn, may increase intensive care unit length of stay and hospital costs and decreases patient satisfaction scores. We describe a case where bilateral TTMP blocks prevented re-intubation in a patient following an ascending aortic aneurysm repair.

The patient was an obese 69-year-old male with history of severe obstructive sleep apnea, current smoking, and uncontrolled hypertension, underwent elective open surgical repair of an ascending aortic aneurysm through a midline sternotomy incision. The Acute Pain Medicine Service was consulted due to fear by the primary team that administration of opioids would lead to respiratory failure given the patient's history of severe sleep apnea. TTMP blocks were performed bilaterally using the technique as described by Ueshima *et al.*^[1] About 20 mL of 0.25% bupivacaine with 3 mg of preservative-free dexamethasone was injected with cranial and caudal spread of injectate underneath the adjacent ribs from T2 to T6 as described by Thomas *et al.*^[2] Thirty minutes following the TTMP blocks, the patient reported a marked decrease in sternotomy pain, from 10 to 1 out of 10 on visual-analog pain scale. His incentive spirometry volumes improved from 750 to 2,250 mL. Analgesia lasted 24-h postinjection.

The sternum is innervated by the anterior cutaneous branches of intercostal nerves 2–6. The parasternal block,^[3] a landmark-guided field block in which >50 mL of local anesthetic infiltrated by the surgeon lateral to the sternum before wire closure anesthetizes the same nerves. The duration of analgesia is limited to only a few hours postoperatively due to the injection of local anesthetic into the wound and not into an avascular plane.^[4] In 2016, Ueshima *et al.* described two cases in which the TTMP provided analgesia to the sternum for median sternotomy.^[5] This technique differs from the parasternal block in that the local anesthetic is injected under ultrasound-guidance into an avascular plane between the intercostal muscles

and the transverse thoracic muscle. TTMP blocks provide high-quality sternal analgesia both consistently and for an extended period of time, allowing for the severity of acute poststernotomy pain to decrease to a level that is manageable with multimodal analgesia.

The TTMP block, as part of a multimodal pain regimen, helped improve the patient's postoperative pain, oxygenation, and respiratory mechanics, ultimately preventing reintubation due to impending respiratory failure. Incorporating the TTMP block into perioperative pain management following sternotomy for cardiothoracic surgery offers a viable option to facilitate extubation and decrease respiratory complications resulting from uncontrolled pain.

Thank you,

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Conflicts of interest

There are no conflicts of interest.

**Johanna B de Haan, Damon Yu,
Nadia Hernandez, Sudipta Sen**

*Department of Anesthesiology, McGovern Medical School,
University of Texas Health Science Center, Houston, USA*

Address for correspondence:

*Dr. Johanna B de Haan,
Department of Anesthesiology, McGovern Medical School, University of
Texas Health Science Center, 6431 Fannin St, MSB 5.020,
Houston, TX, 77030, USA.*

E-mail: johanna.b.dehaan@uth.tmc.edu

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