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Wenlong Yao, MD, PhD
Jin Qiu, MD, PhD
Li Wan, MD
Chuanhan Zhang, MD
Department of Anesthesiology, Tongji Hospital, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, China

https://doi.org/10.1053/j.jvca.2018.10.029

Ultrasound-Guided Single-Shot Preemptive Erector Spinae Plane Block for Postoperative Pain Management

To the Editor:

Thoracotomy is a procedure that causes severe pain as a result of muscle incision, retraction of the ribs, and damage to the intercostal nerves. Postoperative analgesia management is very important for respiratory functions, and successful pain management reduces postoperative complications and length of hospital stay.[1] A variety of procedures have been described for the first-step treatment of thoracic analgesia, including intercostal nerve blocks, thoracic epidural analgesia (TEA), and thoracic paravertebral blocks.[2] However, their usage is limited because of complications and failure rates (up to 15% in TEA).[3] The other option for analgesia is intravenous opioid medications that can be used in combination with nonsterioidal anti-inflammatory drugs.[4] Adverse effects such as sedation, hypoventilation, nausea, and vomiting can occur, especially in systemic high opioid doses used for severe pain such as after thoracotomy.

The ultrasound-guided erector spinae plane (ESP) block is one of the newly described interfascial plane blocks that provide thoracic analgesia at the T5 level[5] and abdominal analgesia at the T7 to T9 level.[6] We were interested in ESP block because it is easily performed and safe under ultrasound guidance (USG).[5] Therefore, we think that ESP block could be a good alternative to other techniques in postoperative analgesia management after thoracal surgery. In this report, we aimed to present our

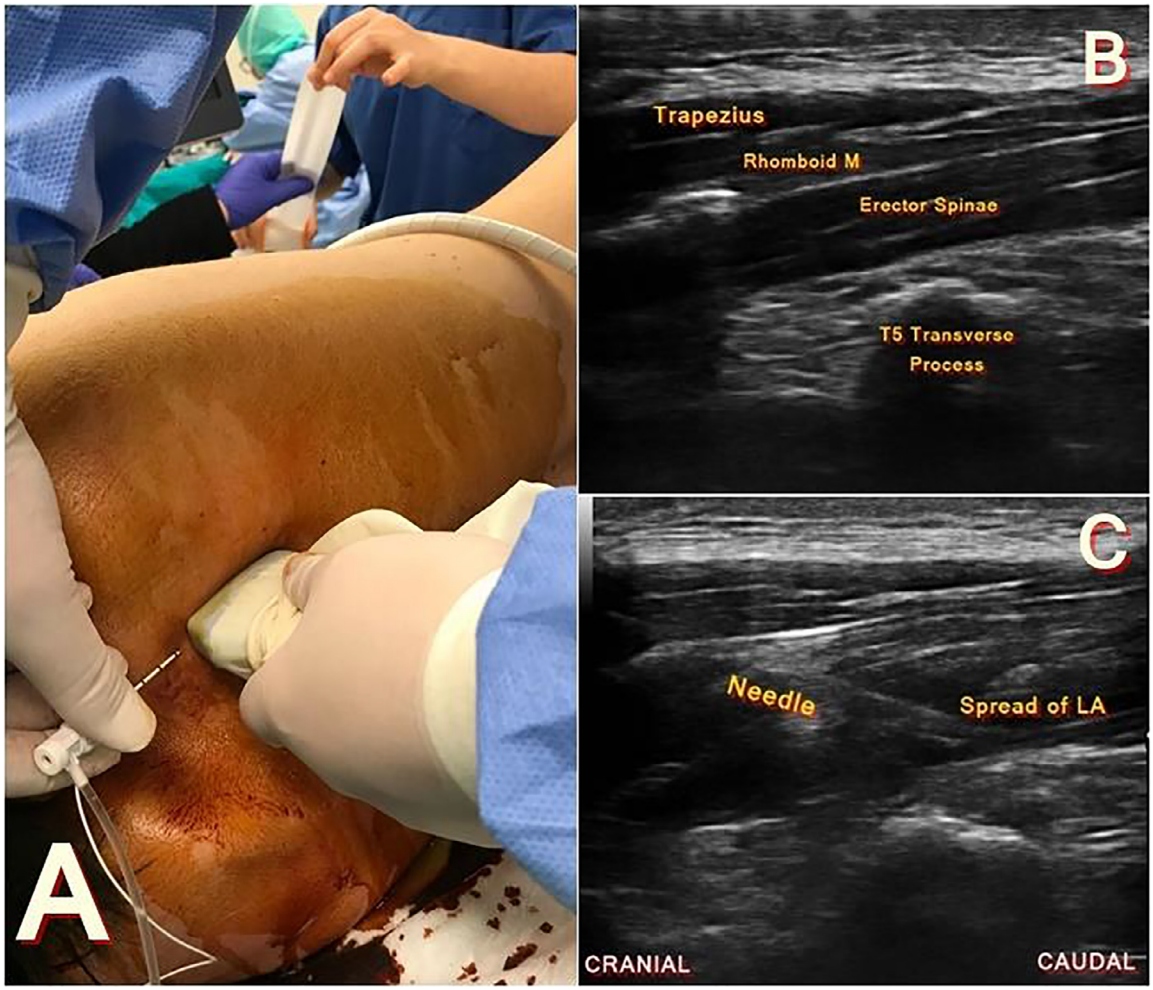

Fig 1. **(A)** Ultrasound and patient setup for block preparation. **(B)** Sonographic anatomy. **(C)** Craniocaudal spread of local anesthetic. Spread is visible within the erector spinae plane (below erector spinae muscle, above the transverse process).

successful ESP block experience for a patient who underwent right lobectomy because of lung metastasis of colon cancer.

Written informed consent was obtained from the patient for this report. We succesfully performed single-shot pre-emptive ESP block in a 57-year-old woman. After induction of anesthesia, the patient was placed in the left lateral decubitis position, and a unilateral ultrasound-guided ESP block was performed at the level of the T5 transverse process with the GE Vivid Q USG device. A high-frequency 12-MHz linear ultrasound probe was placed in a longitudinal orientation 3 cm from the midline (Fig 1A). The trapezius, rhomboid major, and erector spinae muscles were identified superficial to the hyperechoic transverse process shadow (Fig 1B). A 22-gauge, 80-mm block needle (SonoTap; Stimuplex Ultra, B. Braun Medical, Germany) was inserted in a cephalad-to-caudad direction in the interfascial plane deep to the erector spinae muscle. After aspiration there was no blood or air; the erector spinae plane was hydrolocated with 2 mL of normal saline. A total of 20 mL of 0.25% bupivacaine was injected (Fig 1C). Single shot block was performed; we did not use a catheter. A total of 250 μg of fentanyl and 1 g of paracetamol were administered perioperatively. The patient was extubated successfully at the end of surgery and transferred to the postanesthesia care unit (PACU). The patient was awake and comfortable in the PACU. The visual analog scale score was 2 at the PACU; additional analgesic was not given to her. Scheduled postoperative analgesia was 1 g of paracetamol every 8 hours, with a rescue dose of 50 mg of tramodol. At the 10th and 32nd hours, the visual analog scale score was 6 and 100 mg total of tramadol was added. In the postoperative period, the patient reported a sensory block at T2 to T10 dermatomes (evaluated with cold test). She received a total of only 100 mg of tramodol, without any other opioids required during 48 hours after surgery. After a 48-hour period, 1 g of oral paracetamol was ordered for every 8 hours.

The ESP block contains a local anesthetic injection into the paraspinal tissues that is away from the pleural and neurologic structures and thus minimizes the risk of complications owing to injury.[5,7] Visualization of anatomical guide points with USG is easy, and local anesthesic agents can be seen under the erector spinae muscle. The local anesthetics spread here, and analgesia occurs in several dermatomes in a cephalad-caudad way. Cadaveric studies have shown that the injection spreads to both the ventral and dorsal roots of the spinal nerves and creates sensory blockade in the posterior as well as the anterolateral thorax.[7] The risk of pleural puncture is lowest compared to TEA and thoracic paravertebral blocks. Furthermore, because there are no large vascular structures around it, the risk of a clinically significant hematoma is low.

We did not use a catheter for our case because our aim was to see the effectiveness of the single-dose pre-emptive ESP block for thoracic surgery. Our patient was comfortable in the postoperative period and did not need any more opioid. In summary, preemptive single-shot ESP block can be performed as an alternative in postoperative pain management because it is easy to use, a central block-like analgesia can be obtained with it, and it has no risk of serious complications such as pneumothorax.

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Bahadir Ciftci, MD
Mursel Ekinci, MD
Yavuz Demiraran
Department of Anesthesiology and Reanimation, Istanbul Medipol University, Istanbul, Turkey

https://doi.org/10.1053/j.jvca.2018.10.040

Considerations for Patients With Idiopathic Normal Pressure Hydrocephalus Undergoing Cardiac Surgery

To the Editor:

A 73-year-old woman was referred for an elective aortic valve replacement for severe aortic stenosis. She had preserved biventricular function, mild left ventricular hypertrophy, and no significant coronary artery disease. From her medical history, she had dyslipidemia treated with statins and idiopathic normal pressure hydrocephalus (iNPH) awaiting shunt placement (Figure 1, Figure 2). She was experiencing only mild iNPH-related symptoms, namely urinary incontinence, gait disturbances, and dementia, and she had been following up regularly with a neurologist.

As there is very little guidance in the literature for adults with iNPH undergoing cardiac surgery, we approached this patient from a multidisciplinary perspective. After discussion among neurologists, cardiac anesthesiologists, perfusionists, and cardiac surgeons the following plan was established:

During induction of anesthesia, and before initiation of cardiopulmonary bypass (CPB), we monitored the patient parameters closely to avoid hypoxia, hypercapnia, and body temperature, which could result in cerebral vascular dilatation. The patient was positioned with the upper part of the body tilted to a 20 to 25-degree angle, thus reducing central venous return. Mean arterial pressure was maintained to standard values by using small intravenous increments of phenylephrine. After intubation, intermittent positive-pressure ventilation