

## INTRODUCTION

Analgesia for thoracotomy in the pediatric population is historically best managed through the use of a thoracic epidural. Serious complications include abscess and epidural hematoma, especially in the coagulopathic patient. Alternatives include transversus abdominis plane (TAP) blocks and paravertebral locks. We present a novel case of utilizing a continuous erector spinae catheter in a patient undergoing thoracotomy for tumor resection in whom a thoracic epidural was contraindicated

## CASE PRESENTATION

- 14 year old, 43.8 kg female with a chronic opioid (Oxycodone) requirement with left chest wall Ewing Sarcoma presenting for left thoracotomy and tumor resection
- Chronically anemic, thrombocytopenic, preop labs hematocrit: 23.7%, platelets: 11k/mL
- Elected to perform post-induction continuous erector spinae catheter instead of thoracic epidural given coagulopathy
- OR Case:
  - Uneventful IV induction
  - Following induction, positioned in right lateral decubitus and draped in sterile fashion
  - 3-5 cm from midline, a Sonosite linear array probe placed in para-sagittal plane and utilized to visualize transverse process of T8, trapezius, rhomboid and erector spinae muscles and fascial planes
  - 18 g Tuohy needle advanced under in-plane ultrasound guidance and placed in posterior erector spinae fascial plane in cranial to caudal fashion.
  - 20 mL 0.2% Ropivacaine injected and 20g multiorifice catheter inserted 4 cm beyond needle tip
  - Ropivacaine 0.2% 8 mL/h initiated
  - Aside from peri-induction Fentanyl, no additional narcotic administered after initiation of infusion
- Postoperative Course
  - Transferred to Pediatric Intensive Care Unit (PICU) postoperatively
  - ESP catheter infusion continue at same rate and Hydromorphone 20 mcg/kg q6 min PCA added
  - Not candidate for NSAID's or Acetaminophen given oncologic process
  - PCA usage ranged from 0 to 8 administrations per 24h period with pain scores of 0-3/10.
  - Comfortable on pain rounds with T5-T10 level to ice on each postoperative day.
  - Fourth postoperative day, ESP catheter discontinued and patient transferred to floor

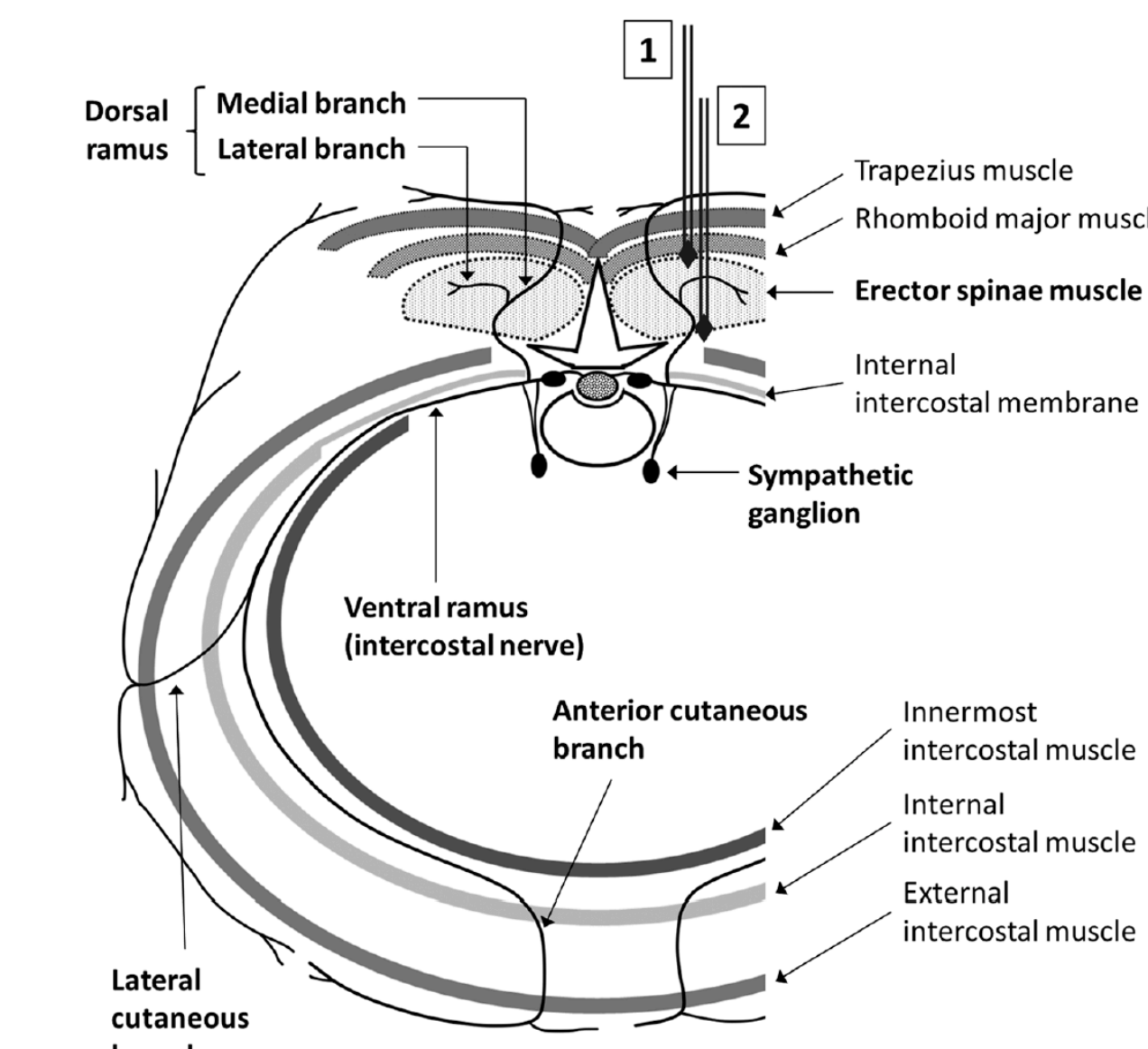
## PATIENT POSITINOING



- Similarly to our patient, patient positioned in lateral decubitus with ultrasound machine opposite the proceduralist. Tuohy inserted cephalad to caudal in plane.
- Epidural catheter inserted 4 cm past the Tuohy under ultrasound guidance

Leyva et al. Continuous Erector Spinae Plane Block for Postoperative Analgesia after Minimally Invasive Mitral Valve Surgery. *Journal of Cardiothoracic and Vascular Anesthesia*. 2017

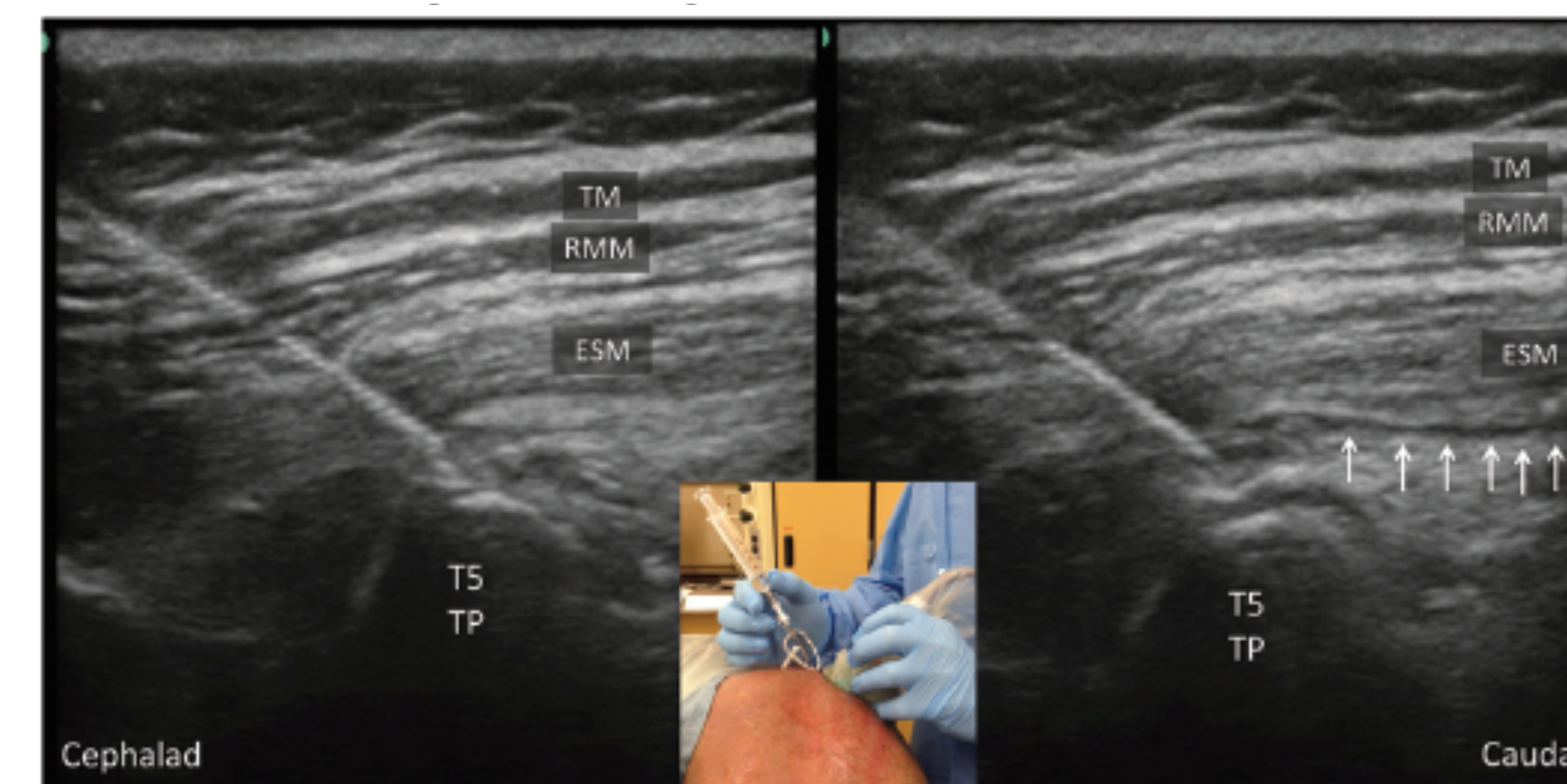
## SCHEMATIC OF ANATOMY



Course of upper thoracic spinal nerve: Dorsal ramus arises soon after spinal nerve emerges from intervertebral foramen and travels posteriorly through costotransverse foramen to enter erector spinae muscle where divides into lateral, medial branches. Medial branch terminates as posterior cutaneous branch innervating skin of back. Ventral ramus continues laterally as intercostal nerve giving rise to lateral cutaneous branch at angle of rib and terminates in anterior cutaneous branch.

Forero et al. The Erector Spinae Plane Block: A Novel Analgesic Technique in Thoracic Neuropathic Pain. *Chronic and Interventional Pain, Regional Anesthesia and Pain Medicine*. Vol 41. 2016.

## ULTRASOUND IMAGING OF BLOCK



TM: Trapezius Muscle  
RMM: Rhomboid Major Muscle  
ESM: Erector Spinae Muscle  
T5 TP: T5 Transverse Process

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## BLOCK OVERVIEW

- Ultrasound-guided fascial plane block initially described for thoracic analgesia
- Local anesthetic deposited in fascial plane between deep border of erector spinae muscle and superficial tips of transverse processes diffusing to dorsal and ventral rami of spinal nerves to achieve multidermatomal sensory block of posterior, lateral, anterior thoracic wall

## THE ROLE OF ERECTOR SPINAE PLANE BLOCKS

- Anatomy easily identifiable on ultrasound
- Successfully performed in perioperative, ICU and Emergency Department settings
- Useful when neuraxial techniques contraindicated: coagulopathy, spinal cord pathology, etc; or when neuraxial techniques challenging
- Achieves analgesic coverage similar to a thoracic epidural or multi-level paravertebral blocks without the need for multiple injections
- Potentially lower risk of pneumothorax or vascular injections
- Successfully utilized for abdominal, GYN, thoracic surgery, rib fractures in intubated patients
- Role in Pectus repairs?

## LIMITATIONS

- Distance from neuraxial space may lead to variation in blockade
- Unilateral block necessitates dual catheters for incisions crossing midline
- Potential dosing limitations with smaller patients
- Similar systemic absorption as intercostal nerve blocks

## REFERENCES

- Forero et al. The erector spinae plane block. A novel analgesic technique in thoracic neuropathic pain. *Regional Anesthesia and Pain Medicine*. Vol 41; 5. Sept-Oct 2016.
- Restrepo-Carces et al. Bilateral continuous erector spinae plane block contributes to effective postoperative analgesia after major open abdominal surgery: A case report. *International Anesthesia Research Society*. May 30, 2017.
- Leyva et al. Continuous Erector Spinae Plane Block for Postoperative Analgesia after Minimally Invasive Mitral Valve Surgery. *Journal of Cardiothoracic and Vascular Anesthesia*. 2017
- Munoz et al. Erector spinae plane block for postoperative analgesia in pediatric oncological thoracic surgery. *Canadian Journal of Anesthesia*. February 2017.
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