



Erector Spinae Plane Catheters for Pediatric Patient with Thoracic Scoliosis Undergoing Nuss Procedure.

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Background

- Pectus excavatum is a congenital chest wall anomaly affecting 1 in every 300 to 400 births per year that based on severity can require surgical correction.
- Surgical correction is widely performed through the Nuss procedure which places curved metal bars in the mediastinum under general anesthesia.
- Nuss procedure patients have higher pain scores and greater opioid consumption than patients undergoing open pectus repair.
- No single analgesia modality has been shown to be a “gold standard” for post-operative pain management.
- In a case of a patient with severe thoracic scoliosis, we utilized erector spinae plane catheters for post-operative pain management.

Case

- 17-year-old male with past medical history significant for pectus excavatum and thoracic scoliosis (Image 1) with progressively worsening chest wall deformity since initial diagnosis at age 10.
- Due to the severity of the scoliotic curve in the patient’s thoracic spine, pursuing a thoracic epidural would be unnecessarily difficult and potentially unsafe.
- It was agreed that bilateral ESP catheters would be the optimal form of regional anesthesia for post-operative pain management.



Image 1. Chest x-ray showing patient’s scoliotic curve.

Table 1. VCU Health Nuss Procedure Analgesia Protocol	
Epidural	To be placed with fluoroscopy in OR
Epidural Medications	Clonidine 0.5-1.0 mcg/kg Duramorph 30mcg/kg Ropivacaine 0.2% 5ml bolus followed by 8ml/h
IV Medications	Acetaminophen 15mg/kg IV to start in OR and then q6h Gabapentin 300mg PO BID Hydromorphone 0.02mg/kg q4h IV PRN for severe and/or breakthrough pain Ketorolac 0.5mg/kg IV to start in OR and then q6h for 48h Lidocaine patch PRN for chest tube insertion site pain Oxycodone 5-10mg q4h PO PRN for moderate pain
IV Drips Post-Op	Magnesium 500mg/hr Narcan 0.25-2mcg/kg/hr for pruritis Phenylephrine PRN for hypotension

Table 1. VCU Health Nuss Procedure Analgesia Protocol

Case Continued

- Under ultrasound guidance, the erector spinae muscle layer was identified at the level of the fourth rib. The skin was anesthetized with local infiltration of 2% lidocaine, and then a 17-gauge Tuohy needle was advanced to the transverse process of T4.
- A 19-gauge open-ended catheter was threaded into the fascial plane and secured with Dermabond and a chlorhexidine dressing.
- The left catheter was secured at 14cm at the skin and the right catheter was secured at 13cm at the skin.
- On POD1, the patient was evaluated by the APS service and found to have well-controlled pain with scores of 3/10 and overall tolerable pain levels.

Discussion

- ESP catheters are a safe and effective form of pain management for patients undergoing the Nuss procedure for pectus excavatum repair.

References

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