

# Opioid Consumption in Repair of Pectus Excavatum: Comparison Between Erector Spinae Block, Thoracic Epidural, and Patient Controlled Analgesia



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## Background

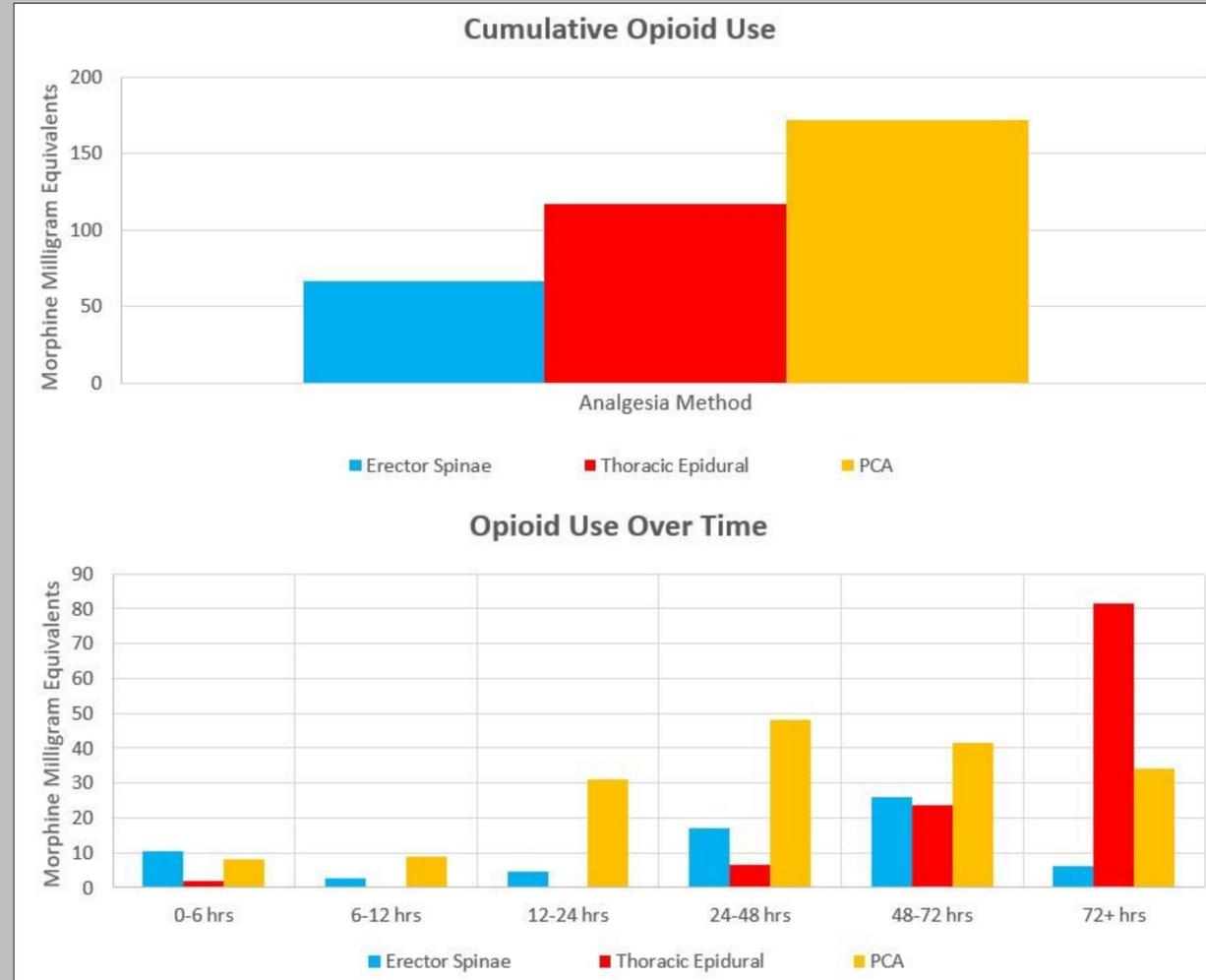
- Pectus excavatum is a congenital chest wall deformity which is commonly repaired surgically<sup>1</sup>
- Surgery to repair pectus excavatum is associated with **high levels of opioid use** and postoperative pain<sup>2</sup>
- No single pain management method has been established as the accepted standard of practice for managing post-operative pain in this patient population<sup>3</sup>

## Objectives

- **Primary:** To evaluate a relatively new analgesia technique, the **erector spinae plane block**, for its ability to **decrease opioid use** following surgery to correct pectus excavatum when compared to thoracic epidural and patient controlled analgesia in a pediatric population
- **Secondary:** To compare the erector spinae plane block to other traditional techniques such as thoracic epidural and PCA for length of stay and pain management postoperatively

## Methods

- Retrospective cohort study including 78 Nemours patients in Orlando, FL from 2014 to 2020
- Three analgesia groups: **erector spinae block, thoracic epidural, or patient controlled analgesia (PCA)**
- Primary outcome: **opioid consumption** (converted to morphine milligram equivalents)
- Secondary outcomes: numerical pain ratings (using Numerical Pain Rating Scale), length of stay
- Analysis of all outcomes measures was performed using ANOVA



**Figure 1:** Average opioid use in patients receiving erector spinal block, thoracic epidural, and PCA for repair of pectus excavatum

	Erector Spinae	Thoracic Epidural	PCA
Average Length of Stay (days)	3.3	4.7	3.7
Average Cumulative Morphine Milligram Equivalents	66.9	117	172.1
Average Overall Pain Rating	4.5	3.4	4.1

**Figure 2:** Length of stay, opioid use, and average pain rating for each group

## Results

- Average **cumulative opioid use was significantly lower (p=0.0002) in the erector spinae group (67 MME)** than in the thoracic epidural group (117 MME) or the PCA group (172 MME)
- Erector spinae and PCA groups both had a **significantly shorter (p<0.0001) average length of stay (3.3 days and 3.7 days, respectively) than the thoracic epidural group (4.7 days)**
- Thoracic epidural group had a significantly lower average pain rating on the NPRS (3.4) than the erector spinae group (4.5)

## Discussion

- When compared to a thoracic epidural or PCA, the erector spinae block proved to be the best choice for limiting post-operative opioid consumption and length of stay in this population.
- Patients receiving an erector spinae block had slightly higher pain levels (about 1 point on the NPRS) than patients receiving thoracic epidural
- With the importance of limiting opioid consumption at the forefront of postoperative pain management, these results **may warrant the erector spinae plane block being considered as the first-line analgesia method for patients undergoing surgery to repair pectus excavatum.**

## References

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