



# Intraoperative serratus anterior block for post-operative pain control after pediatric thoracotomy: a historical cohort study.

A Bunnell MD, N Barnett MD, M Kars MD, J Hagen MD

Department of Anesthesia, Cohen Children's Medical Center/Long Island Jewish Medical Center at Northwell Health, New Hyde Park, NY



## Introduction

- Thoracotomies result in substantial postoperative pain
- Regional techniques include thoracic epidural, paravertebral, and serratus anterior (SAB)
  - SAB is a relatively new, safe and effective alternative to thoracic epidural in adults, though not well studied in children
- We sought to examine the efficacy of the SAB as part of a multimodal regimen in pediatric patients undergoing thoracotomy

## Methods

- Retrospective chart review, single center, sole pediatric cardiac anesthesiologist
- Identified patients who underwent thoracotomy
- Exclusion criteria: pre-op opioids, post-op mechanical ventilation
- Separated into two groups: block vs. no block
- All blocks performed under ultrasound guidance after induction of GA prior to incision
- Statistical analysis via two-tailed t-test
- Primary outcome was post-op opioid consumption converted to morphine equivalent (MEQ)

## Results

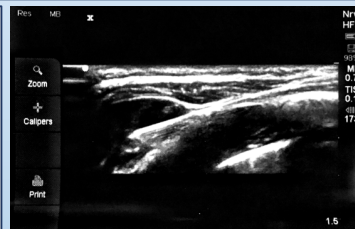
- 18 children identified, ages 5d-15y
- 10 received SAB as part of a multimodal pain regimen usually including dexmedetomidine, iv acetaminophen, and ketorolac
  - Diagnoses: Coarctation of the aorta, vascular ring malformation, BT shunt, thoracic duct ligation, etc.

- LA dosage: 0.5% Bupivacaine 0.5cc/kg or 0.25% Bupivacaine 1cc/kg (n=1)
  - Most patients (n=8) received adjuvant dexamethasone IV or perineural
- No significant differences in demographics
- No significant additional time to perform the block
- Reduced intraoperative opioids in SAB group (p=0.045)
- Trend towards delayed time to rescue dose, reduced post-operative opioids up to 48 hours in SAB group
- No block related complications noted

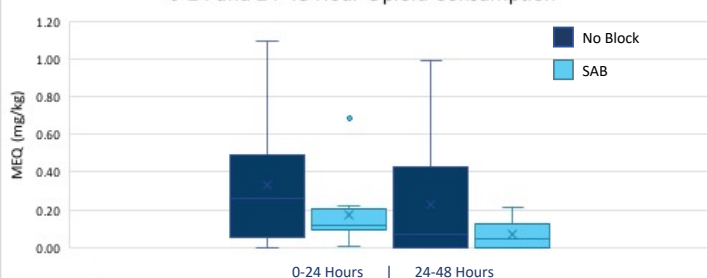
Table 1: Data presented as means (95% CI) and percentages w/ frequencies.

Cohort of 18 patients examined, 56% (n=10) received SAB.

	No Block n=8	SAB n=10	p
Gender: Female	25% (n=2)	30.0% (n=3)	1
Age (yrs)	3.24 (0.50-5.98)	3.69 (0.64-6.74)	0.81
Anesthesia time (min)	179.13 (123.48-234.77)	163.10 (122.61-203.59)	0.59
Surgical time (min)	85.75 (48.01-123.49)	89.20 (58.35-120.05)	0.87
Time to anesthesia release (min)	25.25 (10.40-40.10)	27.00 (18.39-35.61)	0.81
Intraoperative ME (mg/kg)	0.30 (0.14-0.45)	0.14 (0.06-0.23)	0.045
Time to rescue (min)	95.43 (-1.09-191.94)	285.10 (99.77-470.43)	0.088
Postop ME (mg/kg) 0-24hrs	0.33 (0.03-0.64)	0.18 (0.04-0.31)	0.25
Postop ME (mg/kg) 24-48hrs	0.23 (-0.06-0.52)	0.07 (0.02-0.13)	0.18
Postop ME (mg/kg) 48-72hrs	0.04 (-0.03-0.11)	0.06 (-0.02-0.13)	0.72



## 0-24 and 24-48 Hour Opioid Consumption



## Discussion

- Reduced intraoperative opioids in SAB group
  - Biased – practitioner aware of block
- Trend towards reduced post-opioid requirements up to 48 hours post-op
  - Promising for block efficacy
- No significant time added prior to anesthesia release – often a surgeon hesitation
- We suggest no limitations of SAB based on patient size
  - Smallest SAB patient 5 days old, 3.1kg
- Significant limitations:
  - Retrospective nature, lacks blinding, standardization
    - More prevalent use of multimodal regimen in SAB group intra-op
  - Very small sample size limits utility of the study
  - Unable to examine post-op pain scores as a measure of block efficacy
    - Multiple pain scales used, even for a single patient

## Conclusion

- Limited by sample size, but trend towards significance in post-op opioid reduction shows promise for efficacy of SAB as alternative to thoracic epidural for pediatric patients undergoing thoracotomy for pediatric cardiac and thoracic pathology