

# Effect Of Ultrasound Guided Thoracic Epidural Anaesthesia Via Caudal Approach on Postoperative Pain and Stress in Neonates Undergoing Tracheoesophageal Fistula Repair

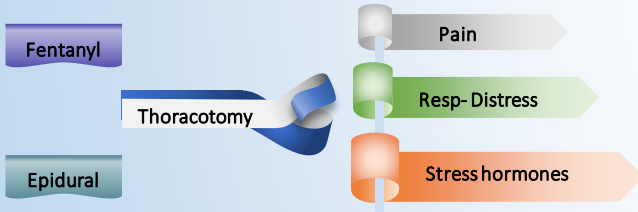
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## Background

- Neonates that experience pain early in life may exhibit more extreme affective and behavioral reactions to future painful experiences.
- In many centers, open thoracotomy repair is the preferred method since thoracoscopic repair equipment and training are not readily available [1].
- Negative effects include hemodynamic disturbance, respiratory discomfort, decreased breathing, and a rise in the stress hormone cortisol(2).
- Due to the negative effects of opioid use, there was a rise in the desire for alternative pain management methods.

## Objectives

- To address the effect of ultrasound guided thoracic epidural anaesthesia via caudal approach on postoperative pain and stress in neonates undergoing thoracotomy for tracheoesophageal fistula repair.



## Methods

- Prospective cohort study on 90 newborns divided into two groups.
- Caudally placed epidural group (CE) received an initial bolus of 0.75 ml/kg of 0.125% levo-bupivacaine under general anesthesia and levo-bupivacaine 0.0625% at 0.1 ml/kg/h continuous infusion.
- Control Group (CG) members were given fentanyl (2 mcg/kg) and paracetamol (10 mg/kg) intravenously, 1 mcg/kg Fentanyl and Paracetamol 10 mg/kg every 12 hours.
- The Neonatal Infant Pain Scale (NIPS) Scale and hemodynamic measurements were used to gauge pain.
- Salivary cortisol a stress marker preoperatively and 24 hours later
- Downes score for respiratory distress.

## Results

- Significantly lower HR in CE group (Figure 1)
- CE group had lower mean postoperative pain scores (Figure 2).
- Significant increase in salivary cortisol in CG group compared to CE group showing less stress response in neonates who received epidural anesthesia (Table1).
- Significant increase in incidence of respiratory distress in CG by Downes score (Figure3).

Figure1 hemodynamic measurements

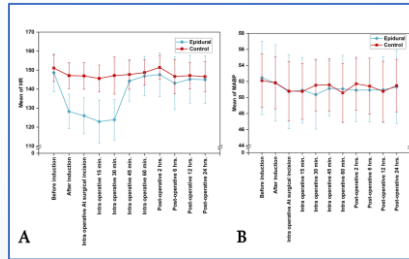


Table (1): Comparison between the two studied groups according to salivary cortisol (mmol/L)

	Cortisol	Epidural (n=45)	Control (n=45)	U	p
Pre-operative					
Min – Max.		12.0 – 69.50	11.0 – 112.0		
Mean ± SD.		28.48 ± 17.77	37.96 ± 26.60	907.500	0.397
Post-operative					
Min – Max.		12.50 – 69.50	18.80 – 192.60		
Mean ± SD.		29.73 ± 16.36	76.07 ± 39.70	318.0*	<0.001*
Z (p <sub>0</sub> )		0.130 (0.897)	5.175* (<0.001*)		

Figure2: Pain assessment using NIPS scale

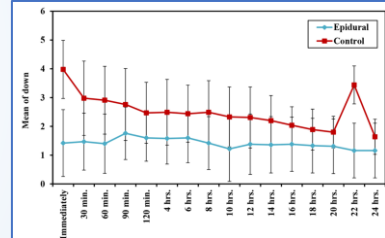
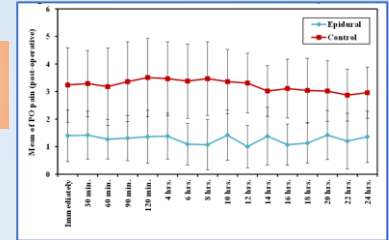


Figure 3: Assessment of respiratory distress

## Conclusion

- Caudally inserted thoracic epidural analgesia is a safe and easy technique in neonates with good hemodynamic stability
- The use of caudally inserted thoracic epidural analgesia in neonates undergoing TOF surgery provides sufficient pain relief and decrease opioid consumption with significant decrease in incidence of postoperative respiratory distress

## References

1. Traini I, Menzies J, Hughes J, Leach ST, Krishnan U. Oesophageal atresia: The growth gap. World J Gastroenterol. 2020;26:1262.
2. De Vos C, Kohler C, Fourie N, Goussard P. Delayed presentation of a baby with an oesophageal atresia on day 14 of life. BMJ Case Reports CP. 2021;14:e244483.