Comparative Perioperative Outcomes Following Different Surgical and Regional Anesthetic Approaches in Four Infants with Type H Tracheoesophageal Fistulas: A Case Series

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INTRODUCTION

- **H-type TEF is rare** (9% of the TEF database)
  - No esophageal atresia makes the diagnosis harder
- Surgical repair: cervical or thoracic approach, depending on fistula location.
- Effective pain control reduces opioid exposure, respiratory depression, long-term neurodevelopmental effects.
- **Limited literature** compares surgical approaches or anesthetic technique for this specific subtype.

METHODS

- Retrospective case series: 4 infants, H-type TEF repair
- UPMC CHP from 8/8/2015 - 9/22/2025
- **Outcomes:**
  - extubation time, opioid/acetaminophen/dexmedetomidine/benzodiazepine use through POD5, pain/sedation scores (N-PASS, UMSS) through POD5, complications, ICU LOS, epidural duration

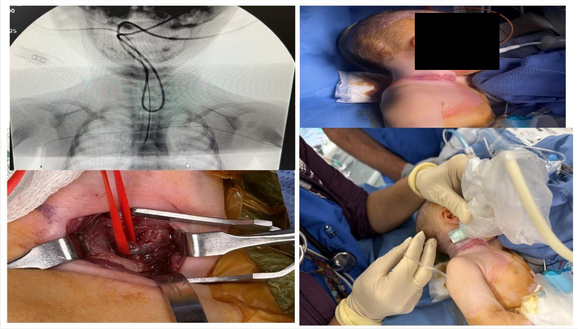


Image 1: *CXR showing the ureteral stent passing through the fistula; Red band isolating the fistula; The patient's incisional site; Performing the superficial cervical plexus block under ultrasound guidance.*

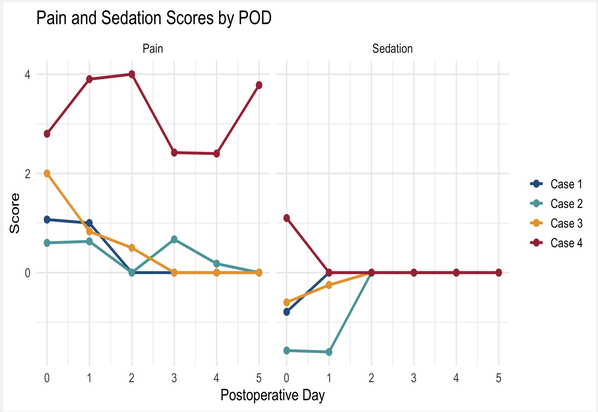
RESULTS

- **Four infants with H-type TEF were managed with different surgical and regional anesthesia approaches (Table 1).**
- **Three cases were extubated by POD0 and one was extubated on POD1; no reintubations occurred**

Table 1: Case Summary

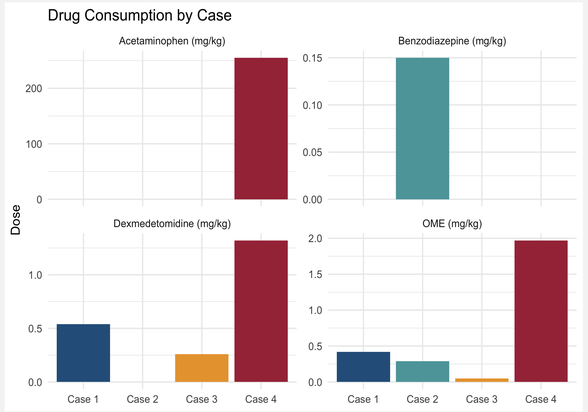
Case #	Surgical Approach	Regional Technique	Vertebral Level of Catheter Tip	Extubation POD	Reintubation	Epidural Duration (hrs)	ICU LOS (days)	Complications
1	Cervical	Superficial cervical plexus block	-	0	N	N/A	21	Right vocal cord paralysis
2	Transthoracic thoracotomy	Caudal thoracic epidural (T4)	T4	1	N	53	18	Small anastomotic leak
3	Transthoracic thoracotomy	Caudal thoracic epidural (T4)	T4	0	N	42	9	N
4	Thoracoscopic (cervical approach to fistula)	Caudal thoracic epidural (T4)	T4	0	N	33.5	9	N

Figure 1: Case Summary



Pain scores declined to 0 by POD3 in Cases 1-3; Case 4 remained elevated throughout POD5. Sedation scores peaked on POD1 and reached 0 by POD3 in all cases.

Figure 2: Case Summary



Case 4 had the highest opioid (1.97 vs. 0.05-0.42 mg/kg), acetaminophen (255.04 vs. 0 mg/kg), and dexmedetomidine (1.32 vs. 0-0.54 mg/kg) consumption, despite having the shortest epidural duration (33.5 hrs) of the three epidural cases.

DISCUSSION

- Superficial cervical plexus block provided satisfactory analgesia with low rescue opioid requirements
- Technically simpler than epidural placement- may be safer in select cases, warranting further investigation.
- Caudal epidural catheters offer titratable, prolonged postoperative analgesia
- Neonatal epidural placement/management carries added technical and safety considerations
- These trade offs should be weighed against surgical approach and observed ICU length of stay



Image 2: *TEF repair via thoracotomy with caudal epidural.*

REFERENCES

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