

A SINGLE INSTITUTION REVIEW OF ANAESTHETIC MANAGEMENT OF AORTOPEXY OVER 4 YEARS

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Objectives:

Aortopexy are part of Great Ormond Street Hospital's specialist tracheal services offered to children with severe tracheobronchomalacia, with an average of 10 cases performed per year. We wanted to document current anaesthetic practice at our institution for this complex group of patients undergoing the procedure.

Methods:

We looked at patient characteristics and anaesthetic management of 26 aortopexies over 4 years over the period January 2016 – January 2019.

Table 1: Patient Characteristics

Gender: 17 males, 9 females; **Ages at surgery:** CGA 38/40 to 15 years; **Weight:** 2.6 – 40 kg, **Ex-prems:** 9

Table 2: Patient comorbidities

| | |
|------------------|--|
| Cardiovascular | Congenital Heart Disease(34.6%), Vascular compression of trachea/bronchi (38.5%) |
| Respiratory | TOF/OA(50%), laryngeal clefts(15.4%), Other(15.4%) eg hypoplastic lung, pulmonary hypertension |
| Gastrointestinal | GORD (42.3%), Nissen's fundoplication(7.7%), choanal/duodenal/ileal atresia(15.4%) |
| Neurological | Neurological(19.2%), Musculoskeletal(11.5%), Renal(11.5%), Metabolic (3.8%) |

Figure 1: Surgical approaches used

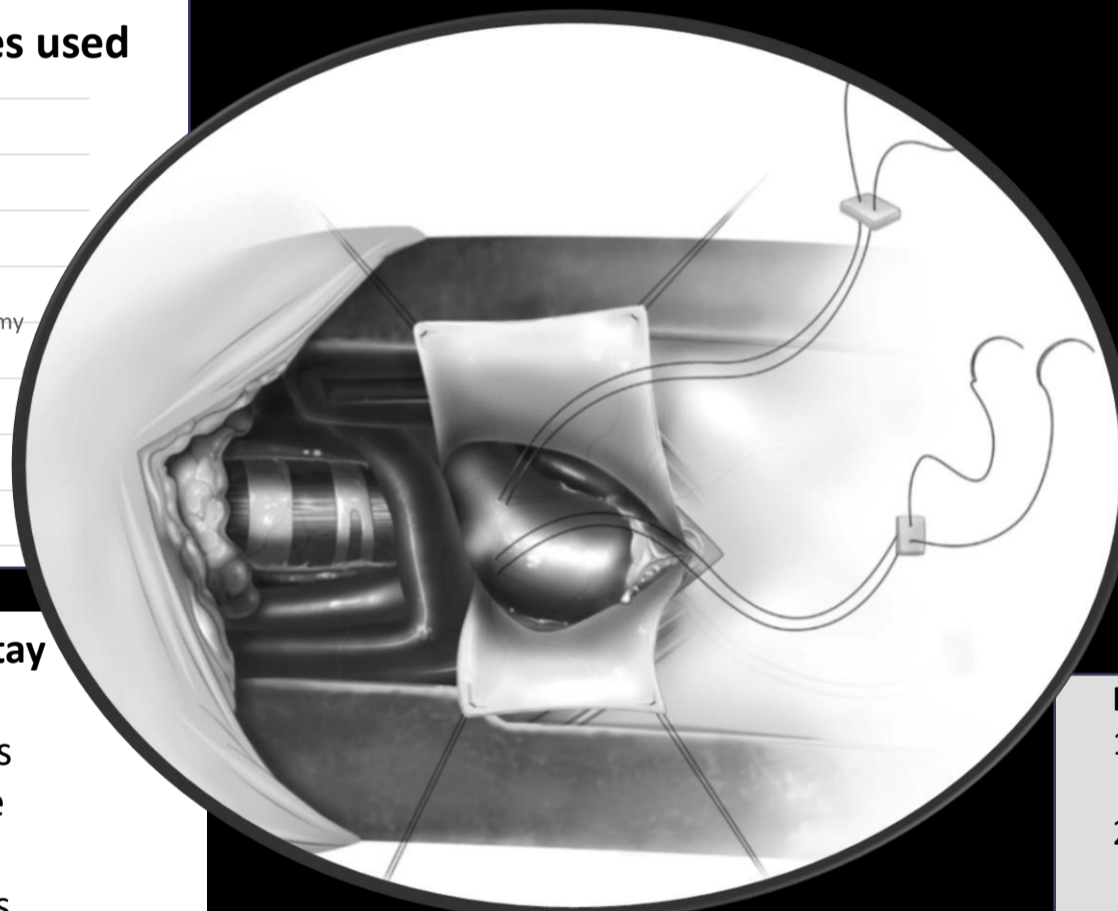
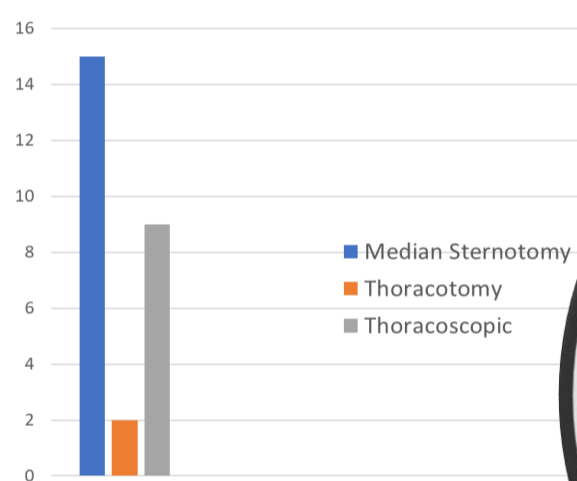


Figure 2: Anterior Aortopexy (Image credit: Elliot et al 2011)

Postoperative Intensive Care Stay

- All median sternotomy cases transferred to intensive care postoperatively
- Median length of stay 5 days
- Median no. of days until extubation of 2 days

Table 3: Adverse effects documented in 6 patients

- Transient ST elevation in 22 day old, 3.5 kg neonate with median sternotomy approach
- Difficult ventilation requiring tracheostomy within same GA
- Complex patient (Scimitar syndrome) desaturating, thought to be secondary to pulmonary hypertensive crisis
- Stridor postop in 17 month old after extubation, so reintubated and transferred to intensive care
- 2 patients requiring repeat aortopexy within the same year
- No cardiorespiratory arrests or fatalities

References:

- Elliot MJ, Speggorin, S & Torre, M (2011) Anterior aortopexy for tracheomalacia
- Rijnberg, F & Butler, C et al (2018). Aortopexy for the treatment of tracheobronchomalacia in 100 children: a 10-year single-centre experience. European journal of cardio-thoracic surgery 54.
- Wong, ZHJ & Hewitt, R et al (2019). Thoracoscopic Aortopexy for symptomatic Tracheobronchomalacia. Journal of Pediatric Surgery. 55.

Table 4: Summary of preferred anaesthetic approach at our institution

| Surgical Approach | Closed (Thoracoscopic) | Open (Median Sternotomy or Thoracotomy) |
|---------------------|--|--|
| Similarities | Majority had gas induction; All intubated & given antibiotic prophylaxis (first line co-amoxiclav) | |
| Premedication | None given | 1 patient (15 year old) received premedication |
| Location | General theatres | Cardiac theatres |
| Muscle relaxant | Short acting (atracurium most preferred agent) | Long acting (pancuronium most preferred agent) |
| Maintenance agent | Inhalational (sevoflurane +/- nitrous oxide) | Inhalational (sevoflurane/oxygen mix) +/- supplementation with iv infusions prior to transfer or morphine, remifentanyl, clonidine or propofol |
| Monitoring | No invasive monitoring | Invasive cannulae: central venous line, arterial lines |
| Analgesia | Paracetamol, NSAIDs, opioid boluses | Paracetamol, NSAIDs, opioid boluses; opioid/α-2 agonist infusions; paravertebral blocks |
| Fluids | Crystalloids (80% used Hartmann's, 20% used N. Saline 0.9% or dextrose-containing fluid) | Blood transfusion may be required (4/17 cases) of 10 – 20 ml/kg |
| Vasopressor support | Not routinely required | Use of noradrenaline infusion in 1 case (term infant), phenylephrine boluses as required |