Undiagnosed Tracheoesophageal Fistula - Intraoperative Cardiopulmonary Collapse Upon Gastrostomy Tube Placement in a Premature Infant with a Duodenal Atresia

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Case
1 day old male, 30wk gestation, 1.35kg

• Duodenal Atresia
• Mother presented to clinic in preterm labor
• Betamethasone
• WGA AB, 1, 2, 3
• Intubated
• Surfactant administered

Outside hospital - orogastric tube insertion

• Interventional radiology failed to pass nasogastric tube
• Patient to the operating room for an urgent gastrostomy

Transferred to Children's Hospital of Wisconsin

Intraoperative Events

Uneventful beginning

• Airway: ETT 3.0uc mm
• Ventilation: Pressure Control, neuromuscularly blocked
• Access: JNG PIV x 2
• Monitoring: Standard ASA, NIRS, radial arterial line
• Anesthetic: Isoflurane

Gastrostomy tube placement

• G-tube insertion = Loss of capnography
• Recognition of TEF
• G-tube clamped
• Emergent thoracotomy → fistula ligation
• EtCO2 regained, hypoxia improved
Tracheoesophageal Fistula / Esophageal Atresia

Anatomical defect with a spectrum of structural abnormalities and syndromic associations

Gross and Vogt classification systems

- Incidence of 1: 2500-3000
- Most common: type C
- Unable to diagnose prenatally
- Clinical diagnosis 50%
- Will have a concurrent congenital anomaly

Preoperative Evaluation

Risk of surgical therapy is based on presence of other co-morbidities
- Complex congenital heart disease
- Weight < 2 kg
- Poor pulmonary compliance
- Large pericardial fistulas
- Thrombocytopenia

Diagnoses
- Electrocardiography / Echocardiography
- Chest radiograph
- Lumbar ultrasound in presence of sacral dimples

Management
- Congestive heart failure must be medically optimized
- Treatment of pulmonary disease decreases intraoperative complications
- Neonates with non-ductal dependent and ductal dependent heart lesions can successfully undergo fistula ligation

Anesthetic Management of TEF Repair

Induction / Airway
- Maintenance of spontaneous ventilation
- Inhalational induction
- No mask ventilation, ET tube past the fistula

Perioperative TEF
- High clinical suspicion
- Loss of capnography after G-tube placement highly suggestive of TEF
- Factors predisposing to ventilatory difficulty
- Epiglottic
Summary

Anatomical abnormality is frequently complicated by other anomalies.

Exhaustive preoperative survey is prudent.

Anesthetic management is dependent on the presence of other co-morbidities.

In undiagnosed TEF, inability to ventilate after G-tube placement is virtually diagnostic of TEF.

Treatment includes clamping of the G-tube, ligation of the fistula, and supportive care.

REFERENCES