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Case Report on Tracheo - Oesophageal Fistula in a New Born - An Anaesthetist's Challenge

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Abstract: ***Introduction: A fistula is an abnormal connection between 2 epithelial surfaces. A tracheo - oesophageal fistula is the connection between oesophagus and trachea which are normally separate structures. The fistula is a congenital defect and occurs in 1 in 5000 births. Here we report a 1day old preterm male child weighs 1.8 kgs with a Tracheoesophageal fistula who was taken up for surgery under general anaesthesia at our hospital who presented to us with hypoxia and tachypnea during breast feeding. Clinical findings were heart rate 146/min, RR 50/min SpO2 on air was 99%. X - ray chest and abdomen showed coiling of nasogastric tube (NGT) in upper part of esophagus and large gas shadow of stomach. Posted for thoracotomy and tracheoesophageal repair. Methods: Baby was premedicated in the preoperative area and inside the operation room all necessary monitors attached. Baby was induced under general anaesthesia, intubated and maintained on inhalational anaesthetics. Surgery was performed through right thoracotomy in the 4th intercostal space. The TEF was exposed, ligated and end to end anastomosis of the esophagus was done after mobilization. Baby was shifted to NICU intubated for further management and ventilatory support. The baby was discharged on 12th postoperative day. Conclusion: Goals in the anaesthetic management of Tracheoesophageal fistula are many like consideration of poor organ development/ prematurity, difficult airway, negotiation of endotracheal tube beyond the fistula, cardiorespiratory compromise, maintenance of oxygen saturation with adequate depth of anaesthesia, perioperative analgesia and postoperative intensive care.***

Keywords: Tracheoesophageal fistula; neonate; esophagealatresia; preterm

1. Introduction

A fistula is an abnormal connection between 2 epithelial surfaces. A tracheo - oesophageal fistula is the connection between oesophagus and trachea which are normally separate structures. It may becongenital or acquired. Incidence of congenital fistula is 1 in 5000 births. Usually males are affected. It is more common in prematurity. When a baby with a TEF swallows, theliquid passes through this connection to the lungs causing pneumonia.

A TEF is suspectedwhen a newborn is unable to swallow its saliva, coughs, chokes, vomits or becomes cyanosed on feeding. Sometimes it is associated with esophageal atresia which can be diagnosed by passing aRyles tube. MRI is an useful investigation to diagnose TEF or EA.

Here we report a 1day old pretermmale child, weighing 1.8 kgs with a TEF who was operated at our hospital. The surgery performed under generalanaesthesia and then transferred to NICUwith the endotracheal tube in situ for elective ventilation.

2. Case Discussion

This is a case of an one day old preterm male baby weighs 1.8kgs who presented to us with hypoxia and tachypnea during breast feeding and was posted for thoracotomy and tracheoesophageal repair. The clinical findings of heart rate 146/min, RR 50/min with intercostal subcostal indrawing and SpO2 on room air was 99%. Patient was managed with oxygen, nebulization, antibiotics. X - ray chest and abdomen showed coiling of nasogastric tube (NGT) in upper part of esophagus and large gas shadow of stomach. No other significant anomaly noted. Routine blood investigations and ABG were within normal limits. High risk consent taken after the parents were informed about the risk involved and about the need of postoperative intensive care.

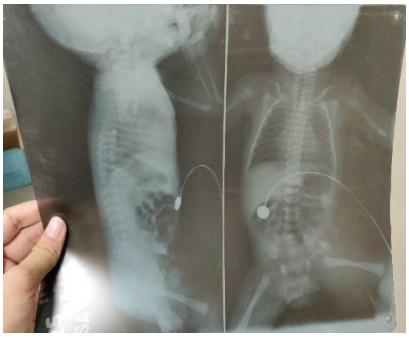

Figure 1: Xray film of the newborn

3. Objectives

Anaesthetic management of such cases are mainly focused on prevention of hypoxia, maintaining haemodynamic stability, smooth induction adequate intra/post operative analgesia and uneventful post - operative recovery.

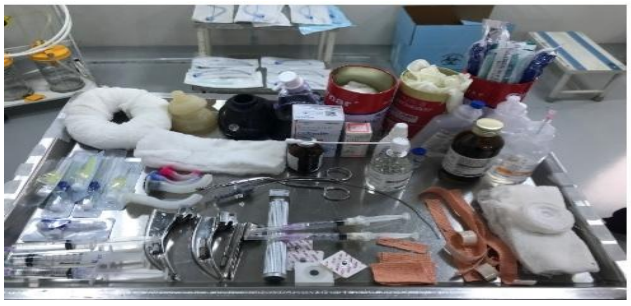

Figure 2: OT preparation (paediatric trolley)

4. Methods

Baby's NBM status was confirmed. Iv cannula was secured. Premedicated with Inj. Glycopyrrolate 0.004mg/kg IV and midazolam 0.05mg/kg IV before taking into the OT. Inside the operation room all necessary monitors including ECG, pulse oximetry, NIBP, capnography were attached. Baby was given inj. Fentanyl 1mcg/kg and gaseous induction sevoflurane and oxygen was started using the Jackson Rees circuit. Preoxygenated with 100% oxygen for 5min. Induced with Inj. Propofol 2mg/kg IV. Proper ventilation was confirmed by waveform capnography, chest rise and auscultation. Muscle relaxant administered in a dose of 1mg/kg of Inj. Atracurinium. Baby intubated with Portex™ uncuffed ET tube of size 3.0mm ID so that distal tip was located below the level of TEF but above the carina and taped after confirming bilateral air entry. Baby was maintained on sevoflurane (MAC 1%), O2 and N2Ovia JR circuit providing IPPV. Ondensetron 0.05 mg/kg, hydrocortisone 5 mg/kg and dexamethasone 0.5 mg/kg. Surgery was performed. The TEF was exposed, ligated and end to end ananstomosis was done Surgery lasted for two hours. Intraoperatively, 70 ml of ringer lactate /hour was infused. Baby was vitally stable intraoperatively. Baby was sent to NICU intubated via AMBU bag at 6l of oxygen monitored post operatively and was on ventilator extubated 4 days later.

The baby was discharged on 12th postoperative day when breast feeding was resumed. On telephonic follow - up he was well until 4months after surgery and also reported good weight gain of 500grams.

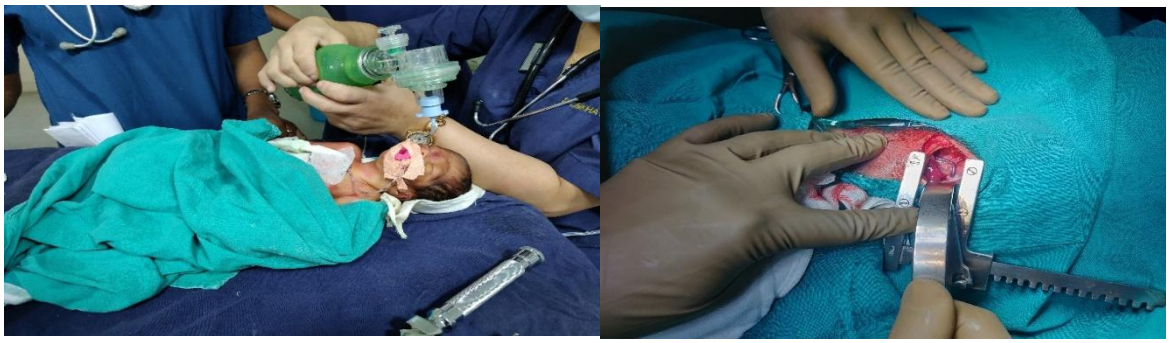

Figure 3: Showing Intraoperative Images

5. Discussion

Tracheoesophageal fistula (TOF) with or without oesophageal atresia (OA) is a congenital anomaly with an incidence of 1 in 3000 - 4000 births worldwide [1]. While TOF may occur in isolation, up to 50% of infants have TOF in association with other congenital anomalies, the most common being congenital heart disease.25% of TOF infants are diagnosed with VACTERL (Vertebral anomalies, imperforate Anus, Cardiac defects, Tracheo - oesophageal fistula, Renal agenesis, and Limb abnormalities, most often radial dysplasia) [2].

Intraoperative challenges:

- Tracheal and Esophageal Isolation - Right vagus nerve stimulation can cause bradycardia.
- Fistula ligation - compression of trachea distal to endotracheal tube; manual ventilation to maintain spo2 >95% with Valsalva maneuvers to ensure successful ligation (detection of leak)
- The goal during induction to intubating was minimizing distention of stomach. If measures are not taken to avoid stomach distention it is almost impossible to ventilate the neonate and can lead to hemodynamic collapse.

6. Conclusion

Goals in the anaesthetic management of TEF are many like consideration of poor organ development/ prematurity, difficult airway, negotiation of endotracheal tube beyond the fistula, cardiorespiratory compromise, maintenance of oxygen saturation with adequate depth of anaesthesia, perioperative analgesia and postoperative intensive care.

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