



ANAESTHETIC CHALLENGES IN A RARE CASE OF ADULT IATROGENIC TRACHEO-OESOPHAGEAL FISTULA POSTED FOR NECK EXPLORATION AND TRACHEO-OESOPHAGEAL FISTULA REPAIR.

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ABSTRACT

The anaesthetic management for tracheo-oesophageal fistula (TEF) closure in adults demands a nuanced approach, recognizing the unique challenges posed by mature anatomy and potential comorbidities. Ensuring effective airway control, ventilation, and hemodynamic stability becomes paramount during this intricate procedure. With the goal of preventing aspiration and optimizing perioperative conditions, anaesthesiologists must tailor their strategies to the specific needs of adult patients undergoing TEF closure. There are multiple causes of tracheo-oesophageal fistula in adults including malignancy, trauma and iatrogenic causes. The important cause of tracheo-oesophageal fistula in our case was iatrogenic due to the provox voice prosthesis with tracheostomy tube in situ. Here we present a rare case report of 62-year-old male with tracheo-oesophageal fistula complains of regurgitation of food particles from the in-situ tracheostomy tube.

KEYWORDS : Tracheo-Oesophageal fistula, Iatrogenic, Provox voice prosthesis, Rare

Case Report

A 62-year-old male patient came with complaints of regurgitation of food partly through tracheostomy tube for six months. Patient had a past history of laryngeal carcinoma. Patient had undergone total laryngectomy with partial pharyngectomy in 2016 under general anaesthesia. Patient underwent Provox voice prosthesis placement in 2018 under general anaesthesia. Patient underwent tracheostomy in 2023 under GA. Patient was a known case of hypertension was currently not on any medications as the blood pressure was under control. Patient was a tobacco chewer for 10 years but stopped 3 years back. Patient had tracheostomy tube no 7 in situ. He underwent 4 cycle of external beam Radiotherapy in 2017. He had a past history of tubercular ascites for which he received Anti tubercular drugs for 9 months.

He was on tracheostomy tube (no 7 PVC portex) at the time of admission to hospital. In spite of repeated regurgitation, he was able to cough out GI contents. This prevented him from aspiration and subsequent development of any upper respiratory tract infections.

Preoperative Assessment

On Examination.

Patient was averagely built and well nourished, conscious, comfortable, and could speak clearly by closing tracheostomy tube. Patient was on nasogastric tube no.14 in-situ. On examination his vital parameters were pulse rate was 76/minute, blood pressure 110/70mmhg and respiratory rate 16/minute. His Spo2 was maintained 99% on room air on auscultation of lungs, bilateral air entry was equal and no added sounds were noted. Other systemic examination findings were within the physiological normal limit. Patient MPC was grade II.

Patient was posted for neck exploration with tracheo-oesophageal fistula closure.

Anaesthetic Management:

Patient was taken in the OT, standard ASA monitors attached. Patient was premedicated with 0.2mg Glycopyrrolate, 0.5 mg Midazolam, 80 mcg Fentanyl IV injections. Anaesthesia Circuit connected to the tracheostomy tube and 100% oxygen

started. Patient was induced with injection propofol 2mg/kg and injection Atracurium 35mg.

Then patient was maintained on sevoflourane, 0.2-2% and injection Atracurium maintenance dose boluses.



Figure 1. Patient on the OT table with tracheostomy tube in situ.

Intraoperatively Surgeon removed the tracheostomy tube and a flexometallic endotracheal tube no 6.5 mmID inserted through the tracheostomy site for surgical access.

Anaesthesia Circuit connected to the flexometallic Endotracheal tube and patient ventilated.

Intraoperatively the flexometallic tube got punctured and a flexometallic tube of size 7.0 mm ID was placed and fixed by the surgeons. The position was confirmed by positive capnography and chest auscultation which revealed Air entry bilaterally equal and clear.

The flexometallic ET tube facilitated the surgeons to operate, by removing the tube out intermittently, with a period of apnea (1-2 minutes each) monitoring SpO2 throughout. Before removing the flexometallic tube, ventilation was done with only 100% O2 for 3 minutes with additional propofol and atracurium in order to avoid hypoxia and light plane of anaesthesia.



Figure 2. Intraoperative monitoring.

These periods of intermittent apnoea (4-5times) the fistula was repaired. Intermittent disconnection of anaesthesia circuit to aid closure of fistula, could lead to hypoxia. This was avoided by providing 100 oxygen for 3 minutes before removal.



Figure 3. Tracheostomy tube replaced with flexometallic endotracheal tube.

After the procedure, the tracheostomy tube no 7 PVC PORTEX was again placed and fixed. Anaesthesia Circuit connected to the tracheostomy tube and position confirmed by positive capnography and chest auscultation which confirmed bilateral air entry equal and clear.

Sevoflourane, fentanyl and Atracurium were with-held 20 min prior to end of surgery and patient's respiratory attempts were observed. Patient was allowed to wake up after reversal of residual neuromuscular block with neostigmine 3 mg and glycopyrrolate 0.5mg.

DISCUSSION:

An adult tracheoesophageal fistula is a rare condition and has high mortality due to aspiration and sepsis. Tracheal injury can happen in multiple ways including traumatic and prolonged intubation, airway suctioning, and tracheostomy tube cuff overinflation. This results in ischemia, pressure necrosis and tissue damage leading to ulceration and formation of subsequent fistula. In our patient the cause of the fistula was the constant irritation between the trachea and the oesophagus by the provox voice prosthesis.

As the surgeon required the access to the field, the tracheostomy tube had to be removed and a flexometallic endotracheal tube placement was necessary

The sterile flexometallic tube was fixed with suture and during repair it was pulled out, before which oxygenation with 100% Oxygen along with top-ups of injection propofol and Atracurium was given. Thus, taking care that the patient was not in light plane of anaesthesia and did not go into hypoxia.

Tracheoesophageal Repair procedure was because of the Shared Airway with the surgical field

Intermittent apnoeic periods during the closure of the fistula could have caused hypoxia, hypercarbia. So continuous monitoring of SpO₂ and EtCO₂ are of utmost importance.

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The challenges faced by the anaesthesiologist in