

ANAESTHESIA FOR TRACHEAL TUMOUR RESECTION: A CASE REPORT

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ABSTRACT

Tracheal tumour resection requires thorough preparation and planning from both the side of the surgeon and the anaesthesiologist. It is indeed a challenge. Here we present a case report of anaesthesia for tracheal tumour resection. A 38 years lady presented with dyspnoea on exertion and stridor with CT scan neck finding of tracheal tumour. This was of importance to us, because this was the first time we were involved in anaesthesia for tracheal tumour resection and reconstruction.

KEYWORDS

Anaesthesia Tracheal Tumour Resection.

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INTRODUCTION

Anaesthesia for tracheal resection and its reconstruction depends on the magnitude of tracheal obstruction by the tumour. More severe the obstruction, more difficult is the airway management. Even the use of cardiopulmonary bypass may be required in most extremes of tracheal narrowing. Here, we describe the anaesthetic management of a tracheal tumour mass done at our hospital.

CASE REPORT

A 38-year-old lady with history of dyspnoea on exertion and stridor 5 months back for which she underwent treatment with bronchodilators, was subsequently diagnosed to have tracheal tumour on CT scan of neck. She also underwent 6 cycles of chemotherapy, but there was no improvement noted. Rigid bronchoscopy was done under general anaesthesia and the tracheal tumour was debulked. She did not have any other comorbidities. Systemic examination was within normal limits. She was posted for tracheal tumour resection. The surgical plan was discussed with the surgeon and the plan of anaesthesia was charted out. The necessary airway instruments like laryngeal mask airways, high frequency jet ventilation system, cricothyroidotomy set, flexometallic tubes and tracheostomy tubes were kept ready.

Pre-operative investigations were noted in the morning of surgery, which were all within normal limits. Written informed consent was taken for the procedure. The distance of the mass from the vocal cords and up to the carina were noted with the help of the Radiologist, which was 3.5 cm and 4.5 cm respectively.

Pre-induction monitors pulse oximeter and ECG were connected; 2 wide bore IV cannulas were secured. Nebulization with salbutamol, ipratropium and budesonide was given.

Patient was pre-medicated with Glycopyrrolate 0.2 mg IV, Midazolam 1 mg IV and Ondansetron 4 mg IV. Dexamethasone 4 mg IV, Deriphyllin 2 mL IV and Paracetamol 1 g IV were also administered. Right radial arterial line was secured under local anaesthesia. Morphine 7.5 mg IV, Xylocard 3 mL were given followed by induction with Propofol 100 mg IV. Muscle relaxation was facilitated by Rocuronium 50 mg. Surgeon performed rigid bronchoscopy. Cook's airway exchange catheter was introduced through the bronchoscope and a 7 mm cuffed flexometallic Endotracheal Tube (ETT) was railroaded over it. Bilateral air entry was checked and the tube was fixed at 21 cm. Anaesthesia was maintained with O₂, N₂O, isoflurane and infusion of Atracurium and Dexmedetomidine. A nasogastric tube was placed and patient's bladder was catheterised.

Surgical steps included neck incision, sternotomy followed by tracheal tumour resection. During the tracheal tumour resection and tracheal reconstruction, the first flexometallic ETT was withdrawn upwards into the trachea and another sterile 7 mm flexometallic ETT was inserted into the distal tracheal opening by surgeon and cuff was inflated. Patient's lungs were ventilated with another sterile circuit through the distal ETT. As the cuff of the first ETT had leak, another ETT was railroaded over a nasogastric tube introduced by the surgeon through the proximal end of trachea. The surgeon looped the Murphy eye of the proximal ETT with silk suture to avoid it from slipping out, which was removed once the tracheal end-to-end anastomosis was near completion. After the closure of surgical wound, a stay suture was placed from the patients chin to the upper sternum to avoid extension of neck.

Intraoperatively, vitals were stable. One unit of compatible whole blood was transfused; 1250 mL of Ringer's lactate was infused and urine output was 500 mL. After checking the arterial blood gas report, potassium correction was given. Once the patient started to breathe, muscle relaxant was reversed with Neostigmine 3 mg IV and Glycopyrrolate 0.6 mg IV. After keeping airway equipment ready and thorough oral suction, trachea was extubated when patient was fully awake and having adequate tidal volume breaths in the operation theatre itself. Post-operatively, pulse rate was 90/min, Blood pressure was 120/70 mmHg and SpO₂ was 100% on room air. Adequate analgesia was prescribed.

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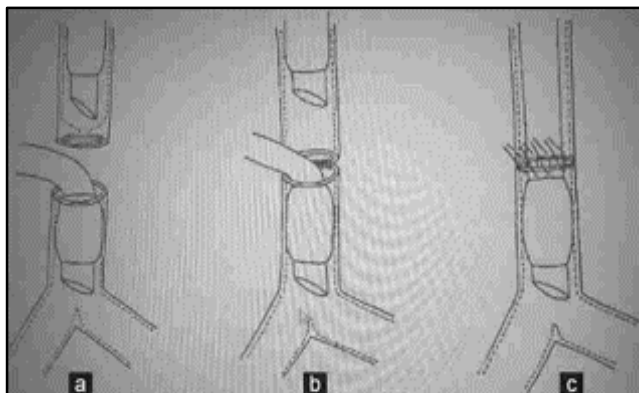


Fig. 1.⁽¹⁾

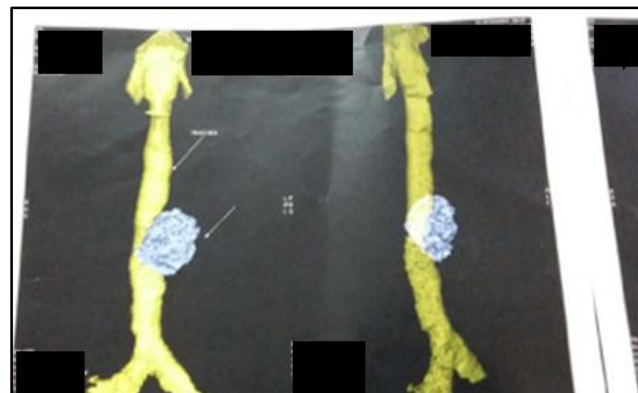


Fig. 4: 3D Reconstruction of Tracheal Tumour

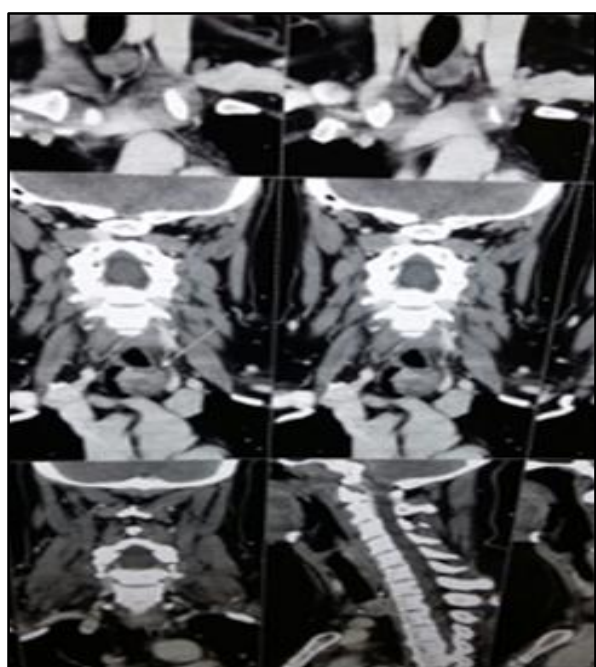
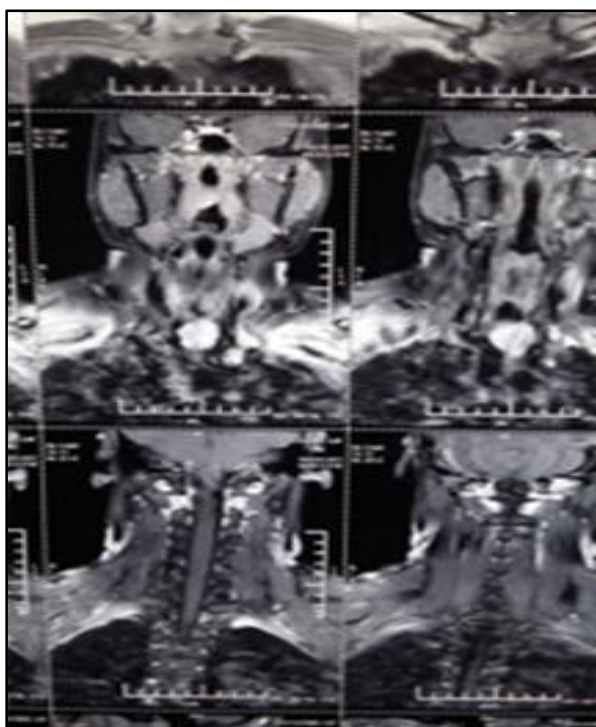


Fig. 2 & 3: CT Scan Pictures of Tracheal Tumour



Fig. 5: Chest Radiograph not showing any Significant Finding

DISCUSSION

Our patient had tumour at mid tracheal level. Tracheal tumours can be located at various levels extending from the vocal cords to the carina and the resection and reconstruction becomes more and more challenging depending on the location.

Tracheal resection and reconstruction is contraindicated in patients with extensive involvement, mediastinal invasion, pulmonary dysfunction, steroid dependence, radiation therapy to the neck and remote metastasis.

Preoperative preparation is vital. Co-operation between the surgeon and anaesthesiologist plays a major role in making the surgery a successful one. The course of anaesthesia can be divided into five phases. There are three critical periods and two periods of relative calm. (1) Induction and intubation-critical period, (2) Dissection, (3) Open airway-critical period, (4) Closure and emergence, and (5) Extubation-critical period.^[2]

A variety of methods for providing adequate oxygenation and elimination of CO₂ have been used during tracheal resection. The different methods which can be used include orotracheal intubation, insertion of a sterile endotracheal tube into the opened trachea or bronchus distal to the area of resection, High Frequency Jet Ventilation (HFJV) through the stenotic area, High Frequency Positive Pressure Ventilation (HFPPV), and Cardiopulmonary Bypass (CPB).^[3] We intubated using the rigid bronchoscope with a flexometallic tube. HFJV represents the optimal modality of ventilation for surgery of the distal portion of the trachea.^[4]

Cardiopulmonary bypass for tracheal resection may produce CPB-related complications and is reserved for cases with acute respiratory distress.^[5] Even when trachea is totally obstructed by tracheal tumour mass, extracorporeal circulation by the femoral artery and femoral vein cannulation can gain good gas exchange and surgery can be performed.^[6]

During open airway, the surgeon manipulates the distal tracheal tube depending on the anastomotic procedure. Extreme co-ordination with the surgeon is essential to avoid desaturation. Extubation may be tricky due to airway oedema. A thick chin-sternum suture or cervical splint suture may be used to reduce tension on the suture line and avoid neck hyperextension.

Post-operatively, humidified oxygen is delivered by mask to achieve a PaO₂ of 75 to 100 mmHg, chest physiotherapy is also administered to all patients to keep loosen secretions and help clear the chest. Close observation of the patient's airway is required.^[7]

CONCLUSION

Anaesthesia for tracheal resection surgery is a challenge. Airway management skills is an essential component and most important is the co-ordination between the surgeon and anaesthesiologist.

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