



ORIGINAL RESEARCH PAPER

Medicine

ANAESTHETIC MANAGEMENT OF ENDOBRONCHIAL TUMOUR REMOVAL IN A YOUNG PATIENT

KEY WORDS: Bronchoscopy, Airway bleeding, cardiac arrest, CPR, double lumen tube, vasopressors.

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ABSTRACT

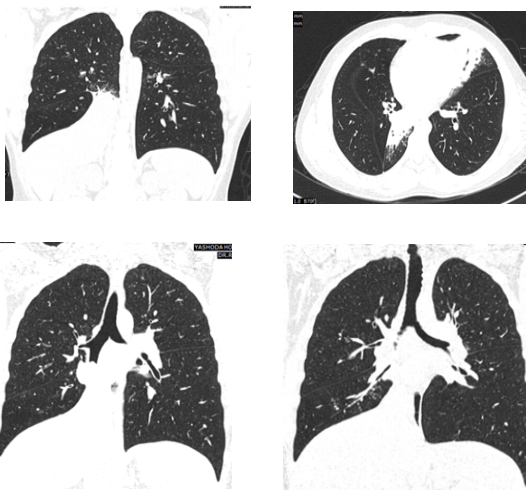
Benign tumors involving bronchus are very rare. Surgical resection through bronchoscopy is the treatment of choice with excellent prognosis. One of the rare complications is bleeding from the airway. However, there is a paucity of case reports on anaesthetic risks involved in case of a bronchial tumor. We present a successful case removal of bronchial tumor involving right intermediate bronchus. The patient was scheduled for rigid bronchoscopy and debulking of the tumor. Patient had a complication of airway bleed & had cardiac arrest. The various anaesthetic implications of the complications of the procedure and airway management with right double lumen tube are discussed. Immediate CPR and control of the airway and proper isolation of lung saved the patient.

INTRODUCTION:

Anaesthetic management of surgical removal of tumors involving the respiratory tract poses a significant challenge as the airway is shared by both anesthesiologist & surgeon, need for control ventilation, oxygenation and providing a good operative field and need to control the seepage of blood and small chunks of tumor tissue distally into tracheobronchial tree while resection. It is therefore important to anticipate problems and formulate airway management options in the preoperative period for successful perioperative anesthetic management.

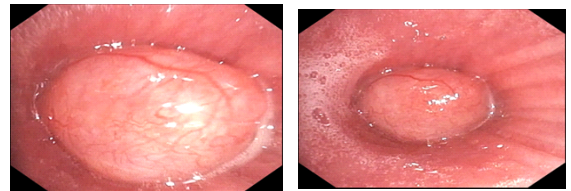
CASE REPORT:

A 16 yr old male who presented with cough with sputum & dyspnea on exertion since 1 week and high grade fever since 2 – 3 days. Computed tomography scan of chest showed etc right lower lobe collapse and mediastinal lymphadenopathy.



Bronchoscopy done suggestive of right intermediate bronchus growth completely occluding lumen with post obstructive pneumonia.

A. Bronchial lumen before resection



Histopathological examination showed spindle cell tumor. So, planned for snaring through rigid or flexible bronchoscopy or removal by cryo-procedure.

Preoperative evaluation done. No comorbidities. History of Pulmonary TB in the past, took Anti-tuberculous treatment & completed the course. So according to ASA fasting guidelines patient was kept NBM for 6 hrs. Nebulization given in preoperative area. 20 G IV Canula secured. Plan of the procedure was discussed with surgeon and decided to do rigid bronchoscopy and snaring¹.

Patient was shifted to Operating Room, connected standard monitoring. 100 mcg. of Fentanyl given intravenously. Preoxygenation done for 3min until end tidal Oxygen is above 90%. Then Inj.Propofol 2mg/kg and atracurium 0.5mg/kg were given. After 3min of bag and mask ventilation and ensuring patient was completely relaxed then surgeon was asked to insert rigid bronchoscope. Circuit was connected to side port of the Bronchoscope and patient was ventilated with oxygen and air^{2,3,4}. Patient's vitals were maintained. Surgeon could remove almost 3/4th tumor.



B. Bronchial Lumen after resection

At that point, there was profuse bleeding⁵ from the site of the lesion, so rigid bronchoscope removed and intubated with single lumen tube. Meanwhile resuscitation started using fluids. But still patient couldn't be ventilated due to blockage with blood & clots. So single lumen tube removed and right double lumen tube inserted and ventilated^{6,7}. Meanwhile patient heart rate came down and BP unrecordable. CPR started and patient revived with one cycle of CPR^{8,9} and patients put on vasopressor.

Patient stabilized for about 30 min in the OR and been shifted to ICU with DLT in situ.

Postoperatively in the ICU patient had ECG changes T wave inversions in lead 3 and 2D Echo showed moderate cardiac dysfunction and so vasopressors¹⁰ (Noradrenaline & Dobutamine) were continued. Patient was sedated and ventilated for 1 day. Next day shifted to Operation theatre again and clots removed, hemostasis secured and tube changed from DLT to single lumen tube under bronchoscopic guidance. Confirmed there is no bleeding in bronchial tree and again shifted back to ICU. Patient slowly weaned off from ventilator and noradrenaline but continued on dobutamine.

Repeat ECHO showed good LV function so dobutamine weaned off.

Patient had hemoptysis on 4th post op day so video bronchoscopy done under conscious sedation, found purulent secretions and no clots. So, put him on antibiotics and antifungals.

Patient was discharged on 8th post-operative day in stable condition.

DISCUSSION:

Tracheal tumors comprise of a rare group of benign & malignant tumors. The infrequency of cases creates a low level of suspicion among physicians.

Patients present with common & non-specific symptoms such as dyspnea, cough, wheeze, etc. which further leads to delay in diagnosis and treatment. Patient may also present with signs & symptoms of pneumonia with tumor obstructive pneumonia.

Among the signs & symptoms which alert anesthesiologist to an increased perioperative risk are increased dyspnea and cough when supine (risk of airway obstruction).

In our case patient presented with short duration of fever and dyspnea. On investigating x-ray and CT showed rt lower lobe collapse & mediastinal lymphadenopathy.

Bronchoscopy¹ is the mainstay of diagnosis & staging of tracheal neoplasms, which showed rt int bronchus growth completely occluding lumen with post obstructive pneumonia.

A variety of methods^{2,3,4} for providing adequate oxygenation & CO₂ elimination during bronchoscopic removal of tumor include

- Apneic oxygenation
- GA under spontaneous or controlled ventilation
- Manual / high frequency jet ventilation

Here in this case we used GA under controlled ventilation. GA needs step by step induction of anaesthesia with continuous monitoring of gas exchange & hemodynamics. There can be many complications⁵ during bronchoscopic tumor removal. Among them airway bleed is the most dangerous.

The literature fails to specify recommendation for management in such episodes of catastrophic bronchial bleed. This may be because such cases are few in no & are usually fatal before any intervention can occur. Establishing a definite airway is the most important step in management of airway bleed as the patient is already anaesthetized to cough out the blood. In our case patient couldn't ventilated with bronchoscope. So, patient intubated with SLT. But couldn't be ventilated for more than few min because of

blockage of tube with clots. So SLT changed to DLT^{6,7} to prevent soiling of good lung with blood to maintain oxygenation.

Meanwhile patient had cardiac arrest, CPR done⁸ and we could revive the patient. Then patient shifted to ICU where he had cardiac dysfunction & was treated & improved. This complicated patient was under the care of the multidisciplinary team during his stay in the hospital. Without such conjoint effort, a desirable outcome would not have been possible in this patient.

A good team work and a better understanding among anesthesiologist, surgical team & perioperative ICU team is the most important thing in management of such cases.

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