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Case Report

Anaesthetic management of a bleeding intratracheal mass

Sakshi Gera[1], **Lalit Sehgal**[2]*, **Akanksha Sharma**[2], **Ashish Vashishth**[3]

[1]*Dept. of Anaesthesia, Rao Tula Ram Memorial Hospital, New Delhi, India*
[2]*Dept. of Anaesthesia, HCMCT Manipal Hospital, Dwarka, New Delhi, India*
[3]*Dept. of ENT, HCMCT Manipal Hospital, Dwarka, New Delhi, India*

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ABSTRACT

A long-standing thyroid mass can have varied presentation depending on the metabolic, compressive or invasive symptoms. The most apparent symptom of thyroid mass is goitre, which if ignored can prove to be catastrophic as in our case. It is uncommon for thyroid mass to present as airway bleeding. However, a patient with long standing goitre presented with frank hemoptysis to our hospital. Radiological study revealed a thyroid mass, infiltrating the tracheal wall and extending into the tracheal lumen. A bleeding intratracheal mass presents a multifactorial challenge to an anaesthetist. Authors present anaesthetic management of a case of infiltrating thyroid malignancy presenting as a bleeding intratracheal mass. The haemostasis and airway patency were restored until definitive surgery was planned. The need for tracheostomy could be avoided in this case. A meticulously planned airway management along with multi-disciplinary approach are important for management of bleeding intratracheal mass.

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1. Introduction

Airway bleeding can become a life-threatening emergency, if not properly and timely managed. The etiology may be multifactorial- trauma, malignancy, sequelae of malignancy or as a postoperative complication. The acuteness and severity of bleeding may result in hemodynamic compromise and subsequently, a threatened airway. It becomes imperative to stop the bleeding along with ongoing medical measures. If the source of the bleed is an obstructing intraluminal tracheal growth, the conduct of anaesthesia and airway management becomes a multi-fold challenge for anesthesiologist. The authors hereby present anaesthetic management of a patient with a thyroid malignancy infiltrating into trachea.

2. Case Report

The patient, a 73-year-old male, complained of a progressively increasing neck mass for nearly four decades. He had episodes of cough with sputum mixed with blood. Patient was a known hypertensive and a reformed smoker. He had undergone coronary artery bypass grafting two years back. Patient was taking aspirin which was stopped after he presented with haemoptysis in the out-patient department (OPD). He also had a history of old treated pulmonary tuberculosis. There was no history suggestive of dyspnea or stridor.

While he was still under evaluation for his symptoms, he presented again with frank haemoptysis in the emergency room (ER).

On the CECT chest, fibrotic opacities in the left upper lobe of lung and a large nodular lesion in right lobe of thyroid, displacing the trachea to left side, was noticed. (Figure 1 A, B) On virtual bronchoscopy, the lesion was

* *Corresponding author*.
E-mail address: sehgal.lalit@gmail.com (L. Sehgal).

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seen to be infiltrating the tracheal wall. (Figure 1 C) Flexible bronchoscopy was done and biopsy from the lesion was taken in the ICU. The results were inconclusive.

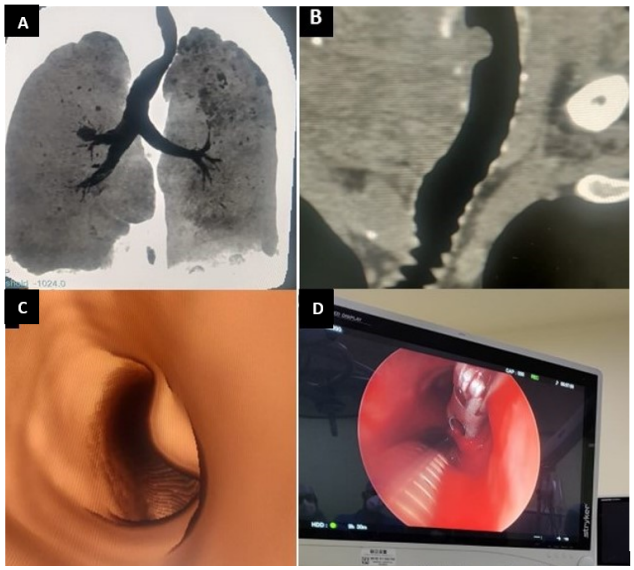

Figure 1: A): CECT chest & neck, fibrotic opacities in the left upper lobe of lung and a large nodular lesion in right lobe of thyroid, displacing the trachea to left side; **B):** CECT Chest & neck with intraluminal extension of mass into the trachea; **C**): Virtual bronchoscopy image displaying infiltration of tracheal wall and partial obstruction of tracheal lumen; **D**): excision biopsy of intra-tracheal mass being performed under rigid bronchoscopy. Small caliber armored endotracheal tube is seen with cuff below the lesion. Black mark of endotracheal is seen just below the lesion.

The multidisciplinary team planned for emergency rigid bronchoscopy and biopsy in the operating room (OR) for recurrence of hemoptysis and for better specimens for histopathology. In view of large thyroid mass and intratracheal extension, the requirement of tracheostomy was discussed with the patient.

After discussing with the surgical team, awake fibre-optic endotracheal intubation was planned with a smaller diameter tracheal tube followed by induction of general anaesthesia. Patient's written informed consent was obtained before the procedure. Patient's pre-procedure vitals were normal, significant investigations included haemoglobin 7.5 g/dl, 2D ECHO showed dilated left atrium and normal left ventricular ejection fraction (LVEF); ECG and thyroid function tests were normal. Coagulation parameters were within acceptable range.

After shifting the patient to OR and attaching standard ASA monitors, a patent 18 G iv access was secured. Packed red blood cell (PRBC) transfusion was continued. 0.1% Xylometazoline drops were instilled in bilateral nostrils & nasal topicalization with 2% lignocaine jelly was done. Oxygen supplementation with nasal cannula was started & continued throughout the procedure of awake intubation. Bilateral superior laryngeal nerve block was performed with 1.5 ml 2% lignocaine each side. Fiberoptic bronchoscope was passed through the nares and vocal cords were visualized. Topicalization with 0.5% lignocaine solution continued with 'spray as you go' technique. Once into the trachea, the infiltrative growth was visualized in the right side of tracheal wall, lying approximately 6 cm above the carina. A 6.5 mm internal diameter (ID), armored endotracheal tube was railroaded and passed beyond the lesion, avoiding avulsing the lesion. The cuff was inflated below the lesion. After securing the airway, anesthesia was induced with iv Propofol 150 mg and fentanyl 100 mcg; and maintained with sevoflurane in 100% oxygen. Assisted manual ventilation was maintained.

Surgeon passed a rigid bronchoscope through the oral cavity, alongside the endotracheal tube into the trachea. Excision biopsy was done after visualizing the growth (Figure 1 D). The haemostasis was done with mechanical pressure over the raw area. Since the intratracheal growth could be completely excised with adequate haemostasis and the lumen patency was restored, the plan for tracheostomy was abandoned. To further ensure haemostasis, it was planned to keep the tracheal tube cuff inflated against the raw area and thus, provide the tamponade effect. Hence, delayed extubation of trachea was planned. The tracheal tube was changed to size 8.0 ID oral and the cuff was inflated against the site of lesion. Injection Atracurium 50 mg iv was given and propofol boluses supplemented. The patient was shifted back to ICU on controlled ventilation. The hemodynamic parameters of the patient were normal throughout.

Patient was kept sedated in the ICU. Next morning, the sedation was discontinued and after adequate level of consciousness and motor recovery, trachea was extubated. After extubating the trachea, the airway remained patent and no subsequent episode of haemoptysis was observed in ICU. Consequently, on the third day, the patient was shifted out of ICU to the ward. The biopsy specimen showed primary thyroid malignancy and the patient subsequently received radiotherapy before surgeons planned for resection.

3. Discussion

Tracheal mass usually presents with stridor or difficulty in breathing. It was a rarity of presentation of tracheal mass in our case as the presenting symptom was haemoptysis. Also, it is rare for long standing thyroid mass to present with haemoptysis without obvious compression symptoms. A bleeding tracheal mass for excision or biopsy presents an anaesthetic challenge as it becomes imperative to secure the airway while the surgical field is shared at the same time. The overlying thyroid mass and the intraluminal growth cause lumen compromise to an unpredictable extent. Though cricothyroid membrane could be palpated, the front of neck access was difficult because the presence

of suspected malignant growth would have made the area highly vascular. Superior laryngeal nerve block could however be performed. Since the growth was more lateralized to one side, the compression of trachea was not clinically apparent. So, the patient could lie flat. Considering these factors, it was decided to proceed with awake fiberoptic guided intubation with a smaller sized endotracheal tube. Since there was active bleeding at the site of lesion, we were suspecting that it could limit the feasibility of fiberoptic guided intubation. So, the ENT surgeon and team were ready with tracheostomy set, in case the bleeding obscured the fiberoptic visualization or the intraluminal growth got avulsed. The presence of blood however obscured the fiberoptic view to some extent after the vocal cords were crossed, but it did not hinder the navigation and passage of the endotracheal tube. The cuff of the tracheal tube was inflated beyond the growth and after the resection the inflated cuff against the raw area was used as a haemostatic manoeuvre by tamponade. Nasal intubation provided uninterrupted access through oral route for rigid bronchoscopy. While changing the endotracheal tube, there was a concern of re-bleed from raw area or tracheal lumen collapse under anaesthesia, as long-standing thyroid mass may cause tracheomalacia. Kim et al. managed a bleeding tracheal lesion by fiberoptic guided endotracheal intubation after induction of general anesthesia.[1] As there was no growth or luminal narrowing, it was feasible in their case. In our case, surgical tracheostomy was kept as an alternative unless the airway was secured with fiberoptic guidance in the awake patient or; there occurred a re- bleed or tracheal lumen collapse under anaesthesia while changing the endotracheal tube. As the growth was lateralized to one side and cricothyroid membrane and trachea could be palpated, we weighed on the feasibility of surgical airway access in the emergency scenario. Overnight elective ventilation with tracheal tube in situ ensured a secure airway till we assessed for re-bleed. Kristensen et al have highlighted the various aspects of management including securing the airway in a patient with bleeding airway pathology, in their narrative review.[2] Their analysis and our approach in this case is similar. It is based on principles of maintaining oxygenation and patency of the airway till the definitive airway is secured to minimize the risk of aspiration and catastrophic loss of airway patency. In a case report by Choi et al where an upper tracheal tumor obscured the passage of endotracheal tube, veno-venous ECMO (extra-corporeal membrane oxygenation) was used till tracheostomy access was achieved.[3] There have been a few sporadic case reports of thyroid tumor presenting as haemoptysis. This aggressive presentation, however, remains uncommon. Aslam et al[4] and Parsuraman et al[5] have reported cases of thyroid malignancy presenting with hemoptysis.Kuperberg et al have reported a similar case where they have used argon plasma coagulation (APC) for control of hemorrhage.[6] Other modalities like electrocautery, laser photocoagulation, use of topical haemostatic agents, local vasoconstrictors, injection tranexamic acid have been described in literature. Sakr et al have outlined the use of these modalities in control of haemoptysis in their systematic review.[7] Efficacies (%) of electrocautery (75-100%), laser photocoagulation (67-100%) and APC (100%) to control hemoptysis have been described. The balloon tamponade has been shown to be 96-100% efficient in controlling hemoptysis, when the balloon is kept inflated for a variable period, as short as 15 min till one week. In our case we kept the balloon inflated for nearly 16 hours. We achieved control of hemoptysis with no recurrence. Correia et al[8] and Kaye et al[9] have also described use of balloon tamponade for control of bleeding from bleeding tracheal sites.

The case report shows a rarity of presentation of a long-standing thyroid mass. The patient presented with frank haemoptysis which was meticulously managed with a multidisciplinary team approach.

4. Source of Funding

None.

5. Conflict of Interest

None.

6. Acknowledgement

This case report is published with the written consent of the patient.

References

1. Kim KN, Lee HJ, Choi HI, Kim DW. Airway management in patient with continuous bleeding lesion of the trachea: a case report. *Korean J Anesthesiol*. 2015;68(4):407–10.
2. Kristensen MS, Mcguire B. Managing and securing the bleeding upper airway: a narrative review. *Can J Anaesth*. 2020;67(1):128–40.
3. Choi SR, Eom DW, Lee TY, Jung JW, Lee GH, Lee SC, et al. Anaesthetic Management of Upper Tracheal Cancer Resection and Reconstruction: A Case Report. *Int Med Case Rep J*. 2022;15:443–7.
4. Aslam W, Shakespeare A, Jones S, Ghamande S. Massive hemoptysis: an unusual presentation of papillary thyroid carcinoma due to tracheal invasion. *BMJ Case Rep*. 2019;12(8):e229330.
5. Parasuraman LN, Soundararajan JCB. Haemoptysis: An Uncommon Presentation in an Incidental Thyroid Nodule-A Case Report. *Indian J Otolaryngol Head Neck Surg*. 2022;74(2):2544–8.
6. Kuperberg SJ, Mockler DC, Kudelka A. Bronchoscopic management of haemoptysis due to endobronchial metastasis of papillary thyroid carcinoma. *Respirol Case Rep*. 2020;8(1):509. doi:10.1002/rcr2.509.
7. Sakr L, Dutau H. Massive Hemoptysis: An Update on the Role of Bronchoscopy in Diagnosis and Management. *Respiration*. 2010;80(1):38–58.
8. Correia S, Dionísio J, daCosta JJD. Modified technique of endobronchial balloon tamponade for persistent hemoptysis. *J Bronchology Interv Pulmonol*. 2014;21(4):361–5.
9. Kaye C, Macleod I, Dhillon M. Bleeding during percutaneous dilatational tracheostomy - What to do while waiting for the surgeon? *J Intensive Care Soc*. 2018;19(1):64–8.

Author biography

Sakshi Gera, Specialist Anesthesia https://orcid.org/0009-0006-0950-2949

Lalit Sehgal, Consultant & HOD, Liver Transplant Anesthesia & Liver ICU https://orcid.org/0009-0008-5383-0151

Akanksha Sharma, Consultant Anesthesia

Ashish Vashishth, Consultant ENT and HOD

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