

## Case report

### An unusual case of a tracheobronchial foreign body

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#### Abstract

We herein report a case of an unusual tracheal foreign body in a 42-year-old patient who after having undergone surgery for a tongue base malignancy presented following discharge with progressively worsened intractable cough. A chest x ray revealed a foreign body (FB) extending from glottis through the trachea up to the right bronchi. Awake fiberoptic bronchoscopic FB removal was done and the tube was recovered as a whole delivered through the oral cavity. It was 2/3<sup>rd</sup> the length of an airway exchanger catheter (AEC) used during the trial of extubation.

**Keywords:** tracheal foreign body, bronchoscopy, ventilation exchange catheter

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**Funding:** None

**Competing interest:** None

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Accepted Date :6<sup>th</sup> Feb 2020

Published Date : 22<sup>nd</sup> Feb 2020

## **Introduction**

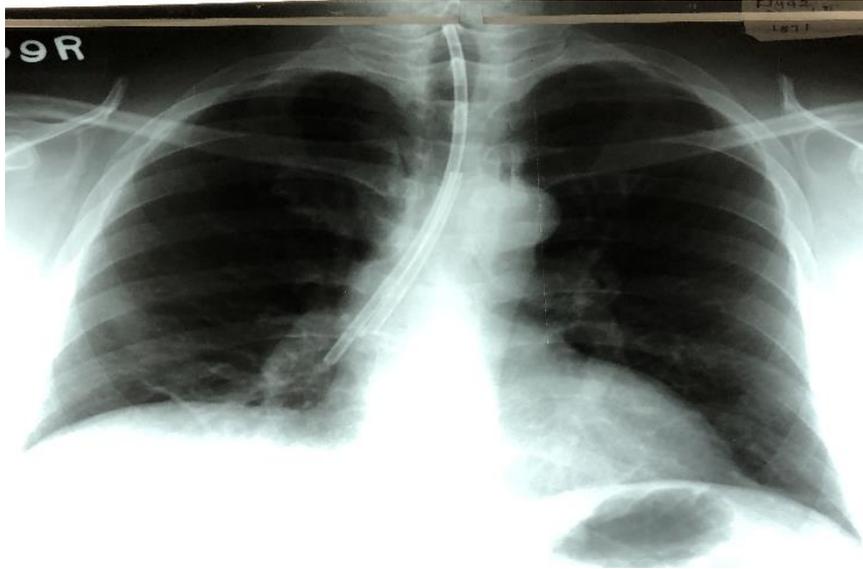
Foreign body (FB) in tracheobronchial tree is a serious and potentially fatal emergency. <sup>(1)</sup> Being more common in children, an adult with FB in bronchus is a comparatively rare occurrence. Regardless of the age an untreated FB within the airway can lead to many complications and if large enough to cause total or near total obstruction of the main airway, asphyxia ensues leading to death.

## **Case report**

A 42-year-old patient with an ulcer over the tongue was diagnosed to have a well differentiated squamous cell carcinoma with metastatic cervical lymphadenopathy. He underwent left sided partial glossectomy and left radical neck dissection on the 03/12/2018 at Oro-Maxillo-Facial (OMF) unit. The surgical procedure was uneventful and on completion the intubated patient was transferred to the intensive care unit (ICU) for overnight ventilation considering potential post-surgical laryngeal oedema inherent to oral surgical procedures. Following overnight monitoring a decision to attempt a trial of extubation was made. The procedure also risked facing persistent laryngeal oedema and hence the trial was attempted using an airway exchange catheter (AEC)

The patient was transferred to the OMF ward following successful extubation where he developed a persistent cough which was managed as a lower respiratory tract infection. Following a 10-day hospital stay the patient was discharged with a follow up plan at the clinic setting.

He represented one week later with a progressively worsened intractable cough. It was mostly dry and had no episodes of haemoptysis. He had no dyspnoea or stridor. A chest x-ray PA view done following readmission showed a large tube like foreign body (FB) extending from upper end of the cervical trachea all the way through the right bronchus. A second separate similar tube like FB was seen overlapping the lower end of the longer shadow of the FB. He coughed out a segment of a rubber tube after a particularly vigorous bout of cough while in hospital.



**Figure 1 –X- ray Chest PA view showing tracheobronchial FB**

Following radiological diagnosis, the patient was referred to Otorhinolaryngology unit for tracheal FB extraction.

The surgical challenge anticipated preoperatively was the ability to access the glottis with the rigid bronchoscope as the patient demonstrated a restricted opening of the mouth which was present prior to the previous surgery. One of the anaesthetic challenges was the options available to access the air way for ventilation and risks of each. Endotracheal intubation usually performed proceeding the rigid bronchoscopy was a risk due to the radiological position of the FB high up in the cervical trachea. Therefore, fiberoptic bronchoscopy was performed to reassess the airway prior to anaesthesia.

The examination up to the glottis was unremarkable and on approach of the glottis a bout of cough by the patient revealed the upper end of a solid jagged edged tube “bobbing” up through the glottis.

Due to the anticipated surgical risk of difficult airway access via a rigid scope and the anaesthetic challenge of obtaining access for ventilation a decision to attempt an awake fiberoptic bronchoscopic extraction was made.

Under direct vision of the upper end of the tube at the glottic inlet an attempt at holding the end of the luminal tube with a micro forceps was made. This failed due to the extremely brittle nature of the tube which kept breaking off which each attempt to engage and advance. After

multiple failed attempts the forceps was then passed in to the lumen of the tube, prong opened within and attempted to drag out. The FB was gradually advanced and visualized through oropharynx while second pair of hands was used to grasp it with a pair of Magill forceps and was successfully delivered through the oral cavity. Two segments of the luminal tube were recovered in this manner. A bronchoscopic examination was repeated and the airway was re-examined up to the secondary bronchi to exclude the presence of any part of the FB. Post procedure chest X-ray confirmed absence any remaining segments.

The tube recovered was found to be roughly 18 cm segment of an AEC that was used during the trial of extubation 2 weeks ago. The remaining part of the catheter recovered later in the ICU where it was found that almost half of the bougie had broken off and was left within the airway unnoticed. The AEC itself, being manufacturer recommended single use device, was old, faded and highly brittle having lost its integrity after multiple uses.



**Figure 2 – Broken segment of the ventilation exchanger catheter recovered**

Following the procedure patient was confirmed to have not developed airway complications in spite of large sized FB and the prolonged duration left within. He was discharged following 2 days of uneventful observation.

## Discussion

Foreign bodies in the airways can be a potentially life-threatening event. The first reported case of FB removal from trachea was by Gustav Killian on March 30<sup>th</sup> 1897. <sup>(2)</sup> Historically FB removal from airway were mainly performed by otolaryngologists and the rigid bronchoscope was frequently utilized for this purpose, if this failed it was followed by tracheostomy and bronchoscopy. Cardiothoracic surgical interventions where thoracotomy or bronchotomy were considered when conventional approaches failed. The advent of flexible endoscopy revolutionized the care of these patients. At present flexible bronchoscopy is often the initial procedure of choice for removal of non-life threatening FB aspiration (FBA) <sup>(3)</sup> FBA is more common in children and approximately 80 % of cases occur in patients younger than 15 years of age, with the remaining 20 percent presenting over the age of 15 years. <sup>(4)</sup>

In adults, FBA usually has a subtle presentation. Consequently, a high index of clinical suspicion is necessary for diagnosis, which is often delayed. Cough is the most common symptom followed by symptoms due to complications of FBA (e.g. pneumonia, bronchial stenosis, bronchiectasis) Most foreign bodies are radiolucent on imaging and direct visualization of the foreign body, usually on bronchoscopy, is required for definitive diagnosis.

Airway exchange catheter (AEC) is a device used to increase the safety of changing endotracheal tubes (ETTs) acting as a conduit to administer oxygen manually, by insufflation, or by jet ventilation and as a stylet for repeated intubation. <sup>(6)</sup> The rate of repeated intubation is as high as 19% in extubated patients in the surgical ICU and the airway management options provided by an AEC are extremely important making its use well recognized by the American Society of Anaesthesiologists <sup>(5)</sup>

Few of the recognized complications of the use of the device have been barotrauma and perforation of the tracheo bronchial tree or lung parenchyma. Broken segments of various therapeutic airway devices being diagnosed as FBA have been reported but a segment of an AEC being a culprit has not been reported in the literature.

The removal of such airway foreign bodies poses considerable challenges to both the surgeon and the anaesthesiologist. Several anaesthesia techniques are effective for managing FB, but there is no consensus as to which technique is optimal. <sup>(5)</sup> Surgically extraction via rigid bronchoscopy if failed would require an open thoracotomy approach. Fortunately, in our case removal of the FB was possible via awake fiberoptic bronchoscopy with optimal patient cooperation.

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