

# Traumatic Esophageal Perforation - A Diagnostic Dilemma

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## ABSTRACT

**Purpose:** We report a case of a complicated traumatic oesophageal due to difficult intubation. Our aim is to highlight the importance of early detection and management of the injury

**Methods:** Literature reviews on management guidelines, published case reports and review articles.

**Results:** Traumatic oesophageal perforation has a significant mortality rate of 20% but a delayed diagnosis may double the rate. Patient's presentations can be vague such as sore throat or neck pain which is often treated by physicians as post extubation laryngeal oedema. Patients can be managed without surgical intervention if detected early but with limited criteria. The aim of early surgical intervention is to repair the perforation and eliminates the source of infection. This has been shown to improve a patient's outcome.

**Conclusion:** The awareness that oesophageal perforation can be a potential complication of difficult intubation and the early recognition of signs and symptoms plays a vital role in managing the patient. Early diagnosis will ensure a favourable outcome for patients.

**Keywords:** traumatic oesophageal perforation, difficult intubation

## INTRODUCTION

Oesophageal perforation secondary to traumatic intubation is a life threatening event and is exceedingly rare. [1] It most commonly occurs during a difficult intubation. The outcome depends on the location, early detection and interval in initiating treatment. In general, the mortality rate for a perforated esophagus is nearly 20% but a delayed diagnosis after 24 hours may double the rate. [2] Early detection and diagnosis is therefore vital for successful treatment. However, the presentation of a patient can often be ambiguous such as sore throat and odynophagia, resembling other disorders, which may mislead an inexperienced healthcare provider. Furthermore, these symptoms are often thought to be due to laryngeal oedema. Our case report aims to highlight and create awareness in managing patients with

delayed diagnosis of traumatic oesophageal perforation.

## Background

Our case is a 68-year-old lady with underlying diabetes who was electively admitted for axillary clearance for left breast invasive micropapillary carcinoma. Prior to this, she had undergone a bilateral cystectomy and a wide local excision of the left breast under general anaesthesia. Both surgeries were uneventful. In the operating theatre, following the routine pre-oxygenation and induction, 3 attempts were made for intubation as difficulties were encountered. During the initial attempt, patient desaturated to 85% after intubation. Second intubation was attempted assisted by a bougie but failed. The third attempt was successful using videolaryngoscope. The surgery was completed within 2 hours without complications intraoperatively.

Patient was successfully extubated in the operating theatre and transferred back to the surgical ward.

Patient started to complain of sore throat and odynophagia post operatively. Physical examination of the neck was unremarkable except for some erythema over the posterior pharyngeal wall. A chest radiograph was ordered and reviewed to be normal. She was treated conservatively with benzydamine hydrochloride spray, nebulised saline, steroids and antibiotics. Symptoms did not improve on the third day and she was referred to the otorhinolaryngology team for flexible nasopharyngoscopic examination. Erythema was seen over the pair of arytenoid cartilages and the posterior wall of pharynx. Otherwise no suspicious lesion was seen. Two days later, she was discharged home as her symptoms have improved significantly.

However, her condition deteriorated at home 2 days after discharge. She started to complain of breathlessness, odynophagia and persistent hemoptysis. Patient was brought by the family to the nearest hospital where a CT scan of the neck and thorax was done urgently. There was a suspicion of tracheal-oesophageal injury at the level below the thyroid gland lobes (Fig 1). A rigid bronchoscopy examination was performed and although no obvious injury was seen at the tracheal lumen, the lower third of the trachea was inflamed and oedematous with collapsible posterior tracheal wall during respiration. She was treated for hospital acquired pneumonia with broad spectrum antibiotics.

After 5 days of treatment, she failed to respond to the antibiotics. Patient became drowsy and was septic with severe metabolic acidosis. She was referred to our centre for intensive care support. Patient was successfully intubated using awake fiberoptic intubation technique. Following intubation, she required high ventilatory and inotropic support in the intensive care. After further discussion with our radiologists regarding the findings of the CT scan, the upper gastrointestinal surgical team was

consulted in view of possible oesophageal injury. A repeat chest radiograph showed widening of the mediastinum, presence of subcutaneous emphysema in the neck with right lung effusion (Fig 2). Chest tube was inserted in the right lung and 600 ml of hemoserous fluid was drained.

The upper gastrointestinal team performed a flexible oesophagoduodenoscopic examination and found a small perforation at the posterior wall of the oesophagus below the cricopharyngeal junction (Fig 3). Decision was made for a primary repair of the oesophagus and drainage of the neck collection. The culture of the neck collection grew candida species. Patient remained critical in intensive care post operatively. She succumbed to her disease 2 days after the surgery.



Fig 1 CT scan showing possible trachea-oesophageal injury with evidence of paraoesophageal gas locules (\*) extending into bilateral neck muscles

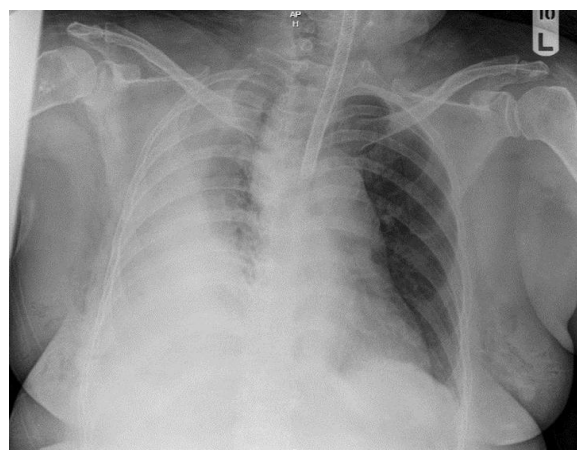


Fig 2 Chest x-ray showing right lung effusion and presence of extensive subcutaneous emphysema



**Fig 3** Flexible oesophagoscopy examination showing the tear (\*) at the posterior wall of the oesophagus below the cricopharyngeal junction

## DISCUSSION

Traumatic oesophageal perforation is a life-threatening event which has significant implications. As highlighted in our case, a delay in diagnosis and management can worsen the prognosis for the patient. Jougon et al concluded in their series of case reports that the main causes of oesophageal perforation from traumatic intubation are due to excessive use of force, poor muscle relaxation, poor visualisation of the relevant anatomy and lack of experience. [3] Patient factors include difficult anatomy such as short or broad neck, dentition, syndromic facies and cervical spondylosis. [1] The use of intubation stylet may increase the risk of iatrogenic perforation as well. [1,3]

The hallmark of oesophageal perforations are neck pain, dysphagia and subcutaneous emphysema. [1] Common clinical presentations include chest discomfort, epigastric pain, fever, tachycardia and dyspnoea. These presentations are often vague and may mimic other disorders like angina, pneumonia, peptic ulcer disease and spontaneous pneumothorax. [2] It is therefore vital that any combination of these symptoms following any instrumentation of the oesophagus or respiratory tract should raise the suspicion of oesophageal

perforation. [2] In our case, the patient only complained of sore throat and odynophagia initially.

In cervical oesophageal perforation, the areas which are at the highest risk for instrumentation perforation are the Killian's and Lannier's triangle. [2,4] These weak points are not protected by any muscular layer and they are separated from the retroesophageal space only by the thin buccopharyngeal layer. Undetected perforation may cause the spread of contaminated oral secretions down the space into the mediastinum causing abscess formation and sepsis.

An anterior neck radiograph may aid early diagnosis of oesophageal perforation as it may reveal the presence of subcutaneous emphysema. Contrast oesophagography with gastrograffin, a water soluble contrast, remains the standard in detecting a perforation. The use of flexible oesophagoscopy and CT may be useful adjuvants although some authors argue that flexible oesophagoscopy may not provide much benefit after an acute perforation. [1,4-6]

The mode of treatment in oesophageal perforation depends on multiple factors. These include the cause of injury, location of the tear, severity of the condition and the interval between the perforation and intervention. [2] The aim of early surgical intervention is to repair the perforation, prevent further contamination and to eliminate the source of infection. Conservative management with broad spectrum antibiotics can be considered in very small subgroup of patients with limited criteria. [7]

In conclusion, traumatic oesophageal perforation has a very high mortality rate especially when there is a delay in diagnosis. The awareness that this can be a potential complication of difficult intubation and the early recognition of signs and symptoms plays a vital role in managing the patient. Emphasis on rapid diagnosis and early surgical intervention should be given to ensure a favourable outcome for patients.

**Conflict of Interest:** Sin Wee Lim and Muhammad Azman Abdullah declare that they have no conflict of interest

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#### **REFERENCES**

1. Ku PK, Tong MC, Ho K et al. Traumatic esophageal perforation resulting from endotracheal intubation. *Anesthesia & Analgesia*. 1998;87(3):730-1.
2. Brinster CJ, Singhal S, Lee L et al. Evolving options in the management of esophageal perforation. *The Annals of thoracic surgery*. 2004;77(4):1475-83.
3. Jougon J, Cantini O, Delcambre F et al. Esophageal perforation: life threatening complication of endotracheal intubation. *European journal of cardio-thoracic surgery*. 2001;20(1):7-11.
4. Jones WG, Ginsberg RJ. Esophageal perforation: a continuing challenge. *The*

*Annals of thoracic surgery*. 1992;53(3):534-43.

5. Laporta D. Traumatic perforation of the cervical esophagus: a complication of endotracheal intubation. *Intensive care medicine*. 1993;19(1):59-60.
6. Pasricha PJ, Fleischer DE, Kalloo AN. Endoscopic perforations of the upper digestive tract: a review of their pathogenesis, prevention, and management. *Gastroenterology*. 1994;106(3):787-802.
7. Altorjay A, Kiss J, Vörös A et al. Nonoperative management of esophageal perforations. Is it justified? *Annals of surgery*. 1997;225(4):415.

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