

Alarming pneumomediastinum but benign outcome: a case report on oesophageal perforation by foreign body

驚人的縱隔積氣，但良性結局：一宗吞入異物引致食道穿破的個案報告

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A case of oesophageal perforation after endoscopic removal of foreign body is described. A 50-year-old female had a sharp fish bone impacted in the cervical oesophagus. After dislodging the bone at endoscopy, she developed neck pain and swelling. Chest X-ray showed alarming pneumomediastinum and subcutaneous emphysema. However, there was no leakage in the water-soluble contrast swallow. She was successfully managed conservatively. Early recognition and proper management of such a well-known complication are important to lower morbidity, especially in view of the fact that endoscopic removal of swallowed foreign bodies is being performed on an outpatient basis in some emergency departments. Special precaution should be given to sharp foreign bodies lodged at the cervical oesophagus. (*Hong Kong j.emerg.med.* 2004; 11:236-239)

報告描述一宗經內窺鏡取出異物後食道穿破的個案：一名 50 歲女性病者被發現有一尖銳魚骨卡在頸段的食道內。經內窺鏡取出魚骨後，病者申訴頸部疼痛及腫脹，胸部 X 光顯示令人震驚的縱隔積氣及皮下氣腫；但吞服水溶性顯影劑的食道造影並無發現滲漏，在保守性治療下，她成功康復。及早識別和適當處理這些熟知的併發症對於減低發病率至為重要，尤其是在一些以門診形式進行內窺鏡移除吞入異物的急症室，對堵塞在頸段食道內尖銳的異物應特別小心。

Keywords: Esophageal perforation, esophagoscopy, foreign bodies, mediastinal emphysema

關鍵詞：食道穿破、食道內窺鏡術、異物、縱隔積氣

Introduction

Perforation of the oesophagus is the most dreaded complication of swallowed foreign bodies. Delayed diagnosis and treatment is associated with prolonged morbidity and high mortality.¹ As small perforations tend to seal without sequelae,¹ high vigilance and early detection are essential to prevent avoidable complications.

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Case report

A 50-year-old lady presented to the emergency department in September 2002 suspecting of having a bone lodged in the throat at dinner. She was not sure about the nature of the bone, whether it was fish or chicken. Her blood pressure was 122/78 mmHg, pulse rate 82 beats/minute, respiratory rate 18 breaths/minute, oral temperature 36.5°C and oxygen saturation (SpO₂) 98% on room air. Direct laryngoscopy finding was normal. The plain X-ray of the neck revealed a small amount of gas in the hypopharynx at the level of C6, but no foreign body. As there was not much symptom, she was discharged with an appointment for oesophago-gastro-

duodenoscopy (OGD) the next morning. At OGD, a large piece of fish bone was found lodged at 18 cm in the hypopharynx. It was dislodged rapidly, though with some difficulty, and pushed into the stomach. There was some residual 'abrasion' identified at the previous foreign body site on withdrawal of the endoscope. The patient was put under observation. The blood pressure was 135/67 mmHg, pulse rate 88 beats/minute, respiratory rate 16 breaths/minute and oral temperature 37.4°C. She was fasted. Intravenous antibiotics ceftriaxone and co-amoxiclav were started to cover the aerobic and anaerobic oral flora. She developed neck pain and subcutaneous emphysema over the neck about one-and-a-half hours later. Chest X-ray confirmed pneumomediastinum with subcutaneous emphysema (Figure 1). Water-soluble contrast swallow revealed mildly oedematous hypopharynx but no leakage. Apart from a raised white cell count of $12.4 \times 10^9/L$ (normal reference 3.9-10.7) with differential count of 79.1% neutrophil (normal reference 38-76%), laboratory tests were essentially normal. Other than neck pain and low-grade fever up to 38.7°C for the first four days, her clinical course was uneventful. Oral intake was resumed in stages, starting from Day 4. She was discharged on Day 7. At the follow-up visit one week

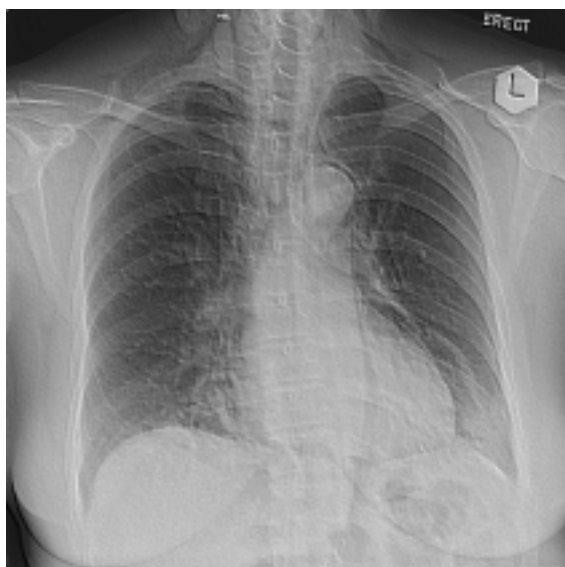


Figure 1. Pneumomediastinum and bilateral cervical subcutaneous emphysema.

later, she was symptom-free. Repeat X-rays confirmed complete resolution of pneumomediastinum and subcutaneous emphysema.

Discussion

Swallowed foreign bodies can cause oesophageal perforation by direct penetration, pressure necrosis, chemical erosion or during endoscopic removal.¹⁻³ They may account for 7-14% of oesophageal perforations.² The most common site of perforation is at the cricopharyngeus (cervical oesophagus).³ Perforations may also occur at other anatomic sites of natural narrowing in the oesophagus – at the level of the left mainstem bronchus or aortic arch (mid-oesophagus) and the gastroesophageal junction (distal oesophagus).¹⁻⁴

Fish bones are the most common oesophageal foreign bodies^{5,6} and the cervical section the most frequent site of impaction in the oesophagus.⁶ Although the forward-viewing flexible panendoscope has become the instrument of choice in managing swallowed foreign bodies,^{7,8} unusual complications following attempted extraction of a sharp impacted oesophageal foreign body with the flexible endoscope can result.⁹ There are a few options to avoid complications in such difficult cases. An overtube may enable extraction of sharp foreign bodies while protecting the mucosa from injury.⁸ Rigid oesophagoscopy under general endotracheal anaesthesia is an alternative.^{7,9} The foreign body may be fractured and disimpacted with laser before removal.¹⁰ Surgical removal is rarely indicated except in the event of perforation or other foreign body complications.^{3,8}

Clinical manifestation of foreign-body perforation may be seen immediately or as late as two weeks as a result of gradual erosion by the impacted foreign body through the oesophageal wall.² The most reliable symptom of an oesophageal perforation is pain localised along the course of the oesophagus.^{1,11} Patients complaining of pain after endoscopy should always be considered to have oesophageal perforation

until proven otherwise.¹ However, up to one-third of cases of a perforated oesophagus may present atypically.^{1,2} The most diagnostic clinical sign is subcutaneous emphysema, if present.¹¹ An erect chest X-ray must be performed immediately.¹ There may be pneumomediastinum, subcutaneous emphysema, pleural fluid and/or air. If taken early, the chest X-ray can be normal.² Pneumomediastinum can take up to an hour to develop and pleural effusion can take several hours to become evident.² Simple pneumomediastinum is usually a benign self-limited disorder, as in this case.¹² Water soluble contrast oesophagogram is the diagnostic procedure of choice in patients with clinically suspected perforation of the oesophagus and may define the anatomical site and extent of the perforation.¹³ False negative oesophagograms may occur in 10-36% of perforations.^{2,4,13-15} Spasm, tissue oedema, self-sealing and other factors may contribute to the false negatives.² On the other hand, leakage may be delayed, so that immediate oesophagogram may fail to demonstrate extravasations.¹⁴ If clinical suspicion of perforation is still high even when the initial oesophagogram is negative, the contrast study should be repeated after several hours or a barium swallow obtained to demonstrate small tears.^{2,11} Flexible oesophagoscopy may miss 20% of perforations.¹⁵ Computed tomography of the chest will be more sensitive in detecting mediastinal air and/or fluid. It may also be useful in cases where contrast oesophagograms cannot be performed or are difficult to diagnose or localise.²

Treatment depends on the etiology, site and size of perforation, time elapsed between perforation and diagnosis, underlying oesophageal disease and overall health status of the patient.^{2,4} Small perforations tend to seal without sequelae, as in this case.¹ Perforations in the hypopharynx and cervical oesophagus which are contained can usually be managed conservatively in the majority of cases.^{1,16} Criteria for conservative therapy include minimal symptoms; clinical stability; absent or minimal sepsis; contained perforation; elective instrumental perforation; and/or perforation by retained foreign bodies.¹⁷ These were well illustrated in this case.

Conclusion

This case illustrates that oesophageal perforation with pneumomediastinum, though alarming, can be managed successfully without complications by conservative means. High vigilance and early detection of such complication is important, especially in view of the fact that endoscopic removal of swallowed foreign bodies is being performed on an outpatient basis in some emergency departments.^{4,18,19} Special precautions should be undertaken in sharp foreign bodies impacted at the cervical oesophagus.

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