

Subtle perforation of the oesophagus by a foreign body

異物造成的食道輕微穿孔

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 A case of subtle oesophageal perforation caused by a foreign body is described. A 48-year-old woman had had a chicken bone impacted in the upper oesophagus for 4 days. At presentation, the bone was dislodged at endoscopy, and two small round depressions at opposite sides of the oesophageal wall were visible. The chest X-ray findings were normal. Computed tomography of the thorax detected a small amount of air in the mediastinum. The water-soluble contrast swallow test showed no evidence of leakage. The patient was successfully treated using conservative measures.

本文報告一個由異物造成食道輕微穿孔的病例。患者為一名四十八歲女性，被一塊雞骨梗阻在上食道四天。利用內窺鏡移除雞骨後，發現在食道壁兩側各留下一處形狀細圓的凹陷，清晰可見。胸腔 X 射線報告正常，以電腦斷層照相術檢查胸廓，偵測到在縱隔內有少量空氣，但水溶性顯影劑吞嚥檢查並沒有顯示出現滲漏。患者經過保守療法已治癒。

Introduction

Oesophageal perforation has been regarded as the most serious injury of the digestive tract. Delayed diagnosis and treatment is associated with prolonged morbidity and high mortality.¹ Foreign bodies are common causes of non-iatrogenic oesophageal injury.²⁻⁴ Treatment may be conservative or surgical, depending on the cause, site, extent, symptoms, signs, and radiographic findings.⁵⁻⁷ The spectrum of severity can vary from minimal leakage of air in the mediastinum to gross disruption and free drainage into the pleural cavity.

Case report

A 48-year-old woman first presented to the Accident and Emergency Department of the North District Hospital in April 2002 with a suspected chicken bone lodged in the throat. Results from physical and laryngoscopic examinations were normal. No radio-opacity was detected in the X-ray of the neck. The patient was discharged home with an appointment for oesophagogastroduodenoscopy 2 days later. Although the patient failed to attend as scheduled, she attended the Accident and Emergency Department again 4 days later, complaining of a persistent sore throat. She could tolerate fluid nutrition only. The blood pressure was 120/69 mm Hg, pulse rate 94 beats per minute, respiratory rate 16 breaths per minute, and temperature 36.2°C. Oesophagogastroduodenoscopy revealed that a chicken bone had impacted transversely in the upper oesophagus at 18 cm. The bone was dislodged by forceps without difficulty and was pushed into the stomach. However, two small, dark, round depressions were found at opposite sides of the oesophageal wall at the previous impaction site (Fig 1). Fasting was implemented. The chest X-ray appeared normal and showed no evidence of pneumomediastinum or subcutaneous emphysema. However, fever subsequently developed (maximum temperature, 39.9°C). Computed tomography of the thorax was performed approximately 4 hours after the endoscopy and revealed a small amount of air in the mediastinum (Fig 2). Approximately 1 hour later, a water-soluble contrast swallow test revealed no evidence of fluid leakage. The white blood cell count was 30.0×10^9 /L (reference range, $3.9-10.7 \times 10^9$ /L). The patient was treated conservatively with intravenous cefuroxime (750 mg every 8 hours),

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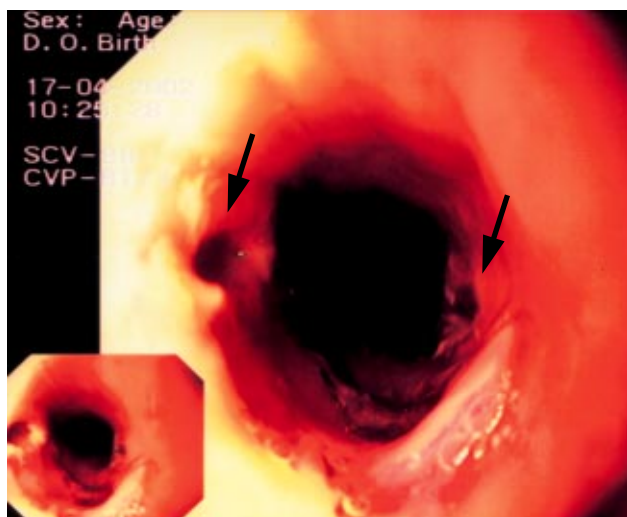


Fig 1. Endoscopic view of two small round depressions at opposite sides of the oesophageal wall (arrows)

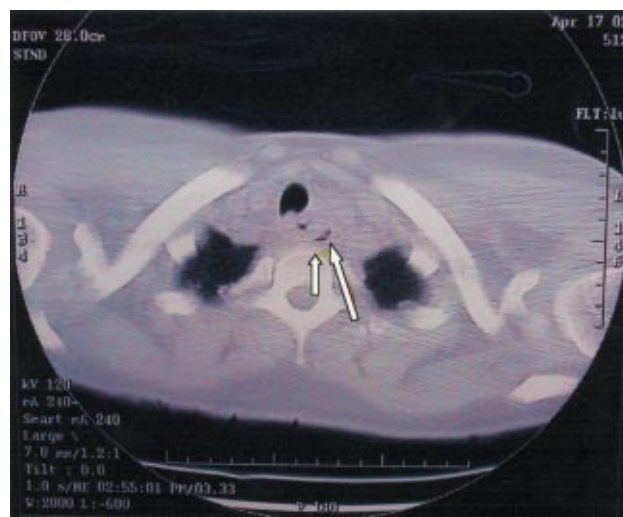


Fig 2. Computed tomogram showing pneumomediastinum at the thoracic outlet (white arrows)

ampicillin (500 mg every 8 hours), and metronidazole (500 mg every 8 hours) to cover the oral bacterial flora. Fever decreased rapidly to approximately 38°C and subsided after 2 days. Oral fluid intake was allowed in increasing amounts and viscosity. The white blood cell counts were 24.5×10^9 /L, 20.5×10^9 /L, and 10.5×10^9 /L on day 1, 2, and 4, respectively. The intravenous antibiotics treatment was discontinued after 5 days. The patient was symptom-free and was discharged home after 1 week.

Discussion

Foreign bodies can cause oesophageal perforation by either direct penetration, pressure, chemical necrosis, or during endoscopic removal.^{1,4} They account for 7% to 14% of oesophageal perforations.⁴ The usual sites affected are the three natural anatomic narrowings: the cricopharyngeus, the crossing of the left mainstem bronchus or aortic arch, and the gastro-oesophageal junction, especially the cricopharyngeus.^{1,4,8}

Clinical manifestation of foreign-body perforation may be seen immediately or as late as 2 weeks afterwards, as a gradual erosion of the impacted foreign body through the oesophageal wall.⁴ The most consistent symptom of an oesophageal injury is pain localised along the course of the oesophagus.^{1,9} However, up to one third of cases of perforated oesophagus are atypical.^{1,4} The most diagnostically useful sign is surgical emphysema.⁹ Chest X-rays may show mediastinal and subcutaneous emphysema, pleural fluid, and air. If taken early, the chest X-ray findings can be normal.⁴ Mediastinal emphysema can take up to 1 hour to develop, and pleural effusion can take several hours to become evident.⁴ Water-soluble contrast oesophagography is the diagnostic procedure of choice in patients with clinically suspected perforation of the oesophagus, and this test may define the anatomical site and extent of the perforation.¹⁰ False-negative oesophagograms occur in 10% to 36% of perforations.^{3,4,6,8,10,11} Spasm, tissue oedema, and other factors may contribute to false-negative results.⁴ Furthermore, leakage

may be delayed, so that an immediate oesophagogram may fail to demonstrate extravasation.⁶ If clinical suspicion of perforation is still high even when the initial oesophagogram is negative, another contrast study should be repeated after several hours to demonstrate small tears.^{4,9} Flexible oesophagoscopy may miss 20% of injuries.¹¹ Computed tomography of the chest is more sensitive in detecting mediastinal air and fluid, and may also be useful in cases in which contrast oesophagograms cannot be obtained or in cases that are difficult to diagnose or localise.⁴

Treatment depends on the aetiology, site, and size of perforation; the time elapsed between perforation and diagnosis; underlying oesophageal disease; and the overall health status of the patient.^{4,8} Small perforations tend to seal without sequelae.¹ Even the injection of methylene blue under pressure can fail to localise the site.² Perforation of the cervical oesophagus can be managed conservatively in most cases.⁵ Perforations of the intrathoracic oesophagus that are confined to the mediastinum can be adequately treated using conservative measures in most patients.⁵ Criteria for non-surgical treatment include perforation that is confined to the mediastinum, drainage of the cavity back into the oesophagus, clinical stability, and minimal clinical signs of sepsis.^{4,7} Perforations of the lower two thirds of the oesophagus that affect the pleura, pericardium, or peritoneum require rapid surgical intervention.⁵

Conclusion

From this case of subtle oesophageal perforation, it can be concluded that plain X-ray cannot rule out the presence of a foreign body in the oesophagus. Early endoscopy is needed if clinical suspicion of an impacted foreign body is high. Small pneumomediastinum may not be detectable on the chest X-ray, and small oesophageal perforations may not be detectable by performing a water-soluble contrast study. Finally, small oesophageal perforations can be managed successfully using conservative measures.

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