

Oesophageal emergencies

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Abstract

Oesophageal emergencies are relatively rare in comparison to others emanating from the gastrointestinal (GI) tract. They encompass four broad groups including bleeding (from tears or varices), obstruction (from cancers, food boluses or foreign objects), perforation (which may be primary or secondary) as well as caustic injury. The presentation of oesophageal emergencies is pleomorphic and largely dependent on the underlying cause. However, given their relative rarity they are frequently missed, leading to a delay in diagnosis and sub-optimal outcomes. Cross-sectional imaging and direct visualization at upper GI endoscopy are key facets in facilitating prompt recognition and treatment, in the context of specialist multidisciplinary teams, and reduces morbidity and mortality.

Keywords MRCP; Oesophageal bleeding; oesophageal perforation

Introduction

Oesophageal emergencies are relatively rare in comparison to others involving other portions of the gastrointestinal (GI) tract. However, they are often life-threatening, particularly if there are delays in diagnosis, and they therefore require prompt recognition and early intervention. Despite this, they are associated with significant mortality.

Broadly speaking, oesophageal emergencies can be classified broadly categorized into four groups: bleeding, obstruction, perforation and caustic injury (Figure 1). The clinical history often provides important clues to the underlying nature of the emergency. The management of oesophageal emergencies is best delivered in a multidisciplinary environment at a specialist centre with oesophago-gastric, gastroenterological, thoracic and ear, nose and throat clinicians, specialist radiologists, dieticians and intensive care facilities. This chapter focuses on obstruction, perforation and caustic injury; oesophageal bleeding is covered elsewhere.

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Key points

- Oesophageal emergencies can be categorized into one of four groups: bleeding, obstruction, perforation and caustic injury. They are associated with considerable mortality
- Prompt resuscitation and early diagnosis are critical to improving outcomes
- Definitive treatment is focused on the underlying disorder

Obstruction

Oesophageal obstruction can occur as a result of a food bolus or, less commonly, after the ingestion of a foreign body. The clinical history guides the likely aetiology, and thereby the likely site and severity of obstruction. This is typically sudden-onset complete dysphagia, which is frequently associated with chest pain.

Preliminary radiographs of the neck, thorax and abdomen can help to identify the nature and level of the obstruction, although cross-sectional imaging using computed tomography (CT) can also be helpful. Although food bolus impaction can resolve spontaneously, urgent upper GI endoscopy should be arranged as this is both diagnostic and potentially therapeutic. A smooth muscle relaxant, such as hyoscine butylbromide, occasionally helps in allowing the bolus to pass conservatively. Food boluses are usually transited into the stomach with the help of the endoscope. Foreign bodies, such as batteries, can be technically challenging to remove and often require a multitude of endoscopic accessories including snares, forceps and overtubes to protect the airway. A recent meta-analysis has suggested that both rigid and flexible upper GI endoscopy are as safe as each other in foreign body removal.¹

Upper GI endoscopy can also identify anatomical reasons for food bolus impaction, such as benign or malignant strictures, and should be appropriately biopsied and further investigated. In younger patients with a concomitant history of atopy, biopsies should be taken from the proximal, mid- and distal oesophagus to exclude eosinophilic oesophagitis.

Oesophageal perforation

The aetiology of oesophageal perforation is summarized in Figure 1. Although uncommon, oesophageal perforations are associated with rapid onset of sepsis and a high risk of morbidity and mortality. The hospital mortality rate has been reported to be around 25%.² Spontaneous oesophageal perforation often comes further down the list of differential diagnoses of other pathologies, such as myocardial infarction, aortic dissection or chest wall injuries in the setting of trauma, as these are more common. However, early recognition and treatment can be life-saving.

If unrecognized, perforation can become evident after initial resuscitation, where chest radiographs can demonstrate pneumo-mediastinum, pleural effusion or pneumothorax. Cross-sectional CT imaging is the gold standard practice in major trauma, but in the context of oesophageal injuries there is limited sensitivity, and perforation can be missed. The optimal initial investigation

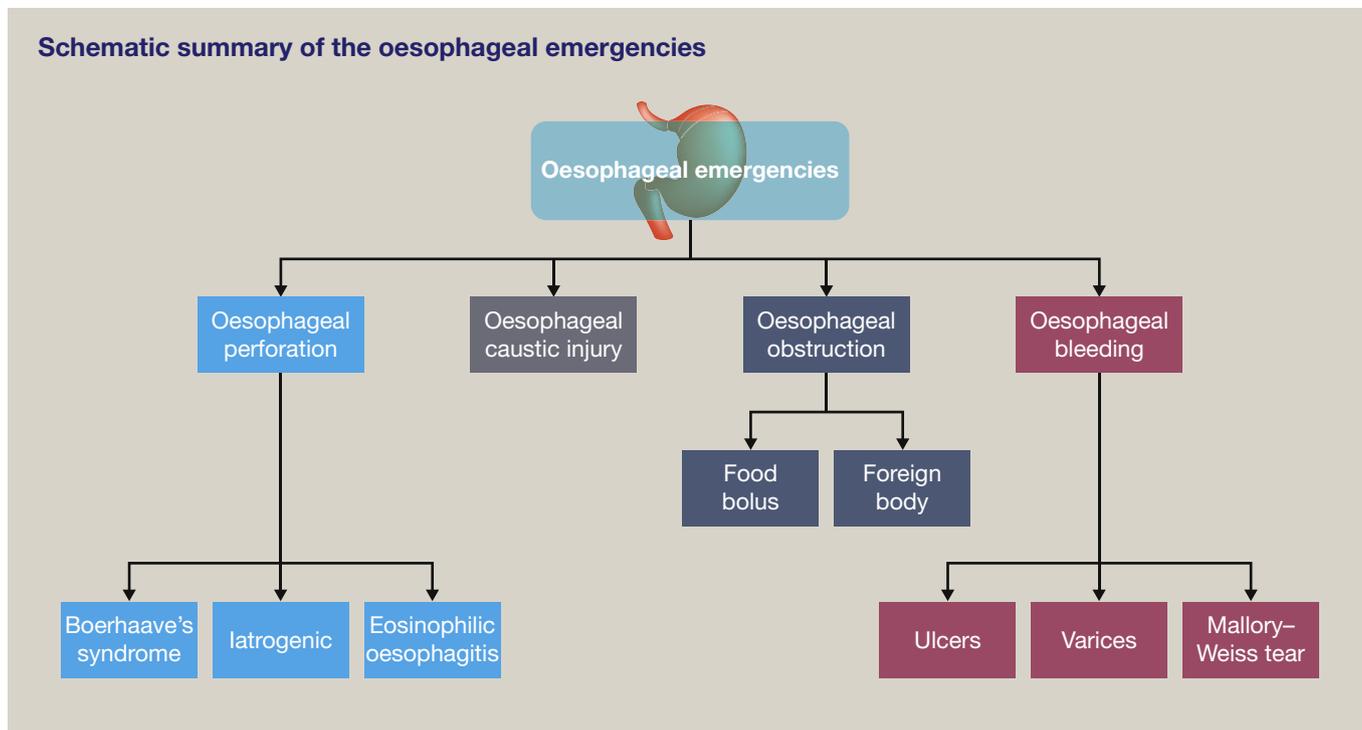


Figure 1

is with water-soluble contrast medium, such as gastrograffin, in preference to barium swallow as the latter can cause an inflammatory response.

Traumatic perforation can be caused by either blunt or penetrating injuries and present as part of polytrauma. The rarity of cases is such that, within the UK, centres typically experience only one or two cases annually. Penetrating injuries are more common as a result of gunshot wounds or knife injury, and are therefore often associated with adjacent injuries.

After initial resuscitation, the patient must be kept nil-by-mouth with intravenous fluids. Because oral intake will not be possible for the coming weeks, nutritional support by either parenteral or fine-bore nasojejunal feeding should be implemented. Local guidelines should be followed, which frequently advise the co-administration of broad-spectrum antibiotics.

Once perforation is identified, the aim of management is to achieve adequate wound debridement with closure under minimal tension, either endoscopically with stenting or more commonly by surgery. Where primary closure of the perforated segment is not possible, closure over a T-tube drain is suitable and, in haemodynamically unstable patients, temporizing oesophagostomy with later excision of the trauma segment can be carried out.

Iatrogenic perforation most commonly occurs after endoscopy or endoscopic intervention. Patients often complain of retrosternal chest pain, which can radiate into the neck. The presence of surgical emphysema supports the suggestion of a perforation. Conservative management with intravenous fluids, nil-by-mouth status, broad-spectrum antibiotics, high-dependency monitoring and nutritional support is preferable where small perforations are evident. Endoscopic clipping is a feasible alternative to surgical management if there are the facilities and clinicians have

adequate training, especially if there is either a very proximal or distal perforation.

If the patient makes an adequate recovery and a swallow test confirms oesophageal integrity, oral intake can be gradually reconstituted after approximately 1 week. However, if the patient's condition becomes unstable, an urgent CT and report from the GI radiology specialist are required, to exclude a source of mediastinal sepsis that could require percutaneous drainage.

Where a large perforation is identified, or the patient is considered clinically unsuitable for surgical intervention, endoscopic stenting can be useful. Anastomotic leak is a severe complication in oesophageal surgery, and management should be undertaken at specialist centres. Patient co-morbidities and the extent of the leak influence whether conservative management will suffice or further endoscopic stenting is required.

Boerhaave's syndrome refers to oesophageal perforation secondary to barogenic trauma, as a consequence of a rapid rise in intraluminal pressure caused by vomiting against a closed glottis (Figure 2).³ It has a mortality of 20–40%. Around 90% of ruptures occur in the thoracic portion of the oesophagus, with an average tear length of 2.2 cm. Risk factors include peptic ulceration, high alcohol intake and eosinophilic oesophagitis. However, unlike iatrogenic perforations, in which the stomach is empty as the patient is fasted, individuals who develop Boerhaave's syndrome often have considerable mediastinal contamination with stomach contents. Therefore, conservative management is rarely successful. While primary surgical repair is technically feasible, a T-tube is often needed to create a controlled fistula, which can be removed at a later date.

Oesophageal ulcers, often a result of malignancy or gastro-oesophageal reflux disease, can also lead to perforation, and in a recent population-based study were identified as cause of death

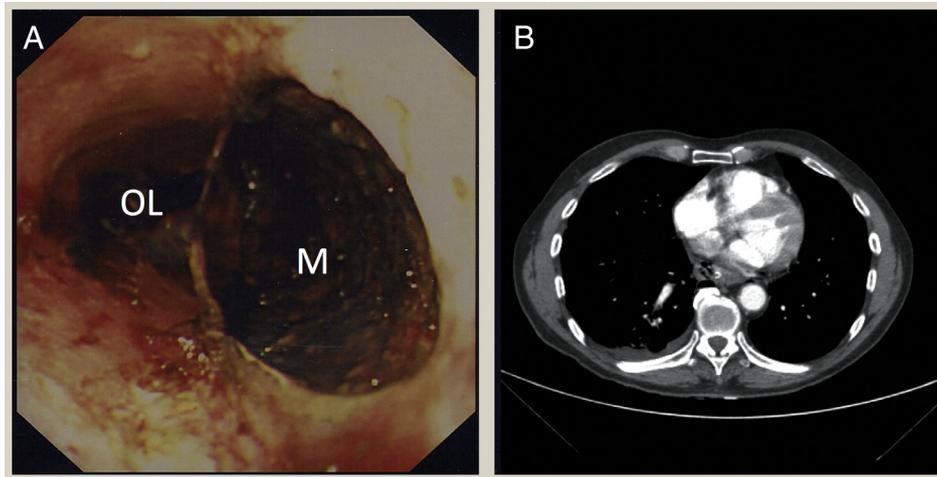


Figure 2 Boerhaave's syndrome. Endoscopic appearances of Boerhaave's syndrome (a). The mediastinum (M) is clearly visible and is distinct from the oesophageal lumen (OL). CT of the thorax (b) demonstrates the oesophageal perforation, with the presence of mediastinal air in the absence of pleural effusions.

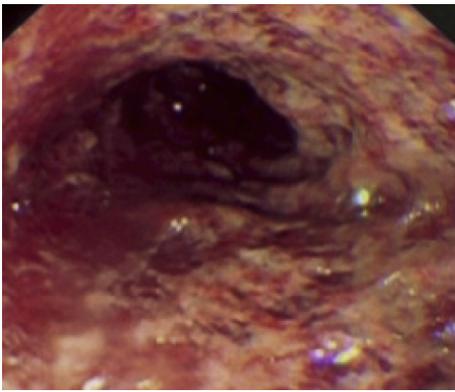


Figure 3 Caustic injury to the oesophagus. Typical endoscopic appearances of a caustic injury to the oesophagus, demonstrating a pan-oesophageal oesophagitis.

in 38% of associated mortality. Inflammation adjacent to ulcer perforation usually walls off the segment of oesophagus, preventing further complications, but in the case of oesophago-pericardial fistula formation there is a higher risk of mortality.

Caustic injury

Although very uncommon in the UK, caustic injuries to the oesophagus can result from self-harm or misadventure. The

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Question 1

A 14-year-old boy presented with a refractory stricture of the oesophagus. This was the consequence, 3 months previously, of him drinking from a lemonade bottle which had been used to keep household bleach.

caustic agent itself can vary but can include chemicals such as bleach. Upper GI endoscopy can determine the severity of caustic ingestion. Generally speaking, caustic injury to the oesophagus causes a pan-oesophageal oesophagitis (Figure 3), which if severe enough can result in oesophageal perforation. The medium-term risk is the development of oesophageal strictures, which frequently need balloon dilation. In patients with refractory strictures, corticosteroid injection and/or insertion of an oesophageal stent can be considered.⁴ ◆

KEY REFERENCES

- 1 Ferrari D, Aiolfi A, Bonitta G, et al. Flexible versus rigid endoscopy in the management of esophageal foreign body impaction: systematic review and meta-analysis. *World J Emerg Surg* 2018; **13**: 42.
- 2 Law TT, Chan JY, Chan DK, et al. Outcomes after oesophageal perforation: a retrospective cohort study of patients with different aetiologies. *Hong Kong Med J* 2017; **23**: 231–8.
- 3 Blencowe NS, Strong S, Hollowood AD. Spontaneous oesophageal rupture. *Br Med J* 2013; **346**: f3095.
- 4 Methasate A, Lohsiriwat V. Role of endoscopy in caustic injury of the esophagus. *World J Gastrointest Endosc* 2018; **10**: 274–82.

What is the most appropriate treatment at this time?

- A Intraoesophageal injection of corticosteroid and stenting
- B Proton pump inhibitors
- C H₂ receptor antagonists
- D Nasogastric feeding
- E Percutaneous endoscopically placed gastrostomy

Question 2

A 68-year-old woman complained of chest pain 20 minutes after upper gastrointestinal endoscopy and balloon dilation for an oesophageal peptic stricture. Clinical examination was normal.

Investigations

- ECG showed sinus rhythm and normal characteristics
- Chest X-ray showed the presence of air in the mediastinum

What is likely to be the most appropriate initial management option?

- A Immediate open surgical repair
- B Immediate endoscopic repair
- C Fluids intravenously and antibiotics
- D Gastrografin imaging
- E MR scan of the mediastinum