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Pharyngo-oesophageal fistula following iatrogenic perforation of a pharyngeal pouch

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Abstract
A unique, previously undescribed case of iatrogenic perforation of a pharyngeal pouch which resulted in pharyngo-oesophageal fistulation is described. The correct management of such complications is discussed.

Key words: Zenker's diverticulum; Trauma, surgical; Fistula; Pharynx; Oesophagus

Introduction

The most frequent site of endoscopic instrument trauma during rigid or flexible endoscopy is the mucosa proximal to the cricopharyngeus. This pharyngo-oesophageal segment is normally closed and has only a potential lumen until the larynx is lifted forward.

In patients with a posterior pharyngeal pouch, the cricopharyngeus becomes anteriorly placed with the cricoid; the lumen of the pouch being contiguous with the hypopharynx. The lining of the diverticulum consists of mucosa without muscular reinforcement and is especially susceptible to perforation. This is especially relevant to the fibreoesophagoscope as the cervical oesophagus, in particular the region of the upper oesophageal sphincter, is a relatively blind area. The scope is often introduced beyond this point before definitive examination and the cervical oesophagus is observed only as the instrument is withdrawn (Cummings, 1986).

We describe a case of pharyngeal pouch perforation resulting in a pharyngo-oesophageal fistula. The use of a radiological examination to rule out cervical oesophageal and hypopharyngeal pathology before the flexible oesophagoscopic examination is discussed, together with guidelines as to the correct management of such a complication.

Case report

A 71-year-old lady with a 12-month history suggestive of gastro-oesophageal reflux was seen in the Professional Medical Unit and flexible upper endoscopy performed. A pharyngeal pouch was entered and perforated causing marked surgical emphysema with crepitus over the neck. A gastrograffin swallow on the same day confirmed perforation of a posterior pharyngeal pouch with tracking into the superior mediastinum to the level of the carina. The patient was treated conservatively with intravenous fluids and antibiotics, but without any nutritional input.

Five days post-perforation, a 5F cobra catheter and Terumo guide-wire were manipulated via the pharyngeal pouch into the mediastinal collection. The guide-wire was exchanged for a stiff wire and an nasogastric (NG) tube was placed over this and into the mediastinal collection. Pus was aspirated at two-hourly intervals. Twelve days post-perforation, still with a mediastinal collection and without any nutrition for this period, the patient was referred to the author's unit for advice. The 'per pouch drain' was removed. The patient was examined under GA and after identification of the pouch and true oesophagus, a conventional oesophageal feeding NG tube was inserted with rigid pharyngoscopy. The neck was opened at the level of cricoid along the anterior border of sternocleidomastoid and after cutting the omohyoid the para-oesophageal space was opened; pus was encountered immediately. The abscess cavity was drained and noted to be intimately related to the left recurrent laryngeal nerve which was identified and preserved. A corrugated drain was inserted and brought out via the neck incision. Urgent Gram staining revealed gram-positive organisms. The patient was continued on broad spectrum antibiotics. Nasogastric feeds were started.

The patient made good progress and on the 24th day after perforation clinical drainage had stopped and plain radiography together with ultrasound suggested resolution of the mediastinal collection. A gastrograffin swallow was performed which showed no leakage into the mediastinum. The patient was commenced on oral fluids and later a soft diet, and made excellent progress. Prior to her discharge, 35 days after the perforation, a barium swallow was arranged to delineate the anatomy of the pouch more clearly prior to definitive surgery. This surprisingly revealed a fistulous track extending from the fundus of the pouch at the level of C7/T1 downwards for about 10 cm and re-entering the oesophagus (Figure 1). No obstruction to barium was noted. The patient was discharged eating and drinking as she would like and taking ranitidine for her reflux symptoms. She remained asymptomatic over a review period of at least nine months.

Discussion

Instrumental perforation of the oesophagus is usually iatrogenic, (Bladergroen *et al*, 1986; Tilanus *et al.*, 1991) and is a serious life-threatening complication that is particularly devastating in benign disease.

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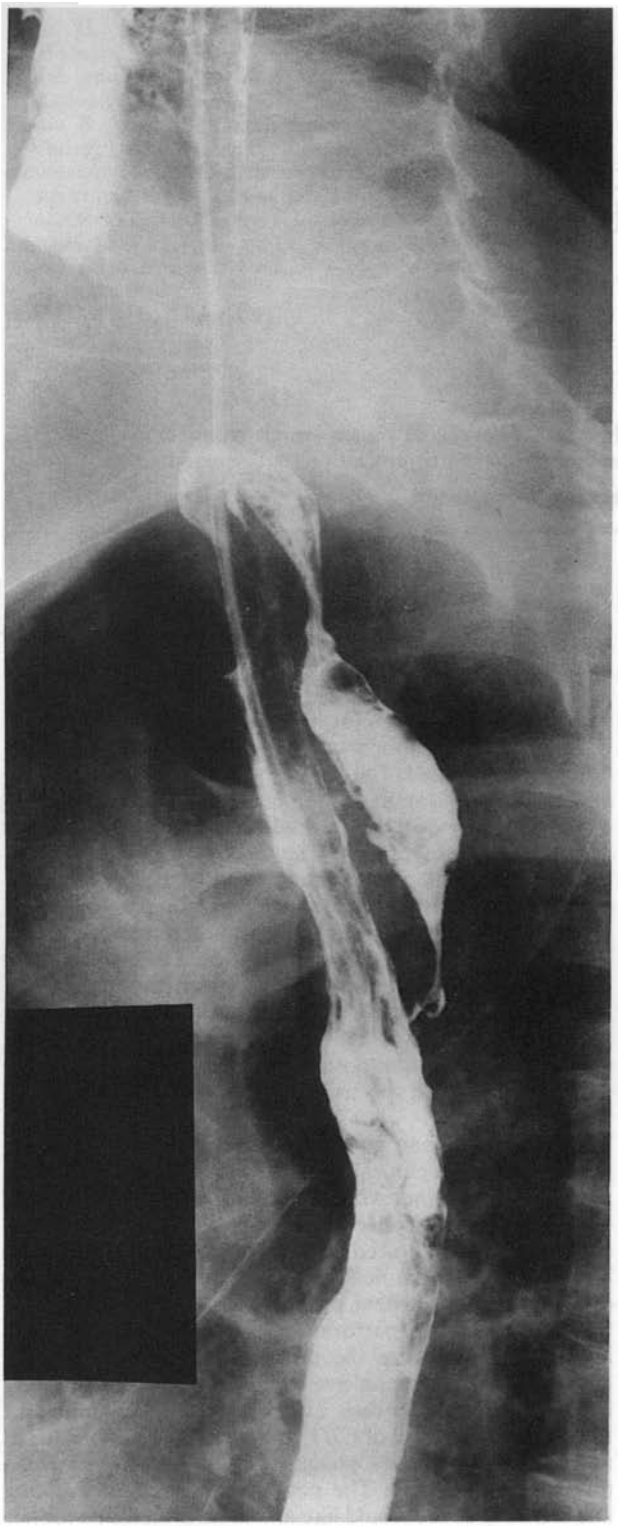

FIG. 1
Barium swallow showing fistula through mediastinum between perforated pouch and oesophagus.

The reported incidence of instrumental perforation of the oesophagus with a rigid oesophagoscope varies between 0.2 and 13 per cent (Ritchie *et al.*, 1993) but this is dependent on whether the procedure is diagnostic or therapeutic, on the instrumentation, and reporting institution. Flexible oesophagoscopy has a good track record with perforation rates ranging from 0.108 to 0.35 per cent (Nashef and Pagliero, 1987) but these rates are subject to similar confounding factors as those for the rigid endoscopy figures.

The one anatomical area in which open tube rigid oesophagoscopy has a potential advantage is the examination of the upper oesophageal sphincter which may be missed by flexible endoscopy. Bacon and Hendrix (1992) recommended the rigid scope for examination of this area although Thomson and Batch (1989) claimed excellent visualization of the laryngo-pharynx and cervical oesophagus with the flexible oesophagoscope when specifically addressed.

This case highlights the advantage of contrast studies prior to flexible endoscopy which ideally should include a cervical oesophogram which demonstrates the cervical oesophagus and cricopharyngeal region. If the contrast studies are equivocal then direct instrumentation of the hypopharynx should be undertaken cautiously under direct vision. Perforation of a pharyngeal pouch is rare but should be managed in the same manner as leakage after resection of a pouch. A conservative approach to cervical perforations has been advocated by most authors (Nashef and Pagliero, 1987; Tilanus *et al.*, 1991) as closure may offer no better results than simple drainage alone (Brewer *et al.*, 1986). Nasogastric feeding should be employed, and prompt and adequate drainage away from the mediastinum is mandatory. In this case the passage of a drain via the perforation into the mediastinum served only to maintain the sinus tract and the mediastinitis. Once correct drainage is employed closure of the resulting fistula usually occurs spontaneously within a few weeks.

In this unique case a delayed pharyngo-oesophageal fistula formed after apparent healing of the perforated pharyngeal pouch. This event appears to have resulted from the spontaneous drainage into the oesophagus and was not secondary to surgery as the surgical drainage procedure did not enter the mediastinum. This rather fortunate fistulization enabled the patient to avoid further surgery.

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