Case report – Thoracic general

Gastrobronchial fistula – a recent series

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Abstract

Gastrobronchial fistula is a very rare condition with only 27 reported cases. Previous gastro-oesophageal surgery, subphrenic abscess, and gastric ulcers are the most commonly reported causes. We are reporting two recent cases of gastrobronchial fistula that presented to us. A review of the literature discussing possible causes, investigation and management of this condition is also provided.

Keywords: Gastrobronchial fistula; Investigation; Management

1. Case reports

1.1. Case 1

A 64-year-old man presented to us postoperatively following Ivor–Lewis oesophagectomy for middle third squamous carcinoma of the oesophagus. The anastomosis was a standard stapled end to side procedure, however the oesophagus was joined to the posterior surface of the stomach. After an initial steady period he developed signs of respiratory distress on the third day along with the appearance of altered fluid in the chest drain. His condition deteriorated rapidly on day four and he developed frank sepsis and pneumothorax on CXR and needed ventilation on the ITU. A bronchoscopy unfortunately showed a bronchogastro fistula in the right main bronchus with aspiration of bilious fluid into the lungs. Exploration of the chest revealed a breakdown of the stapled anastomosis with a defect in the bronchial wall. This was repaired with pericardium and the oesophageal anastomosis was taken down. However, his condition remained grim and he died 2 days later.

1.2. Case 2

The second case is a 34-year-old lady who underwent a left-sided laparoscopic adrenalectomy for pheochromocytoma 2 years ago. The procedure needed conversion. Recovery from this operation was prolonged with a long ITU stay for poor ventilation due to presumed left lower lobe atelectasis/subdiaphragmatic abscess. After 3 months of recovery she developed a persistent cough which gradually got worse requiring hospitalization 6 months after her initial surgery. At this stage she was also 16 weeks pregnant. She was treated conservatively with antibiotics with only X-rays being performed. After childbirth she had a CT scan as she continued to have the cough. These suggested a hiatus hernia and possible fistulous connection between the gastric fundus and the left lower lobe bronchus. This was confirmed on contrast swallow (Fig. 1) and she subsequently underwent surgery through a left thoracotomy. The fistulous communication was identified and divided; a posterolateral defect in the left diaphragm of 3 x 4 cm was sutured closed after replacing the stomach in the abdomen. She made a smooth postoperative recovery and biopsy did not reveal malignancy.

2. Discussion

Gastrobronchial fistula (GBF) is a rare condition with only 27 previously reported cases in the English literature [1] (Table 1). Since the initial classification by Moeller and Carpenter in 1985 [2], previous gastro-oesophageal surgery has been the most common cause of GBF and Nissen fundoplication has been the most commonly carried out procedure (five out of ten postoperative cases) [3–6]. The majority of these fistulae are secondary to gastric ulceration. Erosion into a bronchus usually follows a perigastric abscess secondary to gastric ulcer perforation.
Gastric ulcers have been found in 3–4% of patients following Nissen fundoplication [7,8] and in 6.6% of patients who survived more than a year following a gastric procedure for resectable oesophageal cancer [9]. Various hypotheses have been put forward for the cause of ulceration in this situation; these include gastric hypersecretion secondary to gastric distension [7], inadvertent division of vagal fibres, bile reflux and ischaemic ulceration from devascularization of the stomach. Gastric ischaemia is not only a recognized cause of early gastric tube necrosis [10] but predisposes to chronic ulceration by reducing the healing capacity of mucosa damaged by other factors including bile.

GBF is also caused secondary to subphrenic abscess. Infection may spread by lymphatic flow from below to above the diaphragm or by directly eroding through the diaphragm causing a lung abscess that eventually drains into a bronchus. Erosion into the stomach occurs at about the same time [11]. It is very rare for a lung abscess to perforate the diaphragm. The other common cause is traumatic perforation of the diaphragm with communication between the stomach and the lung.

Fistula secondary to an infiltrating tumour such as a gastric primary has been reported along with malignant recurrence in the gastric tube following oesophagectomy for cancer.

Clinically these patients may present either in the immediate postoperative period as illustrated by our first case or with a more insidious onset as in our second case. A GBF should be suspected when a lower lobe lung abscess fails to resolve with therapy or when there is recurrent or persistent pneumonia [2,12]. Classical presentation with expectoration or tracheal suctioning of gastric contents and cough on lying down should raise a suspicion of GBF.

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<td>Gastro-oesophageal surgery</td>
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<td>Subphrenic abscess</td>
<td>5</td>
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<td>Trauma</td>
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<td>Gastric ulcer</td>
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although these symptoms would more commonly indicate aspiration. An interesting feature that led to the diagnosis in our first patient was the persistent hypercapnia despite high minute ventilation. This was because of increased physiologic dead space due to leakage of part of each breath into the stomach. This phenomenon has been previously reported by Stal et al. [1] who went on to confirm this by the presence of intermittent synchronous airflow from the nasogastric tube.

A contrast study of the upper gastrointestinal tract is the most successful means of diagnosing a GBF [12]. Bronchoscopy will only show a fistulous tract if it is proximal as demonstrated by our first case and a previously reported case [1]. Other methods that have been used include Methylene Blue staining and measurement of bronchial secretion pH. Oesophag gastroduodenoscopy (OGD) is generally unsuccessful for diagnosis.

Treatment begins with attempts to control sepsis and optimizing the patient for surgery. Patients are fasted with nasogastric decompression and acid suppression. Surgery is carried out with a double lumen endotracheal tube and anterolateral thoracotomy with possible extension into the abdomen. From a review of the literature it is evident that in those with frank intrathoracic sepsis, primary surgical management may be a cervical oesophagostomy with gastrostomy and repair of bronchial defect, with oesophagogastric reanastomosis carried out later. Large bronchial defects have been repaired by intercostal muscle flap. In less aggressive situations a simple division of the fistula may be possible with or without resection of the affected segments of the lung. In some cases a refashioning of the oesophago gastric anastomosis with distal oesophagectomy and proximal gastrectomy and further mobilization of the intrabdominal stomach may be needed in delayed presentations after previous oesophageal surgery. Attention should also be given to an appropriate repair of the diaphragmatic hiatus.

In summary, gastrobronchial fistulae are rare, usually seen in patients with previous gastro-oesophageal surgery and should be suspected in those with recurrent lower lobe pneumonia. With early planned treatment and careful postoperative management good results should be expected in the subacute cases; however, the outlook in acute and toxic cases remains grim.

References


Appendix A. ICVTS on-line discussion

Author: Dr. Claude Deschamps, Consultant, Mayo Clinic, Thoracic Surgery, 200 First Street SW, Rochester, Minnesota 55905, USA

Date: 20-Dec-2002 08:16

Message: These are 2 interesting case reports. The first one illustrates well the potentially catastrophic complications of an anastomotic fistula after esophagectomy. The poor outcome tends to reinforce the fact that a fistula between the esophagus or stomach and the airway is often a technical challenge which requires preparation, specialized anesthesiological skills and a backup plan if one is to face a completely disrupted airway or digestive tract.

Author: Prof. Freyja-Maria Smolle-Juettner, University of Graz, Thoracic and Hyperbaric Surgery, Anuenbruggerplatz 29, A-8036 Graz, Austria

Date: 27-Dec-2002 12:44

Message: There is a distinct difference between gastrobronchial fistulae occurring due to chronic inflammatory processes and those found in the immediate postoperative period following esophageal surgery. The latter are practically all due to weakening or even small, undetected trauma of the membranous wall induced by prior dissection. This most likely applies also to case one in this publication: mere breakdown of an esophagogastric stoma would not have caused frank gastrobronchial fistula within 3 days.