A rare complication of ileostomy obstruction: Boerhaave syndrome

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ABSTRACT

Small bowel obstruction is the most common surgical emergency after a patient has had abdominal surgery. However, Boerhaave syndrome secondary to an ileostomy obstruction has not been reported in current literature. We present a rare case of two concurrent surgical emergencies in a patient with Boerhaave syndrome and small bowel obstruction.

A 38-year-old woman presented with sudden onset severe central chest pain associated with breathlessness. She had a history of Crohn's disease, which had been treated with pancolectomy and ileostomy. Clinical examination showed an extensive palpable surgical emphysema extending from the neck to the pelvis with a distended abdomen. Computed tomography contrast of the chest and abdomen reported bilateral pneumothoraces, ruptured oesophagus and distended small bowel secondary to obstruction at the ileostomy. She was referred to the nearest cardiothoracic centre for an urgent assessment. Unfortunately she passed away shortly after the scan.

Ruptured oesophagus is associated with a high morbidity and mortality if it is not recognised, so early diagnosis and prompt treatment is crucial in reducing the mortality rate. There is a strong association between stoma formation and incidence of small bowel obstruction but no difference between an ileostomy and colostomy. This case helps to illustrate the challenging management of chronic recurring abdominal obstruction and the delicate balance of risk of complication versus benefit of various management being surgical or conservative. All general surgeons should be wary of the potential complication of oesophageal perforation secondary to intestinal obstruction.

KEYWORDS

Boerhaave syndrome – Oesophageal perforation – Pneumoperitoneum – Pneumothorax – Hospital emergency service

Accepted 2 June 2018

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Introduction

In 1724, Hermann Boerhaave first described Boerhaave's syndrome, also known as vomiting induced spontaneous perforation of the oesophagus.¹ Current literature suggests the incidence of oesophageal perforation is 3.1/1,000,000/year.² Small bowel obstruction after abdominal surgery is reported at 9%, of which 56–75% of cases are due to adhesions.³ We present a rare case of two surgical emergencies in a patient where emesis due to small bowel obstruction secondary to adhesions resulted in oesophageal perforation.

Case history

A 38-year-old woman was brought by ambulance to the emergency department with sudden onset of severe central chest pain associated with breathlessness. She had been suffering from severe vomiting for the past 24 hours. She

had suffered Crohn's since she was a teen and had undergone several abdominal operations. Six years earlier, she had undergone a pancolectomy after nonoperative measures had failed to control her Crohn's disease. She had a further two subsequent adhesiolysis procedures 10 months apart, initially 2 years after the original operation. As a result of the multiple operations, she had developed adhesions over the years and suffered from recurrent ileostomy obstructions secondary to the adhesions. During the numerous previous obstructions she had been managed conservatively in hospital with nasogastric tube suctioning, fasting, intravenous fluids and allowing self-resolution.

On this particular occasion, her stoma had not drained for 2 days, which was not uncommon for her, so she had not sought immediate medical attention. She had learnt over the years that the obstructions often resolved with bowel rest, so on this occasion she opted to ride the storm at home, hoping for self-resolution of the obstruction. Her past medical history also included depression and heroin

Figure 1 Initial chest x-ray showing bilateral pneumothorax, air below diaphragm and dilated bowel loops.

Figure 3 Transverse computed tomography showing pneumoperitoneum.

Figure 2 Transverse computed tomography showing pneumomediastinum.

intravenous drug abuse. She neither smoked tobacco nor drank alcohol.

On clinical examination, her neck was swollen with extensive palpable surgical emphysema extending from the neck to the pelvis. She was in respiratory distress, hyperresonant on percussion without air entry on auscultation of both her lung fields. Her abdomen was markedly distended, tympanic on percussion, with absent bowel sounds. Her ileostomy bag was empty. Her initial vital signs showed an oxygen saturation of 94% on 15 litres of oxygen, respiratory rate of 32 breaths/minute, blood pressure of 88/42 and heart rate of 132 beats/minute. Electrocardiography showed low voltage sinus tachycardia. She was still communicating verbally but had altered mental status from intermittent confusion. A portable chest x-ray showed a large left pneumothorax, small right pneumothorax, extensive surgical emphysema, air under the diaphragm and also dilated bowel loops as shown in Figure 1.

Figure 4 Sagittal computed tomography showing pneumomediastinum, pneumothorax and pneumoperitoneum.

Figure 5 Timeline of patient admission.

She was managed with bilateral chest drains insertion, which released large amount of air, and she was intubated and ventilated to protect her airway from the extensive surgical emphysema. Urgent contrast-enhanced computed tomography from the neck to the pelvis reported a large distal oesophageal rupture, pneumomediastinum, bilateral pneumothorax, hydrothorax and extensive surgical emphysema with cephalic extension to the neck and caudally to the pelvis as shown in Figures 2–4.

The abdominal images reported an obstruction at the level of the ileostomy with distended bowel and large pneumoperitoneum secondary to the distal oesophageal rupture. She was referred urgently to the nearest cardiothoracic centre, which was half an hour away by road ambulance transfer. Unfortunately, she went into cardiac arrest after returning from the scan. Cardiopulmonary resuscitation was initiated but these measures were unsuccessful and she was pronounced dead after 40 minutes of resuscitation.

The patient's cause of death has been documented as severe sepsis due to mediastinitis secondary to bowel obstruction and multiorgan failure. The timeline of her admission are described in Figure 5.

Discussion

Acute small bowel obstruction is one of the most common surgical emergencies. There is a strong association between stoma formation and incidence of small bowel obstruction but no difference between an ileostomy and colostomy.³ In comparison with other structures of the gastrointestinal tract, the oesophagus is more susceptible to rupture at lower pressures due to the lack of a serosal layer, which contains collagen and elastic fibres that strengthen the structure.¹

Symptoms of intestinal obstruction are abdominal discomfort, vomiting, abdominal distension and failure to pass flatus or stool. Early obstruction may present with regular paroxysm of abdominal discomfort. As the obstruction progresses, cramping pain becomes constant owing to intestinal distention, which causes the loss of natural intestinal motility. Prolonged obstruction may lead to strangulation and gangrene of the bowel.⁴

Physical examination of the obstruction reveals abdominal distension with high-pitched tingling sounds associated with hyperactive peristaltic activity. Absent bowel sound suggest a loss of intestinal motility secondary to prolonged obstruction,⁴ whereas oesophageal rupture presents with retrosternal chest pain, neck discomfort, cough, sore throat, dysphagia, dysphonia, dyspnoea and toxic appearance of the patient.⁵

Patients with vomiting induced pneumomediastinum and Boerhaave syndrome have very similar clinical presentation. The attending physician should therefore be aware of the complications associated with both these conditions. A chest x-ray may indicate the presence of mediastinal air but it does not differentiate the source or cause. More detailed scans such as contrast computed tomography, gastroscopy or contrast swallow study should follow to distinguish the cause of the pneumomediastinum.⁵

The mortality of oesophageal rupture ranges between 20% and 35% if treated and increased to 100% if it is left untreated.^{1,5} Thus, early diagnosis and prompt treatment is crucial in reducing the mortality rate.¹ There are currently no reported cases of these dual pathologies (Boerhaave syndrome secondary to obstructed ileostomy) occurring concurrently.

Boerhaave syndrome can be treated conservatively in appropriately selected patients; however, surgical management remains the gold standard treatment.¹ Barrett reported the first successful surgical repair of oesophageal rupture in 1947.¹ It is important to note that patients presenting with pneumomediastinum and surgical emphysema as a result of vomiting, regardless of the source of the air, should have a cause sought for their vomiting as soon as possible.⁵

Conclusion

This case helps to illustrate the challenging management of chronic recurring abdominal obstruction and the delicate balance of risk of complication versus benefit of various management being surgical or conservative. All general surgeons should be wary of the potential complication of oesophageal perforation secondary to intestinal obstruction.

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