Tension faecopneumothorax: a rare presentation of colonic diverticular perforation

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ABSTRACT
Tension faeco-pneumothorax is rare, typically occurring following strangulation of a diaphragmatic hernia. We report the case of a 69-year-old gentleman with a previous history of thoraco-abdominal oesophagectomy, who presented with an acute abdomen and respiratory distress. Initial investigations revealed pneumoperitoneum and left-sided pneumothorax. The patient rapidly deteriorated with development of tension pneumothorax. Following tube thoracostomy, feculent fluid was drained. At laparotomy, gross faecal peritonitis secondary to colonic diverticular perforation was encountered, with no evidence of intestinal diaphragmatic herniation. This case report highlights the rarity of this clinical entity as well as the possible complications of hiatal surgery.

INTRODUCTION
Tension faeco-pneumothorax is an extremely rare clinical entity, which typically occurs following strangulation of a diaphragmatic hernia(1). We report an interesting case of colonic diverticular perforation with gross pneumoperitoneum and faecal peritonitis. It presented as a faeco-pneumothorax that rapidly developed into tension pneumothorax with the patient in peri-arrest. To the best of our knowledge, this is the first report of such a case.

CASE REPORT
A 69 year-old gentleman presented to the emergency surgical assessment unit with a 24-hour history of generalised abdominal pain. This was associated with several episodes of non-bilious vomiting and abdominal distension. Prior to admission, his otherwise normal bowel habit had been erratic, with alternating constipation and diarrhoea for several days.

Past history included adenocarcinoma of the gastro-oesophageal junction four years previously for which he underwent neo-adjuvant chemotherapy followed by left thoraco-abdominal oesophagectomy. His latest follow-up CT scan was performed 6 months prior to this emergency admission; the scan demonstrated no evidence of recurrent or metastatic disease, with no abnormalities at the previous anastomotic site. There was no other significant medical or family history of note.

Clinical examination revealed the gentleman to be hypertensive, tachycardic, and
tachypnoeic. The abdomen was distended, with generalised peritonitis. Digital rectal exam was unremarkable. The chest radiograph demonstrated pneumoperitoneum as well as left-sided pneumothorax. Within a short space of time, the patient deteriorated due to tension pneumothorax threatening respiratory arrest. Immediate needle decompression followed by tube thoracocentesis in the left 5th intercostal space released a large amount of air under pressure initially, followed by faeculent fluid.

Urgent laparotomy revealed gross faecal contamination within the peritoneal cavity secondary to a large perforation of about 10 cm within the hepatic flexure. There was moderate dilatation of the small and large bowel, but no other obvious pathology, particularly in the hiatus area. Following meticulous washout, right hemi-colectomy was performed, with formation of end ileostomy and mucous fistula of the transverse colon. Histopathological findings were consistent with diverticular perforation. Unfortunately the patient failed to progress post-operatively despite aggressive management and passed away in the intensive care unit several days later.

DISCUSSION

Tension pneumothorax is a rare presentation of intestinal perforation, and there are only a handful of reports of such cases in the literature, all of which are a complication of endoscopic intervention(2,3). Tension faeco-pneumothorax is even more unusual, and all reports of this rare clinical entity are that of diaphragmatic herniation (either congenital or acquired) of colon into the thorax followed by strangulation and perforation(1). An extensive literature search has shown 1 report of faeco-pneumothorax following oesophagectomy, which was also secondary to intrathoracic herniation of colon (4).

It is important to note that intrathoracic herniation of abdominal contents is a reported complication following oesophagectomy, with an overall incidence of 2% (5). This has been attributed to excessive hiatal manipulation and hiatal enlargement due to extended incision and partial resection of the crura. Although there was no definitive evidence of visceral herniation in the case of our patient, it is likely that a diaphragmatic defect was created as a consequence of his previous surgery.

Diverticular perforation and subsequent pneumo-peritoneum with gross faecal contamination therefore resulted in the transmission of large amount of air as well as intestinal contents from the peritoneal into the pleural cavity via this direct communication. This would explain the
sequence of symptoms in our patient and the clinical picture of generalised peritonitis complicated by pneumothorax, which rapidly developed into tension faeco-pneumothorax. This case report demonstrates two messages:

1) Previous hiatal surgery can predispose to pneumothorax and hydrothorax when hollow viscus perforates intra-peritoneally, and

2) In the presence of pneumothorax, abdominal as well as pulmonary causes should be ruled out.

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