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Gastrothorax: A case of mistaken identity

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ABSTRACT

INTRODUCTION: Acute wrap failure post fundoplication is a rare but recognized complication and can be due to patient factors, disease factors and surgical factors. Herniation of the stomach into the thorax can mimic a pneumothorax clinically and radiologically and thus lead to bad outcomes for patients.
PRESENTATION OF CASE: We report the case of a 20-year-old male who presented to the emergency department with progressively worsening upper abdominal pain, nausea and vomiting followed by acute onset dyspnoea, six days post a laparoscopic repair of a small hiatus hernia and a Nissen fundoplication. His chest x-ray was consistent with that of a left sided pneumothorax and was therefore, appropriately resuscitated and treated with an intercostal catheter (ICC). A subsequent CT scan of the chest revealed a left gastrothorax. The patient was taken to theatre for the surgical reduction of the paraoesophageal hernia.
DISCUSSION: Patients with a recent history of anti-reflux surgery, who present with a pneumothorax and respiratory distress or a tension pneumothorax should always be treated with an ICC. However, follow up imaging with a CT scan is essential to confirm diagnosis. Good control of post- operative nausea and vomiting is essential in avoiding wrap failure and ensuing complications.
CONCLUSION: A high index of suspicion for a gastrothorax mimicking a pneumothorax is important in the setting of recent anti-reflux surgery.

1. Introduction

The laparoscopic Nissen fundoplication is a trusted technique adopted by surgeons to treat reflux in those whom other non-surgical treatment options have failed. Acute wrap failure post fundoplication is a rare but recognized complication. Herniation of the stomach into the thorax can mimic a pneumothorax clinically and radiologically, and therefore, affect treatment and outcome for the patient. This work has been reported in line with the SCARE criteria [1].

2. Presentation of case

A 20-year-old male presented to the emergency department with progressively worsening dyspnoea, upper abdominal pain, nausea and vomiting six days post a laparoscopic repair of a small hiatus hernia and a Nissen fundoplication performed at a private hospital.

He had self-funded the procedure and self-discharged the day after so that he will not have to pay additional costs. On his discharge it was noted that he was well, comfortable and was tolerating a fluid diet. Day 2 post discharge, the patient experienced progressively worsening abdominal pain, nausea and vomiting. He therefore, presented to the ED of another institution on day 4. A barium swallow was done at the request of the primary surgeon, and this confirmed the recurrence of the hiatus hernia. He was discharged home and referred to the public hospital for further management.

He then developed acute dyspnoea and thus, presented to the emergency department at our institution at night and was assessed by the on-call surgical registrar. He was haemodynamically stable and afebrile. However, his respiratory rate was 30 and he had a O2 saturation of 96% on room air. His abdomen was soft with tenderness in the epigastrium. Initial auscultation of the chest by the ED team had revealed bilateral air entry. His biochemistry was within normal range except for the lipase which was 113. His only medical history was that of an appendicectomy.

A chest x-ray showed a large lucent area in the left hemithorax with a small amount hyper dense material at the bottom (Fig. 1). There was also some mediastinal shift to the right. The appearance was consistent with that of a tension pneumothorax and therefore, a left intercostal catheter (ICC) was inserted to alleviate respiratory distress. As we could not exclude the presence of a gastrothorax, the left ICC was introduced carefully, without a trocar, to avoid possible iatrogenic perforation of the stomach.

The subsequent CT scan of the chest and abdomen revealed a large paraoesophageal hernia with the entire stomach in the left hemithorax, pressing on the mediastinum (Fig. 2). An NGT was

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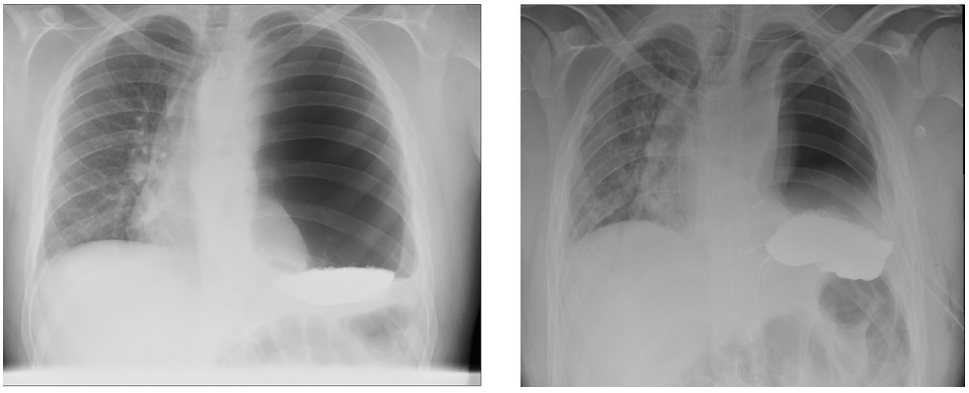

Fig. 1. Chest x-ray at initial presentation (left) and post left intercostal catheter insertion (right).

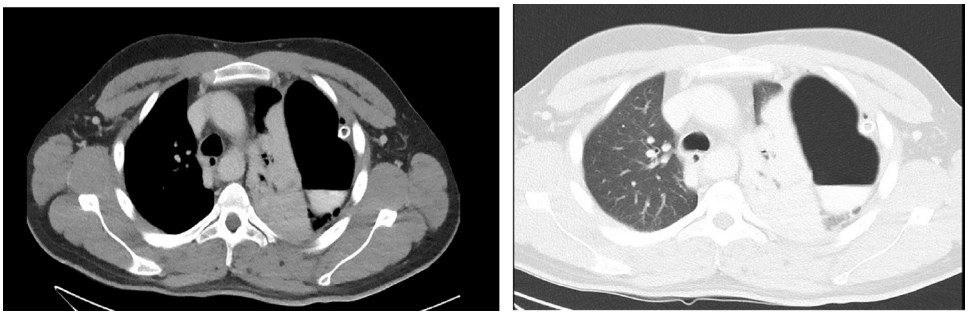

Fig. 2. Axial images of the CT chest post insertion of left intercostal catheter.

immediately inserted and the patient was booked for an operation on the ASU list the following afternoon.

The next morning a MET call was activated for tachycardia (130bpm) and tachypnoea(40bpm). It was also noted that the ICC had about 800 ml of dark enteric looking fluid and a gastric perforation was suspected. Patient was immediately taken to theatre. An on-table gastroscopy showed a healthy mucosal lining of the stomach with no obvious sign of perforation. A relook laparoscopy was then performed and the stomach was reduced back into the peritoneal cavity with great difficulty after incising the left crus and part of the left hemidiaphragm. The stomach was indurated and there were some serosal tears, which were oversewn. The crural defect was closed and the hiatus was reinforced with biomesh. A posterior 270-degree fundoplication was done. The patient was then transferred to HDU with left ICC in-situ for close monitoring (Fig. 3). The patient made a good recovery and was transferred back to the ward. He was also stared on TPN until his oral intake was satisfactory. He was discharged on a puree diet and was again seen 2 weeks post discharge where his diet was again upgraded to solids. He has remained well since.

3. Discussion

Treatment for gastro-oesophageal reflux disease or GORD can be medical or surgical with the latter usually only considered when there is objective evidence of reflux through 24 h pH monitoring, other pathologies (such as malignancy and motility disorders) have been excluded and medical therapy has failed or not tolerated [2]. The literature also shows that surgical treatment offers better outcomes in terms of symptom control and quality of life [2,3]. The laparoscopic Nissen fundoplication is an anti-reflux surgical technique adopted by some surgeons to create an artificial lower oesophageal sphincter by doing a 360° wrap of the fundus of the stomach around gastroesophageal junction [3]. It's a trusted and popular technique that has shown to reduce refluxing of gastric contents [3,4].

Pneumothorax or tension pneumothorax is also a recognized complication of anti-reflux surgery and occurs when there is a breach in the pleura during mobilization of the distal oesophagus from the hiatus [5–7]. It commonly presents during the surgery itself or in the immediate post-operative period and is treated with the placement of an ICC [7,8]. A paraoesophageal hernia mimicking a pneumothorax or tension pneumothorax in the adult is a rare phenomenon and only a few cases have been cited in the literature [9–13]. There are a number cases where patients with large paraoesophageal hernias present with respiratory distress and haemodynamic instability, but the initial chest x-ray has shown signs of the large paraoesophageal hernia (e.g. large air fluid levels, opacification of the left hemithorax or a retro-sternal mass) [14–17]. When a gastrothorax mimics a pneumothorax, it has been treated with an ICC. There is a danger that the ICC insertion can perforate the stomach and thus cause mediastinal contamination and creating the need for a major life saving surgical intervention such as a gastrectomy. To avoid this scenario, it is important to have a high degree of clinical suspicion when a patient presents with respiratory distress and a pneumothorax in the setting of a recent anti-reflux operation (fundoplication/hiatal hernia repair) or known existing hiatus hernia. Additional imaging such as an urgent CT chest/abdomen will help confirm diagnosis. The treatment for a gastrothorax then, would be to insert a nasogastric tube (to decompress the stomach), to secure the airway if there is cardiopulmonary compromise secondary to compression and urgent surgical intervention to reduce the stomach. Intraoperative placement of a ICC in the affected hemithorax, once the stomach has been reduced, may avoid a tension pneumothorax during the laparoscopy.

Recurrence of hiatus hernia or wrap failure post anti-reflux surgery can be due to patient factors, disease factors and surgical factors [8,18,19]. Increased intra-abdominal pressure secondary to vomiting, coughing and straining increase the risk of wrap failure