

Traumatic diaphragmatic hernia: A case report

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INTRODUCTION

Diaphragmatic hernias are defects of the diaphragm, allowing an organ, or part of an organ, to pass into the thoracic cavity (1). Diaphragmatic hernias are rare, and can be classified into congenital and acquired or traumatic.

Traumatic diaphragmatic hernias may result from blunt trauma or penetrating injuries, with blunt trauma being the major cause of diaphragmatic rupture and hernia (2). If left untreated, strangulation of incarcerated viscera through the diaphragmatic defect may occur, which has been associated with high mortality rates of up to 25-60% (2). We present a case of a traumatic diaphragmatic hernia which was successfully repaired via a laparoscopic approach.

CASE REPORT

A 49-year-old lady was unfortunately involved in a motor vehicle accident, and presented to us post trauma. She was in was hit by another car from the side, and her car skidded, coming to a sudden stop.

Post trauma, she complained of shortness of breath and left sided abdominal pain. She was tachypnoeic on arrival with respiratory rate of 24, and saturations of 88% under room air. Examination revealed reduced breath sounds over the left lower zone, and on abdominal examination, there were bruises over the left hypochondrium, with tenderness elicited over left hypochondrium on palpation. A chest x-ray was done, which showed an elevated left hemidiaphragm with gastric dilatation in the thoracic cavity (Figure 1). An urgent computed tomography (CT) scan of the thorax, abdomen, and pelvis was arranged, which showed a left diaphragmatic defect measuring approximately 4.1cm, with herniation of the stomach into the left thoracic cavity, and presence of collar sign at the neck of the defect (Figures 2 and 3).

The patient was counselled and posted for emergency surgery. A laparoscopic approach was undertaken. Intraoperatively, there was a diaphragmatic defect over the left hemidiaphragm measuring approximately 4x2cm, with herniation of the fundus and body of the stomach into the thoracic cavity. The stomach appeared to be healthy, and was easily reduced into the abdominal cavity. The diaphragmatic defect was then approximated with absorbable V-Loc suture and a left chest tube was inserted under direct visualisation prior to closure. Post operatively, patient recovered well. Chest tube was removed post operative day 2 (Figure 4), and patient was discharged home well a few days post operatively.

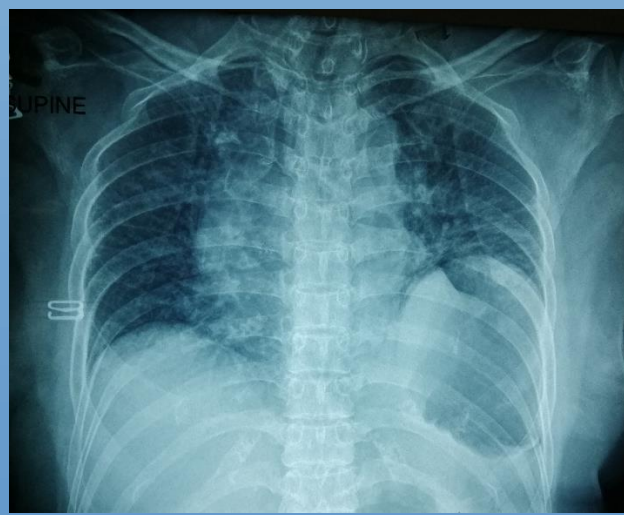


Figure 1. Chest x-ray on arrival.

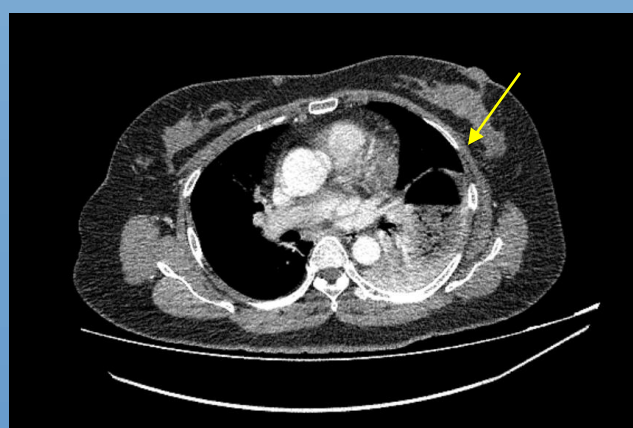


Figure 2. CT imaging with yellow arrow showing herniation of stomach into thoracic cavity.

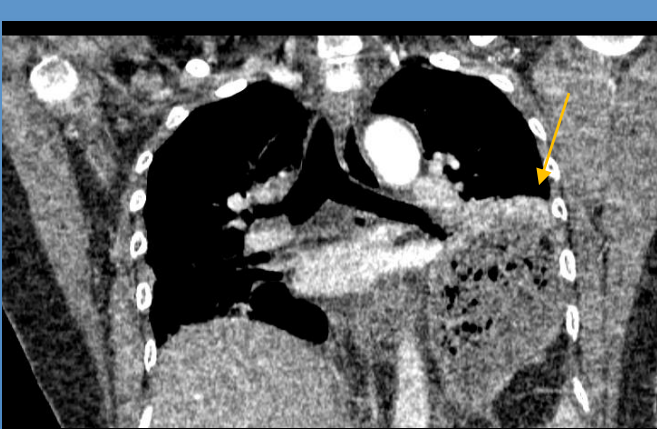


Figure 3. CT imaging with yellow arrow showing herniation of stomach into thoracic cavity.



Figure 4. Chest x-ray after removal of chest tube.

DISCUSSION

Diaphragmatic injuries are estimated to occur in 1.1-3.9% of patients who sustain thoraco-abdominal trauma (3). A rupture of the diaphragm can lead to a traumatic diaphragmatic hernia, which is uncommon, occurring in less than half of the patients who present with diaphragmatic injuries (3).

A study reported the commonly herniated organs in acute traumatic diaphragmatic hernias as stomach, followed by omentum, liver, colon, spleen, and small bowels (4). In our patient, the stomach was herniated through the diaphragmatic defect into the thoracic cavity, and was successfully reduced into the abdominal cavity during surgery.

Similar to the presentation of our patient, patients with diaphragmatic rupture commonly present with dyspnoea and chest pain, and most patients had reduced air entry on auscultation of the lungs, and with some patients having audible bowel sounds in the thoracic cavity on auscultation (3, 5), whereas some patients may be asymptomatic (4, 5).

Chest x-rays are useful for the diagnosis of diaphragmatic injuries, and can detect up to 27-62% of cases of traumatic diaphragmatic hernia following blunt trauma (4). Signs of diaphragmatic injury that can be shown on chest x-rays comprise of the collar sign, which is the intrathoracic herniation of abdominal organs, elevation of the hemidiaphragm, as were seen on the chest x-ray of this patient, and also demonstration of the nasogastric tube tip above the diaphragm (5, 6).

Computed tomography (CT) scanning has a high sensitivity in detecting diaphragmatic injuries (3). Besides that, magnetic resonance imaging (MRI) can be used to detect diaphragmatic injuries as it allows for clear discrimination between the diaphragm and adjacent structures (6).

Once the diagnosis of traumatic diaphragmatic hernia is made, surgical intervention should follow to reduce the herniated organs and to repair the diaphragmatic defect. The repair can be performed via few approaches, namely thoracotomy, laparotomy, or minimally invasive techniques. Minimally invasive laparoscopic repair of diaphragmatic hernia can be used in hemodynamically stable patients, and has been shown to be feasible with good outcomes (2).

CONCLUSION

The diagnosis of diaphragmatic injuries may be challenging, and requires a high index of clinical suspicion. Clinicians and radiologists should work closely to identify cases of diaphragmatic injuries, so as to initiate appropriate management. Clinicians should also be thorough in the assessment of the trauma patient, so as not to miss other associated injuries. Early diagnosis and prompt treatment of diaphragmatic hernias are vital to prevent complications such as incarceration, strangulation and perforation of herniated viscera.

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