

Case Report

Colonic perforation secondary to post traumatic diaphragmatic hernia: a case report

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ABSTRACT

Post traumatic diaphragmatic hernia (PTDH) is a rare cause of large bowel obstruction, and can present weeks or years after the initial trauma. We report the case of a 42 years old male adult who presented in emergency with features of acute generalised peritonitis secondary to closed loop obstruction. Patient had history of fall leading to blunt trauma chest 9 months back which was managed with Intercostal drainage (ICD) left chest at that time. Chest radiography showed multiple air-fluid levels in the left upper quadrant, an air-fluid level in the left thoracic cavity and significant free air under the right side of diaphragm. On laparotomy there was feculent material in abdominal cavity, dilated caecum, ascending colon, transverse colon with invagination of splenic flexure of colon into thoracic cavity. A segment of transverse colon was gangrenous and there was a perforation of size 2 x 2 cm present. Right hemicolectomy performed and loop ileostomy along with DMF transverse colon fashioned in emergency setting. Diaphragmatic hernia repaired after 3 months. Posttraumatic diaphragmatic hernias should be part of the differential diagnosis for patients with bowel obstruction, especially if there is a history of trauma. Radiography is useful in facilitating a quick diagnosis. When patients present complications, there is a higher rate of morbidity and mortality (31%) therefore emergency surgery is mandatory.

Keywords: Diaphragmatic hernia, Obstruction, Perforation, Ileostomy, Case report

INTRODUCTION

Post-traumatic diaphragmatic hernia (PTDH) is defined as a displacement of intra-abdominal organs into the chest through a pathological orifice in the diaphragm followed by a trauma.¹

The incidence of diaphragmatic rupture is 5% in case of severe thoraco-abdominal trauma, including blunt trauma (80%) or penetrating trauma (20%).¹ PTDHs are difficult to diagnose directly, most of them are asymptomatic for years until they present with complications.² Rarely, some of these patients present with bowel obstruction after a history of blunt trauma abdomen. Only about 30-

35% patients diagnosed at the time of trauma.³ The delay in the diagnosis is because of the negative pressure in the thoracic cavity, which promotes the increase of the initial injury and attracts the visceral organs in the chest.⁴

Left diaphragmatic hernias are more common (88–95%) than right, due to a stronger right hemi-diaphragm and size of the liver prevents the organs to migrate in the thoracic cavity.² Therefore left-sided PTDH presents with acute symptoms such as obstruction, perforation, gastrointestinal symptoms, dyspnoea, chest pain, abdominal pain, vomiting and can lead to cardiorespiratory failure.

This case report highlights the importance of an awareness that the presentations like acute intestinal obstruction, acute generalised peritonitis in the setting of old history of trauma may be due to PTDH. The diagnosis of PTDH in such cases can be reached with the use of brief history-taking, thorough physical examination, and radiological investigations.

CASE REPORT

A 42 years MA presented in emergency with H/O pain abdomen and abdominal distension for 3 days, associated with multiple episodes of bilious vomiting and constipation. Patient had prior history of blunt trauma chest left side 9 months back which was managed with ICD at Pt JLNGMC Chamba.

On examination patient was febrile, tachycardic and tachypnoeic. Per abdomen was distended, guarding and rigidity was present. Bowel sounds were absent. On DRE there was no significant findings. On chest examination a faint, well-healed scar was seen in the left 4th intercostal space, at the ant axillary line. On auscultation there was decreased breath sounds in left lower quadrant of chest and bowel sound were heard.

Chest and abdominal radiograph showed multiple air fluid levels in the LUQ, with an additional air-fluid level visible in the left thoracic cavity and significant free air under the right side of diaphragm (Figure 1).

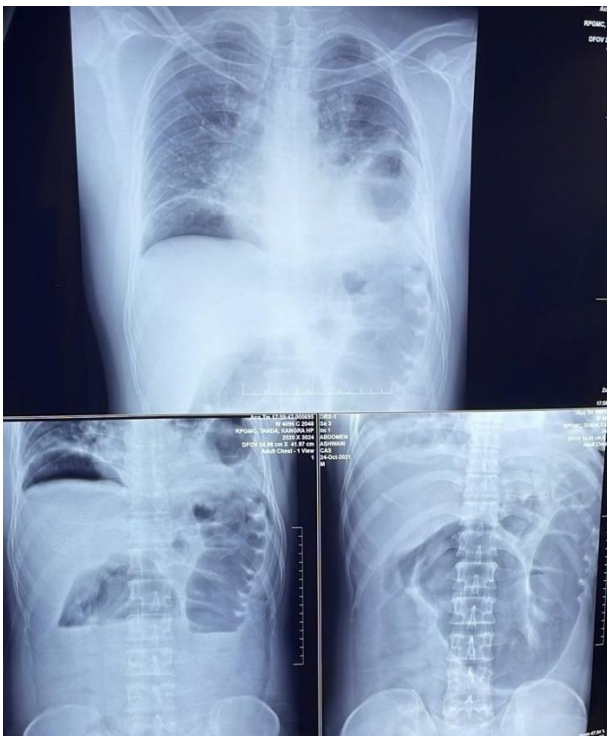


Figure 1: Preoperative chest and abdominal X-ray showing free air under the diaphragm, multiple left upper quadrant air-fluid levels and a single loop of bowel in left thoracic cavity.

After informed consent the patient was taken up for emergency exploratory laparotomy. Intra operatively about 250 cc of feculent content were found in the abdominal cavity, with grossly dilated caecum, ascending colon, transverse colon and splenic flexure was invaginating into the thoracic cavity through the diaphragm (Figure 2). There was a gangrenous patch on transverse colon with a perforation of size approximately 2 x 2 cm secondary to closed loop obstruction (Figure 3).

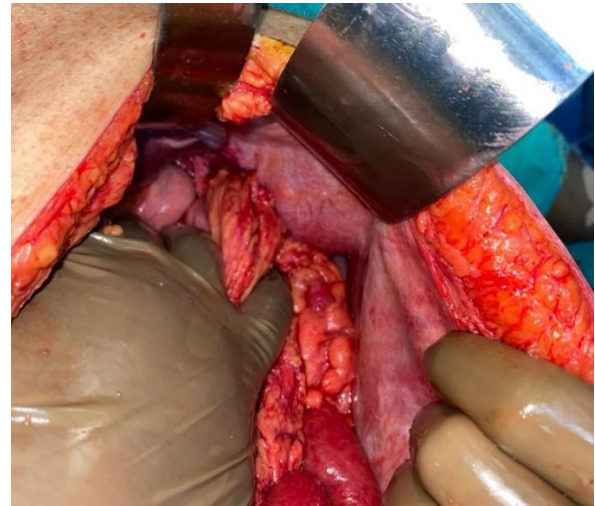


Figure 2: Intra operative photograph showing invagination of splenic flexure of colon into left thoracic cavity through diaphragm.

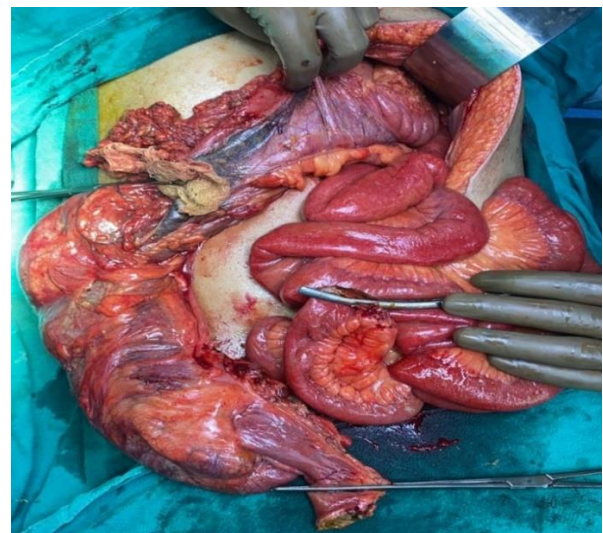


Figure 3: Intra operative photograph showing dilated caecum, ascending colon, transverse colon with gangrenous patch over transverse colon along with perforation.

There was risk of fecal contamination of thoracic cavity so traction of splenic flexure was not performed and diaphragmatic hernia was not repaired at the time of primary surgery. Right hemicolectomy performed, loop ileostomy along with DMF of distal transverse colon

fashioned. Post-operative period was uneventful, patient discharged on 8th POD.

Definitive repair of left diaphragmatic hernia along with restoration of bowel continuity performed after 3 months.

DISCUSSION

PTDH is a very rare cause of intestinal obstruction. The stomach is the most commonly involved organ, however involvement of the small intestine, large intestine, spleen and omentum has also been reported in literature. Based on content of the hernia, PTDH can lead to various complications such as pneumonia, intestinal ischemia, bowel perforation, twisting of the stomach or the splenic hilum.⁵ In most cases of bowel obstruction due to diaphragmatic hernia, the triggering event is blunt abdominal trauma.⁵

PTDHs are much more common on the left side. While the reason for this is not clear, it is known that a triangular gap between the muscle fibres of the costal part of the diaphragm is more common on the left side than the right. Other possible reasons include: (a) the line of fusion of the septal and muscular parts of the diaphragm is a potential weak area (b) the oesophageal hiatus may provide an easier conduit for herniating viscera and (c) the liver, a large solid organ that is less prone to herniate, is positioned on the right side (only one case of liver hernia has been reported so far).⁶

The diagnosis of bowel obstruction due to diaphragmatic hernia is made on chest X-ray when there is air fluid level in thoracic cavity and if there is prior history of trauma. Sometimes bowel sounds can be heard on chest auscultation. In general, ultrasonography is considered the gold standard for imaging cases of diaphragmatic rupture, as it is easily available, cost-effective and has a sensitivity of up to 82%.⁷

Surgery is always necessary for the treatment of PTDH. When patients present with complications and cannot undergo surgery, the mortality rises to 100%.⁸ The surgical options are thoracotomy, laparotomy, and laparoscopy, with or without mesh. When there are symptoms of obstruction or ischemia, laparotomy is needed. Laparoscopic repair is recommended for non-complicated presentation of PTDH.⁹ The advantages are shorter hospital stay, smaller incision, reduced pain and blood loss. In the presence of even a small amount of contamination, we should go for conversion to open laparotomy. In most cases, repair is successfully done by either interrupted or continuous nonabsorbable sutures. The use of a mesh has been reported in a few cases.¹⁰ where the defect is too large for primary closure.

In the immediate postoperative period, monitoring for signs of respiratory distress is important. We did not use chest tube as we did not enter the thoracic cavity during the emergency surgery due to the contaminated nature of

the procedure. A loop ileostomy with DMF was created for the same reason, in accordance with institutional experience.

CONCLUSION

Posttraumatic diaphragmatic hernias (PTDH) should be considered in the diagnosis of patients presenting with acute intestinal obstruction, especially if there is old history of trauma, visible scars over the chest and bowel sounds on auscultation in the chest. While we wait for laparoscopic experience in the management of such cases to increase, the open approach may be safely selected. When patients present with complications, like in our case patient present with colonic perforation, emergency surgery is mandatory as there are high chances of morbidity and mortality.

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