

Diaphragmatic Rupture presented with Herniation and Strangulation of the Abdominal Viscera in the Thoracic Cavity

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ABSTRACT

Traumatic diaphragmatic hernia are often undiagnosed, and can be discovered in case of complications such as obstruction. We reported a case of delayed presentation of post traumatic diaphragmatic rupture with herniation and strangulation of stomach, transverse colon, and the jejunum of a 52-year-old patient who had a fracture of acetabulum six month back following road traffic accident. The diagnosis was suspected based on the clinical features of obstruction and air-filled viscera in the left hemithorax. Diagnosis was confirmed by an abdominal and thoracic computerized tomography (CT) scan. Exploratory laparotomy revealed a diaphragmatic rupture with strangulation of the stomach, transverse colon and the jejunum. The treatment consisted of the reduction of the herniated organs and closure of the diaphragmatic defect.

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Introduction

Post-traumatic diaphragmatic hernia is defined as the passage of abdominal viscera into the chest cavity through the post traumatic diaphragmatic tear or defect. They can be diagnosed immediately after the trauma during the acute phase or later.

We reported a case of diaphragmatic rupture discovered six months later after a road traffic accident, which presented as a picture of intestinal obstruction.

The objective of this clinical case is to study the diagnostic and therapeutic aspects of this pathology.

Observation

A 52-year-old patient presented to accident and emergency department with history of constipation for past 4 days, abdominal distention, vomiting. He did not have any past medical history.

Six months back, he had a road traffic accident which resulted in a fracture of the left acetabulum. No further investigations were done at the time of trauma. On examination, heart rate was 110 beats per minute, respiratory rate 24 breaths/min, a blood oxygen saturation 88% and 95% with an oxygen mask with 6 l/min O₂.



Figure 1. Air-fluid level in the left chest pushing upward left lung.

On physical examination, abdomen mild tenderness associated with pleural effusion syndrome. Chest X-ray showed a large air-fluid level in the left chest pushing up the left lung and shifting the mediastinum structures on the opposite side. (figure 1).

The blood test showed leucocytosis 16000/ μ L, CRP was 33 mg/l. Others blood test were within normal limits. The diagnosis of diaphragmatic hernia suspected, was confirmed by the CT Scan abdomen and thorax (figure 2).

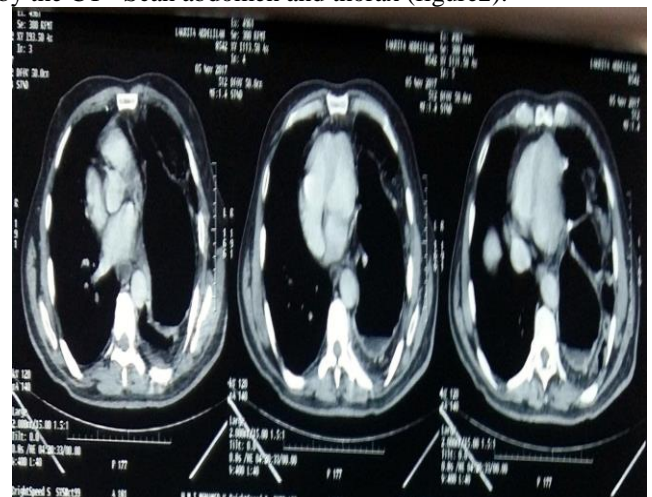


Figure 2. Air-fluid level in left chest with inferior lobe atelectasis, herniation of stomach, transverse colon, jejunum through diaphragmatic defect.

We performed a surgical exploration through a midline laparotomy. We found two defects on the dome of the left diaphragm, the first one was anterolateral measuring 3,5 cm, the second one was mid-diaphragmatic measuring 6cm with incarceration of the abdominal viscera (stomach, transverse colon and jejunum) in the thoracic cavity (figure 3).

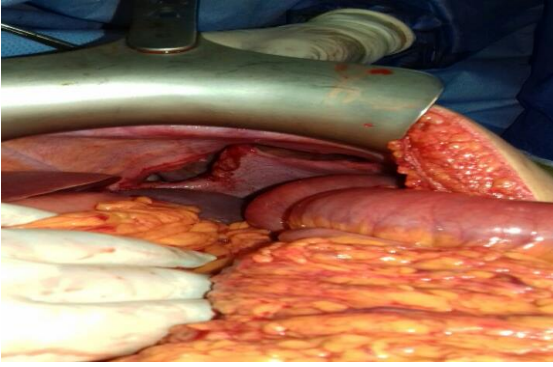


Figure 3. picture shows intraoperative diaphragmatic laceration.

We carried out dissection of adhesions and reduction of herniated organs. The diaphragmatic defect was closed with non- absorbable suture (figure 4)



Figure 4. Diaphragmatic repair.

The intervention was performed after insertion of chest drain in homolateral side. The next step of surgical manipulation was without any difficulty.

Chest X-Ray was done on the second day post-surgery and showed no evidence of air- fluid level. (figure 5). The chest drain was removed on fifth day and patient discharged on sixth day post-surgery.



Figure 5. C- X-ray after surgery shows absence of air fluid level.

Discussion:

Post traumatic diaphragmatic rupture involving the three anatomical structures of diaphragm (pleura, muscle and peritoneum) allowed to abdominal viscera to protrude through a defect during the thoracic aspiration.

There are different mechanisms of diaphragmatic injuries: blunt trauma usually after road traffic accidents, or after penetrating trauma (whether after a stab wound or gunshot). the most common cause of diaphragmatic injury remains road traffic accident.as per statistics, left sided rupture is seen more frequently in 60 to 75 % of the cases, and right in 23 to 40 % of the cases [1]. .

The intra thoracic passage of abdominal organs through the diaphragmatic tear will expose, prematurely or late, to

cardiopulmonary and digestive complications (due to incarceration of viscera at the level of the orifice of the diaphragm with possible perforation of viscera). Missed diagnosis on initial evaluation is reported in 18 to 50 % of the cases [2].

The chest X- ray after the insertion of nasogastric tube is considered as the initial screening examination by visualization of intestinal loop in the hemithorax, but this method is not sufficient for confirmation and therefore, the use of imaging technique (CT scan and MRI) remain mandatory in such cases [3].

The choice of abdominal approach or thoracic depends on delay of presentation and affected structures. The video- or computer (tele-manipulative) assisted surgery, have been the recent tool for diagnosis of diaphragmatic injuries.

In our case, as it was an emergency case, the abdominal approach gives us a better access to view and reduce strangulated organs [4].

Several authors agree on the closure of the diaphragmatic tear by continuous or interrupted sutures using Non-absorbable or absorbable sutures.

In our case, we repaired both laceration with interrupted non- absorbable sutures.

The reconstruction and reinforcing diaphragmatic hernia with prosthetic mesh give an excellent result with minimal rate of recurrence [5].

The post-operative period is usually without complication. The mortality after diaphragmatic rupture is estimated to be 20 to 60 % usually due to associated organ injuries. [6]

Conclusion:

The picture of intestinal obstruction as the clinical presentation of diaphragmatic hernia remains a rare phenomenon thereby making it necessary to observe patients who have had abdominal or thoracic injuries; this observation must continue even long after the trauma. Prompt surgical intervention ensures a favorable outcome majority of cases.

Conflict of interests:

The authors did not declare any conflict of interest

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