

A rare case of traumatic diaphragmatic rupture with delayed presentation

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Abstract

Traumatic injuries of the diaphragm is an entity of difficult diagnosis, it is important because of the frequency and severity of associated injuries, the difficulties in reaching the diagnosis require an aggressive search in patients at risk. We report the case of a patient with blunt trauma with Left diaphragmatic rupture that required urgent surgical treatment. Blunt trauma can cause substantial diaphragmatic rupture. It must have a high index of suspicion for diaphragmatic injury in patients, victims of vehicle collisions and in patients with severe thoracoabdominal trauma.

Keywords: Diaphragmatic rupture, Blunt trauma chest

1.Introduction

Traumatic injuries of the diaphragm remain an entity of difficult diagnosis despite having been recognized early in the history of surgery. In 1541, Sennertus performed autopsy in a patient who died from herniation and strangulation of the colon through a diaphragmatic gap, through a wound received 7 months before[1], the first successful repair was successfully done by Riolfi for the first time in 1886[2].

Such cases remain rare, and difficult to diagnose and care for. In diaphragmatic ruptures, delayed diagnosis and treatment may result in increased rates of morbidity and mortality[3]. Due to late presentation, traumatic events can be forgotten after many years and diaphragmatic injuries can be neglected or omitted[4] Obstruction and/or strangulation may occur with herniating organs into thorax if an early diagnosis is missed and treatment is not started[5].

2. Case Report

A 55year male presented with recurrent hiccups and cough since 1 month. Hiccups duration and frequency increased day by day. Continuous hiccups since 8 days, patient was unable to sleep and even eat due to hiccups. There was a past history of Thoraco-abdominal trauma due to RTA-2 years back which was managed conservatively.

On Examination, Patient was restless with hiccups. Vitals were stable. On auscultation of the chest there was gurgling sound on the left side. Other systemic examination was normal.

Blood investigations were normal. Chest X-ray with abdomen shows herniation of bowel loops into the chest on left side, Left dome of diaphragm was not visualized. Left lung was collapsed (Figure 1). USG Thorax was suggestive of Loculated pleural effusion on left side with consolidation of lung in mid lower zone 243cc volume fluid with multiple pockets.

CT-THORAX WITH ABDOMEN shows large Diaphragmatic Hernia with upward displacement of small bowel, transverse colon, splenic flexure of colon with mesentery, spleen and tail of pancreas with Compression of left lung parenchyma. (Figure 2)

After confirming the diagnosis of Large Diaphragmatic hernia and since patient was having continuous hiccups and bouts of cough with on air saturation of 70-80%, patient was taken for surgery as semi emergency case.

Laparotomy was performed with left subcostal incision under Epidural and General anesthesia. On opening the abdomen, small bowel loops, transverse colon, splenic flexure of colon with mesentery, spleen and tail of pancreas seen entered

into the left thoracic cavity (Figure 3 and 4). The entire bowel retrieved into the abdomen after doing adhesion lysis. Large rent seen in the diaphragm of size approx. 12x6 cm. Left lung was collapsed. Omentum dissected off its adhesions and retrieved into the abdomen. The diaphragmatic defect closed loosely tension free with vicryl 2-0. Large polypropylene mesh of size 15x15 cm placed over the defect and fixed with vicryl 2-0. (Figure 5) Left side intercostal drain was placed.

Post operatively patient monitored in ICU with oxygen supplementation and chest physiotherapy and breathing exercises. Patient recovered well. Patient is doing well on 6 months follow up.

Figure 1: X Ray chest with abdomen showing herniation of bowel loops into the chest on right side, Left dome of diaphragm is not visualized. Left lung is collapsed



Figure 2: shows large Diaphragmatic Hernia with upward displacement of small bowel, transverse colon, splenic flexure of colon with mesentery, spleen and tail of pancreas. Compression of left lung parenchyma



Figure 3: Shows intraoperative picture of large diaphragmatic rent with herniation of stomach, colon and ileum

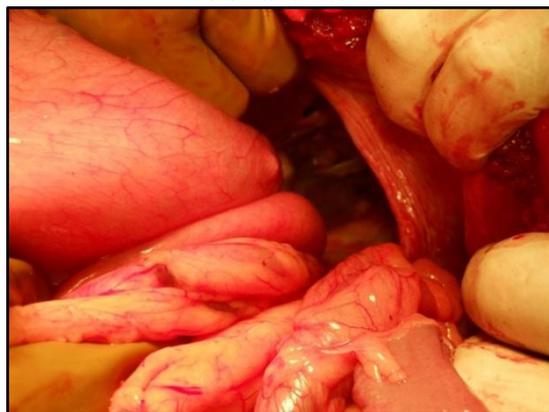


Figure 4: shows herniation of spleen along with splenic flexure of colon and collapsed left lower lobe of lung seen through the diaphragmatic rent



Figure 5: shows repair of diaphragmatic hernia with polypropylene mesh



3. Discussion

Currently, traumatic injuries of the diaphragm remain uncommon. The autopsy studies, the incidence of these injuries range between 5.2% and 17% [6]. Road traffic collisions or lateral intrusions into the vehicle are the most frequent causes of diaphragm. Direct impacts depress the side of the rib cage, and can cause a tear in the diaphragm rib attachments, and even the transverse rupture of the diaphragm [7]-[10].

The injury must be suspected when any hemi diaphragm is not seen or not in the correct position in any chest Radiograph[11]. Specific signs of diaphragmatic injury on plain radiographs are a marked elevation of the hemi diaphragm, an intrathoracic herniation of abdominal viscera, the “collar sign”, demonstration of a nasogastric tube tip above the diaphragm[12] high-energy trauma, when combined with a head injury and pelvic fracture.

A midline laparotomy is the advocated approach for repair of acute diaphragmatic trauma because it offers the possibility of diagnosing and repairing frequently associated intra-abdominal injuries[13] closed diaphragmatic injuries should be treated as soon as possible. Special attention should be given to the placement of thoracic drainage tubes, especially if the radiograph is suspicious. Midline laparotomy is the recommended approach because it allows for an exploration of the entire abdominal cavity Routine surgical repair of any diaphragmatic defect is accomplished by interrupted Or continuous nonabsorbable sutures and placement of chest tube(s) in the affected thoracic cavity Laparoscopy or video assisted thoracoscopic surgery (VATS) can be used in hemodynamically stable patients helps to avoid the risk of tension pneumothorax.

References

- [1] Asencio JA, Demetriades D, Rodriguez A: Injury to the diaphragm. In Trauma. 4th edition. Edited by: en Moore EE, Mattox KL, Feliciano DV. McGraw-Hill, New York; 2000: 603-632.
- [2] Favre JP, Cheynel N, and Benoit N, Favoulet P: Traitement chirurgical des ruptures traumatiques du diaphragme. *Encycl. Med. Chir.* (Elsevier, Paris-France), Techniques chirurgical- Appareil digestif, Paris 2005; 2:235-345.
- [3] Turhan K, Makay O, Cakan A, Samancilar O, Firat O, Icoz G, Cagirici U: Traumatic diaphragmatic rupture: look to see. *Eur J Cardiothoracic Surg* 2008; 33:1082-1085.
- [4] Hegarty MM, Bryer JV, Angorn IB, and Baker LW: Delayed presentation of traumatic diaphragmatic hernia. *Ann Surg* 1978; 188: 229-233.
- [5] Alimoglu O, Eryilmaz R, Sahin M, and Ozsoy MS: Delayed traumatic diaphragmatic hernias presenting with strangulation. *Hernia* 2004; 8:393-396.
- [6] Reber PU, Schmied B, Seiler CA, Baer HU, Patel AG, Büchler MW: Missed diaphragmatic injuries and their-long term sequelae. *J Trauma* 1998; 44:183-188.
- [7] Mansour KA: Trauma to the diaphragm. *Chest Surg Clin N Am* 1997; 7:373-383.
- [8] Rosati C: Acute traumatic injury of the diaphragm. *Chest Surg Clin N Am* 1998; 8:371-379.
- [9] Ozpolat B, Kaya O, and Yazkan R, Osmanoglu G: Diaphragmatic injuries: a surgical challenge. Report of forty-one cases. *Thoracic Cardiovascular Surg* 2009; 57:358-62.
- [10] Boulanger BR, Mizman DP, Rosati C, Rodriguez A: A comparison of right and left blunt traumatic diaphragmatic rupture. *J Trauma* 1993; 35:255-260.
- [11] ATLS: Advanced Trauma Life Support for Doctors. *American College of Surgeons*, 2008; 8.
- [12] Matsevych OY: Blunt diaphragmatic rupture: four years' experience. *Hernia* 2008; 12:73-8
- [13] Hanna WC, Ferri LE: Acute traumatic diaphragmatic injury. *Thorac Surg Clin* 2009; 19:485-9.