



An Accidentally Detected Diaphragmatic Hernia with Acute Appendicitis

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Author's contribution

The sole author designed, analysed, interpreted and prepared the manuscript.

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Case Report

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ABSTRACT

Congenital diaphragmatic hernia (CDH) is a childbirth defect of the diaphragm. The most commonly CDH are anterior-retrosternal Morgagni hernias, posterolateral Bochdalek hernias and septum transversum defects and hiatal hernias. Acquired diaphragmatic hernia (ADH) may result of penetrating, blunt and trivial trauma to abdomen. Diaphragmatic hernia may remain asymptomatic in adult's diagnosis usually become apparent once complications happen or incidentally detected for any other disease. This paper presents a rare case accidentally detected diaphragmatic hernia complicated with acute appendicitis.

Keywords: *Diaphragmatic Hernia (DH); congenital diaphragmatic hernia; Acquired Diaphragmatic Hernia (ADH); acute appendicitis.*

1. INTRODUCTION

A Diaphragmatic hernia is a protrusion of abdominal contents into the thoracic cavity because of a defect within the diaphragm. Diaphragmatic hernias can be divided into two

categories CDH and ADH [1]. It is mostly congenital phenomenon; however, acquired cases has been reported. A CDH occurs through embryologic defect in the diaphragm, and most patients present early in life. CDH comprises of posterolateral Bochdalek (majority of cases of

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CDH) hernias, anterior-retrosternal Morgagni hernias (accounting for 5-10% of CDH), septum transversum defects and hiatal hernias [2,3]. The ADH occurs due to all types of trauma penetrating, blunt, trivial, and iatrogenic [4,5].

ADH remains asymptomatic in adults. Diagnosis usually becomes apparent once complications such as gastrointestinal, respiratory, or cardiovascular happens. In adults the defect grows gradually over many years and may remain completely asymptomatic. Sometimes it presents with nonspecific abdominal pain, marked respiratory distress, decrease breath sound on affected side and paradoxical movement of the abdomen with breathing. Adult patients often asymptomatic at the time of presentation with the defect discovered incidentally on imaging during workup for other problems [3,6,7]. It is widely accepted diaphragmatic hernia whether symptomatic or asymptomatic patients should undergo surgical repair [8,9].

Acute abdomen is a condition that required urgent attention and management. This challenging situation urgently requires a detailed and meticulous investigation to determine the need for surgical intervention [10,11]. Acute appendicitis is a most common cause of acute

abdomen which needs immediate operative intervention.

2. CASE PRESENTATION

Patient young male belongs to middle class came to emergency complaints of right lower abdominal pain with nausea and non-bilious vomiting. He also complaints of exertional breathlessness for few years (retrospective history taken). He is constipating since few months. No alteration in bladder habits. On examination he is conscious, oriented to time place and person. His temperature – 100-degree, pulse- 92/min, BP-112/78mmHg Spo2-95% at room temperature. On per abdomen examination - right iliac fossa tenderness present, respiratory system examination -bowel sounds present in left hemi thorax.

Investigation Report: On investigation it was found that his TLC- raised (approximately 13 thousand).

Chest X-ray revealed: Haziness of left side hemi thorax as shown in Fig. 1 (Ordered as per preanesthetic checkup).

Ultrasound reveled: Acute appendicitis with minimal fluid in pelvis no other abdominal abnormalities.

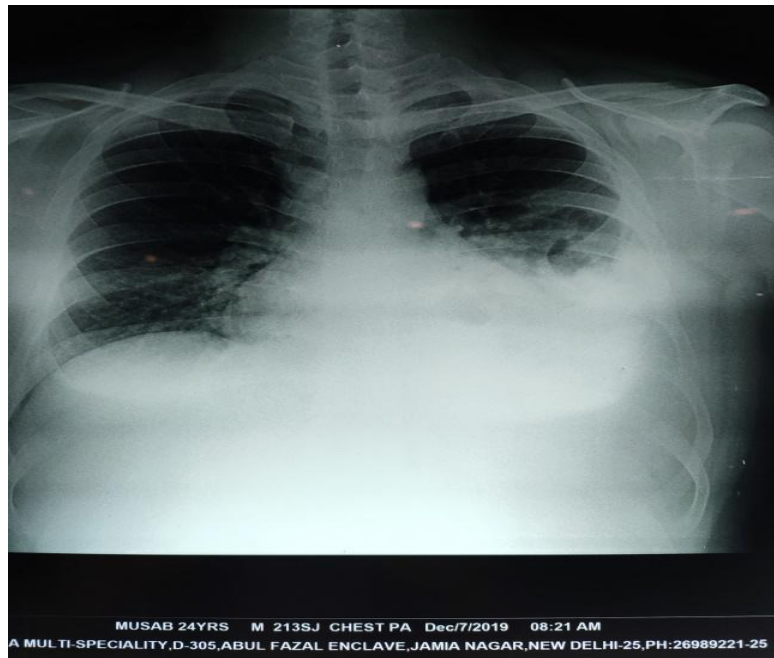


Fig. 1. Chest X-ray revealed- haziness of left side hemi thorax

CT scan has been done -shows evidence of discontinuation in the left hemi diaphragm through which abdominal contents including intestine with mesentery herniated and reaching in to the left sided thorax and compressing the left lung as shown in Fig. 2 dilated blind ended tubular structure with enhancing wall noted in right iliac fossa with surrounding fat stranding and reactionary mildly prominent right iliac fossa and retroperitoneal / mesenteric lymph nodes.

All consequences have been explained to patient and his parents. All aseptic precaution taken before surgery. Anesthesia given using double lumen (may require left thoracotomy). Patient painted and draped using all aseptic precaution. Diagnostic laparoscopy and laparoscopic hernia reduction tried hernial content are too large with more adhesions so laparoscopic converted to open surgery. planned dropped Left subcostal incision given abdomen opened in layers. spleen mobilizes. posterolateral hernias identified after spleen mobilization. Hernia approximately 4-5 cm large at posterolateral identified dense adhesions

present between defect and with containing large (transverse colon) and small bowel with adjacent mesentery and underlying lung. Gentle and meticulous dissection was done hernial defect as shown in Fig. 3. All thoracic content brought back to abdomen. Gentle hand swap was done to thoracic cavity through hernia defect hernial defect closed using non-absorbable intermittent suturing. Mesh was not used because it can get infect due to underlying acute perforated appendicitis.

Standard appendectomy done after incision at right iliac fossa. Two drains placed to abdominal cavity one at diaphragmatic defect closure site due to extensive adhesiolysis another at the appendectomy site. Intercostal tube drainage at left hemi-thorax under water seal was done due to underlying lung and bowel adhesiolysis (Chances of pneumothorax). Abdominal cavity closed using standard method. patient extubated well. Prophylactic and post-operative antibiotic given. Post-op pain management done using epidural, opioid, and non -opioid analgesics. incentive spirometry and chest physiotherapy.

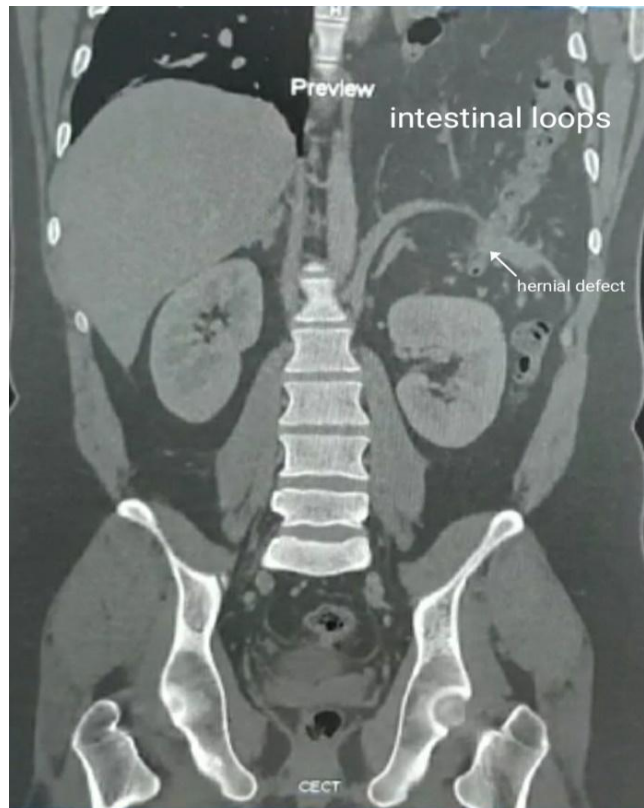


Fig. 2. CT scan shows diaphragmatic defect through which intestinal loops with mesentery herniated

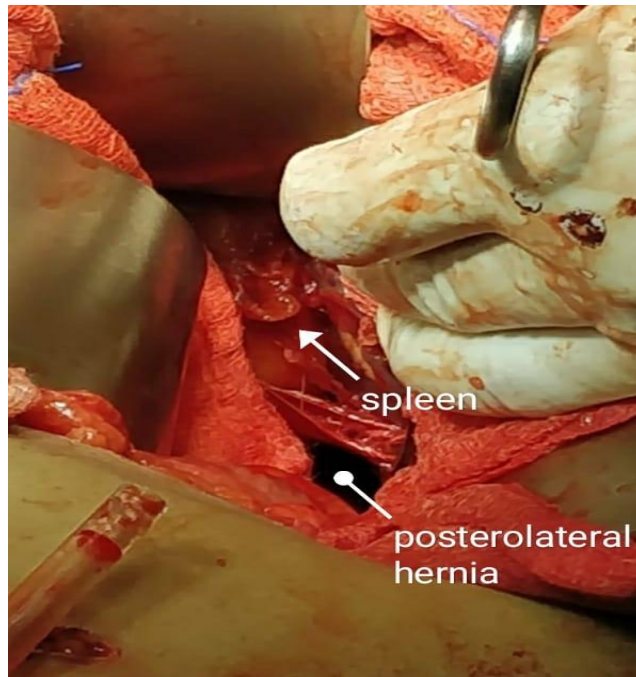


Fig. 3. Posterolateral hernia defect

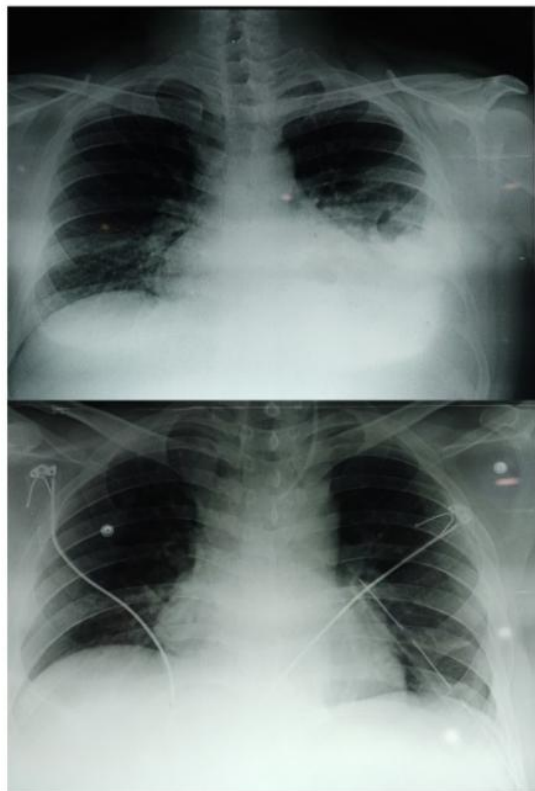


Fig. 4. Preop and post-operative x-ray shows fully expanded left lung

Post-operative check x-ray was done compared with preoperative x-ray. Left lung fully expanded as shown in Fig. 4 and patient maintaining more than 95 % saturation with 3-5 liter oxygen per minutes. Patient recovered well. Post op day- 3 left subcoastal drain removed and started on liquids. Post op-4 removed both appendicular and intercoastal drain. Patient gradually progresses to normal diet over next 3 days. Patient discharged from hospital after 1 week of hospital admission and patient followed up as outpatient clinic. After 2 week sutured was removed.

3. DISCUSSION

In this case patient presented with right lower abdominal pain with nausea and non-bilious vomiting. He also complaints of exertional breathlessness for few years which has been unnoticed for many years (retrospective history taken).

Acute appendicitis with diaphragmatic hernia is rare condition. Diaphragmatic hernia can lead to life threatening complication such as strangulation, gangrene of bowel. Adult diaphragmatic hernial defect can be closed using non-absorbable suture with and without mesh repair [8,9]. In our case mesh was not used because it can get infected due to underlying acute perforated appendicitis. Laparotomy approach has been considered for this patient which allows easier handling of the abdominal viscera and bowel. If diagnostic laparoscopy not done, then midline laparotomy could be better option. Thoracotomy approach has difficulty in handling bowel and viscera but has the advantage of easier repair of defect. Standard appendectomy done incision at right iliac fossa for acute perforated appendicitis.

4. CONCLUSION

A diaphragmatic hernia remains asymptomatic in adults diagnosis usually become apparent once complications such as gastrointestinal, respiratory or cardiovascular happens. Incidentally detected diaphragmatic hernia even asymptomatic needs repair with or without mesh. Hernial defect without much adhesion can be repair laparoscopically. Large defect with more adhesions and content needs laparotomy. Post-operative incentive spirometry and chest physiotherapy helpful in fasten recovery. Due to rarity of such cases a lot more to explore in this field of surgery.

ETHICAL APPROVAL AND CONSENT

As per international standard or university standard written ethical approval has been collected and preserved by the author(s). After informed written consent and preanesthetic checkup patient planned for surgery.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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