

Case Report

Obstructed Bochdalek hernia: a rare presentation of congenital diaphragmatic hernia in adulthood

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ABSTRACT

Congenital diaphragmatic hernia (CDH) is usually diagnosed antenatally or during the initial few hours of life in newborns who present with respiratory distress. CDH presenting with intestinal obstruction in adulthood is very rare. We report a case of 28 year old male, who presented to emergency department, with acute onset of abdominal pain and breathlessness since 2 days. Patient was investigated and diagnosed to have Bochdalek hernia (BH), with herniation of intra-abdominal contents to thorax through the defect (3.5×4.5 cms) in postero-lateral aspect of left hemi-diaphragm with obstructive features of bowel. Patient underwent emergency exploratory laparotomy with reduction of contents and hernia repair. Patient recovered and remains well. High suspicion of BH should be done when patient presents with abdominal and respiratory symptoms even though it is very rare in adults.

Keywords: Bochdalek hernia, Congenital diaphragmatic hernia, Adult

INTRODUCTION

Congenital diaphragmatic hernia presentation in adults is a very rare entity, although its incidence at birth is 1 in 2500-3000 live births.¹ The most common birth defects of diaphragm is a Bochdalek hernia, with other types being morgagni hernia, diaphragmatic eventration and central tendon defects of diaphragm. Bochdalek hernia (BH) is commonest type of congenital diaphragmatic hernia usually seen on left side (80-90%), caused by the failure of the postero-lateral diaphragmatic foramina to fuse properly.² It results in herniation of abdominal contents into the thoracic cavity. Larger defects in BH are associated with pulmonary hypoplasia on the affected side. Colon is the most common intra-abdominal organs migrating through the diaphragmatic defect and may cause large bowel obstruction.³

CDH is a life threatening pathology in newborns and major cause of death is due to two major complications, pulmonary oedema and pulmonary hypertension

(mortality 40-62%). A small percentage of cases go unrecognized and presents in adulthood.

Obstructed diaphragmatic hernia as a cause of intestinal obstruction in adults is very rare, which we have encountered in our institution and hence reporting.

CASE REPORT

A 28 year old male, present to our emergency department with complaints of acute onset abdominal pain, colicky type and breathlessness, associated with vomiting and constipation since 2 days, there was no history of fever, cough, and no h/o trauma to chest or abdomen. The past medical or family history was insignificant and there are no similar complaints in the past. Patient has no other comorbidities.

General examination tachycardia and tachypnea with normal blood pressure. No other abnormality detected. Chest examination revealed decreased breath sounds on

left side and abdominal examination revealed a distended abdomen with diffuse tenderness and absent bowel sounds.

All the blood investigations were normal. A chest X-ray revealed dilated bowel loops in left thoracic cavity and ultrasound revealed bowel loops in thoracic cavity with

minimal left side pleural effusion. CT thorax and abdomen showed a defect of 3.5×4.5 cms in postero-lateral aspect of left hemi-diaphragm with herniation of greater omentum, spleen and large bowel (transverse colon) with twisting inside the sac (volvulus) leading to intestinal obstruction suggestive of obstructed Bochdalek hernia as shown in Figure 1 and 2.

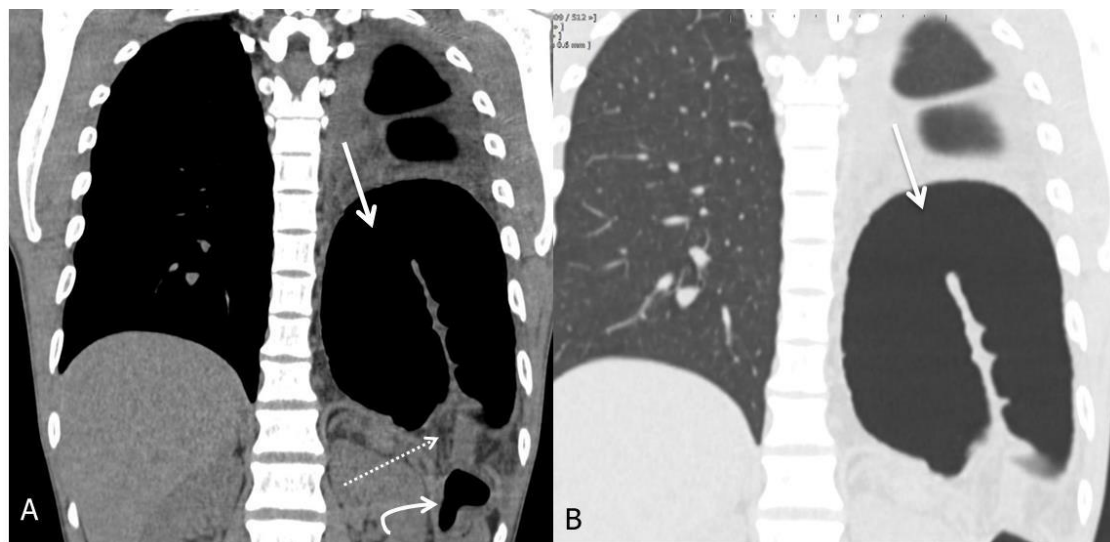


Figure 1: (A) CT thorax coronal reconstruction at the level of spine (soft tissue window) showing defect in the diaphragm on the left side in postero-lateral aspect measuring 3.5×4.5 cm. There is herniation of omentum (dotted white arrow) and colon with twisting at the site of herniation (dotted arrow) resulting in grossly dilated bowel loop with 'coffee bean' appearance (straight arrow), suggestive of volvulus, (B) CT thorax coronal reconstruction at the level of spine showing 'coffee bean' appearance of herniated colonic loop (straight arrow).

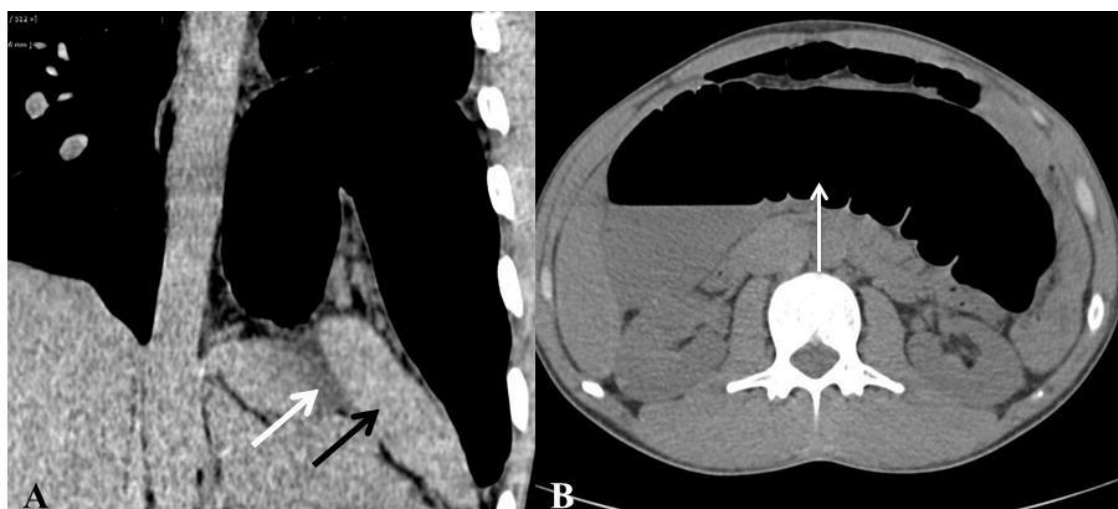


Figure 2: (A) Coronal reconstruction (abdominal window) zoomed image showing defect in diaphragm in the postero-lateral aspect (white arrow) with spleen in the left thoracic cavity (black arrow), (B) Axial CT (mediastinal window) at the level of kidneys showing grossly dilated transverse colon (white arrow).

Treatment

Patient was resuscitated with IV fluids and Ryles tube was inserted. Patient was taken for emergency exploratory laparotomy after preparation. Abdomen

opened by upper midline incision which showed abdominal contents, 30 cms of jejunum along with greater omentum, spleen and transverse colon herniating into left thoracic cavity through a defect in postero-lateral part of left hemi-diaphragm. After reducing these

contents back into peritoneal cavity, we noticed transverse colon was twisted and congested with serosal tears which was causing intestinal obstruction. The defect in the diaphragm was 5×4 cms.

The transverse colon was untwisted, covered with warm mops and 100% oxygen was given to the patient for about 15 minutes. After which transverse colon became normal colour and peristalsis noted. The serosal tears were covered with greater omentum as shown in Figure

3. The diaphragmatic defect was closed using prolene number 1, in an interrupted fashion. A chest drain was placed in left thoracic cavity, another one was placed in left sub-diaphragmatic space and abdomen closed in layers.

Post operatively after 48 hours, a chest X-ray revealed complete expansion of left lung, hence chest drain was removed on 3rd post-operative day along with abdominal drain.

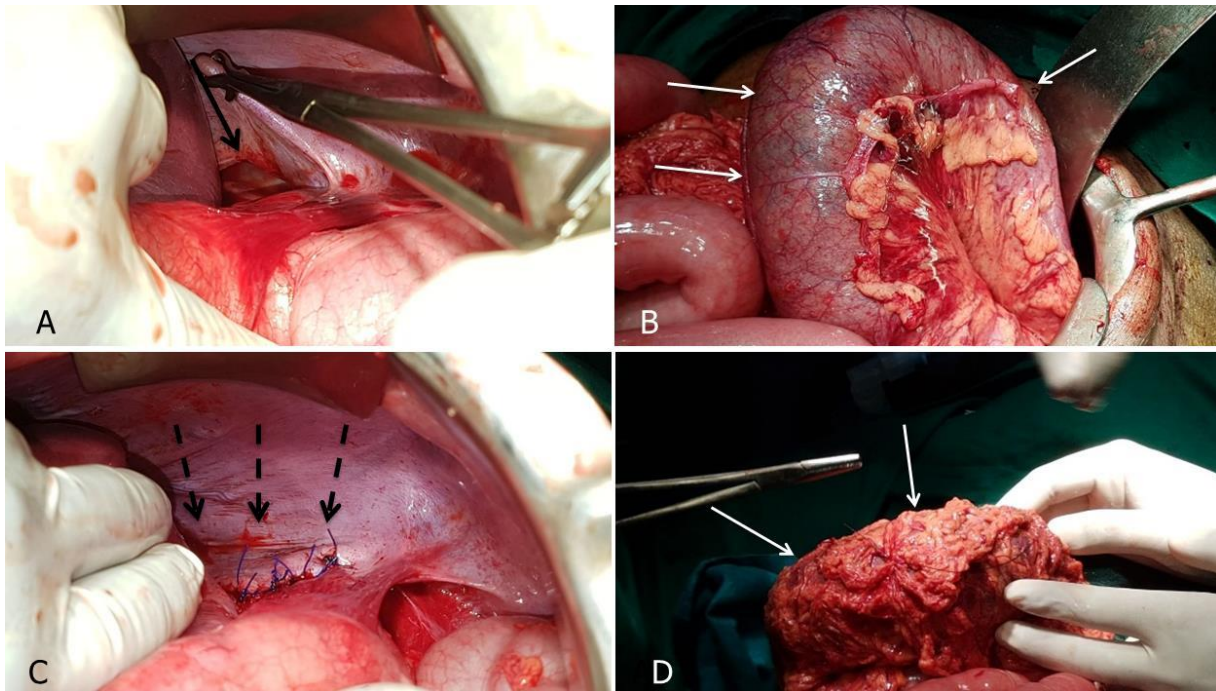


Figure 3: Intraoperative images: (A) Defect in the diaphragm (black arrow) in the postero-lateral aspect of left hemi-diaphragm; (B) Serosal tear in the transverse colon, which was part of hernial contents (white arrows); (C) Repair of diaphragmatic defect (black dotted arrows); (D) Repair of serosal tear using greater omentum (white arrows).

Follow up

Further post-operative period was uneventful and patient got discharged on 10th post-operative day. Patient is coming regularly to our OPD for follow up and no complications noted till date.

DISCUSSION

Bochdalek hernia is the most common type of CDH, common on left side (85%) than right, occurs as a result of inadequate closure of postero-lateral pleuro-peritoneal membrane.² Usual contents on left sided hernia are spleen, stomach, greater omentum, small intestine and colon. Right sided hernia sac usually contains liver and small intestine.⁴ Majority of CDH patients present at new born, Late presentation may be due to delayed rupture of peritoneal sac containing the viscera, or plugging of hernia defect by solid organ due to raised abdominal pressure in severe strain, obesity, pregnancy and during

labour.⁴ In adults it is mostly asymptomatic and incidental finding in imaging tests performed for other reasons. Patients may present with chronic symptoms such as recurrent chest or abdominal pain and postprandial fullness or vomiting.⁵

Brown et al searched the literature yielded 141 articles containing 173 cases from 31 countries. Only 14% of patients were symptomatic at the time of presentation. Presenting symptoms were pain/pressure (chest or abdominal discomfort that was not related to a bowel obstruction) 69%, obstruction 39%, pulmonary symptoms (dyspnea, cough, and shortness of breaths) 37%, strangulated 28%, dysphagia 3%, bleeding 4%, GERD 4%, and other (HTN, fatigue, indigestion) 9%.⁶ In our case, patient has symptoms such as acute abdominal pain and breathlessness.

The diagnosis of a BH in adults is not easy and it is commonly misdiagnosed. Unlike infants who show with

respiratory distress early, the most frequent symptom in adults is mild discomfort and 25% of adult patients are asymptomatic. Consequently, many patients are merely treated according to their symptoms.⁷ In the diagnosis of BH, chest and abdominal X-ray, fluoroscopy, barium examinations, ultrasound, computed tomography, magnetic resonance imaging are available. But among them, contrast-enhanced CT is the most accurate imaging modality for detection of BH. It provides detailed information regarding the herniated viscera and the diaphragmatic defect.⁸

The management of Bochdalek hernia includes reduction of hernial contents to the peritoneal cavity and repair of the diaphragmatic defect.⁸ Although laparotomy was the most widely used surgical approach (38%), minimally invasive surgical techniques have gained popularity since their first report in 1995. Laparoscopic repair can be performed with a low complication rate (7%) and short hospital stay (4 days).⁶ But in patients presenting with complications to the emergency rooms, it is better treated with laparotomy. Regardless of the type of surgical procedure, suturing the defect is likely the most important for restoration of the anatomy between the thoracic and abdominal cavities.³ Many surgeons prefer a prosthetic graft because of the continuing stress on the diaphragm that results from respiratory movements and cardiac motions. Nevertheless, a tensionless type of repair has been validated as an option for BHs, which is similar to the type of repair used for all other hernia repairs. Many types of meshes are available for use in these types of repairs. Although polypropylene mesh has the benefit of support and excellent tissue growth.³ The decreased tendency for adhesion formation of polytetrafluoroethylene (PTFE) and other dual prostheses makes them more desirable.³

CONCLUSION

Adult patients presenting to emergency room with gastrointestinal symptoms and respiratory distress, should have a suspicion of congenital diaphragmatic hernia, to diagnose early, otherwise patient may develop complication like intestinal obstruction or strangulation.

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