

## Case Report

# A rare case of delayed presentation of congenital diaphragmatic hernia with gastric volvulus

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## ABSTRACT

A Bochdalek hernia is a posterior congenital defect of the diaphragm, usually on the left hemidiaphragm, caused by a lack of closure of the pleuroperitoneal canal between the eighth and tenth week of fetal life during the embryonic development. It typically presents in the neonatal period with severe respiratory failure. Here we present a 28 year old man with history of episodes of severe dyspnea, pain in epigastric region who arrived to the emergency room, having tachypnoea with oxygen saturation 80% on room air. During his medical work-up we incidentally found gastric volvulus with diaphragmatic hernia. It was managed with reduction of the herniated and rotated stomach and spleen back to the peritoneal cavity and closed the defect by open approach. This type of hernia is uncommon in adults. In this age group, there are two different clinical presentations: asymptomatic patients who are diagnosed incidentally when abdominal organs are found in the thorax in a chest X-ray, and symptomatic patients due to side effects of incarceration, strangulation, hemorrhage and visceral perforation in the chest cavity.

**Key words:** Diaphragm, Hernia, Congenital, Bochdalek hernia, Gastric volvulus

## INTRODUCTION

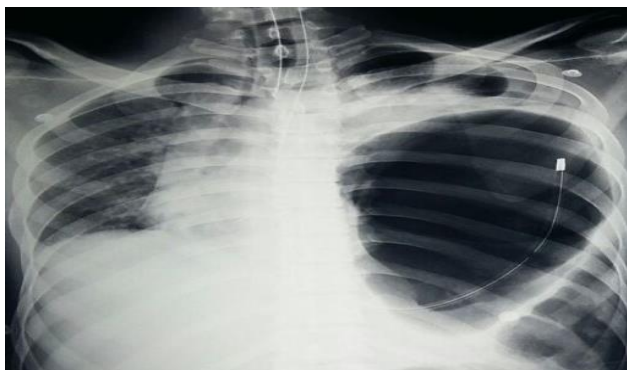
Patients with congenital diaphragmatic hernia (CDH) commonly present in the neonatal period with respiratory distress associated with high mortality. The frequency of CHD is approximately 1/3000 births. Anterior CDH through the foramen of Morgagni (90% right sided) is less common (1-5%) and is usually asymptomatic. The more common Bochdalek hernia (BH) is a posterior congenital defect of the diaphragm caused by a lack of closure of the pleuroperitoneal cavity between the eighth and tenth week of embryonic life. Between 70% and 90% of cases occur on the left. It was first described in 1848 by the Czechoslovakian anatomist, Vicent Alexander Bochdalek. Most of adult Bochdaleks hernia are asymptomatic during childhood and may present as

surgical emergency in adulthood. Prenatal US and/or prenatal MRI already detects the hernia in utero in most cases.<sup>1</sup>

## CASE REPORT

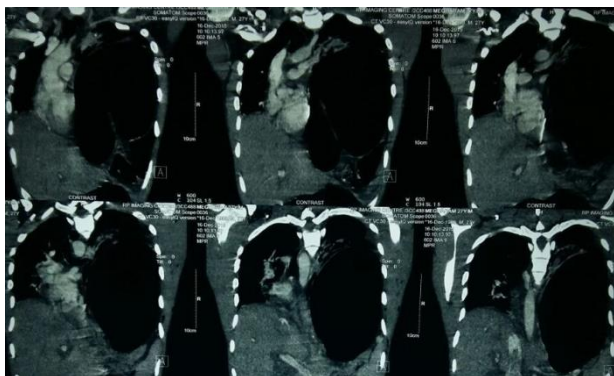
We present a case of 28 year adult male with chief complaints of pain in abdomen, respiratory distress and heaviness on left side of chest after having a moderate amount of alcohol at dinner. Patient gave history of taking alcohol and smoking after that patient had acute epigastric pain, severe in nature, associated with perspiration, nausea and vomiting. Patient also gave history of some relief of pain in right lateral position. He also complained of heaviness and sudden respiratory distress on left side of chest and abdomen. His symptoms

did not respond to anti-emetics and H<sub>2</sub>-antagonists given at the time of original review by the family physician. The suspicion of a cardiac cause was raised. He had no history of trauma, previous surgery or extreme physical exertion. Patient attended emergency department of our tertiary care centre. His physical examination revealed mild tenderness in the upper abdomen, absence of breath sounds in the left hemithorax, tachypnea and tachycardia and instantly intubated and managed as per protocol. Investigations included electrocardiogram that was normal. Chest X-ray revealed a markedly distended viscous (stomach with ryles tube) in the left hemithorax.



**Figure 1: X-ray chest showing gastric shadow with ryles tube on in left hemithorax.**

There is deviation of the heart to the right side of thorax. CT chest and abdomen showed gastric volvulus with left diaphragmatic hernia.

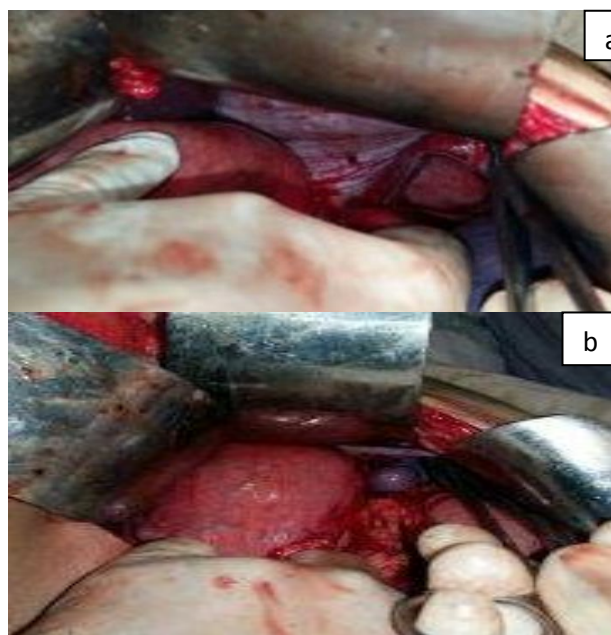


**Figure 2: CT scan revealing left diaphragmatic hernia with gastric volvulus with displaced cardiac shadow to the right side.**

Emergency laparotomy was performed through an upper midline incision. The stomach and spleen were missing from their normal site and herniated into the left hemithorax through a large near about 15cm left posterolateral diaphragmatic defect.

There was no hernial sac, the omentum was hypoplastic and the spleen was attached only to its vessels. All viscera were viable. After careful reduction of the herniated and rotated stomach and spleen back to the

peritoneal cavity, the defect was repaired with interrupted non-absorbable suture, leaving a chest drain in the left hemi-thorax. A gastropexy was performed where the stomach was anchored to the posterolateral abdominal wall, using a three-point technique with non-absorbable suture material. The abdomen was closed after putting drain in the peritoneal cavity. Post-operative recovery was uneventful and the chest drain was removed after expansion of the lung. The patient was discharged with instructions to avoid lifting weights and seek urgent medical advice on return of abdominal or chest symptoms. He is doing well on subsequent outpatient reviews.



**Figure 3a and b: Intraoperative photographs showing diaphragmatic defect with herniated stomach with omentum and spleen.**

## DISCUSSION

Congenital diaphragmatic hernias are usually found in neonates and around 10% of all reported cases occur in adults.<sup>3</sup> 68% are found on right side, 18% in the left side and 14% are bilateral.<sup>1</sup> Left sided diaphragmatic defects are more likely to produce symptoms than right sided defects because of protective effect of liver on right side of body. It is more in women than men (17:5). The mean age of presentation is 66 years in adult population. Causes of late presentation of hernia include blunt or penetrating trauma, physical exertion, pregnancy, labour, delivery, sneezing or coughing. Adult BHs can present in two ways. They can give rise to vague, mainly gastrointestinal (abdominal pain, nausea and vomiting, constipation) or respiratory, (chest pain, dyspnea, wheezing) symptoms, followed by severe attacks and episodes of incarceration with serious consequences.<sup>2-5</sup> Characteristically, these symptoms can be intermittent, as herniated viscera can spontaneously reduce causing symptom regression. In such cases, radiological

investigations demonstrate reduction of the hernia with symptoms resolution. Others will present with serious complications associated with strangulation of herniated viscera, especially when the diagnosis has been missed or treatment delayed. There have been reports of BH presenting with sudden death from intra-thoracic complications. Gastric volvulus is one of the rare but recognized complications of BH.

Bochdalek hernias are usually diagnosed on routine chest radiography. Frontal and lateral view chest radiographs are the most important tools for diagnosis. Most Bochdalek hernias appear as gas-filled bowel loops or a soft tissue mass above the dome of the diaphragm. Chest CT may directly visualize the focal defect and facilitate definite diagnosis of the hernia.

Transabdominal and transthoracic approaches have been recommended in BH repair. The abdominal approach is easily performed through an upper abdominal incision, when the patient has findings suggesting intestinal strangulation. The signs of intestinal obstruction and strangulation in our cases warranted an approach with a midline incision. We performed a upper midline laparotomy to approach the acute abdominal symptoms

of the first patient. If the bowel does not show gangrenous change, transthoracic repair of diaphragmatic hernia is easier than midline laparotomy.

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