Case report:

**Adult congenital diaphragmatic hernia causing gastric complications**

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**Abstract:**

Bochadaleks hernia is rare in adults and is usually asymptomatic. It is common in neonate with respiratory symptoms. We are presenting two cases of congenital Bochadaleks hernia causing gastric complications. Timely surgical intervention avoided complications of congenital diaphragmatic hernia.

**Keywords:** Bochadaleks hernia, gastric volvulus, haematemesis,

**Introduction:**

Congenital posterolateral defects, such as Bochadaleks hernia usually present in neonatal period with respiratory distress with high mortality. Most of adult Bochadaleks hernia are asymptomatic during childhood and may present as surgical emergency in adulthood. Bochadaleks hernia is secondary to incomplete development of pleuroperitoneal folds.

**Case report 1:**

Sixty five year old female was admitted for epigastric pain for 3 months and haematemesis 2 to 3 times three days prior to admission. Chest X ray (Figure 1) showed gastric air bubble in left lower chest. Barium studies (Figure 2) showed part of stomach above the diaphragm. The patient had blood stained vomiting during the stay, 8 to 10 times as she developed hypotension. After due resuscitation, emergency laparotomy was done. The lapotomy revealed congested but viable stomach which had herniated through the defect in left diaphragm. Viable stomach was reduced back to abdomen and the diaphragmatic defect was sutured with mattress proline 1.0 suture. There was no associated gastric volvulus or malrotation of the gut or congenital Ladd’s band. Patient had uneventful recovery. Four years postoperative patient is doing well.

**Case report 2:**

A 40 year male with acute recurrent pain in epigastric region and repeated vomiting came to hospital. He was haemodynamicaly stable. Chest X ray (Figure 3) showed gastric air bubble in left lower chest with thin slip of diaphragm. Barium studies (Figure 4) again showed part of stomach above the diaphragm with thin slip of diaphragm. U.S.G suggested spleen, stomach and splenic Plexus of colon displaced in left chest, no muscular portion of diaphragm is appreciated. Upper G.I.scopy: proximal part of gastric luminal axis was abnormal, suggesting extrinsic gastric compression. Diagnostic laparoscopy confirmed Near total diaphragmatic defect, stomach, splenic plexus of colon and spleen in...
left chest. (Figure 5) As the symptoms were due to intermittent gastric volvulus. Laparoscopic anterior gastropexy by three point fixation done. Postoperative patient was asymptomatic and discharged on 5\textsuperscript{th} post operative day. 1 year follow-up patient had no symptoms.

**Discussion:**

The initial reports of congenital diaphragmatic hernia date back to 1679, which was first described by Lazarus Riverius. Riverius incidentally observed congenital diaphragmatic hernia in a 24 year old man during post mortem examination. Bochadaleks hernia is secondary to incomplete development of the pleuroperitoneal fold and due to improper or absent migration of the diaphragmatic muscle was first described by Victor Alexander Bochadaleks in 1848. Failure of closer of embryological canal between the septum transversum and the esophagus by eight week of gestation results in Bochadaleks hernia. Mullen’s reported an incidence of 0.17% after reviewing 13,138 C.T.scans\textsuperscript{(1)}

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 patients than men (17:5). The mean age of presentation is 66 years in adult population. 68% right side, 18% in the left side, 14% are bilateral.\textsuperscript{(2)} Causes of late presentation of hernia include blunt or penetrating trauma, physical exertion, pregnancy, labour, delivery, sneezing or coughing.\textsuperscript{(2)}

Contents on the right sided hernia can be liver, fat, kidney, colon or intestine. Contents on the left side can be stomach, small intestine, colon, spleen, liver, pancreas, kidney, or fat.\textsuperscript{(2)}

The diagnosis of Bochadaleks hernia in adulthood is problematic because of the rarity of this disease and the variety of the presenting symptoms. Presence of bowel sounds in chest and absent breath sounds are typical findings. A misdiagnosis rate of 38% has been reported by Thomas and Kapur.\textsuperscript{(3)} Clinicians should take greater care during the management of patient with persistent pulmonary symptoms and abnormal chest x-ray findings. Opaque barium filled dilated bowel segment or soft tissue mass above the diaphragm establishes a definitive diagnosis. Chest x-ray may be normal during intermittent herniation\textsuperscript{(4)}.

Chest X ray in Bochadaleks hernia may be mistaken for left middle lobe collapse, pneumatic consolidation, and pericardial fat pad, and pericardial cyst, sequestration of the lung, mediastinal lipoma or anterior mediastinal mass. C.T.scans is the only way to directly visualize the focal defects in the diaphragm and the presence of soft tissue counter in the chest. For detecting omentum through the defect, thickening of diaphragm or cruss as a result of edema and hematoma, Helical C.T.valuable. Because of potential life threatening complication such as chest pain and breathlessness due to recurrent chest infection or symptoms of gastrointestinal obstruction and strangulation, patients who have congenital diaphragmatic hernia should undergo surgical repair.\textsuperscript{(5, 6, 7)} Transthoracic approach has improved ability of separating adhesions between the hernia sac and pleura. Transabdominal approach is better suited for possible strangulation and recognition of
possible malrotation. Controversy exists regarding management of Bochadaleks hernia. Most surgeons prefer to leave the hernia sac in place. Seroma in the remnant sac is potential risk. Remnant sac completely disappears in 30 days. Suturing the defect is important for the restoration of the anatomy between thoracic and abdominal cavities in small defects. For large defects many surgeons prefer prosthetic reinforcement; Tensionless type of repair has been validated. For large defects to decrease the tendency for adhesions formation PTFE or DUAL meshes are more desirable.

CONCLUSION:
1) In the first case, small diaphragmatic defect of 2 cms with herniation of stomach because of raised intrabdominal pressure caused stomach congestion, herniation and haematemesis. The defect was closed timely which prevented gastric necrosis.
2) In second case due to large near total diaphragmatic defect, patient had symptoms of gastric volvulus for which we had done anterior gastropexy. The timely gastropexy prevented complication of gastric volvulus and necrosis. Patient advised early referral for any acute abdominal or chest complaints. Early surgical intervention prevents complications of congenital diaphragmatic hernia.

Large size of diaphragmatic defect has more postoperative morbidity. We are planning for second stage anatomical restoration and diaphragmatic mesh repair.

Conflict of interest: The authors do not have any disposable interest.
Figure 4. Barium studies. Case 2

Figure 5. Case 2. Showed near total diaphragmatic defect

References:


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