



Adult Bochdalek Hernia - A Case Report

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ABSTRACT

We report a case with Bochdalek hernia. During routine dissection for the first year MBBS students, a left sided Bochdalek hernia was recognized in a 55 year old adult female cadaver, in the Department of Anatomy, Sri Ramachandra Medical College and Research Institute, Chennai. The Bochdalek hernia, also known as a postero-lateral diaphragmatic hernia, is the most common manifestation of congenital diaphragmatic hernia, accounting for more than 95% of cases. The majority of Bochdalek hernias (80-85%) are present on the left side of the diaphragm. Bochdalek hernias unusually remain asymptomatic until adulthood and present as critical surgical emergency. The symptoms are non-specific, intermittent, vague and varies from chest pain, difficulty in breathing, abdominal pain to intestinal obstruction. Knowledge regarding Bochdalek's hernia plays an important role in clinical practice by gastro-enterologists, surgeons and pulmonologists.

KEYWORDS

Hernia, Bochdalek, Diaphragmatic, Postero-lateral, Left sided.

INTRODUCTION

Bochdalek hernia, also known as a postero-lateral diaphragmatic hernia was first described by Vincent Alexander Bochdalek in 1848. It is the most common type of congenital diaphragmatic hernia, accounting for more than 95% of cases. The majority of Bochdalek hernia (80-85%) present on the left side of the diaphragm is common in neonates, and not reported in adults. Bochdalek hernia remains asymptomatic until adulthood and presents as a critical surgical emergency. Embryologically, Bochdalek hernia is characterized by a congenital defect on the postero-lateral region of the diaphragm and is due to the failure of closure of the pleuroperitoneal canal during the ninth to tenth week of gestation^[1].

CASE REPORT

During routine dissection for the first year MBBS students, Bochdalek hernia was seen in an adult female cadaver, in the Department of Anatomy, Sri Ramachandra Medical College and Research Institute, Chennai. On observation, left side pulmonary hypoplasia and right sided mediastinal shift was noticed (FIGURE -1). Right lung and pericardium were normal. A pocket like sac protruding from the postero-lateral side of diaphragm into the left thoracic cavity behind the pericardium was seen (FIGURE – 2 and 3). After incising the sac, the herniation of the peritoneal cavity with the abdominal contents was observed. The sac contained stomach, colon and greater omentum. Diaphragm was normal in shape and all the three diaphragmatic openings were normal in position and the corresponding structures were passing through them. The abdominal cavity was opened and the findings were witnessed by the passage of transverse colon, greater omentum and fundus of stomach into the thorax (FIGURE-4).



FIGURE 1 – Shows the hypoplasia of left lung.



FIGURE 2 – Shows the hernial sac behind the heart in the left thoracic cavity after removal of left lung.



FIGURE 3 – Shows the protrusion of hernial sac through diaphragm on the left side.

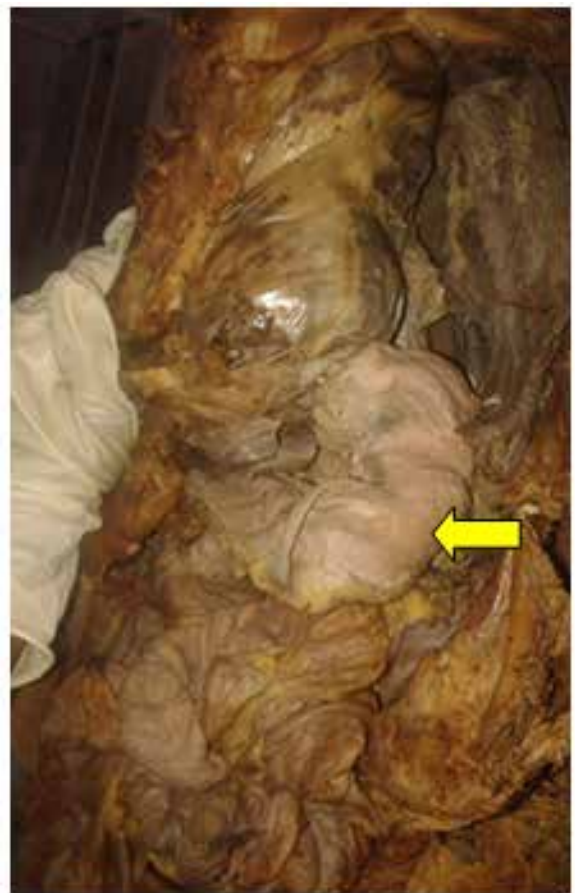


FIGURE 4 – Shows the contents of the Bochdalek hernia

DISCUSSION

Diaphragm development begins by the 3rd week and ends by the 10th week of IUL. Diaphragm is formed from four embryonic elements : septum transversum, pleuroperitoneal membranes, dorsal mesentery of oesophagus and is muscular in growth from lateral body walls. Chromosome 15q26 plays an important role in the development of diaphragm^[2].

Failure of normal embryological process leads to the following abnormalities^[3]:

- Failure of development of septum transversum – Agenesis of diaphragm
- Failure of closure of pleuro-peritoneal canal to fuse with septum transversum – Congenital posterolateral diaphragmatic hernia (Bochdalek)
- Failure of the development of the retrosternal segment of the septum transversum – Congenital anterior diaphragmatic hernia (Morgagni)
- Failure of the migration of primitive muscle cells – Eventration of the diaphragm

The foramen of Bochdalek is a small opening in the posterior part of the diaphragm during the fetal life. Pleuroperitoneal canal conveys between the pleural and peritoneal cavities through this foramen.

By the end of 6th week of IUL, pleuro-peritoneal membrane unites with other three diaphragmatic elements. Failure or incomplete fusion leads to persistence of pleuro-peritoneal membrane. This persistence further leads to passage of abdominal viscera into the thorax during the return of the intestines back to the abdomen from the physiological hernia of umbilical cord in the 10th week of IUL. Early closure of right pleuroperitoneal opening leads to predominant left sided defects. The organs that most commonly herniate into the tho-

rax through this defect are stomach, spleen and intestines^[2].

Timing, extent and degree of compression of herniated structures determines the developmental anomalies of lungs. Ipsilateral hypoplasia of lung is due to lack of space to develop leading to a compromise in pulmonary function^[2].

In our case, the characteristic features of Bochdalek hernia pertaining to previous literature like : left sided posterolateral diaphragmatic hernia, hernial contents like transverse colon, stomach, greater omentum protruding into thoracic cavity, left lung hypoplasia, mediastinal shift were encountered.

Bochdalek hernia in adult can present with gastrointestinal symptoms or respiratory symptoms. The symptoms are non-specific, intermittent, vague and varies from abdominal pain, nausea, vomiting (gastrointestinal symptoms) to chest pain, difficulty in breathing, wheezing (respiratory symptoms) followed by severe attacks and episodes of incarceration with serious consequences^[4]. The symptoms can be intermittent, as herniated viscera can spontaneously reduce causing symptom regression.

Complications associated are strangulation of herniated viscera, gastric volvulus, sudden death from intrathoracic complications.

The differential diagnosis of mass in the left thoracic cavity are congenital diaphragmatic eventration, omental hernias through Morgagni's foramen or esophageal hiatus and mediastinal lipomatosis. Diaphragmatic eventration is formed by the displacement of whole or a part of the intact diaphragm. Unlikely in Bochdalek hernia, the diaphragm is interrupted and has a defect on it. Furthermore diaphragmatic eventration does not always need surgical therapy but on the contrary, congenital diaphragmatic hernia should be surgically repaired to avoid serious complications^[5].

Bochdalek hernia can be diagnosed by plain radiographs and barium studies. Level 3 USG examination is the standard tool for prenatal diagnosis of congenital diaphragmatic hernia. Postnatally, USG is used to trace the contour and structure of the diaphragm and evaluation of herniated viscera^[6]. Computed Tomography is believed to have a novel role in diagnosing and evaluating the thoracic cavity and the contents of the hernia particularly the smaller structures. CT with multiplanar reconstructions can accurately assess the associated anomalies^[7].

Reduction of herniated viscera and repair of the defect is the principal management of Bochdalek hernia. Different surgical approaches such as thoracotomy, laparotomy and minimal in-

vasive surgeries are available. Thoracotomy provides the convenience of separating adhesions between thoracic contents and the hernia sac. Abdominal approach by laparotomy is better than thoracotomy to treat complications such as malrotation, obstruction, strangulation and perforation of abdominal viscera^[8]. Minimal invasive surgeries includes thoracoscopic repair and laparoscopic repair^[9].

CONCLUSION

Adult Bochdalek hernia is an exceptionally rare entity. It is detected incidentally by CT abdomen in asymptomatic adults. Prompt diagnosis in symptomatic patients, favourable approach during intra operative management and post operative care results is a complete surgical treatment. Embryological and clinical knowledge of diaphragm and diaphragmatic hernia plays a vital role in clinical practice of gastroenterologists, surgeons, pulmonologists and radiologists.

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