

## CASE REPORT

**Bochdalek Hernia with Incarceration of Large Bowel***Siddharth P. Dubhashi<sup>1\*</sup>, Ratnesh Jenaw<sup>2</sup>, Shireesh Gupta<sup>3</sup>*

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**Abstract:**

Congenital Diaphragmatic Hernia (CDH) is a condition characterized by developmental defect in the diaphragm with herniation of the abdominal contents through the defect into the thorax. Late presentation of CDH is around 5 to 25%. This is a report of a young female presenting with acute abdomen and left-sided chest pain. Laparotomy revealed a Bochdalek Hernia with incarceration of large bowel. The contents were reduced, gangrenous bowel and omentum resected and intestinal continuity restored. Acute intestinal obstruction with respiratory embarrassment warrants a high index of suspicion. An adequate resuscitative measure with urgent surgical intervention and ventilatory support is the key to a successful outcome.

**Keywords:** Bochdalek, Diaphragm, Acute Abdomen, Chest Pain

**Introduction:**

Congenital Diaphragmatic Hernia (CDH) is a condition characterized by developmental defect in the diaphragm with herniation of the abdominal contents through the defect into the thorax. The incidence is 1 in 4000 to 5000 live births [1]. Commonest type of CDH occurs through the foramen of Bochdalek in the posterolateral portion of the diaphragm [2]. Small hernias may remain undiagnosed until adulthood [3]. Late presentation of CDH is around 5 to 25% [2]. Most (80-90%) of the cases occur on the left side of the diaphragm [2].

**Case Report:**

A 20 year old female presented to the emergency ward with features of intestinal obstruction and left-sided chest pain since 5 days. On examination, she was toxic, febrile with tachycardia, hypotension and in respiratory distress. X-ray abdomen revealed multiple air-fluid levels (Fig 1). The patient was resuscitated and haemodynamically stabilized. Emergency laparotomy revealed herniation of the large bowel and omentum into the thorax through a small rent in the posterolateral aspect of the left hemidiaphragm (Fig 2 & 3). There was no herniasac. The splenic flexure of the colon was gangrenous with evidence of perforation. The left one-third of transverse colon and the upper part of descending colon appeared ischemic. The ischemic and gangrenous segment of the bowel along with the affected omentum was resected and end-to-end anastomosis was performed (Fig 4). The defect in the diaphragm was closed using Prolene 1-0 sutures (Fig 5). Intercostal drain was placed in the left hemithorax. A thorough peritoneal lavage was given and an intra-abdominal drain was placed. The post-operative period was uneventful.



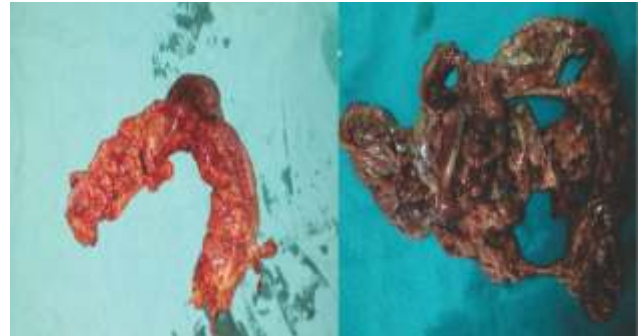
**Fig. 1: Air-fluid Levels on X-ray Abdomen**



**Fig. 2: Bowel Herniation through the Defect in Diaphragm**



**Fig. 3: Defect in Diaphragm**



**Fig. 4: Resected Specimen**



**Fig. 5: Closure of Defect**

**Discussion:**

The diaphragm develops from: septum transversum (ventral and pericardial portion), pleura-peritoneal membrane (lateral portion), dorsal mesentery (medial dorsal component), and striated muscles (origin opposite the fifth cervical segment). The canals usually close by 8<sup>th</sup> week of gestation. Failure of closure leads to developmental defects [4].

Diaphragmatic hernia was first reported by Fennertus in 1541 [5] and traumatic diaphragmatic hernia was first described by Ambroise Pare in 1579 [6]. Lazarus Riverius first described a congenital diaphragmatic hernia in 1690 in a 24 year old man at post-mortem [7]. The description of gross anatomy associated with congenital diaphragmatic hernia in a newborn baby was reported by McCauley in 1754. Bochdalek hernia

was first reported by Victor Alexander Bochdalek in 1848 [8].

Neonates with CDH, present with a triad of respiratory distress, apparent dextrocardia and a scaphoid abdomen [1]. In adults, CHD can present with intermittent abdominal pain, vomiting, dyspnea and chest pain. Acute presentations as seen in our case can be due to incarceration or obstruction of the hernia contents. A positive pressure gradient between the peritoneal and pleural spaces with a range of 7 to 20 cm H<sub>2</sub>O can cause herniation of the abdominal contents through the defect in the diaphragm [9].

The diagnosis can be made by frontal and lateral chest radiographs, CT thorax and MRI. Bochdalek hernias appear as gas-filled bowel loops above the dome of diaphragm on chest X-ray. The condition may be misdiagnosed as pleural effusion, tension pneumothorax, atelectasis [10]. CT demonstrates thoracic herniation of the abdominal viscera or omentum through the defect [11]. T1 weighted

sequence of MRI can show an abrupt defect in low signal intensity of the hemidiaphragm, with herniation of the abdominal viscera [12].

The treatment of Bochdalek hernia includes reducing the abdominal contents and repairing the defect using non-absorbable sutures through a laparotomy or thoracotomy [1]. Emergency situations, wherein patients may present with septic shock as seen in our case, warrant immediate resuscitation. Mesh repair is not recommended in contaminated cases [8].

### Conclusion:

CDH can remain asymptomatic until adulthood, wherein they can present as acute cases. There is a high risk of incarceration of hernia contents through small defects without a sac. Acute intestinal obstruction with respiratory embarrassment warrants a high index of suspicion. Adequate resuscitative measures with urgent surgical intervention and ventilatory support is the key to a successful outcome.

### References

1. Singh TC, Singh CG, Lamare KN, Babitha N, Kharnaor A. Congenital Diaphragmatic Hernia in adult presenting with obstruction: A rare case. *Int J Sci Stud* 2015; 2(10):142-5.
2. Christiansen LA, Blichert-Toft M, Bertelsen S. Strangulated diaphragmatic hernia: A clinical study. *Am J Surg* 1975; 129(5):574-8.
3. Mar Fan MJ, Coulson ML, Sia SK. Adult incarcerated right-sided Bochdalek Hernia. *Aust NZ J Surg* 1999; 69:239-41.
4. Mullins ME, Stein J, Saini SS, Mueller PR. Prevalence of incidental Bochdalek's Hernia in a large adult population. *AJR Am J Roentgenol* 2001; 177(2):363-6.
5. Schneider CF. Traumatic diaphragmatic hernia. *Am J Surg* 1956; 91(2):290-97.
6. Schumpelick V, Steinau G, Schluper I, Prescher A. Surgical embryology and anatomy of the diaphragm with surgical applications. *Surg Clin North Am* 2000; 80(1):213-9.
7. Bhandari BB, Basnet RB. Late presentations of congenital diaphragmatic hernia. *J Nepal Health Res Counc* 2011; 9(19):192-4.
8. Hung YH, Chien YH, Yan SL, Chen MF. Adult Bochdalek Hernia with bowel incarceration. *J Chin Med Assoc* 2008; 71(10):528-31.
9. Shanmuganathan K, Kilteen K, Mirvis SE, White CS. Imaging of diaphragmatic injuries. *J Thorac Imaging* 2000; 15(2):104-11.
10. Chiu CC, Yeh HF, Chiu TF. Bochdalek diaphragmatic hernia masquading as pneumonia - A rare cause of non-traumatic haemothorax. *Ann J Emerg Med* 2009; 27(2):252.
11. Eren S, Ciris F. Diaphragmatic hernia: diagnostic approaches with review of literature. *Eur J Radiol* 2005; 54(3):448-59.
12. Shanmuganathan K, Mirvis SE, White CS, Pomerantz SM. MR imaging evaluation of hemidiaphragm in acute blunt trauma: experience with 16 patients. *AJR Am J Roentgenol* 1996; 167(2):397-402.

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