

# Congenital Diaphragmatic Hernia in a Post-Partum Woman

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## Summary

Congenital diaphragmatic hernia (CDH) is rare in adults. We report a 24 year old woman presenting with shortness of breath, chest pain and nausea after the birth of her first baby. Clinical examination, plain radiography and a CT scan revealed herniation of abdominal contents into her left chest. Via a midline laparotomy, the contents were reduced and the defect repaired, using a mesh. She remains symptom-free three years since her surgery and even after a second childbirth. A brief review of the literature reporting adult diaphragmatic hernias of congenital origin accompanies this case report. We conclude that symptomatic CDH in adults usually presents as an emergency with gastrointestinal and occasionally respiratory complications. Early diagnosis and repair is essential to avoid subsequent morbidity and mortality.

**Key Words:** Congenital diaphragmatic hernia, Bochdalek hernia

## Introduction

The term congenital diaphragmatic hernia (CDH) is generally used for the hernia through the posterolateral foramen in the diaphragm. It is named after Bochdalek<sup>1</sup> who described the foramen in the diaphragm and the associated hernia.

The incidence of CDH in infants is between 1: 4000-5000 live births but the entity is rare amongst adults and has not been previously reported to present in the post-partum period. The following case report is followed by a brief literature review on other reported cases of adult CDH.

## Case Report

We report a 24 years old woman who started experiencing shortness of breath on exertion after her first childbirth through a normal vaginal delivery. She initially ignored her symptoms, but soon experienced increasing breathlessness and episodes of short lived left sided chest pains associated with nausea. She presented to us 6 weeks after her childbirth following a cardiology consultation. On examination we found decreased air entry, percussion-dullness and audible bowel sounds over her left chest. Chest X-ray (Figure:1) showed a raised left hemidiaphragm, mediastinal shift to the right and

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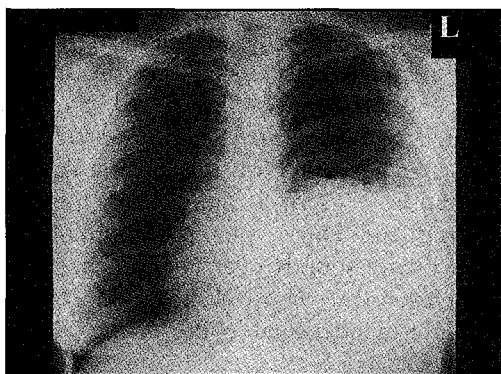
## CASE REPORT

bowel loops in the left thoracic cage. A CT scan (Figure: 2) confirmed the diagnosis of a left diaphragmatic hernia.

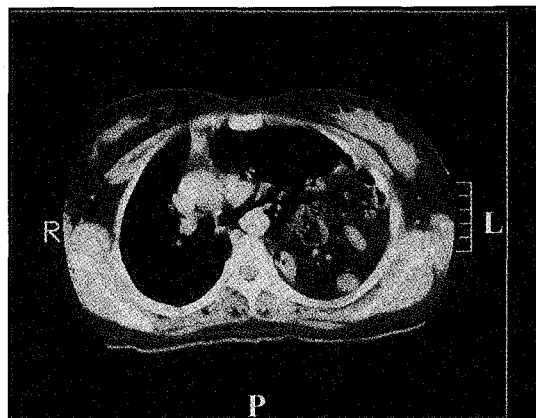
She was operated electively, using a midline abdominal incision under general anesthesia and epidural support. The findings at surgery were of a posterolateral defect in the left hemi-diaphragm measuring 6cm x 3cm in size. The midgut was rotated clockwise and bowel loops from the proximal jejunum up to the splenic-flexure of the colon along with the spleen had herniated through the diaphragmatic defect into the left pleural cavity. There was no noticeable hernia sac and the hernia margins were rather thin posteriorly. The left lung was of a reduced volume and only partially expanded with positive pressure ventilation.

The diaphragmatic defect was closed with monofilament sutures and reinforced with a prolene mesh. A chest tube was left in the pleural space. The affected lung expanded only to a minimal extent in the immediate post operative period. On follow up visits the patient remained comfortable and serial chest X-rays demonstrated further, but not total lung expansion.

She was then lost to follow up, only to present 15 months later. During this time she had another pregnancy and an uneventful childbirth. A chest X-ray taken on this visit showed complete left lung expansion albeit a slightly smaller lung volume compared to the right.



**Fig 1. Chest X-ray showing abdominal contents occupying the left chest**



**Fig 2. CT scan showing bowel loops in the left thoracic cavity**

## Discussion

In Bochdalek's hernia, the defect is in the posterolateral part of the diaphragm. Most often it is a unilateral defect on the left side. There is significant hypoplasia of both lungs involving the bronchial, alveolar and vascular components. The pulmonary vascular resistance is also increased. Hence in infants CDH usually presents with life threatening respiratory distress and a high mortality. The reason of late manifestation in adults is not fully known. Perhaps the defect is more common but becomes symptomatic only with a rise in intra-abdominal pressure later in life.

The hernia is named after Bochdalek<sup>1</sup>, who in his writings in 1848, described the diaphragmatic defect and speculated the pathophysiology of the hernia. The first report of successful repair of CDH was by Aue in 1901 involving an adult patient. In 1959, Kirkland<sup>2</sup> reviewed 39 adult patients presenting between 1853 and 1958. Another large study was done in 1991 by Thomas and Kapur<sup>3</sup>. They reviewed 53 cases of adult CDH from earlier descriptions. The majority of the patients in both these series had presented as acute surgical emergencies and an incorrect diagnosis was made in 38% patients. In these series the onset of clinical features were reported

to occur after a heavy meal, diving, intercourse, ingestion of beer and retching, physical exertion and pregnancy. Other modes of presentation in the case reports from around the world are those of unresolving pleural empyema, colonic obstruction and volvulus of the stomach. Incorrect diagnosis is not uncommon and sepsis and death has been reported following insertion of chest tube in suspicion of hydropneumothorax.

Although presentation as a surgical emergency is the commonest mode, with the availability of modern imaging facilities like CT scanning and MRI, asymptomatic CDH in adults has been reported in the literature. Spiral CT with 3D images can be constructed to give a stereographic perception.

Once diagnosed, operative repair should be carried out even in asymptomatic patients to avoid later complications like strangulation of the stomach or bowel. Minimally invasive techniques

using a thoracoscope or laparoscope have been successfully used in repairing the diaphragmatic defect. Laparoscopic approach can provide a better view of the surgical field, ease of execution, minimal surgical trauma, good cosmetic results, rapid recovery, and shorter hospitalization stay<sup>4</sup>. However in adults, the conventional approach has been through a midline abdominal incision. This allows inspection and correction of associated congenital abdominal abnormalities. The reported post operative mortality in adults is less than 3% for elective surgery but rises to 32% when complications set in<sup>5</sup>. This is still lower than the 50% mortality seen in surgical interventions involving CDH in infants.

In conclusion CDH is an uncommon entity in adults, which should be considered when dealing with respiratory and gastrointestinal emergencies especially those with typical radiological findings. Early diagnosis and repair is essential to avoid subsequent morbidity and mortality.

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