



# Congenital Diaphragmatic Hernia with Adulthood Presentation: A Case Report

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## Authors' contributions

*This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.*

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Case Study

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## ABSTRACT

**Introduction:** Diaphragmatic Hernia (DH) is a defect or hole in the diaphragm that allows abdominal contents to move into the chest cavity. Herein, we report an unusual case of adult diaphragmatic hernia that was repaired via laparotomy.

**Case Presentation:** A 51-year-old female presented with complaints of vomiting, coughing and early satiety with mild dyspepsia since 1.5 months. The pathology was treated successfully via laparotomy.

**Discussion:** Although an Adult Onset Diaphragmatic Hernia almost always follows after a past history of trauma. The finding of one such case without any precipitating factor in this female hints towards a congenital pathology with late presentation in adult life and hence represents a rare occurrence with a very few cases reported worldwide.

**Conclusion:** Diaphragmatic hernias are rare among adult population. Surgical Repair is mandatory to prevent its potential devastating morbidity and mortality.

*Keywords: Diaphragmatic hernia; Bochdalek hernia; diaphragmatic defect; thoracic surgery.*

## 1. INTRODUCTION

The diaphragm is a dome-shaped muscular barrier between the chest and abdominal cavities. It separates the heart and lungs from the abdominal organs (stomach, intestines, spleen, and liver).

Diaphragmatic Hernia essentially is a defect in the diaphragm through which the abdominal contents under the positive abdominal pressure; herniate into the thorax.

Diaphragmatic Hernia is usually congenital in onset as seen in neonates in fetal life. Due to the abnormal development of the pleuro-peritoneal membrane while the fetus is forming [1]. As a result the abdominal contents migrate into the thoracic cavity comprising lung development. However this arrested lung development affects only one lung in majority of cases.

When found in adults generally follows a past history of trauma (blunt or penetrating injury) following which patient develops symptoms depending on the nature of its cause and effect but can be asymptomatic also. Traffic accidents and falls cause the majority of blunt injuries. Penetrating injuries result from high velocity projectiles and stab with a pointed object. Iatrogenic injuries during various thoracic and abdominal surgeries also can give rise to diaphragmatic herniation eventually.

A rare subset of patients suffering from this condition are asymptomatic and present in the 5<sup>th</sup> decade of life is rare with no underlying known etiology. Only 130 such cases have been reported in the medical literature [2].

The case discussed here does have a past surgical history of Laparoscopic Tubal Ligation but the history is of more than 23 years which makes iatrogenic etiology less likely.

Diaphragmatic hernia (DH) is corrected by laparotomy or thoracotomy, or both with the minimal invasive procedures being successfully performed on adults in these times [3].

## 2. PATIENT PRESENTATION

A 51-year-old married female presented to us in out-patient department (OPD) with complaint of vomiting, coughing and early satiety with mild dyspepsia since 1.5 months.

The patient had no complaint of fever / history of trauma.

The patient had a Past History of Laparoscopic Tubal Ligation x 23 Years back.

The patient had attained menopause 5 years back with 2 full term normal vaginal delivery and no other remarkable past history.

### 2.1 Clinical Findings

Her vital signs were blood pressure 100/60, heart rate 120 beats per minute, respiratory rate 25 breaths per minute and temperature 37 °C.

Per Abdominal examination yielded no significant findings.

### 2.2 Investigations

Basic routine blood investigations including the total White Blood Cell count, Haemoglobin, serum creatinine and bilirubin were done and found to be normal.

X-ray chest suggested that the Left Dome of Diaphragm appear elevated.



Fig. 1. Chest-Xray(PA view)

Ultrasonography suggested herniation of abdominal viscera into the left thoracic cavity.

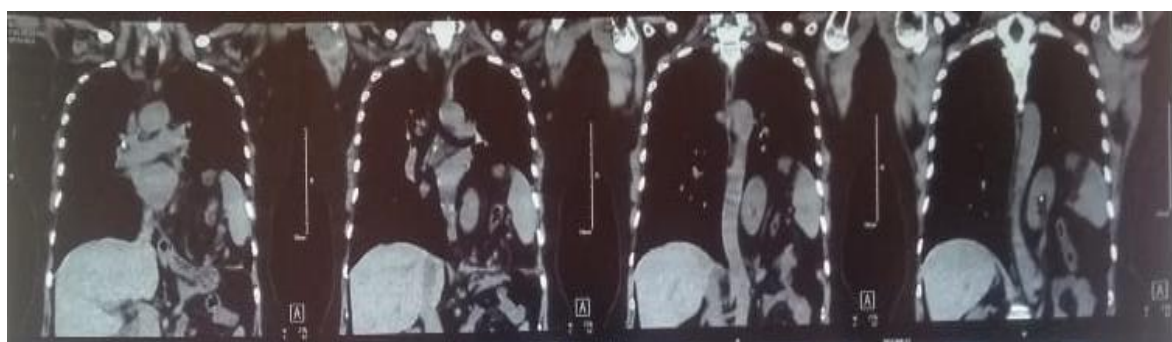
CT- Thorax + Abdomen suggested Left Diaphragmatic Hernia with defect (7.2cm x 7.4cm) in the left dome of Diaphragm posteriorly and spleen, left kidney, splenic flexure of colon adjacent transverse colon and adjacent proximal descending colon along with mesentery as herniating content.

Plate like Atelectasis in the right middle lobe, lingula and both lower lobes of lungs.

Small fibrotic strands in both upper lobes of lungs.



**Fig. 2. CT – THORAX (Transverse view)**



**Fig. 3. CT-Thorax (Coronal View)**

Rest of the lung fields appear clear. No consolidation, nodules, cavitating lesion or mass lesion detected in both lungs.

### **2.3 Therapeutic Intervention**

Left Sided Diaphragmatic hernia repair with hernioplasty with left sided Inter-coastal Drain (ICD) insertion (under General Anesthesia + Epidural Anesthesia).

Operative Notes :- Left Para-Median skin incision was kept. On exploration transverse colon, splenic flexure, descending colon, spleen, left kidney, left suprarenal gland and stomach was

found herniating into left hemithorax through a 19cm x 8cm defect on left-posterolateral aspect of the diaphragm. Adhesiolysis was done, hernia sac cut and reduced and the contents were reduced back into the abdominal cavity. The defect was approximated using non-absorbable prolene sutures and reinforced with 15cm x 15cm proceed mesh. Left sided Inter-coastal Drain(ICD) was placed and closure done in layers.

### **3. FOLLOW-UP AND OUTCOME**

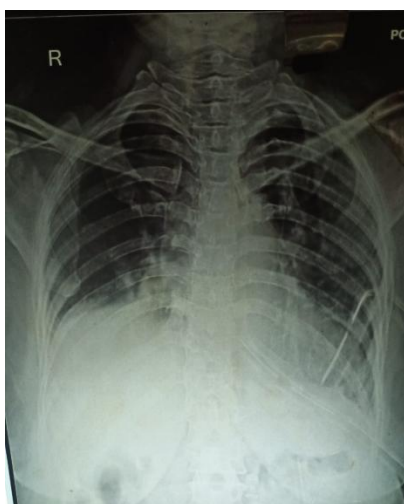
The patient was discharged on Tenth post-operative day after removing the drain and alternate suture removal. Follow up was then

done on every fifth day, and complete suture removal done on the 15<sup>th</sup> day.

The patient was given oral antibiotics for 7 days post discharge along with analgesics.

No wound discharge/dehiscence/seroma formation or any other immediate post-operative complications were noted.

After suture removal, the patient was kept on monthly follow up for six months.



**Fig. 4. Post-Op Chest X-Ray (PA view)**

#### 4. DISCUSSION

Although an Adult Onset Diaphragmatic Hernia (DH) is almost always follows after a past history of trauma. The finding of one such case without any precipitating factor in this female represents a late-presenting Congenital pathology. A rare occurrence with a very few cases reported worldwide.

A congenital defect in the posterolateral aspect of the diaphragm is a Bochdalek hernia. This is caused by a lack of closing of the pleuro-peritoneal cavity by incomplete diaphragmatic development before the intestine returns to the abdomen from the yolk sack between weeks 8 and 10 of gestation. A severe respiratory dysfunction can arise as a consequence of pulmonary hypoplasia if; herniation transpires prior to lung development.

In adults, this defect is uncommon, the lung in most cases develops normally and therefore symptoms are rare[4]. In this age group there are two typical clinical presentations: An incidental

finding during X-ray examinations performed for symptoms not related to the hernia [5,6] or when symptoms develop as a result of incarceration, strangulation and visceral rupture inside the chest cavity. Symptoms vary according to the affected organ: digestive symptoms include intermittent abdominal pain, vomit and dysphagia while respiratory symptoms include chest pain and dyspnea[5,7].

In the case we presented the patient complained of intermittent dyspepsia, vomiting and early satiety. The most frequently displaced organ is the stomach followed by the colon, spleen, small intestine and ureter[4,8,9]. In this case transverse colon, splenic flexure, descending colon, spleen, left kidney, left suprarenal gland and stomach was found herniating into left hemithorax through a 19cm x 8cm defect on left-posterolateral aspect of the diaphragm.

Diagnosis is usually straight forward on a chest X-ray where gas and organs seen over the diaphragm or a CT which would show soft tissue density over and under the diaphragm's discontinuity in its typical posterolateral location[10]. Only rarely a MRI or upper gastrointestinal fluoroscopic studies are required[7,11,10].

The surgical approach; Thoracic or Abdominal for this pathology depends on the presence of visceral complications. However the abdominal approach is preferred under the emergency setting or when septic complications are suspected. With the advancements in minimally invasive surgery and anaesthetic techniques, most of the cases are now addressed laparoscopically or thoroscopically in the elective setting; provided the expertise and the facilities are available[12,13–15].

In this case, surgical laparotomy procedure was done. There were no intra-operative or immediate post-operative complications. There was no incidence of any seroma/hematoma formation and the suture removal was undertaken on the fourteenth post-operative day on follow-up. No recurrence was noted in the six months of follow up.

#### 5. CONCLUSION

Congenital diaphragmatic hernias are an uncommon diagnosis among adult populations because they are mainly recognized in infancy. Most Adult onset Diaphragmatic hernias are due

to trauma of some kind and a congenital onset with such a late presentation in adulthood is all the more rare.

## CONSENT

Consent has been taken from the patient.

## ETHICAL APPROVAL

As per international standard or university standard ethical approval has been collected and preserved by the authors.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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