Int. J Med. Pharm. Res.
P-ISSN: 2958-3675 | E-ISSN: 2958-3683
Available on: https://ijmpr.in/

International Journal
of Medical and
Pharmaceutical Research

ORIGINAL ARTICLE OPEN ACCESS

Breathlessness Unveiled: The Hidden Consequences of Diaphragmatic Injury

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OPEN ACCESS

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Received: 25-06-2025
Accepted: 27-07-2025
Available Online: 17-08-2025

ABSTRACT

A female patient was admitted in the department of medicine for complaint of difficulty in breathing. Patient was advised for chest x-ray and diagnosis of pleural effusion was made. A chest tube was placed in the left side of chest. After few days patient complaint of passage of food particles in the chest tube. On detailed enquiry she gave history of trauma two years back due to Road Traffic Accident and at that time she was treated conservatively. Review of x-ray of chest and a Computed Tomography of chest and abdomen, and on the basis of history of trauma a diagnosis of traumatic diaphragmatic hernia was made. Herniated stomach was placed in its normal position and torn diaphragm was repaired by open surgery

Keyword: Traumatic Diaphragmatic Hernia, Breathlessness, Computed Tomography, Surgical Reapir.

INTRODUCTION-

A female patient of diaphragmatic hernia presented with breathlessness and on the basis of chest x-ray the patient was diagnosed a case of pleural effusion. After placement of chest tube complications developed. On further investigation it was found that she had traumatic diaphragmatic hernia.

Diaphragmatic hernia may occur through the esophageal hiatus, through other congenital openings (such as foramina of Bockdalek or Morgagni) or through post traumatic defects. The majority of the diaphragmatic hernias are sliding hernias of the stomach through the oesophageal hiatus[1].

1. Congenital diaphragmatic hernia
2. Acquired diaphragmatic hernia

(1) CONGENITAL DIAPHRAGMATIC HERNIA --- Most cases are present at birth. In adults, CDH scan be asymptomatic or present with vague symptoms.

Morgagni Hernia- A rare hernia that occurs in about 2-5% of congenital diaphragmatic hernia cases. It is characterized by an opening in the front of the diaphragm, to the side and back of the sternum.

Bochdalek Hernia – A type of diaphragmatic hernia where the defect is posterolateral.

Para esophageal Hernia- A type of diaphragmatic hernia where the defect is located adjacent to the esophageal hiatus.

(2) ACQUIRED DIAPHRAGMATIC HERNIA – It can be divided into three types:

(a) TRAUMATIC DIAPHRAGMATIC HERNIA —This is the most common type of ADH. Traumatic diaphragmatic hernias may further be subdivided into two groups. In first group, hernia is caused by direct trauma to the diaphragm which usually result from stab or gunshot injury. In second group of traumatic diaphragmatic hernia in which,

trauma is caused by indirect injury such as severe injury to the abdomen or chest, secondary to high velocity or industrial accidents.[2]

Penetrating injuries between fourth intercostal space and the umbilicus should raise the suspicion of a diaphragmatic injury. Careful examination of chest x-ray is important, but it is diagnostic in only one half of the cases. Symptoms may appear long after injury. Delays of more than 10 years are not uncommon.[3]

Traumatic diaphragmatic hernia occurs in 1-5% of vehicle crashes and 10-15% of penetrating injuries of the lower chest.
(b) IATROGENIC DIAPHRAGMATIC HERNIA: caused by damage to the diaphragm during major abdominal or thoracic surgery.
(c) HIATAL HERNIA: A type of Acquired Diaphragmatic Hernia that occurs at the esophageal hiatus.

SLIDING HERNIA (TYPE-1)- In this case Gastro-esophageal junction (GEJ) and stomach displaced above the diaphragm. Phreno-esophageal membrane anchors the GEJ.

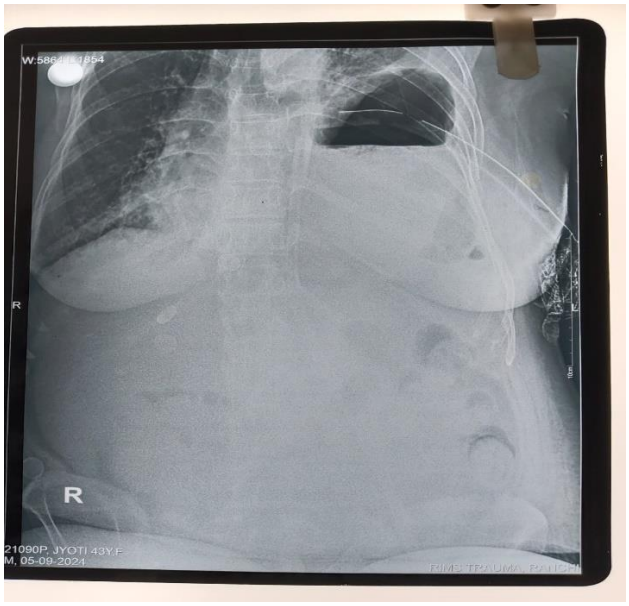
PARAESOPHAGEAL HERNIA (TYPE-2)-Stomach protrudes through the esophageal hiatus alongside the esophagus, GEJ typically remains in a normal position at the level of diaphragm as there is preservation of the posterior phreno-esophageal ligament with normal anchoring of GEJ. The entire stomach can pass into chest. Gastric volvulus may result. Most para esophageal hernia contain a sliding hiatal component. This is called mixed diaphragmatic hernia (type 3).

CASE REPORT:
A female patient aged, 43 years, admitted in the department of medicine in Rajendra Institute of Medical Sciences, Ranchi, Jharkhand, India, for the complaint of sudden onset of breathlessness and chest pain and fever. Xray and other investigations were done there. A chest tube was inserted for the diagnosis of pleural effusion. Few days after the insertion of chest tube, a call was sent to the department of surgery for the complaint of, food particles coming through the chest tube.

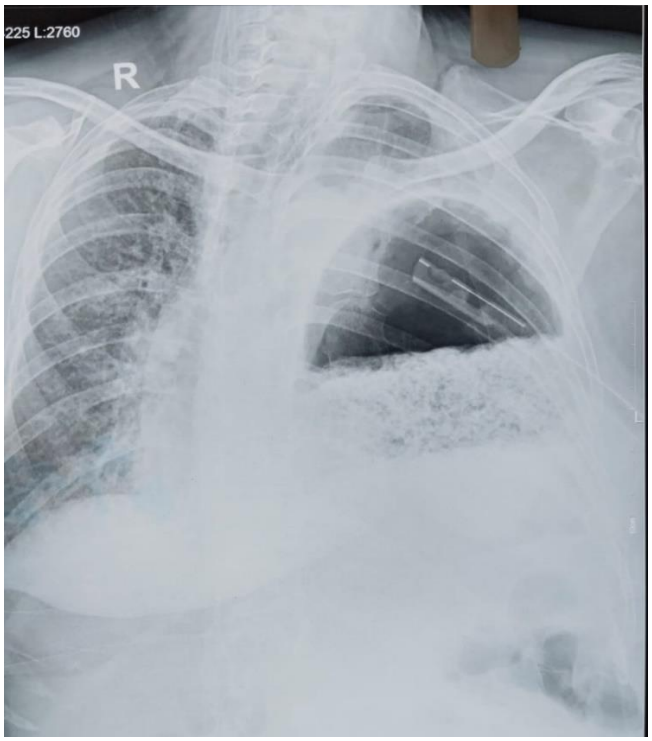
On repeated history taking, she mentioned that she had a road traffic accident two years back causing chest injury but no any surgical intervention was done at that time.

On examination patient was conscious. Her pulse was 112 per minute, Spo2 was 93% in room air and blood pressure was within normal limit. Left sided crept was found on auscultation. Patient is a known case of diabetes for more than one year. On chest examination bowel sounds were heard in the left side of chest. Xray of the chest and CT SCAN was done. Skiagram of Chest and CT SCAN are shown below. Chest skiagram is showing gaseous shadow above and fine granular shadow below, which is definitely different from lung shadow. CT scan shows presence of stomach through defect in left side of diaphragm. Diagnosis of left sided traumatic diaphragmatic hernia was made. Operation was done through abdominal route. Stomach was placed at its normal anatomic place and repair of the diaphragm was done. Two drains were placed, one in the chest and other in the abdomen. Drains were removed after 72 hours. Patient recovered well.

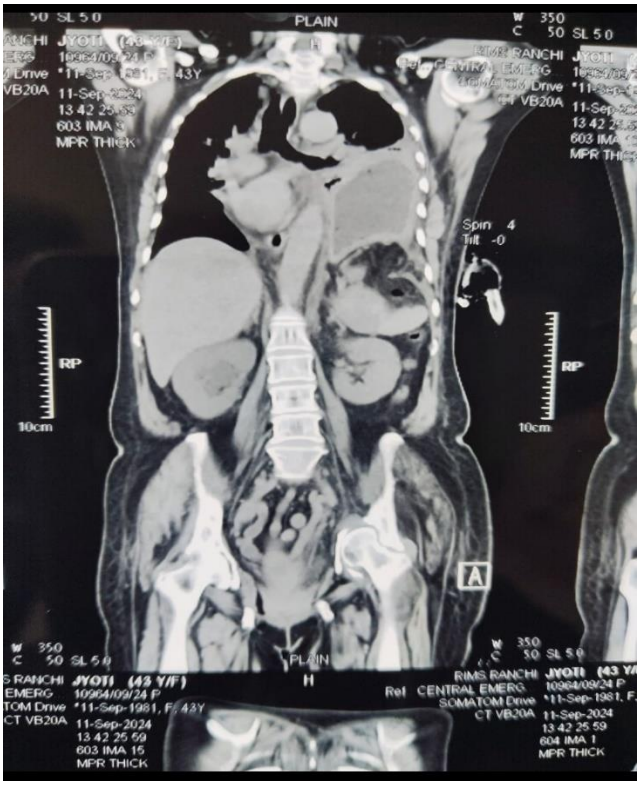
PHOTOGRAPH-1
Plain Chest X-Ray Showing Left Sided Horizontal Air-Fluid Level with Chest Tube In Situ.



PHOTOGRAPH-2
Plain chest x-ray showing horizontal level with air above and on lower side granular shadow (sea-sand appearance)



PHOTOGRAPH-3
C.T. Scan showing upward displacement of left diaphragm and tear of diaphragm with herniation of stomach in the chest.



DISCUSSION:
Traumatic diaphragmatic hernia is difficult to diagnose because of their varied clinical and radiologic signs and because patients may not present with symptoms for months to years following the injury[4].Lerner C.A. et all presented a case of a

delayed presentation of a traumatic diaphragmatic rupture through which a portion of the stomach herniated and simulated a large subphrenic abscess.

Baker M.E., et all presented a case of a Richter's hernia through a traumatic, diaphragmatic defect presenting with the appearance of an abscess on C.T. They underscore the importance of hernia and its diagnosis and they aspirated the lesion[5].

J Baerg et al included 31 subjects in their study and they were diagnosed with congenital diaphragmatic hernia between 45 days and 13 years of age. Among 31 subjects Bockdalek hernia were presented in 18 (58%) and Morgagni hernia in 13(42%) patients[6].

For imaging Diaphragmatic Hernia plain chest radiography is firstly preferred, but CT scan is most effective in many diaphragmatic hernia cases. It shows the herniated abdominal organs together with complications, such as intestinal strangulation, hemothorax and rib fractures[7].
Traumatic diaphragmatic rupture is a prediction of serious associated injuries which unfortunately, is itself often occult. Numerous reports describe splenic rupture in 25%, pelvic fracture in 40% and thoracic aortic tears in 5% [8].

Post traumatic diaphragmatic injuries present with varied clinical expressions. The discovery of a colonic tumor in a diaphragmatic hernia was an exceptional clinical circumstances[9].
The left diaphragm was injured in 22 and the right in 8 instances (out of 30 diaphragmatic injuries)[10].

In cases of respiratory problem of patient, other than pulmonary causes musculoskeletal and diaphragmatic causes should be kept in mind. So again, this case report emphasizes for importance of taking good past history, thorough clinical examination of patient and meticulous observation of reports of investigations.

REFERENCE:

1. 1.Sleisenger and Fordtran's Gastrointestinal and liver Disease, 8th Edition,2007, page number:477.
2. Jack C. Cooley, M.D.; J.C.T. Rogers, M.D., Traumatic Diaphragmatic Hernia. October 1959. AMA Arch Surg.1959; 79(4): 581-587.doi:101001/archsurg.1959.04320100047008
3. Lin Y-K, Huang B-S, Shih C-S, et al. Traumatic diaphragmatic hernia with delayed presentation. Chin Med J(Taipei)62:223,1999.
4. LERNER C.A., Dang H., Kutilec. R.A., strangulated traumatic diaphragmatic hernia simulating a subphrenic abscess.J.E.Merg.Med.1997,15(6): 849-53.pbm.
5. Baker M.E., Ungerleider R, Cooper C, Dunick N R., Computed tomography of a traumatic diaphragmatic, Richter's hernia, findings mimicking an abscess. J. Comput. Tomogr 1988 Jan,12(1)42-44, DOI:10:1016/0149-936(88)90028-8.
6. Baerg J, Kanthimathinathan V, Golin G., Late –presenting congenital diaphragmatic hernia: diagnostic pitfalls and outcome. Hernia. 2012; Aug 16(4):461-6. DOI:10.1007/s 10029-012-0906-5. Epub 2012 March 7.
7. Eur. J Radiol.2005;54(3):448-59. pub med.
8. Meyers B F, McCabe CJ. Traumatic diaphragmatic hernia. Occult marker of serious injury. ANN Surg.1993;18(6):783-90. Pub med.
9. Mohammed Eikehal, Sani Rabiou, Boubocar Efared, Saad Slaiki, Hichem Elbauhadouti.Yassne Quadnouni, Nawal Hammas, Taoufiq Harmouch, Mohammed Smahi. Post traumatic diaphragmatic hernia. Open J. of Thoracic surgery vol 6, no.3. July 20,2016. DOI: 10.4236/ojts.2016.63003.
10. O.P. Sharma. Traumatic diaphragmatic rupture : not an uncommon entity—personal experience with collective review of the 1980's.J. TRAUMA 1989 May;29(5):678-82.PMID-2657086.