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## PYOPNEUMOTHORAX WITH AN UNUSUAL ETIOLOGY

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### ABSTRACT

**Background:** Congenital diaphragmatic hernias are common in the children. The commonest variety is the Bochdalek type of hernia. It appears through the foramen of bochdalek on the left side of diaphragm. Bochdalek hernia in adults is a rare entity. In adults hernia may occur after traumatic episode. Diaphragmatic hernia presenting as typical left pyopneumothorax with shifting of mediastinum is very rare. **Case History:** Our patient is a 56 year old male presented to the casualty with breathlessness, severe chest pain and decreased appetite of one week duration. He was clinically and radiologically diagnosed as left sided hydropneumothorax. Patient was in shock. Inter costal chest tube was placed on the left side. Frank pus was collected. On third day of admission food particles were collected in the water seal bag. Contrast pleuroscopy and CT thorax revealed presence of stomach in the left pleural cavity. Laparotomy was performed, which showed incarcerated and perforated stomach along with spleen inside the left pleural space. Patient improved after surgery.

**Conclusion:** An adult patient presented with features of left pyopneumothorax. The presentation in this case was very much confusing for the physicians because there was appearance of food particles in the intercostals drainage tube. Later surgically approached and found to be incarcerated diaphragmatic hernia. Incarcerated abdominal contents were secondarily infected consequently leading to accumulation of pus in the pleural cavity.

**Keywords:** Pyopneumothorax, Bochdalek hernia, Gastro-pleural fistula, incarcerated stomach.

### INTRODUCTION

Pleural cavity is a sealed compartment covering the lungs for easy movement during respiration. It is lying between the lung surface on one side and the thoracic cage and diaphragm on the other<sup>1</sup>. There is a thin layer of fluid in the pleural cavity for friction free movements. If there is any alteration in the hydrostatic, osmotic pressure and pleuro- pulmonary lymphatic drainage system there will be abnormal accumulation of the fluid<sup>2</sup>. The infective aetiologies may convert the serous fluid into pus. There are many thoracic as well as extra

thoracic causes for this. Pulmonary infections, surgery, trauma, iatrogenic causes, subdiaphragmatic pathologies are the causes in descending order of their occurrence<sup>3</sup>. Among the abdominal causes diaphragmatic rupture is a rare entity. It usually occurs following a trauma. But the present case is a very rare one as it presented as a left sided pyopneumothorax due to herniation and incarceration of stomach and spleen in the thoracic cage.

## CASE HISTORY

A 56 Year old male agricultural labourer, presented to the emergency department with history of acute onset of left sided chest pain, breathlessness, cough & fever for 1 week and history of pleural aspiration two days back. He is not a diabetic and there was no previous history of pulmonary tuberculosis or ATT intake. He had history of laparotomy for peptic ulcer perforation 5 years back. He was not a smoker or alcoholic. On Examination patient was conscious, breathless with cold peripheries, cyanosis, tachycardia with low volume pulse and tachypnea. Blood pressure was not recordable. Chest movements diminished on Left side. Trachea deviated to right side. Apex beat was located in left 5<sup>th</sup> intercostal space adjacent to left sternal border. Intercostal tenderness was present in left axilla. Differential percussion note was elicited on left side with horizontal level of stony dullness below 2<sup>nd</sup> Intercostal space on mid clavicular line, 4<sup>th</sup> Intercostal space on mid axillary line and 6<sup>th</sup> Intercostal space on mid scapular line. Shifting dullness was present. Breath sounds and vocal resonance diminished all over the left hemithorax. Succussion splash was found on the same side. Clinical diagnosis of left hydropneumothorax was made which was confirmed by chest x-ray.

Initial chest x-ray revealed left hydropneumothorax. Thoracentesis revealed presence of frank pus. Intercostal tube was inserted in left 5<sup>th</sup> intercostal space in anterior axillary line, pus was drained.

Blood investigations revealed Haemoglobin -7.2 gm %, Total White Blood Count - 9700/mm<sup>3</sup>, Random Blood Sugar- 199 mg % Blood urea - 92 mg % Serum creatinine 1.3mg %, HIV- Non reactive. Patient was treated with appropriate intravenous antibiotics, oxygen inhalation. As blood pressure was not improved with intravenous fluid challenge, Dopamine infusion was started along with stat dose of injection

Hydrocortisone. Chest Physiotherapy like breathing exercises and incentive spirometry were carried out. Pleural fluid analysis revealed exudative nature with neutrophil predominance. Repeat chest X-ray showed inter costal tube (ICT) in position and expansion of lung. Mediastinum also came back to normal position. Patient relieved symptomatically but there were episodic attacks of breathlessness and chest pain. That was associated with oxygen desaturation. It was observed that these episodic attacks were occurring during the intake of food. Surprisingly, there was increase in the level of water seal bag after every oral feed. On thorough observation partly digested food particles were seen. Suspecting an abnormal communication between pleural space and gastro intestinal tract, further investigations were performed. Computed Tomography (CT) of thorax revealed chest tube in situ, diaphragm high up, stomach with its contents inside the left pleural space. While performing Upper Gastro Intestinal endoscopy fundus of the stomach was not visualized. Contrast fluoroscopy showed entry of oral contrast into pleural space. Patient was subjected to exploratory laparotomy.

## MANAGEMENT

Peroperative findings were large diaphragmatic hernia on left side containing fundus of stomach and spleen. The fundus of stomach was incarcerated and perforated. Pleural space was filled with pus and partly digested food particles. Spleen was resected and diaphragmatic rent was closed. Post operatively patient improved and no recurrence of symptoms. He was discharged after stabilization.

## DIAGNOSIS

Diaphragmatic hernia with incarcerated and perforated fundus of the stomach with spontaneous gastro-pleural fistulae with left hydropneumothorax.

## DISCUSSION

There are very few Sub diaphragmatic causes of pyopneumothorax, of which, diaphragmatic hernia with gastropleural fistula is very rare. Diaphragmatic hernias are congenital or traumatic. Amongst the congenital hernias Bochdalek hernia is more common in the left side which occurs through the posterolateral portion of the diaphragm<sup>4</sup>. But it usually occurs in the newborn period. Our patient is an adult with 56 years of age. Very few cases of adult diaphragmatic hernia with spontaneous gastropleural fistula resulting in pyopneumothorax have been reported. In a case series by Mullin et al, 22 cases of asymptomatic adult Bochdalek hernia were reported<sup>5</sup>. Kishiki Tomokazu reported a 64 year old lady presented with Bochdalek hernia with pyopneumothorax. She had history of previous abdominal surgery for rectal carcinoma<sup>6</sup>. In our case also there was past history of abdominal surgery. Akishige et al reported a case of 63 year old woman presented with a right sided Bochdalek hernia associated with herniation of the colon and the right kidney, which led to severe dyspnoea and abdominal pain<sup>7</sup>. Sameer Vyas et al reported a case of spontaneous esophageal pleural fistula in a middle aged female<sup>8</sup>. Abdullah Erdogan reported a 56 years old male patient's intrathoracic incarceration and perforation of the stomach on the left side of the diaphragmatic defect resulting in empyema thoracis<sup>9</sup>. Kocakusak and others reported a case of a 21-year-old male with a left-sided undiagnosed Bochdalek's hernia. This resulted in necrosis of the transverse colon requiring surgical intervention for resection and colo-colonic anastomosis. The Bochdalek's hernia was repaired at the time of colectomy, and the patient recovered uneventfully<sup>10</sup>.

## CONCLUSION

Herniation, incarceration and perforation of the stomach led to pleural infection and

pyopneumothorax. Pyopneumothorax with mediastinal shift is a Medical emergency and ICTD is the treatment. Collection of food particles in ICTD gave suspicion of fistula between pleura and GIT. Patient was managed surgically and improved. Diaphragmatic hernia should be kept in mind in a case of pyopneumothorax presenting with persistent hypotension.

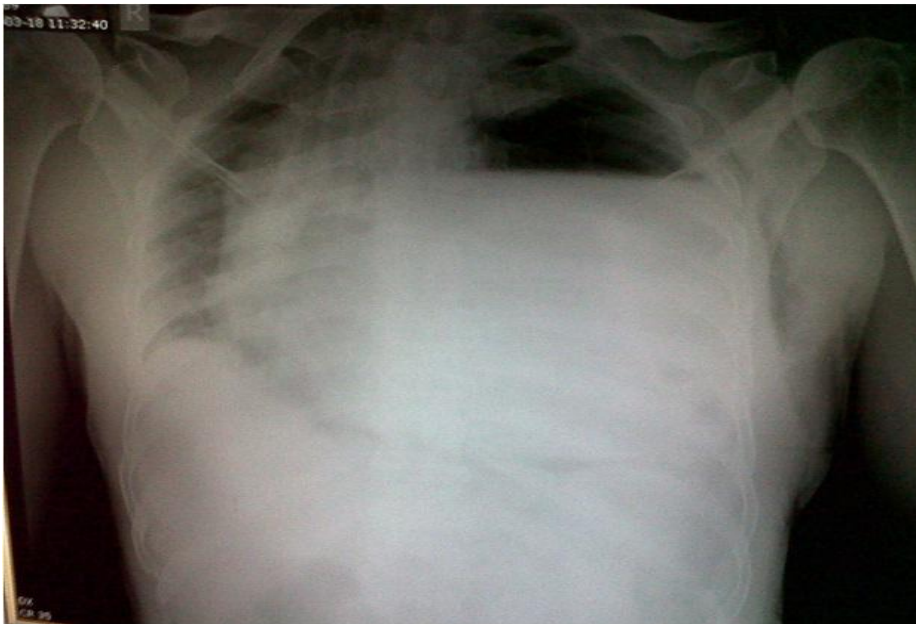
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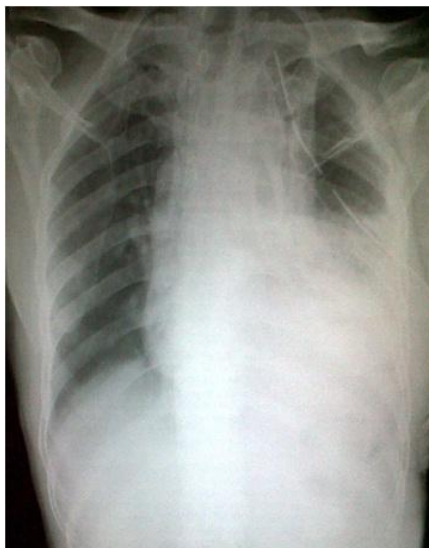


**Figure 1 CXR at the time of admission**

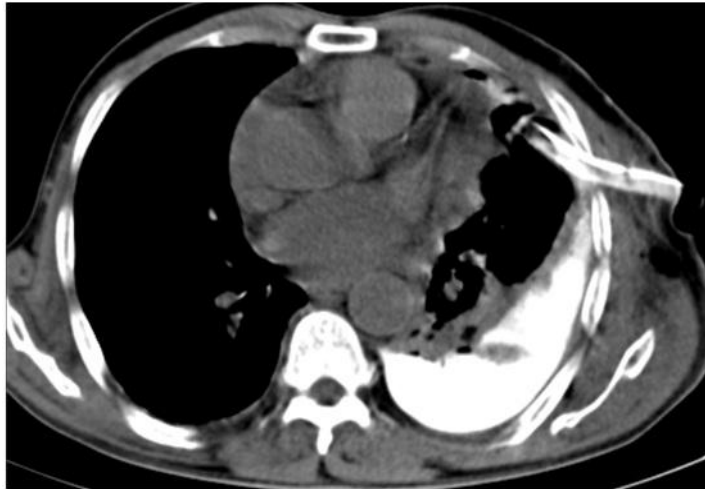
**Figure 2 after ICTD insertion**



**Figure 3 CXR showing reaccumulation of pus**



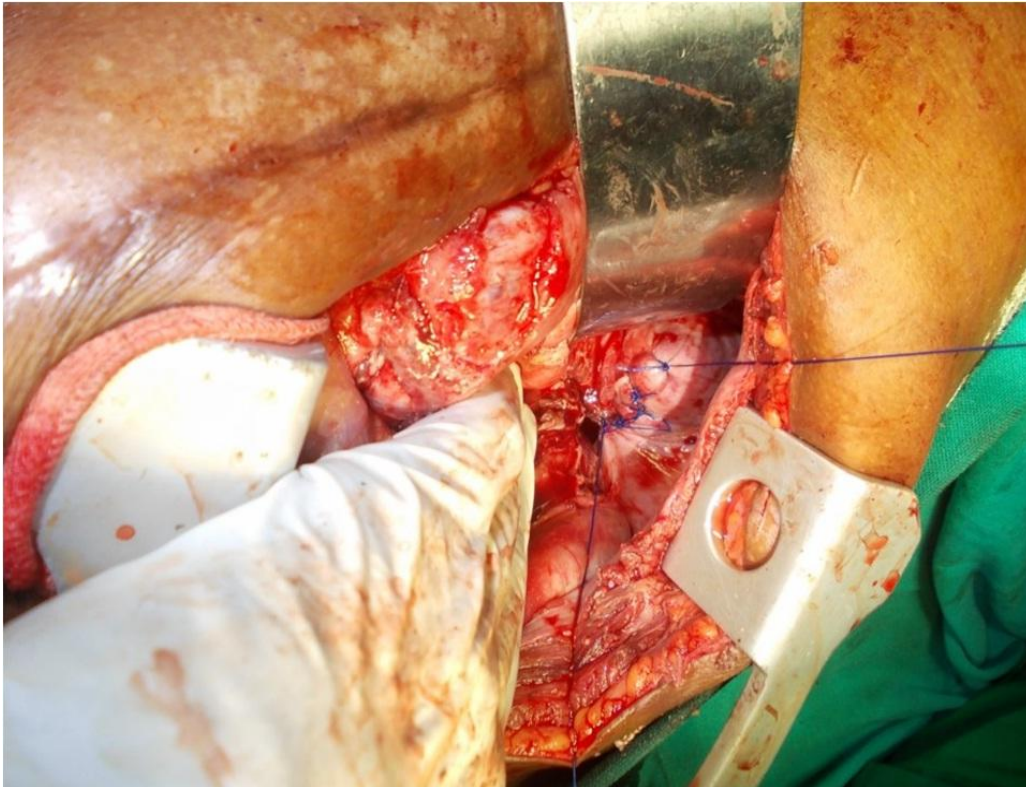
**Figure 4 CT thorax showing ICTD in situ oral contrast entering pleural space**



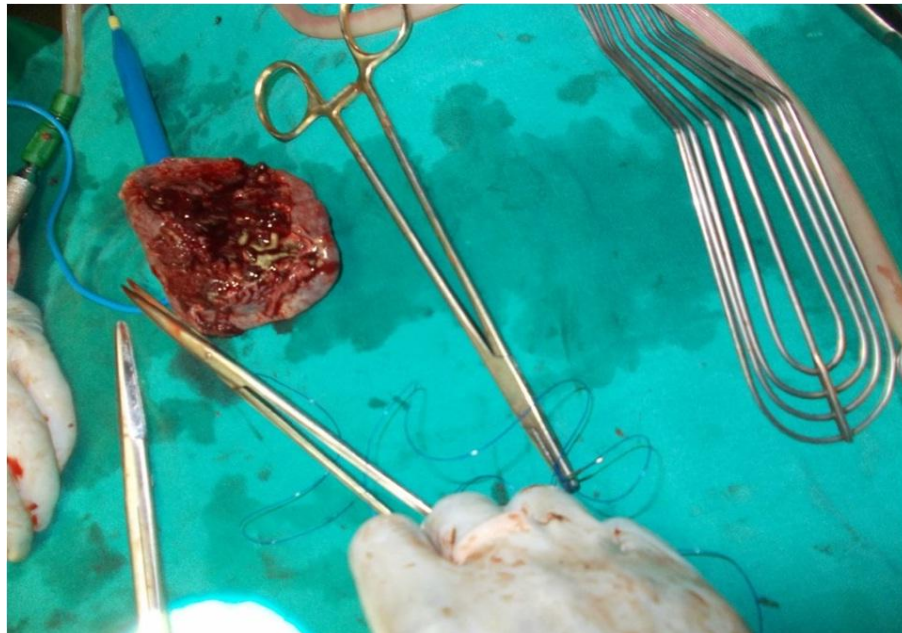
**Figure 5 CT Thorax showing stomach and spleen in the pleural cavity**



**Figure 6 Closing of diaphragmatic rent**



**Figure 7 Resected spleen**



**Figure 8 CXR at Discharge**

