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CASE REPORT

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# Spontaneous Rupture of a Congenital Diaphragmatic Eventration in an Infant

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## ABSTRACT

Rupture of diaphragmatic eventration is a rare entity that commonly presents as sudden onset respiratory distress. We report a case of a 7-month-old infant with spontaneous rupture of congenital diaphragmatic eventration which led to secondary diaphragmatic herniation with gastric volvulus. Clinical diagnosis of gastric volvulus was suspected on the basis of imaging and failed entry of nasogastric tube into stomach. Exploratory laparotomy revealed ruptured diaphragmatic eventration and gastrothorax with volvulus. Anatomical repair of diaphragmatic rupture followed by diaphragmatic plication resulted in successful outcome in our patient.

**Key words:** Eventration; Diaphragm; Rupture; Gastric volvulus.

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## INTRODUCTION

Eventration of diaphragm has a varied presentation ranging from asymptomatic to severe respiratory distress in newborns requiring mechanical ventilatory support. Presentation of with gastric volvulus or intestinal obstruction is unusual.[1,2] Spontaneous rupture of eventration of diaphragm is rarely reported in English literature.[3,4] We present an infant with spontaneous diaphragmatic eventration rupture resulting in gastrothorax and gastric volvulus.

## CASE REPORT

A 7-month-old male infant presented with sudden onset of breathlessness. At the age of three months, baby was diagnosed as a case of left diaphragmatic eventration on routine chest X-ray while undergoing evaluation of recurrent lower respiratory tract infection at a peripheral hospital. Parents of the baby were advised surgery but they refused it.

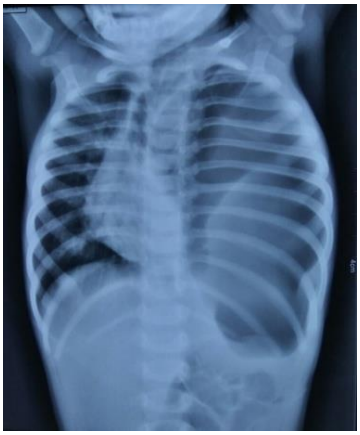

Figure 1: Chest X ray at presentation showing shadow of a hugely distended stomach in the left hemithorax with mediastinal shift.

On examination, the patient had respiratory distress with significantly decreased air entry on left hemithorax. Chest radiograph done after initial resuscitation of the baby demonstrated a hugely distended stomach occupying the left hemithorax with mediastinal shift to oppo-

site side. Air fluid level was appreciated at the lower part of the gastric shadow (Fig.1). Nasogastric tube insertion was attempted but could not be negotiated beyond a few centimetres. In view of failed entry of nasogastric tube into the stomach coupled with the above mentioned chest radiograph findings, clinical diagnosis of acute gastric volvulus due to diaphragmatic eventration was made.

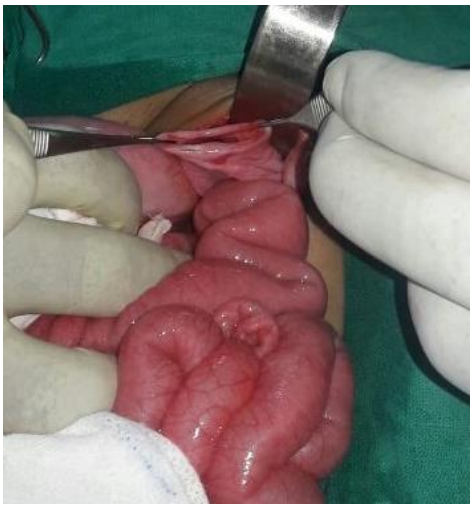

Figure 2: Intraoperative picture of defect in the diaphragm after reducing the contents

Immediate surgical intervention after initial stabilisation was done. At laparotomy, a large perforation of the eventration of left dome of diaphragm with migration of stomach with volvulus, and spleen into the chest cavity were found. After manual detorsion, the stomach which was dilated and congested without signs of ischemia, was decompressed with nasogastric tube. The diaphragmatic rupture) was repaired with 3-0 polypropylene suture (Fig.2). Plication of the diaphragm was also performed with polypropylene 3-0 suture. Intercostal tube drain was inserted on the left hemithorax. Postoperative recovery was uneventful. At one year follow up, the child was asymptomatic and doing fine.

## DISCUSSION

Recurrent lower respiratory infection is the common presentation in patients having eventration of diaphragm but a number of these patients continue to remain asymptomatic. In our patient, eventration of diaphragm was identified as the underlying cause for recurrent lower respiratory tract infections but the parents had not consented for surgical intervention. Spontaneous diaphragmatic rupture in association with eventration is extremely rare with only 3 reported cases in English literature.[3-5] In contrast, perforation of diaphragm is a known postoperative complication following suture plication of the eventration of diaphragm.[6] Spontaneous diaphragmatic rupture presents with acute onset respiratory distress without any history of preceding trauma. X-ray chest can sometimes contribute to diagnosis of diaphragmatic rupture in presence of eventration only if the patient has a prior X-ray chest available for comparison. In our case, we did not suspect rupture of diaphragm preoperatively. Gastric volvulus presents with triad of Borchardt comprising of epigastric distension, retching and inability to negotiate a nasogastric tube. The complete triad may be seen in 30% of adult patients but is rarely seen in children. One or more components of Borchardt triad can be found in 70% of children suffering from gastric volvulus. In our patient retching was absent and upper abdomen was not distended as part of the distended stomach was lying inside the thoracic cavity. Inability to negotiate a feeding tube into the stomach was the only clinical criteria favouring the diagnosis of acute gastric volvulus in this child.

Surgery is the only modality of treatment for diaphragmatic rupture. It can be carried out by either abdominal or thoracic route. Minimal invasive approaches like thoracoscopy and laparoscopy can also be utilized. Treatment consists of reduction of the contents, inspection of the contents for viability, closure of diaphragmatic rupture with non-absorbable sutures coupled with plication of the diaphragm.

Excision of the redundant diaphragm can also be contemplated if diaphragm is found to be too thin for secure suturing. To conclude, high index of suspicion and prompt surgical treatment is considered beneficial as delayed management invariably increases the risk of ischemic injury to the stomach. This case also highlights the lacunae in the communication and counselling on the part of the health care providers and parents in making an informed decision. Early referral to a specialized paediatric surgical centre can benefit such patients.

**Consent:** Authors have submitted signed consent form from legal guardian of the patient and available with editorial office.

**Authors' Contribution:** All authors were involved in manuscript writing, literature review, and final approval of the manuscript.

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