Case Report

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Anaesthetic Management of Morgagni Hernia Repair in an Infant- A Case Report

Ahamed Ashar Ali H[1], Thahseen Nilofar S[2]

Author Affiliation: [1]Consultant Anaesthesiologist, Department of Anesthesia, [2]Consultant Pediatrician, Department of Pediatrics, Ramnad Neuro care, Ramanathapuram, Tamil Nadu 623501, India.

Corresponding Author: Ahamed Ashar Ali H, Consultant Anaesthesiologist, Department of Anesthesia, Ramnad Neuro care, Ramanathapuram, Tamil Nadu 623501, India.

E-mail: dr7ahamed@gmail.com

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Abstract

Morgagni hernia is a rare variety of Congenital diaphragmatic hernia and its diagnosis is usually incidental. When symptomatic, it is usually gastro intestinal. Cardio- pulmonary compromise due to hernia contents on lungs, heart and great vessels even in an uncomplicated hernia, poses a challenge for anaesthesiologist. Intra operative complications to be anticipated are hypoxia, hypercarbia, right to left shunt. Post operatively, atelectasis is an expected complication which could be prevented with adequate analgesia.

Keywords: Hernia sac; Laparotomy; Morgagni hernia.

Introduction

Congenital diaphragmatic hernias (CDH) are rare congenital defects. The different types are Bochdalek hernia, Morgagni hernia, and esophageal hiatus hernia 1. Bochdalek hernia is the most common while Morgagni hernia is the least common variety, accounting for only 1–3% of all diaphragmatic hernias. Morgagni hernia (a.k.a anterior diaphragmatic, parasternal, or retrosternal hernia) is generally thought to result from a congenital defect in the retrosternal region of the diaphragm and subsequent failure of fusion in the anterior part of the pleuroperitoneal membrane and deficient muscularization. It is more common on the right side, at the level of the seventh rib on either side of the xiphoid, in a space where the superior epigastric vessels pass; defects may also occur on the left(Larrey hernia), at the midline, or bilaterally.

Case report

A 1 year old developmentally normal girl child, born out of full term normal vaginal delivery, to non consanguinous parents, was brought with complaints of progressive vomiting of 1 month duration.

The child had been otherwise normal with no previous episodes of illness, trauma or hospitalization. The antenatal, natal and post natal period were uneventful. She was immunized appropriate for age. The present illness started a month ago with episodes of vomiting that followed forceful feeding as noticed by the mother. Vomiting occured immediately after feeding, contained undigested food particles and the child became much comfortable after vomiting. It progressed to occur after each and every feed ; over the weeks, mother noticed that child had started to lose weight

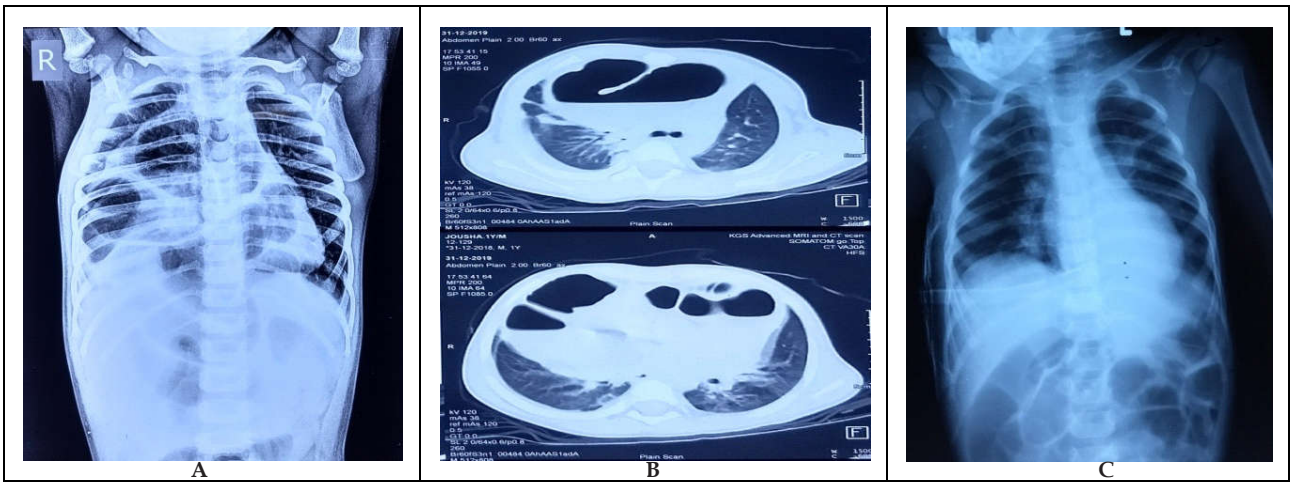

Fig. 1A, B: Pre-op imaging photos which shows air-fluid level in right hemithorax.

C: Post-op chest X-ray shows expansion of right lung, inter costal tube in situ.

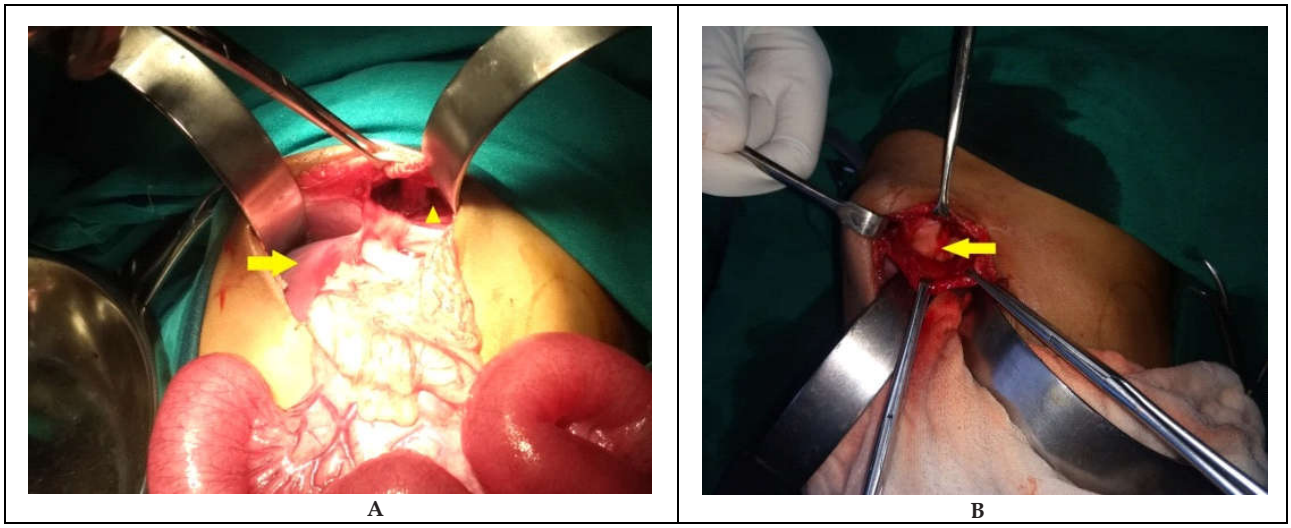

Fig. 2(A): Intra-op, liver (yellow arrow), Hernial sac in thoracic cavity (yellow arrow head).

(B): Expanded lung after removal of hernia sac and its contents (yellow arrow).

and passed high colored urine. Initially child was treated with oral anti emetics with no much improvement. Later child was treated for acute gastro enteritis with oral antibiotics, parenteral anti emetics and supportive measures only to result in inconsistent improvement. In view of persistent symptoms, dehydration and weight loss, child was admitted for evaluation and management. Clinical examination revealed a moderately nourished child with no evidence of pallor, icterus, cyanosis, clubbing, lymphadenopathy or pedal edema. She had some dehydration. Systemic examination was normal other than decreased breath sounds to auscultation on the right side. Her vital parameters were within normal limits. Blood Biochemical parameters were normal. chest X-ray was done and showed round opacity with air fluid level at right hemithorax on the dome of the diaphragm. (Figure 1A). On further workup, thoracic CT scan (Figure 1B) was performed and revealed part of the colon and omentum herniated into the thorax. When the diagnosis of CDH was confirmed, the patient was prepared for laparotomy after pre operative assessment including echocardiography, cardiologist consult. In the preoperative assessment, pulse rate was 122/min and BP was 100/66 mmHg. Patient was assessed under ASA II.

After obtaining informed written consent, patient was shifted to operation theatre, placed supine and peripheral intravenous line secured in left forearm with 20G intravenous cannula. Intra operative

monitoring was initiated. General anaesthesia was induced with fentanyl 20 µg and propofol 30 mg intravenously and tracheal intubation with 4mm uncuffed endotracheal tube facilitated using atracurium 5 mg. Anaesthesia maintained with N2O : O2 and sevoflurane 1%. A Foley catheter was inserted after general anesthesia. Nasogastric tube was inserted and position confirmed. The anesthesiologist manually inflated the lungs to ensure positive pressure in order to facilitate the reduction of the sac contents.

Intraoperatively, hernial sac content (colon, omentum) was pulled out and reduced back into the abdominal cavity (Figure 2A). The falciform ligament was divided and the hernia sac was excised. Right lung expanded after removal of hernia sac and its contents (Fig 2B). Inter costal drainage (ICD) tube was secured. Intraoperative period was uneventful. Trachea was extubated after procedure with adequate pain relief. Patient shifted to post operative ward. Chest x ray taken on first post operative day confirmed adequate lung expansion on right side (Fig 1C). ICD tube was removed on fourth day. Patient was discharged on day [8].

Discussion:

Morgagni hernia was described by Giovanni Battista Morgagni, an Italian anatomist and pathologist in 1769, while performing a postmortem examination on a patient who died of a head injury1. The cause of CDH is not known; 2% of cases could be familial and 15% of patients have an associated chromosomal abnormality. It is common in females and obese persons.

The peritoneal sac of almost all Morgagni hernias are well developed; the most common parts herniating into thorax are colon, omentum, stomach and liver. The most common presenting symptoms in these cases are nausea, vomiting, recurrent chest infection, and chest pain.[2,3] Dyspnea and palpitations are not frequent. Differential diagnosis of this condition includes pleura-pericardial cyst, mesothelioma of pleura, mediastinal lipoma, tumors/ cysts of the diaphragm, thymoma, and anterior chest wall tumors. Diagnosis is based on imaging- barium study, computed tomography (CT), or magnetic resonance imaging (MRI). Imaging can define the defect size and sac contents.

Morgagni hernia should be treated, even in asymptomatic cases. The surgery is not urgent except if there is strangulation. Morgagni hernia can be repaired by a variety of surgical approaches including laparotomy, thoracotomy, laparoscopy, and thoracoscopy. An open Trans-abdominal approach is the method of choice in patients with obstruction, incarceration, strangulation, or perforation. Both sides can be evaluated by a midline incision. Trans-thoracic approach provides an excellent view for repair. Thoracotomy is not done usually due to its associated morbidity and need for chest tube drainage. Thoracoscopy is less invasive but evaluation of the other side is not possible[4,5]. Laparoscopic repair is safe, minimally invasive, effective and is the gold standard for repair of an uncomplicated Morgagni hernia. Excellent bilateral view, less tissue damage, less requirement for postoperative analgesia, a short hospital stay, and rapid return to normal life are its benefits. Several techniques have been described for laparoscopic repair including primary closure of the defect with intracorporeal sutures, stapler, or a mesh.[6-8]

Some surgeons recommend excising the hernial sac, whereas some prefer to leave the sac in situ. Sac Excision has the following advantages: (1) reduction of tissue trauma as only the sac is manipulated rather than its contents (2) decreased chance of fluid collection as the serous lining is removed; and (3) sac excision removes the chance that the sac itself can act as a lead point for recurrence. Concerns against removal of the sac include massive pneumomediastinum, life threatening damage to the pericardium/ mediastinal structures. In our case, the hernial sac was resected.[9,10] There was no complication during/after surgery and on follow up.

Conclusion

Any symptom that brings the patient to a health care worker may initially point to a particular system only. But that should not preclude a physician from thorough and complete physical examination of all the systems. A thorough clinical systemic examination will definitely guide us through a comprehensive and early diagnosis which may alter the course of management appropriately.

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