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Open repair of a Morgagni's herniausing trans-abdominal approach-An incidental finding

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Abstract

Morgagni's hernia is a rare type of congenital hernia which occurs due to defective development of diaphragm with the defect located anterior and retrosternal in location. It was first described in 1769 by Morgagni. Morgagni hernia is usually have an asymptomatic presentation, leading to a delay in the diagnosis of the defects or may present with pulmonary or abdominal features such as repeated chest infections, respiratory distress, pulmonary hypoplasia, flatulence or abdominal distension. A 1 year 4 months old female came to the OPD for primary assessment of developmental delay and seeking treatment for bilateral CTEV and other congenital anomalies. On examination, X-ray chest was suggestive of bowel contents herniated into the hemithorax, with a large defect in the left hemidiaphragm, confirmed on a computed tomography scan and an incidental finding of Morgagni hernia was reported. Patient underwent an open repair with a midline incision over abdomen. After reducing the contents, the defect was primarily closed with 2-0 prolene suture without the use of a mesh. Most Morgagni's hernias tend to be incidental in finding, and carry an increased risk of complications such as strangulation or incarceration. Hence, primary surgical repair either open or laparoscopically, using a transthoracic or transabdominal approach is indicated even in asymptomatic cases. The long term prognosis of surgical treatment is good and the recurrence rate is low. Objectives to be kept in mind in such cases are patient profiles, any associated conditions, symptoms, complications and surgical outcomes.

Keywords: Morgagni's Hernia, Transabdominal, Bilateral CTEV, Congenital Diaphragmatic Hernias.

Introduction

Morgagni-Larry's hernia occurs when there is herniation of abdominal contents into the thorax through a congenital defect in the diaphragm. It was first described by Morgagni in 1769.[1] The diaphragm is a skeletal muscle of respiration which separates the two cavities and develops mainly from three embryonic sources : the septum transversum, the pleuroperitonial folds and the somites.[2] Failure of fusion of septum transversum with

the thoracic wall leading to an anterior or retrosternal defect leads to a Morgagni hernia.[3] It is the rarer type with incidence accounting for only 2-5% of all congenital diaphragmatic hernias. The other types of congenital diaphragmatic hernias are Bochdalek's, Hiatal, Paraoesophageal, Anterior and Retrosternal.[4] More than 50% of Morgagni hernias are reported as an incidental finding. Morgagni hernia tend to be less symptomatic as pulmonary hypoplasia is uncommon or may present with an array of thoracic or gastrointestinal symptoms such as pulmonary hypoplasia, pulmonary hypertension, flatulence, abdominal distension or even obstruction. There may be presence of other congenital malformations such as cardiac anomalies and an increased association with chromosomal disorders such as turners and down's syndrome has been well documented.[5] A chest x-ray can be used as the initial investigation. However, a confirmatory diagnosis is made by computed tomography of chest and a prompt repair is advised to avoid future complications such as strangulation or incarceration. Repair can be either open or laparoscopic through a thoracic approach or an abdominal approach, although a thoracic approach is preferred in case of additional thoracic abnormalities.[6] In our patient who did not have any such complications, a transabdominal approach was preferred due to lack of availability of Pediatric laparoscopic setup. Patient had no complications post operatively and had a complete occlusion of defect with no signs of recurrence.

Case Report

A 1 year 4 months-old female was brought to the pediatric OPD for primary assessment of any developmental delays with history of bilateral CTEV and other associated congenital anomalies. On physical examination, the patient was conscious, alert, afebrile, with a pulse rate of 86/min, oxygen saturation 98% at room air , respiratory rate of 22/min. On local examination the patient had macrocephaly, with wide spread eyes, flat nasal bridge and frontal bossing present. Ophthalmic examination revealed a right medial rectus palsy and a squint in her right eye. Orthopedic examination showed contractures present in the middle two fingers of her hands. Lower limb examination showed hyperextension of knee joint and bilateral equinovarus. Systemic examination was within normal limits with both heart sounds heard no murmurs present, bilaterally equal air entry on respiratory system examination. Abdomen was soft non-tender, no organomegaly with bowel sounds present in all four quadrants and no neurological deficits. [Gross motor – sits without support, fine pincer grasp present, language bi-syllable. And social anxiety + eats food on her own spilling + DQ 53%). Routine chest X-ray done in both antero-posterior and lateral view was suggestive of herniation of abdominal contents in thorax. HRCT chest, a 100% accurate diagnostic modality, revealed a defect of size 1.9 cm in the left hemidiaphragm anteriorly, with small bowel loops and omentum as contents herniated into the thoracic cavity. Ultrasonography and 2D ECHO done to rule out any other congenital malformations was reported normal. The patient was prepared for an elective open surgical repair of the Morgagni hernia due to risk of incarceration. Other relevant investigations for the pre-anesthetic fitness were within normal limits. Under all aseptic precautions, general anesthesia was administered with patient in supine position a right thoracic approach was undertaken. Trans-abdominal approach A midline skin incision was taken . Subcutaneous tissue separated and peritoneum opened. A 6x3 cm defect in diaphragm on the left with herniation of small bowel loops visualized. Sac is present in 90% cases and needs to be excised. However, in our study sac was not present.

Defect closed in two layers with 1-0 prolene sutures without the use of a mesh. Hemostasis achieved. Abdomen closed in layers. In case of emergency, open laparotomy is done. Post operatively patient was stable, with no observed complications and discharged on day 7. The patient was stable at week 1 and week 4 follow-up.

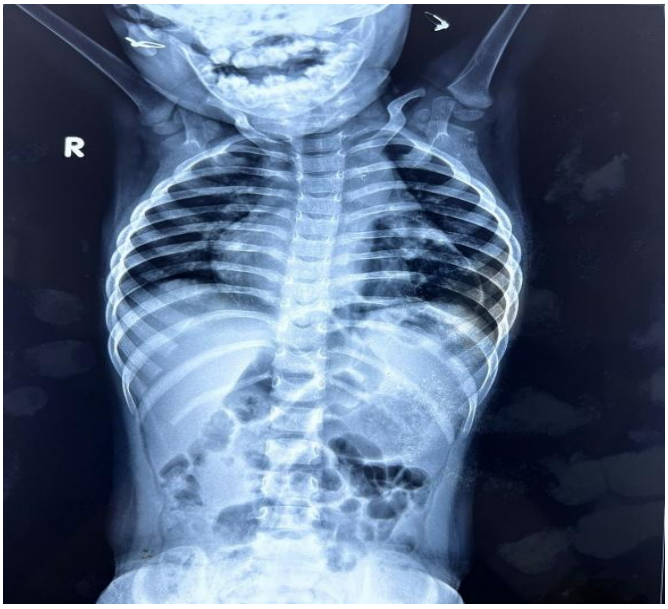

Fig. 1 : A chest X-ray displaying air and gas above the leftfig

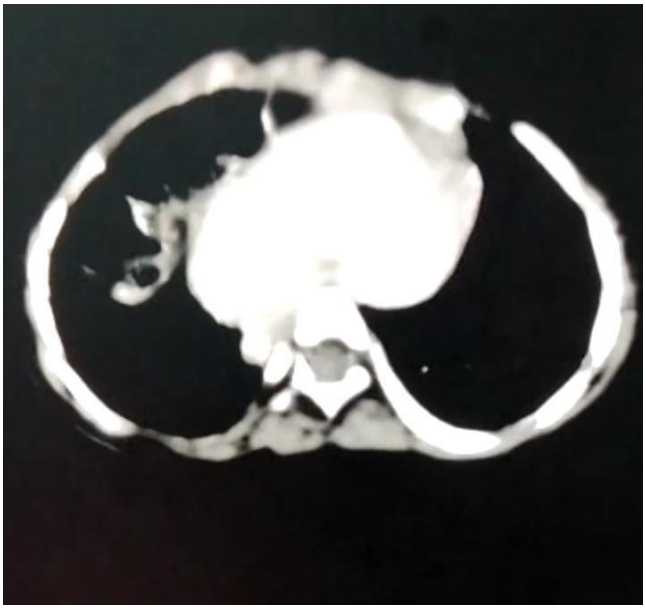

Fig. 2 A CT scan showing a left morgagni herniadiaphragm, indicating a diaphragmatic hernia.

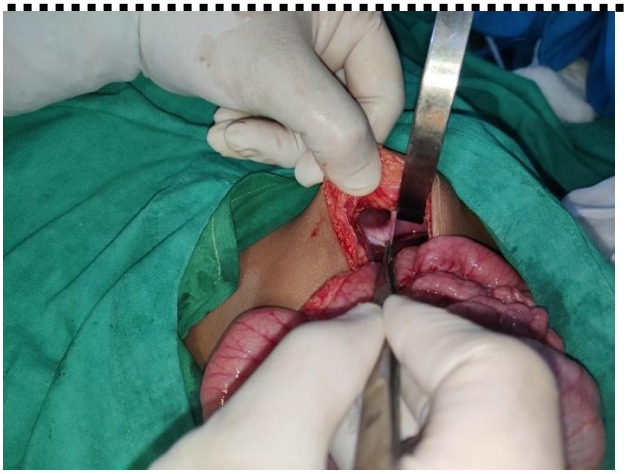

Fig.3: Intraoperative image showing defect of diaphragmatic Hernia.

Discussion

Congenital diaphragmatic hernias are a prevalent congenital anomaly with an incidence of 1 in 2000-5000 births.[7] They are associated with a high risk of mortality in children and can be subdivided into four types as follows: Bochdalek hernia, Morgagni hernia, eventration of diaphragm and central tendon defects. [8 9]

Morgagni hernia is the rarest type with an incidence reported of only 2-5% of all congenital diaphragmatic hernias.[11 12] It occurs as a result of persistent defect and failure of fusion of septum transversum with the anterior wall, and are more common on the right side around 90% as compared to 2% on the left due to pericardial attachments which provide support to the left side of diaphragm. About 8% are bilateral.[13 14]

It is less symptomatic as pulmonary hypoplasia is uncommon and 50% are reported as an incidental finding. Symptomatic cases in children present with respiratory findings like repeated chest infections, respiratory distress, pulmonary hypoplasia or pulmonary hypertension.[15 16] In adults, presentation is varied with symptoms ranging from non-specific ones such as flatulence, indigestion or that of bowel obstruction or strangulation. [17]

They are associated with a number of other congenital or developmental malformations such as congenital heart disease, malrotation of bowel or chromosomal anomalies, such as trisomy 21. [18 19]

It is treated surgically, with equivalent results and a low rate of recurrence irrespective of the approach, laparoscopic or open laparotomy or thoracotomy. A mesh reinforcement can be done in case of large hernias.[20] In our case, a transabdominal approach and suturing the defect close without mesh reinforcement was the preferred choice of surgery.

Conclusion

We present a rare case of incidental Morgagni hernia in a 1 year old female, with bilateral CTEV, dysmorphic facies, squint and macrocephaly along with developmental delay who was managed successfully with an elective hernia repair without any post-surgical complications and early recovery. The pre-operative diagnosis was done by a chest radiograph, and confirmed by a computed tomography scan. The various things to keep in mind are prompt action to avoid any complications associated with the hernia, patients' profile, symptoms and outcomes. Open repair gave a satisfactory outcome with quick recovery in our case.The treatment of Morgagni Hernia is primary surgical repair which can be done either trans-thoracically or transabdominally. It is advised that surgical repair should be done even in asymptomatic cases.

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