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CASE REPORT

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Use of the transabdominal approach to repair Morgagni hernia in a 28-year-old symptomatic female: A case report

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Abstract

Morgagni's hernia is a congenital diaphragmatic hernia, which represents only 3% of all diaphragmatic hernias. Herein, we report a case of a 28-year-old symptomatic female patient with Morgagni's hernia who underwent a transabdominal surgery for hernia repair and mesh placement.

KEYWORDS

diaphragmatic hernia, mesh, Morgagni hernia, symptomatic, transabdominal, transthoracic approach

1 | INTRODUCTION

Morgagni's hernia (MH) is the rarest type of congenital diaphragmatic hernias (DHs), representing only 3% of all DHs.[1] It occurs inside the Morgagni foramen, which is also known as the sternocostal triangle and is located in a triangular space in the anterior aspect of the thoracic cavity.[2] Generally, MH is found as a sac within the abdominal viscera (AV) on the right side of the sternum in the thoracic cavity. Both left-sided and bilateral forms are uncommon. In the majority of cases, MH stays asymptomatic until adulthood, which leads to a delayed diagnosis and discovery by coincidence during a non-related workup.[3] Many studies showed that MH could be associated with different congenital defects and several syndromes: Down's syndrome, Noonan's syndrome, Turner's syndrome, and many others.[4] In some cases, it could be presented with respiratory symptoms like frequent chest infections, which are common in children, or gastrointestinal (GI) symptoms such as bowel obstruction.[5] Surgery can be performed as an effective therapy by either a transthoracic approach or transabdominal (TA) for both symptomatic and asymptomatic patients.[3]

2 | CASE PRESENTATION

A 28-year-old female patient was admitted to the thoracic surgery department with dyspnea, palpitation, and a sense

of heaviness in the chest with no abdominal symptoms and only a medical history of two cesarean sections. However, the symptoms persisted and worsened for years, especially (pregnancies and lying supine). Physical examination, laboratory findings, and electrocardiogram were within normal limits. The chest X-ray demonstrated a suspected loop of the bowel on the right side of the thorax cavity (Figure 1). A computed tomography (CT) of the chest and abdomen revealed a DH in the right hemithorax which contained the transverse colon, loops of the small bowel, and omentum in the hernia sac (HS) but no liver/stomach (Figure 2). Surgery was performed by open laparotomy and the defect measured approximately 10–15 cm in size. The bowel loops and rest of the HS contents could be pulled easily from the chest back to the abdominal cavity through the defect; only minor adhesions between the bowel loops were present and were lysed. The large hernia orifice was repaired, and a mesh was placed and attached with sutures to the edges of the defect for further support (Figures 3-4). The HS was not resected and was left in the chest cavity. No complications occurred during the surgery. Post-operation, the patient recovered well and was discharged 6 days after surgery. One month of follow-up, physical examination was unremarkable, and the chest X-ray showed no hernia recurrence or complication related to the HS (Figure 5).

3 | DISCUSSION AND CONCLUSION

Most congenital diaphragmatic hernias occur through the left posterolateral foramen of Bochdalek, and patients are usually symptomatic at birth. The Morgagni hernia, on the other hand, is rare in children and only represents 1%–6% of all types of congenital diaphragmatic hernia. It is usually asymptomatic in childhood and discovered accidentally.[6] Giovanni Morgagni was the first one who described these DHs in 1769.[3,7] Although the defect is present since birth, an MH may remain asymptomatic until adulthood or present with relatively mild and nonspecific symptoms and can often be discovered incidentally on a routine X-ray.[4,8] It begins small to be expanded over time, allowing the AV to herniate into the thorax cavity. The HS is present in 90% of cases and it most often contains omentum and parts of the transverse colon, other abdominal organs can also be found like the stomach and parts of the small bowel/the liver.[9] Commonly, it presents with GI symptoms (bloating, fullness, discomfort in the abdomen, or subcostally) or respiratory symptoms (dyspnea and chest discomfort).[3] In childhood, it is usually asymptomatic but can present with repeated chest infections or with gastrointestinal symptoms which can be easily missed. Although colonic perforation and intestinal obstruction have been reported, this is a rare occurrence.[6] Herein, the patient presented with chest discomfort and other respiratory symptoms. No significant abdominal symptoms were present. The MH diagnosis is based on chest X-rays, CT scans, and GI tract contrast radiography.[9] On a typical chest X-ray the hernia presents as a round shadow in the cardiophrenic angle, a lateral film may reveal its location anterior close to the anterior chest wall and the diaphragm. This shadow may appear to be opaque and homogenous if the hernia contains solid contents like the omentum, but the air could be visible in the mass in case it contains parts of the bowel, mostly the transverse colon.[3] Using a CT scan can assist in further investigating any doubted mediastinal mass on X-ray, and thereby can be considered a reliable tool in the preoperative workup of an MH. The CT scan of MH could be variable according to the HS content. However, it may be characterized as a pericardial fat density with linear densities which are consistent with omental blood vessels, an abnormally high position of the transverse colon, or visible bowel loops within the chest.[7] An empty HS or a sac with solid contents may complicate or delay the diagnosis.[9] A differential diagnosis includes a lipoma, pleuropericardial cyst, thymoma, diaphragmatic cyst, or a pericardial fat pad.[8] If parts of the bowel are present in the HS, a radiographic study with a barium enema and MRI can be very useful in confirming the diagnosis.[3,9] A chest X-ray showed an air-containing mass in the right cardiophrenic angle adjacent to the heart in our case (Figure 1). A CT scan showed the presence of bowel loops in the chest (Figure 2). Surgery is the definitive treatment and recommended for both symptomatic and asymptomatic cases to avoid complications such as volvulus or strangulation. Moreover, there is still some controversy

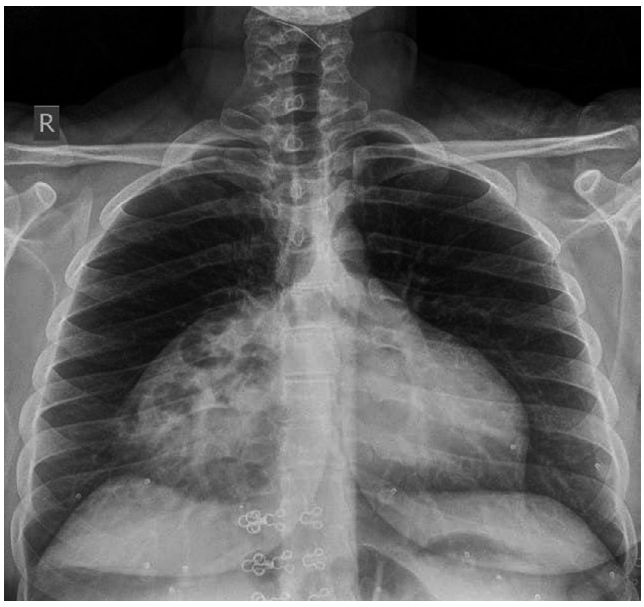

FIGURE 1 Chest X-ray image showing a suspected loop of the bowel on the right side of the chest

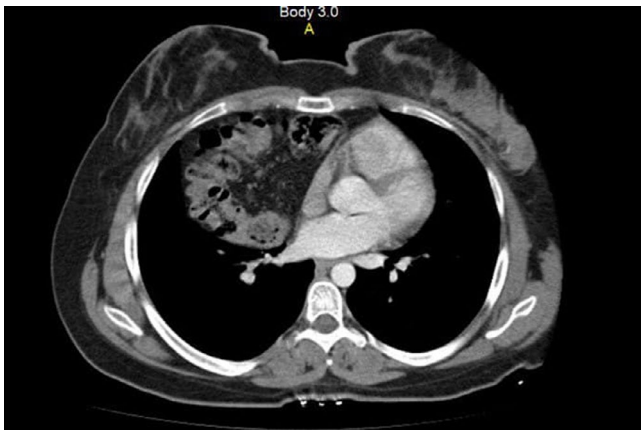

FIGURE 2 Axial CT scan showing the herniated bowel on the right side of the chest

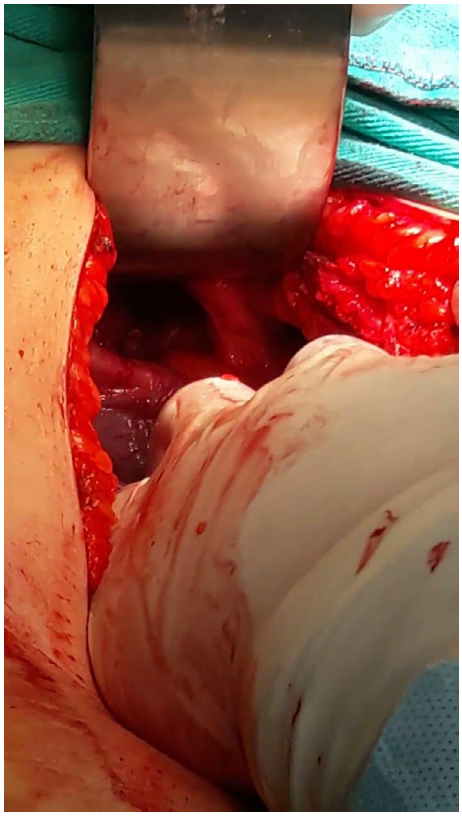

FIGURE 3 Transabdominal surgery showing the orifice of the Morgagni hernia

about the preferred surgical technique. Some prefer the TA, while others advocate the transthoracic, laparoscopic, or thoracoscopic approach.[4] The TA is usually preferred because of better surgical exposure for easier hernia reduction. After laparotomy, the adhesions are reduced, and the bowel and other hernia contents are reduced back into the peritoneal cavity. The margins of the hernial sac are located, and the sac is usually resected. In our case, the hernia sac was not resected, and no complications such as seroma or recurrences occurred. Sac excision is considerably

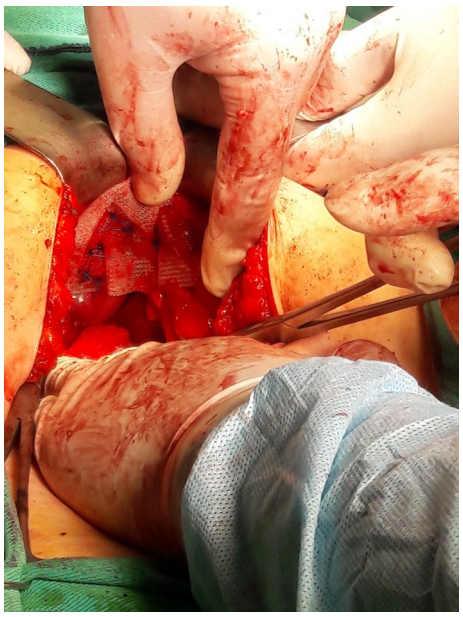

FIGURE 4 Intraoperative image showing the mesh that was used for repairing the defect

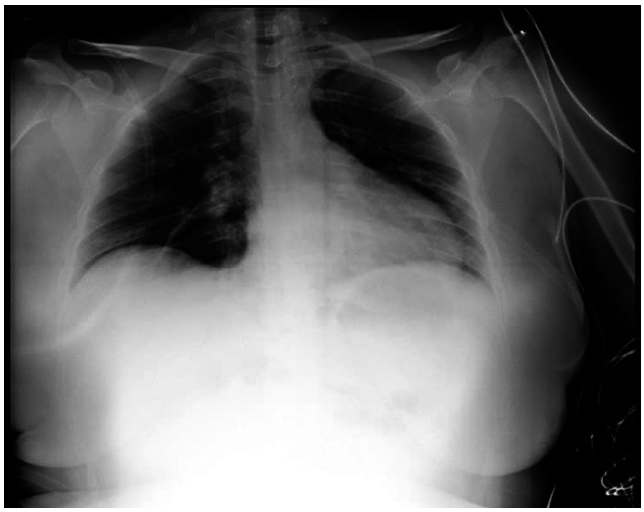

FIGURE 5 One month of follow-up, a chest X-ray image confirming that there is no hernia recurrence

controversial. Disadvantages of the excision may include pneumomediastinum or potential lung injury or injury to the pericardium or other mediastinal structures.[10] Although the laparoscopic approach has shown favorable results, it is not appropriate for cases that are considered surgical, like strangulation.[9] In general, small hernias can be repaired by direct suturing, whereas large defects usually require mesh repair.[4] Here, the TA was preferred, and a mesh was used to repair the defect (Figures 3-4). Recently Robotic MH repair emerged as a new promising minimally invasive approach that allows for the precise sac excision in addition to primary repair with mesh reinforcement.[11] In conclusion, this publication aims to demonstrate the challenges of diagnosing and managing Morgagni's hernia in adults.

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Not applicable.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

AUTHOR CONTRIBUTIONS

Marah Mansour: contributed to the design of the study, data collection, data interpretation and analysis, drafting, critical revision, and approval of the final manuscript. Ammar Ismail contributed to data collection, data interpretation, and analysis, critical revision, drafting, and approval of the final manuscript. Maria Alfathi contributed to data interpretation and analysis, critical revision, drafting, and approval of the final manuscript. Tamim Alsuliman contributed to drafting, critical revision, approval of the final manuscript.

ETHICAL APPROVAL

Not applicable.

CONSENT

Written informed consent was obtained from the patient for publishing this case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

GUARANTOR

Adnan Ismail is the guarantor of this work. Adnan Ismail is the supervisor and contributed to patient care, drafting, critical revision, and approval of the final manuscript.

DATA AVAILABILITY STATEMENT

Not applicable. All data (of the patient) generated during this study are included in this published article and its supplementary information files.

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