

CAS CLINIQUE / CASE REPORT

MORGAGNI HERNIA

A Case Report and a Review of the Literature

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ABSTRACT • Introduction: Herniation through right sternocostal hiatus called Morgagni hernia (MH), constitutes about 3% of all cases of congenital diaphragmatic hernias. It is diagnosed with a lateral chest X-ray and confirmed with a barium enema or computed tomography. The defect can be repaired by a transabdominal, transthoracic approach, or via minimal invasive surgery. **Case presentation:** An 81-year-old female with a history of cholecystectomy presented to our center with nausea and vomiting for the last two weeks. **Surgical technique:** The laparoscopic repair of the MH was carried out under general anesthesia, and the patient was positioned in supine position. A segment of transverse colon with omentum, the round and the falciform ligament, the antro-pyloric region along with the first portion of the duodenum were seen herniating into the hernia sac and were easily reduced without significant adhesion to the sac. The defect was closed with non-absorbable 1-0 suture, using transfascial sutures with the knots residing in the subcutaneous plane. A polypropylene mesh of 20 x 15 cm was inserted into the abdominal cavity through 10 mm port, and fixed to the anterior abdominal wall and edge of the diaphragmatic defect with tackers. **Discussion:** There is no guidelines to date on the optimal surgical approach since open abdominal, open thoracic as well as minimal invasive techniques have all been practiced. In our patient we did not resect hernia sac as we judged that excision was difficult and could have led to damage to the pericardium or mediastinal structures. Closure of the edges of the hernia was done with extracorporeal knots in the subcutaneous plane and we consider the transfascial sutures to be a practical and reliable way to close the defect. Fixation of the mesh was done using tackers. We think that this technique should be the approach of choice for the treatment of MH.

Keywords : Morgagni hernia; diaphragmatic hernia; laparoscopic repair

INTRODUCTION

A triangular anterior diaphragmatic space located between the muscular fibers of the xiphisternum and the costal margin defines the foramen of Morgagni or the sternocostal hiatus [1]. Herniation through right sternocostal hiatus is called Morgagni hernia (MH) and through

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RÉSUMÉ • Introduction: La hernie diaphragmatique à droite du hiatus sternocostal appelée hernie de Morgagni (MH), constitue environ 3% de tous les cas de hernies diaphragmatiques congénitales. Elle est diagnostiquée par une radiographie thoracique latérale et confirmée par un lavement baryté ou une tomographie. Le défaut peut être réparé par une approche transabdominale, transthoracique, ou par une chirurgie invasive minimale. **Présentation du cas :** Femme de 81 ans ayant comme antécédent chirurgical une cholécystectomie s'est présentée souffrant de nausées et de vomissements depuis deux semaines. **Technique chirurgicale :** La réparation laparoscopique de la MH a été effectuée sous anesthésie générale. Un segment de côlon transverse avec le grand épiploon, le ligament rond et le ligament falciforme, la région antropylorique avec la première portion du duodénum ont été observés dans le sac herniaire et ont été facilement réduits sans adhésion significative au sac. Le défaut a été fermé avec une suture non absorbable 1-0, en utilisant des sutures transfasciales avec les nœuds résidant dans le plan sous-cutané. Un maillage de polypropylène de 20 x 15 cm a été inséré dans la cavité abdominale par un orifice de 10 mm et fixé à la paroi abdominale antérieure et au bord du défaut diaphragmatique avec des tackers. **Discussion :** Il n'existe pas de directives à ce jour sur l'approche chirurgicale optimale, car les techniques abdominales ouvertes, thoraciques ouvertes ainsi que les techniques invasives minimales ont toutes été pratiquées. Chez notre patiente, nous n'avons pas résectionné le sac herniaire car nous avons jugé que l'excision était difficile et pourrait avoir causé des dommages au péricarde ou aux structures médiastinales. La fermeture des bords de la hernie a été faite avec des nœuds extracorporels dans le plan sous-cutané et nous considérons les sutures transfasciales comme un moyen pratique et fiable pour fermer le défaut. Nous pensons que cette technique devrait être l'approche de choix pour le traitement de la MH.

Mots-clés : hernie de Morgagni; hernie diaphragmatique; réparation célioscopique

left sternocostal hiatus is called Larrey hernia [2]. MH constitutes about 3% of all cases of congenital diaphragmatic hernias [3]. In childhood, patients can present with respiratory symptomatology, whereas in adults usually MH is asymptomatic and most commonly diagnosed incidentally on a chest X-ray, but rarely some patients may present with nonspecific symptoms as dyspnea, cough,

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chest pain, and obstruction symptoms [4]. MH is diagnosed with a lateral chest X-ray and confirmed with a barium enema or computed tomography [5]. The defect can be repaired by a transabdominal or transthoracic approach; however, in recent years, there has been a shift towards minimal invasive repair surgery [6]. We hereby present the case of a patient with MH treated successfully by laparoscopy.

CASE PRESENTATION

An 81-year-old female with a history of cholecystectomy in 2013 presented to our center with nausea and vomiting for the last two weeks.

CT-scan showed right diaphragmatic hernia containing the antro-pyloric region of the stomach with part of the transverse colon (Figure 1). Gastroscopy revealed an esophagitis with no signs of malignancy on biopsies.

SURGICAL TECHNIQUE

The laparoscopic repair of the MH was carried out under general anesthesia, and the patient was positioned in supine position. The surgeon stood between the legs, cameraman to his left and second assistant to his right.

A 10-mm trocar port was inserted at the umbilicus, and a 30° telescope was used. Two additional 5 mm ports were inserted, one on each side of the midline, in the midclavicular line. The patient was given an anti-Trendelenburg position to allow the bowel to move down towards the pelvis. After preliminary assessment, a 3 x 6 cm anterior defect in the diaphragm was visualized. A segment of transverse colon with omentum, the round and the falciform ligament, the antro-pyloric region along with the first portion of the duodenum were seen herniating into the hernia sac and were easily reduced without significant adhesion to the sac (Figure 2). The round and falciform ligament were sectioned to allow a proper application of the mesh. The defect was closed with non-absorbable 1-0 suture, using transfascial

sutures with the knots residing in the subcutaneous plane (Figure 3). A polypropylene mesh of 20 x 15 cm was inserted into the abdominal cavity through a 10 mm port, and fixed to the anterior abdominal wall and edge of the diaphragmatic defect with tackers (Figure 4).



Figure 2. Laparoscopic view of MH



Figure 3. Closure of the diaphragmatic defect

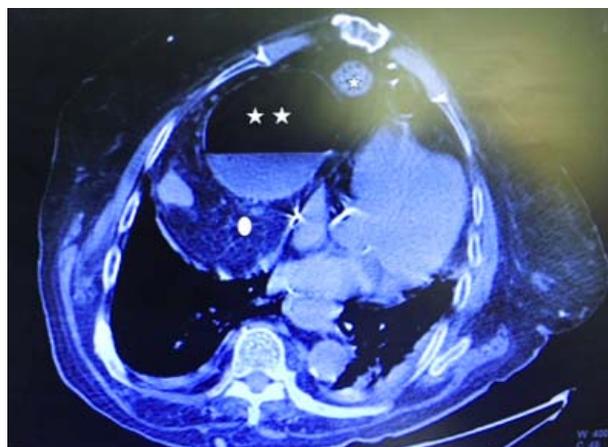


Figure 1. CT scan revealing MH

* transverse colon ** gastric antrum ● omentum

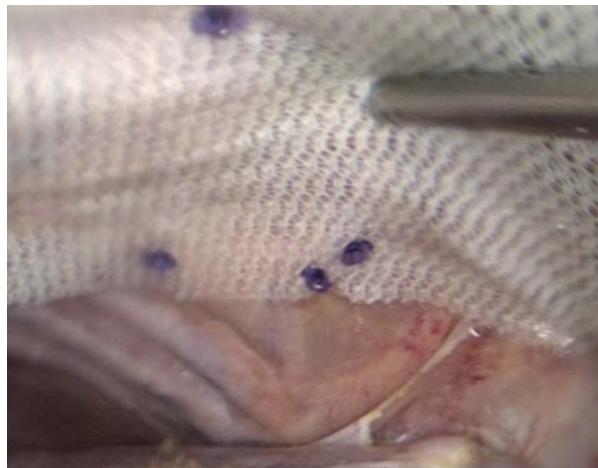


Figure 4. Fixation of the mesh

At the left cranial region (the region of the heart), we fixed the mesh using two intracorporeal prolene knots, with small bites.

The patient was admitted to the surgical intensive care unit for the first postoperative day and then discharged 48 h after surgery. No complications were noted; postoperative CT-scan was satisfactory.

Follow-up has been done for 10 months with no recurrence to date.

DISCUSSION

An Italian anatomist and pathologist, Giovanni Battista Morgagni [7], was the first to describe an uncommon variety of diaphragmatic hernia in 1769. In this hernia, the abdominal viscera herniate into the mediastinum through the foramen of Morgagni, a defect in the costosternal trigones located just posterolateral to the sternum on either side of the xiphoid [8]. A congenital lack of fusion of the pars sternalis with the costal arches leads to this defect in the pleuroperitoneal membrane anteriorly.

Despite their congenital etiology, MH are detected more commonly in adults [9]. Obesity, multiparity, chronic cough, chronic constipation and chronic obstructive pulmonary disease (COPD) may predispose to MH [10]. Our patient, obese, presented with poorly controlled COPD. Most MH are asymptomatic, but may present with retrosternal discomfort, dyspnea, tightness in the chest, or symptoms of digestive obstruction [10]. MH is usually found incidentally on chest radiographs as a pericardiophrenic angle density, and diagnosis can be established with CT scan finding a retrosternal or parasternal mass representing a combination of omentum and an air-containing viscus [11]. Surgery is the treatment of choice for patients with MH even when asymptomatic to prevent possible complications of incarceration, intestinal obstruction and strangulation [10]. However, there is no guidelines to date on the optimal surgical approach since open abdominal, open thoracic as well as minimal invasive techniques have all been practiced. The first laparoscopic repair of MH was described by Kuster *et al.* in 1992 [12]. Hernia sac excision has considerable controversies [12]; in our patient we did not resect hernia sac as we judged that excision was difficult and could have led to damage to the pericardium or mediastinal structures. To date we did not have any recurrence. Closure of the edges of the hernia was done with extracorporeal knots in the subcutaneous plane and we consider the transfascial sutures to be

a practical and reliable way to close the defect. Since the diaphragmatic musculature in MH is weak and attenuated we decided to use composite prostheses (expanded polytetrafluoroethylene: ePTFE). To our knowledge, no recurrences were ever seen when a prosthetic material was used. Fixation of the mesh was done using tackers. We think that this technique should be the approach of choice for the treatment of MH.

In conclusion, we report this case of MH due to its rarity, with treatment possible by a simple and reproducible surgical approach.

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