A Rare Case of Laparoscopic Repair of Simultaneously Occurring Morgagni and Paraesophageal Hernias

Zu-Li Zhou, MD, Hao Li, MD, Jian-Feng Li, MD, Yan-Guo Liu, MD, Chong Wang, MD, and Jun Wang, MD

Simultaneously occurring Morgagni hernia and paraesophageal hernia is an extremely rare clinical condition with only six case reports in the English-language literature and only two laparoscopic repair reports. We report a 73-year-old woman with both Morgagni hernia and paraesophageal hernia who underwent successful laparoscopic repair of the hernia defects using transabdominal wall suturing. The laparoscopic operation can provide excellent exposure and repair the hernia defect easily with minimal invasiveness and fewer complications. This case report reported the concurring Morgagni and paraesophageal hernias and validated the feasibility of laparoscopic repair both hernias simultaneously.

Keywords: hernias, hiatal hernia, minimally invasive surgery

Introduction

Simultaneously occurring Morgagni hernia (MH) and paraesophageal hernia is an extremely rare clinical condition with only six case reports in the English-language literature (Table 1). Within the six case reports, the hernias defect were repaired using laparoscopic techniques only in two cases. Herein, we report a case of successful laparoscopic repair of concurring Morgagni and paraesophageal hernias.

Case Report

A 73-year-old female patient with 20 year history of acid regurgitation and retrosternal burning, presented with acute chest pain and shortness of breath after meal. Physical examination revealed bowel sounds upon chest auscultation. Chest X-ray showed an air-fluid level in the cardiac shadow with a widened lower mediastinum (Fig. 1A). Chest computed tomography (CT) scan showed a mass composed mainly of fat in the right cardiophrenic angle compressing on the heart, and another mass made of fat and bowel inside in the left posterior mediastinum (Fig. 1B). A paraesophageal hernia was verified by upper gastrointestinal contrast X-ray (Fig. 1C). Subsequent 24 h pH monitoring and manometric examination of esophagus revealed the average pressure of lower esophageal sphincter was 10 mmHg and mild gastroesophageal reflux disease (DeMeester score 18.5). The final diagnosis of this patient was MH, paraesophageal hernia (type III) and gastroesophageal reflux disease.

In consideration of the patient’s symptoms and possible severe complications caused by the two hernias, laparoscopic hiatal reconstruction with fundoplication was indicated. The patient was placed in the low lithotomy position, with the surgeon situated between the patient’s legs. After establishing pneumoperitoneum and introducing trocars, standard laparoscopic survey was carried out. A MH containing omentum with a diameter of about 3 cm was noticed (Fig. 2A). The omentum and transverse colon...
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were removed from the hernia sac relatively easily using two graspers. We also found the gastric fundus herniated into the thoracic cavity at a diameter of about 5 cm (Fig. 2B). After the lower esophagus and gastroesophageal junction were successfully exposed, the stomach was pulled back to the abdominal cavity, and then the hiatus was reconstructed with interruptedly tied 2/0 prolene sutures behind the esophagus. An electronic gastroscopy was also performed during the reconstruction to assure the lower esophagus was unobstructed and the dentate line was about 3 cm below the hiatus. A 270-degree Toupet fundoplication was then performed to complete the hiatal closure. A 3 cm incision was made below the xiphoid process to completely close the MH with transabdominal wall suturing using interrupted vertical mattress nonabsorbable sutures (Fig. 2C).2)

The patient was not allowed to eat or drink until she passed gas three days post-operation, at which time she was allowed to resume fluids. The postoperative period was uneventful and the patient was discharged seven days post operation. At one-month follow-up, chest X-ray showed normal signs without masses or air-fluid level in the chest (Fig. 2D). There were no gastric complaints or shortness of breath at follow-up 6 months after discharge.

Fig. 1 Preoperative chest X-ray (A) and transverse section of chest computed tomography (B). Upper gastrointestinal contrast X-ray confirmed the diagnosis of paraesophageal hernias (C).

Fig. 2 Laparoscopic view of the Morgagni hernia with omentum and colon herniating into the chest (A), and the obviously wider esophageal hiatus with the gastric fundus herniating into the chest (B). Closure of the Morgagni hernia using interrupted vertical mattress sutures with the abdominal wall (C). The postoperative chest X-ray at one-month follow-up (D).
MH was first described in 1769 by Giovanni-Battista Morgagni. It is rare and accounts for only 3% of all congenital diaphragmatic hernias.\(^7\) About 91% MH is found on the right side, with omentum or colon and omentum constituting the most common contents of the hernia sac.\(^7\)

The MH in this case was in the right side and the content of the hernia sac was omentum and colon. Simultaneously occurring Morgagni and paraesophageal hernias is extremely rare with only two cases reported laparoscopic repair in English literature (\textit{Table 1}).\(^4,5\)

There is a common belief that MH is usually asymptomatic, thus often discovered accidentally. However, in a review of 298 cases of adult MHs, Horton et al. found 72% of patients presented with pain and pulmonary complaints directly related to their MHs.\(^7\) In our review of previous cases of concurring hernias, all the patients had some symptoms. Common symptoms, including shortness of breath, dyspnea, retrosternal pain or pressure and abdominal discomfort, are usually related to the content of the hernia or the pressure in the chest. More severe complications such as bowel obstruction and bleeding could also happen. The most common diagnostic method used to evaluate patients with MH is the chest X-ray, which can reveal a shadow in the cardiac angle. The diagnosis can be confirmed by chest CT with or without contrast. Chest magnetic resonance imaging (MRI) can help identify the omentum in the sac. With the typical manifestations in her chest CT, we did not think that chest MRI was so necessary for this patient.

Due to the threat of serious complications caused by MH and paraesophageal hernia, most surgeons agree that surgery is indicated even in asymptomatic patients.\(^5,7\) Compared with traditional open surgical techniques, laparoscopic operation has become the main method to repair both MH and paraesophageal hernia, with the advantage of minimal invasiveness and fewer complications. The abdominal approach can provide excellent exposure to allow full exploration of the hernia sac and bilateral diaphragm, provide easier access when narrowing the hernia defect, and allow for simultaneously performing other procedures such as fundoplication.\(^5,8\)

There are two common methods used to repair the MH defect. Some surgeons use plastic meshes to reach a tension-free repair. However, the mesh can cause complications including adhesion and infection. Others prefer to narrow the hernia defect with nonabsorbable sutures directly as a safe and effective method.\(^7\) Management of the hernia sac is controversial because the natural history of an unexcised hernia still remains unclear. Some surgeons think that removing the sac is not necessary and the risk of injuring thoracic structures due to intrathoracic adhesions is high, while others think resection of the sac is safe and adhere more strictly to classic surgical principles of hernia repair.\(^7\)

In conclusion, we report a case of successful laparoscopic repair of simultaneously occurring Morgagni and paraesophageal hernias using the primary sutures to

<table>
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<tr>
<th>Ref.</th>
<th>Year</th>
<th>Author</th>
<th>Age</th>
<th>Gender</th>
<th>Symptom</th>
<th>Treatment</th>
<th>Complications</th>
<th>Follow-up</th>
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2015 Present case 73 Female Chest pain, dyspnea Laparoscopy None 6 months

\textit Table 1 Simultaneously occurring Morgagni and paraoesophageal hernias
close the Morgagni defect, which validated the feasibility of laparoscopic repair both hernias simultaneously.

Disclosure Statement

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References