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CASE REPORT

Successful Laparoscopic Repair for Large Paraesophageal Hiatal Hernia Presenting Cardiopulmonary Problems: Two Case Reports

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Large paraesophageal hiatal hernia, which is a type III hiatal hernia, involves the combined herniation of both the esophagogastric junction and fundus. Different symptoms are noted in patient with hiatal hernia, the most common being gastroesophageal reflux disease-related symptoms. Herein, we present two cases of large paraesophageal hiatal hernia with symptoms mimicking cardiopulmonary disease, which were successfully treated by laparoscopic hernia repair.

Key words: Cardiopulmonary problems, laparoscopic repair, mimicking, paraesophageal hiatal hernia

INTRODUCTION

Hiatal hernia is a medical condition involving the herniation of abdominal organs through an opening of the diaphragm. Four types of hiatal hernias have been defined, and a paraesophageal hiatal hernia is often regarded as type III, which combines both herniation of the esophagogastric junction and fundus. Different symptoms are noted in patients with hiatal hernia, the most common being gastroesophageal reflux disease (GERD)-related symptoms such as heartburn, regurgitation, and dysphagia. However, patients with type III hiatal hernia are either asymptomatic or have nonspecific symptoms. Herein, we present two cases of large hiatal hernia with symptoms mimicking cardiopulmonary disease.

CASE REPORTS

Case 1

An 82-year-old female presented with intermittent epigastric pain for 1 month and increased dyspnea for 1 day. The patient had underlying chronic diseases including hypertensive cardiovascular disease, gastric ulcer, GERD, and left 7th cranial nerve schwannoma. In the physical examination, the vital signs were stable and palpation of the abdomen revealed epigastric tenderness. Besides, a mild decrease in the breathing sound of the left lung field was also noted. Laboratory data showed the following results: white blood cell, 3850/mm^3; neutrophil, 57.6%; C-reactive protein, 0.22 mg/dL, and all biochemical parameters were within the normal range. Chest plain film showed cardiomegaly, atherosclerosis of the aorta, and the cardiac shape seemed to be overlapped by a hemispherical, hollow shadow. In addition, contrast enhanced computed tomography (CT) of chest and abdomen revealed long segmental edematous wall thickening of the ileum and a large paraesophageal hiatal hernia. The diagnosis of mesenteric ischemia was made and emergent surgical intervention with adhesiolysis and segmental resection of the small intestine was performed. The patient was transferred to the intensive care unit postoperatively for 3 days and discharged in a stable condition 10 days after surgery. However, she still complained of intermittent dyspnea after symptomatic treatment with a proton pump inhibitor (PPI). After checking the upper gastrointestinal (GI) series with barium contrast, hiatal hernia repair was planned as an elective surgery [Figure 1]. The surgical intervention was performed with primary suture and fundoplication, and no symptoms of dyspnea, reflux, or obstruction were reported at the 1-year follow-up.

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Case 2

The patient was a 70-year-old male who presented to the outpatient clinic with worsening chest tightness after meals. He had to lean forward to relieve the discomfort, especially after food ingestion. The patient denied having any underlying disease except GERD and was treated conservatively with oral PPI. The laboratory tests were unremarkable, and electrocardiography showed sinus rhythm. Chest plain film revealed a retrocardiac air bubble with an air-fluid level. In addition, contrast enhanced CT revealed a large paraesophageal hiatal hernia [Figure 2]. Upper GI endoscopy showed a gastric volvulus, could not view the duodenum. Surgical intervention was indicated due to the progressive symptoms and was performed with a relaxing incision along the left crural muscle, followed by cruroplasty of hernia defect. Nissen fundoplication was also performed to improve GERD. At the 2-year follow-up, the patient had a complete resolution of his preoperative symptoms, and no recurrence occurred.

DISCUSSION

The natural history of large hiatal hernia is poorly understood, but the potential mechanism may be attributed to the following reasons: (1) GERD-related esophageal scaring and shortening, leading to traction on the esophagogastric junction and (2) Chronic positive pressure increases the propensity of the stomach to herniate into the chest, exacerbating the GERD.[1] These two key points constitute the vicious circle and lead to hiatal hernia.

The diagnosis of hiatal hernia was initially suspected based on the retrocardiac air shadow seen on the chest plain film. Chest CT can provide more detail information including the type of hiatal hernia and presence of complications or not. One of our patients underwent upper GI series with barium contrast to determine the anatomy and size of the hernia 2 month after resection of the small intestine. An upper GI endoscopy is necessary preoperatively to exclude esophagitis, Barrett's esophagus, or other reasons that may change further medical treatment.[2]

The most common symptoms of hiatal hernia are gastric reflux, 83%; postprandial fullness, 56%; and dysphagia, 48%; however, many patients have minimal or no reflux symptoms, especially in paraesophageal hernia.[3] In patients with large hiatal hernia, atypical symptoms such as chest tightness and dyspnea may be present because of the compression effect to the heart and lung, mimicking a cardiopulmonary disease. Sahin *et al*. presented a case of large intra-abdominal hiatal hernia, which protruded into the intrathoracic cavity, compressed the left atrium and right pulmonary vein, and caused dyspnea.[4] In another case report, Chau *et al*. reported a case that presented to the emergency department with acute angina.[5]

The management of paraesophageal hiatal hernia has been widely debated for years. In asymptomatic or minimally symptomatic patients, watchful waiting is a reasonable initial management after considering the age and comorbidities.[6,7] For symptomatic paraesophageal hiatal hernia, elective surgical repair is the preferred option rather than emergency surgery because of the higher mortality rate.[8] However, for patient with complications such as gastric volvulus, obstruction, strangulation, or perforation, emergent repair should be considered.[7]

To repair a large paraesophageal hiatal hernia, three principles are required including: (1) hiatal hernia reduction, sac excision, and defect repair; (2) assessment of the esophageal

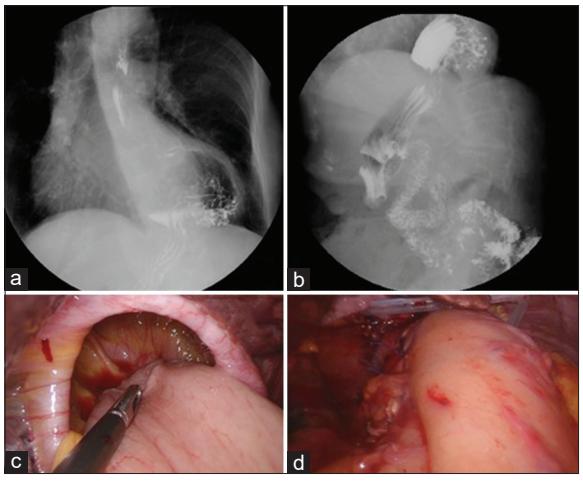

Figure 1: Case 1. (a and b) Upper GI series with barium contrast showing the herniation of both the esophagogastric junction and fundus. (c) After reduction of the stomach from the thorax, a large herniation sac is noted. (d) Suture cruroplasty and formation of the fundoplication

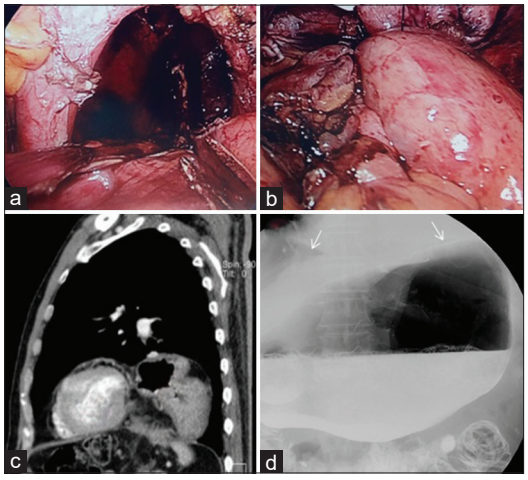

Figure 2: Case 2. (a) A large herniation sac. (b) Formation of the fundoplication. (c) A gastric volvulus is seen besides the heart, on the sagittal view of the contrast enhanced chest computed tomography. (d) After the laparoscopic hernia repair, the whole stomach is seen below the diaphragm (arrow)

length and the use of an esophageal lengthening procedure if needed; and (3) an antireflux procedure. There remains a debate as to whether mesh repair or suture cruroplasty is the better way to close the hiatal defect. A meta-analysis conducted in 2020 showed no statistically significant difference in favor of any of the interventions in the outcomes of recurrence, postoperative complications, or death.[9] Considering the chance of mesh-related symptoms such as dysphagia and epigastric pain, and complications such as mesh erosion and esophageal stenosis, we chose suture cruroplasty with Nissen fundoplication for both patients.[10]

CONCLUSION

Patients with large paraesophageal hiatal hernia may present with compressive symptoms mimicking cardiopulmonary disease. The laparoscopic repair of large paraesophageal hiatal hernia is an effective and safe management for elderly patients.

Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent

Informed consent was obtained from all individual participants included in the study.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patients have given their consent for their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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