THREE PORTS LAPAROSCOPIC REPAIR OF ADULT MORGAGNI HERNIA AND RARE SIMULTANEOUS PRESENTATION OF PARA-ESOPHAGEAL HERNIA WITH MORGAGNI HERNIA

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ABSTRACT

We report two case reports of Morgagni hernia repair. Our first case was of a 65-year-old white male who presented with abdominal pain in the upper right quadrant and right side of the chest for last three days. He was having three episodes of dark appearing vomiting associated with pain. He also had two episodes of hematemesis. The patient had gastric outlet obstruction with severe distension of stomach because of incarcerated small bowel and colon in the right-sided anterior diaphragmatic Morgagni hernia. Laparoscopic repair of incarcerated Morgagni hernia under general anesthesia planned. We report our second case on rare simultaneous presentation of Morgagni Hernia with type 3 a para-esophageal hernia. 60 years old female patient presented to the clinic with a follow-up of chest discomfort which was progressively increasing with shortness of breath and a chronic gastric reflux. Her vitals were within normal limits and had body mass index (BMI= 29.52kg/m2) (overweight category). Previous past medical history included multiple episodes of gastric regurgitation and cardiovascular intervention for coronary stenting. CT scan showed type 3 a paraesophageal hernia (gastroesophageal junction with the fundus of stomach displaced above the diaphragm). The patient had more than 30% of her stomach incarcerated in the chest as a paraesophageal hernia. The gastroesophageal junction was intra-abdominal after lysis of adhesion. Mesh was placed after posterior crural repair, followed by Nissen fundoplication over a 54 French bougie patient also had an incidental finding of a reducible Morgagni hernia through an anterior defect, followed by a repair without mesh. Esophago-gastro-duodenoscopy showed there was no evidence of any air leak with good valve creation on retroflection through a fundoplication.

KEYWORDS diaphragmatic hernia, Laparoscopy, Morgagni hernia, Paraesophageal hernia, Fundoplication

Introduction

Morgagni hernia (MH) is a congenital hernia comprise of approximately 1–3% of surgically managed diaphragmatic hernias. [1] It occurs in the retroxiphoid area. In the past Morgagni hernias have been treated through open surgical repair either by the transthoracic or trans-abdominal approach. Modern laparoscopic techniques have revolutionized the management of cases of Morgagni hernias. We are presenting two cases of Morgagni hernia and its repair through the laparoscopic procedure without mesh. However, our second case also has type 3 para-
esophageal hernia and its repair was done laparoscopically but with mesh.

**Case Report**

Sixty-five-year-old white male presented with abdominal pain in the upper right quadrant and right side of the chest for last three days. He was having three episodes of dark appearing vomiting associated with pain. He also had two episodes of hematemesis. The patient was well healthy, and abdominal examination was unremarkable. Examination of the respiratory system revealed reduced air entry at the right lower zone. Vitals including blood pressure, temperature, respiratory rate and pulse were normal. His past medical history was significant for seizures disorder for which she was taking Levetiracetam 500 mg b.i.d. and Diazepam 5 mg t.i.d. She had a history of stroke in the past. His labs were normal except white cell count of 18,000 x 109 per liter (L). CT scan abdomen without contrast showed a large defect in the right anterior dome of diaphragm measuring approximately 6 cm in transverse dimension and 6 cm in the anterior-posterior direction (fig. 1). There was herniation of the large bowel with a large amount of intraperitoneal fat through the gap in anterior diaphragm with ascending loop on the right side and descending loop to the left side of the spine near the midline. There was also herniation of the duodenal bulb and second part of duodenum into an above-described hernia. The patient had gastric outlet obstruction with severe distension of stomach because of incarcerated small bowel and colon in the right-sided anterior diaphragmatic Morgagni hernia.

Laparoscopic repair of incarcerated Morgagni hernia under general anesthesia was planned (Fig. 2). The patient placed in supine position. General endotracheal anesthesia performed. Prophylactic antibiotics administered. The patient was prepped and draped in a sterile fashion. A nasogastric tube, Foley catheter placement, and intravenous fluid resuscitation are already done, and automatic compression device was attached. First of all, left upper quadrant 5 mm incision made, and safe intraperitoneal access was obtained using Optiview trocar. Pneumoperitoneum then achieved, and then more trocars placed; one 12 mm trocar at the supra-umbilical position and two more 5 mm trocar on the right side and descending loop to the left side of the spine near the midline. Extensive lysis of adhesions was unremarkable. Examination of the respiratory system revealed reduced air entry at the right lower zone. Vitals including blood pressure, temperature, respiratory rate and pulse were normal. His past medical history was significant for seizures disorder for which she was taking Levetiracetam 500 mg b.i.d. and Diazepam 5 mg t.i.d. She had a history of stroke in the past. His labs were normal except white cell count of 18,000 x 109 per liter (L). CT scan abdomen without contrast showed a large defect in the right anterior dome of diaphragm measuring approximately 6 cm in transverse dimension and 6 cm in the anterior-posterior direction (fig. 1). There was herniation of the large bowel with a large amount of intraperitoneal fat through the gap in anterior diaphragm with ascending loop on the right side and descending loop to the left side of the spine near the midline. There was also herniation of the duodenal bulb and second part of duodenum into an above-described hernia. The patient had gastric outlet obstruction with severe distension of stomach because of incarcerated small bowel and colon in the right-sided anterior diaphragmatic Morgagni hernia.

**Case Report 2**

A 60 years-old female patient presented to the clinic with a follow-up of chest discomfort which was progressively increasing with shortness of breath and a chronic gastric reflux. Her vitals were within normal limits and had body mass index (BMI= 29.52kg/m2) (Overweight category). Past medical history included multiple episodes of gastric regurgitation and cardiovascular intervention for coronary stenting. There were no known allergies. The patient denied any consumption of alcohol or tobacco. A provisional diagnosis of incarcerated hiatal hernia deduced, and CT scan recommended with esophagogastroduodenoscopy. The patient had more than 30% of her stomach incarcerated in the chest as a paraesophageal hernia (Fig. 3).

The patient was brought to the operating room and placed in supine position. General endotracheal anesthesia performed. A Foley catheter and spontaneous compression devices also placed. First of all, a right upper quadrant 5mm incision was made, and safe intraperitoneal access was obtained using Optiview trocar technique. After that, another 12 mm trocar was placed in the right upper quadrant right to the midline and then another 5mm trocar passed to the upper left quadrant. A stab incision made in the epigastrium and Nathanson liver retractor placed. Diagnostic laparoscopy showed a large sized type 3 a paraesophageal hernia as well as a Morgagni hernia. The stomach wall was retracted back into the abdominal cavity as much as possible, but most of the fundus incarcerated into the hernia sac. First of all, the lesser sac was entered after dividing the pars flaccida using harmonic scalpel device. After that, we continued our dissection along the pharyngoesophageal membrane and hernia sac in the posterior mediastinum. The analysis was extended all around from right crus to the left crus in an inverted U shape. All of the gastroesophageal junction also identified and brought back to the abdominal cavity. Extensive lysis of adhesions was performed for about 30 minutes to reduce this hernia. The aorta, pleura, and right vagus nerve preserved. Retrogastric tunnel created along with placement of a Penrose drain around the gastroesophageal junction. A 54 French sized bougie placed through the esophagus into the stomach and fundus of the stomach was wrapped around the gastroesophageal junction and brought anteriorly and sutured with the body of the stomach with the figure of eight 2-0 Ethibond on Endo Stitch device x2. This completed the Nissen fundoplication at the point. After that, a piece of vicryl mesh was brought to the operating room field was inserted around the lower part of the esophagus, over the crura and left in place. Esophagogastroduodenoscopy then performed. Air leak test showed no air leak. Retroflexion confirmed the creation of a flap or valve from Nissen fundoplication around the esophagus. There was noted esophagoscopy passing through the gastroesophageal junction. Also, the wrap was loose enough, allowing the laparoscopic graspers to pass between the stomach and the flap itself without any problem. After a thorough suctioning and irrigation, two figure-of-eight stitches were performed in the diaphragm, by using Endo Stitch device, and these stitches were brought against the anterior abdominal skin, pulling the diaphragm against the anterior abdominal wall and shutting off the Morgagni hernia defect. At this point, the 12 mm trocar site in the upper right quadrant was closed using a Dermabond was then applied. The patient was extubated and was stable postoperatively.

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single 0 vicryl stitch on Carter-Thomason device. Dermabond was applied. The patient was extubated and stable.

**Discussion**

Morgagni hernia is an embryological defect that involves failure of the pleura-peritoneal membranes to fuse together anteriorly, leading to a defect in costosternal trigones. It is located at the level of 7th rib on either side of xiphoid and posterolateral to the sternum. Herniation through left sternocostal hiatus is called as Larrey Hernia while Morgagni hernia is a protrusion of contents through right sternocostal hiatus. On either side of hernia medial border is defined by ligamentum teres. Although it is more common on the right, in rare instances the hernia can be bilateral. [2] Computed tomography (CT) is a diagnostic modality in cases with MH. The common CT finding is a retrosternal or parasternal mass or fat density representing omentum or a combination of omentum and an air-containing viscus. [3]

The management of Morgagni hernia in either symptomatic or asymptomatic patients is surgical, as intestinal obstruction and incarceration, strangulation, or both may occur. One-third of patients remains asymptomatic. Pain or constipation is the most common complaint of patients with Morgagni hernia like our patient is having pain without any constipation. [4] Patients often complain only of vague epigastric or substernal fullness or dull right subcostal discomfort. Complete obstruction, incarceration or strangulation with necrosis of a hollow viscus contained in a foramen of Morgagni hernia is rare. However, incarceration of Morgagni hernia occurred in our case. In the study by Berardi et al., twelve patients had a complete bowel obstruction, and one had gangrenous intestine. [4] In a study done by Loong and Kocher, 7/47 children and 12/93 adults presented acutely while 40% of children presented with the subacute presentation. [5] There were gastrointestinal symptoms and signs of the frequency of Morgagni Hernia (MH) in our patients. Cardiopulmonary symptoms usually present dyspnea and palpitations but are less common than digestive complaints. [3] Laparoscopic hernia repair is safer in reducing the morbidity as well as other complications associated with it. Morgagni hernia should not be ignored because there is a substantial evidence suggesting incarceration through it. CT scan should be done in time, and the surgeon should devise a proper surgical plan before starting the operation. Special expertise is required to handle such surgical cases.

**Disclosure Statement**

There were no financial support or relationships between the authors and any organization or professional bodies that could pose any conflict of interests.

**Competing Interests**

Written informed consent obtained from the patient for publication of this case report and any accompanying images.

**References**


