LAPAROSCOPIC MANAGEMENT OF TYPE III PARAESOPHAGEAL HERNIA WITH ORGANOAXIAL GASTRIC VOLVULUS : A CASE REPORT

Surgery

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ABSTRACT

Paraesophageal hernias are the results of defects in the diaphragmatic hiatus. Types II to IV hiatal hernias are also known as paraesophageal hernia. These hernias can be associated with life threatening complications such as gastric volvulus leading to necrosis or perforation of the stomach. Due to these potential complications it was thought that all paraesophageal hernia should be repaired upon diagnosis. Recent evidence, however demonstrated that a non surgical approach is a safe option in many cases. Surgical intervention is usually reserved for patients who are exhibiting symptoms secondary to paraesophageal hernia. We report an interesting case of a 72yrs old female who presented at with Type III paraesophageal hernia with organo axial gastric volvulus for which successful Laparoscopic reduction of volvulus with Diaphragmatic hernia repair with Nissen's fundoplication was done.

KEYWORDS

Paraesophageal hernia, Gastric volvulus, Nissen's fundoplication, GERD.

INTRODUCTION:

Hiatus hernia refers to herniation of elements of the abdominal cavity through the esophageal hiatus of the diaphragm and into the mediastinum. They are relatively rare, representing only about 5%–7% of all hernias, and can be associated with severe complications. Hiatal hernias have been associated with gastroesophageal reflux disease (GERD), and the prevalence and size of the hiatal hernia has been described to correlate with the severity of reflux.¹ The presence of a hiatal hernia has also been identified in nearly 40% of obese patients.² Some of the causes of hiatal hernias have been attributed to age, stress, and degenerative processes on the diaphragm.³ Most cases of hiatal hernia are acquired rather than congenital, although familial clustering has been reported.⁴

CLASSIFICATION:

Four types of hiatal hernias have traditionally been described. Type I hiatal hernia is a migration of the gastroesophageal (GE) junction into the posterior mediastinum, which is usually the result of deterioration of the phrenoesophageal ligament.⁵ Different types of collagen, particularly types I and III, have been found to be reduced in the phrenoesophageal ligament of patients with GERD and hiatal hernia.⁶ Type II is also referred to as a “true” paraesophageal hernia. Congenital defects in the esophageal hiatus can lead to paraesophageal hernias.⁷ Type III hiatal hernias are a combination of types I and II, in which both the GE junction and a portion of the stomach—usually the gastric fundus—herniate into the mediastinum. Type IV hiatal hernias contain stomach and other abdominal organs such as small bowel, colon, pancreas, or spleen in the mediastinum. The term *giant paraesophageal hernia* refers to large hiatal hernias where at least 50% of the stomach is in the mediastinum or the hernia measures at least 6 cm on endoscopy.⁸

FIGURE 1 :Types of hiatus hernia. (A) Normal anatomy. (B) Type I, or sliding, hiatal hernia. (C) Type II or “true” paraesophageal hernia. (D)

Type III or “mixed” paraesophageal hernia. (E) Type IV paraesophageal hernia, containing other intraabdominal organs.

Sources: Shackelford textbook of surgery 8th ed

CASE REPORT

72/F, hypertensive was referred to our hospital with H/O of intermittent abdominal pain associated with nausea and vomiting and decreased appetite. H/o of malena since 1day. She had no prior abdominal surgeries. Her Upper GI series was s/o – grossly dilated esophagus, stomach and duodenum. Her CT scan was s/o – Paraesophageal hiatus hernia with oraganoaxial gastric volvulus. Given her symptoms and image findings a Laparoscopic Paraesophageal hernia repair was offered to her.

INVESTIGATION:

Figure 2 : CT image of patient showing type 3 paraesophageal hernia with gastric volvulus.

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OPERATIVE STEPS: PATIENT POSITIONING:

FIGURE 3 : Patient was positioned in a steep reverse trendlenburg position with the surgeon standing in between the two legs of the patient. The camera person is on the right side while the assistant surgeon is on the left side of the patient. Monitor is placed on the head end.

Sources: Shackelford textbook of surgery 8th ed

PORT PLACEMENT:

FIGURE 4: Sketch diagram depicting various port placement.

Sources : [www.googleimages.com/port placement](http://www.googleimages.com/port%20placement)

LIVER RETRACTION:

FIGURE 5 : The liver was retracted by an instrument known as “Nathanson” liver retractor introduced through the epigastric port.

Sources: [www.googleimages.com/nathanson retractor](http://www.googleimages.com/nathanson%20retractor)

OPERATIVE STEPS:-

The key operative steps in our procedure included :-

- Reducing the gastric volvulus
- Excision of the hernia sac
- Preservation of both vagal nerves
- Complete mobilisation of gastric fundus by dividing short gastric vessels
- Extensive mediastinal dissection to obtain 3cm length of tension free intra-abdominal esophagus
- Creation of a large retroesophageal space.
- Cruroplasty using 2-0 ethibond suture along with a composite mesh
- Creation of a 2.5cm “floppy” fundoplication.

POSTOPERATIVE COURSE :

The patient was successfully extubated and shifted to recovery room. The patient did well in the postoperative period. Liquids were started 6hrs after the surgery. Soft diet was initiated 48hrs after the surgery. Drain was removed on 2nd postoperative day. Suture removal done on

8th postoperative day. There were no postoperative complication.

OPERATIVE IMAGES:

Figure 6 : Initial laparoscopic view showing a wide hiatus hernia with organoaxial gastric volvulus

Figure 7 : Preservation of posterior division of vagus nerve

Figure 8: Cruroplasty performed with 2-0 ethibond suture

Figure 9 : Hiatus reinforcement with a composite mesh

Figure 10: Completion of Nissen's 360° fundoplication

Figure 11 : Postoperative image of the patient showing port placement

CONCLUSION

Laparoscopic repair of paraesophageal hiatal hernia has become the

standard of care in many centers across the world. When performed in esophageal centers of excellence, by an experienced esophageal surgeon, the short-term outcomes of laparoscopic repair compare favorably with the outcomes of open repair.^{9,10} However, not every surgeon is necessarily experienced enough to do these complex operations independently. There are several key elements to laparoscopic repair of PEH: (1) complete reduction of the hernia sac and contents; (2) careful preservation of the anterior and posterior vagus nerves; (3) mobilization of the gastroesophageal fat pad and identification of the GEJ; (4) recognition and management of a shortened esophagus (extensive mediastinal mobilization and performance of a Collis gastroplasty when necessary); (5) preservation of crural integrity and closure of the hiatal defect without tension with liberal use of an induced pneumothorax to yield a “floppy” diaphragm during repair; selective use of mesh reinforcement only if other measures fail; and (6) performance of an antireflux procedure or perhaps in select patients a gastropexy. Laparoscopic repair of PEH can provide excellent patient satisfaction and symptom resolution when performed by surgeons with extensive experience in minimally invasive and open esophageal surgery.

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