Laparoscopic Treatment of a Giant Type IV Hiatal Hernia with Intrathoracic Gastric Volvulus: A Case Report

Damiano Chiari1*, Paolo Veronesi1, Marco Platto1, Giacomo Borroni2 and Walter Zuliani1

1Department of General Surgery, Humanitas University, Italy
2Department of General Surgery, University of Insubria, Italy

Abstract

Introduction: Few cases of intrathoracic gastric volvulus associated with para-oesophageal hernia have been reported and most of these cases were treated with open approach. We present a case of a giant type IV para-oesophageal hernia composed of part of the transverse colon and part of the stomach with volvulus.

The patient was a 66-years-old male. He performed the following diagnostic tests: gastroscopy, barium swallow and CT scan. The patient was candidate surgical treatment with laparoscopic approach at our Centre.

Technique: The patient was submitted to laparoscopic repair of the paraoesophageal hernia. Reducing the transverse colon and the stomach in the abdomen, the gastric volvulus resolved. A primary cruroplasty with interrupted sutures was performed. A Nissen fundoplication was performed in order to recreate the anti-reflux valve.

Results: The post-operative course was uneventful. The patient started drinking and eating on first and second post-operative day respectively. The discharge occurred three days after surgery. A month after surgery, an oesophagography showed a rapid bolus transit from the oesophagus to the stomach and the patient was asymptomatic for reflux symptoms or dysphagia. One year after surgery, the gastroscopy was regular and the patient he continued to feed normally, increasing his body weight.

Conclusions: Repair of type IV para-oesophageal hernia with intra-thoracic gastric volvulus can be performed safely and successfully with laparoscopic approach by expert surgeons.

Introduction

Type IV para-oesophageal hernias are characterized by the presence of structure other than the stomach in mediastinum and account for a minimal rate of all hiatal hernias. This condition is a predisposing factor for organoaxial gastric volvulus. Sporadic cases of intrathoracic organoaxial gastric volvulus associated with para-oesophageal hernia have been reported. Most of these cases are treated with open approach [1-3]. We present a case of successful laparoscopic management of a giant para-oesophageal hernia composed of part of the transverse colon and part of the stomach with volvulus.

A 66-years-old male had recurrent episodes of epigastric post-prandial spastic pain that were resolved with vomiting, causing a weight loss of 20kg. A gastroscopy showed a grade II esophagitis that was treated with proton pump inhibitors without resolution of symptoms. A barium swallow showed the herniation of the gastric fundus and of part of the transverse colon. A CT scan confirmed this finding and found the presence of an intrathoracic organoaxial volvulus of the stomach. The patient was referred to our Centre where he was submitted to para-oesophageal hernia repair with laparoscopic approach.

Technique

The procedure was performed in the French position with the surgeon between the patient’s legs, the camera surgeon at the patient’s right side and the assistant at the left side.

Under direct visualization, the entrance into abdomen was obtained with a supraumbilical 10 mm camera port. With the pneumoperitoneum, under telescopic visualization with a 10mm 30°
liver retractor port and one 5 mm left anterior axillary retractor port. After all trocars were inserted, the patient was tilted into the reverse Trendelenburg position (20°-30°).

Initially the lesser curvature of the stomach was reduced in abdomen usingatraumatic graspers. After the lysis of some adhesions, the part of the transverse colon herniated in mediastinum was reduced. Using an ultrasonic shear, division of the attenuated phrenoesophageal ligament was performed and the right crus were freed from hernia sac. Dissection of the sac continued in the upper part of the hiatal rim. Afterward, the proximal part of the gastric body and the fundus were derotated and reduced in abdomen by “hand-over-hand” traction and by lysis of medialstinal adhesions. Next, the sac dissection was performed in the mediastinum and continued along the left crus. Some short gastric vessels were dissected with ultrasonic shear in the cranial part of the greater curvature. Finally, the retro-esophageal dissection was performed, identifying and preserving the posterior vagus nerve. Consequently, a wide hiatus was found. The possibility of approaching the crura was verified. Therefore, a laparoscopic retractor was positioned behind the gastrooesophageal junction to sling the oesophagus upwards and a posterior jatoplasty was performed. The posterior hiatus was closed with three interrupted sutures. A Maloney dilator was positioned in the oesophagus in order to verify the absence of stenosis. After checking the adequate mobilization of the gastric fundus and with a Maloney dilator into oesophagus, a Nissen fundoplication was performed in order to recreate the anti-reflux valve.

**Discussion**

The use of mesh for large hiatal hernia repair is matter of debate. Repair of a hiatal defect with primary cruroplasty has been associated with a recurrence rate in the range of 10% to 20% or higher [4,5]. The use of mesh for reinforcement of crural pillars may reduce this recurrence rate [6,7]. However, many surgeons hesitate to place a mesh at the gastroesophageal junction, which is a highly dynamic area. Mesh repair can be associated with early or late complications such as mesh infection, migration and shrinkage [8]. Moreover, cases of intraluminal mesh erosion into esophagus or stomach are described. Due to these complications, some patients underwent esophagectomy or gastrectomy and in some cases the patients remained dependent on tube feeding [9]. Furthermore, the fibrotic reaction produced by mesh can make further surgery extremely challenging and dangerous. A case-series of mesh complications after prothetic hiatus repair reported that two patients died three months after reoperation of unknown cause. On the one hand we have the prothetic repair of the hiatus with a lower recurrence rate; on the other hand we have primary cruroplasty with a higher rate of severe complication. We think that a key factor in the choice between these two options is the fact that the hiatal hernia is a benign disease. Healthy patients who are operated for a benign disease expect the risk of severe complications and mortality to be zero. For this reason, we believe that the relatively better outcomes in terms of recurrence of mesh hernia repair are not currently sufficient to justify the postoperative risks of mesh placement. Prosthetic reinforcement can be justified and effective in case of reoperation after primary cruroplasty failure.

**Results**

The post-operative course was uneventful. The patient started drinking and eating on first and second post-operative day respectively. The discharge occurred three days after surgery. A month after surgery, an oesophagography showed a rapid bolus transit from the oesophagus to the stomach and the patient was asymptomatic for reflux symptoms or dysphagia. One year after surgery, the gastroscopy was regular and the patient he continued to feed normally, increasing his body weight.

**Conclusions**

Repair of type IV para-oesophageal hernia with intra-thoracic gastric volvulus can be performed safely and successfully with laparoscopic approach by expert surgeons.

**References**