Online case report

Modification of Belsey (Mark IV) fundoplication in the management of hiatal hernia and gastroesophageal reflux disease after sleeve gastrectomy: a case report

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Gastroesophageal reflux disease (GERD) is a condition seen commonly in the bariatric surgery population. Although some operations, such as Roux-en-Y gastric bypass, are known to be associated with a reduced incidence of reflux postoperatively, the prevalence of GERD after laparoscopic sleeve gastrectomy (LSG) may be increased by 2.1% ~ 34.9% [1]. In addition, it is still controversial for the treatment of medication-refractory GERD after LSG. Here, we report the surgical management of a patient, suffering from acid reflux, heartburn, and vomiting, with a modified laparoscopic Belsey (Mark IV) fundoplication 2 years after a successful LSG operative for obesity.

Case presentation

A 60-year-old woman with a history of obesity had undergone LSG at another hospital 4 years ago. The surgery provided good control of weight and resulted in a 40-kg weight loss. She did well until one year before referral, when she began to experience symptoms of acid reflux, heartburn, and vomiting, which severely limited the quality of her life. The hiatal hernia and esophagitis were diagnosed by esophagogastroduodenoscopy, and esophageal manometry demonstrated a hypotensive lower esophageal sphincter (LES, pressure, 4.0 mm Hg) with normal relaxation and normal peristalsis of the esophageal body.

After the patient was referred to our center for GERD, a modified laparoscopic Belsey (Mark IV) fundoplication with hiatal hernia repair was performed. The patient was endotracheally intubated in the supine position using 5 laparoscopic ports under general anesthesia. After dissecting the gastrohepatic ligament with harmonic scalpel, a widow was created behind the lower esophagus. Then, the diaphragmatic crura were dissected carefully, and the distal esophagus was mobilized about 5 cm while the mediastinal structures, including pleura, pericardium, vagus nerves and aorta, were identified and preserved. The size of hernia defect was measured as approximate 4cm, and then secured with 2 interrupted 2-0 nonabsorbable sutures.

Because of stapling too close to the angle of His in the previous LSG, the remnant of gastric fundus could not be utilized for fundoplication. After dissecting the adhesions from the previous operation, one horizontal mattress 2-0 nonabsorbable suture was secured between the left wall of esophagus and the wall of gastric fundus for reconstructing the angle of His. Afterwards, 5 horizontal mattress sutures were placed 1.5~2 cm from the esophagogastric junction between stomach and esophagus to create a nearly 200° wrap, and the second row of sutures was placed 1~1.5 cm proximally so as to include the diaphragm. A bougie was not necessary for this anterior and partial fundoplication surgery if the diaphragmatic hiatus after repairing was not

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smaller than normal. Finally, the ports were removed under direct vision, and the abdomen was desufflated.

The patient was discharged on the 7th postoperative day tolerating a liquid diet without reflux or dysphagia. Two year later, she is still well and does not have dysphagia or any other symptoms of GERD.

Discussion

Laparoscopic sleeve gastrectomy has become a standard bariatric surgical procedure [2]. Although it has an acceptable complication profile and amount of weight loss, one of the most distressing complications to the patient is reflux postoperatively. It is reported that hiatal hernia repair concurrently with LSG could result in a 47.5% decrease in GERD prevalence postoperative at 12 months if one is detected intraoperatively [3]. However, it is controversial for the treatment of patients with medication-refractory GERD after LSG, especially for these patients with hiatal hernia.

Although laparoscopic Nissen fundoplication with hiatal hernia repair is thought to be a gold standard of antireflux procedure [4], the remnant of fundus can not be used for fundoplication in these patients after LSG. The transthoracic Belsey (Mark IV) operation has been used for management of hiatal hernia for over 40 years [5]. Based on the basic technique, a modified Belsey (Mark IV) fundoplication with hiatal hernia repair was performed under laparoscopy in this patient after LSG. It provides a partial fundoplication on the anterior of esophagus with using the anterior gastric wall.

Kotak et al. [6] reported that primary hiatal hernia repairing in GERD patients after LSG was a well-tolerated and effective operation. Clapp [7] also reported that the use of a prosthetic bioabsorbable mesh to repair a hiatal hernia could be a more effective operation after LSG. Comparing with primary hiatal hernia repairing with or without using mesh, however, fundoplication with hiatal hernia repair would provide a better and long-term control of reflux in GERD patients after LSG. Although Roux-en-Y gastric bypass (RYGB) is a feasible and efficacious treatment option for GERD patients after LSG [8], it is optimal for the GERD patient with weight regain after LSG.

It is the first time to perform a modified Belsey (Mark IV) operation under laparoscopy in patients after LSG. Therefore, large scale, long-term follow-up and randomized trials are needed to definitely assess the value of a modified laparoscopic Belsey (Mark IV) fundoplication in GERD patients after LSG.

Conclusion

A modified laparoscopic Belsey (Mark IV) fundoplication for medication-refractory GERD appears to be a feasible and efficacious approach. It is a successful treatment option for the GERD patients with good control of weight after LSG.

Disclosures

The authors have no commercial associations that might be a conflict of interest in relation to this article.

Appendix

Supplementary data

Supplementary data cited in this article is available online at http://dx.doi.org/10.1016/j.hrthm.2014.12.023.

References