Surgical Laparoscopy, Endoscopy & Percutaneous Techniques
Vol. 13, No. 4, pp. 268–270

Case Report

Laparoscopic Resection of Gastric Duplication

Successful Treatment of a Rare Entity

Marcel Autran C. Machado, MD, Vinicius R. Santos, MD, Rodrigo B. Martino, MD, Fabio Makdissi, MD, Leonardo Canedo, MD, Telesforo Bacchella, MD, and Marcel C. C. Machado, MD, FACS

Summary: Alimentary tract duplications are rare congenital malformations that may be found anywhere from mouth to anus. They usually share a common smooth muscle wall and blood supply with the adjacent bowel. Some duplications are asymptomatic but most cause problems in early childhood. Gastric duplications account for 2% to 7% of all gastrointestinal duplications. The management of gastric duplication is essentially surgical. The treatment of choice is the complete excision of the gastric duplication without violation of the gastric lumen whenever possible. The authors report an unusual case of gastroesophageal junction duplication completely removed by laparoscopy. To our knowledge, this is the first case of gastric duplication successfully treated by laparoscopy in English literature. Laparoscopic resection may be added to the surgical armamentarium in the treatment of alimentary tract duplications. **Key Words:** laparoscopy, gastrointestinal duplication, technique

Duplications of the alimentary tract are rare congenital malformations. Duplications are usually single, vary widely in size, are more often spherical than tubular, and are lined by alimentary tract mucosa. A common muscular layer between the duplication and the adjacent bowel is the rule.[1] Presentation in adult life is very rare, but may be associated with malignant degeneration.[2] The authors report an unusual case of gastroesophageal junction duplication completely removed by laparoscopy. To our knowledge, this is the first case of gastric duplication successfully treated by laparoscopy in English literature.

CASE REPORT

A 45-year-old man presented with epigastric discomfort. There was no significant past medical or surgical history. Upper gastrointestinal endoscopy revealed an extrinsic compression in the cardia. Ultrasound revealed a cystic mass arising from the left lobe of the liver. The patient was then diagnosed with a liver tumor and was referred to our service. Abdominal CT scan showed a 6 cm cystic tumor between the left lobe of the liver and the stomach with presumptive diagnosis of a gastric duplication (Fig. 1). The wall of the cyst, enhanced by the contrast media, together with a thin line between the cyst and the liver parenchyma, and the relationship with the stomach were the main clues to this preoperative diagnosis. Surgical intervention by laparoscopy was indicated to confirm the diagnosis and excise the gastric duplication. Exploration of the abdominal cavity was done by a 10 mm trocar in supraumbilical position. A large thin-walled 6 cm spheric cyst was found along the lesser curvature of the stomach in the esophagogastric transition in direct contact with the left lobe of the liver (Fig. 2). Additional ports were inserted in the same fashion as for laparoscopic Nissen operation. The cyst was

Received October 28, 2003; accepted May 15, 2003.
From the Department of Surgery, University of São Paulo, Brazil
Address correspondence and reprint requests to Marcel Autran C. Machado, MD Al. Casa Branca 438 # 101 - 01408-000 São Paulo, Brazil. Address electronic mail to: dr@drmarcel.com.br

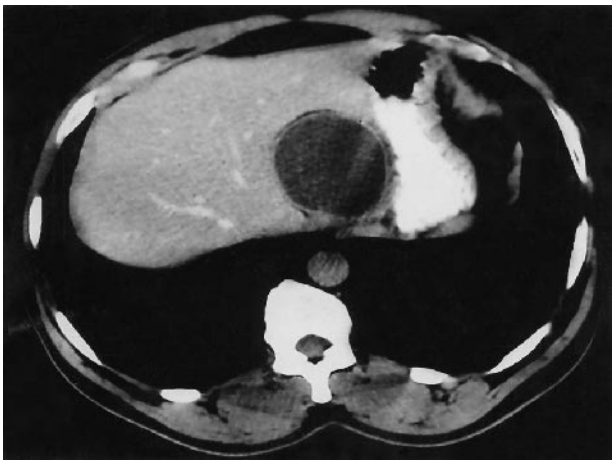

FIGURE 1. CT scan showed a 6-cm cystic tumor between the liver and the stomach.

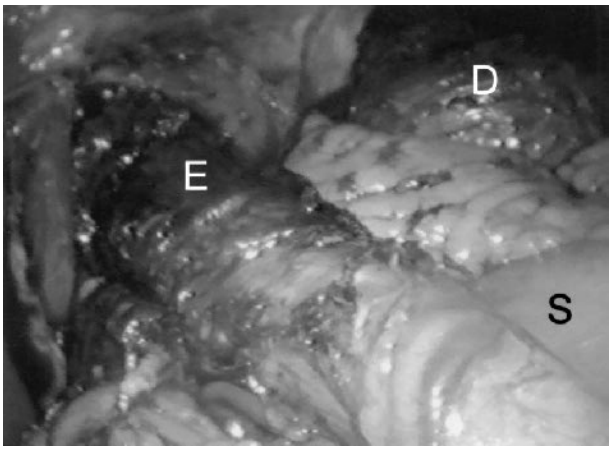

FIGURE 3. Intraoperative view of the gastric duplication dissected free from the esophagus and stomach. E = esophagus; S = stomach; D = gastric duplication

irrigated by a branch of the left gastric artery that was ligated between metallic clips. The cyst presented large collaterals veins drained to the left gastric vein. These vessels were ligated using harmonic scalpel without any bleeding. After extensive dissection using the harmonic scalpel, the cyst was dissected free from the esophagus and stomach (Fig. 3). There was no connection between the cyst and the stomach; however, it shared a smooth layer with the esophagus and, after resection of the cyst, the esophageal mucosa was exposed. This was the most difficult part of the intervention because care had to be taken to not enter gastric or esophageal lumen. The harmonic scalpel and careful dissection of the esophagogastric area were essential to handle this operation laparoscopically. The surgical intervention was completed with a Nissen procedure wrapping the exposed esophageal mucosa. The recovery was uneventful and the patient was discharged on the third postoperative day. Histologic examination disclosed a smooth muscle wall with unclassified mucosal lining.

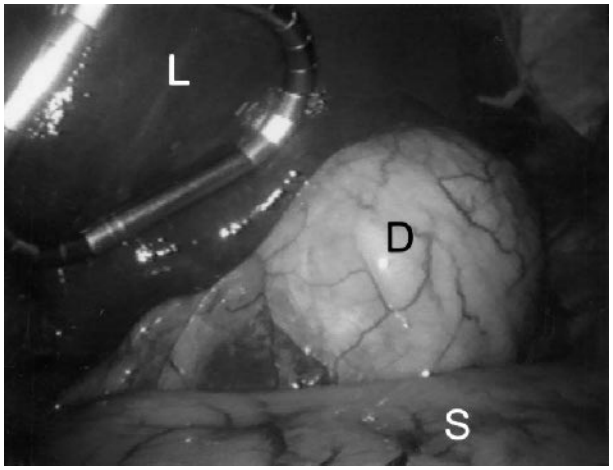

FIGURE 2. Intraoperative view of the gastric duplication. L = liver; S = stomach; D = gastric duplication

DISCUSSION

Duplication of the alimentary tract is an unusual congenital anomaly that may occur at any level, from oral cavity to rectum. Most often presenting as a benign partially obstructing mass in the neonatal or pediatric age group, the primary surgical treatment is directed toward relief of the symptoms while preserving as much normal gastrointestinal length and physiology as possible. Enteric duplications presenting in the adult population are much less common, and the stomach is the site least often affected, regardless of age.

The duplication is named according to the site rather than the mucosal features. The mucosal lining of the duplication, when preserved, varies from unclassified primitive enteric mucosa, such as encountered in the present case, to well-differentiated mucosa from any portion of the gastrointestinal tract. The type of differentiated mucosa does not necessarily correspond to the anatomic site of the duplication.

The pathogenesis of alimentary tract duplications is controversial, but abnormal recanalization after the solid epithelial stage of embryonic bowel development is thought by most to underlie these lesions.[2]

Signs and symptoms of gastric duplications depend on the localization, size, presence of gastric mucosa in the cyst, and whether or not there is communication with gastric lumen.[3] The most common symptoms are epigastric pain or discomfort, vomiting, and gastrointestinal

bleeding. There are many other clinical presentations, such as recurrent pancreatitis and fistulous invasion in the bile duct and other segments of the gastrointestinal tract.[3–5]

Gastric duplication cysts accounts for 2% to 7% of all gastrointestinal duplications.[2] They are usually diagnosed during surgery for intestinal obstruction or other complications. Nevertheless, recent progresses in image methods are increasing the awareness of this rare entity. Helical computed tomography and magnetic resonance images can demonstrate the cystic lesions and their relationship with adjacent structures as in the present case. The wall of the cyst may be enhanced with contrast media, suggesting the diagnosis.

The management of gastric duplication is essentially surgical. The treatment of choice is the complete excision of the gastric duplication without violation of the gastric lumen whenever possible. The reason for complete resection of the cyst is the potential risk for complications and malignant transformation of the cyst.[2]

There is only one report of laparoscopic treatment of alimentary duplication in English literature. Schleef and Schalamon[6] reported two cases of intestinal duplication in children treated with laparoscopic-assisted resection. Video-assisted thoracoscopy has been described for removal of a foregut duplication.[7]

To our knowledge, this is the first case of gastric duplication successfully treated entirely by laparoscopic resection. Laparoscopic resection may be added to the surgical armamentarium in the treatment of alimentary tract duplications.

REFERENCES

1. Stringer MD, Spitz L, Abel R, et al. Management of alimentary tract duplication in children. *Br J Surg*. 1995;82:74–78.
2. Coit DG, Mies C. Adenocarcinoma arising within a gastric duplication cyst. *J Surg Oncol*. 1992;50:274–277.
3. Glaser C, Kuzinkovas V, Maurer C, et al. A large duplication cyst of the stomach in an adult presenting as pancreatic pseudocyst. *Dig Surg*. 1998;15:703–706.
4. Mahnovski V, Mahour GH, Rowland JM. Gastric duplication-colonic fistula with colonic ulceration and bleeding. *J Pediatr Surg*. 1998;33:1815–1816.
5. Kaneko K, Ando H, Watanabe Y, et al. Gastric duplication communicating with the left hepatic duct: a rare case of recurrent hemobilia in a child. *J Pediatr Surg*. 1999;34:1539–1540.
6. Schleef J, Schalamon J. The role of laparoscopy in the diagnosis and treatment of intestinal duplication in childhood. A report of two cases. *Surg Endosc*. 2000;14:865.
7. Dillon PW, Cilley RE, Krummel TM. Video-assisted thoracoscopic excision of intrathoracic masses in children: report of two cases. *Surg Laparosc Endosc*. 1993;3:433–436.