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Case report

Adenocarcinoma of the gastric pouch after Roux-en-Y gastric bypass: a new technique for en bloc resection and reconstruction

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Only a few cases of gastric cancer after a bariatric procedure have been reported. After laparoscopic Roux-en-Y gastric bypass (RYGB), these rare cases mostly pertain to the excluded stomach. We present a case report of gastric cancer of the pouch after previous RYGB for morbid obesity and a new laparoscopic technique for en bloc resection of the lesion.

Case report

A 67-year-old woman underwent laparoscopic RYGB for morbid obesity (body mass index, 39 kg/m^2) associated with type 2 diabetes and hypercholesterolemia. As with all our patients, 2–3 weeks before the laparoscopic RYGB, an esophagogastroduodenoscopy was performed as part of the standard preoperative RYGB workup. No lesions were discovered preoperatively. Two years after the RYGB procedure, the patient came to the clinic with a history of sudden vomiting and dysphagia that had caused a weight loss of 8 kg over the last 2 months. She underwent an esophagogastroduodenoscopy, and a lesion was found in the gastric pouch 4-cm distal to the z line, just proximal to the gastroenterostomy (Fig. 1). Biopsy of the nodule revealed invasive well-differentiated adenocarcinoma. Staging with endoscopic ultrasonography revealed invasion of the submucosa but no suspect lymph nodes (T1 N0). Computed axial tomography and 18-fluorodeoxyglucose positron emission tomography demonstrated no distant metastatic disease.

Management

The patient underwent a totally laparoscopic procedure. The stomach pouch–anastomosis complex was dissected. The gastrocolic ligament was divided, and the omentum was split longitudinally at the level of the crow's foot of the stomach, leaving the entire left half of the omentum attached to the stomach. The bursa omentalis was opened at the edge of the caudate lobe, and the left gastric vessels were identified and ligated at their origin. Dissection was continued in a cephalad direction and the right crus identified. The phrenoesophageal ligament was divided, and both crura were entirely exposed. The distal esophagus was mobilized circumferentially up to the level of the left pulmonary vein and transected with a linear stapler approximately 7 cm proximal to the esogastric junction. The distal remnant stomach was freed circumferentially and cut transversally with a linear stapler well to the right of the alimentary limb, just distal to the crow's foot. The alimentary limb of the RYGB was divided with a linear stapler approximately 5 cm distal to the gastrojejunostomy. The remaining part of the alimentary limb, measuring approximately 145 cm after transection, was marked with a white silk suture at its distal end for later identification. The specimen was lifted to the patient's left and the lymph nodes of group 11, 10, and 4 were harvested en bloc with the remnant gastric body and fundus. The splenic vessels were skeletonized and the spleen preserved. The specimen

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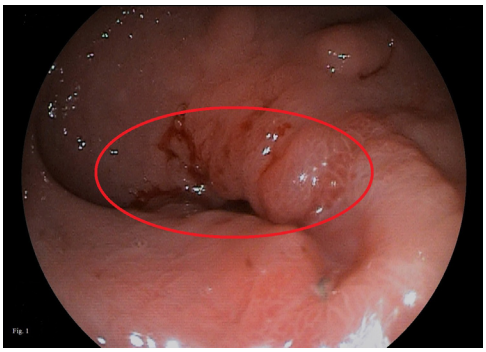

Fig. 1. Esophagogastroduodenoscopy (EGD) showing a cancerous lesion (circle) in the gastric pouch just proximal to the gastroenterostomy.

thus consisted of the distal esophagus, the gastric pouch, part of the remnant stomach, the proximal part of the alimentary limb, a large part of the omentum, and the lymph nodes. The specimen was put in a sac and removed via a small Pfannenstiehl incision. The staple line at the distal esophagus was snapped with 2 graspers, and a small opening was created to accommodate the placement of the anvil of a 31-mm circular stapler. A purse string of monofilament suture 2/0 secured the anvil. An enterotomy was created in the proximal end of the preserved alimentary limb, and the stapler was introduced. An esophagojejunostomy was performed (Fig. 2). To ensure sufficient caloric uptake and to allow access for endoscopy of the distal stomach, duodenum, and common bile duct, an additional manual anastomosis was created between the remaining remnant stomach and the alimentary limb (Fig. 2). The defect created by the gastroenteral anastomosis was carefully closed to prevent internal herniation. A nasogastric tube was placed across both anastomoses.

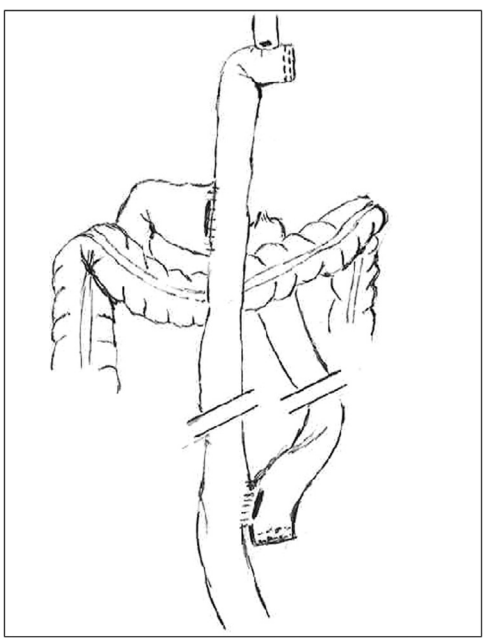

Fig. 2. Diagram of the construction after resection of the gastric pouch. An esophagojejunostomy with an additional anastomosis between the remaining remnant stomach and the alimentary limb.

The postoperative course was uneventful. On the fifth postoperative day, a gastrograffin swallow study revealed no evidence of an anastomotic leak. The nasogastric tube was removed and oral intake resumed. The patient left the hospital on the seventh postoperative day.

Histopathology of the specimen demonstrated a well-differentiated adenocarcinoma with 20 tumor negative lymph nodes (T1 N0 G1 L0 V0 R0). The surgical margins were free of disease. After discussion with the multidisciplinary tumor board, adjuvant therapy was deemed unnecessary. At the last follow-up 6 months after the operation, the patient was doing well with an adequate caloric intake and was maintaining her weight. There were no signs of recurrent disease

Discussion

To our knowledge, this is the first case of adenocarcinoma occurring in the gastric pouch after primary RYGB for obesity [1,2]. The majority of gastric cancers after bypass procedures are seen in the remnant stomach, often leading to a delayed diagnosis [1,2]. The diagnosis of esophagogastric cancer after RYGB can be difficult because weight loss, vomiting, and inability to eat normal quantities of food are often part of the normal process after a bariatric procedure. The etiology of esophagogastric cancer after gastric bypass has not been clearly elucidated.

As soon as a patient has been diagnosed with a suspect gastric lesion, proper staging must be performed, including an endoscopic ultrasonography, computed tomography, and fluorodeoxyglucose positron emission tomography. With respect to the oncological principles, resection should at least include removing the gastric pouch and the draining lymph node basin. In this case, we believe there was no need for resecting the entire remnant stomach. The tumor only developed after the RYGB was performed and the stomach had been divided in 2 completely separated compartments. However, we do believe the proximal part of the remnant stomach should be removed to allow en bloc resection and to avoid leaks in case of vascular compromise. Removal of the remaining alimentary limb (i.e., between the gastrojejunostomy and the entero-enterostomy) is best avoided to prevent malnutrition. To assure an optimal caloric intake, in case of chemotherapy, for example, an anastomosis is performed between the distal part of the remnant stomach and the alimentary limb (Fig. 2). An additional benefit of this configuration is to allow full endoscopic access of the remnant stomach, duodenum, and the bile tree, which thus come in reach without the need for more complicated maneuvers, as described in the literature [3].

Conclusion

Gastric cancer after RYGB is very rare. However, an index of suspicion must be maintained in patients

presenting with newly appearing dysphagia symptoms after a bariatric procedure. Surgery can be technically challenging. When possible it should be performed laparoscopically. Patients should be referred to specialized centers with oncologic and bariatric experience.

Disclosures

Dr. Simon van de Vrande and Dr. Leman have no conflicts of interest. Dr. Jaques Himpens is a consultant for Ethicon Endosurgery and Gore, but this has no relation to the work in this article.

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