

Functional end-to end esophago-jejunal anastomosis using linear staplers following laparoscopic total gastrectomy

Hiroshi Okabe, Kazutaka Obama, Eiji Tanaka, Shigeru Tsunoda, Shigeo Hisamori, Yoshiharu Sakai

Department of Surgery, Graduate School of Medicine Kyoto University, Kyoto, Japan

Corresponding to: Hiroshi Okabe, MD, PhD, FACS. Department of Surgery, Graduate School of Medicine Kyoto University, 54 Kawahara-cho, Shogoin, Sakyo-ku, Kyoto, 606-8507, Japan. Email: hokabe@kuhp.kyoto-u.ac.jp.



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Introduction

Technical difficulty of laparoscopic Roux-en-Y reconstruction is a major reason of less prevalence of laparoscopic total gastrectomy (LTG). Reconstruction-related complications, such as anastomotic leakage or stenosis were reported in higher rate than in distal gastrectomy (1). To overcome the technical obstacle and establish a standardized reconstruction method, we introduced intracorporeal functional end-to end (FETE) esophago-jejunal anastomosis using endoscopic linear staplers in September 2006 (2,3). This video article demonstrates our standard laparoscopic procedure of Roux-en-Y reconstruction using endoscopic linear staplers following total gastrectomy (*Video 1*).

Surgical technique

After completion of total gastrectomy, a jejunal loop about 20 cm distal to the ligament of Treitz is marked with dye, and the jejunal mesentery is divided to create a 50-cm Roux-en-Y limb. Marginal vessels are always divided so that Roux-en-Y limb could reach the esophagus without tension. Jejunal branches are also divided, if necessary. Side-to-side jejunojejunostomy is performed using a 45 mm linear stapler. After the entry hole is closed by continuous suture with 3-0 Vicryl[®], the jejunal mesenteric defect is also closed with 3-0 continuous suture with non-absorbable thread.

Then, the Roux-en-Y limb was brought up via the antecolic route to create an esophagojejunostomy. Small holes are made at the end of the Roux-en-Y limb on the antimesenteric side, and on the left dorsal side of the esophageal stump. To make the lumen of the esophagus easier to detect, a nasogastric tube was advanced through

the hole. Through the left lower trocar, a 45 mm endoscopic linear stapler is inserted. The anvil fork is inserted into the Roux-en-Y limb, and then the cartridge side is inserted into the esophageal lumen using the nasogastric tube as a guide. After the entry hole is roughly closed with staplers that is used for fixation of mesh in hernia repair, closure is completed with a linear stapler through the right lower trocar. An air leakage test is performed to confirm the tightness of the anastomosis. Hand-sewn closure of the Petersen's defect is done using non-absorbable thread.

Results

From September 2006 to December 2012, LTG with FETE esophagojejunostomy were planned in 119 patients. LTG was accomplished in 117 patients (98.3%). Reasons of two conversion were, bleeding from the splenic hilum and involvement of a naso-gastric tube during esophagojejunostomy. Postoperative complications occurred in 27 patients (22.6%). Among them, reconstruction-related complications were observed in five patients (4.3%): two anastomotic leakage of esophagojejunostomy (1.7%), two Roux stasis (1.7%), and one duodenal stump leakage (0.9%). Median postoperative hospital stay was 14 days. During median observation period of 30 months, adhesive ileus occurred in 5 patients (4.3%), and internal hernia through the jejunal mesenteric defect occurred in three patients (2.6%). No anastomotic stenosis was observed. While all patients with adhesive ileus were successfully treated with fasting and/or decompression, all three patients with internal hernia required emergent operation. Mesenteric defects had not been closed during initial LTG in all three patients.

Conclusions

Intracorporeal FETE esophago-jejunal anastomosis was safely performed with less postoperative reconstruction-related complications. The advantages of FETE esophagojejunostomy include safe anastomosis under better visualization, and less anastomotic leakage or stenosis. Mesenteric defects should be closed to prevent internal hernia.

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