

Series

Laparoscopic proximal gastrectomy with hinged double flap method using knotless barbed absorbable sutures: A case series



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ABSTRACT

BACKGROUND: Intracorporeal reconstruction following laparoscopic proximal gastrectomy is technically challenging. The aim of this study was to investigate the use of knotless barbed absorbable sutures in esophagogastrostomy closure using the hinged double flap method.

DESIGN & METHOD: The subjects comprised patients with gastric cancer who were scheduled to undergo laparoscopic proximal gastrectomy. The V-Loc™ 180 wound closure device (V-Loc; Covidien, Mansfield, MA, USA) was used for all laparoscopic esophagogastrostomy closures. Between January 2015 and November 2016, 13 patients were enrolled.

RESULTS: The mean suturing time was 109.6 min. Median hospital stay was 14 days. One anastomotic minor leakage occurred in an esophagogastrostomy and it was managed conservatively. Twelve of 13 patients did not exhibit any symptoms of reflux esophagitis.

CONCLUSION: These results suggest the use of the unidirectional barbed absorbable suture is safe and produce reproducible results for esophagogastrostomy closure using the hinged double flap method.

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1. Introduction

Several reconstruction methods to be used following proximal gastrectomy already exist, however, ideal reconstruction techniques have not been established [1–3]. Double-tract reconstruction after proximal gastrectomy results in excellent postoperative outcomes in terms of preventing reflux symptoms, though it is technically complicated because of the formation of three anastomoses and due to the fact that the passage of food is non-physiological [3,4]. In contrast, esophagogastrostomy is simpler because of the need for only one anastomosis and the allowance of easy postoperative endoscopic surveillance. In most cases, this makes esophagogastrostomy the optimal reconstruction method following proximal gastrectomy, except in patients with complications like reflux esophagitis and anastomotic stricture.

To overcome these drawbacks of esophagogastrostomy following proximal gastrectomy, the hinged double flap method (i.e., Kamikawa's procedure) has been used in patients with an upper early gastric cancer [3,5,6]. However, in most of these instances, the cumbersome multiple anastomoses of intracorporeal hinged

double flap method required advanced techniques in laparoscopic surgery. Thus, we modified this method to develop a new laparoscopic procedure that uses the V-Loc™ Absorbable Wound Closure Device (V-Loc; Covidien, Mansfield, MA, USA). This report demonstrates a novel technique of intracorporeal proximal gastrectomy performed with the hinged double flap method using knotless barbed absorbable sutures, and the short-term clinical outcomes of the patients who underwent this procedure at our institution. This work has been reported in line with the PROCESS criteria [7].

2. Patients and methods

Thirteen patients (10 males and three females) underwent proximal gastrectomy at our institution, between January 2015 and November 2016. All patients were preoperatively diagnosed with early gastric cancer using preoperative diagnostic evaluation including gastrointestinal endoscopy, an upper gastrointestinal series, a computed tomography scan, and an endoscopic ultrasound. Tumor stage was classified according to the seventh edition of the International Union against Cancer tumor–node–metastasis staging system for gastric cancer, while the lymph node stations were numbered according to the definitions of the Japanese Gastric Cancer Association [8]. The surgical complications were classified according to the Clavien-Dindo classification [9]. Endoscopic

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assessments of esophagitis were recorded using the Los Angeles classification [10].

3. Surgical procedures

Muraoka et al. [3] previously discussed laparoscopic proximal gastrectomy with hinged double flap method. Here, we present a modified hinged double flap method in laparoscopic proximal gas-

trectomy. The distal cut end of the stomach was sealed off using a linear stapler and the remnant stomach was brought out of the abdomen through the extended umbilical port for making “double-door” seromuscular flaps. A sideways H-shaped incision (3.5 cm height \times 2.5 cm width) was conducted 3 cm to 4 cm below the tip of the remnant stomach under direct vision. Muscular layer was carefully detached from the submucosal layer to create the “double flap”, and the bottom of the muco-submucosal layer was opened

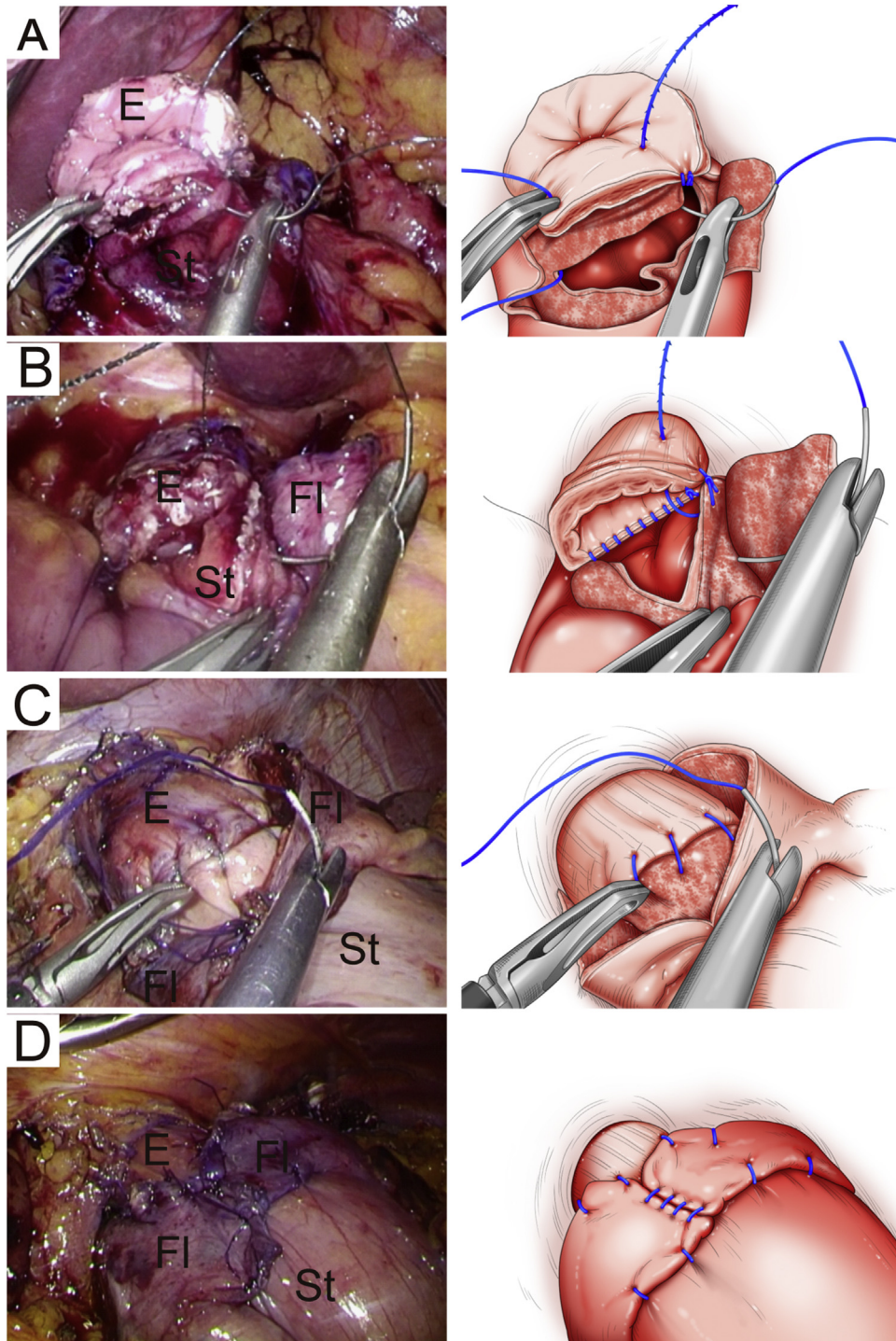


Fig. 1. Intraoperative view during the esophagogastrostomy.

a) The esophagogastrostomy of the posterior wall. b) Continuous sutures were used for layer-layer suturing on the closure of anterior wall. c) Anastomosis was covered by seromuscular flaps. d) The view of completed anastomosis with the hinged double flaps.

E; esophagus, FI; flap, St; the remnant stomach.

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