Gastric Cancer (1998) 1: 78–79

Short communication

Gastric tube reconstruction prevented esophageal reflux after proximal gastrectomy

Norio Shiraishi, Ryuichiro Hirose, Akio Morimoto, Katsunori Kawano, Yosuke Adachi, and Seigo Kitano

First Department of Surgery, Oita Medical University, 1-1 Idaigaoka, Hasama-machi, Oita 879-5593, Japan

Abstract:
Although the standard operation for early cancer of gastric cardia is proximal gastrectomy followed by jejunal interposition, we recently reported a simple and useful technique for proximal gastrectomy with gastric tube reconstruction. The operative procedures included resection of the proximal two-thirds of the stomach, followed by anastomosis between the esophagus and gastric tube, using a circular stapler (Proximate ILS 25; Ethicon, Cincinnati, OH, USA). The gastric tube was about 20 cm long and 4 cm wide. The patient a 76-year-old man had no reflux symptoms such as heartburn, retrosternal pain, and regurgitation. Endoscopy showed no evidence of reflux esophagitis, including mucosal redness, erosion, and ulceration. Ambulatory 24-h pH monitoring indicated that the pH of the lower esophagus was between 6 and 8 when the patient was upright and between 5 and 7 when he was in the supine position. There were nine reflux episodes during the day, and no reflux episode while he was asleep. The duration of each reflux episode was less than 1 min, and the total reflux time was 1 min in the 12-h day (0.1%). These data indicate that reconstruction by gastric tube may prevent esophageal reflux in patients who have undergone proximal gastrectomy for early cancer of the gastric cardia.

Key words: gastric cancer, early gastric cancer, proximal gastrectomy, reflux esophagitis, 24-h pH monitoring

Introduction

The standard operation for early cancer of the upper third of the stomach is proximal gastrectomy followed by jejunal interposition between the esophagus and distal gastric remnant. [1–4] However, the procedure is complicated and time-consuming, and is sometimes unsatisfactory. [5] When proximal gastrectomy is followed by a direct anastomosis between the esophagus and gastric remnant, esophagitis associated with acid-reflux is frequent. [6] Recently, we reported a simple and useful technique of proximal gastrectomy and gastric tube reconstruction. [7] The procedure is an application of intrathoracic reconstruction in which a gastric tube is used after thoracic esophagectomy for esophageal cancer. [8] Although acid-reflux esophagitis has not been observed clinically or endoscopically after this procedure, the pH of the lower esophagus has not been studied after this procedure. Here we present the findings in a patient who underwent 24-h pH monitoring after proximal gastrectomy and gastric tube reconstruction.

Patient and methods

The patient was a 76-year-old man who underwent proximal gastrectomy and gastric tube reconstruction for IIa-type carcinoma of the gastric cardia. The lesion was a well differentiated tubular adenocarcinoma restricted to the mucosa, and no lymph node metastasis was present. Operative procedures included resection of the proximal two-thirds of the stomach, followed by anastomosis between the esophagus and the gastric tube, performed with a circular stapler (Proximate ILS 25; Ethicon, Cincinnati, OH, USA). [7] The gastric tube was about 20 cm long and 4 cm wide. The patient had no reflux symptoms, including heartburn, retrosternal pain, and regurgitation. Endoscopy showed no evidence of reflux esophagitis, including mucosal redness, erosion, and ulceration.

Ambulatory 24-h pH monitoring was performed as follows. A glass esophageal pH probe was introduced into the esophagus through the nostril, and was positioned at a level 3 cm above the esophagogastrostomy site. The appropriate position of the pH probe was confirmed by roentgenography before and after moni-

Offprint requests to: N. Shiraishi
Received for publication on Apr. 27, 1998; accepted on Aug. 19, 1998

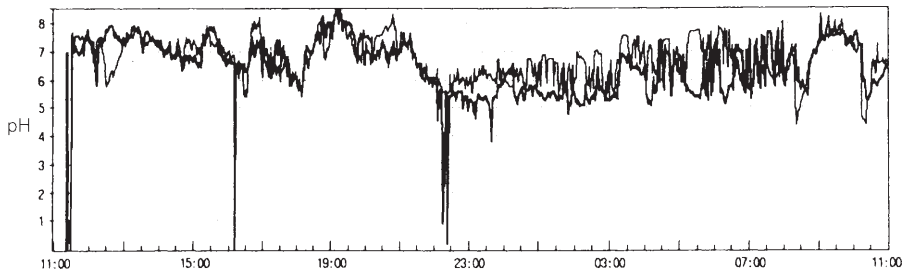

Fig. 1. Twenty-four-hour pH monitoring indicated that, in our 76-year-old patient with proximal gastrectomy and gastric tube reconstruction, there was no reflux episode when he was in the supine position, while total reflux time during the 12-h day when he was upright was 1 min (0.1%) of the day

toring. Esophageal pH changes were recorded and analyzed with a Digitrapper MK III (Synectics Medical, Stockholm, Sweden) and an EsopHogram (Gastrosoft, Dallas, TX, USA). The patient was allowed his usual diet and carried on his normal life activities during the examination.

Results

The data for the 24-h pH monitoring are shown in Fig. 1. The pH of the lower esophagus was between 6 and 8 when the patient was upright and between 5 and 7 when he was in the supine position. There were nine reflux episodes during the day, none occurred while he was asleep. The duration of each reflux episode was less than 1 min, and the total reflux time was 1 min during the 12-h day (0.1%).

Discussion

It is generally accepted that the occurence and severity of reflux esophagitis after proximal gastrectomy is closely related to the volume of residual acid-secreting gastric mucosa. Esophageal reflux after proximal gastrectomy can be diagnosed easily by clinical symptoms and endoscopic examination. Twenty-four-h pH monitoring is indicated in patients whose symptoms are suggestive of esophageal reflux but who do not show esophagitis on endoscopy. pH monitoring is the most specific study for the diagnosis of esophageal reflux in patients without unequivocal clinical or endoscopic evidence of the disease. The test is usually regarded as positive for reflux esophagitis when the pH is less than 4 for more than 7% of the time and negative when it is less than 4 for more than 4% of the time. [6]

In our patient, more than the proximal two-thirds of the stomach were resected, and the distal gastric remnant was established in the form of the gastric tube. Neither clinical symptoms nor endoscopic signs of reflux esophagitis were present. Twenty-four-h pH monitoring indicated that the lower esophagus was mostly free of acid-reflux, even when the patients was in the supine position at night. The data indicate that reconstruction by gastric tube may prevent esophageal reflux in patients who have undergone proximal gastrectomy for early cancer of the gastric cardia. To confirm the importance and usufulness of gastric tube reconstruction, further examination, using 24-h pH monitoring, should be done in a large series of patients who have undergone this procedure.

References

1. Harrison LE, Karpeh MS, Brennnan MF. Total gastrectomy is not necessary for proximal gastric cancer. Surgery 1998;123:127–30.
2. Kitamura K, Yamaguchi T, Nishida Y, Yamamoto K, Ichikawa D, Okamoto K, et al. The operative indications for proximal gastrectomy in patients with gastric cancer in the upper third of the stomach. Jpn J Surg 1997;27:993–998.
3. Takeshita K, Saito N, Saeki I, Honda T, Tani M, Kando F, et al. Proximal gastrectomy and jejunal pouch interposition for the treatment of early cancer in the upper third of the stomach: Surgical techniques and evaluation of postoperative function. Surgery 1997;121:278–286.
4. Kameyama J, Ishida H, Yasaku Y, Suzuki A, Kuzu H, Tsukamoto M. Proximal gastrectomy reconstructed by interposition of a jejunal pouch. Eur J Surg 1993;159:491–493.
5. Seike K, Kinoshita T, Sugito M, Arai T, Ono M, Taniyama S, et al. Comparative study between esophagogastrostomy and jejunal interposition after proximal gastrectomy for cardiac cancer of the stomach (in Japanese with English abstract). Jpn J Gastroenterol Surg 1998;31:900–907.
6. Hsu CP, Chen CY, Hsieh YH, Hsia JY, Shai SE, Kao CH. Esophageal reflux after total or proximal gastrectomy in patients with adenocarcinoma of the gastric cardia. Am J Gastroenterol 1997;92:1347–1350.
7. Adachi Y, Katsuta T, Aramaki M, Morimoto A, Shiraishi N, Kitano S. Proximal gastrectomy and gastric tube reconstruction for early cancer of the gastric cardia. Dig Surg (in press).
8. Sugimachi K, Ohno S, Maekawa S, Mori M, Kuwano H, Ueo H. Safety of EEA staplers for anastomosis between upper esophagus and the gastric tube. J Surg Oncol 1990;43:40–44.