How to Do It

Gastric Tube Interposition for Corrosive Esophagitis Associated with Pyloric Stenosis

ATSUSHI MATSUKI¹, TATSUO KANDA¹, SHIN-ICHI KOSUGI¹, TSUTOMU SUZUKI², and KATSUYOSHI HATAKEYAMA¹

¹ Division of Digestive and General Surgery, Niigata University Graduate School of Medical and Dental Sciences, 1-754 Asahimachidori, Niigata 951-8510, Japan
² Department of Nursing, School of Health Sciences, Niigata University, Niigata, Japan

Abstract
Corrosive esophagitis, caused by swallowing corrosive acid or alkali, results in cicatricial stricture of the esophagus. The stricture is often accompanied by pyloric stenosis because strong acids act synergistically with gastric juice. Resection of both the esophagus and stomach is usually necessary, and the colon or jejunum is used as an esophageal substitute. We describe how we successfully treated corrosive esophagitis associated with pyloric stenosis, by performing gastric tube interposition for the esophageal reconstruction. After resecting the injured distal part of the stomach, we pulled the pedunculated gastric tube up to the cervix after anastomosis to the jejunal limb in a Roux-en-Y fashion. This reconstruction procedure prevented excessive organ sacrifice and was minimally invasive. Thus, esophageal reconstruction by interposition using a pedunculated gastric tube can be used effectively to treat corrosive esophagitis associated with pyloric stenosis.

Key words Corrosive esophagitis · Pyloric stenosis · Pedunculated gastric tube

Introduction
Corrosive esophagitis is caused by swallowing caustic chemicals such as acids and alkalis, either by accident or in a suicide attempt. This results in cicatricial stricture composed of granulation tissue following the healing of the inflammation. Caustic stricture is usually limited to the esophagus, but sometimes extends to the stomach. Pyloric stenosis often occurs when a strong acid is swallowed, because strong acids act synergistically with gastric juice.¹ In such cases, surgical repair of the damaged tissue becomes more complicated and invasive than when the stomach is available because the intestinal tract must be used as an esophageal substitute.² Moreover, taking too much of the digestive tract for esophageal reconstruction compromises the patient’s long-term quality of life nutritionally. We describe a method of esophageal reconstruction, achieved by combining interposition using a pedunculated gastric tube and a jejunal Roux-en-Y procedure, to treat pyloric stenosis caused by corrosive esophagitis.

Case Report
A 63-year-old woman attempted suicide by drinking a whisky cocktail mixed with a detergent containing 9.5% (v/v) hydrochloric acid. The patient was taken to a local hospital by ambulance. On arrival, the presentation was of confusion and shock, with a systolic blood pressure of 60 mm Hg. Thoracoabdominal computed tomography (CT) scans showed no evidence of perforation in the gastrointestinal tract. Fluid resuscitation and gastric lavage with normal saline was started immediately. The patient recovered from shock and total parenteral nutrition (TPN) was commenced. An endoscopic examination 10 days after admission revealed a corrosive ulcer extending through the entire thoracic esophagus to the antrum and pylorus via the lesser curvature of the stomach. The greater curvature of stomach and the duodenum were intact. About 60 days after admission, the patient was transferred to the Niigata University Hospital for esophageal reconstruction because an esophageal stricture had developed.

The esophageal stricture was so severe that even a 7-mm fiberscope could not be passed into the thoracic esophagus. Upper gastrointestinal series showed a severe stricture involving the entire thoracic esophagus and a deformity of the antrum of the stomach. Fluorescent observation with a blowing agent revealed normal
expansion of the fundus and corpus of the stomach and no stenosis in the duodenum or jejunum (Fig. 1). On day 68, the patient underwent curative surgery, which included a transhiatal esophagectomy and partial resection of the antrum. Gastric tube interposition was selected for the esophageal reconstruction.

Surgery

Via an upper median laparotomy, the stomach was mobilized as for construction of a conventional gastric tube. The esophagus was removed through the esophageal hiatus using a blunt dissection technique. The gastric antrum and pylorus were narrowed by callous formation, which extended to the cardia along the lesser curvature of the stomach. The long gastric tube, which is conventionally used, was not available because the gastric outlet was rigid and stenotic. Fortunately, the greater curvature of the gastric corpus was intact. Therefore, we used a short gastric tube as the esophageal substitute. After dividing the right gastric vessels, the branches of the right gastroepiploic vessels supplying the pyloric lesion were cut carefully along the greater curvature where they entered the gastric wall. This procedure was extended 5 cm upward from the pylorus. The duodenum was divided just distal to the pyloric ring and the duodenal stump was closed. The callous part of the stomach was excised segmentally. Beginning at this point, we cut the stomach parallel to the greater curvature using linear staplers, and constructed a 17-cm-long gastric tube pedunculated with right gastroepiploic vessels (Fig. 2). The distal stump of the tube was anastomosed to the upper jejunum for a Roux-en-Y reconstruction. Thereafter, the gastric tube was pulled up through the posterior mediastinum and anastomosed to the cervical esophagus.