

Single Case

Percutaneous Trans-Esophageal Gastrostomy for Oral Intake in a Case of Anastomotic Obstruction following Total Gastrectomy

Masayuki Shishida^a Daisuke Sumitani^a Masatsugu Yano^a Makoto Ochi^a
Yuzo Okamoto^a Shigeto Yoshida^b Kazuaki Tanabe^c Hideki Ohdan^d

^aDepartment of Surgery, JR Hiroshima Hospital, Hiroshima, Japan; ^bDepartment of Gastroenterology, JR Hiroshima Hospital, Hiroshima, Japan; ^cDepartment of Perioperative and Critical Care Management, Graduate School of Biomedical and Health Sciences, Hiroshima University, Hiroshima, Japan; ^dDepartment of Gastroenterological and Transplant Surgery, Graduate School of Biomedical and Health Sciences, Hiroshima University, Hiroshima, Japan

Keywords

Percutaneous trans-esophageal gastrostomy · Anastomotic obstruction · Gastric cancer · Case report

Abstract

Gastric cancer is one of the most common diseases globally. Total gastrectomy is often performed surgically. However, late-stage anastomotic passage obstruction after total gastrectomy is relatively rare. Here, we report a case involving a 73-year-old male patient who experienced repeated aspiration pneumonia due to anastomotic passage obstruction 22 years after a total gastrectomy for gastric cancer. He was eventually hospitalized in the Department of Gastroenterology at our hospital because of difficulty eating. Computed tomography revealed prominent dilation of the esophagus and the blind end of the elevated jejunum. Upper gastrointestinal endoscopy revealed a poorly extended site on the main side of the elevated jejunum; however, the passage through the scope was good. A percutaneous trans-esophageal gastrostomy was performed for oral intake. The patient experienced decreased nausea and vomiting. He gained weight, and his general condition improved. He did not feel inconvenienced by percutaneous trans-esophageal gastrostomy and had no desire for surgery. Follow-up observations are currently being conducted, with tubes exchanged every 6 months. There are no reports of percutaneous trans-esophageal gastrostomy for oral intake for anastomotic passage obstruction following total gastrectomy; therefore, we report this as a reference when similar cases are encountered.

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Correspondence to:
Masayuki Shishida, shishimasa12@yahoo.co.jp

Introduction

Gastric cancer (GC) is a global disease with a high mortality rate, particularly in East Asian countries such as China, Japan, and South Korea [1]. In 2020, the estimated number of new cases of GC was 1,089,103 worldwide, with a total of 768,793 deaths [2]. The standard therapy for proximal GC is total gastrectomy [3] with Roux-en-Y reconstruction, which has been widely used in gastrointestinal reconstruction [4]. Late-stage complications following total gastrectomy include anemia [5], dumping syndrome [6], reflux esophagitis [7], and afferent loop syndrome [8]. However, anastomotic passage obstruction may be relatively rare. Anastomotic reconstruction for anastomotic passage obstruction following total gastrectomy is a highly invasive procedure for elderly people with poor nutritional status because the anastomotic site is located deep in the abdominal cavity, and adhesion is also considered. In this study, we report a case of recurrent aspiration pneumonia due to anastomotic passage obstruction 22 years after total gastrectomy for GC, for which we performed percutaneous trans-esophageal gastrostomy (PTEG) for oral intake.

Case Report

A 73-year-old male patient with angina had visited the Department of Cardiology at our hospital for several years. He had undergone total gastrectomy with Roux-en-Y reconstruction at another hospital 22 years ago for GC. A few years ago, he began occasionally vomiting and had repeated aspiration pneumonia. Although the patient managed to live his daily life while repeatedly vomiting at home, he was eventually admitted to the Department of Gastroenterology at our hospital because of difficulty eating food. During the hospital admission, he had a height and weight of 173.8 cm and 45.2 kg, respectively. His body mass index was 14.9 kg/m². The results of blood investigations were as follows: white blood cell count, 9,240/mm³; hemoglobin, 12.8 g/dL; platelet count, 252,000/mm³; total bilirubin, 0.8 mg/dL; aspartate aminotransferase, 16 IU/L; alanine aminotransferase, 10 IU/L; blood urea nitrogen, 12 mg/dL; creatinine, 0.5 mg/dL; sodium, 140 mEq/L; potassium, 3.8 mEq/L; chloride, 103 mEq/L; albumin, 3.6 g/dL; and C-reactive protein, 1.3 mg/dL. No special notes were made except for a slight increase in the inflammatory response. Computed tomography revealed prominent dilation of the esophagus and blind end of the elevated jejunum. Dilation of the main side of the elevated jejunum was not observed (Fig. 1a). A fluoroscopic examination of the upper gastrointestinal tract revealed stenotic changes on the side of the elevated jejunum, and the contrast medium was difficult to follow. The blind end of the elevated jejunum was dilated (Fig. 1b). The main side of the elevated jejunum had a poorly expanded site on the upper gastrointestinal endoscopy; however, the passage through the scope was good. Furthermore, the flow was good when the contrast medium flowed from the anal side to the poorly developed location (Fig. 1c). The patient was referred to our department regarding an indication for further surgical treatment. Based on the laboratory findings, it was believed that the food flowed into the blind end of the elevated jejunum due to the angle of the anastomotic site in the esophagus; the dilation of the blind end of the elevated jejunum made it more difficult for food to flow to the main portion.

The aspiration of saliva and food was assumed to be the main cause of the illness. Because the aspiration of digestive juice was rare, this did not result in significant pneumonia, and the patient's course was chronic. The patient requested that oral intake be provided as much as possible without surgery. If this was unavoidable, the patient was willing to undergo surgery. The following two options were provided to the patient: (1) to conduct laparotomy and reconstruction of the anastomotic site or anastomosis between the

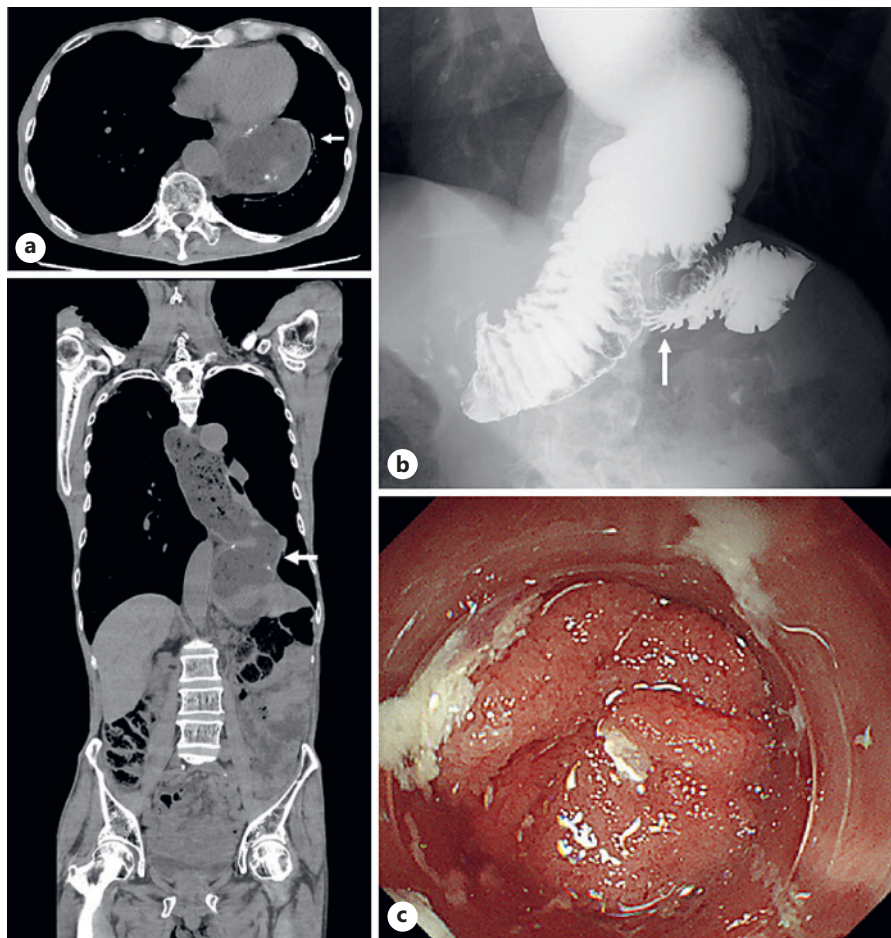


Fig. 1. Preoperative examination. **a** Preoperative CT scan (1. axial section, 2. coronal section). The esophagus and blind end of the elevated jejunum are significantly dilated (white arrows indicate esophageal jejunal anastomosis). **b** Preoperative upper gastrointestinal fluoroscopy. The main side of the elevated jejunum shows a stenotic change on the central side (white arrow). The blind end of the elevated jejunum was dilated. **c** Preoperative upper gastrointestinal endoscopy. The main side of the elevated jejunum showed poor progression; however, the passage of the scope was good. CT, computed tomography.

blind end of the elevated jejunum and the main side of the elevated jejunum; (2) to conduct PTEG and anticipate that oral ingestion would be possible by straightening the anastomotic site. If oral intake was impossible after PTEG, tube feeding from PTEG would have been conducted for a certain period to improve the patient's nutritional status and weight gain before surgery. A nasogastric tube would also be a possible option if it could straighten the anastomotic site; however, the long-term placement of the nasogastric tube would cause the patient discomfort. After proposing the above options, the patient requested the latter; therefore, PTEG was conducted using the procedure reported by Oishi et al. [9] (Fig. 2). On the day of surgery, the patient began tube feeding with PTEG. The patient began drinking water on the first postoperative day. Oral intake was initiated on the second postoperative day. The oral intake was smooth; therefore, the nutrition injection from the PTEG was discontinued on the same day. Inserting the tube into the main side of the elevated jejunum allowed food to flow more easily to the main side, and postoperative food intake was higher than preoperative food intake. The patient experienced decreased nausea and no vomiting.



Fig. 2. Abdominal X-ray following PTEG. The tube was placed on the main side of the elevated jejunum. PTEG, percutaneous trans-esophageal gastrostomy.

The patient was discharged from the hospital on postoperative day seven. A computed tomography scan 1 month postoperatively showed improvements in the dilation of the esophagus and the blind end of the elevated jejunum (Fig. 3). Even 10 months postoperatively, the patient had steadily gained weight to 59.2 kg and a BMI of 19.6. Oral intake had become possible for extended periods. The patient gained weight, his general condition improved, and it was believed that surgical treatment (e.g., anastomotic site reconstruction) was currently possible. However, the patient did not feel inconvenienced by PTEG and did not desire this procedure. Follow-up observations are currently being conducted, with tubes exchanged every 6 months. The patient provided written informed consent for the publication of this report.

Discussion

The incidence of pneumonia is high among elderly people, with 75% of patients with pneumonia aged >70 years [10]. Aspiration pneumonia accounts for 86.7% of pneumonia cases in elderly adults. Aspiration pneumonia is a major cause of death in the elderly [11]. Aspiration pneumonia that is caused by the obstructed passage of the gastrointestinal tract repeatedly occurs if the causative obstruction of the passage is not improved. A decrease in nutritional intake also accompanies this; therefore, activities of daily living rapidly decrease. However, unlike normal aspiration pneumonia in patients with impaired swallowing function, it is thought that both aspiration pneumonia and decreased nutritional intake can be improved so long as the obstruction of the passage is improved.



Fig. 3. CT scan 1 month after surgery (1. axial section, 2. coronal section). The dilation of the esophagus and blind end of the elevated jejunum improved (white arrows indicate esophageal jejunal anastomosis). CT, computed tomography.

Anastomotic passage obstruction may be a relatively rare late-stage complication following total gastrectomy and may be caused by stenosis or flexion. Endoscopic treatment is the main treatment for anastomotic stenosis, and there are reports of balloon dilatation [12], argon plasma coagulation [13], and stent placement [14]. However, surgical treatments, such as anastomotic reconstruction, are considered for cases where endoscopic treatment is ineffective. Surgical treatment, such as anastomotic reconstruction, is the main treatment for anastomotic flexion; however, endoscopic magnetic compression anastomosis may also be possible [15]. Anastomotic reconstruction for anastomotic passage obstruction following total gastrectomy is a highly invasive procedure for elderly patients with poor nutritional status because the anastomotic site is located deep in the abdominal cavity, and adhesion should be considered. Furthermore, it is unlikely to be the first-line treatment for patients with repeated aspiration pneumonia because of significant weight loss and poor general condition. This was the case of an elderly patient who underwent total gastrectomy with Roux-en-Y reconstruction at another hospital 22 years earlier for GC and experienced repeated aspiration pneumonia for several years. The results of upper gastrointestinal fluoroscopy and endoscopy revealed that the cause of the anastomotic passage obstruction was not stenosis but flexion of the

esophageal jejunal anastomosis, and it was thought that food flowed into the blind end of the elevated jejunum, resulting in its dilation. Therefore, it was difficult for food to flow to the main side of the elevated jejunum. The patient experienced repeated aspiration pneumonia and lost a significant amount of weight; however, his wish was to be able to conduct an oral intake to the extent possible without surgery. We do not believe that PTEG insertion is appropriate for all patients with impaired gastrointestinal transit after total gastrectomy. For example, it may be inappropriate for patients with impaired gastrointestinal transit due to stenosis. If the cause of the anastomotic passage obstruction had been stenosis, we would have opted for endoscopic treatment. However, in this case, the cause of the anastomotic passage obstruction was not stenosis but rather flexion of the esophageal jejunal anastomosis. Therefore, we decided to conduct PTEG with the objective of oral intake. Fortunately, this patient achieved oral intake, and aspiration pneumonia did not occur; however, if aspiration pneumonia had repeatedly occurred after this procedure, then oral intake would have been discontinued. Tube feeding was conducted using the PTEG, and the patient's overall condition improved before considering surgical treatment, which was the patient's wish. Currently, the patient's weight is steadily increasing, and surgical treatment under general anesthesia can be safely conducted; however, the patient is satisfied that he can eat properly, and no further treatment is required. Many clinicians may ultimately choose surgical treatment for this case; however, we believe that it is best to discuss and consult this option with the patient before treatment and proceed according to the patient's wishes; therefore, no additional treatment was given in this case. There are no reports of PTEG for oral intake in patients with anastomotic passage obstruction following total gastrectomy; therefore, we report this as a reference for similar cases. Furthermore, if a puncture route can be secured, PTEG may be applicable to other gastrointestinal transit disorders caused by flexion. The CARE Checklist has been completed by the authors for this case report, attached as online supplementary material (for all online suppl. material, see www.karger.com/doi/10.1159/000530137).

Statement of Ethics

Ethical approval is not required for this study in accordance with local or national guidelines. Written informed consent was obtained from the patient for publication of the details of their medical case and any accompanying images.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

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Author Contributions

Masayuki Shishida treated the patient, designed the research study, drafted the manuscript, and contributed to the interpretation of data. Daisuke Sumitani, Masatsugu Yano,

Makoto Ochi, Yuzo Okamoto, and Shigeto Yoshida treated the patient. Kazuaki Tanabe and Hideki Ohdan contributed to critical revision of the manuscript. All authors read and approved the final version of the manuscript.

Data Availability Statement

All data that support the findings of this study are included in this article. Further inquiries can be directed to the corresponding author.

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