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Jin-Lei Wang, Director
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CASE REPORT

Gastric endoscopic submucosal dissection *via* gastrostoma before the second operation for esophageal perforation: A case report

Takuma Sasaki, Masaya Uesato, Takumi Ohta, Kentarou Murakami, Akira Nakano, Hisahiro Matsubara

Takuma Sasaki, Masaya Uesato, Takumi Ohta, Kentarou Murakami, Akira Nakano, Hisahiro Matsubara, Department of Frontier Surgery, Chiba University Graduate School of Medicine, Chiba 260-8677, Japan

ORCID number: Takuma Sasaki (0000-0002-5352-3265); Masaya Uesato (0000-0002-6766-5600); Takumi Ohta (0000-0002-0448-2049); Kentarou Murakami (0000-0002-0115-7726); Akira Nakano (0000-0002-2506-1825); Hisahiro Matsubara (0000-0002-2335-4704).

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Correspondence to: Masaya Uesato, MD, PhD, Assistant Professor, Doctor, Department of Frontier Surgery, Chiba University Graduate School of Medicine, 1-8-1 Inohana, Chuo-ku, Chiba-shi, Chiba 260-8670, Japan. uesato@faculty.chiba-u.jp
Telephone: +81-43-2262110
Fax: +81-43-2262113

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Abstract

A 69-year-old man with advanced esophageal cancer and 2 early gastric cancers received chemoradiotherapy and was scheduled to undergo subtotal esophagectomy after gastric endoscopic submucosal dissection (ESD). However, left lower esophageal perforation induced by vomiting suddenly occurred, and he urgently underwent esophago-proximal gastrectomy and gastrostomy without reconstruction. The resected specimen showed a complete response of pretreatment for the esophageal cancer and radical resection of one gastric cancer. Radical resection of the other gastric lesion was necessary before reconstruction. The fistula of gastrostoma was gradually dilated from 6.7 to 9.3 mm in order to pass the endoscope. At nine months after emergent operation, gastric ESD was performed *via* only the gastrostoma. A hemoclip with thread was attached to the specimen, and the thread was pulled out of the gastrostoma. The specimen was able to be removed *en bloc*, resulting in radical resection. Gastric tube reconstruction through the posterior sternal route was performed at six months after the ESD. He has not developed recurrence of the esophageal or gastric cancer in the two years since the emergent operation.

Key words: Gastric cancer; Endoscopic submucosal dissection; Gastrostomy; Gastrostoma

Core tip: Gastric endoscopic submucosal dissection (ESD), which is a useful and minimally invasive procedure for early gastric cancer, is usually performed through the mouth. This patient's stomach had a gastrostoma that was not connected to the mouth after surgery for esophageal perforation. The fistula of the gastrostoma was dilated in order to pass the endoscope. ESD for the early gastric cancer was performed *via* the gastrostoma. The specimen was able to be removed *en bloc*, and the residual stomach was able to be used for reconstruction. We herein report a unique gastric ESD technique using a gastrostoma.

Sasaki T, Uesato M, Ohta T, Murakami K, Nakano A, Matsubara H. Gastric endoscopic submucosal dissection *via* gastrostoma before the second operation for esophageal perforation: A case report. *World J Gastrointest Endosc* 2018; 10(6): 121-124 Available from: URL: http://www.wjgnet.com/1948-5190/full/v10/i6/121.htm DOI: http://dx.doi.org/10.4253/wjge.v10.i6.121

INTRODUCTION

Endoscopic submucosal dissection (ESD) is a useful, minimally invasive procedure that is used in the management of early gastric cancer[1,2]. The insertion route of the endoscope is usually the oral route. We herein report a unique ESD technique using a gastrostoma in a patient with early gastric cancer without an esophagus.

CASE REPORT

A 69-year-old man with middle thoracic esophageal cancer [T4b (trachea) N2 M0 StageⅢC] and 2 gastric cancers (T1aN0M0 StageⅠA, T1bN0M0 StageaⅠA) received chemoradiotherapy and was scheduled to undergo subtotal esophagectomy after gastric ESD. However, left lower esophageal perforation induced by vomiting suddenly occurred, and he urgently underwent esophago-proximal gastrectomy and gastrostomy without reconstruction (Figure 1). The resected specimen showed a complete response to pretreatment of the esophageal cancer and radical resection of one gastric cancer. Radical resection of the other gastric lesion was necessary before reconstruction of the gastric tube. The fistula of gastrostoma was gradually dilated from 6.7 to 9.3 mm using a urethral balloon catheter in order to pass the endoscope (GIF-Q260J; Olympus, Tokyo, Japan) after 4 wk as an outpatient.

At nine months after emergent operation, gastric ESD was performed through only the gastrostoma. ESD was performed with the patient awake. The gastric lesion was located at the middle posterior wall (Figure 2A), so the patient was placed in the supine position. Just after the insertion of the scope into the stomach, Funada-type gastric wall fixation (Create Medic, Tokyo, Japan) was performed at two opposite points (Figure 2B). Marking was performed around the boundary of the lesion using a needle knife. A sufficient amount of glycerol solution was injected into the submucosal layer. After making a small incision at the anal side, we connected the incision from the anal side to the surrounding lesion using an IT Knife2 (Olympus). We felt dissection to be difficult due to the large amount of vessels and fibrosis in the submucosal layer. A hemoclip (Olympus) with thread was attached to the specimen, and the thread was pulled *via* the gastrostoma (Figure 2C). The specimen was able to be removed *en bloc* in seven hours, showing radical resection pathologically (Figure 3). Gastric tube reconstruction through the posterior sternal route was performed at six months after ESD. He has not developed recurrence of esophageal and gastric cancer in the two years since the emergent operation.

DISCUSSION

ESD is a useful, minimally invasive procedure that is used in the management of early gastric cancer[1,2]. ESD is also actively performed for cases of residual gastric cancer, since this disease is generally considered to be difficult to treat effectively. The insertion route of the endoscope is usually the oral route. However, we herein report a unique ESD technique using a gastrostoma in a patient with early residual gastric cancer without an esophagus.

Five cases of gastric ESD performed in combination *via* routes other than the mouth have been reported[3-7] (Table 1). Among them, two reports of animal experiments involved gastric ESD *via* the mouth using a percutaneous endoscopic gastrostomy (PEG) device[6,7]. All five of these reports used a gastrostoma to perform endoscopic mucosal resection or ESD more easily. When reconstruction is performed in cases of esophageal cancer, the stomach is commonly used because it has an abundant blood flow[8]. Our patient scheduled to undergo reconstruction had a stomach without a connection to the mouth. Therefore, ESD had to be performed *via* only the gastrostoma.

As preparation, the fistula of the gastrostoma must be expanded to make it large enough for the endoscope to pass through. We previously reported a gradual tube dilation method before PEG for obstructive esophageal cancer[9]. This is a safe method, because it does not involve sudden expansion. While the method took longer than usual because our subject was an outpatient, we were able to expand to 9.3 mm without complications. The patient's posture during ESD was supine because to ensure the stability of the endoscope. However, the lesion at the posterior wall became invisible when bleeding occurred, and without the traction of gravity, the lesion was very difficult to dissect. We were able to resolve this issue by towing the specimen with a thread clip[10]. Of particular note, the thread attached to the clip was pulled *via* the fistula in our case. Bleeding may be substantial during ESD of a stomach isolated from the esophagus due to poor venous return. We recommend

Table 1 Cases of gastric endoscopic submucosal dissection performed in combination via routes other than the mouth

Ref.	Asano *et al*[3]	Tokumo *et al*[4]	Nishiwaki *et al*[5]	Delius *et al*[6]	Storm *et al*[7]	Sasaki
Year	1993	1997	2005	2008	2016	2018
EMR/ESD	EMR	EMR	ESD	ESD	ESD	ESD
Subject	Human	Human	Human	Pig	Pig	Human
Number	1	10	2	10	3	1
Use of an oral endoscope	Traction	EMR	ESD	ESD	ESD	None
Use of a gastrostoma	EMR	Traction	Auxiliary endoscope	Traction	Traction	ESD and Traction
Diameter of the gastrostoma (mm)	8	2.6	8	2.5	10, 16	9.3
Period from PEG to EMR/ESD	3 wk	Immediate	3 wk	Immediate	Immediate	7 wk[1]
Gastropexy	Used	Used	None	None	None	Used

[1]This period was required to expand the fistula diameter from 6.7 to 9.3 mm. EMR: Endoscopic mucosal resection; ESD: Endoscopic submucosal dissection; PEG: Percutaneous endoscopic gastrostomy.

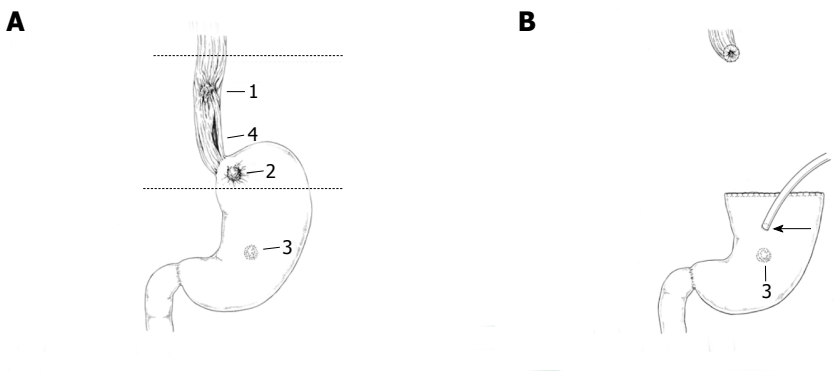

Figure 1 Schematic illustration of esophagectomy. A: This schematic illustration shows the middle thoracic esophageal cancer (1T4b), two gastric cancers (2T1b,3T1a), esophageal perforation (4) and the cutting line of the emergent operation (dotted line); B: After the emergent operation, one gastric cancer (3) remained at the middle posterior wall with the gastrostoma at the anterior wall (arrow).

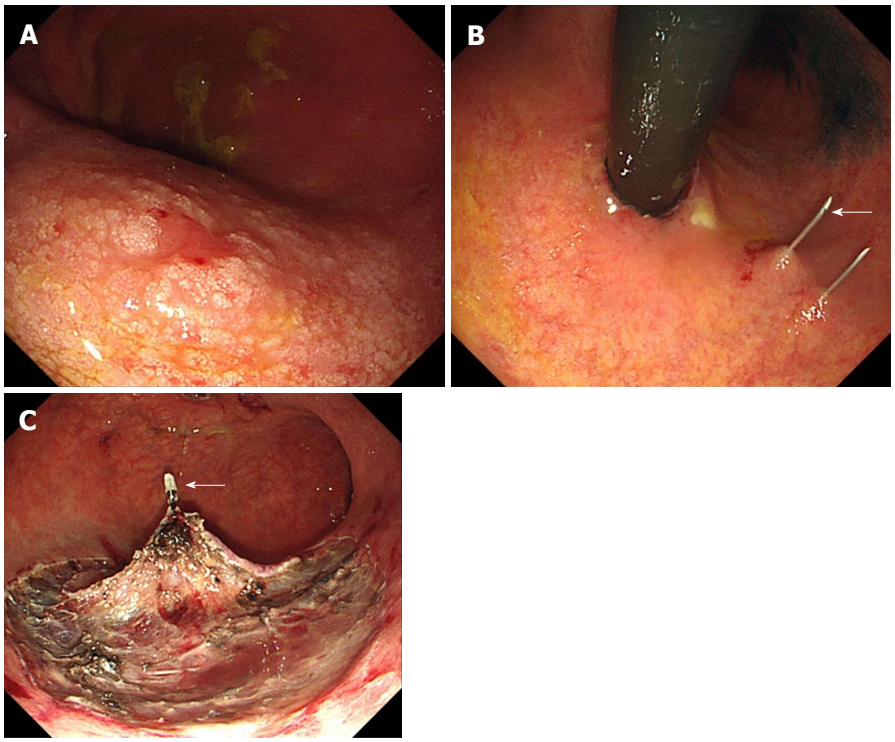

Figure 2 Results of gastric endoscopic submucosal dissection. A: The remnant gastric lesion located at the middle posterior wall showed a mucosal cancer lesion about 10 mm in diameter; B: Just after the insertion of the scope into the stomach, Funada-type gastric wall fixation (arrow) (Create Medic, Tokyo, Japan) was performed at two opposite sites; C: A hemoclip (Olympus, Tokyo, Japan) with thread (arrow) was attached to the specimen, and the thread was pulled *via* the gastrostoma.

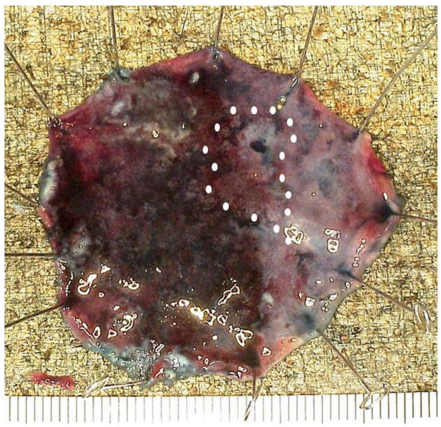

Figure 3 Gross appearance of the resected gastric mucosa is shown. A superficial depressed tumor measuring 14 mm × 10 mm (white dot) was observed macroscopically.

frequent hemostasis to ensure safe ESD. Regarding the gastric wall fixation, if it is necessary to perform ESD without a PEG device, the Funada-type fixation should be performed to ensure safety.

In conclusion, we successfully performed gastric ESD *via* only the fistula of a gastrostoma. To ensure success, the gradual tube dilation of the fistula, traction with a hemoclip and thread through the gastrostoma and frequent hemostasis should be considered.

ARTICLE HIGHLIGHTS

Case characteristics

A 69-year-old man with advanced esophageal cancer and 2 early gastric cancers received chemoradiotherapy and he was scheduled to undergo subtotal esophagectomy after gastric endoscopic submucosal dissection. However, left lower esophageal perforation suddenly occurred, and he urgently underwent esophago-proximal gastrectomy and gastrostomy.

Clinical diagnosis

The patient had one early cancer in the residual stomach without a connection to the esophagus.

Imaging diagnosis

The only *via*ble approach to the residual stomach was the gastrostoma.

Treatment

The fistula of the gastrostoma was gradually dilated to allow the endoscope to pass through. Gastric endoscopic submucosal dissection was performed *via* only the gastrostoma. A hemoclip with thread was attached to the specimen, and the thread was pulled *via* the gastrostoma. The specimen was able to be removed *en bloc*. Gastric tube reconstruction was performed.

Experiences and lessons

We successfully performed gastric endoscopic submucosal dissection through only the fistula of a gastrostoma. To ensure safety and success, the gradual tube dilation of fistula, traction with a hemoclip and thread through the gastrostoma and frequent hemostasis should be considered.

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