

CASE REPORT

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Esophageal reconstruction using a pedicled jejunum following esophagectomy for metastatic esophageal stricture from breast cancer in a patient with previous pancreatoduodenectomy

Soichiro Asai¹, Masahide Fukaya¹, Hironori Fujieda¹, Tsuyoshi Igami¹, Nobuyuki Tsunoda¹, Yayoi Sakatoku¹, Yuzuru Kamei², Kazushi Miyata¹, and Masato Nagino¹

¹*Division of Surgical Oncology, Department of Surgery, Nagoya University Graduate School of Medicine, Nagoya, Japan*

²*Department of Plastic and Reconstructive Surgery, Nagoya University Graduate School of Medicine, Nagoya, Japan*

ABSTRACT

A 71-year-old woman with dysphagia was diagnosed with thoracic esophageal squamous cell carcinoma by endoscopic biopsy at another hospital. She had previously undergone partial breast excision with axillary lymph node dissection for right breast cancer eleven years earlier and subtotal stomach-preserving pancreatoduodenectomy with Child's reconstruction for ampullary cancer ten years earlier. Gastrointestinal endoscopy showed a stricture due to a bulging submucosal tumor in the mid-thoracic esophagus. The tumor was diagnosed as an esophageal metastasis from breast cancer by endoscopic ultrasound-guided fine-needle aspiration biopsy. After six courses of fulvestrant, the tumor progressed, completely impeding her ability to swallow. An esophagectomy was planned in a one-stage operation because of the expectation of a prolonged survival and her strong hope of regaining oral intake. Unfortunately, she underwent emergent omental patch repair for perforation of the gastrojejunostomy site due to an anastomotic ulcer one day before the scheduled operation. Due to postoperative impairment of her performance status, she subsequently underwent a two-stage esophageal operation. In the first surgical stage, prone position thoracoscopic esophagectomy and cervical esophagostomy were performed and she was discharged with enteral nutrition on postoperative day 15. Sixty-one days after the first surgical stage, esophageal reconstruction was performed using a pedicled jejunum with microvascular anastomosis via the subcutaneous route. She was discharged without any complications 20 days after the second operation.

Keywords: pancreatoduodenectomy, thoracoscopic esophagectomy, breast cancer, metastatic esophageal stricture

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INTRODUCTION

Surgeons may hesitate to perform esophagectomies in patients who have previously undergone

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Corresponding Author: Masahide Fukaya, MD

Division of Surgical Oncology, Department of Surgery, Nagoya University Graduate School of Medicine, 65 Tsurumai-cho, Showa-ku, Nagoya, 466-8550, Japan

Tel: +81 52-744-2222, Fax: +81 52-744-2230, E-mail: mafukaya@med.nagoya-u.ac.jp

pancreatoduodenectomies because of the difficulty in adhesiolysis of the upper abdominal organs and complicated nature of the reconstructive procedure. In patients with primary esophageal cancer, chemoradiotherapy can be used as an alternative therapy. In fact, although there have been some reports of synchronous esophagectomy and pancreatoduodenectomy,¹⁻³ or pancreatoduodenectomy after esophagectomy,^{4,5} there are only a few published reports of esophagectomy after pancreatoduodenectomy.⁶

Herein, we report a case of esophageal metastasis from breast cancer in a patient who had previously undergone pancreatoduodenectomy. The esophageal tumor was successfully treated by prone position thoracoscopic esophagectomy and pedicled jejunum reconstruction in a two-stage operation.

CASE PRESENTATION

A 71-year-old woman with dysphagia was diagnosed with thoracic esophageal squamous cell carcinoma by endoscopic biopsy at another hospital.

She had undergone partial breast excision with axillary lymph node dissection for right breast cancer eleven years earlier and subtotal stomach-preserving pancreatoduodenectomy with Child's reconstruction for ampullary cancer ten years earlier. She underwent residual mastectomy for ipsilateral breast cancer recurrence five years earlier and partial lung resection due to left lung metastasis from breast cancer four years earlier. She was started on letrozole (LET) treatment after the partial lung resection. She was referred to our hospital for surgical treatment.

Physical findings revealed no abnormalities except surgical scars. Blood biochemical examinations were within normal limits, including tumor markers such as CEA, SCC, and CA15-3. Upper gastrointestinal imaging showed a large wall deformity on the anterior wall of the mid-thoracic esophagus (Fig. 1A). Gastrointestinal endoscopy revealed an esophageal stricture due to a bulging submucosal tumor in the mid-thoracic esophagus (Fig. 1B). Computed tomography (CT) showed wall thickening of the upper- to mid-thoracic esophagus, without invasion of the left main bronchus or regional lymph node metastases (Fig. 2A). Positron Emission Tomography (PET)-CT showed high accumulation of ¹⁸F-fludeoxyglucose (FDG) [maximum standardized uptake value (SUV max) 11.4] in the tumor (Fig. 2B). The endoscopic findings were atypical for esophageal squamous cell carcinoma and suggested esophageal metastasis from breast cancer. Histologic analysis of endoscopic ultrasound (EUS)-guided fine-needle aspiration biopsy (FNAB) confirmed that the tumor was an esophageal metastasis from breast cancer. Immunohistological results were as follows: Estrogen receptor (++), Progesterone receptor (++), Her-2 (-). The molecular phenotype was luminal A-like type.

LET was changed to fulvestrant (FUL), and hormone treatment was continued. PET-CT after three courses of FUL showed that the accumulation of FDG in the tumor had decreased to SUV max 3.84. However, after 4 months, the patient's oral intake was completely impeded due to progressive esophageal stricture, and she received a gastrostomy for enteral nutrition. PET-CT after three more courses of FUL showed that the SUV max had increased to 5.52. An esophagectomy with colon or small intestine reconstruction was planned in a one-stage operation because of the expectation of a prolonged survival and her strong hope of regaining oral intake. Unfortunately, she underwent emergent omental patch repair for perforation of the gastrojejunostomy site due to an anastomotic ulcer one day before the scheduled operation. Due to postoperative impairment of her performance status, we chose to perform a two-stage operation for esophageal resection and reconstruction.

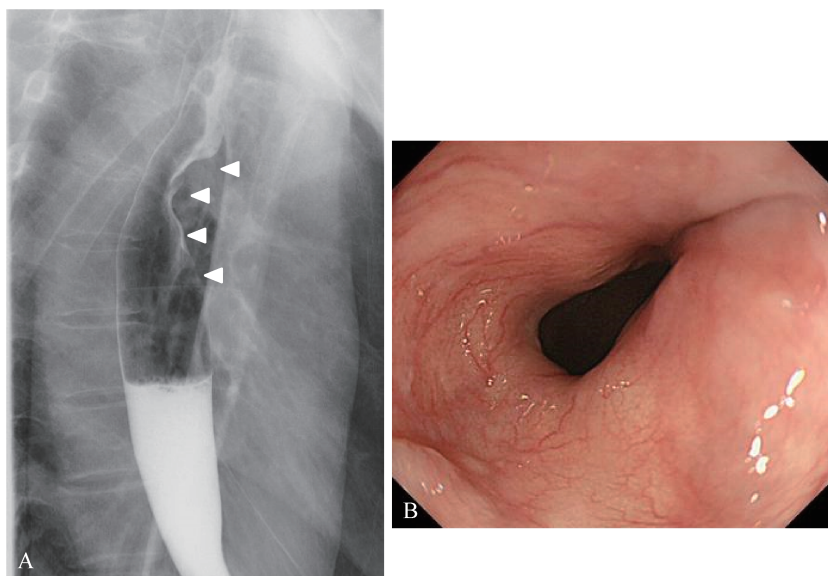


Fig. 1 Preoperative esophagography and endoscopic findings

Fig. 1A: Upper gastrointestinal imaging showed a large wall deformity on the anterior wall of the mid-thoracic esophagus, as indicated by the white arrows.

Fig. 1B: Gastrointestinal endoscopy revealed a stricture due to a bulging submucosal tumor in the mid-thoracic esophagus.

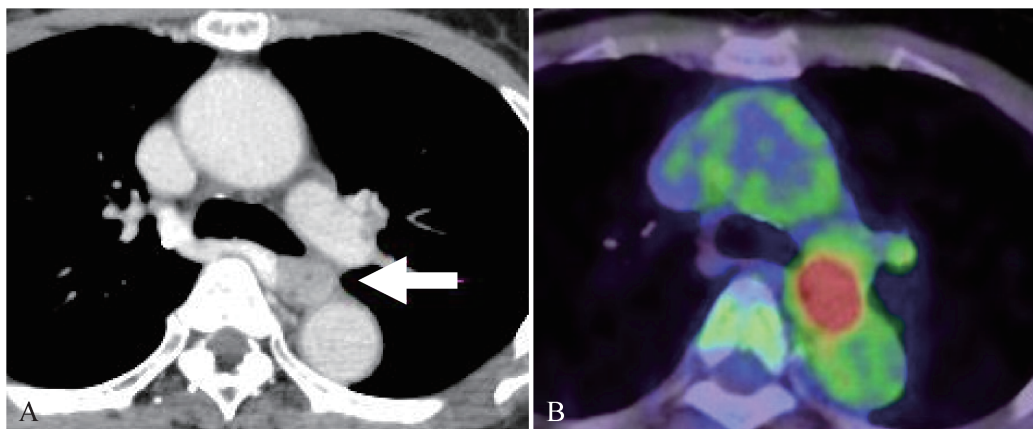


Fig. 2 Preoperative computed tomography image

Fig. 2A: Computed tomography (CT) showed wall thickening of the upper- to mid-thoracic esophagus, as indicated by the white arrows. The tumor did not invade the left main bronchus or demonstrate regional lymph node metastases.

Fig. 2B: Positron Emission Tomography (PET)-CT showed high accumulation of ^{18}F -fluorodeoxyglucose (FDG) [maximum standardized uptake value (SUV max) 11.4] in the tumor.

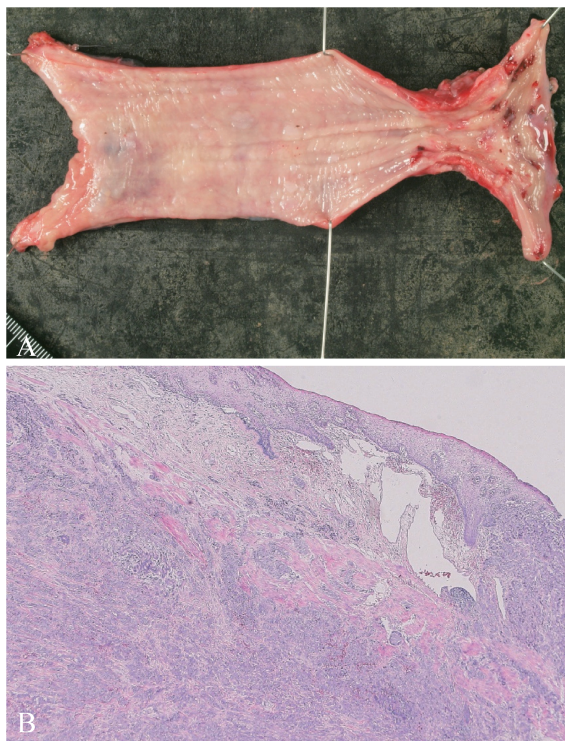


Fig. 3 Histological findings of the resected specimen

Fig. 3A: A resected specimen showed a circumferential stricture in the mid-thoracic esophagus, but the mucosal lesion was not clear.

Fig. 3B: Histologic analysis confirmed breast cancer metastasis. Tumor cells proliferated under the mucosa.

In the first surgical stage, prone position thoracoscopic esophagectomy and cervical esophagostomy were performed. Lymph node dissection was not performed because the tumor was a known esophageal metastasis from breast cancer. The operative time was 5 hours 11 minutes, and the blood loss was 80 ml. The resected specimen showed a circumferential stricture of the mid-thoracic esophagus, but the mucosal lesion was not clear (Fig. 3A). Histopathological examination of the excised specimen confirmed breast cancer metastasis (Fig. 3B). The postoperative course was uneventful, and she was discharged with enteral nutrition on postoperative day 15.

Sixty-one days after the first surgery stage, esophageal reconstruction was performed using a pedicle jejunum. The branches of the second jejunal vessels and marginal vessels were identified and clamped. Mesenteric blood flow to the jejunum used for the Child's reconstruction were identified and preserved. The jejunal and marginal vessels were cut, and the jejunum was divided at 20 cm distal to the gastrojejunostomy (Fig. 4). The distal portion of the jejunum was pulled up via a subcutaneous route and anastomosed to the remnant esophagus using a circular stapler. Microvascular anastomosis of the branches of the second jejunal vessels and right internal thoracic vessels was performed. The proximal portion of the jejunum was anastomosed to the mid-jejunum at 60 cm distal to the esophagojejunostomy. The mid-jejunum was anastomosed to the wall of the upper gastric body by side-to-side anastomosis at 40 cm distal to the esophagojejunostomy (Fig. 5). The operative time was 10 hours 14 minutes, and the blood loss was 1043 ml. The patient was discharged without any complications 20 days after the second operation stage.

Esophagectomy after pancreatoduodenectomy

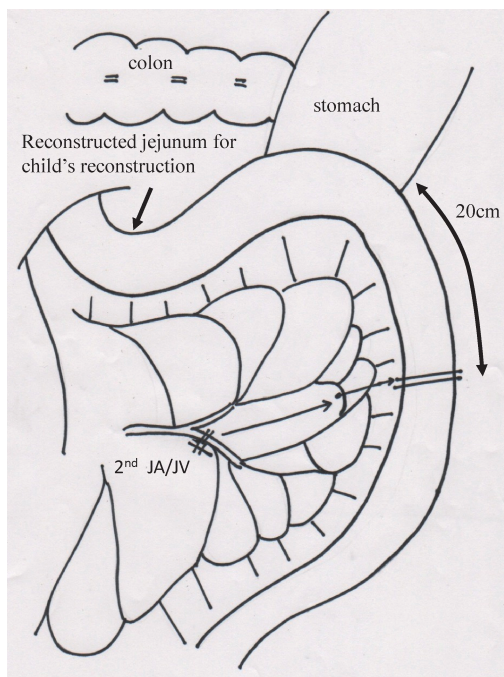


Fig. 4 Schema outlining the creation of a pedicled jejunum

JA, jejunal artery; JV, jejunal vein.

After clamping branches of the second jejunal vessels and marginal vessels that were scheduled to be cut and identifying mesenteric blood flow to the jejunum used for Child's reconstruction, the appropriate vessels were cut and the jejunum was divided at 20 cm distal to the gastrojejunostomy.

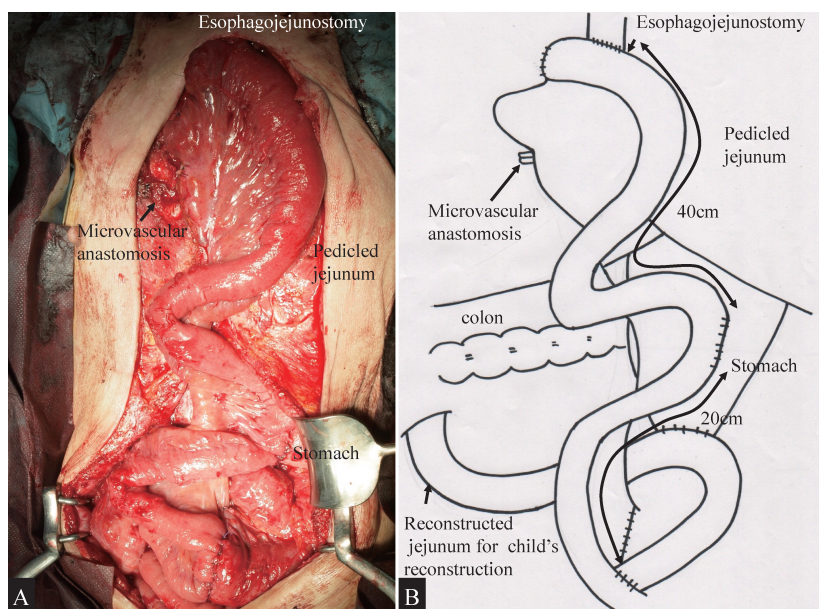


Fig. 5 Intraoperative photograph and schema of the second operation stage.

Fig. 5A: Photograph.

Fig. 5B: Schema.

Oral tamoxifen was started after the second operation stage. Six months later, the patient developed subcutaneous metastasis of the right axis and underwent high-dose toremifene therapy for three months. The tumor progressed, and paclitaxel plus bevacizumab therapy was started. Two years after the surgery, the patient has continued receiving this regimen without tumor regrowth and has good oral intake and nutrition.

The distal portion of the jejunum was pulled up via a subcutaneous route and anastomosed to the remnant esophagus. Microvascular anastomosis of branches of the second jejunal vessels and right internal thoracic vessels was performed. The proximal portion of the jejunum was anastomosed to the mid-jejunum at 60 cm distal to the esophagojejunostomy. The mid-jejunum was anastomosed to the wall of the upper gastric body by side-to-side anastomosis at 40 cm distal to the esophagojejunostomy.

DISCUSSION

Esophageal metastases from breast cancer are rare, and reported to be 0.6% of malignant esophageal diseases.⁷ In most cases, endoscopy reveals the extrinsic esophageal wall involvement with an apparently normal mucosal layer, and EUS-guided FNAB is reported to be a useful alternative to exploratory surgery.⁸ In this patient, histological results of biopsied specimens showed poorly differentiated squamous cell carcinoma at another hospital. However, considering past history of breast cancer and the endoscopic finding, we decided to perform EUS-guided FNAB, and its histological examination could confirm the tumor was an esophageal metastasis from breast cancer.

Esophagectomy in patients who have previously undergone pancreatoduodenectomy can be technically difficult. For example, the stomach cannot be used because the gastroepiploic vessels have been previously resected. Because of the shortage of jejunum available for reconstruction due to the Child's reconstruction after pancreatoduodenectomy, the colon is generally supposed to be suitable for esophageal reconstruction.^{2,6} However, in the presented case, extensive colonic adhesions near the hepatic and splenic flexures, due to peritonitis following ulcer perforation, complicated the colon reconstruction. Fortunately, the jejunal adhesions were soft, and esophageal reconstruction could be carried out using a pedicled jejunum after carefully identifying the jejunal vessels suitable for the reconstruction and after identifying blood flow to the jejunum following Child's reconstruction by the clamp test.

Resection of primary esophageal cancer requires extensive lymphadenectomy (ELA), including upper mediastinal and cervical lymph node dissection. ELA improves prognosis, but the complication and mortality rates are high.⁹ In addition, esophagectomy with colonic reconstruction is a high-risk surgical procedure.¹⁰ If this tumor was primary esophageal cancer, considering the surgical invasiveness and the complications associated with this reconstructive procedure, we would have chosen a two-stage operation from the beginning, which has been reported to be a useful option for high-risk patients.^{11,12} Because the tumor in this case was metastatic from breast cancer, it did not require lymph node dissection. We initially planned a one-stage operation. However, the patient developed peritonitis due to ulcer perforation at the gastrojejunostomy anastomosis one day before the scheduled surgery. We thus chose a two-stage operation due to impairment of her postoperative performance status.

CONCLUSION

Prone position thoracoscopic esophagectomy and esophageal reconstruction using a pedicled jejunum was successfully performed in a patient who had previously undergone pancreatoduodenectomy with Child's reconstruction. The surgery was performed in two stages due to the patient's performance status and complicated reconstructive procedure. In performing esophagectomy in patients who have undergone previous pancreatoduodenectomies, a pedicled jejunal reconstruction can be an alternate reconstructive procedure.

COMPETING OF INTERESTS

The authors declare that they have no competing interests.

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