GAVIN PUBLISHERS

Journal of Digestive Diseases and Hepatology

Kawano H, et al. J Dig Dis Hepatol: JDDH-140.

Case Report

DOI: 10.29011/2574-3511. 000040

Successful Esophagectomy and Colon Interposition for Metachronous Esophageal Cancer in A Patient with A History of Total Gastrectomy and Jejunal Interposition

Hiroyuki Kawano*, Masaru Morita, Takayuki Aiba, Syotaro Kuramitsu, Rumi Matono, Kenji Umeda, Koichiro Tahara, Hideaki Anai

Department of Surgery, Oita Medical Center, Oita, Japan

***Corresponding author:** Hiroyuki Kawano, Department of Surgery, Oita Medical Center, Oita, 2-11-45 yokota, Oita, 870-0263 Oita, Japan. Email: kawano.hiro0112@gmail.com

Citation: Kawano H, Morita M, Aiba T, Kuramitsu S, Matono R, et al. (2018) Successful Esophagectomy and Colon Interposition for Metachronous Esophageal Cancer in A Patient with A History of Total Gastrectomy and Jejunal Interposition. J Dig Dis Hepatol: JDDH-140. DOI: 10.29011/2574-3511. 000040

Received Date: 22 December, 2017; **Accepted Date:** 06 January, 2018; **Published Date:** 15 January, 2018

Abstract

A 64-year-old man with no special complaints was referred to our hospital with squamous cell carcinoma of the upper thoracic esophagus. He had previously undergone laparotomy three times: The first operation was distal gastrectomy for peptic ulcer, the second operation was partial gastrectomy for a bleeding peptic ulcer and the third operation was lower esophagectomy and remnant gastrectomy for lower esophageal cancer, followed by reconstruction using the jejunal interposition between the esophagus and duodenum. Since he had undergone three laparotomies, we worried about the likely presence of severe intraperitoneal adhesions. However, we were able to perform subtotal esophagectomy and reconstruction using the colon conduit. The distal end of the colon conduit was anastomosed to the remnant jejunal interposition, which helped reduce the number of surgical maneuvers and shortened the operating duration. He had an uneventful postoperative course. This report is the first to describe subtotal esophagectomy with colon conduit reconstruction in a patient with esophageal cancer and a history of gastrectomy and jejunal interposition reconstruction.

Keywords: Esophageal cancer; Jejunal interposition; Reconstruction

Background

The reconstruction of the alimentary tract after esophageal cancer resection can be completed using the stomach, colon or jejunum. If possible, the stomach is the first choice, because esophago-gastric anastomosis has been demonstrated as a technique with a low incidence of complications [1]. When patients undergo partial gastric resection or total gastrectomy, the colon or jejunum can be used for reconstruction. While the best method for achieving reconstruction after total gastrectomy with or without lower esophagectomy remains controversial, jejunal interposition is one method of reconstruction after gastrectomy. However, although several reports on the outcomes of esophageal cancer after gastrectomy with Roux-en-Y reconstruction have been published, none have described esophagectomy performed in a thoracic esophageal cancer patient with a history of gastrectomy and reconstruction using jejunal interposition. We herein report the outcome of subtotal esophagectomy and reconstruction using the colon conduit in a patient with a history of three laparotomies and reconstruction using jejunal interposition after gastrectomy. We expected to have difficulty in breaking up postoperative peritoneal adhesions, so didn't decided what kind of reconstructive procedure before surgery.

Case Presentation

A 64-year-old man without any complaints underwent a routine examination, and an esophageal tumor in his upper thoracic esophagus was detected during screening Esophagogastroduodenoscopy (EGD). He had a long history of heavy smoking and alcohol drinking. His medical history included lower esophageal cancer, gastric ulcer and alcohol-induced chronic pancreatitis. He had undergone distal gastrectomy 42 years

prior for a peptic ulcer with a Billroth I anastomosis, and partial gastrectomy 22 years prior for a bleeding peptic ulcer.

In addition, he had undergone lower esophagectomy, total remnant gastrectomy and reconstruction using jejunal interposition 10 years prior for lower esophageal cancer, which was pathologically diagnosed as moderately differentiated squamous cell carcinoma, pT1aN0M0; stage IA, according to the 7th edition of the UICC-TNM Classification of Malignant Tumors [2]. He was referred to our hospital for treatment. A physical examination of the chest and abdomen revealed no abnormal findings. Esophagoscopy revealed a type 0-Is tumor located 8 cm proximally from the esophago-jejunal anastomosis site. A biopsy of the tumor showed well-differentiated squamous cell carcinoma. Esophagography showed an elevated lesion with a diameter of 2 cm on the posterior wall of the upper thoracic esophagus (Figure 1).

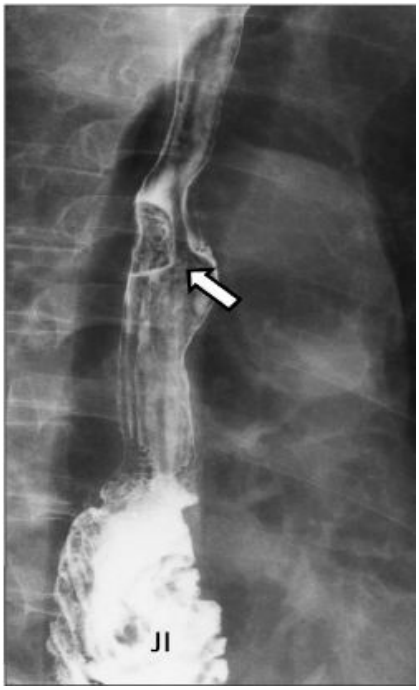

Figure 1: Esophagography. Esophagography showed an elevated lesion with a 2-cm diameter on the posterior wall of the upper thoracic esophagus (arrow). JI**:** Jejunal Interposition.

Computed Tomography (CT) revealed neither lymph node metastasis nor distance metastasis. [18F] Fluoro-2-Deoxy-D-Glucose Positron Emission Tomography (FDG-PET) imaging showed a high degree of FDG accumulation in the esophageal mass, and the maximum Standardized Uptake Value (SUV_{max}) in the esophageal tumor was 9.2. The angiographic assessment of the colonic arterial supply showed neither an anomalous nor aberrant vascular supply (Figure 2).

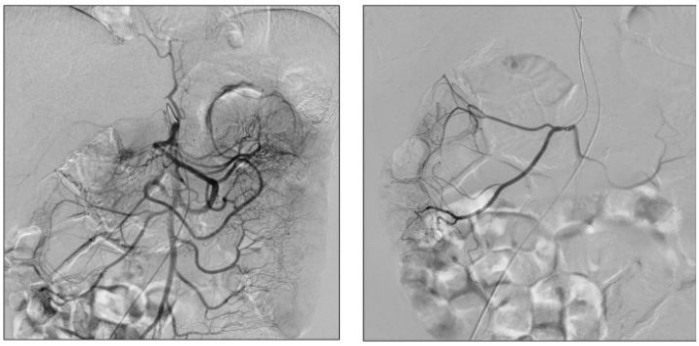

Figure 2: The angiographic assessment of the colonic arterial anatomy. (a) Superior mesenteric arteriogram. (b) Ileocolic arteriogram. The angiographic assessment of the colonic arterial supply showed neither an anomalous nor aberrant vascular supply.

Since the patient had a history of acute pancreatitis and had undergone laparotomy three times in the past, we feared the presence of severe intraperitoneal adhesions. Furthermore, no reports had ever described performing subtotal esophagectomy and esophageal reconstruction using interposed colon in a patient who had previously received lower esophagectomy with jejunal pouch interposition reconstruction. However, curative surgical resection was expected, so we decided to perform subtotal esophagectomy with colon conduit reconstruction.

Subtotal esophagectomy with two-field dissection of the lymph nodes and esophageal reconstruction using the right colon conduit through an ante thoracic route was performed (Figure 3).

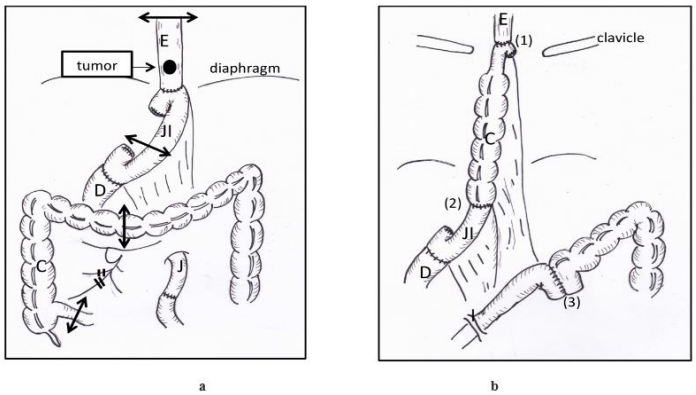

Figure 3: A schematic illustration of the resection area of the remnant jejunal interposition and the esophagus (pre-operative, a), and reconstruction of the organs (post-operative, b). Double-headed arrow: resection line, C: colon, E: esophagus, CI: colon interposition, D: duodenum, J: jejunum, JI: jejunal interposition, (1): esophagoileostomy, (2): colojejunostomy, (3): ileocolestomy

The intraperitoneal adhesions were much more attenuated than anticipated. The proximal anastomosis in the neck was congruent between the ileum and the proximal esophagus with end-to-end anastomosis using the triangulating stapling technique. The distal anastomosis stayed in the abdomen, and the colon graft was joined to the jejunal pouch interposition. When the colon conduit is used after esophagectomy, vascular reconstruction of the ligated arteries (supercharge) and veins (superdrainage) of the upper part of colon conduits is performed to improve the blood circulation. In the present case, the ileocolic artery and vein were anastomosed with the right internal thoracic artery and vein using microsurgery techniques. The operating duration was 865 min, and 200 ml of intraoperative bleeding was detected. The patient had an uneventful postoperative course.

The pathological findings revealed that the tumor was 15 mm in size and had invaded the submucosa. Histological lymph node metastasis was not recognized. Therefore, the final diagnosis was esophageal squamous cell carcinoma: Ut, 15 mm, Type0-IIa+III, well-differentiated squamous cell carcinoma, pT1b, ly0, v0, pIM0, pPM0, pDM0, pN0, cM0; stage IA, according to the 7th edition of the UICC-TNM Classification of Malignant Tumors [2].

Discussion

A gastric tube is usually used for conventional reconstruction after esophagectomy. However, the number of patients developing esophageal cancer after gastrectomy has increased, so reconstruction using colon interposition with a vascular pedicle is frequently performed for patients with esophageal cancer and a history of gastrectomy [3]. The disadvantages of using the colon conduit for reconstruction include the high invasiveness, long operative time and additional anastomosis [4]. Furthermore, resolving adhesions in the upper abdominal cavity caused by previously gastrectomy may result in intraoperative blood loss. The present patient had a history of three laparotomies. Although we expected to encounter substantial adhesions in the abdominal cavity, the adhesions were quite attenuated, and relatively little intraoperative bleeding occurred.

Jejunal interposition has been used as a gastric substitute after total gastrectomy [5-7]. Maintaining the so-called physiological route, which refers to the passage of food through the duodenum with replacement of the jejunal segment, is believed to be best for ensuring the optimum postoperative nutritional condition [8]. To our knowledge, there have been no reports of subtotal esophagectomy with colon conduit reconstruction in a patient with esophageal cancer and a history of gastrectomy and jejunal interposition reconstruction. In this case, we successfully constructed an anastomosis between the colon interposition and the remnant jejunal interposition, preserving the food passage through the duodenum. In addition, because we were able to avoid Roux-en-Y reconstruction after subtotal esophagectomy and colon conduit reconstruction, we were able to reduce the number of surgical maneuvers and shorten the operating duration. Using the remnant jejunal interposition for colon conduit reconstruction might reduce the incidence of postoperative complications.

A follow-up study after resection of Esophageal Squamous Cell Carcinoma (ESCC) showed a high prevalence of metachronous ESCC, especially among alcoholic men with inactive heterozygous Aldehyde Dehydrogenase-2 (ALDH2). In a recent study, the rate of development of new primary esophageal carcinoma after Endoscopic Mucosal Resection (EMR) for an initial lesion was found to be relatively high (14.6%) [9,10]. In addition, it was reported that the risks of metachronous ESCC and oropharyngolaryngeal squamous cell carcinoma were significantly higher in patients with inactive heterozygous ALDH2 than in those with active ALDH2 [11,12]. Given that our patient was a heavy user of alcohol, he should undergo follow-up with close endoscopic observation.

In summary, this is the first case report of esophagectomy and right colon conduit reconstruction for metachronous esophageal cancer in a patient who had previously undergone total gastrectomy, jejunal interposition reconstruction and multiple laparotomies. Using the remnant jejunal interposition for colon conduit reconstruction was shown to be a viable option.

Ethical Statement

This article does not contain any studies with human or animal subjects performed by any authors.

Conflict of Interest

The authors declare no conflicts of interest in association with this study.

Informed Consent

Additional informed consent was obtained from all patients for whom identifying information is included in this article.

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