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Curative two-stage resection for synchronous triple cancers of the esophagus, colon, and liver: Report of a case



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ABSTRACT

INTRODUCTION: Cases of synchronous triple cancers of the esophagus and other organs curatively resected are rare.

PRESENTATION OF CASE: A 73-year-old man was admitted to our hospital with bloody feces. He was diagnosed with synchronous triple cancers of the esophagus, colon, and liver. We selected a two-stage operation to safely achieve curative resection for all three cancers. The first stage of the operation comprised a laparoscopy-assisted sigmoidectomy and partial liver resection via open surgery. The patient was discharged without complications. Thirty days later, he was readmitted and thoracoscopic esophagectomy was performed. Although pneumonia-induced pulmonary aspiration occurred as a postoperative complication, it was treated conservatively. The patient was discharged on postoperative day 24.

DISCUSSION: Esophagectomy is a highly invasive procedure; thus, simultaneous surgery for plural organs, including the esophagus, may induce life-threatening, severe complications. Two-stage surgery is useful in reducing surgical stress in high-risk patients. For synchronous multiple cancers, the planning of two-stage surgery should be considered for each cancer to maintain organ function and reduce the stress and difficulty of each stage.

CONCLUSION: We successfully treated synchronous triple cancers, including esophageal cancer, by a two-stage operation.

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1. Introduction

Reports of synchronous multiple cancers have been increasing due to prolonged lifespan and improvements in diagnostic techniques [1,2]. The incidence of multiple cancers of the esophagus and other organs is reported to range from 9.5% to 20.7% [3–6]. Head and neck squamous cell carcinoma and gastric adenocarcinoma are most frequently observed as multiple primary cancers of other organs in esophageal cancer patients [7,8]. In Japan, the surgical procedure for thoracic esophageal cancer generally comprises subtotal esophagectomy with three-field lymphadenectomy; dissection of the mediastinal, abdominal, and cervical lymph nodes; and gastric tube reconstruction [9]. However, this is an extremely invasive procedure with a high mortality rate. Surgery for multiple cancers of other organs with esophagectomy is a highly complicated procedure. In addition to esophageal cancer surgery, for example, simultaneous total gastrectomy for synchronous gastric

cancer requires reconstruction of the colon with the addition of total pharyngolaryngoesophagectomy for synchronous head and neck cancer. It has been reported that two-stage surgery was both useful and safe for high-risk patients with esophageal cancer [10]. Therefore, a two-stage procedure may be suitable for complicated surgery for synchronous cancers of the esophagus and other organs. Cases of synchronous triple cancers of the esophagus and other organs are rare [1,7]. Here, we describe a case of synchronous triple cancers of the thoracic esophagus, sigmoid colon, and liver successfully treated with a two-stage operation.

2. Case report

A 73-year-old man was admitted to a local hospital with bloody feces. A barium enema revealed two tumors in the sigmoid colon (Fig. 1A). Endoscopic biopsy of both tumors revealed moderately differentiated adenocarcinoma. A screening esophagogastroscope to search for other gastrointestinal lesions showed a superficial elevated lesion with a surrounding Lugol-voiding lesion from 27 cm to 30 cm below the incisor (Fig. 2A). A diagnosis of poorly differentiated squamous cell carcinoma was histologically confirmed.

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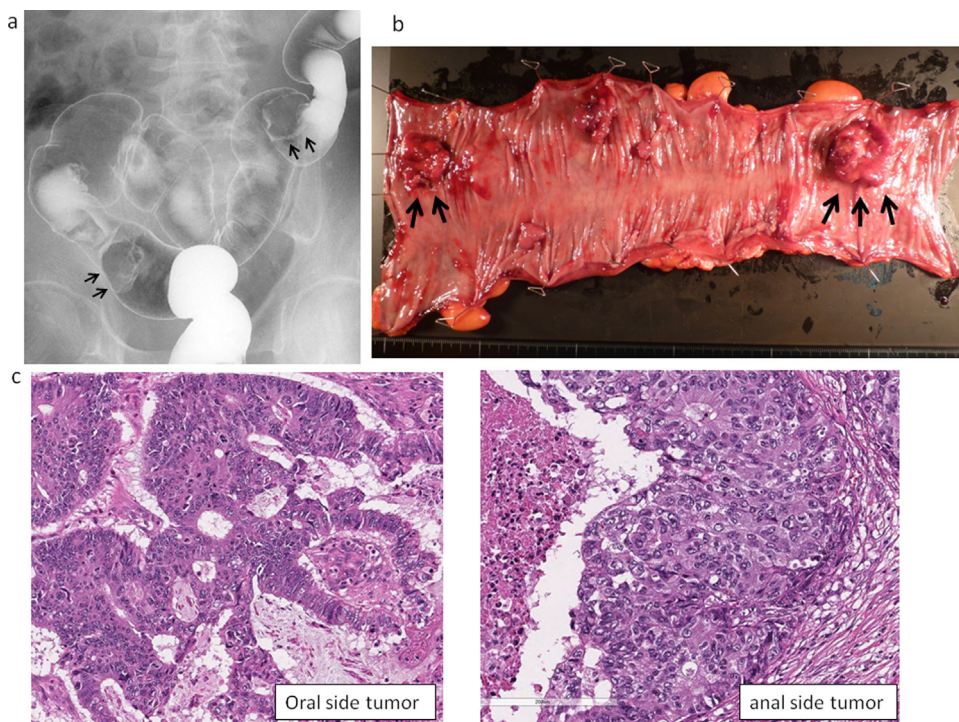


Fig. 1. (a) Barium enema showed two tumors as defects in the sigmoid colon (arrows). (b) Surgical specimen of the sigmoid colon (arrows). (c) Pathological specimen from the sigmoid colon showed a moderately differentiated adenocarcinoma.

Computed tomography (CT) showed no evidence of lymph node involvement for the esophageal cancer, but revealed lymph node metastasis from the sigmoid colon cancer. A CT scan during hepatic arteriography showed a high-density area of 7 cm in diameter on subsegments 4 (S4) and 8 (S8), which was diagnosed as hepatocellular carcinoma (HCC) (Fig. 3A). The laboratory data were

as follows: WBC count, 6890/mm³; RBC count, 442 × 10⁴/mm³; hemoglobin, 13.9 g/dL; platelet count, 204 × 10³/mm³; prothrombin time, 97%; albumin, 4.2 g/dL; total bilirubin, 0.3 mg/dL; and indocyanine green retention rate at 15 min, 12%. The hepatitis markers were negative. The prothrombin induced by vitamin K absence or antagonist II level was 2016 mAU/mL, alpha-fetoprotein

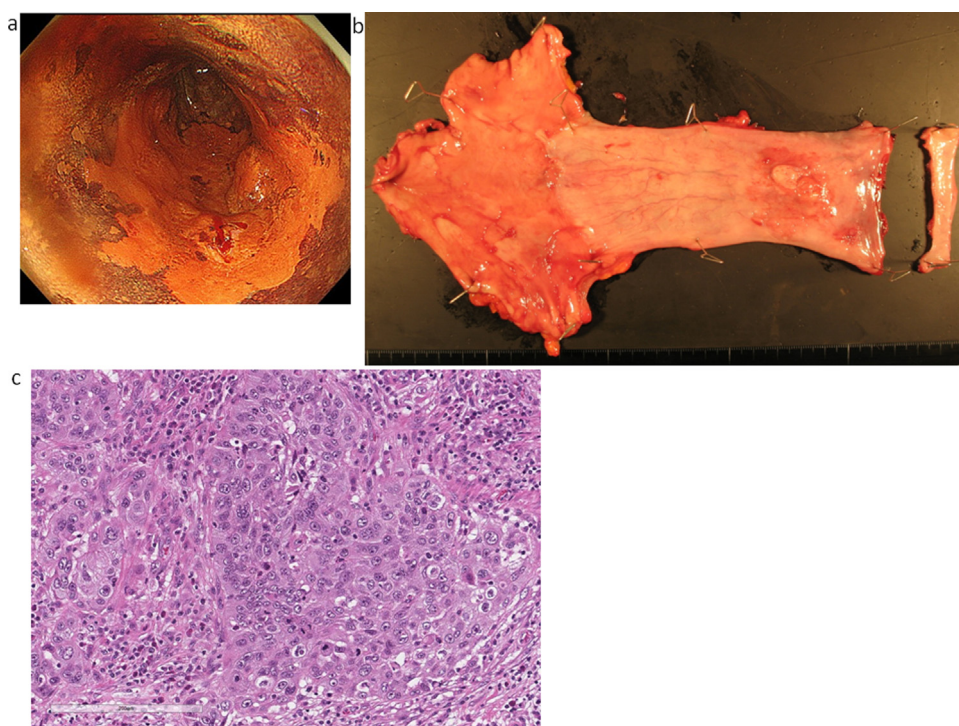


Fig. 2. (a) Esophagogastroscope revealed a superficial elevated lesion with a surrounding Lugol-voiding lesion from 27 cm to 30 cm below the incisor. (b) Surgical specimen of the esophagus. (c) Pathological examination of a specimen from the esophagus showed poorly differentiated squamous cell carcinoma.

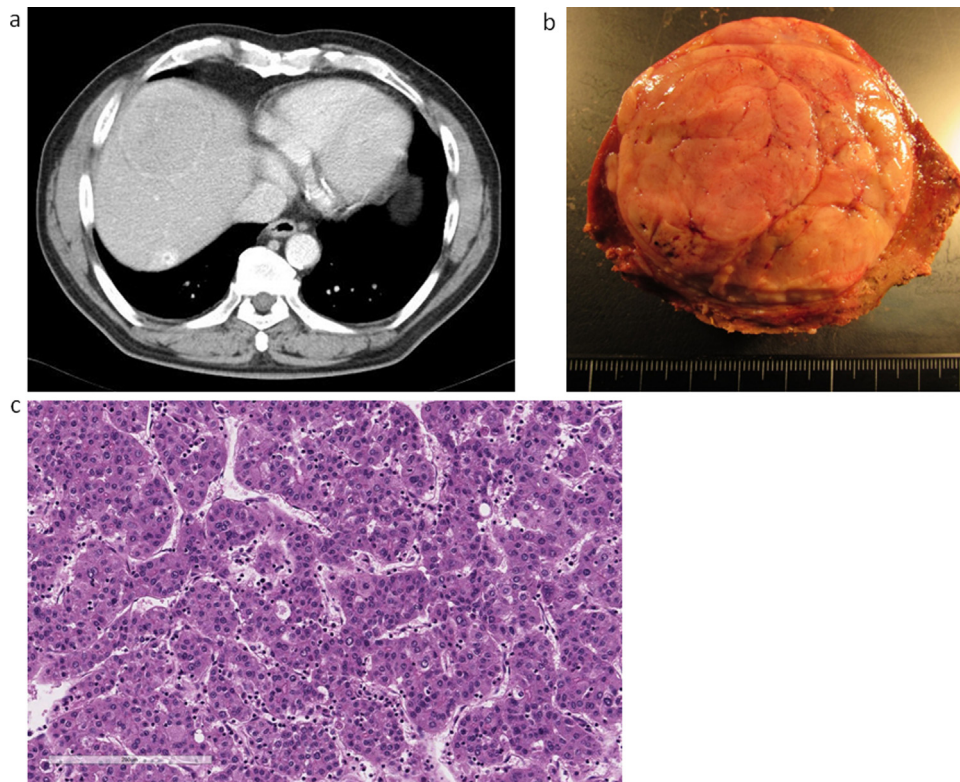


Fig. 3. (a) A CT scan during hepatic arteriography showed a 7 cm, high-density area on S4 and S8. (b) Surgical specimen of the liver. (c) Pathological examination of a specimen from the liver showed moderately differentiated HCC.

was 13.1 ng/mL, and carcinoembryonic antigen was 4.5 ng/mL. The levels of the other tumor markers, including carbohydrate antigen 19–9 and squamous cell cancer antigen were within normal limits. The patient was diagnosed with synchronous triple cancers of the esophagus (T1N0N0 stage I), colon (T3N1M0 stage IIIA), and HCC (T3N0M0 stage IIA) (Union for International Cancer Control ver. 7). A two-stage operation was performed with the intent of curative resection of all three cancers to reduce invasiveness of simultaneous complicated surgery. The first-stage of the procedure comprised sigmoidectomy for the colorectal cancer and partial resection of the liver for HCC. Laparoscopy-assisted sigmoidectomy was first performed, followed by upper midline laparotomy for partial hepatectomy of S4 and S8. A few sheets of Seprafilm (Genzyme, Cambridge, MA, USA) were placed directly around the stomach and under the abdominal wound before abdominal closure. The surgical duration was 472 min with a blood loss of 211 mL. The postoperative course of the first stage of the operation was uneventful and the patient was discharged on postoperative day 13. The pathological diagnosis of the colorectal cancer was moderately differentiated adenocarcinoma and pathologically staged as T3N1M0 (stage IIIA). The liver tumor was diagnosed as HCC and staged as T3N0M0 (stage IIA) (Fig. 3C). The patient was placed on a modified diet and underwent preoperative inspiratory muscle training until the second-stage of the surgery. Forty-nine days after the first stage of the surgery, esophagectomy with three-field lymph node dissection and gastric tube reconstruction was performed as the second stage using a thoracoscopic approach in the prone position, laparotomy, and bilateral cervical approaches. In the abdominal space, there were no adhesions around the liver or stomach. Posterior mediastinal route reconstruction was achieved using the gastric tube. The surgical duration was 572 min and blood loss was 516 mL. Pneumonia occurred as a postoperative complication and was treated conservatively. The patient was discharged on postoperative day 24. The pathological diagnosis of the

esophageal tumor was poorly differentiated squamous cell carcinoma and pathologically staged as T1N0M0 (stage I) (Fig. 1C). The patient is alive and has remained cancer-free for 7 months after the second stage of the surgery.

3. Discussion

Radical esophagectomy with simultaneous resection of other organs can be safely performed in most patients with synchronous double cancers [11]. However, as esophagectomy is a highly invasive procedure by itself, it is possible that simultaneous surgery for plural organs, including the esophagus, may induce life-threatening, severe complications. For esophageal cancer in high-risk patients, two-stage surgery is sometimes performed to reduce surgical stress. Therefore, it is also expected that a two-stage operation can reduce the invasiveness of surgical treatment for synchronous cancers of the esophagus and other organs. Fukaya et al. [7] reported a case of surgical resection for synchronous triple cancers of the esophagus, stomach, and ampulla of Vater. In the present case, the preoperative diagnosis was esophageal cancer (T2N0M0, stage IB) with gastric cancer (T1N0M0, stage IA) and cancer of the ampulla of Vater (T2N1M0, stage IIB) (Union for International Cancer Control ver. 7). The first stage of the operation comprised right-side transthoracic subtotal esophagectomy with external esophagostomy in the neck and gastrostomy. Thirty-five days after the first surgery, total gastrectomy and pancreatoduodenectomy were performed as the second stage. Esophageal reconstruction was performed using the ileocolon via the percutaneous route [7]. In this case of triple cancer, intrathoracic and abdominal surgeries were divided into separate stages. For synchronous multiple cancers, the planning of two-stage surgery should be considered for each cancer to maintain organ function and reduce the stress and difficulty of each stage. In the present case, cancers of the colon and liver were more advanced than the esophageal cancer, and

esophagectomy with lymphadenectomy and reconstruction was the most invasive procedure. Therefore, laparoscopic sigmoidectomy and partial hepatectomy were preferentially performed with radical esophagectomy a month later as the second stage.

The period between the first and second stages is needed for recovery from stress from the first stage and to prepare for the second. Patients undergoing esophageal surgery are at a high risk for post-operative pulmonary complications. It has been reported that pre-operative inspiratory muscle training reduces the risk of post-operative pulmonary complications [12]. Our patient underwent preoperative inspiratory muscle training under the supervision of a physiotherapist for 1 month prior to the second stage esophagectomy. Furthermore, it is well-known that a high body mass index (BMI) increases the risk of post-operative complications [13]. Our patient was obese with a BMI of 25.7 kg/m² at time of the first operation [14]. Therefore, he was placed on a restricted calorie diet for 1 month until the second operation, which resulted in a weight loss of 7.8 kg and a reduced BMI of 22.7 kg/m². It seemed that this pre-operative management regimen reduced the risk of postoperative complications because only mild pneumonia-induced pulmonary aspiration occurred after the second surgery.

The disadvantage of a two-stage operation is the possibility of rapid progression of the cancer until the second operation as a result of immune suppression following highly invasive surgery. Therefore, an accurate diagnosis and staging of the cancer of each organ is quite important.

Natsugoe et al. [1] reported that patients with synchronous cancers, including esophageal cancer, had poorer prognoses than those with metachronous cancer and that esophageal cancer was the most frequent cause of death. Treatment with higher curability for esophageal cancer and safety may be warranted.

4. Conclusions

Here, we reported the successful treatment of synchronous triple cancers of the thoracic esophagus, sigmoid colon, and liver by a two-stage operation. Two-stage surgery for curative resection is a useful treatment option for multiple primary cancers, including esophageal cancer.

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