

Case Report

## Return to Work 6 Days after Subtotal Esophagectomy with Three-field Lymphadenectomy for Advanced Esophageal Cancer

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### ABSTRACT

Esophagectomy with three-field lymphadenectomy is highly invasive, and is associated with high complication. A 66-year-old man with dysphagia was found to have advanced esophageal cancer. Preoperative radiochemotherapy was started and jejunostomy was performed for dysphagia. After a partial response to radiochemotherapy had been confirmed, home nutrition guidance was provided by a nutrition support team. At home, self-injected 2,000 kcal of an enteral nutrition formula and 1,000 ml of an ionic drink through the jejunostomy each day. He was readmitted and his nutritional was evaluated by the nutrition support team. He underwent esophagectomy with three-field lymphadenectomy. After surgery, pulmonary and motor rehabilitation was performed. All tubes had been removed by postoperative day 4, and the patient was discharged the next day after normal swallowing function by the otolaryngology. He returned to work on postoperative day 6 and self-managed enteral feeding.

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Key words: esophagectomy, nutrition support, self-injected enteral nutrition, respiratory function, rehabilitation

### INTRODUCTION

Esophagectomy with three-field lymphadenectomy is a highly invasive surgical procedure, with a high incidence of complications, prolonged hospitalization and rehabilitation. Here, we present a patient who had undergone such a major surgery following radiochemotherapy, was discharged 5 days after surgery, and returned to work the next day.

### CASE

The patient was a 66-year-old man in whom dysphagia developed in April 2004. Although he did not seek medical assistance at first, upper gastrointestinal endoscopy was performed at another institution in September 2004, when the dysphagia worsened. The patient received a diagnosis of esophageal cancer and was referred to our hospital for curative surgery. He was also treated for diabetes mellitus and hypertension. At the time of admission, no physical abnormality was seen, and laboratory findings, including

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serum tumor markers (squamous cell carcinoma antigen, and carcinoembryonic antigen), were within the normal range. On the basis of the findings of upper gastrointestinal endoscopy (Fig. 1), an upper gastrointestinal series (Fig. 2), and computed tomography, advanced esophageal cancer (T2N1M0, stage III) was diagnosed.

Preoperative radiochemotherapy was started in September 2004 with 2 Gy radiotherapy administered 5 days a week and 1,200 mg of 5-fluorouracil administered 5 days a week for 4 cycles, and 6 mg of cisplatin was administered 5 days a week for 4 cycles for 4 weeks. In November, jejunostomy was performed 6 weeks after the start of radiochemotherapy because of poor oral intake due to esophageal stricture. After preoperative radiochemotherapy had been completed, tumor reduction and a partial response were confirmed. Because the area of stricture had not dilated sufficiently to allow oral intake, home nutritional guidance was provided by a nutrition support

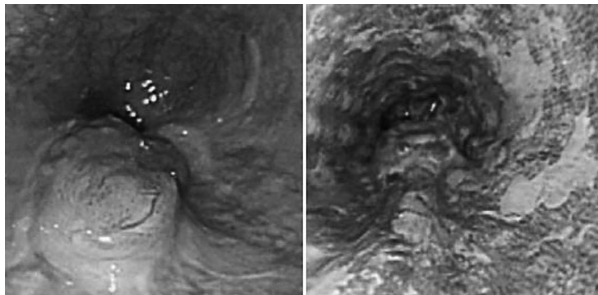


Fig. 1. Endoscopic study showed luminal narrowing at the lower part of the esophagus.



Fig. 2. Esophagography demonstrated a long and severe stricture in the lower thoracic esophagus.

team. The patient was discharged 10 days after jejunostomy. At home, the patient self-injected 2,000 kcal of an enteral nutrition formula and 1,000 ml of an ionic drink through the jejunostomy. The patient was readmitted 12 days later, and his nutritional status was evaluated by the nutrition support team. At the Department of Otorhinolaryngology, recurrent nerve paralysis was reevaluated, and preoperative tests were performed.

Esophagectomy with three-field lymphadenectomy (cervical, thoracic, and abdominal regions) was performed by means of hand-assisted laparoscopic and thoracoscopic surgery with clavicle lifting technique in December 2004. The esophagus was reconstructed by elevating the gastric tube to the cervical region through the posterior mediastinum, and the residual esophagus and the gastric tube were anastomosed. While adhesion due to jejunostomy were observed, findings indicative of distant metastasis such as peritoneal metastasis were absent. However, because the right cardiac lymph node were enlarged, T3N1M0 stage III disease was diagnosed.

After surgery, the patient was admitted to the intensive care unit and was then transferred to the general ward on the next day. The patient underwent daily respiratory and motor rehabilitation. By postoperative day 4, all tubes had been removed, and the patient was discharged the next day after normal swallowing function and intact recurrent nerve function had been confirmed by the Department of Otorhinolaryngology.

For nutritional management, an enteral nutrition formula was administered through the jejunostomy from the time of intensive care unit admission, and the daily dose of this formula was increased to 2,000 kcal. During this period, hyperalimentation was not performed, and intravenous alimentation consisted of maintenance infusion.

The patient returned to work on postoperative day 6 and performed enteral feeding by himself. To date, the patient has been well, with no sign of recurrence. The patient has also been able to swallow without difficulty, and oral intake has been favorable. The jejunostomy was removed 2 months after surgery. The tumor was histopathologically diagnosed as

adenosquamous cell carcinoma of the esophagus: pT3pN0(0/69)M0, stage II. Although surgical findings were suggestive of metastasis to the right cardiac lymph node, no sign of metastasis was observed. The degree of curability was assessed as "A".

## DISCUSSION

In recent years, social demands and the disclosure of medical information have increased the emphasis on disease curability and postoperative quality of life (QOL). We believe that QOL can be improved by 1) achieving long-term survival, 2) alleviating physical pain, 3) achieving early discharge and recovery, and 4) containing total medical costs. Consequently, improving QOL requires cooperation of surgeons, and other healthcare professionals. With a team approach to medicine, a team of healthcare professionals has been involved in the treatment of esophageal cancer at our hospital since 2002. In particular, rehabilitation and nutritional management play an important role.

### *Pulmonary rehabilitation*

During the 1990's, endoscopic surgery was introduced to reduce surgical invasiveness in the treatment of esophageal cancer<sup>1,2</sup>, and shortened postoperative hospitalization, lower mortality rates (1.4%) and lower pulmonary complications (pneumonia 7.7%) have been documented<sup>3</sup>. Even when performed endoscopically, esophagectomy with three-field lymphadenectomy is highly invasive, and in particular, intrathoracic procedures lengthen the duration of one-lung ventilation, thus increasing the risk of postoperative pneumonia.

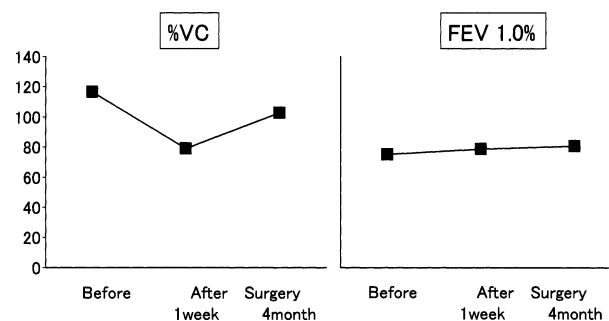
To shorten the duration of intrathoracic procedures and assist forceps manipulation, at our hospital, an assistant insert his or her left hand through the median incision to widen the visual field by displacing the right lung<sup>4</sup>. This maneuver shortens operation time and reduces surgical invasiveness to prevent postoperative pulmonary complications. However, improving therapeutic outcomes involves systemic management before and after surgery as well as improved surgical methods.

In the past, the incidence of postoperative respiratory complications ranged from 19.5 to 27%, but with the introduction of preoperative rehabilitation, the incidence has decreased to 6% to 7.5%<sup>5,6</sup>, and the importance of perioperative respiratory rehabilitation is now widely recognized.

In our patient anesthesia was provided by continuous infusion of a mixture of 10 ml of 0.2% ropivacaine hydrochloride hydrate (Anapeine, AstraZenaca, Tokyo, Japan) and 8 ml (0.4 mg) of fentanyl citrate (Fentanest, Sankyo Co., Ltd, Tokyo, Japan) at 4 ml/h into the epidural space between the T10 and T11, and at a rate of 2 ml/h for T2 and T3. The patient underwent rehabilitation before and after surgery, and did not have any pulmonary complications. One day after surgery, the endotracheal tube was removed, and the patient began walking. At two days after surgery, the patient began to walk longer distances, and a physical therapist was assigned for rehabilitation. In addition, epidural anesthesia was continuously administered for sufficient pain control and rehabilitation.

In terms of respiratory function, percent vital capacity decreased slightly 1 week after surgery, but at 4 months after surgery, was nearly as high as it had been before surgery. No marked changes were seen in the percent forced vital capacity in 1 second before and after surgery (Table 1). To the best of our knowledge, no published studies have assessed respiratory function 1 week after esophagectomy. That respiratory function could be assessed in the present

Table 1. Respiratory function, before and after surgery. %VC decreased slightly one week after surgery, but at four months after surgery, it was nearly as high as it was preoperatively. No marked changes were seen in FEV1.0% before and after surgery



patient demonstrates the minimal invasiveness of our technique for esophagectomy.

### *Nutrition*

Due to difficulty of swallowing and eating, the incidence of malnutrition is high among patients with esophageal cancer<sup>7,8</sup>, and surgery, radiotherapy, and chemotherapy themselves are invasive and undermine nutritional status. Studies have shown that enteral feeding started preoperatively is effective in maintaining a favorable nutritional status, preventing weight loss<sup>9,10</sup>, and improving therapeutic outcomes<sup>11</sup>.

In the present patient, oral intake became insufficient during radiochemotherapy, and central venous hyperalimentation was the main source of nutrition. Because he did not initially consent to laparotomy for jejunostomy. At the end of radiochemotherapy, oral intake was poor, and the levels of serum albumin and rapid turnover proteins were low, for which a jejunostomy tube was placed for home enteral feeding therapy. At home, oral intake was insufficient, and enteral feeding improved the nutritional status and contributed to the rapid recovery and return to work as 6 days after extensive esophagectomy.

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