

CASE REPORT

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Two cases of carcinoma of the cervical esophagus adjacent to the larynx treated with surgery

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Abstract We report herein two cases of carcinoma of the cervical esophagus adjacent to the larynx in which surgery achieved good results. Surgery for case 1, a 64-year-old woman, comprised resection of a carcinoma of the cervical esophagus at stage 0-IIa T1aN0M0, bilateral neck and paratracheal dissections (D1 and D2 dissection), reconstruction using the free jejunal segment, and tracheostomy. At 30 days postoperatively, she was able to eat normal food. For case 2, a 58-year-old man, the same operative procedures were conducted for stage 0-IIc T1bN0M0 carcinoma. At 33 days postoperatively, the patient was able to eat rice porridge (5 parts water, 1 part rice). We therefore consider that for carcinomas in the vicinity of the pharyngoesophageal segment, surgery can achieve both radical cure and preservation of function in some cases.

Key words Cervical esophagus · Surgery · Free jejunal transfer · Function preservation

Introduction

In recent years, chemoradiotherapy has been actively used in the treatment of esophageal cancer^{1–3} and it is considered the standard treatment. This approach enables preservation of organ morphology, but is hardly a minimally invasive therapy. Tumors in the head and neck are also often duplicated and some treatment histories do not permit the use of radiotherapy, and treatments that preserve function for secondary and subsequent cancers that occur after radiotherapy are not easy to conduct.

Otolaryngologists and head-and-neck surgeons are familiar with the anatomy of the operative field for carcinoma of the cervical esophagus, and thus should actively participate in such treatment. We report herein the successful results of surgery in two patients with carcinoma of the cervical esophagus adjacent to the larynx.

Case reports

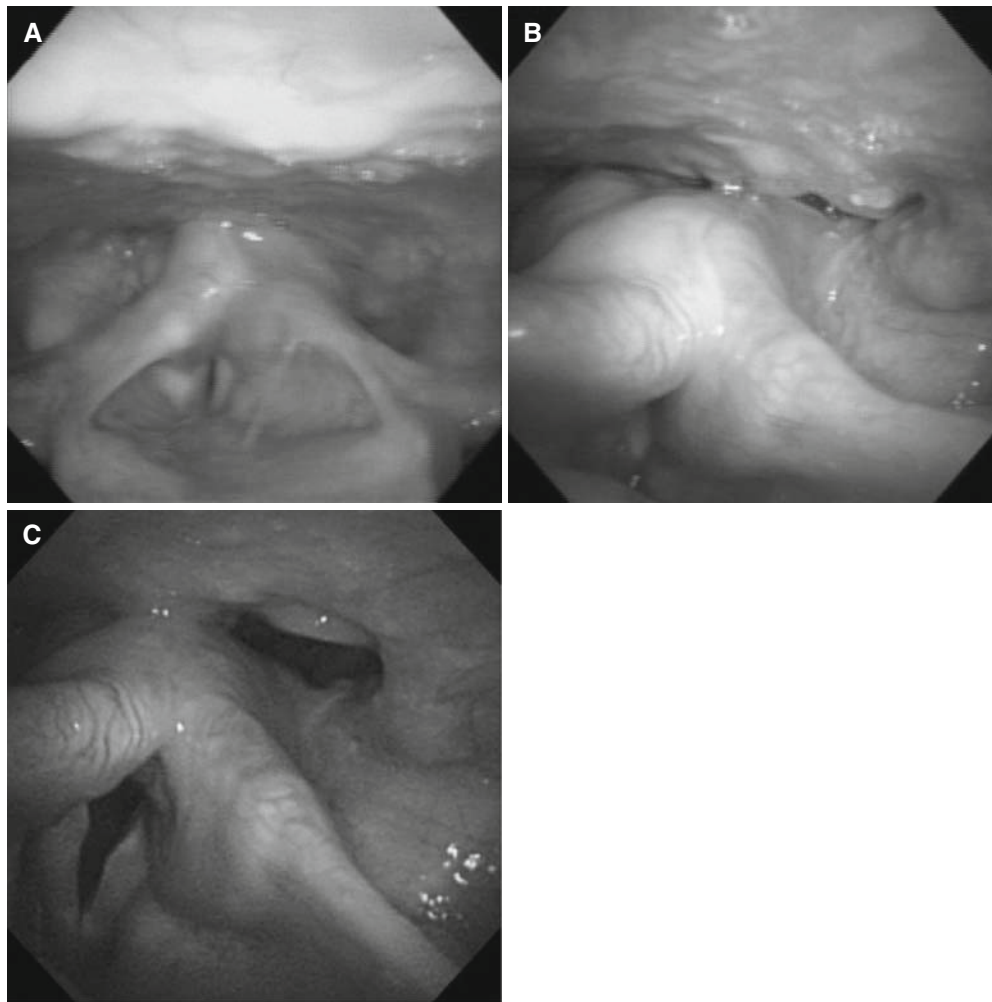
Case 1 involved a 64-year-old woman. During follow-up for esophageal dysplasia, stage 0-IIa T1aN0M0 carcinoma of the cervical esophagus was diagnosed at 16–18 cm from the incisors. No upper mediastinal or supraclavicular lymph node metastases were identified by computed tomography (CT). Biopsy revealed squamous cell carcinoma. Given the position of the tumor, endoscopic mucosal resection was considered difficult. The patient was given the option of surgery that would preserve the larynx, or radiotherapy, and she selected surgery.

After a U-shaped skin incision was made, bilateral neck and paratracheal dissections (D1 and D2 dissection) were conducted, preserving the recurrent laryngeal nerve bilaterally. Strap muscles were divided inferiorly bilaterally. After separating the cervical esophagus from the trachea and surrounding tissue, we entered the esophageal lumen at a location considered to be safe, based on endoscopic findings and palpation. We then performed Lugol staining and secured a safety margin from 15 mm above to 10 mm below the resected cervical esophagus. The upper extremity was resected at 10 mm from the inferior edge of the cricoid cartilage. A frozen section of the superior and inferior extremities yielded cancer-negative results. To improve swallowing function, we performed cricopharyngeal myotomy, but not laryngeal suspension. Reconstruction was performed using the free jejunal segment. Albert-Lambert sutures were used to anastomose first the esophagus to the jejunum, and then the pharynx to the jejunum. The left external carotid artery and left internal jugular vein were anastomosed to each other. Temporary

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Fig. 1A–C. Case 1. **A** One month postoperatively. **B** Five months postoperatively; clearance is good and the jejunum can be distinguished. **C** Nine months postoperatively



tracheostomy was performed between the second and third rings of the trachea. A drain was inserted and surgery completed. The tumor was diagnosed as pT1bN0M0.

No laryngeal paralysis was identified postoperatively. The patient started drinking on postoperative day (POD) 14, the tracheostomy was closed on POD 20, and eating of normal food was started on POD 30 (see photograph in Fig. 1A).

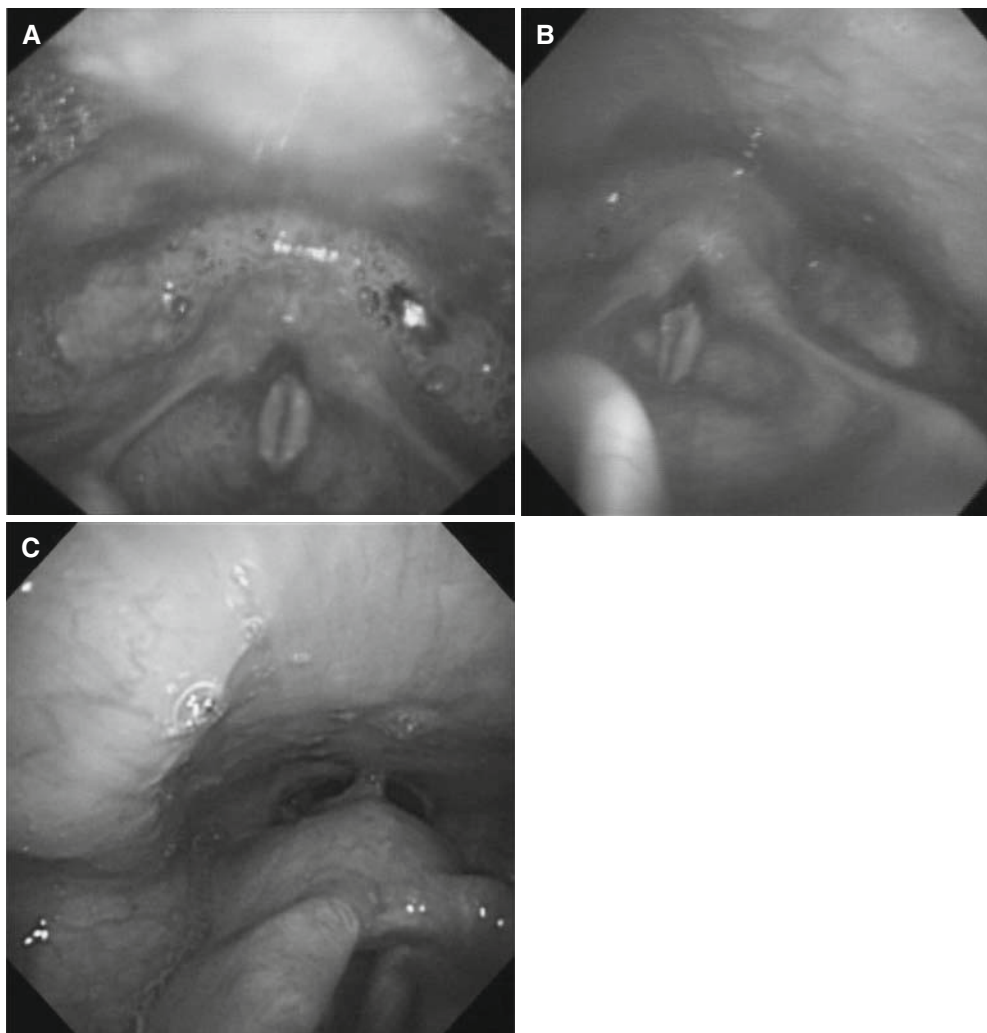
Case 2 involved a 58-year-old man. Stage 0-IIc T1bN0M0 carcinoma of the cervical esophagus at 18–20 cm from the incisors was diagnosed following a medical check-up. Biopsy led to a diagnosis of squamous cell carcinoma. No upper mediastinal or supraclavicular lymph node metastases were identified by CT. The patient was given the option of surgery preserving the larynx, or radiotherapy, and he selected surgery.

Surgery comprised resection of the carcinoma of the cervical esophagus, bilateral neck and paratracheal dissections (D1 and D2 dissection), reconstruction using the free jejunal segment, and tracheostomy. The procedures were virtually the same as those used for case 1, again preserving the recurrent laryngeal nerve bilaterally. After separating the cervical esophagus from the surrounding tissue, we entered the esophageal lumen at a location considered to

be safe, based on palpation and endoscopic findings. We then performed Lugol staining and secured a safety margin of 15 mm above and 10 mm below the resected cervical esophagus. The superior extremity was resected at 20 mm from the inferior edge of the cricoid cartilage. A frozen section of the superior and inferior extremities produced cancer-negative results. To improve swallowing function, we performed cricopharyngeal myotomy, but not laryngeal suspension. Reconstruction was performed using the free jejunal segment. Albert-Lambert sutures were used to anastomose first the esophagus to the jejunum, and then the pharynx to the jejunum. The left external carotid artery and left internal jugular vein were anastomosed to each other. Temporary tracheostomy was performed between the second and third rings of the trachea. A drain was inserted and surgery completed. The tumor was diagnosed as pT1bN1M0.

No laryngeal paralysis was evident postoperatively. On POD 16, he was able to start eating jellied food, followed by rice porridge (5:1 water-to-rice ratio) on POD 33. On POD 40, the tracheostoma was closed. Pharyngeal clearance was initially insufficient, but steadily improved and the patient was able to eat normal food as of 6 months postoperatively (see photograph in Fig. 2B).

Fig. 2A–C. Case 2. **A** Two months postoperatively; accumulation of saliva can be observed in the hypopharynx. **B** Six months postoperatively. **C** Thirteen months postoperatively; clearance is good and the jejunum can be distinguished



Discussion

Accounting for just 4% of all esophageal cancers, carcinoma of the cervical esophagus is comparatively rare and is often advanced on diagnosis.⁴ Treatment strategies remain controversial, as the condition of the pharynx is closely connected with patient quality of life.

If treatment with chemoradiotherapy is performed in the early stages, preservation of the organs is possible. Yamada et al.⁵ reported the treatment of stage I (T1N0M0) esophageal cancer using chemoradiotherapy. The 5-year cause-specific survival rates for T1a and T1b cancer patients were 85.2% and 70.0%. Treatment options include radiotherapy and surgery. However, tumors in the head and neck are often duplicated and some treatment histories do not permit the use of radiotherapy. For secondary and subsequent cancers that occur after radiotherapy, function-preserving treatment is difficult. For this reason, we conduct surgery if we feel that function may be preserved.

The presence of disease in both proximal and distal surgical margins can be detected through the examination of frozen sections stained using Lugol's solution, allowing

clear visualization of the extent of a cancerous lesion.⁶ We therefore use this method to determine the extent of resection that needs to be performed.

Free jejunal transfer with microvascular anastomosis is a standard reconstructive procedure in this kind of surgery.⁷ Following surgery, differences were identified between our cases 1 and 2 with regard to pharyngeal clearance and swallowing function, but we do not know the reason behind this. However, for case 2, the patient was able to eat rice porridge (5 parts water, 1 part rice) on POD 33 and he could eat normal food after 6 months, representing a satisfactory outcome.

We consider the conditions enabling preservation of pharyngeal function in carcinoma of the cervical esophagus adjacent to the larynx to be as follows. First, irrespective of N classification, cases should be T1 or T2. That is, the carcinoma should be limited to the muscularis propria. Second, the recurrent laryngeal nerve should be able to be preserved on at least one side. Third, following radical resection, post-cricoid mucosa that permits suturing needs to be preserved. The extent of resection is passively determined by the extent of the tumor. Where possible, we try to obtain a safety margin of 10 mm or more for the stump. In cases

where a safety margin of 10 mm is difficult to achieve, resection is performed up to the site determined to be pathologically cancer-free on frozen section analysis. Although the opening of the esophagus is considered to start from the inferior edge of the cricoid cartilage, the anterior wall of the esophagus can be detached up to the superior edge of the cricoid cartilage by dissecting part of the inferior constrictor muscle and the cricopharyngeus muscle. This method is useful when problems are encountered with surgical margins on the oral side. If these conditions are satisfied, we also make a careful study of the age, overall physical condition, willingness to undergo treatment, social background, and other factors of the patient.

We thus believe that in some cases of carcinoma adjacent to the entrance to the esophagus both radical cure and preservation of function can be achieved through surgery.

Conflict of interest statement

No author has any conflict of interest.

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