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# Larynx-Preserving Pharyngo-Esophagectomy After Chemoradiation in the Treatment of Cancer of the Pharyngo-Esophageal Junction

Örs Péter Horváth, ScD, László Cseke, MD, Katalin Kalmár, MD, Gábor Varga, MD, and Gábor Horváth, MD

Departments of Surgery and Radiology, University of Pécs, Pécs, Hungary

Pharyngo-laryngo-esophagectomy in the treatment of advanced tumors of the pharyngo-esophageal junction is associated with a high morbidity and poor quality of life due to loss of the larynx. Neoadjuvant chemoradiotherapy resulted in a considerable tumor reduction in 6 patients allowing radical tumor resection by larynx-preserving pharyngo-esophagectomy. The operation con-

sisted of total esophagectomy and resection of the posterior pharyngeal wall and reconstruction by a pharyngo-gastrostomy in 5 patients, and ileocolon interposition in 1 patient.

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Pharyngo-laryngo-esophagectomy has been the only therapeutic method to cure tumors of the pharyngo-esophageal junction. The procedure is associated with a high morbidity and considerable mortality. In addition, the short- and long-term postoperative results are limited by a significant reduction in the patient's quality of life due to the loss of the larynx [1]. An attempt to avoid laryngectomy therefore seems to be justified. The good response of tumors at this location to neoadjuvant chemoradiotherapy raises the possibility of modification of the surgical treatment [2].

This series of patients with advanced cancers at the pharyngo-esophageal junction underwent neoadjuvant chemoradiotherapy. Those patients with a good response to treatment and tumor regression to adequate safety margins to the larynx were submitted to total esophagectomy and partial pharyngectomy with preservation of the larynx.

## Technique

Between January 1997 and December 1999, 155 patients with esophageal cancer were treated at the Department of Surgery, University of Pécs. Eleven patients (7.1%) presented with tumors at the pharyngo-esophageal junction and were medically fit for a major operation.

Pretherapeutic staging consisted of barium swallow; endoscopic ultrasound; abdominal, thoracic, and cervical computer tomography; bronchoscopy; abdominal and cervical ultrasonography; chest roentgenography; and ear, nose, and throat examinations. Four of the 11 pa-

tients had a Unio Internationalis Contra Cancrum (UICC) stage III, 7 patients a stage IV pharyngo-esophageal tumor. Without neoadjuvant treatment, a pharyngo-laryngo-esophagectomy or only palliative therapy would have been indicated.

All 11 patients with tumors of the pharyngo-esophageal junction received neoadjuvant chemoradiotherapy. On day 1, carboplatin and 5-fluorouracil (600 mg/m<sup>2</sup>/day) were administered intravenously [3] followed by a daily infusion of 5-fluorouracil (600 mg/m<sup>2</sup>/day) on days 2, 3, 4, and 5. Radiation therapy was given from day 1 (a total of 35 Gy administered in fractions of 250 cGy). After the completion of the neoadjuvant treatment, the patient was restaged with endoscopy, thoracic and cervical computer tomography and pharyngo-laryngoscopy.

The operative procedure started with a transmediastinal esophagectomy. The entire esophagus and part of the posterior pharyngeal wall—5 cm to 6 cm in diameter—was removed. An Akiyama gastric tube was pulled up via the posterior mediastinum and anastomosed side-to-side to the pharynx with partly interrupted, partly running sutures using a 3-0 absorbable monofilament suture material (Fig 1). In the ileocolon replacement, a side-to-end pharyngo-ileostomy was performed.

Following neoadjuvant treatment, swallowing improved in all cases. The restaging examinations showed considerable tumor regression in all 11 patients. Therefore, all were subjected to surgical exploration. In 3 patients, in spite of regression of the primary tumor, widespread lymph node metastases precluded an R<sub>0</sub> resection. In these patients, no resection was performed. In 6 patients, the tumor had macroscopically disappeared from the pharynx or was confined to the posterior wall of the pharyngo-esophageal junction thus allowing a larynx-preserving pharyngo-esophagectomy. In the remaining 2 patients, the primary tumor had disappeared from the cervical esophagus and a

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Address reprint requests to Dr Gabor Horváth, Department of Surgery, University of Pécs, H-7624 Pécs Ifjúság u. 13, Hungary; e-mail: ophorvath@iseb.pote.hu.

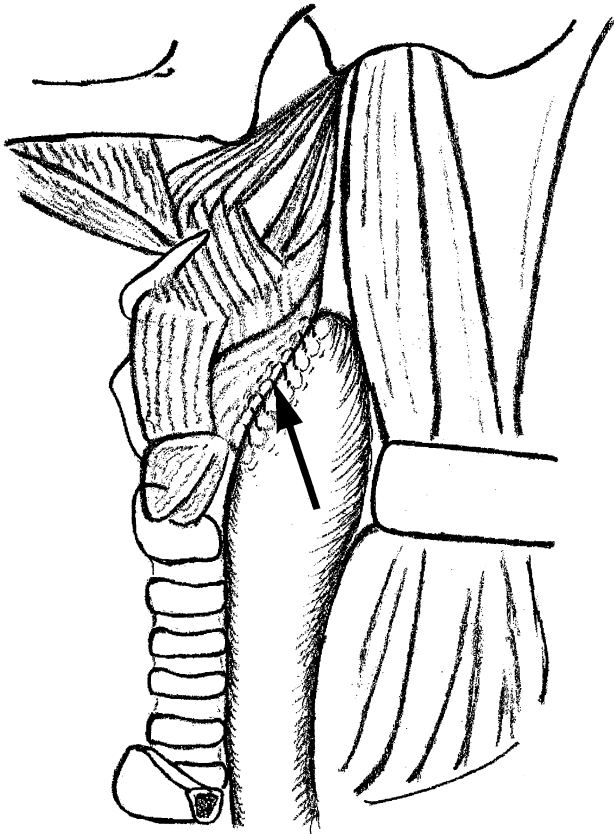


Fig 1. Gastric pull-up after larynx-preserving pharyngo-esophagectomy. The posterior wall of the pharynx is resected. The gastric tube is anastomosed to the pharynx (arrow).

pharyngo-laryngectomy could be achieved preserving the thoracic esophagus. The reconstruction was performed using a free jejunal interposition.

In 4 of 6 patients undergoing larynx-preserving pharyngo-esophagectomy, a complete histopathological response was seen, while in 2 patients, partial tumor regression could be demonstrated by histological analysis. No mortality and two minor anastomotic leaks were observed. All 6 patients were discharged with a good swallowing function. One patient presented with cervical lymph node metastases 5 months after resection and died within a year. In another case, an anastomotic tumor recurrence developed 6 months after the larynx-preserving operation. The recurrent tumor was removed by pharyngo-laryngectomy and a free jejunal transfer was performed with a pharyngo-jejuno-gastrostomy. The patient recovered uneventfully and died 1 year later of multiple distant metastases. Another patient died of a pulmonary complication related to tumor recurrence 14 months after surgery. The other 3 patients are alive with no detectable tumor growth after a 36, 30, and 24 month follow-up, respectively.

### Comment

Pharyngo-laryngo-esophagectomy is accompanied by high morbidity and mortality at our hospital as well as in

experienced institutions [2, 4, 5]. The loss of the larynx causes a major reduction in quality of life of these patients.

In 60% to 80% of patients with squamous esophageal carcinoma of the pharyngo-esophageal junction, neoadjuvant chemoradiotherapy proved to be suitable to achieve tumor regression [6]. For the good responders, a larynx-preserving pharyngo-esophagectomy may be offered. These patients will learn to swallow well in 2 to 3 weeks and generally do not need tracheostomy as proposed by some authors to avert the danger of aspiration [2]. The morbidity and mortality of larynx-preserving pharyngo-esophagectomy are similar to those of routine esophageal resection.

From the oncological point of view, two important perspectives emerge following successful neoadjuvant treatment of tumors of the pharyngo-esophageal junction. First, in advanced cancers requiring mutilating major surgical resections, the use of neoadjuvant treatment may lead to a compromise in the extent of the oncological resection such as preserving the larynx. Second, although the recommended resection margin for hypopharyngeal tumors and carcinomas of the cervical esophagus is 3 cm, measured from the edge of the macroscopic tumor growth [2], the borderline between normal and neoplastic tissue is difficult to ascertain after neoadjuvant treatment. Histological sampling with intraoperative frozen sections can only be taken from the resection margin, so we believe that a resection margin proven to be tumor-free should imply sufficient radicality. In summary, larynx-preserving pharyngo-esophagectomy—after successful neoadjuvant chemoradiotherapy—is feasible allowing larynx preservation even in those patients whose tumors are located at the level of the pharyngo-esophageal junction on the posterior wall of the pharynx.

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