

# Head and Neck Surgery

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## Introduction

Preservation of vital organ function is the goal of several surgical innovations. The larynx is the central focus of many organ-preserving strategies because it is amenable to a variety of function-sparing surgical options, including partial laryngectomy. These surgical approaches have been extended in recent years to include advanced disease management. Free flap reconstruction with extended laryngeal conservation surgery opens the possibility of function-preserving surgery of the hypopharynx and the base of the tongue. Early detection of hypopharyngeal cancer using Narrow Band Imaging (NBI) endoscopy also adds to the potential for larynx preservation.

## Partial Laryngectomy for Laryngeal Cancer

Supraglottic and vertical partial laryngectomy have been used as function-preserving options for the treatment of laryngeal cancer, but these procedures have not been widely performed as salvage surgery following radiotherapy. In Japan, total laryngectomy is commonly performed in patients with recurrent tumor after radical radiotherapy. In our multicenter study, partial laryngectomy was performed successfully in 40 patients out of 50 cases with recurrent tumor after radiotherapy to T1/2 glottic cancers. Laryngeal preservation was possible in 36 (72%) of the 50 patients (median follow-up: 24 months). Although further examination will be necessary, partial laryngectomy may become a standard response to irradiation failure (26).

## Conservation Surgery for Hypopharyngeal Carcinoma

Laryngeal preservation surgery started in 1984, after the development of microsurgical techniques. Initially, we performed these operations on patients who had tumors that could be successfully removed without resection of part of the larynx. From 1997, this operation was indicated in patients with tumors that could be successfully removed by resection of the arytenoid and aryepiglottic (AE) fold without resection of the arytenoid on the other side. In an investigation of 79 patients who had received conservation surgery for hypopharyngeal carcinoma, laryngeal preservation proved successful in 69 (87%). In patients who did not undergo resection of the arytenoid and the AE fold, the laryngeal preservation rate was 92%. Laryngeal preservation was successful in 75% of patients who underwent removal of the arytenoid and the AE fold. Remodeling of the aryepiglottic fold proved to be effective in preventing aspiration following these operations, but laryngeal preservation was not successful in the hemilaryngectomy patients.

The early detection of hypopharyngeal cancer including NBI reduced surgical stress and provided a new procedure for conservation surgery of hypopharyngeal carcinomas. Primary closure has been able to be performed safely, since the mucosal defects are small after removal of the tumor. Since the introduction of EMR in 2002, there have been 25 cases who received primary closure after removal of their tumors. Primary closure was possible in 53% of patients who underwent laryngeal preservation surgery; this figure was only 15% before introduction of EMR. The larynx preservation rate was 92% in these

patients, with no severe complications seen. Since it is possible to set the deep resection margin easily, this procedure will be helpful in treating early tumors that cannot be removed safely with EMR (26).

### **Larynx Preservation in Base of Tongue Carcinoma**

There is a paucity of literature on functional outcomes in patients who are treated for oropharyngeal malignancies. Larynx preservation has also been tackled in surgical treatment of base of tongue carcinoma. In our surgical series for base of tongue carcinoma between 1982 and 2001, 20% of patients required total laryngectomy because of tumor invasion to the larynx. The larynx preservation rate was 64% overall, but larynx preservation was successful in 79% of patients who had undergone resection of their tumor without total laryngectomy. The indication for free flap reconstruction is controversial. From the aspects of postoperative swallowing and speech function, cases with primary closure obtained better function, as did those patients who were reconstructed using free flaps. Primary closure of the defect should be tried first, and if impossible, free flap reconstruction should be the next alternative. Larynx preservation surgery is useful for selected patients with base of tongue carcinoma.

### **Chemoradiation to Treat Head and Neck Cancers**

There are several ongoing clinical trials of chemoradiation for treatment of head and neck cancers. Gastrointestinal and radiation oncologists work effectively with head and neck surgeons and are responsible for the management of patients treated by chemoradiation. For further information, please refer to the Gastrointestinal Oncology and Radiation Oncology chapters.

### **Molecular Profiles of the Mouse Postnatal Development of the Esophageal Epithelium Showing Delayed Growth Start**

This study examined whether the esophagus in growing neonates provides an experimental system for studies on epithelial stem cell renewal.

The basal cell layer is known to contain the stem cells for the esophageal epithelium. The growth of the esophageal epithelium begins from postnatal day 3, and that the timing is consistent with membrane localization of Ngfr in the basal cell. An increase in the basal cell number and mRNA overexpression are associated with the timing of the growth of the esophageal epithelium in the neonatal mice. This study provides a new experimental model for studies on the growth of the basal cells, which are considered to include the stem cells, and on the enlargement of the body size in young organisms (27).

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