



Original research

The survival rate and larynx preservation in elderly cancer patients who received surgical operation: A retrospective cohort study



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HIGHLIGHTS

- Patients underwent larynx preservation, 5 year-survival rate was 30.5%.
- 3/5 year-survival rates in patients without larynx preservation were 46.9%/28.1%.
- Larynx preservation is not a factor for inducing complication.

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ABSTRACT

Background: To investigate the efficiency of surgical operation for patients over 70 years with hypopharyngeal cancer.

Materials and methods: A retrospective analysis of the medical records from 68 patients over 70 years-old with hypopharyngeal cancer who underwent different therapeutic regimen between 2000 and 2009 was conducted. 36 of 68 patients underwent larynx preservation. All patients were treated with surgical operation and adjuvant radiotherapy. A Kaplan-Meier method was employed to calculate the survival rate.

Results: Overall 3 year- and 5 year-survival rates were 48.6% and 29.4% respectively. For patients who underwent larynx preservation, 5 year-survival rate was 30.5%, which was decreased compared to 3 year-survival rate (46.9%). However, 3 year- and 5 year-survival rates in patients without larynx preservation were 46.9% and 28.1% respectively, suggesting that no statistically significant difference of survival rates was found between patients with or without larynx preservation ($P > 0.05$). A majority of patients who receive larynx preservation exhibited normal breathing and eating abilities and could present an intelligible speech. 16 of 36 patients who preserved larynx and 14 of 32 patients who underwent laryngectomy showed postoperative complication. No significant difference was observed in these two treatments, indicating larynx preservation is not a factor for inducing complication.

Conclusion: This study provides evidence that the quality of life for elderly patients with hypopharyngeal cancer can be improved by optimizing the therapeutic regimen based on the physical condition of each patient.

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1. Introduction

Hypopharyngeal cancers are relatively uncommon malignancies with unfavorable prognosis and mainly occur in males aged around 55 years old [1–3]. It is the most aggressive malignancy among the neoplasms in the head and neck and most of such cases are squamous cell carcinomas [4]. More than 50% of patients are found at advanced stage III and IV with locoregional and/or distant

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metastases, which is the main reason for its high mortality [5].

Total laryngectomy has been employed as the mainstay of treatment, which can adversely affect quality of life and disrupt speech and swallowing. During the last decade, advances in surgical methods and introductions of chemotherapy and radiation therapies have improved the larynx preservation with comparable survival rates [6,7]. Concurrent chemoradiotherapy is also employed as a treatment to improve survival and locoregional control for advanced hypopharyngeal cancers [8]. Although primary chemoradiation regimens achieve oncologic cure in the majority of patients, the failure of it can result in poor functional outcome and the presence of late complications such as dysphagia and xerostomia [9–11]. Long-term monitoring of thyroid functions is also necessary because hypothyroidism can occur years after the treatment of hypopharyngeal carcinoma [12].

In present, the management of hypopharyngeal cancer requires the considerations of both survival and the functional consequences of given treatment, giving rise to more challenges for choosing an optimal organ preservation regimen for individual. Partial laryngectomy followed with appropriate postoperative adjuvant therapies could provide better oncological outcomes and preserve functional larynx compared to non-surgical approaches [13]. Recent researches on hypopharyngeal cancers indicated an increased 5-year survival rate [14]. Almost 4% more of diagnosed patients were survived from 1990 to 2003 compared to the survivals from 1973 to 1989 [14]. However, since most of elderly patients have additional circulating respiratory system diseases, surgery may lead to aggregation of cardiovascular and respiratory system diseases or increase of the risk of complications. This study investigated the survival rate, organ functional preservation and postoperative complication in patients over 70 years old with hypopharyngeal cancer.

2. Patients and methods

2.1. Patient characteristics and treatments

Age, sex, stage, survival, and postoperative complications of 68 patients diagnosed between 2000 and 2009 with hypopharyngeal cancer were obtained by hospital records at The First Affiliated Hospital of Medical University of Anhui. The survival rate was calculated from the start date of therapy in the hospital to the date of death. Preoperative evaluation confirmed that there were 41 cases of cervical lymph node metastasis. All patients were treated with adjuvant radiotherapy by the dose of 55–70 Gy. All patients agreed with our data utilization, and they also signed informed, written consent forms before joining the experiment. This study was approved by the ethics committee of The First Affiliated Hospital of Medical University of Anhui.

2.2. Preoperative evaluation

Preoperative evaluation was conducted in all of the patients to assess their physical conditions, examine head and neck with laryngoscopy, and obtain tomography (CT) and magnetic resonance imaging of the head and neck region. American Society of Anesthesiologists (ASA) risk classification system as an index for perioperative risk and to predict complications and mortality was used to determine the classification of each patient.

2.3. Operation method

Surgery resection and postoperative radiotherapy were performed in all patients. 20 patients underwent hypopharyngeal resection and 36 patients underwent partial resection of the

laryngeal pharynx and preserved the larynx. Hemipharyngo-total laryngectomy was performed in 8 patients. Laryngectomy and pharyngectomy were performed in 4 patients.

For all cases, partial or whole excision of the larynx was performed if the tumor had invaded laryngeal tissue. The tumor tissues were frozen after the operation for the later employment of repair operation after the confirmation of margin.

2.4. Laryngeal and pharynx reconstruction

The resection defect of tumors affecting the lateral wall of the pyriform sinus can be sutured directly if the extent of the lesion is less than 50%; otherwise, reconstruction is needed, preferably with a thin, pliable flap. For 17 patients with lateral wall pyriform sinus cancer, laryngeal mucosa was intact after surgery. Laryngeal reconstructions were conducted followed surgery resection in 31 patients with medial wall pyriform sinus cancer, 13 patients with the posterior wall of hypopharynx carcinoma patients and 5 patients with postcricoid carcinoma. In addition, pharynx reconstruction was performed after partial resection of larynx in 26 patients. 3 patients received pharynx reconstruction after laryngectomy.

2.5. Statistical analysis

All the clinical data were processed and analyzed by SPSS 16.0, employing Kaplan Meier method to identify survival rates and to compare the survival rates of the two groups. Statistical significance was defined as $p < 0.05$.

3. Results

3.1. Patient populations

The characteristics of all patients are listed in Table 1. Among the 68 patients aged from 70 to 77 years old, 61 were male patients and 7 were female patients. All the patients were clinically classified according to the Hypopharyngeal Cancer Classifications Criteria [15] (UICC). 44 patients were diagnosed as pyriform sinus carcinoma (5 cases of T1N0, 7 cases T2N0, 8 cases of T2N1, 2 cases of T2N2, 1 case of T2N3, 8 cases of T3N0, 1 case of T3N1, 4 cases of T3N2, 4 cases of T4N0, 2 cases of T4N1, 2 cases of T4N2). 17 patients had posterior wall carcinoma (8 cases of T2N0, 3 cases of T2N1, 1 case of T3N0, 3 cases of T3N1, 1 case of T4N0, 1 case of T4N2), and 7 patients had inferior postcricoid carcinoma (4 cases of T3N1, 1 case of T3N2, 1 case of T4N0, 1 case of T4N1). The T and N classification distribution are shown in Table 2.

Table 1
Patient characteristics.

	Hypopharyngeal cancer				
Age (years)					
Range	70–77				
Median	73				
Sex					
Male	61				
Female	7				
Primary tumor stage					
I	5				
II	15				
III	31				
IV	17				
Tumor sites	Total	T1	T2	T3	T4
Pyriform sinus carcinoma	44	5	18	13	8
Posterior wall carcinoma	17	–	11	4	2
Inferior postcricoid carcinoma	7	–	–	5	2

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