

Early oral feeding after total laryngectomy: Outcome of 602 patients in one cancer center



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ABSTRACT

Objective: Pharyngocutaneous fistula (PCF) is the most frequent complication after total laryngectomy. However, delayed oral feeding and inserting a nasogastric tube has been considered as a safe practice among head and neck surgeons, and there is no general agreement on the initiation of the oral intake. The aim of the study is to determine the incidence of PCF after primary total laryngectomy in a large homogenous case series and to evaluate whether fistula and early oral feeding are related.

Methods: Patients who underwent total laryngectomy/laryngopharyngectomy with primary closure of pharynx between 1990 and 2014 were reviewed. Patients who had a history of previous radiotherapy, chemotherapy or chemoradiotherapy, and patients who underwent more complex reconstruction techniques (e.g. pedicled or free flaps) for closure were excluded. In total, 602 patients underwent total laryngectomy ($n = 580$) or total laryngectomy plus partial pharyngectomy ($n = 22$).

Results: The overall PCF rate was 12%. In 582 of the 602 patients (99.8%), a nasogastric tube was not inserted. In 95.7% of the patients (576/602), oral feeding was started within 3 days of surgery. Among the patients who developed PCF (72/602), PCF rate was not significantly higher in early oral fed patients (69/582, 11.8%) than the patients with nasogastric tube insertion (3/20, 15%) ($p = 0.722$).

Conclusion: The low PCF rate in our study indicates that early oral feeding is a safe and effective method in primary total laryngectomy.

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1. Introduction

Pharyngocutaneous fistula (PCF) is the most common local complication after total laryngectomy. It prolongs the hospital stay more than any other cause, and delays oral intake. Long duration of nasogastric tube or gastrostomy feeding creates significant discomfort and affects patient's psychological condition. In addition, a salivary fistula causes wound

breakdown and interferes in subsequent adjuvant therapies that may have an adverse effect on tumor control. Furthermore, it sometimes results in catastrophic consequences such as carotid artery rupture, particularly in patients with concurrent radical neck dissection.

Factors predisposing to PCF are previous radiation therapy, radical neck dissection, types of pharyngeal closure and suture material, positive tumor margins, preoperative tracheotomy, poor general status, tumor localization, advanced tumor stage, low hemoglobin levels, intraoperative blood transfusion, prophylactic antibiotics, hematoma formation, and wound infection [1–3].

The incidence of fistula varies from 3% to 65% [2,3]. However, a rate between 13% and 25% has been reported in recent

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series [1,3,6,9,13]. Delayed oral feeding has been traditionally considered to be preventive in the development of PCF, and insertion of nasogastric tube for 7–14 days following total laryngectomy is a common practice among head and neck surgeons [2,4]. However, there is no general agreement on the initiation of the oral intake. In the literature, there are many reports indicating that early oral feeding does not contribute to PCF [2,4–8]. However, it should be considered that many of the papers carried out up to now have heterogeneous group of patients concerning primary and salvage laryngectomies.

As such, the present study aimed to determine the incidence of PCF after primary total laryngectomy in a large series and to evaluate whether fistula and early oral feeding are related.

2. Material and methods

2.1. Patients

This retrospective study included patients diagnosed as laryngeal/hypopharyngeal cancer who underwent total laryngectomy/total laryngectomy plus partial pharyngectomy at Department of Otorhinolaryngology – Head and Neck Surgery, Hacettepe University Faculty of Medicine between 1990 and 2014. Patients who had a history of previous radiotherapy, chemotherapy or chemoradiotherapy, and patients who had undergone previous surgery for larynx (including partial laryngectomy, endolaryngeal laser surgery for carcinoma) were excluded. Patients who underwent more complex reconstruction techniques (e.g. pedicled or free flaps) for closure were excluded from the study in order to prevent confounding factors associated with technique differences. After the exclusion of patients above, in total, 602 patients underwent total laryngectomy ($n = 580$) or total laryngectomy plus partial pharyngectomy ($n = 22$) with primary closure. The clinical tumor and nodal stages are shown in Table 1.

There were 582 (96.7%) males and 20 (3.3%) females. The mean age was 55, ranging from 23 to 86 years.

2.2. Surgery

Total laryngectomy was performed in 580 (96.3%) patients, whereas surgery was extended to the base of the tongue in 17 patients (3.1%) due to invasion through vallecula. Partial

pharyngectomy in addition to total laryngectomy was performed in 22 patients (3.7%) who had tumor extensions to the pyriform sinus. In all cases surgery was performed or supervised by experienced surgeons in head and neck oncology. The pharynx was closed via horizontal closure of the pharyngeal mucosa with continuous Vicryl 3/0 sutures in 580 (96.3%) patients. An additional submucosal closure was performed with interrupted sutures as a second layer, followed by a third layer using sutures through the suprahyoid muscles and the inferior pharyngeal constrictor muscles. Horizontal linear repair is an institutional preference and was performed in all patients, except those that underwent partial pharyngectomy combined with total laryngectomy; in these patients pharyngeal defect was closed via T-type closure. Total laryngectomy was combined with neck dissection (including selective, modified radical, or radical neck dissection) in 556 (92.7%) patients. Neck dissection was not performed in 44 cases (7.3%).

2.3. Postoperative follow-up

Vacuum drainage system was used and maintained for at least 48 h. Antibiotic therapy (amoxicillin–clavulanate 1.2 g/8 h or ampicillin–sulbactam 1.5 g/6 h) was administered post surgery until vacuum drainage was stopped.

In 582 of the 602 patients (99.8%), a nasogastric tube was not inserted and oral feeding began in the first 5 days after surgery. In 95.7% of the patients (576/602) early oral feeding without a nasogastric tube began within 3 days of surgery. Oral feeding was started 24 h post surgery in 401 (66.6%) patients and 48–72 h post surgery in 175 (29%) patients (Fig. 1). Water was given for initial oral intake because it is particle-free and does not irritate the pharyngeal wall. Frequently, oral intake of water was followed by other clear fluids (e.g. fruit juice), and then milk. Oral feeding continued with semisolid food in the following 10 days. Daily caloric intake during the postoperative period was closely monitored by dieticians and maintained at 2100 calories in males and 1850 calories in the female patients. Regular diet was advanced after 14 days. A nasogastric tube

Table 1
Patient characteristics.

	<i>n</i>	%
Carcinoma localization		
Larynx	580	96.3
Hypopharynx	22	3.7
Clinical tumor stage		
T3	34	5.6
T4	568	94.4
Clinical nodal stage		
N0	169	28.1
N1	286	47.5
N2a	58	9.6
N2b	53	8.8
N2c	22	3.7
N3	14	2.3

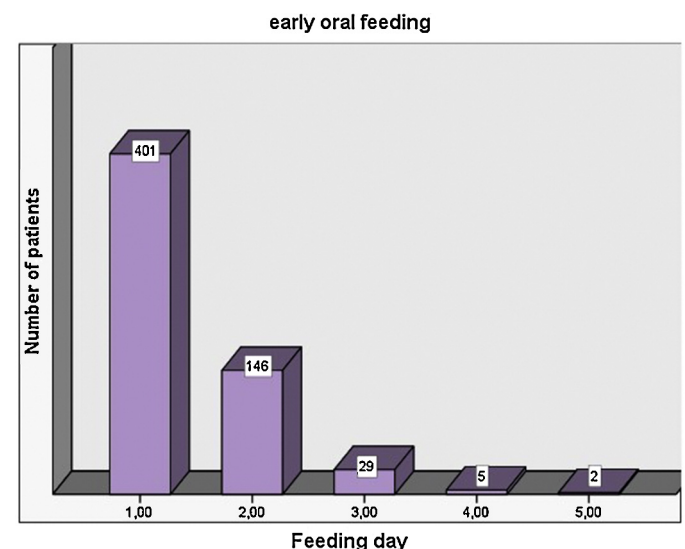


Fig. 1. The number of early fed patients.

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