



Safety and efficacy of functional laryngectomy for end-stage dysphagia

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Abstract

Objective: To evaluate functional outcomes and complication rate after total laryngectomy (TL) for dysfunctional larynx with end-stage dysphagia.

Study design: Retrospective chart review

Methods: Chart review was performed on all patients who underwent TL from January 2008 to July 2016 at a single tertiary academic medical center. Patients who underwent TL for dysfunctional larynx without preoperative evidence of malignancy were included. Main outcome measures were post-TL functional swallowing and speech outcomes and complication rate.

Results: The study included 19 patients from a cohort of 278 consecutive patients. All patients were previously treated with radiotherapy (RT), while 13/19 (68%) previously received chemoradiotherapy. The median time from RT to TL was 10.98 years (range 0.67 – 23.94 years). Aspiration was evident preoperatively in 17/19 (89%) patients with 11 experiencing recurrent aspiration pneumonia. Seventeen of 19 (89%) patients were nil per os (NPO) requiring enteral nutrition. Six of 19 (32%) patients had surgical complications, including 3 (16%) pharyngocutaneous fistulas. At three-month and one-year postoperative follow-up, there was significant improvement in mean FOIS score and aspiration, recurrent pneumonia, enteral nutrition, and NPO status rates ($p < 0.05$). At one-year follow-up, no patients were NPO and only one patient required gastrostomy tube supplementation. Mean FOIS score increased from 1.3 to 6.1 ($p = .001$). Eight of 13 patients (62%) were actively using a tracheoesophageal prosthesis at one-year follow-up.

Conclusion: Laryngectomy for dysfunctional larynx eliminates the morbidity of aspiration while improving diet and reducing gastrostomy tube dependence with an acceptable complication rate.

Introduction

Although organ preservation regimens for locally advanced HNC may offer patients comparable survival rates to surgery with preservation of the affected organ^{1,2}, acute and late toxicities of treatment may result in organ dysfunction.³ The late effects of RT on laryngopharyngeal function and the resulting dysphagia often have a profound impact on HNC survivors' quality of life.⁴ Patients who suffer from recurrent aspiration pneumonia or those individuals whose quality of life is most heavily impacted by chronic dysphagia may benefit from surgical intervention to provide a permanent surgical airway and restore swallow function. Total laryngectomy (TL) is a definitive option for patients with dysfunctional larynxes and end-stage dysphagia with associated aspiration.^{5,6} The purpose of this study was to report our experience with TL for dysfunctional larynx with end-stage dysphagia with regards to safety, efficacy, and functional speech and swallowing outcomes.

Methods and Materials

Following IRB approval, we reviewed our database of 278 consecutive patients who underwent TL from January 2008 to July 2016 at a single tertiary academic medical center. Nineteen patients underwent TL with or without pharyngectomy for dysfunctional larynx. Patients included in this study underwent TL for laryngopharyngeal dysfunction, received prior RT for HNC, and had no evidence of preoperative malignancy. Main outcome measures were post-TL swallowing outcomes and surgical complication rate.

Table 1. Patient Characteristics

		No. of patients (%)		No. of patients (%)	
Sex	Male	11 (58)	Site of Primary HNC		
	Female	8 (42)		Larynx	12 (63)
Age			Oropharynx	4 (21)	
	Median (range)	59.8 (24.2 – 88.8)	Nasopharynx	2 (11)	
			Unknown	1 (5)	
Smoking Status			Prior HNC Treatment		
	Never	2 (10)		RT	1 (5)
	Former	11 (58)		CRT	10 (53)
			Surgery → RT	3 (16)	
Alcohol Status			Time from RT to TL		
	Never	8 (42)		Surgery → CRT	5 (26)
	Former	2 (11)		Median, y	10.98
			Range, y	0.7-23.9	
Trach Present			> 5 years	13 (68)	
	Yes	15 (79)	> 10 years	10 (53)	
	No	4 (21)			

Figure 1A/B. Representative microscopic slide of elective TL for laryngopharyngeal dysfunction showing RT changes

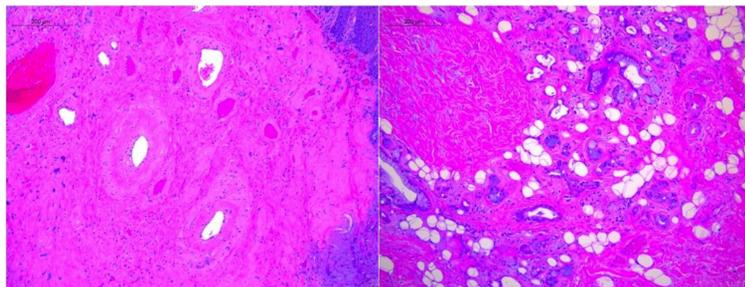


Figure 2. Functional Oral Intake Scale

Level	Type of Intake
1	Nothing by mouth
2	Tube dependent with minimal attempts of food or liquid
3	Tube dependent with consistent oral intake of food or liquid
4	Total oral diet of a single consistency
5	Total oral diet with multiple consistencies but requiring special preparation or compensations
6	Total oral diet with multiple consistencies without special preparation, but with specific food limitations
7	Total oral diet with no restrictions

Table 2. Functional Outcomes

	Preoperative (N = 19)	3 months (N = 18)	P Value	1 year (N = 13)	P Value
FOIS Score	1.3	3.9	.001	6.1	.001
Recurrent PNA	11 (58)	1 (6)	.004	0	.002
Aspiration	17 (89)	0	<.001	0	.001
Tube Feeds	17 (89)	8 (44)	.006	1 (8)	.001
NPO	17 (89)	4 (22)	<.001	0	<.001
TEP	N/A	8 (44)		8 (62)	

Table 3. Complications

Length of Stay (Median)	6 days
Length of Stay (Range)	5-35 days
Overall Complication Rate	9 (32%)
Pharyngocutaneous fistulas	3 (16%)
TJUH Salvage TL Fistula Rate	29.1%
Wound dehiscence (without fistula)	3 (16%)
30-day unplanned readmission	1 (5%)

Conclusions

1. Severe laryngopharyngeal dysfunction may occur years after initial treatment and after many years of reasonable swallowing function
2. TL for dysfunctional larynx eliminates the morbidity of aspiration and safely allows patients to resume oral intake
3. Need for tube feeds is eliminated in a majority of patients at one-year follow-up
4. With appropriate preoperative counseling (surgeon, oncologist, SLP) on realistic expectations of functional outcomes as well as complications, TL is a reasonable treatment modality for end-stage dysphagia

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