

## Abstract

**Introduction:** Restoring or preserving swallowing function after Total Laryngectomy (TL) is of paramount importance; however, dysphagia limiting diet or need for dilation is not uncommon, particularly after (chemo)radiation ((C)RT). We analyzed long term dysphagia outcomes in our TL patients, stratified by reconstruction type, closure type, and concurrent pharyngectomy.

**Methods:** A retrospective review of all patients undergoing TL at our institution from 2007 to 2016 was performed. Surgical indication, concomitant pharyngectomy (none, partial, total), reconstruction, prior therapy, and its impact on swallowing were analyzed. Long term dysphagia outcomes including the frequency of patients requiring pharyngoesophageal dilation, diet, and feeding tube dependence at one-year follow-up were recorded. Outcomes are stratified by reconstruction type (primary closure, free flap, pectoralis flap) and flap closure type (inlay or onlay).

**Results:** 278 patients underwent TL. The mean age was 65 (range 24-92) and 78% were male. There were 137 (49.3%) primary TLs, 121 salvage TLs (43.5%), and 20 functional TLs (7.2%). There were 34 total laryngopharyngectomies (12.2%), 57 partial laryngopharyngectomies (20.5%), and 187 laryngectomies without pharyngectomy (67.3%). In the primary TLs, extent of pharyngectomy did not influence need for dilation (no pharyngectomy 19.8%, partial pharyngectomy 29.6%, total pharyngectomy 30.8% (p=0.45). In the post treatment group, extent of pharyngectomy did not influence need for dilation (31.5% none vs 21.7% partial vs 47.4% total pharyngectomy, p=0.20). In post-(C)RT TL patients, 31% (42/131) required a pharyngoesophageal dilation, with median time to dilation of 5.1 months after surgery. In post-treatment TL patients, the need for dilation was highest with primary closure (46%), lower with free flap closure (35%), and lowest with pectoralis flap (4%) (p=0.002). There was not a difference in need for dilation between closure type (19% onlay vs 32% inlay, p=0.21). In post-(C)RT TL patients the proportion of people tolerating a regular diet at one year follow-up was 61.5% (24/39) with primary closure, 52.6% (30/57) with free flap, and 47.6% (10/21) with pectoralis flap (p=0.53).

**Conclusions:** Dysphagia requiring pharyngoesophageal dilation after TL is common in both primary and post (C)RT TL patients. The addition of pharyngectomy to TL does not increase the risk of needing a pharyngoesophageal dilation. Long term tolerance of regular diet after TL is not different based on reconstructive flap choice or closure type.

## Introduction

- Dysphagia is one of the most common and well-known postoperative symptoms in patients after total laryngectomy (TL), particularly after (chemo)radiation ((C)RT).<sup>1</sup>
- The reported incidence of postoperative dysphagia varies from 17 to 72%.<sup>2,3</sup>
- We analyzed long term dysphagia outcomes in our TL patients, stratified by reconstruction type, closure type, and concurrent pharyngectomy.

## Methods

- Retrospective review of all patients undergoing TL at TJUH from 2007 to 2016.
- Surgical indication, concomitant pharyngectomy (none, partial, total), reconstruction technique, prior therapy, and its impact on swallowing were analyzed.
- Long term dysphagia outcomes included: frequency of pharyngoesophageal dilation, diet, and feeding tube dependence at one-year follow-up.
- Outcomes were stratified by reconstruction type (primary closure, free flap, pectoralis flap) and flap closure type (inlay or onlay).
- The post-treatment TL group pooled together the salvage TL and functional TL populations.

## Results

Table 1 . Population Characteristics.

Population Characteristics (n=278)	
Age (Years)	Mean: 65 Range: 24 - 92
Sex	Male: 217 (78%) Female: 61 (22%)
TL Indication	Primary TL: 137 (49.3%) Salvage TL: 121 (43.5%) Functional TL: 20 (7.2%)
Pharyngectomy	None: 187 (67.3%) Partial: 57 (20.5%) Total: 34 (12.2%)

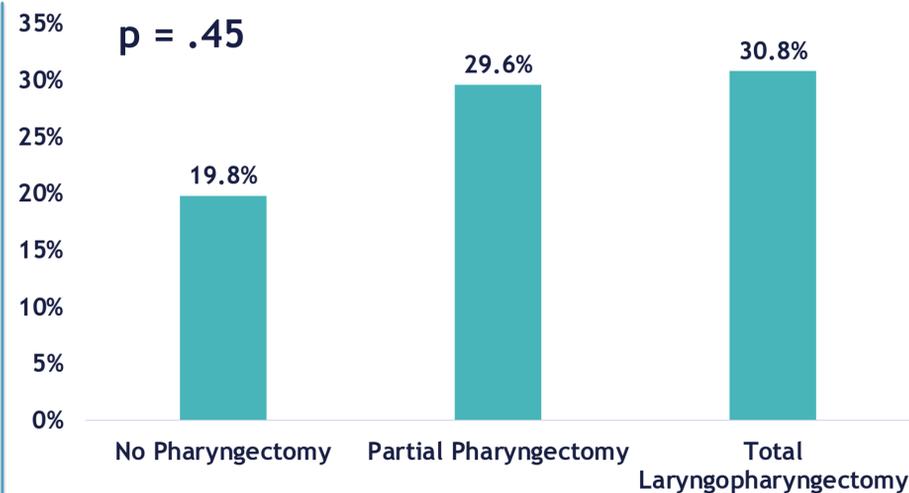


Figure 1. Need for dilation with relation to pharyngectomy in primary TL.

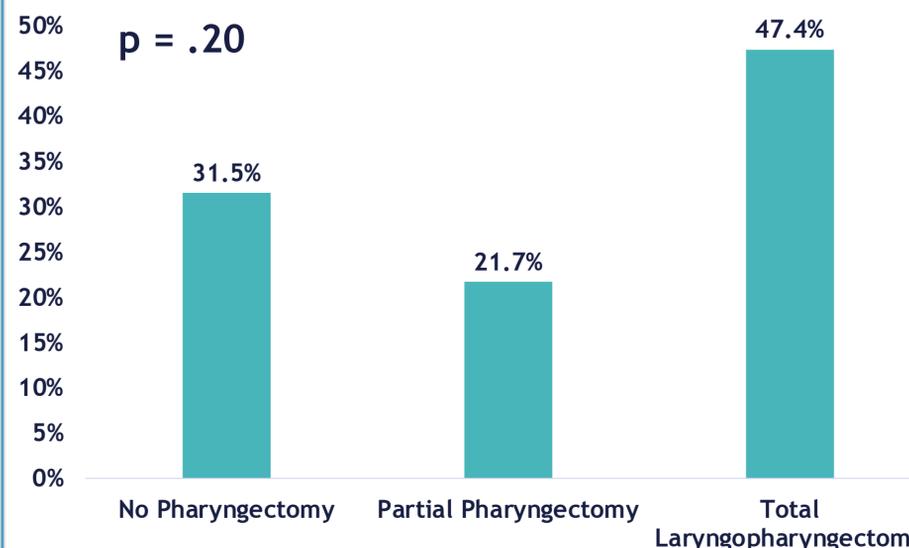


Figure 2. Need for dilation with relation to pharyngectomy in post-treatment TL.

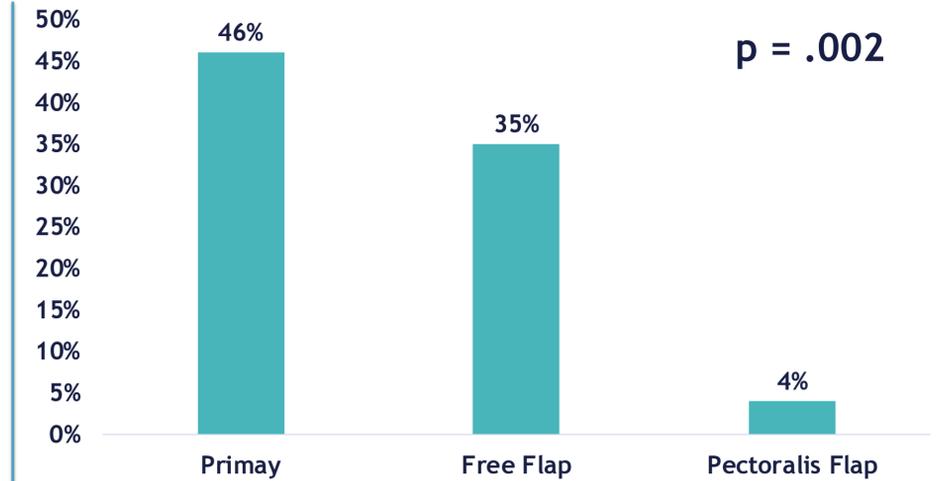


Figure 3. Need for dilation with relation to type of closure in post-treatment TL.



Figure 4. Need for dilation with relation to inlay vs onlay technique in post-treatment TL.

Table 2. Pharyngoesophageal Dilation and Diet in the Post-(C)RT Population.

Post-(C)RT TL Patient Population	
Need for Pharyngoesophageal Dilation	31% (42/131)
Median Time to Dilation Post Surgery (months)	5.1
Regular Diet at 1 Year F/U*	Primary Closure: 61.5% (24/39) Closure with Free Flap: 52.6% (30/57) Closure with Pectoralis Flap: 47.6% (10/21)
*p = .53	

## Discussion and Conclusions

- Dysphagia requiring pharyngoesophageal dilation after TL is common in both primary and post (C)RT TL patients.
- The addition of pharyngectomy to TL does not increase the risk of needing a pharyngoesophageal dilation.
- Long term tolerance of regular diet after TL is not different based on reconstructive flap choice or closure type.

## References

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