Esophageal Dilatation Following Total Laryngectomy: A Description of Rates and Effectiveness

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Abstract

Objective: To describe the rates and effectiveness of esophageal dilatation following total laryngectomy at a single institution.
Methods: The records of forty-one consecutive patients who underwent esophageal dilatation after total laryngectomy were reviewed for operative details, pre- and post-dilatation diets, and percutaneous endoscopic gastrostomy (PEG) tube dependence.
Results: All patients underwent dilatation with either Maloney or Savary dilators under general anesthesia. Twenty patients (49%) were salvage total laryngectomy, sixteen (39%) primary total laryngectomy, and five (12%) underwent total laryngectomy for dysfunctional larynx. Average time from total laryngectomy to first dilatation was 301 days with a range spanning from 44 to 1441 days. Nineteen patients (46%) reported improvement in diet density. Of those who noted improvement, nine underwent a single dilatation and ten underwent multiple dilatations (two or more). There were no major complications of esophageal injury or perforation..
Conclusion: Esophageal dilatation is a safe procedure that improves diet for some patients after total laryngectomy. Further study is needed to determine those most likely to benefit from undergoing dilatation. To our knowledge, this is the first investigation of esophageal dilatation following total laryngectomy.

Introduction

Total laryngectomy (TL) has three principle indications: primary cancer removal, salvage cancer removal, or laryngeal dysfunction. Removal of the larynx can often cause disruption of adjacent structures' normal physiology. In addition, previous or subsequent radiation can complicate the healing process of surrounding structures. The pharynx and esophagus are two such organs often affected in this population causing significant dysphagia. Studies show variation in the percent of patients who experience dysphagia following a TL due to different definitions of the term. Nonetheless, a significant percent do experience dysphagia as reported from 42% to 71%[1,2]. The dysphagia following TL can often be attributed to either esophageal stenosis and/or dysfunction of the structures involved in swallowing[3]. A common treatment modality is esophageal dilatation with Maloney, Savary, or balloon dilators. Esophageal dilatation has proven to be effective and more importantly, safe [5]. Risk of complications following esophageal dilatation is low, but includes perforation and infection including cervical spondylodiscitis[6]. Here we present some preliminary data on our experience of esophageal dilation following total laryngectomy.

Methods

A record of all TLs from 2011 to 2015 at our institution was created. All patients who underwent esophageal dilatation following total laryngectomy were focused upon. Records were queried for age, TL indication, number of dilatations, pre and post-dilatation diets, date of PEG tube removal, and history of radiation. Improvement in diet is defined as an increase in diet density on a scale of NPO to solids (NPO, liquids, softs, solids) within 6 months of dilatation. Simple descriptive statistics were used to display the results.

Results

Indications for TL included primary cancer removal, salvage cancer removal, and removal of a dysfunctional larynx. Nearly half the patients underwent salvage TL (49%), while the rest were primary or dysfunctional TLs (39% and 12% respectively). There was no prior treatment for laryngeal cancer noted in 46% of patients, while 44% had prior radiation with or without chemo ,and 10% underwent prior surgery with radiation. The mean number of days from TL to first dilatation was 301 ranging from 44 to 1441. The mean number of dilatations was 3.3, ranging from 1 to 26.

Descriptives

Indications		
Primary	**Salvage**	**Dysfunctional**
16 (39%)	20 (49%)	5 (12%)
Prior Treatment for Laryngeal Cancer		
No Prior Treatment	**Radiation +/- Chemo**	**Surgery + Radiation**
19 (46%)	18 (44%)	4 (10%)
Chronology		
Mean Number of Days from TL to First dilatation (Range)	301 (44 to 1441)	
Mean Number of dilatations (Range)	3.3 (1 to 26)	

Improvement in diet was seen in 46% of patients, with one increasing from NPO to liquids, 4 from liquids to softs, 13 from softs to solids, and 1 from liquids to solids. Of the patients who had improvement in their diet, 9 underwent a single dilatation while 10 underwent two or more dilatations. There were 18 patients with a PEG tube at the time of their first dilatation. Of those 18 patients, 9 had the tube removed within 6 months of dilatation.

Improvement in Diet

Increased Density			
Total With Improvement In Diet	19 (46%)		
NPO to Liquids	**Liquids to Softs**	**Softs to Solids**	**Liquids to Solids**
1	4	13	1
Single dilatation	9		
Two or More dilatations	10		
PEG Tube Removal			
Total With PEG Tube at Time of First dilatation	18 (44%)		
Total Removed Before or Within 6 Months of Last dilatation	9 (50%)		
Removed Before Last dilatation	**Removed 0 to 3 Months Post dilatation**	**Removed 3 to 6 Months Post dilatation**	
3	4	2	

Conclusions

- Esophageal is a safe procedure that may improve a diet in patients with dysphagia following TL.
- More patients should be queried and data analyzed with univariate and multivariate analysis.
- Future studies could include a scoring system to grade dysphagia and take on a prospective form.

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