

Swallowing Outcomes following Reconstruction of Total Laryngectomy Defects with Tubed vs. Patch Free Flaps

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INTRODUCTION

Despite advances in both surgical and reconstructive techniques for patients with advanced laryngeal cancer, many patients still suffer from varying swallowing dysfunction after definitive treatment.¹⁻⁵ Many reconstructive options are available for defects after total laryngectomy/laryngopharyngectomy, all of which must account for defect geometry. Patients may undergo patch or tubed free flap reconstruction, depending on their defect.

The aim of this study is to compare the swallowing outcomes of free flap reconstruction for total laryngectomy using a tubed or patch method. We hypothesized that those patients who underwent reconstruction with a tubed free flap would have poorer swallowing outcomes when compared to patients who underwent reconstruction with a patch flap.

METHODS

A retrospective review was conducted on patients who underwent total laryngectomy with free flap reconstruction from 2004-2018 at one tertiary hospital. All reconstruction was completed by three surgeons. There were similar characteristics between the two groups, Reoperation rates within 30 days, complications, primary TEP, postoperative fistula, G-tube use at one-year after surgery or at last known follow-up within 1 year, final known diet and stricture rates were analyzed. A binomial logistic regression was completed to test the probability that last known dietary status was NPO given particular reference values, termed post-operative factors: tubed flap reconstruction, patch flap reconstruction, complications, post-operative fistula, primary TEP or reoperation within 30 days. This was repeated to similarly evaluate G-tube status at 1 year, or at last known follow-up.

RESULTS

- Increased rates of complications in tubed flap group:
 - Re-operation within 30 days
 - Postoperative fistula/leak
 - Any other complication (excluding leak)
 - Stricture
- Increased rates of primary TEP in patch flap group

Total Laryngectomy or Laryngopharyngectomy			
Complication/Factor	Patch Flap, n=243 (%)	Tubed Flap, n=59 (%)	p-value
Primary TEP	109 (44.9)	10 (16.9)	<0.001
Reoperation within 30 days	50 (20.6)	21 (35.6)	0.015
Postoperative fistula	56 (23.0)	22 (37.3)	0.025
Any Complication (excluding fistula)	61 (25.1)	27 (45.8)	0.002
Flap Loss	10 (4.1)	1 (1.7)	0.373
Stricture (Dilations at any point)	34 (14.0)	21 (35.6)	<0.001

Table 1: Postoperative "factors" and complications after total laryngectomy

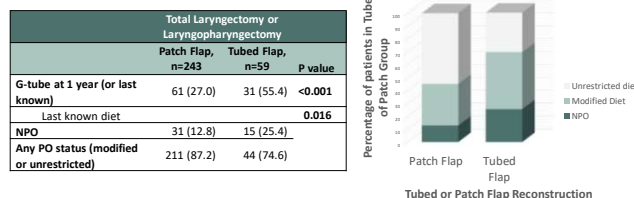


Figure 1: Diet Status Following Total Laryngectomy

After multiple logistic regression analysis:

- ↓ **G-tube at 1 year (or last known follow-up) with:**
 - Post-operative leak (OR 0.409, p=0.005)
 - Tubed free flaps (OR 0.376, p=0.005)
- ↑ **G-tube with: primary TEP** (OR 1.811, p=0.047)
- ↑ **NPO (decreased risk of a PO) with: Post-operative fistula** (OR 0.391, p=0.012)

RESULTS

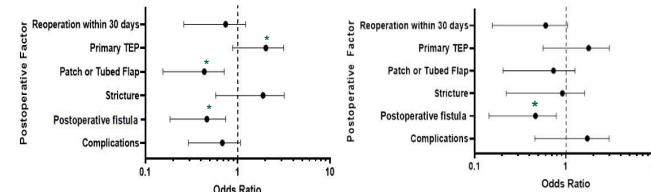


Figure 2: Effect of post-operative "factors" on G-tube presence

Figure 3: Effect of post-operative "factors" on PO diet

DISCUSSION

When controlling for other post-operative factors, there was an increased risk of strict NPO status when a patient had a post-operative fistula, regardless of which flap reconstruction was completed. Increased risk of G-tube presence seems to be affiliated with primary TEP placement. It should be noted that outcomes vary based on data analysis and how outcomes are defined, and it is likely that swallowing outcomes following total laryngectomy are multifactorial.

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