Free Flap Reconstruction in Primary Laryngectomy: Surgical and Functional Outcomes. A Multi-Institutional Study

Dustin Conrad, MS, MD, FRCSC[1]; Hadi Seikaly ML, MD, FRCSC[2]; Han Zhang MD, FRCSC[3]; Deepa Danan MBS, MD[1]; Brian Hughley MD[1]; D. Spencer Nichols MD[1]; Dan O'Connell MS, MD, FRCSC[2]; Peter T Dziegielewski MD, FRCSC[3]

[1]University of Florida; [2]University of Alberta; [3]McMaster University

Contact: Peter Dziegielewski ("Dz") ptd@ufl.edu

BACKGROUND

- Despite advances in surgical technique post-operative complications such as pharyngocutaneous fistula and pharyngeal stenosis remain considerable problems for many patients.
- Rates of fistula formation range from 10-50% in most studies.
- Rates of long-term pharyngeal stenosis range from 25-75%
- Techniques to reduce these complications include:
  - Various suture patterns for primary closure
  - Primary closure + pec muscle
  - Incorporation of a pedicled skin paddle/patch (e.g. pec flap)
  - Free flap reconstruction

AIM: *To determine the rate of fistula pharyngeal stenosis as well as long term swallowing and speech outcomes in patients undergoing primary total laryngectomy with free flap reconstruction.*

METHODS

- IRB approval: obtained at all 3 sites.
- Setting: 3 academic, tertiary care referral centers: University of Florida, McMaster University and University of Alberta
- Study Design: retrospective review of prospectively collected data from 2013-2020
- Patients: advanced laryngeal cancers undergoing primary total laryngectomy and simultaneous free flap reconstruction.

METHODS

- Primary Outcome:
  - Rate of Pharyngocutaneous Fistula formation
- Secondary Outcomes:
  - Rate of Pharyngeal Stenosis formation
  - GTube Dependence
  - Oral Diet Achievements
  - Artificial Speech Acheivements

RESULTS

Table 1. Fistula and Pharyngeal Stenosis

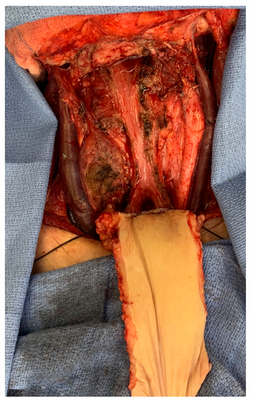
Variable	N (%)	Fistula N (%)	P-value	Pharyngeal Stenosis N (%)	P-value
Patients	311	34 (11%)	n/a	44 (14%)	n/a
T3	97 (31%)	10 (10%)	0.98	15 (15%)	0.97
T4	214 (69%)	24 (11%)		29 (14%)	
Flap					
RFFF	249 (80%)	26 (10%)	0.78	35 (14%)	0.89
ALTF	62 (20%)	8 (13%)		9 (15%)	
Reconstruction					
Patch	277 (89%)	29 (10%)	0.15	24 (9%)	0.001
Tube	34 (11%)	5 (15%)		20 (59%)	
Age					
≥ 70	103 (33%)	19 (18%)	0.04	15 (15%)	0.98
< 70	208 (67%)	15 (7%)		29 (14%)	
Current Smoking					
≥ 1 ppd	255 (82%)	31 (12%)	0.03	39 (15%)	0.04
< 1 ppd	56 (18%)	3 (5%)		5 (9%)	

RESULTS

Table 2. Secondary outcomes

Variable	N (%)
Post-Op RT	296 (95%)
G-Tube Use @ 1 yr	45 (15%)
Full Oral Diet @ 1 yr	311 (100%)
TEP Placement	165 (53%)
Using TEP @ 1 yr	151 (91%)
Not Using TEP @ 1 yr	14 (9%)
Electrolarynx Use	
Using @ 1 yr	171 (56%)
Not Using @ 1 yr	140 (45%)





- Flap Design and Inset

CONCLUSIONS

- Free flap reconstruction in primary total laryngectomy offers low rates of fistula and pharyngeal stenosis formation.
- Functional outcomes are excellent after 1 year.