

Surgical factors associated with patient-reported quality of life outcomes after free flap reconstruction of the oral cavity



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Introduction

- The factors that influence functional outcomes in the unique population of patients who undergo free flap reconstruction are not fully understood.
- Treatment toxicities span many domains including swallowing, chewing, speech, taste, salivation, pain, neck and shoulder disability, appearance, mental health, and finances.
- To better understand treatment toxicities and QOL outcomes, numerous patient-reported outcome measures (PROMs) have been developed and validated in HNC patients.

Objectives

To determine which surgical factors were associated with QOL outcomes in oral cavity cancer survivors after free flap reconstruction of the oral cavity.

Methods

- Retrospective cross-sectional study of PROMs in HNC survivors in a multidisciplinary HNC survivorship clinic between December 2016 and September 2020
- Inclusion criteria: age 18 or older, prior oral cavity resection and free flap reconstruction
- Exclusion criteria: distant metastases, active locoregional disease, missing surgical or treatment details, less than 6 months of post-operative survivorship follow-up, flap failure and revision with primary closure or loco-regional flap
- Spearman correlation coefficient matrix was used to select PROMs with less overlap for analysis
- UWQOL (physical and social subscales) selected (Range 0 – 100, MCID = 7. Higher scores indicate better QOL)
- EAT-10 selected (Range 0 - 40. Higher scores indicate more dysphagia burden)
- Statistics:
 - Wilcoxon test for two groups
 - Kruskal-Wallis test for three or more groups
 - Association between PROM scores and continuous variables assessed by linear regression
 - Joint effects of clinical factors on PROMs assessed by multivariate linear regression

Results

- Extent of tongue resection was associated with EAT-10 and the UW-QOL Physical subscale scores.
- Patients with oral tongue defects reported worse scores than with composite defects in the EAT-10 and UW-QOL physical domain ($p = 0.0004$, 0.0025 , respectively). This association no longer applies when controlling for differences in extent of tongue resection ($p = 0.707$).
- Patients with anterior composite resections reported worse EAT-10 scores than lateral resections ($p = 0.024$). This association no longer applies when controlling for extent of tongue resection ($p = 0.46$).

Patient details

- N = 80
- Median age = 60 years
- 73% of patients had stage III/IV disease
- 79% of patients received adjuvant treatment
- Free flap: 22% ALTFF, 45% FFF, 22% RFFF
- Resection
 - 70% composite resection (68% lateral, 32% anterior)
 - 30% oral tongue resection

Table 1. Associations between defect characteristics and PROMs

PROM	Defect Characteristic		Median Score (IQR)	P value
UW-QOL Physical	Oropharyngeal component	Yes No	72 (53 – 78) 63 (52 – 73)	p = 0.2723
	Resection type	Oral tongue	48 (36 – 70)	p = 0.0025
		Composite	68 (59 – 81)	
	Extent of tongue resection	None < 1/3 1/3 - 1/2	78 (64 – 92) 68 (57 – 76) 61 (42 – 68)	p < 0.0001
		> 1/2	40 (32 – 53)	
EAT-10	Oropharyngeal component	Yes No	4 (2 – 22) 10 (4 – 24)	p = 0.3850
	Resection type	Oral tongue	25 (10 – 32)	p = 0.0004
		Composite	10 (2 – 18)	
	Extent of tongue resection	None < 1/3 1/3 - 1/2	2 (1 – 7) 8 (4 – 16) 19 (7 – 31)	p < .0001
		> 1/2	28 (24 – 33)	

Results

Figure 1. Worse QOL associated with oral tongue resection is conditional on the extent of tongue resected

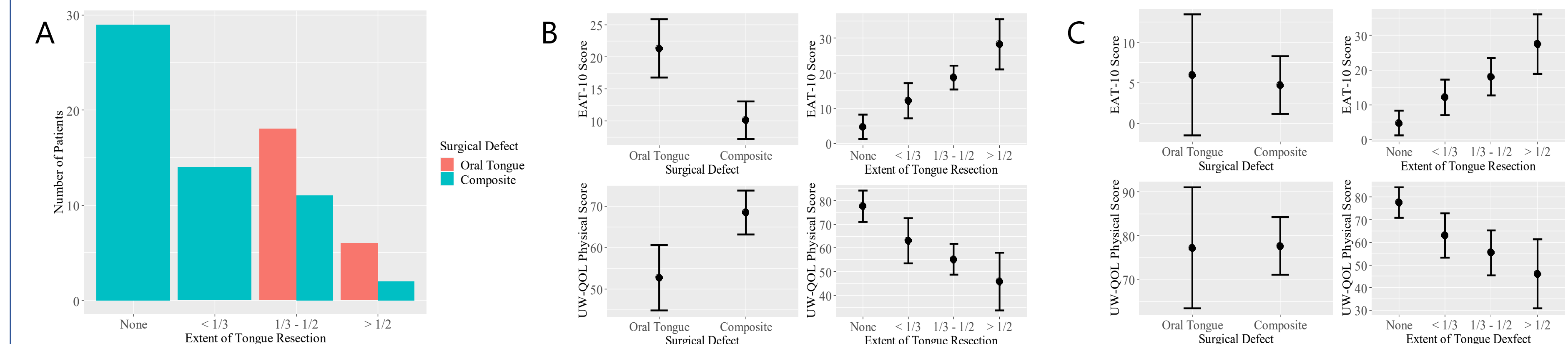
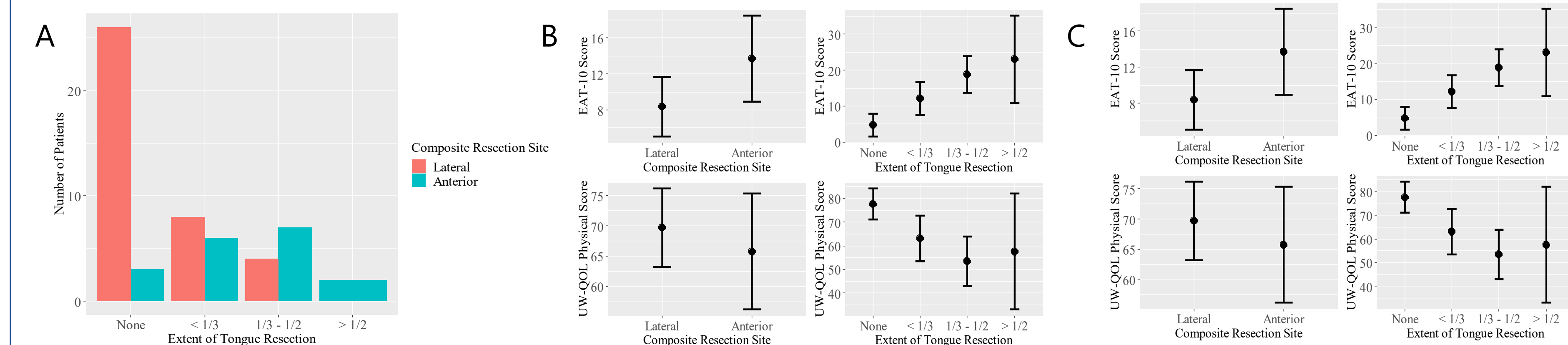


Figure 2. Worse QOL associated with anterior composite resection is conditional on extent of tongue resected



- No association between defect characteristics and UW-QOL Social Domain
- Gastric tube dependence demonstrated similar trends to EAT-10 and UW-Physical

Conclusions

- Extent of tongue resection is associated with worse QOL in PROMs describing swallowing, chewing, salivation, speech, taste, appearance
- Associations between worse QOL and oral tongue resection are conditional on extent of tongue resection
- In patients with composite defects, associations between worse QOL and anterior defect site are conditional on extent of tongue resection

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References

- Nilsen MN, Mady LJ, Hodges J, Wasserman-Wincko T, Johnson JT. Burden of Treatment: Reported Outcomes in a Head and Neck Cancer Survivorship Clinic. *Laryngoscope*. 2019; 129(12): E437-E444.
- Nilsen MN, Lyu L, Belsky MA et al. Impact of Neck Disability on Health-Related Quality of Life among Head and Neck Cancer Survivors. *Otolaryngol Head Neck Surg*. 2020; 162(1): 64-72.
- Cramer JD, Johnson JT, Nilsen ML. Pain in Head and Neck Cancer Survivors: Prevalence, Predictors, and Quality-of- Life Impact. *Otolaryngol Head Neck Surg*. 2018; 159(5): 853-858.
- Mady LJ, Lyu L, Owoc MS, Peddada SD, Thomas TH, Sabik LM, Johnson JT, Nilsen ML. Understanding financial toxicity in head and neck cancer survivors. *Oral Oncol*. 2019; 95:187-193.
- Rogers SN, Devine J, Lowe D, Shokar P, Brown JS, Vaugman ED. Longitudinal health-related quality of life after mandibular resection for oral cancer: a comparison between rim and segment. *Head Neck*. 2004; 26(1): 54-62.
- Belafsky PC, Mouadeb DA, Rees CJ et al. Validity and reliability of the Eating Assessment Tool (EAT-10). *Ann Otol Rhinol Laryngol*. 2008; 117(12): 919–924.