

Swallowing outcomes post mandibular lingual release approach for oral/oropharyngeal cancer: 5-year retrospective study

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Background & Aims

- The mandibular lingual release approach (MLRA) is a rare open access approach used for surgical resection of large or inaccessible oral cavity and/or oropharyngeal squamous cell carcinoma (OC/OPSCC)
- Little is known about the relationship between the MLRA and post-operative swallowing¹ although several authors have discussed the risk for dysfunction resulting from detachment of the floor of mouth musculature during the procedure²⁻⁴
- To date, only 4 studies have explored this area, 3 using a patient reported^{3,5-6} measure, and one a non-validated clinician tool⁷ and all provided limited information of swallowing outcomes
- More evidence is needed to enable development of clinical care pathways that involve pre-surgical education, timely instrumental swallowing assessment, and prophylactic enteral feeding support that will help optimize SLP care for these patients

STUDY AIM:

To investigate acute recovery and dysphagia outcomes following surgical resection using MLRA for management of OC/OPSCC

Methods

PARTICIPANTS

- Inclusion criteria:** adults admitted to St Vincent's General Hospital between 2012-2017 (5 years) with OC/OPSCC undergoing primary curative surgical resection using the MLRA
- Exclusion criteria:** salvage cases, non-SCC, significant baseline dysphagia

PROCEDURE

- Data collection:** Collated at 3 time-points: baseline (diagnosis), post-operative, and discharge

Measures:

Demographics:

- Age, gender, residence, TNM classification, HPV, comorbidities

Swallowing outcomes:

- Fluid/diet trials during the clinical swallow examination (CSE) rated using the Functional Oral Intake Scale (FOIS)⁶.
- Videofluoroscopic swallow study (VFSS) analysis via 1) FOIS, 2. Penetration-Aspiration Scale (PAS)⁷, and 3) Dynamic Imaging Grade of Swallowing Toxicity (DIGEST)⁸

Enteral feeding:

- Type, timing, duration

Acute milestones:

- Surgery, type of closure either free flap or primary closure, tracheostomy weaning, complications, length of stay

ANALYSIS:

Change in FOIS overtime via Wilcoxon signed rank test
Sub-analysis of method of surgical closure via Mann-Whitney U

Results

PATIENT CHARACTERISTICS

- Total cohort (TC) $n=28$ - >80% male, T2, tonsillar SCC, requiring free flap reconstruction (**Table 1**)
- Subgroups:** $n=19$ free flap reconstruction (F), $n=9$ primary closure (PC)

Table 1. Demographic data of the 28 included cases

Variables	No. cases	% TC	Variables	No. cases	% TC	Variables	No. cases	% TC
Gender	23 M	82	Tumor classification			Neck dissection		
Residence status			I	3	11	Total	28	75
Major city	10	36	II	12	43	Bilateral	21	75
Inner reg.	11	39	III	10	36	Free flap reconstruction		
Outer reg.	7	25	IV	3	11	Total	19	73
Medical History			Cancer location			RFFF	17	61
Smoker	11	39	Tonsil	8	29	MA	1	3
EtOH	10	36	FOM	7	25	FF	1	3
HPV status			Tongue	7	25			
Positive	14	50	BOT	6	21			

Key: Reg=regional; M=male; EtOH=alcohol; HPV=human papillomavirus; FOM=floor of mouth; BOT=base of tongue, RFFF=radial forearm free flap; MA=medial sural artery perforator; FF=fibular flap

SWALLOWING OUTCOMES

TOTAL COHORT (TC)

- 68% incidence baseline dysphagia (**Table 2**)
- 75% severe dysphagia post-operative and **15 NBM**
- Sig. functional decline in swallowing ($p=0.000$)
- 43% severe dysphagia at discharge and **7 NBM**
- 9 **reactive** gastrostomies (PEG)
- Sig. worse swallowing at discharge vs baseline ($p=0.000$)

Table 2. Swallowing outcomes determined at each time-point

	Baseline		Post-operative		Discharge		
	TC	TC	Subgroup analysis		TC	Subgroup analysis	
			PC	F		PC	F
Dysphagia severity							
- Normal (FOIS 7)	9	-	-	-	-	-	-
- Mild (FOIS 6)	13	3	3	-	5	4	1
- Moderate (FOIS 5)	3	4	-	4	11	4	7
- Severe (FOIS ≤4)	3	21	6	15	12	1	11
- Strictly NBM	-	(15)	(2)	(13)	(7)	(1)	(6)
Enteral feeding							
- NGT	-	28	28	28	-	-	-
Gastrostomy total							
- Prophylactic	-	-	-	-	9	1	8
- Elective	-	-	-	-	-	-	-
- Reactive	-	-	-	-	9	1	8

FLAP (F) AND PRIMARY CLOSURE (PC)

Baseline:

- Sig. difference in FOIS scores between F and PC groups ($p=0.019$) (**Figure 1**)

Postoperative:

- Sig. **worse** functional scores for F cohort ($p=0.020$)
- Higher** incidence of severe dysphagia in F cohort (**Table 2**)

Discharge:

- 58% severe dysphagia in F cohort
- 8/9 **reactive** PEGs from F cohort
- FOIS scores remained sig. different between cohorts ($p=0.011$)

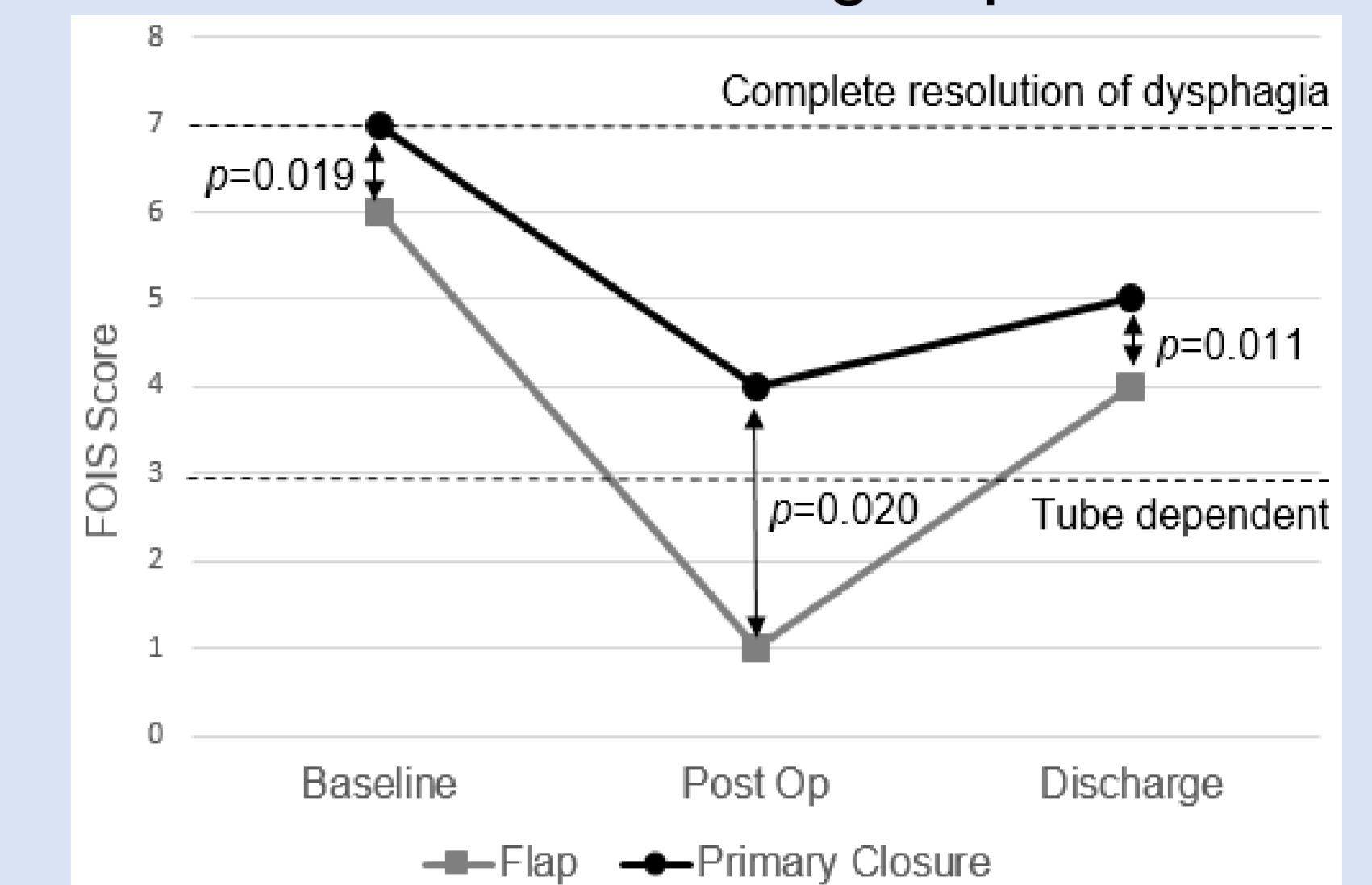


Figure 1: Progress of functional swallowing for subgroups over time

VFSS DATA *

- Recorded for 12 cases (43%)
- DIGEST scores revealed majority $n=8$ (66%) had severe dysphagia
- 9 (75%) had high residue patterns
- 9 (75%) had silent aspiration (**Figure 2**)
- Silent aspiration cases all from the F cohort. * Note data set is incomplete for TC



Figure 2: Intra-swallow silent aspiration

LENGTH OF HOSPITAL STAY

- 27.9 days (TC)

Conclusions

- Dysphagia post MLRA is **common** and often **severe** in presentation
- Patients require **extended** hospital admission with **prolonged** enteral feeding which may persist at discharge
- This cohort requires **regular** and **ongoing** SLP services for dysphagia management.

FUTURE DIRECTION:

Systematic research to comprehensively map the clinical and physiological dysphagia characteristics from the acute phase through to the long term which can inform optimal SLP clinical pathways for this at-risk cohort.

References: 1. Hardingham et al., *Manuscript under review 2021*; 2. Stanley, *Laryngoscope* 1984; 3. Devine et al., *IJOMS* 2001; 4. Dean et al., *JCMFS*, 2000; 5. Li et al., *Tumour Biology* 2014; 6. Li et al., *JCMFS* 2015; 7. Song et al., *HNO* 2013.

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