Protocol for evaluation and early intervention to prevent trismus after treatment for head and neck cancer

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Clinical Aim

Patients who undergo treatment for head and neck cancers may be at risk for trismus, dependent on the site and extent of the tumor, surgical plan, and the need for radiation therapy. With the advent of more focused radiotherapy techniques, there was hope that the risk of trismus would be reduced. However, for individuals who develop trismus, the consequences can be devastating. The aim of this project is to develop strategies for early recognition and intervention to reduce the risk of trismus development or progression.

Patients

Individuals undergoing treatment for head and neck cancer that includes radiation therapy are screened at the dental clinic prior to the start of radiation, evaluated mid-radiation, and again post-radiation.

The pre-radiation visit(s) include screening for dental disease, treating carious lesions, periodontal therapy, education on oral care during and after cancer treatment, extracting non-restorable teeth.

Providers use the following template to record their intraoral findings:

Soft tissue exam- buccal mucosa, floor of mouth, hard palate, soft palate, tongue dorsum, ventral tongue, vestibule

Presence of fungal infection

Mucositis grade:

Dentition, ROM in mm: pain-free interincisal opening, maximum unassisted interincisal opening

Presence of necrosis

Saliva quality, amount

Proposed Intervention

Table 1 – Trismus Protocol

	PFOi (mm)	MUOi (mm)	Additional information	Intervention
Pre-radiation	>35	>35	None	Educate, monitor
	<35	>35	JFLS	Gentle active stretch;
	<35	<35	JFLS	Active stretch plus mild tongue blade stretch as tolerated.
Mid-radiation	Monitor	Monitor	Mucositis Grade	Tx for mucositis as needed, gentle active stretch if PFO or MUO<35 mm.
Post-radiation	>35	>35	None	Educate, monitor
	<35	>35	JFLS	Gentle active stretch; consider Photobiomodulation based on radiation site/dose
	<35	<35	JFLS	Active stretch plus tongue blade stretch or trismus device; referral to PT and follow with H & N surgeons

PFOi: Pain-free interincisal distance
MUOi: Maximum unassisted interincisal distance
JFLS: Jaw Functional Limitation Scale

Outcomes- Traditional Therapy

Table 2 – Summary of Cases

Age	43	60	27
Gender	M	F	F
Cancer type	Tonsillar	Buccal mucosa	Tongue
Radiation (VMAT)	6996 cGY	6000 cGY	6600 cGY
Initial PFO	4 mm	5 mm	2 mm
Initial MUO	4 mm	6 mm	3 mm
JFLS-Mastication	10	2.2	10
JFLS-Mobility	8.5	3.7	7.5
Treatment duration	3 mo.	1.5 years	8 mo.
Final PFO	18 mm	2 mm	3 mm
Final MUO	18 mm	2 mm	7 mm

Conclusions

- Current systematic reviews indicate various techniques may be helpful in patients who develop trismus , however the clinical gain is generally limited.[1]
- While prevention of trismus has not been shown in systematic review[1] early intervention is recommended. [2]

1. Shao, C-H, et. al. Exercise therapy for cancer treatment-induced trismus in patients with head and neck cancer: A systematic review and meta-analysis of randomized controlled trials. Radiotherapy and Oncology 151 (2020) 249-255.
2. Rapidis, AD, et. al. Trismus in patients with head and neck cancer: etiopathogenesis, diagnosis and management. Clinical Otolaryngology 40 (2015) 516-526.

Jaw Functional Limitation Scale

Level of limitation in the past month	No limitation 0 1 2 3 4 5 6 7 8 9 10 Severe
Chew tough food	
Chew hard bread	
Chew chicken (e.g., prepared in oven)	
Chew crackers	
Chew soft food (e.g., macaroni, canned or soft fruits, cooked vegetables, fish)	
Eat soft food requiring no chewing (e.g., mashed potatoes, apple sauce, pudding, pureed food)	
Open wide enough to bite from a whole apple	
Open wide enough to bite into a sandwich	
Open wide enough to talk	
Open wide **enough** to drink from a cup	
Swallow	
Yawn	
Talk	
Sing	
Putting on a happy face	
Putting on an angry face	
Frown	
Kiss	
Smile	
Laugh	

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