

Case Report

Physiotherapy for pain, jaw mobility, and oral health-related quality of life in patient with trismus following radiation therapy for jaw cancer: A case report

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ABSTRACT

Background: Trismus is a painful condition that restricts the temporomandibular joint range of motion (ROM) causing difficulty in eating, chewing, speaking, etc., affecting the oral health-related quality of life (OHRQOL). It often presents as a complication during pre-malignancy stage or after oral cancer treatment. Its prevalence is between 28% and 79%, and it is 8 times more common in edentulous patients.

Case Presentation: The 57-year-old male complained of continuous tongue and jaw pain with difficulty in chewing, eating, and speaking 1 year before and gradually developed small ulcers over the right jaw. After complete investigation, the patient was diagnosed with jaw cancer and underwent radiotherapy for 2 months. This patient came with complaints of pain, difficulty in mouth opening to physiotherapy department, 3 months following radiotherapy, diagnosed as a case of trismus. A comprehensive physiotherapy protocol including LASER, mobilization, Myofascial release, active exercises for the period of 4 weeks was given. Outcomes for pain, jaw mobility, and OHRQOL were evaluated at baseline and 4 weeks.

Conclusion: Four weeks of comprehensive physiotherapy protocol was found effective in reducing pain and improving jaw mobility and OHRQOL in patients with trismus following radiation therapy.

Keywords: Trismus, Laser, Myofascial release, Exercise therapy, Mobilization

INTRODUCTION

Trismus occurs due to reduced mandible mobility in 28–79% of patients with head-and-neck malignant neoplasms, leading to limited mouth opening.^[1,2] The causes can be an invasion of tumor in the masticatory muscles or temporomandibular joint (TMJ), mouth infections after surgery, and radiotherapy-induced fibrosis.^[3] The maximal interincisal distance (MID) of <35 mm is regarded as trismus, with difficulties in daily activities such as chewing, drinking, speaking, and poor oral hygiene, having a negative impact on oral health-related quality of life (OHRQOL).^[4] According to a study, structured exercise interventions with jaw mobilizing devices are effective in improving mouth opening, trismus-related symptoms, and health-related quality of life (HRQOL) at 2 years following completion of jaw exercise training.^[5]

CASE REPORT

Patient information

The patient was a 57-year-old male, having a history of tobacco chewing for 30 years. One year back, he visited a doctor with the complaint of continuous tongue and jaw pain. He gradually developed a small ulcer on the right side of gums, started having frequent bleeding from the ulcer, and lost a molar tooth. After investigations, he was diagnosed with jaw cancer (stage 2). He completed 16 sessions of radiotherapy within 2-month duration. He started having difficulty in opening his mouth and pain while eating and swallowing for 3 months following the radiotherapy. He was referred for physiotherapy with chief complaints of pain and difficulty in mouth opening.

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Received: 25 May 2023 Accepted: 26 June 2023 Epub Ahead of Print: 18 July 2023 Published: 19 October 2023 DOI: 10.25259/IJMS_108_2023

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Clinical findings

Subjective examination

Continuous pain on mouth opening more on the right side with gradual in onset aggravated by jaw movements. There was abnormal closing of the mouth with deviation to the right side and also presented with rounded shoulders and forward head posture. The superficial and deep sensations were intact. Jaw movements were incomplete and painful. Mouth opening, (maximal interincisal distance) measured using ruler was 8 mm. Cervical range of motion (ROM) was incomplete and painful reduced TMJ mobility. There was tightness of the upper trapezius, levator scapulae, and sternocleidomastoid muscles. Functional assessment was done through OHRQOL (Oral Health Impact Profile 14 – OHIP-14), for Activities of Daily Livings - Jaw Function Limitation Scale-20 (JFLS-20).

Functional diagnosis

Subjective and objective examination and based on medical records have confirmed the functional diagnosis as trismus following radiation therapy.

Therapeutic physiotherapy intervention

810 nm laser beam with power output of 1 watt, for 60 s, 3 times/week for the first 2 weeks, was delivered in continuous mode to the lateral aspect of the TMJ and masseter muscle, kept at a distance of 2–4 mm bilaterally.^[6]

The myofascial release (MFR) was given for superficial parts of masseter and sternocleidomastoid. The patient was lying supine, the head turned to the side. Tissue slack was removed, by sliding the tissues with the pad of the finger in caudal direction. A shift movement of the soft tissues was performed along the targeted muscle, 6 times each bilaterally in 1 session.^[7]

For improving the jaw opening, sustained stretching was given with flat ice cream sticks, stacked in opened jaw position for 2 min initially, and progressed by increasing the number of sticks to 10-min hold with the improving range.

TMJ joint mobilization started from the 2nd week (anterior, lateral, and inferior glides) – Grades 1 and 2 and Grades 3 and 4 for the next 2 weeks and maitland mobilization for cervical spine (C3, C4, C5 posteroanterior rhythmic oscillations), Grades 1 and 2 for the 1st week, Grades 3 and 4 in the later weeks.

Active exercises for jaw opening, closing, and jaw protrusion, 10 repetitions each for 2 sets, twice a day, daily.

Trapezius, levator scapulae and sternocleidomastoid stretching 30 s hold, 3 repetitions, chin tucks, shoulder shrugs, and shoulder bracing exercises were performed for 10 repetitions each.

Outcome measures

- Intervention was given for 4 weeks along with home exercises including active jaw opening and closing movements daily for 25–30 repetitions after each meal.
- Physiotherapy session was given for 5 days a week, at physiotherapy OPD.
- Outcome measures for pain - visual analog scale
- Cervical ROM - goniometry
- MID
- OHRQOL was assessed by OHIP-14 questionnaire, which measures people's perception of the social impact of oral disorders on their well-being
- Activities of daily living was assessed by JFLS-20, an organ-specific instrument comprising mastication, vertical jaw mobility, and emotional and verbal expression for assessing functional status of the masticatory system.

The outcome measures at baseline, 2 weeks, and 4 weeks are given in [Table 1].

DISCUSSION

Four weeks of physiotherapy protocol was planned including LASER, active jaw exercises, MFR, jaw, and cervical mobilization for patient presented with trismus following radiation therapy. In this study, a significant improvement was observed in pain, mouth opening, and OHRQOL in this patient.

LASER was time-efficient treatment option, as it provides immediate pain relief and promotes tissue healing. It induces muscle relaxation and analgesia by the neuronal blockade of nociceptors and motor nerve inhibition.^[6] MFR helped in improving fascial mobility around the TMJ and increasing

Table 1: Change in outcome measures at baseline, 2 weeks, and 4 weeks.

	Baseline	2 nd week	4 th week	% change
Outcome measures				
VAS	8	6	4	50
MID (mm)	10	15	22	55
Cervical ROM (degrees)				
Flexion	0–40	0–45	0–55	27
Extension	0–30	0–35	0–40	25
Rotation (right)	0–30	0–40	0–45	33
Rotation (left)	0–35	0–38	0–45	22
Side flexion (right)	0–5	0–10	0–15	66
Side flexion (left)	0–5	0–10	0–0	75
OHRQOL				
OHIP-14	44	30	22	50
JFLS-20	180	167	140	22

VAS: Visual analog scale, MID: Maximal interincisal distance, ROM: Range of motion, OHRQOL: Oral health-related quality of life, OHIP-14: Oral Health Impact Profile 14, JFLS-20: Jaw Function Limitation Scale-20

the pain-free mandibular mobility which was supported by the study conducted by Urbanski *et al.* which observed a significant decrease in the electrical activity of the anterior part of the temporal and masseter muscles and in the intensity of spontaneous pain in masticatory muscles after a series of both post-isometric relaxation and MFR treatments.^[7]

Active jaw exercises encouraged patient's participation and improved self-efficacy and TMJ mobility. Similarly, Wanman and Marklund found the beneficial effect of supervised and home exercise program among patients presenting with TMJ pain and clicking sound. The current 6-week supervised exercise program showed significant improvements in pain and indicators of health and well-being,^[8] thereby improving the OHRQOL. MID has increased significantly which was facilitated by sustained stretching program with the help of flat ice cream sticks. TMJ and cervical joint mobilization with rhythmic oscillations have an inhibitory effect on the perception of pain stimuli by repetitively stimulating the mechanoreceptors that block nociceptive pathway at the spinal cord level, which helps for pain relief and improves the ROM by improving intra-articular mobility.^[9] This customized and supervised physiotherapy intervention program has improved HRQOL in patient with trismus without reporting any adverse effects.

Intervention adherence and tolerability

The patient conformed very well to number of sessions of physiotherapy as per the advice. The patient participated actively by focusing on physical therapy and exercises.

Adverse and unanticipated events

No harmful or unexpected incidents have occurred.

CONCLUSION

Four weeks of comprehensive physiotherapy protocol was found effective in reducing pain and improving jaw mobility and OHRQOL in patient with trismus following radiation therapy.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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How to cite this article: Wani S, Burnwal SP, Mungikar S, Garg K, Katage G. Physiotherapy for pain, jaw mobility, and oral health-related quality of life in patient with trismus following radiation therapy for jaw cancer: A case report. *Indian J Med Sci* 2023;75:187-9.