

Prevalence of Trismus in Post Operative Oral Cavity Cancer Patients in Rural Area - A Cross Sectional Study

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ABSTRACT

Oral cancer constitutes over 90% of malignancies affecting the oral and maxillofacial region. This is likely due to prolonged use of cigarettes and alcohol. Trismus is a significant complication of oral malignancies or its treatment. It hampers, eating, maintaining oral hygiene, and other social interactions to varying degrees. Trismus is recognized at a late stage due to the lack of understanding regarding early diagnosis, prevention, and treatment thus correct physical therapy is rarely delivered. The presence of physiotherapy intervention would be detrimental to aid in ability of the patient to cope with the effects of the disease or its treatment on their functional capacity and quality of life. Hence the study aimed to identify the prevalence of trismus in oral cancer patients in rural areas post-operatively. To identify whether trismus is prevalent in the post operative oral cavity patients in rural area. Study began after the clearance from the institutional ethical committee and then the patients were selected from the Oncology department of Pravara Rural Hospital. Informed consent was taken prior to the study and 60 patients were included in the study. The maximum mouth opening i.e., the distance between the two incisors was taken using the Metal ruler to identify the presence of trismus. Out of 60 oral cancer patients, 37 patients had difficulty in mouth opening which accounts for 67% prevalence of Trismus. Trismus is a major complication of oral malignancies or its surgical and radiotherapy management. Early diagnosis of trismus must be taken into account in order to provide prompt intervention and the development of preventive strategies. This study concludes that the prevalence of trismus is 62% in oral cancer patients and the prevalence was highest in maxilla and mandible (67%) followed by buccal mucosa (65%), tongue (45%) and hard palate (40%).

Keywords: Oral cancer, Physiotherapy, Radiotherapy, Surgery, Trismus.

INTRODUCTION

Oral cancer is included within head and neck cancer and is reported to be the sixth most common malignant neoplasm in the world. Annually, approximately 355,000 oral cancer cases are diagnosed, representing 2% of the malignant neoplasms detected worldwide. Due to a lack of

awareness about oral hygiene, oral cancer and its risk factors in rural areas, oral cancer is diagnosed at a much later stage, which significantly increases the mortality rate. Trismus is a common side effect of head and neck cancer and its treatment. ⁽⁴⁾

Trismus is a significant complication of oral malignancies, or it can be due to surgical

and radiotherapy treatment, or both. Immobility due to pain signifies muscle wasting, joint stiffness, with de-conditioning and fatigue are inevitable. The absence of physiotherapy intervention would be detrimental to patient care and ability of the patient to cope with the effects of the disease or its treatment on their functional capacity and quality of life. Following any treatment for HNC, physical therapy plays an essential role in preventing various complications, helping patients mitigate impairments, and restoring function of the shoulder joint, neck, and face.⁽¹⁰⁾ Research has shown trismus, if untreated leads to serious complications like permanent lock jaw and affects vital functions like eating, swallowing and speech leading to increased social isolation and potentially reduced quality of life and mental health, so this study was performed to understand its prevalence to aid in early diagnosis and further help to plan early interventions and preventive strategies.

MATERIALS & METHODS

Cross sectional study was conducted at Pravara Institute of Medical Sciences, Dr. APJ Abdul Kalam College of Physiotherapy for duration of 6 months, Sample size was 60. study population were patients with oral cancer. Materials: NPRS, TNM staging scale, consent was obtained before including them in study. Equipment's used were metal ruler.

Inclusion criteria-

- Males and females diagnosed with oral cancer, Site of neoplasm classified on International Statistical Classification of Diseases and Related Health Problems (ICD)- 10, Stage I to III according to the TNM staging system, 4 weeks after surgery, above 18 years of age, NPRS score 2-4

Exclusion criteria-

- Patients treated previously for head and neck cancer, Patients who would be

treated with only radiotherapy or chemotherapy.

Patients for the study were selected from the Dental college OPD based on the inclusion and exclusion criteria and then an informed consent was taken from all the patients participating in the study. The demographic data for each participant was collected and the procedure along with the purpose of study was explained to all the participants. Patients were classified as "dentate" if they possessed frontal dentition or were using a prosthesis. If a patient lacked frontal dentition and did not use a prosthesis, they were classified as "edentulous." Patients were classified as "partially edentulous" if they wore a prosthesis in one jaw (upper or lower jaw) and had a frontal dentition in the other jaw (upper or lower jaw). The maximum mouth opening i.e the distance between the two incisors was taken was measured using the Metal ruler

RESULT

In this study 60 participants were selected on the basis of inclusion and exclusion criteria. Data was collected and analyzed. 14 (23.3%) women and 46 (76.7%) men participated in this study. The age ranged from 30 to 82 with a mean age of 48.9. Out of 60 oral cancer patients, 37 patients had difficulty in mouth opening and the reading on ruler showed it was less than 35 mm which accounts for 62% prevalence of Trismus. Out of the patients affected with Mandible and maxilla cancer (9), 6 (67%) had trismus and in the patients affected with buccal mucosa cancer (23), 12 (65%) had trismus, in patients with cancer of tongue (22), 10(45%) had trismus whereas out of the patients affected and in patients affected with cancer of hard palate (5), only 2(40%) had trismus. In this study, it was observed that among the participants affected by trismus, majority of the participants had a moderate grade trismus 21(60%), whereas 8(23%) had a mild trismus and 6(17%) had a severe trismus.

Fig 1: Prevalence of trismus

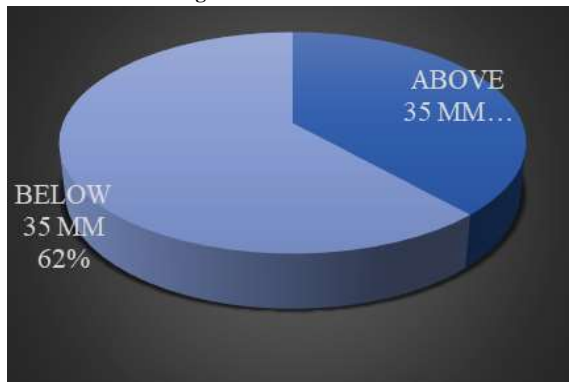
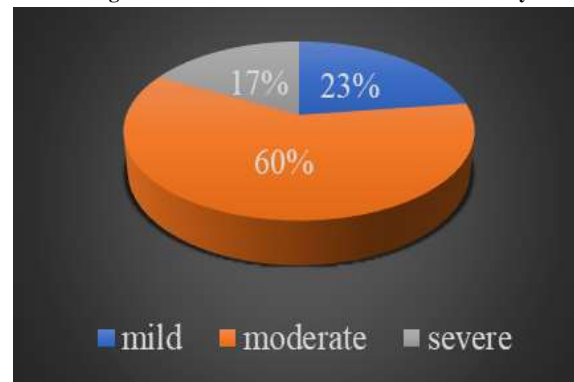


Fig 2: Classification of trismus based on severity.



DISCUSSION

Trismus is a symptom associated with the management of head and neck cancer that has previously not received much attention due to the scarcity of its literature. The ability to foretell which individuals may experience trismus, might have a significant impact on how the patient care is managed before or during their treatment. This study shows that out of 60 oral cancer patients, 37 patients had presence of trismus and the prevalence was 62%. The participants included in this study were the patients undergoing radiation therapy, chemotherapy and also had been operated for Oral malignancy.

Radiotherapy is recognized as one of the risk factors for development of trismus.

The pathobiology behind radiation starts with focal myopathy of the irradiated muscles, typically accompanied with painful spasm. This is followed by radiation-induced fibrosis, which is the aberrant proliferation of fibroblasts in the muscles and ligaments. This fibrosis is not apparent immediately following radiation treatment but develops over time as the mucositis heals. The tissues shorten and contracture as the fibrotic transformation lasts for several months, making the trismus worse. These effects are further exacerbated by the addition of localised loss of arterial perfusion.⁽¹⁵⁾ The rapid formation of collagen caused by radiation damage is the main factor restricting jaw motion in the irradiated patient. The stiffening of epidermal and dermal layers may also cause limitation of mouth opening after or during

radiation.⁽¹⁶⁾ However, the severity of trismus is influenced by the radiation source, dose, and quantity of fields radiated. The limitation in mouth opening worsens with increasing radiation dosage administered to the masticatory structures. Post radiation trismus is more likely to occur in tumours that develop near to masticatory tissues.⁽¹⁷⁾

It was also observed that the patients tend to restrain themselves from performing movements of jaw, resulting in immobilization of the TMJ after surgery for a long time which has been shown to compound the problem.

Surgical procedures, may be associated with various degrees of scarring and tissue contracture whether they are minimal and localized or broad and extensive. Secondary healing following the buccal mucosa excision, carries a risk of formation of a fibrotic band connecting the upper and lower jaws and limiting mouth opening. Immobilization eventually leads to degeneration of joint surfaces, thinning of cartilages and shortening and atrophy of muscles, leading to restriction on range of motion.⁽¹⁵⁾

It was seen that patients with lesions of maxilla, mandible and buccal mucosa region developed trismus more.

Cancers in these regions are known to trigger reflexes in the maxillofacial area, activate the efferent part of the tonic reflex, arch of the muscles of mastication resulting in an increased tonus and eventually developing trismus.⁽¹⁶⁾

The participants of this study were within the time period ranging from 4 weeks after surgery up to 6 months post operatively which could be another cause for the results of reduced mouth opening as few studies suggest that the peak time for trismus accounts for up to 6 months and then shows some improvement with time.⁽³⁾ When evident at the time of discharge following surgery or radiation therapy, trismus is a possible issue that merits early attention so that physical rehabilitation can be started.

The time period for improvement in mouth opening can be reduced by incorporation of Physical therapy which can be much more effective as an additive to their routine treatment and show some good results in improving maximum mouth opening.

The jaw-opening muscles (depressors of the mandible) are strengthened through active training, while the jaw-closing muscles are stretched through passive exercise (elevators of the mandible). Improved circulation, pain relief, increased collagen tissue extensibility, reduced joint stiffness, and easier mobilizations could all be achieved with heat therapy, microcurrent electrotherapy, low-level laser therapy, and other complimentary approaches.⁽¹⁸⁾

Various mechanical aids like the rubber plugs, wooden spatulas, tongue blades, Therabite device can be used to treat trismus. These devices function primarily in a manner similar to passive physiotherapy exercises such that mechanical forces are applied to forcibly stretch the jaw-closing muscles by depressing the mandible. However, the main drawback of these procedures is that they can only be used on patients who are dentate or partially edentulous; as a result, large stresses may be generated on the teeth, putting them at risk for pain and loosening.

It was also observed that the patients are unable to maintain their oral hygiene along with difficulty in chewing, swallowing and speech. This also raises concerns about nutrition because their mouth opening was restricted, making it quite challenging for them to ingest their meals.

Quality of life in terms of social contact, sexuality, teeth, mouth opening, dry mouth, feeling ill, nutritional supplement, and weight loss were also seen as additional sequels of Trismus along with clinical depression and moderate levels of chewing dysfunction.⁽¹⁹⁾

Trismus not only renders a patient physically incapable but also has effects on their social, bodily, and psychological well-being. Identification of these target regions as parallel intervention can significantly improve the QOL in these patients.

A similar study was done by Joakim Johnson, Mia Johansson on the Impact of trismus on health-related quality of life and mental health. This study measured the impact of trismus on health-related quality of life (HRQOL) and mental health in patients with head and neck cancer and temporomandibular disorder. The Gothenburg Trismus Questionnaire (GTQ) showed that Jaw related problems, eating limitations and Muscular tension along with pain were seen in cancer patients. Cancer patients also scored lower on Physical Functioning as well as Social Functioning and Role Limitations due to Emotional Problems along with depression and mood disorder.⁽²⁰⁾

Thus, trismus patients should be treated holistically with respect for the underlying cause, addressing not only the physical components of trismus but also the patients' mental health as it is crucial for providing the patients with targeted and customized trismus therapy.

Limitations of this study

The study included smaller sample size and it was conducted at one center.

Cancer patients included were of short time follow up.

The study did not include a pre-surgery assessment.

Future scope of the study

Study can be expanded to larger sample size and can be conducted at multi-centers with

patients from various geographical locations.

Long term follows up patients can be included.

Study can include a pre- surgery assessment.

Study can be conducted further on basis on TNM staging of cancer.

CONCLUSION

Trismus is a major complication of oral malignancies or its surgical and radiotherapy management. Early diagnosis of trismus must be taken into account in order to provide prompt intervention and the development of preventive strategies. This study concludes that the prevalence of trismus is 62% in oral cancer patients and the prevalence was highest in maxilla and mandible (67%) followed by buccal mucosa (65%), tongue (45%) and hard palate (40%).

Declaration by Authors

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