

# The Role of Trismus in Oral Cancer

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### Abstract

Trismus can be defined as mouth opening limitation and can be caused by some factors as edema following surgery, pain, invasion of the masticatory muscles and usually radiotherapy-induced fibrosis.

Actually, there are some studies about trismus, but there are no uniform criteria about normal opening mouth and limited opening mouth.

The negative impact in the quality life of these patients is very recognized, affecting daily activities such as phonation, chewing and oral health.

This article proposes a short review of the literature on limitation of mouth opening, emphasizing the existing difficulties for the accurate diagnosis of this condition. The lack of uniform criteria for trismus diagnosis needs to be further studied through future research.

**Keywords:** Trismus; Oral cancer; Edema; Oral health

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## Introduction

Trismus may be an important symptom in patients with head and neck's malignant neoplasms. Although trismus is well known in the literature, there are many issues that need to be better analyzed. Limitation of mouth opening is usually studied as a consequence of the radiotherapy treatment in the oral cavity but may also occur due to other factors.

The involvement of the masticatory musculature by the invasion of the neoplasia itself is one such factor. Although it is recognized that the limitation of mouth opening can occur at the time of diagnosis, there is still not much attention focused on this issue, impacting on the late diagnosis of this condition. The incidence rates of trismus before cancer treatment are not yet have a consensus, ranging from 5% to 38%.

Another point to be clarified is the criteria classification about what is a normal mouth opening and a restricted mouth opening. This absence of critical analysis can affect a real incidence of trismus in the population. Atualmente, o critério adotado para a classificação de trismo são aberturas de boca menores do que 35 mm.

Performing essential and daily activities such as chewing, speaking and even performing oral cavity hygiene can be made very complicated or even impossible due to the presence of mouth opening limitation, causing a drastic reduction in the patient's quality of life during and after the process of therapy.

## Literature Review

Trismus is original from the greek term "trismós" and means "gnashing" [1]. It can be defined as a tonic contraction of the muscles of mastication and results in a limited ability to open the mouth [2]. Trismus can occur due to several factors such as tumor invasion of the masticatory muscles and/or temporomandibular joint, fibrosis induced by radiotherapy, oral infections, edema after surgery or pain [2,3]. Although it is commonly classified as a consequence of radiotherapy in the face in oncology patients due to the fibrosis that this treatment can cause, trismus can occur due to several factors, even before treatment, by the invasion of the neoplasia in the adjacent masticatory musculature. Postoperative edema may also be considered another factor that may cause this limitation [4].

Its incidence is very variable in the literature, with indices

between 6% and 86% in patients who received radiotherapy and only 2% during the diagnosis of neoplasia. This discrepancy in values may be caused by the lack of uniform criteria [5,6].

Many classifications have already been proposed, such as the Thomas et al. [7] definition, where mouth opening dimensions are classified as hard, moderate and soft trismus. The definition of normal mouth opening and limited mouth opening is not yet defined by uniform criteria. Currently, the used criteria the one suggested by Dijkstra et al. [6], and Scott et al. [8], which the authors classifies normal mouth openings that are above 35 mm. This criteria considers in its classification discreet opening limitations.

Measurement of mouth opening can be easily obtained with a millimeter ruler, measuring the distance between the incisal edges of the central incisors at maximum mouth opening. Although objective, this measurement is not simple to obtain, since many patients have no dental elements. In these cases, there are still no defined protocols to establish the correct measure of mouth opening. This lack of criteria for measuring mouth opening directly impacts the diagnosis of trismus.

The treatment of this condition is another question to be reviewed, as it requires a multidisciplinary crew with physicians, physiotherapists and dentists. Due to oncologic treatment, the diagnosis of trismus is usually done late. Delay in diagnosis becomes a complication, since the measurement of the oral opening should be made at the time of diagnosis of the neoplasia [9].

The complexity of the treatment is directly proportional to the increased restriction of the opening of the mouth. Currently, Terabite associated with physiotherapy and re-establishment of the oral health is the measures adopted for treatment [3]. In severe cases, direct surgical intervention in muscle fibrosis may be considered.

The negative impact on the quality of life of the patient who has this limitation of oral opening is unquestionable. Performing daily activities such as phonation, chewing or cleaning the oral cavity can be hard compromised [5].

Recent advances in cancer treatment have led to changes in the incidence, nature, and severity of oral complications. Acute oral complications include mucositis, infection, and saliva and neurosensory changes [10]. As the increase in survival of these patients is increasing, the quality of life during and especially after treatment should be objectified.

According to Cooperstein et al. [11], a critical end effect that has often been overlooked and underreported are oral health complications. Preventive measures are critical to minimize adverse long-term dental outcomes. Underlying risk factors for poor dental outcome should be identified and addressed prior to initiating therapy. These include poor prior oral/dental health; diseased teeth, soft tissue, or bone; mineralization status and risk of salivary dysfunction; microbial risk; and dietary risk. Diseased teeth, soft tissue, or bone should be treated prior to initiating cancer therapy [10].

## Discussion

Although well known in the literature, this is a subject that still has many issues to be discussed. The first of these is the establishment of uniform and consistent diagnostic criteria for the diagnosis of trismus. We must consider that the oral health condition has a direct impact on this diagnosis, since the measurement criterion currently adopted does not take into account the variations that may occur and the dental history of the patient. The absence of dental elements is a complicating factor to obtain the diagnosis, many patients present losses of dental elements, partial losses, or even of all teeth. Taking into account that the measurement of trismus is made by means of the interincisive distance at the maximum opening of the mouth, how to obtain this measure in the absence of dental elements?

Dijkstra et al. [6], in his recent research, suggests that the diagnostic criteria for trismus should be different for fully dentate, partially dentate and edentate patients, but there are no studies to establish these parameters. Although its measurement is objective, it is not as simple as it seems.

Fully edentulous patients, who did not have their function reestablished by prosthesis, may present a reduction in the vertical dimension of the occlusion, in which further studies would be necessary to estimate this loss and how it influences the diagnosis of trismus.

The second issue involves the timing of your diagnosis, which is usually done after the cancer treatment, while it should be done at the time of diagnosis of neoplasia. This delay in the diagnosis of trismus can later impact after oncologic treatment, where the restriction of the opening of the mouth can be significantly greater. The identification of mouth opening limitation during diagnosis allows the values to be monitored and controlled before, during and after treatment. This early intervention could significantly reduce the severity of mouth opening limitation, increasing the quality of life of oncology patients [9]. Uma abertura de boca restrita pode impactar até mesmo no tratamento da própria neoplasia.

The third issue to be increased is the follow-up of a multidisciplinary crew with the support of physicians, physiotherapists and dentists, in order to propose measures aimed at maintaining mouth opening and oral health quality in these patients. Not only must neoplasm be treated aggressively, but so does the management and management of this patient, so that its essential functions are preserved in order to provide quality survival. The evolution in antineoplastic therapy is increasing and should aim at the patient as a whole.

Maintaining oral health is also a very important part of treatment and should be treated with due care. The elimination of infection focus in the oral cavity is essential so that systemic infections can be avoided to the maximum [12]. The rehabilitation of the dental condition is essential before the radiotherapy treatment, which can be very aggressive to the adjacent structures. Rampant cavities and osteoradionecrosis can be cited as frequent

symptoms after irradiation, so follow-up with the dental surgeon is critical. Preservation of oral health contributes positively to the eradication of infection focus and also to a better survival of these patients. Maintaining chewing and oral hygiene elevate the function and self-esteem of patients undergoing treatment of the disease.

## Conclusion

Despite being recognized and very recurrent in literature, trismus

needs to be studied under new perspectives in order to fill these existing gaps. The largest of these, of course, is the lack of uniform criteria for their measurement and classification. This diagnosis, which should be obtained simply, in reality, is still very subjective, and is not fully defined. After defining its diagnostic criteria, trismus needs to be seen as an adjuvant factor to neoplasia, not only as a consequence of its treatment. Finally, in a generalized way, its impact should be minimized in the patient's daily life, in order to increase their quality of life.

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