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# Exeresis of bilateral mandibular torus for prosthetic purpose: case report

# Exérese de tórus mandibular bilateral com finalidade protética: relato de caso

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## ABSTRACT

The torus is a benign bony protuberance, which affects the maxilla and mandible, consisting of multifactorial etiology, being associated with genetic and environmental factors. The aim of this study is to report a clinical case with its focus on the surgical management of a bilateral mandibular torus that required surgical removal for prosthetic purposes. A 64-year-old male patient approached the Dental Clinic from the Bahia Adventist College (FADBA), seeking prosthetic rehabilitation treatment. The intraoral physical examination revealed the presence of partial edentulism in both dental arches, as well as the presence of a hardened and asymptomatic mass on the mandibular lingual alveolar ridge bilaterally. It was decided to perform surgery for mandibular torus excision. A bilateral inferior alveolar and lingual nerve block was performed, an envelope flap was made, mucoperiosteal detachment, osteotomy with orientation grooves and cleavage of the bone blocks, ridge regularization with a maxicut drill and copious irrigation with saline solution followed by interpapillary suture. As it is an asymptomatic pathology in most cases, it does not require treatment. However, in cases of broader extension, when there are repeated traumatic injuries related to feeding, phonetic alterations, or hindrance to rehabilitative prosthetic treatment, surgical removal is indicated. After the clinical evaluation, the diagnosis of mandibular torus was confirmed, and the patient was informed of the need for surgical removal, since the presence of exostoses would make prosthetic treatment impossible. After surgery, the patient was directed to follow up his rehabilitative treatment.

**Keywords**: Exostosis. Mandible. Oral surgery.

## RESUMO

O tórus é uma protuberância óssea benigna, que acomete a maxila e a mandíbula, de etiologia multifatorial, estando associado a fatores genéticos e ambientais. O objetivo deste estudo é relatar um caso clínico com foco no manejo cirúrgico de tórus mandibular bilateral que necessitou de remoção cirúrgica com finalidade protética. Paciente, do sexo masculino, de 64 anos, compareceu à Clínica Odontológica da Faculdade Adventista da Bahia (FADBA), buscando tratamento reabilitador protético. Ao exame físico intraoral, presença de edentulismo parcial em ambas as arcadas dentárias, bem como presença de massa endurecida e assintomática em rebordo alveolar lingual mandibular bilateralmente foram constatadas. Optou-se, assim, por realizar a cirurgia para exérese do tórus mandibular. Foi realizado bloqueio do nervo alveolar inferior e lingual bilateralmente, confecção do retalho tipo envelope, descolamento mucoperiosteal, osteotomia com sulcos de orientação e clivagem dos blocos ósseos, regularização do rebordo com broca maxicut, irrigação copiosa com soro fisiológico, seguida de sutura interpapilar. Por tratar-se de patologia assintomática na maior parte dos casos, dispensa tratamento. Em casos de maior extensão, no entanto, quando ocorrem lesões traumáticas de repetição relacionadas à alimentação, às alterações fonéticas ou algum empecilho para o tratamento protético reabilitador, indica-se remoção cirúrgica. Após a avaliação clínica, foi definido o diagnóstico de tórus mandibular, esclareceu-se o paciente sobre a necessidade de remoção cirúrgica, uma vez que a presença das exostoses impossibilitaria o tratamento protético. Após a cirurgia, o paciente foi encaminhado para dar seguimento ao seu tratamento reabilitador.

**Palavras-chave**: Cirurgia bucal. Exostose. Mandíbula.

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## INTRODUCTION

Exostoses are characterized as bony protuberances that develop in distinct locations of the body, having an etiology in the cortical bone, presenting a variety of extensions and forms. In the oral cavity, the commonly found form is the mandibular torus, located above the mylohyoid line and along the lingual surface in the mandible and the maxillary torus, located on the midline of the hard palate in the maxilla (Santos, Cardoso & Tonelli, 2019; Rocha & Dias, 2020).

Mandibular Torus (hereafter, MT) is a benign bony protuberance of multifactorial etiology associated with genetic and environmental factors. However, other factors may be related to the development of this exostosis, such as masticatory hyperfunction, parafunctional habits, nutritional disorders, infection and the continuous process of bone development (Santos et al., 2019; Rocha et al., 2020; Rios et al., 2021).

In most cases, torus are asymptomatic, except in regions in which the mucosa has a thin coating that may injure the site where the trauma occurred. It is prevalent bilaterally, accounting for 90% of cases. Depending on the extent, they may appear on periapical radiographs, while, on occlusal radiographs, they are easily visualized. It is formed by means of hyperplastic bone that has a compact structure and trabecular bone connected to the fatty marrow. It is circumscribed and can vary in size from one to five cm (Fragoso, Silva, Flores, Lucena & Florentino, 2020; Silva et al., 2021).

They rarely require surgical intervention, considering that most cases do not promote physiological influences. Surgery is recommended in situations of pain, difficulty in chewing and phonation, in addition to interference with the firmness of the Total Prosthesis (TP) or Removable Partial Prosthesis (RPP). In cases of a better obtention of the prosthesis, excision is suggested in pre-prosthetic surgeries, ensuring retention, stability and reducing ulcerations during masticatory rehabilitation (Panzoni, Guarino, Perez, Souza & Paro, 2008; Soares, Azevedo, Lima, França & Neves, 2020; Silva et al., 2021).

The present work aims to report a clinical case with emphasis on the surgical management of a bilateral MT, which required surgical removal for prosthetic purposes.

## CASE REPORT

A 64-year-old male melanodermic patient came to the Dental Clinic from the Bahia Adventist College (FADBA), seeking prosthetic rehabilitation treatment. In his anamnesis, the patient reported that he had no systemic alterations and reported that he did not use medication. In the physical examination, no abnormalities of the cervical lymph nodes were detected, nor were there any facial asymmetries or signs of changes in temporomandibular dysfunction. In the intraoral examination, it was confirmed that the patient had partial edentulism in the dental arches (upper and lower). In the mandible, specifically in the lingual region, the appearance of a bilateral, asymptomatic, lobular lesion was observed, with firm consistency on palpation and well-defined borders. The surface is covered by epithelial tissue with normal appearance, constituting three lobes on the left side and six on the right (Figure 1A).

For diagnostic elucidation, radiographic examinations were performed in which the presence of bilateral exostoses compatible with cortical bone was verified (Figure 1B). After radiographic evaluation, the diagnosis of MT was verified and the patient was informed of the need for surgical intervention in this case, considering that the presence of these exostoses would have implications in his prosthetic rehabilitation treatment. Pre-prosthetic surgery for MT excision was proposed as a conduct.

Initially, the patient underwent preoperative medication, considering that surgery would bring an increased inflammatory response and risk of transient infection. The anti-inflammatory of choice was Dexamethasone 4mg, and, for the infection control, Amoxicillin 1g, both were administered one hour before the procedure.

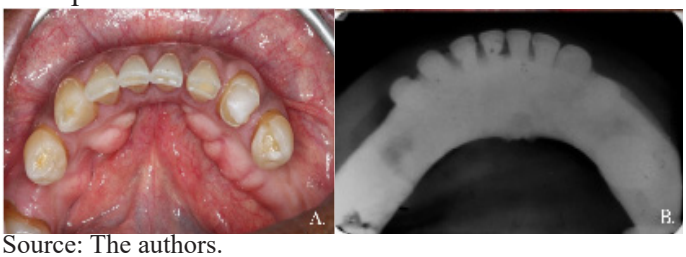
For torus removal, anesthesia was performed bilaterally from the inferior alveolar and lingual nerve block, and complemented with infiltrative techniques. Lidocaine 2% with epinephrine 1:100,000 was employed as the anesthetic of choice and a total of four tubes were applied.

An intrasulcular incision was made using a 15 blade to create an envelope flap, followed by mucoperiosteal detachment (Figure 2A). Subsequently, an osteotomy was performed with 702 drill guide grooves and cleavage of the bone blocks with a chisel and hammer. The ridge regularization was continued with a maxicut drill, copious irrigation of the surgical site with a saline solution, followed by interpapillary suturing for flap repositioning (Figure 2B and C).

The patient was given postoperative recommendations. These included rest, diet, wound care and oral hygiene. For pain, inflammation and infection control, the following medications were prescribed: dipyrone 500mg, one tablet every six hours for two days; mimesulide 100mg, one tablet every twelve hours for three days; and amoxicillin 500mg, one tablet every eight hours for seven days, taken orally.

After seven days, the patient returned for postoperative evaluation. Adequate tissue repair of the wound was perceived which resulted in the sutures being removed. After the stabilization time and tissue renewal, around 90 days, in duration, the patient was taken for the preparation of the RPP (Figure 3).

**Figure 1**
Pre-operative



Source: The authors.
*Note*. A: Clinical appearance. B: Radiographic examination.

**Figure 2**
Trans-surgical appearance.

Source: The authors.
*Note.* A: Flapped flap. B: Bone planing. C: Flap integrity after torus removal.

**Figure 3**
Clinical appearance after fifteen days of treatment.

Source: The authors.

## DISCUSSION

MT can be defined as a circumscribed, localized, non-neoplastic bony growth protruding from the cortical bone surface above the mylohyoid line in the premolar region (Fuentes, Borie, Parra & Rebolledo, 2009; Rodríguez-Vázquez et al., 2013; Santos et al., 2019).

Studies state that, when compared to the palatine torus, TM is less common, as its prevalence ranges from 5% to 40%. Most TMs are affected bilaterally (Auskalnis et al., 2015; Silva et al., 2021), ratifying the clinical characteristics described in the present case.

According to Auškalnis et al. (2015), MT has a multifactorial etiology and one of the factors analyzed were the ages of 81 pairs of twin patients, in which higher incidence was identified in patients over 18 years of age. Chao et al. (2015) described that MT showed an association with middle-aged and male patients (Freire et al., 2010; Rodríguez-Vázquez et al., 2013).

Furthermore, MT also appeared to exhibit a predilection for race. In a study that evaluated the epidemiology of TM, the populations commonly affected were Afro-descendants and Asians, with a prevalence of 6% to 12% respectively (Martins, Lata, Martins, Bussadori & Fernandes, 2007; Freire et al., 2010). These data corroborate the findings of this report.

For the case described, an occlusal radiographic examination was performed in order to verify a radiopacity superimposed on the dental roots, confirming the bony protuberances discovered in the intraoral examination. Studies indicate that, depending on the extent of the lesion, exostoses can be seen on periapical and panoramic radiographs, while on occlusal radiographs they are easily visualized (Silva et al., 2021).

Surgical removal of MT is not always necessary. It is indicated in cases of painful symptoms, difficulty in swallowing and phonation. The most frequent cause, however, remains rehabilitation with prosthesis, whether PT or PPR (Panzoni et al., 2008; Rodríguez-Vázquez et al., 2013; Soares et al., 2020; Silva et al., 2021; Rodrigues, Santos, Campello, Nunes & Torres, 2022). It is also recommended when it is a potential source of autogenous bone for grafts in periodontal surgery, cysts and implant dentistry, even if the stability of the graft is questionable in the long term (Rodríguez-Vázquez et al., 2013; Oliveira et al., 2021).

When surgical treatment of MT is indicated, there are a variety of surgical techniques that can be employed. Two types can be used: those that employ the use of rotary instruments and those that do not (Silva et al., 2021).

Some authors emphasize caution with the use of chisels and hammers, given the risk of fracture in older patients. The handling of the rotary drills should be performed with caution, assessing the risk of perforation of the floor (the syndesmotome can be used in this case to perform protection, placing it below, at the limit of the torus), with caution being taken not to extend excessively and remove important bone structure for regularization of the ridge of the future prosthesis (Calle, 2020).

Another method used is the formation of the orientation grooves with the use of the rotary and then with the use of the hammer and chisel to perform the removal of the lesion. The groove is important to serve as a support, encouraging extirpation, in addition to avoiding possible complications in the post-surgical period (Silva et al., 2021).

It is important to emphasize the copious irrigation with saline solution during the use of the rotary. The movements can promote the heating of the drill, generating necrosis on the tissue due to the induced heat. Performing the irrigation with the active tip can cause cooling and prevent necrosis or tissue injury (Silva et al., 2021).

As with all dental surgery, postoperative MT removal requires care. Pain should be controlled with anti-inflammatory drugs, analgesics and antibiotic therapy. Dipyrone sodium is the preferred analgesic due to its ability to promote action and rapid absorption. Regarding anti-inflammatory drugs, the option of choice is non-steroidal, with ibuprofen and nimesulide recommended, as they enable positive action and binding with the analgesic.

With regard to antibiotics, amoxicillin is used extensively, due to its potential to act against bacteria stored in the oropharynx (Silva et al., 2021).

## CONCLUSION

Exostoses are abnormal and benign bone growth. However, they can cause adversities in hygiene, esthetics, chewing habits, phonation and can cause discomfort to the patient, in addition to requiring removal for prosthetic rehabilitation. Thus, torus excision is well indicated, and surgical management should be adequate to promote better adaptation and stability of the prosthetic piece, as reported in the case developed. After surgery, the patient was encouraged to continue his rehabilitative treatment. However, in order to achieve success, it is of paramount importance to respect and follow the surgical planning, therapeutic recommendations and anatomical knowledge to ensure satisfactory results.

## COMPETING INTERESTS

The authors declare that there are no conflicts of interest.

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## AUTHOR CONTRIBUTIONS

*Conceptualization*: D. A. S. *Data curation*: D. A. S. *Formal analysis*: M. M. R. S. *Investigation*: D. A. S. *Methodology*: M. M. R. S. *Project administration*: T. S. F. *Resources*: T. S. F. *Supervision*: W. S. B. *Validation*: C. E. S. C. *Visualization*: M. R. C. C. *Writing the initial draft*: W. S. B. *Revision and editing of writing*: M. R. C. C.

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