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The Lone Giant: An Unusual Case of Large Unilateral Mandibular Torus

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**Type of Publication:** Case Report **Conflicts of Interest:** Nil

## Abstract

Torus mandibularis is bony protuberance present commonly at the premolar region. They are oftenly small and bilateral (80%) but rarely large and unilateral. They are usually asymptomatic and found as an incidental finding in routine practise. Radiographically, radiopaque structures superimposed with roots and histologically seen as normal compact bone. Surgical excision is done when they are huge and arise with some complications. Here, is the case report of the patient with asymptomatic large and unilateral mandibular torus.

**Keywords:** Large, Radioopaque, Surgical Excision, Torus Mandibularis, Unilateral

## Introduction

Tori is bony protuberance or localized bony outgrowth derived from Latin word meaning "to stand out" or "lump". (1)Torus mandibularis can be defined as an exostosis, unilaterally or bilaterally situated on the lingual aspect of the mandible above the mylohyoid line usually in the region of the premolars. (2) They develop by the process of hypertrophy of the compact bony layer and, sometimes, the spongy bony layer with poorly vascularised mucosal covering (1,3). They are often discovered incidentally usually bilateral(80%) less oftenly unilateral and large (4)They appear to grow very slowly and gradually, and they are also a great option for donor sites in grafting operations.(5) Although its

etiology is unclear, 30% are attributed to genetics and 70% to environmental causes.(6)They could make it more difficult to do endotracheal intubation, laryngoscopy, prosthesis placement or intraoral radiography.(6)Here, is the case report of a rare huge unilateral mandibular torus reported to our department.

#### **Case Report**

A 52 years female patient reported to Oral Medicine & Radiology department with the chief complaint of pain in lower right back region of jaw since 15 days. On examination, associated tooth 46 was carious also an incidental swelling was noted in mandibular left region of jaw with respect to 33-36. Patient gave the history of swelling in the lower left back region of jaw since 40 years, as it was asymptomatic she was not concerned about it. It was causing no discomfort on mastication or during speech but sometimes, was interfering while tongue movements. No history of pus discharge, trauma, ulceration or bleeding. Medical history revealed hypertension and diabetes since 6 years and is on medication for the same. Family history, dental history was non-contributory. There was no lymphadenopathy. There were no relevant findings extra-orally.



On intraoral examination, there was a solitary pale pink dome shaped outgrowth present lingually in left mandibular region extending anterio-posteriorly from 33-36. Superiorly from middle third of crown and inferiorly above the mylohyoid ridge in the floor of the mouth, measuring 3 cms in diameter with no buccal extension. Mucosa overlying & surrounding mucosa was normal. On palpation it was non tender, hard in consistency with smooth surface. Associated teeth - root stumps with 34, 35 and proximal caries with 36. Based on clinical examination the provisional diagnosis given was unilateral mandibular torus present wrt 33 to 36. Investigations adviced were IOPA, Occlusal radiograph, OPG and CBCT.



Radiographic examination with IOPA, Occlusal radiograph, OPG and CBCT revealed solitary oval dense homogeneous well-defined radio-opacity mass measuring 2.5\*2 cms approx. on lingual side with superimposition on roots w r t 33- 36. It had no effect on surrounding structures and adjacent teeth .CBCT also revealed bone density as D1.Radiographic diagnosis given was mandibular tori w r t 33-36. Differential diagnosis could be considered as osteoma, exostosis, complex odontoma.

So, the final diagnosis given based on location and radiographic features as unilateral mandibular torus present w rt 33 to 36 and surgical excision was done and specimen was sent for histopathological diagnosis, reports revealing compact structure of the normal bone,

having a slightly spongy structure with marrow spaces, suggestive of mandibular torus. Follow up was done after 15 days and orthopantomogram showed healing phase in that region.





# Discussion Epidemiology

They are seen in second and third decade of life with male predilection. The incidence rate ranges from 0.5% to 63.4%. (1) They are essentially a functional adaptation occuring especially among people living in northern latitudes and existing principally on animal food.(2)They are found mostly in Eskimos, American Indians and Asians, and Koreans.(7)The torus mandibularis is found bilaterally in 80% of cases and ranges in prevalence from 1% to 64% (6,4).

## Etiology

Although its etiology is unclear, 30% are attributed to genetics and 70% to environmental causes. (6) Masticatory functional stress such as bruxism or temporomandibular joint disorders. It also occurs due to vitamins involved in bone health( vitamins A and D) and supplements high in calcium, medications involved in calcium homeostasis, continued growth and bone mineral density, dietary habits (1,3, 6,8,9). Mandibular tori has also been reported in systemic disorders such as primary hyperparathyroidism, with a higher blood phosphate level in hemodialysis patients, with partially edentulous jaws and not using any prostheses as a result increased occlusal of stress. oseteoporosis, hypothyroidism (6).

# Pathogenesis

Autosomal dominant mode of heritance is seen in the development of Mandibular Tori. (10)Instead of developing a simian shelf, humans have strengthened the weakest portion of their jaw by creating an external chin. As a result, as the mandibular body buckles medially due to a combination of muscle compression and tooth orientation controlled by the maxilla, the morphology of the mandible localizes torus development to the .Because parafunctional premolar area activity concentrates mechanical stresses in the area where TMs usually occur, it may be the cause of TM development. Consequently, TM will be more common in mandibular geometries that promote stress concentration, such as square-shaped mandibles. (8) Functional stress may release bone morphogenic proteins resulting in osseous growth at stress site. (6). It could be also associated with consumption of fish, because fish contains omega 3 unsaturated fatty acids and vitamin D, which encourages bone growth. It may be because of prolonged use of phenytoin which leads to an increase in size of torus as it induces an increase in calcium homeostasis functioning as an osteogenic agent. (11)

In chronic diseases, such as osteopenia and osteoporosis, the balance between bone metabolism cell types can be shifted to favor an overall catabolic state in bone. The sympathetic nervous system innervates bone tissue, and it has been shown that its activity inhibits bone formation. Accordingly, drugs that inhibit the activity of the sympathetic nervous system, such as antihypertension medications, have been shown to counteract this catabolic state and increase bone mineral density (BMD) and bone formation. Hypothyroidism decreases the recruitment, maturation, and activity of bone cells, leading to decreased bone resorption and a net positive bone balance. Low-grade hyperactivity of

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the immune system, as occurs in subjects with allergies, may actually stimulate bone formation. It has been shown that, in addition to immunoglobulin E antibodies, cytokines such as interleukin-4, interleukin-13, and interferon- (IFN-) play important roles in penicillin allergy. Recent research has shown that IFN- is necessary for the osteogenic differentiation of human mesenchymal stem cells in vitro and for the maintenance of BMD in vivo, suggesting a potential role of IFN- in bone formation in vivo. It could thus be expected that subjects known to have increased levels of IFN-, as in subjects with a penicillin allergy, may be more likely to have greater bone accrual leading to the development of an oral torus. (9)

### **Clinical Features**

Mandibular Tori are asymptomatic and exhibit slow growth. (1) They are located on the mandibular lingual side, above the mylohyoid line, next to the premolars(4). They may grow over several centimeters and create problem in the fabrication and wearing of removable dentures or prosthesis.(7)Usually present as well-rounded, smooth surfaced, bony projections, covered with normal or blanched mucosa and hard on palpation(12).Mandibular tori can be seen in dentulous as well as edentulous cases. They are less than 2 mm in size. Rarely, TM may grow in size so much that contralateral TMs can meet in the midline ("kissing tori").(10) Their size varies and may extend distally to the third molar and mesially to the lateral incisor region.(13)The presence of paresthesia should be investigated promptly. (10) Sometimes patients may present food deposits or periodontitis. (11) Larger tori can also cause perturbed phonation, produce pain or create ulceration of the overlying mucosa due to constant trauma, and sometimes they cause obstruction in tongue movements by trapping lingual frenum. The potential malignant transformation has not yet been reported. (14) Osteonecrosis of the tori in patients receiving bisphosphonates for osteoporosis and cancer treatment as well as interference with endotracheal intubation during general anaesthesia is seen. (3)

#### Classification

I. Based on number(2)-(a)single unilateral torus, (b) multiple unilateral tori, (c) single bilateral tori, and (d) multiple bilateral tori

II. Based on size - Ranging from barely palpable to one that contacts the torus on the opposite side.

III. Based on shape- flat, nodular, lobulated (15)

## **Radiographic Features** (15)

Mandibular Tori can be radiographically seen on Intraoral periapical radiograph, Occlusal Radiograph, Orthopantomogram, Cone beam Computed tomography, Computed Tomography, MRI

**Location**- The recognition of mandibular tori relies on their appearance and location. Their presence bilaterally reinforces this impression, although they can occur unilaterally. On mandibular periapical images, a torus mandibularis appears as a radiopaque entity, usually superimposed on the roots of premolars and molars and occasionally over a canine or incisor.

**Periphery**-The periphery of tori are well defined, and they will appear convex or as a lobulated outline. Mandibular tori in particular can appear very sharply demarcated on intraoral images.

**Internal structure**-The internal aspect is homogeneously radiopaque.

**Effects on adjacent structures-** Tori are continuous with the bone surface from which they are arising. In the mandible, this continuity may be visualized on cross-sectional occlusal images.

**Effects on adjacent teeth-** Tori have no effects on the teeth.

On CT, mandibular tori present as bony protrusions, isodense to compact bone and generally located on the lingual aspect of the mandible. Thickness range of 4.3– 11.3mm for mandibular tori on CT. They have very low signal intensity on all MR sequences, as they consist of compact bone. Smaller tori are difficult to identify on MR because of their low signal. Furthermore, the detection of tori on MR may be problematic due to metal artifacts, which were nearly absent. Lesions which are isointense to compact bone on MRI and are located on the medial aspect of the mandible can be classified as tori without additional CT scans. The characteristic MRI features of compact bone and the typical location of tori on the medial aspect of the mandible allows differentiation of mandibular tori from other jaw lesions. (16)

## **Histopathological Features** (17)

It reveals that it is similar to the compact structure of the normal bone, having a slightly spongy structure with marrow spaces.

## Treatment

TM excision is indicated in speech intereference, difficulty in tongue movements denture fabrication, traumatic ulceration, cancerphobia, sensitivity or pain due to thin mucosal lining, limitation in masticatory mechanics or source of autogenous cortical bone graft (10) Mandibular tori are usual clinical finding and require no treatment, but in case if large sized tori pose above mentioned complications, surgical excision is the treatment of choice.

## Conclusion

Mandibular Torus is an asymptomatic incidental finding. Large and unilateral occur very rarely. Surgical excision is the treatment of choice if arise with complications.

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