

FREQUENCY OF TORI IN PATIENTS SEEN AT PROSTHODONTICS DEPARTMENT OF ISLAMABAD DENTAL HOSPITAL

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ABSTRACT

Tori are benign growths of new bone in the mouth. The bony prominences go unobserved for a long period of time in the oral cavity due to their painless and benign nature. These are usually noticed during fabrication of a prosthesis as they affect the management of partially and completely edentulous patients. The occurrence of tori vary in populations and between genders. The aim of this study was to assess the frequency of torus palatinus and torus mandibularis seen in patients who visited Prosthodontics department of Islamabad Dental Hospital and to find out their gender predominance and variations among the sizes. A total of 278 patients over a period of 4 months were assessed. The results showed that maxillary tori were present in 7.6% of patients and mandibular tori were present in 0.3%. Among these 59% were females and 41% were males. The most frequent age group for tori was of 46-50 years.

Key Words: *Torus Palatinus and torus Mandibularis, frequency, Islamabad sample, denture construction.*

INTRODUCTION

Torus is a non-neoplastic osseous bony growth; developmental in origin, present in the maxilla and mandible. In the literature they are also designated as hyperostosis, exostosis and osteomas.¹ Tori are self-limiting and painless, but they may grow over several centimeters and then contribute to periodontal disease of adjacent teeth by forcing food during chewing toward the teeth instead of away from them. If it is large, it may also be a problem in the construction and wearing of removable dentures.² Although they are generally asymptomatic, surgical intervention may be required in some cases for prosthodontic purposes.³ They present a clinical challenge for the dental team attempting to capture accurate detail for final impressions of crown and bridge, removable prosthesis, oral appliances, study models, accurate opposing models, and bleaching trays.⁴ Stock impression trays often cannot be seated properly, as the path of placement of trays is hindered by the bony prominences, along with the traumatization of soft tissue mucosal lining over the prominences, making the procedure painful for the

patient.⁴ After extraction of teeth residual alveolar ridge resorbs continuously whereas the tori do not resorb. This becomes a problem in complete denture patients where rocking of dentures can occur at the torus area.⁴

Prevalence for tori varies within different populations, a study conducted in Nigeria showed prevalence as low as 1.8%. Torus Palatinus (TP) was significantly more common in females than in males.⁵ Whereas a study conducted in Iraq concluded the prevalence of torus palatinus was as high as 60.9% while that of torus mandibularis (TM) was significantly lesser i.e. 23.5%.⁶ Another study conducted to see the prevalence of torus palatinus and torus mandibularis in Germans and Thai populations in 1988 stated that torus palatinus (TP) was 13.5% and Torus mandibularis (TM) was recorded in 5.2%, whereas in Thai population torus palatinus was found in 23.1% and 9.4% of the men and 9% of the women showed torus mandibularis.⁷

Literature study shows that prevalence and frequency of tori varies from population to population. This study was conducted to find out the frequency of tori in patients seen at the Department of Prosthodontics of Islamabad Dental Hospital, Bara Kahu, Murree Road, Islamabad.

METHODOLOGY

Two hundred and seventy eight patients having tori were examined over a period of four months by two researchers. The researchers underwent training for consensus and consistency of finding and reporting for inter-observer reliability. Patients with any soft tissue growth/hyperplasia, surgical intervention of maxilla and mandible and incomplete healing of maxillary and mandibular arches after any surgical procedure were excluded from the study. Visual and digital examina-

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tion was performed to identify tori. Torus palatinus was examined clinically by placing the index finger in middle of the palate and by running the finger from side to side. For torus mandibularis index finger was placed in premolar region lingually and run from anterior to posterior to detect any bony prominences.

A serial number was allotted to all the patients. When identified presence of tori in maxilla or mandible was noted on study proforma. Casts of the patients whose treatment was initiated at the department were acquired with permission, to measure the size and exact location of the maxillary and mandibular tori. Whereas, informed consent was obtained from patients whose treatment could not be initiated for any reason at the time of examination. Impressions were made in reversible hydrocolloid (alginate impression material Normal Set) and casts were made in dental hard plaster (KOPO-HARD CKH-52) for measurements. Boundary of identified torus was marked on the cast, with a mechanical pencil (0.5mm, fine tip), to delineate the border of torus. The point of maximum elevation was identified and marked by examining the bulge of torus from distal side. The torus was measured in three dimensions including the width, length and height. An adjustable tip divider (model K 2101-3) was used recording the measurements. The length and width of torus was recorded by placing the tips of divider at most anterior and posterior and most mesial and distal borders of torus respectively, and measured. The height was recorded by placing the adjustable tip in such a way that one tip rests on the point of maximum elevation and the other at the distal border of torus. The tips were locked and vertical distances between the tips were measured with a stainless steel scale with 0.5mm precision. All readings were recorded three times by the same researcher and average was noted on the proforma. For intra-rater reliability these readings were randomly repeated by the chief researcher for verification.

The grading system used for classification of size of torus was based on Woo's classification of torus size, i.e. small, medium and large.⁸ The scheme of classification is shown in Table 1. In Woo's classification, if one of the measurements fails to meet the criterion of the medium or large grade, it is classified as of the smaller grade.

RESULTS

A total of 278 patients seen at the Prosthodontics department over a period of 4 months were evaluated. Maxillary tori were present in 21 patients (7.6%) and mandibular tori were present in 2 patients (0.3%). On

TABLE 1: SCHEME FOR CLASSIFICATION OF THE SIZE OF TORUS⁸

	Elevation (mm)	Width (mm)	Length (mm)
Small	Under 3	Under 10	Under 15
Medium	From 3-5	From 10-15	From 15-25
Large	Above 5	Above 15	Above 25

evaluation of size of tori, it was found that the 19 patients had small maxillary tori and 2 had medium tori. The mandibular tori were small in size, and bilateral in location. According to gender, 59% females and 41% males had tori. The most frequent age group for tori was 46-50 years.

DISCUSSION

Tori come into notice during the fabrication of prosthesis especially the removable ones, as these may affect the denture bearing areas and interfere with the fabrication of the prosthesis. The area of torus is accompanied by no or uneven resorption that later leads to rocking of prosthesis. The thin mucosal lining, when exposed to masticatory loads may ulcerate under removable prosthesis. Failure to achieve the exact replication of anatomical areas can be the primary reason for failure even though the design of the prosthesis is well structured.⁹

The occurrence of tori varies in different populations. Present study showed more occurrence of torus palatinus than torus mandibularis. (7.6% TP and 0.3% TM). The results are consistent with various previous studies. Torus palatinus was also found to be significantly greater in occurrence than torus mandibularis in a study conducted in Iraq, which reported 60.9% torus palatinus and 23.5% torus mandibularis.⁶ A similar study in German and Thai population indicated 13.5% torus palatinus and 5.2% torus mandibularis.⁷ A study carried out in Karachi, Pakistan, yielded the same results showing frequency of torus palatinus as 3.7% of patients out of which 35.3% were males and 64.7% were females.¹⁰

Majority of the studies showed that the tori occurrence was frequent in female population as compared to males. A study conducted among children and adults in Jordan showed female predominance.¹¹ Another study conducted in Malaysia showed female prevalence with TP seen more in females (35%), compared to males (20%).¹² Present study also revealed an increased gender predisposition towards females. However, a study conducted among edentulous patients in Saudi Arabia found male predominance, showing the percentage of males with either tori, higher (19.0%), when compared to females (15.94%).¹³ Another study conducted in Jordan reported the frequency of torus palatinus and Torus mandibularis as 3.1%, and 2.3% respectively. It was however, twice as frequent in females as in males.^{14,15,16}

In this study most of the tori were small in size. Different studies have shown varying results. A similar study conducted in Karachi, Pakistan found medium size tori more in number. This study used Reichert's Classification.⁷ A study conducted in Saudi Arabia showed that 66.6% of the tori were small in size (less than 2 cm).¹⁷ In the present study, Woo's Classification for Tori was used. It was found that the 90% of TP were small in size. All mandibular tori found were small in size, and bilateral in location. The difference in the

results in this study compared to the other studies can be attributed to the fact that different classification systems were used. Woo's Classification,⁸ analyzes the torus in three dimensions; small, medium and large. This classification system was used in the present study as it is more precise.

The presence of tori affects the prosthodontic rehabilitation of such patients especially in case of removable prosthesis. Further research can be carried out to look for factors that predispose the females to have more bony abnormalities including tori as compared to males.

This study had certain limitations as convenient sampling was done, which may have affected the results. Also the number of male and female subjects and division of subjects as per age group was not equal. A single classification system was used to assess the size of tori.

CONCLUSIONS

Frequency of torus palatinus was found higher as compared to torus mandibularis. Females were more affected (59%) than males (41%).

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