



PREVALENCE OF TORUS PALATINUS IN ADULT HUMAN CRANIA OF EAST INDIAN ORIGIN

Anatomy

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ABSTRACT

Torus Palatinus or Palatine torus is a benign bony exostosis that exists on the hard palate along the mid-palatal or interpalatine suture. Although smaller tori are clinically asymptomatic, bigger ones may require surgical intervention. This study is an attempt to analyze the incidence of palatine tori in East Indian population and to assess any significant sexual variation between male and female crania. In the present study, 96 skulls (60 male and 36 female) from different medical colleges of West Bengal were examined at Department of Anatomy, N.R.S. Medical College, Kolkata, West Bengal between 2017-2019 to observe the presence of torus on the hard palate. While 8.33% of the total sample showed the presence of palatine torus; no statistically significant sex difference was noted in its prevalence in male and female skulls. Male skulls were documented with a 10% prevalence rate while female skulls were found to have a 5.55% prevalence of Torus Palatinus. This data is not only useful in comparing skulls of various races but also bears importance in dentistry and facio-maxillary operative interventions.

KEYWORDS

East Indian, Skulls, Prevalence , Palatine Torus, Torus Palatinus.

INTRODUCTION:

Torus Palatinus or Palatine torus is a benign bony exostosis that exists on the hard palate along the mid-palatal or inter-palatine suture. As stated by AlZarea[1], palatine torus mainly consists of dense cortical bone with minimum amount of bone marrow and is covered with a fragile and limited vascularised mucosa.

Usually the torus has an average diameter of 2 cm and grows rather slowly. Al- Sebai D[2] suggested that this abnormality of the bony palate usually features in the second to third decade of life. It can be classified as flat, spindle shaped, nodular or lobular according to Simukovic et al [3]. Although smaller tori are clinically asymptomatic, bigger ones may require surgical intervention.

Among the very few research work on palatine tori in India, Ambumani[4] and Patil S[5] conducted studies in south and north Indian population respectively. This study is an attempt to analyse the incidence of palatine tori in East Indian population and to assess any significant sexual variation between male and female crania.

MATERIALS AND METHODS:

The study design was conducted at the Department of Anatomy, N.R.S. Medical College, Kolkata, West Bengal between 2017-2019 on 96 (60 male and 36 female) dry, well preserved and fairly intact adult crania available from the department of Anatomy as well as from undergraduate MBBS students of various medical colleges across West Bengal.

All skulls were assumed to be from Eastern Indian origin. Skulls with broken palates were excluded. All collected skulls were carefully observed for presence of palatine torus.

The data obtained was further analyzed statistically to calculate the incidence in the total sample as well as separately for male and female skulls. Any significant variations in incidence among male and female skulls were analyzed by using Chi-square (χ^2) tests.

RESULTS:

The observations of the present study are tabulated in table 1 below:

Table 1- Prevalence of Palatine Torus

Sample size	Skulls presenting with Torus Palatinus	Percentage
Total sample (96)	08	8.33%
Male skulls (60)	06	10.00%
Female skulls (36)	02	5.55%



Figure 1: Male skull presenting with Torus Palatinus

Sex difference in prevalence of palatine torus in male and female skulls was found to be statistically insignificant ($p > 0.05$).

DISCUSSION:

The prevalence rates of palatine torus diversify in populations with contrasting ethnic origins. In studies of Kerdpo and Sirirungrojying[6] significant racial differences have been observed with Mongoloids having a higher prevalence rate than Caucasians, and Caucasians having a higher prevalence rate than blacks. In the present study on east Indian dry intact skulls, 8.33% of skulls presented with the bony exostosis defined as Palatine Torus. This finding can be compared to Indian studies conducted by Ambumani et al[4] and Patil et al[5] on south Indian and north Indian skulls respectively with prevalence rates of 12% and 1.30% of torus palatinus. Al Quran FAM and Al -Dwairi ZN[7] found an incidence of 29.8% in Jordan while Ashish Kumar et al[8] documented a 43% incidence of palatine torus in Malaysian skulls.

Garcia et al[9] observed that Palatine Torus was most prevalent in females than males which was attributed to a dominant type X chromosome. Although Bader K Alzarea[1] and Patil et al[5] found the incidence to be higher in males. The present study on east Indian skulls however showed no significant differences between the two sexes which is similar to the findings of Janusz Skrzat et al[10] on Cracovian skulls.

Significant tori on the hard palate may be associated with masticatory dysfunction, speech disturbances, oral ulcerations and cancerophobia. Their presence may also require fabrication of dental prosthesis. Small palatal tori are usually not pathologically significant. However their size can change throughout life ranging from few mm to cm. An increase in size is usually observed in early adulthood which gradually decreases with increasing age due to bone resorption. Thus, knowledge of palatine torus holds importance for facio-maxillary and dental surgeons. The etiology of palatine torus, though still debatable; but according to Sawyer DR et al[11] is based on various factors such as race, genetics and geographical factors which have a significant impact on palatal morphogenesis.

Although presence of torus palatinus may interfere with the functioning of the oral cavity, their existence may be adopted as antecedents of autogenous cortical bone in periodontal surgeries.

Most studies on palatine torus have been conducted on patients who presented with facio-maxillary and oral problems with very few studies on bony exostosis of hard palate in dried adult human skulls. Among the researches on palatine tori, Indian population was not taken into account in most cases. This present study is an attempt to focus on the prevalence of Torus Palatinus on east Indian skulls which might lead to further such studies in patients which will hold immense significance for neurosurgeons, dentists, facio-maxillary surgeons and prosthodontics people.

Conflicts of interest –Authors have no conflicts of interest.

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