Torus Palatinus in an Infant: A Case Report

J. P. Beena, BDS, MDS

ABSTRACT

The most significant exostoses of the human jaws are the torus palatinus and torus mandibularis. Torus palatinus has long been reported by various anthropological and anatomical studies. Even if it has no functional importance, it could interfere with oral functions. Although it has been the subject of numerous studies, torus palatinus is rarely reported in children. The purpose of this paper was to report a rare case of torus palatinus in a 1½-year-old boy. (J Dent Child 2012;79(3):181-4)

Received January 31, 2011; Last Revision May 30, 2011; Revision Accepted June 5, 2011.

KEYWORDS: DENTAL DEVELOPMENT, GROWTH AND DEVELOPMENT, INFANT ORAL HEALTH, EARLY CHILDHOOD CARIES

The word torus means to "to stand out" or "lump" in Latin.[1] Torus palatinus (**TP**) is a nonpathologic bony overgrowth in the midpalatine region, first described in 1814 by Fox.[2] Kupfer and Bessel-Hagen[3] first used the term "torus palatinus" in a letter addressed to Virchow in 1897. The TP is a slowly growing bony elevation that sometimes exists on the hard palate along the midpalatal suture and interpalatine suture. The anatomical position of the TP varies, however, according to the transverse palatine suture. It may extend forward or backward toward the transverse palatine suture, and sometimes the torus is located in the area of intersection of both palatine sutures, forming an oval elevation. The TP consists of compact bone externally and spongy internally.[4,5] According to Woo,[5] the torus is "composed of a layer of compact bone on oral and nasal surfaces with intervening spongy bone," whereas, according to Perier,[6] it consists of compact bone. Anthropological and anatomical studies have reported various findings concerning the frequency and morphology of this cranial feature.[7]

Torus palatinus is a non-neoplastic developmental anomaly which does not present until adult life. Even though a few cases have been reported in older children, its occurrence in a child of one and half years contributes for an interesting case report.

Dr. J. P. Beena is reader, Department of Pediatric and Preventive Dentistry, A.E.C.S Maaruti College Of Dental Sciences and Research Centre, Karnataka, India.

Correspond with Dr. J.P. Beena at drbeena.jp@gmail.com

CASE REPORT

A 1½-year-old boy of Indian ethnicity was brought to the Department of Pediatric and Preventive Dentistry at the A.E.C.S Maaruti College of Dental Sciences and Research Centre, Karnataka, India, with the chief complaint of palatal swelling occurring over the last month, as first noticed by the child's mother during feeding. According to the patient's parents, there was no apparent change in the size of the lesion since it was first noticed. The family was from a low socioeconomic rural background. The patient's medical, family, and past dental history were unremarkable. Upon intraoral examination, a solitary swelling was present posterior to the distal surfaces of the primary maxillary first molars in the midpalatal region (Figure 1). It was lobular-shaped, pale yellow in color with few brown spots, and approximately 10 mm x 10 mmin size. The surface was smooth, with clearly defined edges. The initial findings were confirmed on palpation, and it was stony hard in consistency.

Clinically, a differential diagnosis of exostoses, osteoma, and osteochondroma was made. Gardener's syndrome was ruled out after a careful general examination by the pediatrician, as there were no associated fibromas of the skin, intestinal polyposis, or odontomes. Histopathologically, a hematoxylin and eosin-stained section revealed a compact bone, with osteoblasts lining the periphery and many osteocytes present within the lacunae (Figure 2).

Due to the patient's age and no pathology associated with the lesion, active treatment for the removal of the torus was not warranted. This patient remains under review.

DISCUSSION

In most cases, the finding of TP is incidental and observed during clinical examination in the dental office. The etiology of the palatine torus has been attributed to various pathological conditions[8] Kupffer et al,[3] have observed TP to be a characteristic of race. Others have claimed that its occurrence is dependent upon geographical location. According to the functional concept elaborated by Kajava,[9] the appearance of torus palatinus is explained by masticatory hyperfunction or hyperfunctional stresses. From the genetic aspect, Suzuki and Sakai[4] found a fixed relationship between parents and their children in the occurrence of TP, as well as in the degree of its development. It has been repeatedly been suggested that an important factor influencing the prevalence of tori is diet.[10-14] The most popular theory of the causation of the variation in prevalence of TP is that its presence is triggered by pressure toward the median palatine region from mastication of tough food, and that the thickening of the palatine suture acts as a buttress to resist the pressure.[12] The role of nutrients in the etiology of tori has been reviewed by Eggen et al.,[15] who suggested saltwater fish consumption in Norway possibly supplied higher levels of polyunsaturated fatty acids and vitamin D, which is involved in bone growth, increasing the chances of tori. Apparently the TP has no functional importance, unless it is extremely large, in which case it may cause discomfort in the oral cavity. The morphology of the TP is also of clinical importance in the administration of the palatal surgery and in orthodontic practice.[16] The prevalence of tori according to Al Bayaty et al.[17] is 12.3% and Bruce et al.[18] found it to be 14.6%. According to MacInnis et al.[19] TP appears during puberty and slowly grows until the subject reaches adulthood, with the possibility of their growth continuing until seventh decade of life. Bruce et al.[18] found the average age of onset of tori to be 34 years and Al-Bayaty et al.[17] found the average age for TP to be 30.7 years. It is most frequent for TP to appear in women than in men[1,20-23] and it is believed that there may be a dominant type linked to the X chromosome.[1] The appearance of tori is more common in certain ethnic groups and countries such as Eskimos, Japanese, Caucasians, African-Americans, Norwegians and Thais. Sonnier et al.[24] and Al-Bayaty et al.[17] concluded that the average size of the TP was 20.33 x 9.45mm and 21 x 18mm respectively. Woo[5] based on the size of palatine torus classified them as small, medium or large (Table 1). Based on their shapes Reichert et al.[25] classified them as follows: small (<3mm), medium (3-6mm) and large (>6mm). The shapes of TP were classified as spindle, nodular, lobular and flat according to Neville et al.[26]

Choyayeb and Volpe,[27] however, found no relationship between age and the presence of tori in either jaw. In his study of Brazilian Indians, Bernaba[28] did not find TP in any person younger than 10 years, a finding which agreed with other observations.[13,29,30] Reichert et al.[31] observed children with TP in their study, which is also reported by other authors.[32,33]

The presence of tori might be advantageous, however, since they may be used as sites for harvesting bone for ridge augmentation procedures to replace a missing tooth.[23] They may be also source of autogenous cortical bone in periodontal surgery.[27] Yildiz et al.[34] found a TP prevalence of approximately 31% among 5- to 15-year-old schoolchildren and 4% among 13 to 85-

Figure 1. Close-up view of torus palatinus.

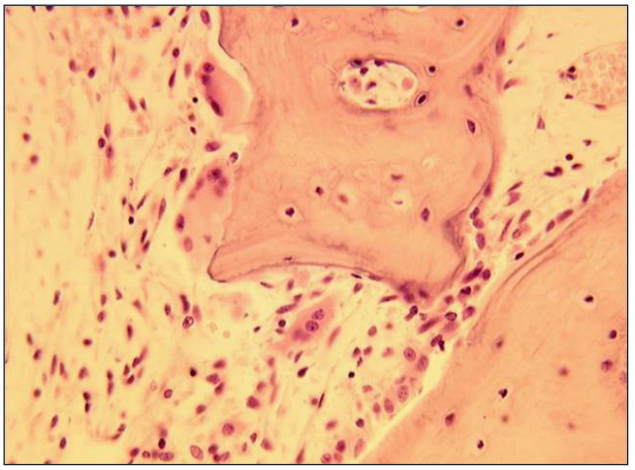

Figure 2. Hematoxalin and eosin-stained section of torus palatinus.

Table 1. Classification of Torus Palatinus Based on Size (mm)

	Elevation	Width	Length
Small	<3	<10	<15
Medium	3-5	10-15	15-25
Large	>5	>15	>25

year olds. TP requires no treatment unless there are disturbances of phonation, interference with masticatory function, traumatic ulceration of the overlying mucosa, prosthetic treatment needs, or food deposition. When treatment is elected, the lesions may be surgically removed.

CONCLUSION

This report discussed a rare case of TP in a 1½-year-old boy. This case report is important to pediatric dentists because they are among the first to diagnose these lesions and it is their duty to reassure anxious parents about the lesion's benign nature. It is important to remember that treatment options will vary, depending upon the patient's age. Additionally, the patient should be kept under review unless the presence of torus interferes with feeding, swallowing, or other difficulties which can impede oral function.

REFERENCES

1. Castro Reino O, Perez Galera J, Perez Cosio Martin J, Urbom Caballero J. Surgical techniques for the exeresis of torus, both palatal and mandibular. Rev Actual Odontoestomatol Esp 1990;50:53-6.
2. Fox J. Natural History and Diseases of the Human Teeth. 2nd ed. London, UK: E Cox; 1814:135.
3. Kupffer C, Bessel- Hagen F. Verhandlungen der Berliner gesellschaft fur anthroplogie enthnologie and urgerschichte. Z Ethnol 1879;11:70-1.
4. Suzuki M, Sakai T. A familial study of torus palatinus and torus mandibularis. Am J Phys Anthrop 1960; 18:263-72.
5. Woo JK. Torus palatinus. Am J Phys Anthrop 1950; 8:81-111.
6. Perier AL. Palatine torus and mandibular torus: Research on the meaning of said maxillary exostoses torus palatal torus and mandibular sagittal, with some observations of microanatomy. Archs Suisses Antrop Gen 1947-48;13:1-13.
7. Kronenberger H. The torus palatinus. Anthropol Anz 1981;39:150-7.
8. Lasker GW. Torus palatinus: An historical note. Dent Rec 1952;72:269-73.
9. Kajava Y. Die Zahne der Lappen. Anthropologische Zahnstudie. Proc Finn Dent Soc. 1912;10:1-64.
10. King DR, Moore GE. An analysis of torus palatinus in a transatlantic study. J Oral Med 1976;31:44-6.
11. Miller SC, Roth H. Torus palatinus: A statistical study. J Am Dent Assoc 1940; 27:1950-7.
12. Hooton EA. On certain Eskimoid characters in Icelandic skulls. Am J Phy Anthropol 1918;1:53-76.
13. Hrdlicka A. Mandibular and maxillary hyperostosis. Am J Phy Anthropol 1940;27:1-67.
14. Mayhall JT. The effect of culture change upon the Eskimo dentition. Arctic Anthropol 1970;7:117-21.
15. Eggen S, Natvig B. Relationship between torus mandibularis and number of present teeth. Scand J Dent Res 1986;94:233-40.
16. Kerdpon D, Sirirungrojying S. A clinical study of oral tori in southern Thailand: Prevalence and relation to parafunctional activity. Eur J Oral Sci 1999; 107:9-13.
17. Al-Bayaty HF, Murti PR, Matthews R, Gupta PC. An epidemiological study of tori among 667 dental outpatients in Trinidad and Tobago, West Indies. Int Dent J 1999;49:101-4.
18. Bruce I, Ndanu TA, Addo ME. Epidemiological aspects of oral tori in Ghanaian community. Int Dent J 2004;54:78-82.
19. MacInnis EL, Hardie J, Baig M, Al-Sanea RA. Gigantiform torus palatines: Review of the literature and report of a case. Int Dent J 1998;48:40-3.
20. Donaldo M. Preprosthetic surgery. In: Donaldo M, ed. Oral Surgery, Pathology, and Technique. 2nd ed. Barcelona, Spain: Masson; 1998:481-510.
21. Antoniades DZ, Belazi M, Papanayiotou P. Concurrence of torus palatines with palatal and buccal exostoses: Case report and review of the literature. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 1998;85:552-7.
22. Martinez-Gonzalez JM. Benign tumors of the maxilla. In: Donaldo M, ed. Oral Surgery, Pathology, and Technique. 2nd ed. Barcelona, Spain: Masson; 1998:627-39.
23. Eggen S, Natvig B, Gasemyr J. Variation in torus palatines prevalence in Norway. Scand J Dent Res 1994;102:54-9.
24. Sonnier KE, Hornong GM, Cohen ME. Palatal tubercles, palatal tori, and mandibular tori: Prevalence and anatomical features in US population. J Periodontol 1999;70:329-36.
25. Reichert PA, Neuhaus F, Sookasem M. Prevalence of torus palatinus and torus mandibularis in Germans and Thai. Community Dent Oral Epidemiol 1988;16:61-4.
26. Neville BW, Damm DD, Allen CM, Bouquot JE. Oral and Maxillofacial Pathology. Philadelphia, Pa: WB Saunders; 1995:17-20.
27. Chohayeb AA, Volpe AR. Occurrence of torus palatinus and mandibularis among women of different ethnic groups. Am J Dent 2001;14:278-80.
28. Bernaba JM. Morphology and incidence of torus palatinus and mandibularis in Brazilian Indians. J Dent Res 1977;56:499-501.
29. Dorrance GM. Torus palatinus. Dent Cosmos 1929;71:275-85.
30. King DR, Moore GE. The prevalence of torus palatinus. J Oral Med 1971;26:113-5.
31. Reichert PA, Neuhaus F, Sookasem M. Prevalence of torus palatinus and torus mandibularis in Germans

and Thai. Community Dent Oral Epidemiol 1988; 16:61-4.
32. Schreiner KE. Zur Osteologie der Lappen: BDI. Oslo, Norway: Harvard University Press; 1935:160-77.
33. Jarvis A, Gorlin R. Minor orofacial abnormalities in an Eskimo population. Oral Surg Oral Med Oral Pathol 1972;33:417-27.
34. Yildiz E, Deniz M, Ceyhan O. Prevalence of torus palatinus in Turkish schoolchildren. Surg Radiol Anat 2005;27:368-71.