

# Maxillary Torus in North Indian Crania in Rohilkhand Region, Uttar Pradesh, India

<sup>1</sup>Subhash Gupta, <sup>2</sup>Nirala K Prasad, <sup>3</sup>Amrita Gupta

## ABSTRACT

Nonmetric studies of cranium have been of great interest among research workers. The crania have different regional and racial characteristics. In the present study, 30 skulls from North Indian population of Uttar Pradesh were studied for the maxillary torus. Findings of this study have been compared with other global studies and it has been found to be significant.

**Keywords:** Cranial variant, Human skulls, Maxillary torus.

**How to cite this article:** Gupta S, Prasad NK, Gupta A. Maxillary Torus in North Indian Crania in Rohilkhand Region, Uttar Pradesh, India. *Int J Adv Integ Med Sci* 2017;2(4):188-189.

**Source of support:** Nil

**Conflict of Interest:** None

## INTRODUCTION

Nonmetric cranial variants have been a subject of study by many pioneering workers.<sup>1</sup> Carolineberry and Berry<sup>2</sup> observed this variant in different races which are of much ethnic importance but not of much forensic interest. Berry<sup>3</sup> made a special study of nonmetrical human cranial variants including maxillary torus. The present study is undertaken to know the incidence of variant of maxillary torus and to draw significant conclusion, if any, from this study.

## MATERIALS AND METHODS

Thirty North Indian human crania were studied. For this study, human crania of the Museum of Varun Arjun Medical College and Rohilkhand Hospital, Shahjahanpur, and Rohilkhand Medical College, Bareilly, India, were studied. Presence of maxillary torus was noted among these crania and also the unilaterality or bilaterality. If unilateral, whether on left or right was noted and recorded.

## RESULTS

Out of 30 skulls studied, double maxillary torus was seen only in five skulls (two had bilateral and three unilateral, all on left side). Thus, the incidence of this cranial variant was 16.67%. Out of these, it was bilateral (Fig. 1) only in 6.67% cases. However, unilaterally, it was present (Fig. 2) in 10% of the cases.

## DISCUSSION

Anatomists have been very curious about the variations in crania for many decades.<sup>4</sup> Wood-Jones<sup>5</sup> first proposed the idea of minor cranial variations to be important in anthropological studies among different races. In 1956,



Fig. 1: Maxillary torus (bilateral)



Fig. 2: Maxillary torus (unilateral)

<sup>1-3</sup>Assistant Professor

<sup>1-3</sup>Department of Anatomy, Varun Arjun Medical College and Rohilkhand Hospital, Shahjahanpur, Uttar Pradesh, India

**Corresponding Author:** Nirala K Prasad, Assistant Professor Department of Anatomy, Varun Arjun Medical College and Rohilkhand Hospital, Shahjahanpur, Uttar Pradesh, India Phone: +919412293525, e-mail: kamtanirala7@gmail.com

Table 1: Maxillary torus according to Berry<sup>2</sup>

Egypt (summed) 250 skulls	Nigeria (Ashanti) 56 skulls	Palestine (Lachish) 54 skulls	Palestine (modern) 18 skulls	India (Punjab) 53 skulls	Burma 51 skulls	North America (British Columbia) 50 skulls	South America (Peru) 53 skulls	Our study (Uttar Pradesh) North India 30 skulls
16.6%	11.6%	7%	8.3%	17.9%	9.8%	24%	27.4%	16.67%

Laughlin and Jorgensen<sup>6</sup> put this idea in practice. In 1967, Carolineberry and Berry<sup>2</sup> suggested that these studies could be used to find a distance statistically among different population samples. This article is concerned with description and racial and regional incidence of maxillary torus, one of the important cranial variants. Cranial variants have been studied by many anatomists and research workers. Works of many of those have been recognized and given due importance in textbooks. For comparative purposes, they have been described as rare or occasionally found; nevertheless, a few of them have been utilized as anthropological markers.<sup>7,8</sup> These variants may arise due to diseases or external factors.<sup>9-11</sup> However, most variations are due to normal process of development and are genetically determined.<sup>2</sup> Related races have similar frequency of any particular variation, but it remains approximately constant in related race. It was Chambellan<sup>12</sup> who first suggested the use of such variant traits in anthropological determinations. In 1900, Russel<sup>13</sup> gathered together data on a number of skull variants in American groups and gave the first indication of their use in the comparison of populations. Data on the skull variants were used in a more systematic manner for comparison in Far Eastern groups by Wood-Jones.<sup>5,14</sup> Berry<sup>3</sup> studied nonmetrical variations of human cranium including maxillary torus. His findings have been compared in Table 1.

In our study, it was observed that double maxillary torus was present in 16.67% of crania. Out of these, in 6.66% crania it was bilaterally present (Fig. 1) and in 10% cases it was unilaterally present (Fig. 2). In North India (Uttar Pradesh), the incidence of this variant was greater (16.67%) than in Nigeria (11.6%), Palestine (7%), Palestine modern (8.3%), and Burma (9.8%) and similar in Egypt (16.6%). Our study showed lesser value as compared with that in North America (24%) and South America (27.4%), and also some states in India (Punjab, 17.9%). Hence, the current study provides valuable data from Uttar Pradesh, India, and has been compared with similar data of different global studies. The findings are of considerable racial and regional global significance.

### CLINICAL SIGNIFICANCE

A maxillary torus is removed only in instances where it is problematic. In edentulous patients, it creates problems.

Fitting of dentures is problematic when overgrowth of maxillary torus extends much beyond, to the vibrating line. It also prevents posterior sealing of palatine fovea. Frequent trauma to the torus is another indication for its removal. Overgrowth of maxillary torus is associated with thin mucoperiosteum over it due to stretching. Speech disturbance is another relative indication. Recently, in cancer-phobic patients, it has been a major concern.

### ACKNOWLEDGMENT

Authors would like to thank the kind support of the administration and technical staff in helping them to carry out the study in a cordial manner.

### REFERENCES

1. Todd TW, Tracy B. Racial features in American Negro cranium. *Am J Phys Anthropol* 1930 Sep-Dec;15(1):53-110.
2. Carolineberry A, Berry RJ. Epigenetic variation in the human cranium. *J Anat* 1967 Apr;101(Pt 2):361-379.
3. Berry AC. Factors affecting the incidence of non-metrical skeletal variants. *J Anat* 1975 Dec;120(Pt 3):519-535.
4. Le Double, AF. *Traite des Variations des os du Crane de L'Homme*. Paris: Vigot; 1903. p. 400.
5. Wood-Jones F. The non-metrical morphological characters of the skull as criteria for racial diagnosis. I.II.III. *J Anat* 1930-1931 Jan-Jul;65(Pt 1-3):179-195, 368-378, 438-445.
6. Laughlin WS, Jorgensen JB. Isolate variation in Greenlandic Eskimo crania. *Acta Genet Stat Med* 1956;6(1 Pt 2):3-12.
7. Brothwell, DR. Digging up bones: the excavation, treatment and study of human skeletal remains. London: British museum (Natural History); 1963. p. 192.
8. Brothwell, DR. Of mice and men. Epigenetic polymorphism in the skeleton. In: Caso A, et al. *Homenaje a Juan Comas en Su 65 Aniversaria*. Vol. 2. Mexico: Editorial Libros de México; 1965. p. 9-21.
9. MollerChristensen, Sandison AT. Usura orbitae (enbra orbitalia) in the collection of crania in the Anatomy department of university of Glasgow. *Path Microbiol* 1963;26:175-183.
10. Roche AF. Aural exostoses in Australian aboriginal skulls. *Ann Otol Rhinol Laryngol* 1964 Mar;73:82-91.
11. Dorsey GA. Wormian bones in artificially deformed Kwakiutl crania. *Am Anthropol* 1897 Jun;10(6):169-173.
12. Chambellan, M. *Etude Anatomique et Anthropologique sur les Os Wormiens*. Thesis, Paris. [Cited by Dorsey, 1897]. 1883.
13. Russel F, *Studies in Cranial Variation*, *Am Nat* 1900;34:737-747.
14. Wood-Jones F. The non-metrical morphological characters of the skull as criteria for racial diagnosis. IV. *J Anat* 1933-1934 Oct;68(Pt 1):96-108.