

Prevalence of Cusp of Carabelli in Permanent Teeth in a Group of Dental Student of School of Dentistry at University of Sulaimani

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Abstract: The aim of this study was to determine the prevalence of cusp of carabelli in permanent teeth in a sample from a group of Dental Student of School of Dentistry at University of Sulaimani A special proforma was developed to collect the data. A total of 150 subjects (Students of School of Dentistry, University of Sulaimani) were included in the study. Cusp of Carabelli was present in 30% of the study population in maxillary first permanent molar but, did not find on maxillary second permanent molars. Prevalence in males (30%) was slightly greater than females (29%). Unilateral cusps were higher in males while bilateral cusps were higher in females.

Keywords: Cusp of Carabelli, Unilateralism

I. Introduction

The cusp of Carabelli trait was first described by Carabelli in 1842 (1). It is a nonfunctioning mini cusp at mesiopalatal cusp at mesiopalatal line angle in maxillary first permanent molar (2). It has also been variously referred to as the fifth lobe, supplemental cusp, mesiolingual elevation, accessory cusp, tuberculum anomalies, tuberculum Carabelli and tuberculum imparon (3). It is separated from mesiopalatal cusp by a groove which is also named as cusp of carabelli groove (2). It is rarely present on the second or third permanent molars, or on the upper first primary molars (3). It has no established etiology, nor known function or clinical importance (1).

Cusp of carabelli is entirely absent in some individuals and present in others in a variety of forms (2). The cusp may rival the main cusps in size, whereas other related forms include a small ridge, pit, or furrow (4). The cusp of carabelli is a heritable feature. It has been proposed that homozygosity of a gene is responsible for a pronounced tubercle, whereas, the heterozygote show as slight grooves, pits, tubercles or bulge. It is most common among Europeans (75-85% of individuals) and rarest in pacific islands (35-45%) (5). This cusp was mainly used for differentiation between different populations⁴ but it has also significance in clinical dentistry (2) that is useful in forensic, anthropological and ethnic studies (1). One study proposed that in individuals with the genotype for Carabelli trait expression, larger molar crowns are more likely to display Carabelli cusps in comparison to smaller molar crowns which are more likely to display reduced forms of expression (6). A Carabelli cusp has been found in Australopithecus, Neanderthal man, when it was only a groove. Therefore, it has been suggested that there has been an evolution in Carabelli's cusp from a simple groove to a well-developed cusp (4).

II. Methodology

This descriptive study was carried out on students of College of Dentistry, University of Sulaimani. The ethical committee of the college has approved the study proposal. The students also have signed the informed consent before oral examination. Duration of the study was five months (January 2015 to May 2015). The oral examinations were performed on the dental chair under dental chair light for proper visual clarity. The presence and absence of this extra cusp on both maxillary first and second molars for both males and females were recorded on study form. Any tooth cusps compromised by dental caries, attrition or any other factors were discarded from the study. One hundred and fifty dental students were examined of which 55 were males and 95 females. The study was also involved determination of unilateral and bilateral presences of cusp of Carabelli for

both sexes. Each student was examined by two examiners for better reliability of the study. The data was collected and tabled.

III. Results

Among 150 students 45 (30%) had cusp of Carabelli and 105 (70%) had not. Both males and females showed approximately the same percentages of presence and absence of cusp of Carabelli, 30% and 29% respectively **Table 1**. The percentages of bilateral and unilateral cusps of Carabelli in males and females were (36% and 64%) and (68% and 32%) respectively, that constituted 56% of bilateral and 44% of unilateral of the total 45 of students that had cusp of Carabelli **Table 2**. This study did not find this extra cusp on the maxillary second molars.

IV. Discussion

Cusp of Carabelli is important for determination of ethnicity and for forensic dentistry too. It is also has got attention in many science fields like anthropology, genetics and evolution science as it regards as biological dominant in population. The current study has shown that cusp of Carabelli has no sex predilection; this finding is similar to Subedi et al study that had found 49.7% for males and 50.3% for females. In contrary they found opposite percentages for presence and absence of Carabelli cusp with our study (68.3% and 31.7%) respectively (7). another study found the similar percentages for presence and absence of the cusp like our study (38.2% and 62.4%) respectively (8). Regarding the presence of the cusp bilaterally and unilaterally, this study goes with the former study (7).

In the current study and some other studies showed that the prevalence of cusp of Carabelli in males and females are relatively low and similar. Among students that had this fifth cusp, majority of males had unilateral cusp while majority of females had bilateral cusp of Carabelli. This information is important to document every individual with other anatomical landmarks for the purpose of forensic medical data.

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Tables:

Table 1: Prevalence of Cusp of Carabelli in Males and Females

Gender	Cusp of Carabelli		Total
	Yes	No	
Male	17 (30%)	38 (70%)	55
Female	28 (29%)	67 (71%)	95
Total	45 (30%)	105 (70%)	150

Table 2: Unilateral and Bilateral Distribution of Cusp of Carabelli

Gender	Unilateral	Bilateral	Total
Male	11 (64%)	6 (36%)	17 (37%)
Female	9 (32%)	19 (68%)	28 (63%)
Total	20 (44%)	25 (56%)	45 (100%)