

“One Cusp too Many” Rare Presentation of Accessory Tubercles- A Case Report

Suneeth Shetty^{1*} and Sunil Tejaswi²

¹Lecturer, Department of Conservative Dentistry and Endodontics, JSS Dental College and Hospital, JSS Academy of Higher Education and Research (Deemed to be University), India

²Reader, Department of Conservative Dentistry and Endodontics, JSS Dental College and Hospital, JSS Academy of Higher Education and Research (Deemed to be University), India

***Corresponding Author:** Suneeth Shetty, Lecturer, Department of Conservative Dentistry and Endodontics, JSS Dental College and Hospital, JSS Academy of Higher Education and Research (Deemed to be University), India.

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Abstract

Accessory cusps are common variations of tooth morphology that are occasionally seen. Clinically three of the most commonly reported variations of accessory cusps are the Carrabelli cusps of the molars (52% - 68%), Talon cusps of the incisors (1 - 7.7%) and Leong's tubercle of the premolar (8%). This case presents the anatomical and morphological characteristics of rare case of three lobulated tubercles on the palatal surface of permanent maxillary first molar.

Keywords: Paramolar; Carabelli Cusp; Talon Cusp

Introduction

Variations in the morphological features and forms of teeth are observed in both primary and permanent dentition. Sometimes changes in the crown either in the form of anomalous cusps or in an increased number of roots, have been associated with an anomalous cusp. The term “paramolar tubercle” has been applied to any styler anomalous cusp, supernumerary inclusion, or eminence occurring on the buccal surfaces of both upper and lower premolars and molars [1]. Clinically three of the most commonly reported variations of accessory cusps are the Carabelli cusps of the molars (52% - 68%), Talon cusps of the incisors (1 - 7.7%) and Leong's tubercle of the premolar (8%). A distinguishing morphological developmental anomaly is usually positioned on the mesiopalatal surface of the upper first permanent molars and rarely on the second or third permanent molars, or on the upper first primary molars known as Carabelli cusps [2]. Supernumerary structures on the molar region are of 2 types paramolars and distomolars. If a dysmorphic supernumerary tooth is located buccally or palatally/lingually to one of the molar it is called a paramolar. Distomolars are located distal or distolingual to third molars [3]. Problems arising in the pits or developmental grooves between the accessory cusp and the tooth include, sensitivity or devitalisation of tooth due to fracture or attrition of the protruded portion of the cusp that has a pulpal extension [4].

Case Report

A 36-year-old male patient reported to the OPD of JSS dental Hospital (Dept. of Conservative Dentistry and Endodontics) with a chief complaint of decayed teeth and no other relevant familial and medical history. On clinical examination, in addition to carious teeth, 3 well-developed lobulated tubercles were found on the lingual surface of 16 giving a cauliflower like appearance as seen in figure 1 and 2. These tubercles were conical in shape and well delineated by prominent deep grooves without any inflammation present.



Figure 1 and 2

Discussion

What is a cusp?

Occlusal or incisal eminence on a tooth is known as a cusp. Canine or cuspids, usually possess a single cusp, while premolars or bicuspid, possess two each, whereas molars normally possess either four or five. The Cusp of Carabelli is seen especially in the maxillary first molar as a fifth cusp situated on the mesiolingual cusp.

Accessory cusps occurring as anatomical variants in maxillary molars

Cusp of carabelli

It is a structural variation on the mesiolingual aspect of the upper molar in both deciduous and permanent dentition. Cusp or tubercle of carabelli is named after the Australian dentist George von carabelli. It is a supplemental cusp found lingual to the mesiolingual cusp, which merely acts as a buttress or a supplement to the bulk of the mesiolingual cusp. It is an anatomical trait which helps to distinguish between population. It appears frequently and is well developed in Caucasoid population and relatively infrequent in non caucasiods [5].

Metaconule (distal accessory tubercle)

It defines as an accessory cusp located on the distal border of the maxillary molars between a metacone and the metacone hypocone distal groove. It is rounded or conical in shape and triangular when expression is more pronounced.

Hanihara in 1967 found metaconule to be very frequent on the deciduous maxillary second molars of mongoloid population and proposed its inclusion in the 'mongoloid dental complex' [6].

Paraconule

It is a small cusp located on the mesial ridge of the paracone near the protocone [7].

Paramolar cusp/Paramolar tubercle

Bolk in 1916 described an additional cusp formation on the buccal surface of the upper and lower permanent molars and named it as paramolar tubercle. He noted that they occurred on the second and third permanent molars and never on the permanent first molars.

Dahlberg and various other authors found paramolar cusps on premolars, lower first molar and upper and lower deciduous molars [8].

Central and talons cusp are both referred to as dens evaginatus. The exact etiology of extra cusp formation or abnormal shape is unknown. Previously, it was said that genetically these features are probably due to hyperactivity of the dental lamina. However, more recently it is believed that the PAX and MSX genes are responsible for the abnormal shape of the teeth [9]. Current embryological evidence suggests that tooth morphogenesis is characterized by transient signalling centers in the epithelium, consisting of epithelial cell clusters that correspond to the initiation of individual cusps [10,11]. A study was done by Kettunen, *et al.* where he analyzed the roles of FGF-3, FGF-7, and FGF-10 in developing mouse teeth. Their result suggested that FGF-3 may participate in signalling functions of the primary enamel knot [12].

Conclusion

Developmental anomalies of teeth are clinically evident abnormalities and hence a careful and thorough examination of the cavity and regular monitoring are important to both the clinician as well as the oral health of the patient.

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