

Unilateral Protostylid on Mandibular Molar: A Rare Finding

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Abstract

The morphology of both the deciduous and permanent teeth is affected by various developmental malformations. Anterior teeth are commonly associated with an accessory cusp, a developmental alteration to the shape of the teeth, which is rarely found in the permanent molars. A protostylid is a supernumerary or accessory cusp located on the mesiobuccal surface of the mandibular molars. Here, we report a case of an accessory cusp found on the buccal surface of mandibular molar.

Keywords: Accessory cusp, developmental anomaly, protostylid

Introduction

Development of tooth is a complex series of molecular signals, receptors and transcription control systems, which has always been enigmatic. Any disturbance of epithelium and mesenchymal interactions can affect normal odontogenesis leading to developmental alteration

affecting any part of the tooth.¹ Commonly occurring developmental disturbances of tooth include germination, fusion, taurodontism, concrescence, enamel pearl and supernumerary cusp.² “Paramolar Tubercle” is the term used for any stylar anomalous cusp, supernumerary inclusion, or eminence occurring on the buccal surface of maxillary or mandibular premolar and molars.³ According to Dahlberg’s (1945) paleontological nomenclature, parastyle was referred to an accessory cusp on maxillary molars and protostylid on the mandibular molars.⁴ De Jonge-Cohen termed these cusps as “Mesiobuccal edge prominencies.”⁵ A protostylid is a supernumerary cusp located on the mesio-buccal surface of the mandibular molars and varies with race.⁶ Here, we report a rare appearance of an accessory cusp on the mesiobuccal surface of the mandibular second molar.

Case report

A female patient aged 35 years reported to the department of Oral Medicine and Radiology with a chief complaint of sensitivity of hot and cold things in all the teeth since 4 months. The patient reported with no history of any systemic illness. Intraoral examination revealed poor oral hygiene status along with distinct stains and calculus. Also, an accessory cusp on the mesiobuccal surface of right mandibular second molar was present as an incidental finding. (figure 1) It was a triangular structure with apex towards occlusal surface measuring about 4 mm cervico-occlusally and 3 mm mesiodistally. (figure 2) According to Hanihara's classification, it falls under type 6. Intraoral periapical radiograph reveals a radiopaque area extending from occlusal surface to the cement-enamel junction on the mesial aspect of the molar with no pulpal extensions. (figure 3) As the patient was asymptomatic and no functional complications arise due to an accessory cusp, no occlusal modifications were carried out.

Discussion: Cusp is an elevation or mold on the crown portion of the tooth which makes up the divisional part of the occlusal surface. Extra number of cusps occurring on the surface of the tooth is a developmental anomaly and is known as supernumerary or accessory cusp.² At the time of morphodifferentiation stage of tooth development, outfolding of inner enamel epithelium and focal hyperplasia of peripheral cells of mesenchymal dental papilla leads to the origin of protostylid. This occurs before the onset of dentinogenesis and amelogenesis.⁷ The present case report shows a bulbous accessory cusp on the mesiobuccal aspect of mandibular second molar in a female patient aged 35 years which is contrast with the previous cases reporting the protostylid in deciduous teeth.⁸ It is reported that among 80 individuals, 22 had demonstrated protostylid on the deciduous second molars

bilaterally and 3 unilaterally.⁹ Our case showed the presence of an accessory cusp unilaterally in mandibular molar in an adult female.

Presence of protostylids may cause few of the dental related problems like pit and fissure caries, sensitivity and devitalisation. Also, sharp prominent cusp in the posterior teeth may lead to morsicatio buccarum, premature tooth contact and habitual repositioning of tooth.¹⁰ Accessory cusps might interfere in the cementation of brackets as well in the alignment of the arch wire. Enameloplasty is done in order to remove supernumerary cusps after ruling out the pulpal extension in the protostylid.⁷ Radiographically, in case of protostylid, dentin core is overlapped by enamel.¹¹

The etiology of supernumerary or accessory cusps is multifactorial. However, PAX and MSX gene overactivity in the dental lamina is considered to be involved in the formation of protostylid.⁸ Overexpression of Eda and Edar can also lead to developmental disturbance of tooth.² Since dentinal tissues remain unchanged over a long period of time, protostylids act as useful diagnostic tool in forensic odontology.¹²

Conclusion

Protostylid in mandibular molars is rarely found but is not an anomalous structure. These are normal morphological traits, found useful in forensic sciences.

References

1. Ashish Shrestha, Vinay Marla, Sushmita Shrestha, Iccha K Maharjan. Developmental anomalies affecting morphology of teeth-a review. *RSBO*. 2015; 12 (1): 68-78
2. Ghazala Hassan, Sarah Gafoor. Unilateral protostylid on buccal surface of permanent maxillary first molar: A rare finding. *Journal of the Pakistan Dental Association*. 2018; 27 (3): 157-9

3. Vela D Desai, Harsha Sadnani, Sunil MV Kumar, Prerna Pratik. Protostylid: As never reported before! A unique case with variation. Journal of Indian Academy of Oral Medicine and Radiology. 2016; 28: 57-60
4. Dahlberg AA. The paramolar tubercle (bolck). Am J Phys Anthropol 1945; 3:97-103.
5. De Jonge Cohen, Th E. Some reflections following the researches of Gottardi. Mag Dent Imaging 1928; 35:5-18.
6. D. Gaspersic. Morphology of the most common form of protostylid on human lower molars. J. Anat. 1993; 182: 429-431
7. S.V.S.G. Nirmala, Kumar Raja Gaddam, P. Vimaladevi, Sivakumar Nuvvula. Protostylid: A case series. Contemporary clinical dentistry. 2013; 4 (3)
8. Nirmala SV, Gaddam KR, Vimaladevi P, Nuvvula S. Protostylid: A case series. Contemp Clin Dent 2013; 4:349-52.
9. Dahlberg A. Analysis of the American Indian dentition. In: Brothwell DR, editor. Dental Anthropology. Oxford: Pergamon; 1950: 149-77.
10. Rajendran Appadurai, Lingeshwar D, Mary Shelloni Missier, Valli Maila S. Permanent Mandibular Protostylid: A Rare Developmental Anomaly and its Overview. Indian journal of Dental Research. 2018; 29 (2)
11. Dahlberg AA. The evolutionary significance of the protostylid. American journal of physical anthropology. 1950;8(1):15-26.
12. Nagaveni NB, Umashankara KV, Radhika NB, Garewal RS. "Paramolar tubercle" in the primary dentition: Cases reports and literature review. Int J Dent Anthropol 2009; 14:12-8.

Legends of figure



Fig 1: presence of an extra cusp



Fig 2: triangular shaped protostylid mesio-buccal surface of right mandibular second molar

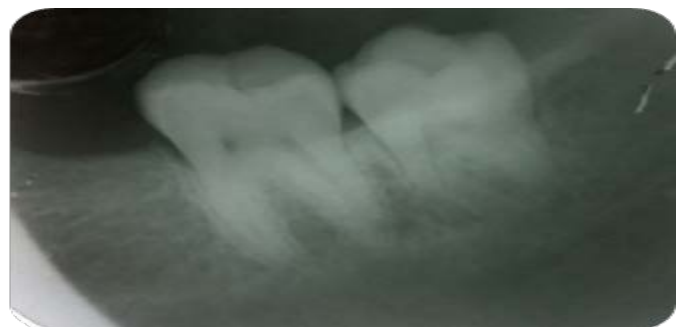


Fig 3: radiopaque area on the mandibular cusp representing protostylid