

CASE REPORT

Bilateral accessory central cusp of 2nd deciduous molar: an unusual occurrence

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(Received 22 March 2009, revised manuscript accepted 10 August 2009)

Keywords

Accessory central cusp, maxillary deciduous molars, occlusal surface.

Abstract Presence of accessory cusp on the occlusal surface of a tooth may occasionally pose problems to dentists'. Although its presents may not be a cause for alarm in most instances, nevertheless it can lead to serious consequences if it is damaged. This report describes a rare finding of bilateral central accessory cusp seen on the occlusal surface of both the 2nd maxillary deciduous molars and the need for continuous dental surveillance and preventive measures have been highlighted.

Introduction

Accessory cusps are common variations of tooth morphology that are occasionally seen clinically. However, their incidences differ depending on the type and the tooth affected. Three of the most commonly reported variations of accessory cusps are the Carrabelli cusps of the molars, Talon cusps of the incisors and Leong's tubercle of the premolar. These variations are both seen in primary and permanent dentitions. Variations in size, shape, location and composition of these anomalies have been reported in the literature (Ooshima *et al.*, 1996).

The frequencies of occurrence of these variations differ depending on the type, between 1% and 7.7% for the Talon cusp, 52% (Curzon *et al.*, 1970; Chawla *et al.*, 1983; Shay, 1984) and 68% for Carabelli cusp (Kannapan and Swaminathan, 2001; Mavrodisz *et al.*, 2007) and 8% for the Leong's tubercle (Segura-Egea *et al.*, 2003).

Presence of these additional extensions of tooth structure may pose various dental problems to clinicians such as caries in the pits or deep developmental grooves between the accessory cusp and the tooth (Rusmah, 1991), sensitivity or devitalisation of tooth due to fracture or attrition of the protruded portion of the cusp that has pulpal extension (Shay, 1984; Güngör *et al.*, 2000; Stecker and DiAngelis, 2002), premature tooth contact that leads to occlusal interference and habitual posturing of the jaw (Hattab and Yassin, 1996).

The above mentioned accessory cusps are the expected normal variations of teeth commonly seen clinically. However, sporadically some abnormal shape projections may occur from time to time without any clear aetiology. The purpose of this report is to highlight an incidental clinical finding of bilateral accessory central cusp of the 2nd maxillary deciduous molars and problems associated with it.

Case findings

A 6-year old Malay girl was seen at the paediatric unit of the Faculty of Dentistry, Universiti Kebangsaan Malaysia for treatment of carious teeth. She was medically fit and well. Oral examination revealed she has a moderate level of oral hygiene and mild gingivitis of the gums. No other soft tissue abnormalities were found. Dental charting was carried out and it was noted that her left mandibular 2nd deciduous molar has a large distal caries. Caries was also noted on the occlusal surfaces of right and left maxillary 2nd deciduous molars and also on mesial surfaces of both the maxillary deciduous central incisors.

In addition to the above findings, a large central projection of a cusp was seen on the occlusal surfaces of both the right and left maxillary 2nd deciduous molars respectively. These projections were 3mm by 4 mm in size with a triangular base and sitting on the centre of the oblique ridge and were identical on both sides. The tips of these extra cusps lie above the levels of the other cusps of the teeth respectively (Figure 1). The corresponding deciduous molars, of the lower arch also exhibit central occlusal surface depressions that conform well to the cuspal projections when the teeth were in occlusion (Figure 2). Grooves

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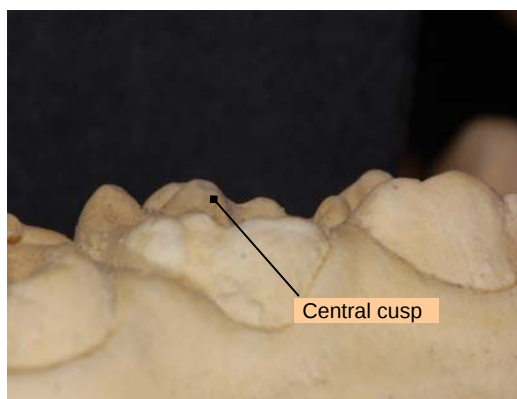


Figure 1: Palatal view of maxillary 2nd primary molar of a cast model showing projection of central cusp above the levels of other cusps.

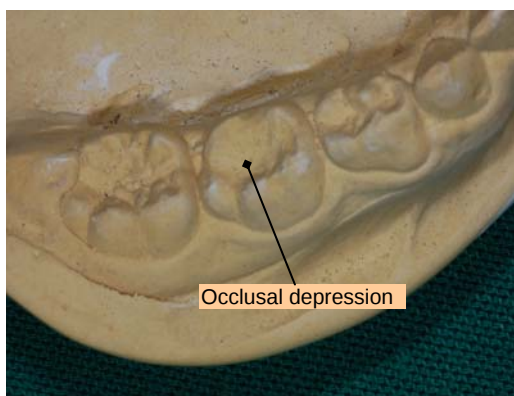


Figure 2: Cast model showing depression on the occlusal surface of the mandibular 2nd primary molar that corresponds to the central cusp when the teeth are in occlusion.

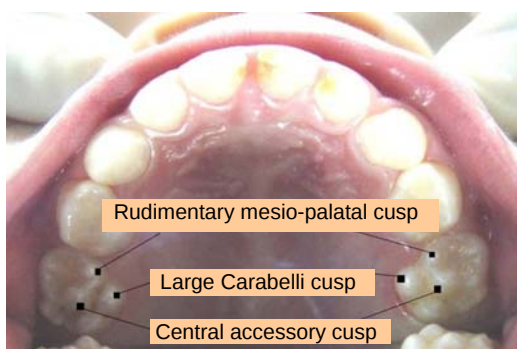


Figure 3: Occlusal anatomy of upper right and left maxillary 2nd primary molars (mirror image).

surrounding the accessory central cusps showed evidence of caries. Presence of large Carabelli cusps were also noted on both upper right and left maxillary 2nd deciduous molars respectively. Mesio-palatal cusps of both maxillary 2nd deciduous molars were rudimentary in size in relation to other cusps of the affected teeth (Figure 3).

Initially the child was selectively uncooperative to some of the dental treatment, but with good behaviour management strategies, necessary treatment was carried out uneventfully. Caries of right and left maxillary 2nd primary molar and right and left maxillary

primary central incisors were restored with composite. Vital pulpotomy was carried out on left mandibular 2nd deciduous molar and later the tooth was restored with stainless steel crown. Preventive measures such as oral hygiene care, diet advice and topical fluoride application with sodium fluoride gel were also instituted.

It is interesting to note how the accessory central cusps of the right and left maxillary deciduous 2nd molar conform well to the corresponding teeth of mandibular right and left 2nd deciduous molars respectively when in occlusion. The depressions seen on both the opposing teeth of right and left mandibular 2nd deciduous molars do not show any evidence of attrition. However, the cuspal tip of the accessory cusps showed some degree of attrition. Bite-wing radiographs did not conclude any pulpal extension into the accessory cusp. The young girl was reviewed 3 months after the completion of treatment and thereafter 6 months. No evidence of new carious lesion was detected.

Discussions

Accessory cusps are rare anomalies that occur sporadically more so in the primary dentition. Both the talon cusp and the central cusp are often referred to as dens evaginatus (Yip, 1974). Histologically, both these anomalies may compose of enamel, dentine and with or without pulpal projection into them (Levitan and Himel, 2006). There is a wide variation in the size, shape and location of these anomalies. Due to this variation, accessory cusp found on maxillary or mandibular anterior teeth is often referred to as Talon cusp and accessory cusp found on occlusal surface of premolar or molar is referred to as dens evaginatus (Jerome and Hanlon, 2007). The central cusp on the occlusal surface of posterior teeth has been also given several descriptions such as supernumerary occlusal cusp, occlusal tubercle, premolar odontome, tuberculated premolar and Leong's premolar (Scott and Turner, 1997).

Presence of central cusp or tubercle at the centre of a tooth is often said to be due to abnormal proliferation of the epithelial fold during the morphodifferentiation phase of tooth development (Oehlers, 1956). Dens evaginatus occurs primarily in people of Asian descent such as Japanese, Chinese, Malay, Eskimo, American Indian, Thais and Filipinos (Kocsis *et al.*, 2002). Dens evaginatus can arise on any tooth but it is most commonly associated with premolars (Hill and Bellis, 1984). There is typically a bilateral, symmetric distribution, with a slight sexual predilection for female (Merrill, 1964). Based on Schulge categorisation of dens evaginatus of posterior teeth, there are five types based on location of the tubercle (Kocsis *et al.*, 2002):

- A cone like enlargement of the lingual cusp
- A tubercle on the inclined plane of the of the lingual cusp
- A cone like enlargement of the buccal cusp

- A tubercle on the inclined plane of the of the buccal cusp
- A tubercle arising from the occlusal surface obliterating the central groove

Dens evaginatus is more commonly found on permanent dentition (Neville *et al.*, 2002). Although it has been mentioned that the occurrence in central cusps in primary dentition is rare but there is no evidence to justify this statement and most of the reported reviews were on presence of Talon cusps on permanent and primary dentitions (Ferraz *et al.*, 2001; Chen and Chen, 1986) and also on dens evaginatus on permanent dentition (Stecker and DiAngelis, 2002). There is no reference of dens evaginatus on primary molars.

In this case report, we found that the accessory cusp is situated centrally on the oblique ridge and the cuspal tip extends above the level of other cusps. Whether this occurrence is similar to that of dens evaginatus or not is yet to be known. However, looking at clinical presentation, we assume that the cause of the formation is similar to dens evaginatus. Its occurrence bilaterally is also suggestive of dens evaginatus. It would be of interest to note if the permanent successors also show evidence of dens evaginatus later.

Conclusions

Although these additional cusps are rare, their presence may complicate the process of daily routine oral health care. Pits and grooves surrounding the cusps are highly susceptible to caries. One cannot rule out premature contact and occlusal interference. If present, the premature contact should be removed to prevent habitual posturing of the jaws. Patients with additional tooth projections should be placed under routine and periodic dental surveillance, which include monitoring of the degree of attrition and tooth vitality. The deep grooves and pits surrounding the cusps should be sealed with pit and fissure sealant.

Acknowledgement

My sincere gratitude and appreciation to Brigadier General (Rtd) Dato' Dr. Arichandra Nadarajah for his guidance and invaluable comments in the writing of this paper.

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