

Research Journal of Pharmaceutical, Biological and Chemical Sciences

Bilateral Mandibular Dens Evaginatus: A Report of Two Cases and Short Review.

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ABSTRACT

Accessory cusps are common variations of tooth morphology that are occasionally seen clinically. Most commonly occurs in Asians. While its presence may not be a cause for alarm in most instances, it can sometimes lead to serious consequences if it is damaged. This article will highlights the various types of dens evaginatus, and periodic dental surveillance, which include monitoring of the degree of attrition and tooth vitality to prevent the advanced consequences of additional tooth projections.

Keywords: Accessory cusp, dental anomalies, dens evaginatus, leong's premolar.

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INTRODUCTION

Dens evaginatus (DE) is one of the supernumerary cusps considered as anomalous in dental literature. It is commonly referred as Leong's premolar after MO Leong first described this anomalous premolar at a meeting of the Malayan Dental Association in 1946. The term Dens evaginatus was first recommended by Oehlers in 1967 [1].

It is a developmental malformation characterized by the presence of an extracusp occurs as tubercle or protuberance covered by enamel on the occlusal surface, between the buccal and lingual cusps of posterior teeth, or an accessory cusp like structure arising from the lingual surface (usually) or the facial surface (rarely) of anterior teeth. This evagination is often described as a nodule or tubercle, shaped as a cylindrical cone with a sharp point or a raindrop. Dens evaginatus consists of an outer layer of enamel, a core layer of dentin and sometimes a slender extension of pulp tissue into the dentin [2].

DE in posterior teeth is referred as Leong's premolar, central cusps, interstitial cusp, tuberculated premolar, odontome of axial core type, evaginated odontome, occlusal enamel pearl, occlusal anomalous tubercle [1-7].

Types of Dens Evaginatus in Posterior Teeth

According to Schulge (1987)[8] DE could be classified depending on location

- Type 1: A cone-like enlargement of the lingual cusp.
- Type 2: A tubercle on the inclined plane of the lingual cusp.
- Type 3: A cone-like enlargement of buccal cusp.
- Type 4: A tubercle on the inclined plane of the buccal cusp.
- Type 5: A tubercle arising from the occlusal surface obliterating the central groove.

Kocsis et al (2002) [6] have registered 8 types of dens evaginatus, which they regarded as the central cusps in their study on dental casts showing these anomalies on the occlusal surface of posterior teeth and lingual surface of anterior teeth.

- Type 1: Enlargement or bulging on the buccal surface of a lingual cusp of premolars and molars in the faciolingual direction. The lingual cusp is cone-shaped.
- Type 2: A macrostructure identified as a supernumerary lobe/central cusp located close to the lingual cusp of premolars and molars, with the existence of the original lingual cusp.
- Type 3: A supernumerary cusp on the occlusal surface arising from or near the groove between the original buccal and lingual cusps of premolars and molars. This type is called dens evaginatus.
- Type 4: A pearl-like enlargement seen on the lingual surface of a buccal cusp in faciolingual direction on premolars and molars. This central cusp type is the occlusal enamel pearl. It may sometimes occur on canines, too.
- Type 5: Bulging of the lingual aspect of a buccal cusp on premolars and molars, and bulging of the lingual aspect of the central lobe on canines and incisors.
- Type 6: Various degrees of supernumerary cusp formation on the lingual surface of the anterior teeth, developing from the lingual tuberculum or from the cingulum.
- Type 7: Occlusal (or lingual) supernumerary macrostructure of teeth in the case of syndromes.
- Type 8: A new central cusp form (type 8) was also recorded. It involves a type 1 and a type 5 central cusp form connected to each other via an enamel ridge and is referred to as a margoid central cusp formation.

CASE REPORT

This is a report of two unusual cases of DE which presented on the bilaterally mandibular 2nd premolar.

Case-I

A 26 year old chinese male presented to Department of Periodontics, for routine dental care and was not experiencing any discomfort. The patient's medical history was not significant. His temporomandibular joints movement was smooth and co-ordinated. Family history was not revealed any similar incidence in family members. Oral examination revealed he had a moderate level of oral hygiene and mild gingivitis of the gums. No other soft tissue abnormalities were found. On intraoral hard tissue examination, missing 1st premolar and maligned teeth were present in the mandibular arch. Past dental history reveals that 1st premolars were extracted few years back for orthodontic treatment. DE was present on the bilaterally mandibular 2nd premolars [Figures 1]. The tubercle seems attrited and island of dentine was visible in both the premolars. There was no sensitivity or pain on percussion, and the pulp vitality test was negative.

**Figure-1: CASE-I****Case-II**

A 38 year old chinese female presented to Department of Periodontics, for routine dental care and was not experiencing any discomfort. The patient's medical history was not significant. Her temporomandibular joints movement was smooth and co-ordinated. Family history was non-contributing. Oral examination revealed she had a moderate level of oral hygiene and mild gingivitis of the gums. No other soft tissue abnormalities were found. On intraoral hard tissue examination, multiple carious teeth in both the jaw and missing anterior teeth were present in maxillary arch. DE was present on the bilaterally mandibular 2nd premolars [Figures 2]. There was no sensitivity or pain on percussion, and the pulp vitality test was negative.

**Figure-2: CASE-II****DISCUSSION**

Developmental anomalies could be the results of systemic as well as local disturbances, thus influencing both deciduous and permanent dentition. Extra cusp is a rare entity mainly seen on premolars but can be associated with molars, canines and incisors.

Crown pattern is determined by the reaction diffusion mechanism that is controlled by genes [9]. Extra cusps situated between lingual and buccal cusp tips on the occlusal surface of molars, pre molars and on the lingual surface of canine and incisors are called as central cusps. Mutation in developmentally regulated genes will cause the congenital malformation of teeth in humans. Gene mutation act at different levels of tooth formation, i.e., development of the embryonic bud stage bell stage, production of enamel and dentin formation or the root formation. Each tooth formation and cusp formation is under the control of specific genes [10].

Merrill [11] divides the various kinds of evagination into two groups: the nodule originating from the lingual crest of the buccal cusp, and the nodule originating from the middle of the occlusal surface and commonly obliterating the central sulcus. In both the cases present here, the nodule originating from the middle of occlusal surface of bilaterally 2nd mandibular premolars.

Diagnosis and management of DE is of great importance to the clinician as it may cause a variety of clinical problems such as stagnation of food, caries, periapical lesions. Occlusal interference can damage the periodontium, cause infraocclusion of the opposing tooth, and also temporomandibular joint pain. Severe attrition or fracture of the enamel surface can cause exposure of the dentine–pulp complex, and consequently pulp necrosis. Various prophylactic treatments have been proposed to treat these teeth before pulp infection occurs: selective grinding of the tubercles, application of resin to reinforce the tubercles, placement of prophylactic amalgam or composite restorations after removal of the tubercles, and cavity preparations [1,12-16]. In both of our case, central cusp was centrally placed, and there was no interference with opposing the tooth in occlusion or with lateral extrusion in case –II, but in case –I island of dentin is present due to the attrition of the central cusp without any complaint of sensitivity. Patients was informed about the condition and regular dental visits was advised to the patient.

It is most commonly occurring among mongoloid racial stock, about 15% of asians and rare in whites [17-19]. It is predominant in premolars and is usually bilateral with a marked mandibular predominance [20]. Both of the patients described in this report were ethnic Chinese and DE was present bilaterally in mandibular 2nd premolars. Now a days, communities are migrating across the continents, thus the professional must be aware of this clinical condition in order to provide information to the patient regarding correct hygiene, the need for occlusal adjustment or even removal, and the necessity of endodontic treatment [14, 15].

CONCLUSION

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. Early diagnosis and management are important to minimize local problems, such as caries, periodontal disease and malocclusion.

REFERENCES

- [1] Oehlers F, Leek, Lee E. Dent Pract Dent Rec 1967;17:239-244.
- [2] Rao Y, Guo L, Hu T. Int J Oral Sci 2000;2(3):177-180
- [3] Bermudez de Castro JM, Martinez I. Int J Anthropol 1986;1(2):165-168.
- [4] Ling JYK, Wong RWK. The Open Anthropol J 2008;1:19-25.
- [5] Kustaloghi OAJ Dent Res 1962;41:75-83.
- [6] Kocsis G, Marcsik A, Kokai E, Kocsis K. Acta Biol Szeged 2002;46:71-82.
- [7] Shiu-Yin Cho, Yung Ki, Vanessa Wing-Yee Chu. Hong Kong Dent J 2006;3:45-47.
- [8] Scott GR, Turner CG II. Cambridge University Press; 1997:35-7..
- [9] Koussoulakou DS, Margaritis LH, Koussoulakos SL. Int J Biol Sci 2009;5:226-43.
- [10] Smith MM, Coates MI. Eur J Oral Sci 1998;106 Suppl 1:482-500.
- [11] Merrill RG. Oral Surg Oral Med Oral Pathol. 1964;17:484–96.
- [12] Kawata T, Tanne K. J Clin Pediatr Dent 2002; 26(2):199–201.



- [13] Yong SL. ASDC J Dent Child 1974; 41(4):289–92.
- [14] Sim TP. Endod Dent Traumatol 1996; 12(3):137–40.
- [15] Augsberger RA, Wong T. J Endod 1996; 22(6):323–6.
- [16] Gaynor WN. N Z Dent J 2002; 98(434):104–7.
- [17] Curzon ME, Curzon JA, Poyton HG. Br Dent J 1970; 129(7):324–8.
- [18] Yip WK. Oral Surg Oral Med Oral Pathol 1974; 38(1):80–7.
- [19] Tsai SJ, King NM. J Clin Pediatr Dent 1998;22(3):185–94.
- [20] Solares R, Romero MI. Pediatr Dent 2004; 26(5):450–8.