DENS EVAGINATUS AND DENS INVAGINATUS IN ALL MAXILLARY INCISORS A CASE REPORT WITH REVIEW OF LITERATURE

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Dens evaginatus is a developmental malformation characterized by the presence of an extra cusp that takes the form of a tubercle arising from the occlusal or the lingual surface of the tooth'. It is also referred to as talons cusp in the anterior teeth and enamel pearl in the premolars. Dens invaginatus is a deep surface invagination of the crown or the root that is lined by enamel, dentin and pulp. Though many cases of dens evaginatus and dens invaginatus have been reported in literature, an association of both is a rare anomaly. This is a case report of dens evaginatus and dens invaginatus 'involving all the four maxillary incisors with bilateral paramolars in a 25 yr old patient.

Key words: Dens Invaginatus, Dens Evaginatus

INTRODUCTION

Mitchell[2] in 1892 first described the talon cusp as "a process of hornlike protuberance, curving from the cervical portion downwards to the cutting edge" on the lingual surface of an upper central incisor. Other names include dens evaginatus, interstitial cusp, tuberculated premolar, odontome of axial core type, evaginated odontome, occlusal enamel pearl, occlusal anomalous tubercle and supernumerary cusp.[3] This condition has also been associated with conditions like Rubinstein- Taybi syndrome[4,5], Mohr syndrome[6], Sturge-Weber syndrome[7] and Ellis van creveld syndrome[8].

Talon cusp affects both sexes equally and is commonly unilateral, though one fifth of the cases reported are bilateral. The incidence varies between 1 to 2% in Asian communities[9]. Chawala[11] et al found a prevalence of 7.7% among the North Indian children and Curzon ME et al[10] reported 3 to 4% in North American Indians. Talon cusp involving the facial surfaces of the teeth has also been reported[12,13].

Talon cusp is usually associated with other dental anomalies like bifid cingula, dens invaginatus and exaggerated cusps of Carrabelli and in particular shovel shaped maxillary incisors[14]. Talon cusp is more frequently seen in permanent dentition. A review of literature showed 75% of talons cusp occurring in permanent dentition and 25% in primary dentition with a mild predilection for maxilla over the mandible[14]. The maxillary lateral incisors are the teeth most frequently involved (67%), followed by central incisors (24%) and canines (9%)[7 14, 15]. The susceptibility of the lateral incisors to abnormalities could be related to the compression of the tooth germ of the lateral incisor by the adjacent central incisor and the canine that develop 7 months earlier than the lateral incisor. Increased localized external pressure on the tooth germ during the morphodifferentiation stage may result in either outfolding of the dental lamina (in case of talon cusp) and sholving or infolding as in dens invaginatus[1]. A multifactorial proposed etiology including both genetic and environmental factors[5,16] have been suggested where aberrant hyperactivity of the dental lamina may be responsible for its occurrence[17]. Another theory suggests that talon cusp might occur as a result of the outward folding of the inner enamel epithelial cells and the transient focal hyperplasia of the mesenchymal dental papilla[15].

Dens invaginatus is a developmental anomaly characterized by an infolding of the enamel and dentin. It is a deep surface invagination of the crown or the root that is lined by enamel. Oehler described this

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condition thoroughly in three classic articles published from 1957-5818. Coronal dens invaginatus is seen more frequently with the reported prevalence varying from 0.04 to 10% in all patients. It is most commonly seen in permanent lateral incisors. In order of decreasing frequency, the teeth affected most often include the permanent lateral incisors, central incisors, premolars, canines and molars. Maxillary predominance is seen. The depth of invagination varies from a slight enlargement of the cingulum pit to a deep infolding that extends to the apex.

The morphology of the lingual surface of the tooth with dens invaginatus might suggest a groove or fissure[18].

CASE REPORT

A 25 yr old male patient reported to the Department of Oral Medicine & Diagnosis and Radiology, Ragas Dental College and Hospital, Chennai, India with a complaint of food impaction in his right upper posterior tooth region. Intra oral examination revealed presence of paramolars in relation to the buccal aspect of maxillary 1st and 2nd molars bilaterally (Fig 1).

The maxillary incisors showed prominent cusp like projections attached to the palatal surface in the midline of the tooth extending from the cementoenamel junction to half the way to the incisal edge (Fig 1). A deep pit below the cingulum was present on probing these teeth. These accessory cusps did not produce any functional or esthetic impairment.

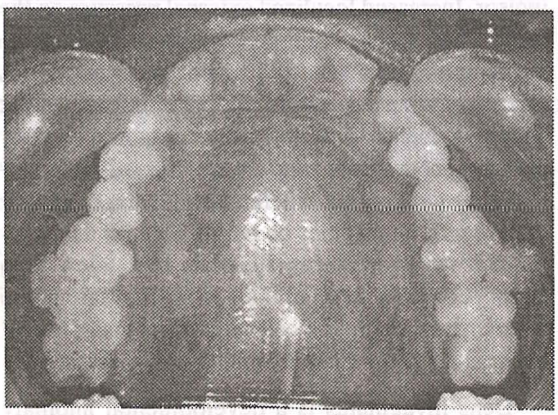


Fig. 1. Photograph of the maxillary arch showing Dens evaginatus in maxillary incisors and presence of paramolars in relation to maxillary 1st and 2nd molars bilaterally.

Intraoral radiographs showed a V shaped radiopaque structure superimposed on the maxillary incisors with the point of V towards the incisal edge and an invagination seen extending below the cementoenamel junction ending as a blind sac in the cervical third of the roots of incisor teeth which was not in communication with the adjacent pulp (Fig 2,3). The clinical and the radiographic features suggested the clinical diagnosis of dens evaginatus and dens invaginatus in all the maxillary incisors.

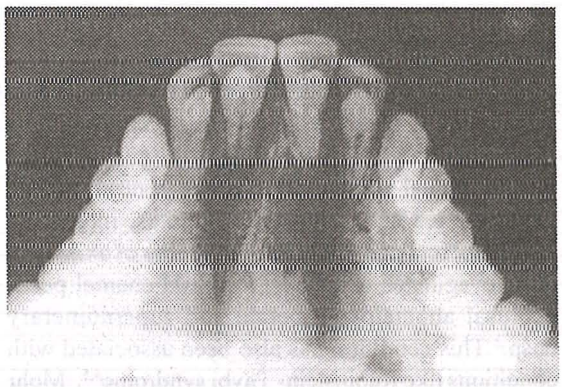


Fig 2. Photograph of the maxillary occlusal radiograph showing dens invaginatus and dens evaginatus in maxillary incisors and paramolars.



Fig 3. Photograph of Intraoral periapical radiograph showing dens invaginatus and dens evaginatus in all maxillary incisors

DISCUSSION

The anomalous talon cusp is composed of normal enamel and dentin with varying extensions of pulp tissue. Hattab et al[15] classified this anomaly into 3 types on the basis of the degree of cusp formation and the extension. Type I (Talon), an additional cusp that projects from the palatal surface of an anterior tooth and extends one half the distance from the CEJ to the incisal edge. Type II (Semitalon), an additional cusp 1 mm or more in length but extending less than half the distance from the CEJ to the incisal edge. Type III (Trace talon), manifesting enlarged and prominent cingula and their variations. As the talon cusps in this case was pyramidal in shape extending from the cementoenamel junction to more than halfway to the incisal edge clinically, it was classified as type I or ***Talon.***

Oehler[19] (1957) classified dens invaginatus into three types with respect to the morphology and depth of invagination. Type I exhibits an invagination that is confined to the crown. Type II exhibits an invagination that extends below the CEJ and ends in a blind sac that may or may not communicate with the adjacent dental pulp. Type III extends through the root and perforates the apical or lateral radicular area without any immediate communication with the dental pulp. In the case reported, as the invagination extends below the cementoenamel junction and ends in a blind sac in the cervical third of the roots without any communication with the adjacent pulp, according to Oehlers classification it is classified as Type II dens invaginatus.

Although isolated cases of dens evaginatus and dens invaginatus are reported in literature, the concomitant occurrence of these two conditions occurring in the same tooth is an extremely rare condition. De Sousa SM (1999)[20] reported a case with a bilateral talon cusp associated with dens invaginatus in maxillary permanent lateral incisors. M Muppurapu (2004)[21] reported a case of dens evaginatus and dens invaginatus in a maxillary lateral incisor. Here we present a case of dens evaginatus and dens invaginatus involving all the four maxillary incisors with bilateral paramolars.

Early diagnosis and management of talon cusp is important in order to prevent occlusal interference, compromised esthetics, carious developmental grooves, and periodontal problems due to excessive occlusal forces or irritation of the tongue during speech and mastication. Occlusal adjustment of the palatal projection is performed to eliminate the premature contact. Dens invaginatus appearing as a deep pit below the cingulum can be restored using pit and fissure sealants. Early diagnosis and management of dens invaginatus with probable endodontic treatment to avoid the occurrence of periapical pathologies is critical.

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