CONCOMITANT DENS EVAGINATUS & DENS INVAGINATUS IN A MAXILLARY LATERAL INCISOR: A CASE REPORT

Kamal Kiswani

Department of Oral & Maxillofacial Pathology, Bhabha college of Dental Sciences, Bhopal,India

Corresponding Author: Kamal Kiswani, Professor & Head, Department of Oral & Maxillofacial Pathology, Bhabha College of Dental Sciences, Bhopal,India

Abstract

Dens evaginatus also referred to as a talon's cusp, is a developmental anomaly characterized by formation of a well - delineated additional cusp that extends from the cementoenamel junction to the incisal edge. Dens invaginatus is a developmental anomaly caused by invagination of the surface of the tooth crown before calcification has occurred. Dens evaginatus and dens invaginatus are usually present in isolation and many cases have been reported. But, their concomitance is highly rare and unusual and requires documentation. A case report of a 9 year old child with a combination of the talon cusp and dens invagination in the right maxillary lateral incisor is presented here. Such a tooth due to its unusual morphology is susceptible to food lodgment leading to carious invasion. Hence early diagnosis and prophylactic therapy is important.

Key words: Dens evaginatus talon's cusp, dens in dente, dental anomaly.

Introduction

Dens evaginatus (DE) is a rare developmental anomaly of a tooth, which results in the formation of an accessory cusp comprising enamel, dentin and varying amounts of pulp tissue. [7] It was first described by Windle in 1887 and Mitchell coined the term "talon cusp" in 1892. [1] DE is usually found on the occlusal surface of the premolars or projecting from the lingual surface of the anterior teeth in both primary and permanent dentition. It can present unilaterally or bilaterally and has a strong predilection for the permanent maxillary incisors. [7] Etiology of DE is not known. There is a hypothesis that DE could be caused by a combination of environmental and genetic factors [1]. DE is thought to occur at the morphodifferentiation stage of the tooth development as a result of excessive localized elongation and abnormal proliferation of inner enamel epithelial cells and transient focal hyperplasia of the peripheral cells of the mesenchymal dental papilla. [14] The maxillary lateral incisors are the most commonly affected teeth (67%) followed by the central incisors (24%) and canines (9%). Hattab et al [10] have classified talon cusp as true talon, semi talon, and trace talon, based on the degree of formation and extension. [4]

Dens invaginatus (DI) is a rare malformation wherein the affected teeth radiographically show an infolding of enamel and dentin that may extend deep into the pulp cavity and into the root and sometimes even reach the root apex. It was first described by Ploquet in 1794; he discovered this anomaly in a whale's tooth. [3] DI in a human tooth was first described by Socrates in 1856. Etiology of DI is unclear. Aktinson suggested that DI may be due to growth pressure of the dental arch resulting in buckling of the enamel organ.Rushton proposed that the invagination was a result of rapid and aggressive proliferation of the inner enamel epithelium invading the dental papilla.[1] Schulze in 1970 considered dens invaginatus as a deep infolding of the foramen caecum during tooth development which in some cases even may result in a second apical foramen.[3]Oehlers classified DI on the basis of radiographic appearance as : Type I,

invagination confined to the crown and does not extend beyond the CEJ. Type II, an enamel lined invagination invades the tooth, but remains confined as a blind sac, there may be a communication with the pulp and the invagination may or may not be grossly dilated. In Type III, the invagination penetrates through the root, and bursts apically or laterally at the foramen. [1]

The following report is of a patient with a rare concurrent occurrence of DE and DI (discovered accidentally on routine radiograph), in the same tooth.

Case Report

A 9 year old boy reported to the clinic with his mother for routine dental examination. The mother was concerned with the permanent teeth not coming straight in the arch. The esthetic appearance was not very pleasing due to the misaligned teeth. The child was also not maintaining a scrupulous oral hygiene. The mother's pregnancy, labor, and deliver were normal and she had not taken any medications during the pregnancy. The patient had no history of severe illness or orofacial trauma.

Extra oral examination showed a normal facial appearance. Intraoral examination revealed mixed dentition. There were deposits on the teeth, due to inadequate hygiene.

The palatal surface of the right maxillary lateral incisor (tooth number 12) exhibited a well defined developmental projection along with a developmental groove, extending to more than half the tooth crown, suggestive of a talon's cusp (DE) - type I -according to Hattab et al classification. [10] There was no associated swelling, sinus, fistula etc in the vicinity of the tooth of interest.

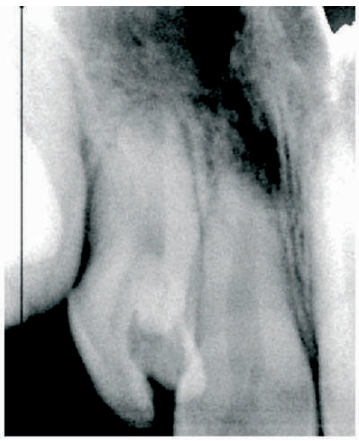
The contra lateral tooth i.e. tooth number 22 also showed a prominent cingulum with a developmental groove, but no other anomaly was noted.(Fig 1a & b: tooth no.12 showing a prominent talon's cusp)

(Fig 1a)

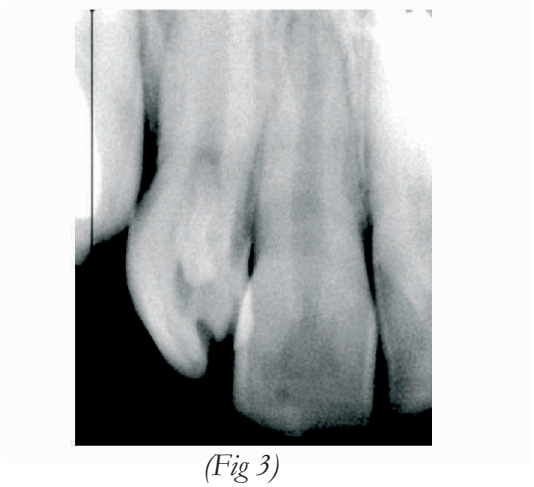
(Fig 1b)

There was a brownish discoloration on the palatal aspect of 12. But there was no catch on probing. The mother was informed about the anomaly and was also advised for a periapical radiograph

Radiographic examination of 12 revealed a well defined radio opaque shadow indicating of DE showing enamel, dentin and pulp. (Fig 2)



(Fig 2)



(Fig 3)

Additionally, an enamel invagination was observed extending from the cingulum apically into the pulp giving a tooth within a tooth appearance (fig 3). According to Oehlers classification, the invagination was a type II DI - i.e. enamel lined form that invades the root but ends as a blind sac without communication with the pulp. The parent was explained in detail about both the anomalies within the same tooth and was counseled for placement of prophylactic fissure sealant in 12.

Discussion

Developmental disturbances of the permanent teeth are most frequently encountered in the lateral incisor. Moyers states that this is because the most distal tooth within each group displays the greatest variability in size, is the most frequently abnormal in shape and aberrant in calcification timing. [5]

Based on the classification by Hattab et al, the patient had a type I DE (talon's cusp). It may pose a challenge to maintenance of oral hygiene, stagnation of food, caries, irritation to the tongue during mastication and speech, occlusal discrepancies, compromised esthetics and periodontal problems due to excessive forces. Hence early occlusal adjustments may be required to eliminate any premature contact. After such occlusal adjustments the tooth can be treated with topical fluoride to increase caries resistance. [4] However due to absence of any premature contacts and symptoms, no treatment was planned for the talon's cusp in this patient.

The treatment objective of a DE should include preserving pulp vitality, meeting esthetic and occlusal requirements, establishing caries prevention or eradication in developmental grooves and eliminating tongue irritation.

The second anomaly in this patient was accidentally discovered on routine radiographic examination. The DI (dens in dente) was classified as type II according to the Oehelers's classification. The invagination was lined by enamel and dentin but remained confined as a blind sac and did not have a communication with the pulp. However the patient was advised for fissure sealants and necessary treatment was done.

The management of DI ranges from application of fissure sealant(conservative restoration of the opening) to endodontic treatment, though narrow accessibility may hinder cleaning and cause pulpal pathology secondary to caries.[4,5] Therefore early detection and conservative management is the safest bet. Thus a prophylactic protocol was followed for the above case.

Conclusion

The concurrent existence of DE and DI in the same tooth is extremely rare. A careful overview of the English literature revealed only five cases reported worldwide. [1,2,7,8] Hence, this intriguing case has been reported here. The maxillary lateral incisors are the teeth most susceptible to coronal invaginations (similar observation in the case reported here).These teeth should be thoroughly investigated clinically and radiographically, especially in teeth with deep pit at foramen caecum. The contra lateral tooth should also be investigated thoroughly.

Early diagnosis is mandatory since pulpal involvement of teeth, with coronal invaginations may occur within a short time

after eruption. Early detection and preventive measures of such coexisting DE and DI can help the clinician maintain the health and integrity of the tooth.

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