Case report

A RARE OCCURRENCE OF DENS EVAGINATUS WITH TWO DENS INVAGINATIONS IN A SINGLE TOOTH: A CASE REPORT

ABSTRACT

There are many developmental dental anomalies written in the literature which may or may not be associated with some syndrome. Whereas, two anomalies occurring in single teeth are rarely seen in a non syndromic patient. This case report presents the occurrence of dens evaginatus with two dens invaginations in a single tooth which can be of a great concern to the dentist.

KEYWORDS: Dens invagination, Dens evaginatus, malocclusion, Non syndromic, accessory cusp

Introduction

Dens invaginatus results from an infolding of the outer surface of a tooth. The clinical importance of dens invaginatus results from the risk of pulpal disease. So, all clinicians should be aware of this anomaly. It commonly occurs in maxillary permanent lateral incisors followed by the maxillary central incisors, premolars, canines and less often in the molars [4]. The defects may vary in size and shape from a loop like, pear-shaped or slightly radiolucent structure to a severe form resembling a "tooth within a tooth" [11]. It can be identified easily because infolding of the enamel lining is more radiopaque than the surrounding tooth structure.

CASE REPORT

A 11-year-old girl reported to the department of pedodontics and preventive dentistry with the chief complaint of extra tooth behind the right upper front tooth region. Child was having insignificant family and medical history regarding malocclusion. The child's parents did not mention any prior dental defects, trauma to the anterior region during dentition development. To rule out the existence of any linked syndrome or disease, a complete general examination was conducted. Intraoral examination revealed presence of an extra-cusp like protuberance on palatal surface on permanent maxillary right lateral incisor giving characteristic appearance of dens

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evaginatus which was extending from cingulum till incisal tip [Fig 1]. Involved tooth was proclined with no occlusal interference. No associated swelling or sinus tract was present. Electric pulp testing revealed that the tooth was vital. Radiovisiography (RVG) revealed the presence of a radiopaque structure in shape of V with its edge was facing the incisal surface of the affected teeth [Fig 2]. Pulp extensions can be distinguished showing two distinct invaginations on the coronal surface not involving the radicular pulp.

An official diagnosis of a nonsyndromic dens evaginatus with two dens invaginatus was made based on the aforementioned clinical and radiological characteristics. Patient was explained regarding the presence of no extra tooth in her oral cavity. Mesial and distal pits of accessory cusp was restored conservatively and prophylactic treatment with fluoride application was done. Since, patient did not want any treatment for esthetics, routine clinical and radiographic evaluations were advised.

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Fig1. Tooth morphology

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Fig 2. dental anomalies

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DISCUSSION

There are variable presentations of dental anomalies in the primary and permanent dentitions that might emerge at various phases of tooth development. The premaxilla's propensity for supernumerary teeth, talon cusps, dens invaginatus (DI), dens evaginatus (DE) and geminated teeth may indicate that its embryological development is distinct from that of other jaw locations [1].

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DENS EVAGINATUS

Dens evaginatus, known as talons cusp is a rare developmental anomaly which is defined as an auxiliary or accessory cusp-like structure that protrudes from the cingulum region or cementoenamel junction of the maxillary or mandibular anterior teeth in either the primary or permanent dentition [2]. It can simply be defined as the hyperplasia of the cingulum of the teeth. The prevalence of talon cusp has been estimated to be between 1% and 6% of the population [3].

The pathophysiology begins at the morphodifferentiation stage of a developing tooth, regardless of the cause. According to some theories, dens evaginatus results from the progressive localised hyperplasia of the dental papilla and the outfolding of the inner enamel epithelium which will become future ameloblasts and future odontoblasts [1]. Although both genders are equally affected by talon cusp, but the majority of reported cases shows male predominance. Talon cusp is uncommon in deciduous teeth and often appears on permanent teeth [4]. Permanent maxillary lateral incisors make up the majority of the affected teeth (55%), followed by maxillary central incisors (33%), mandibular incisors (6%), and maxillary canines (4%). According to the degree of their creation and extension, Hattab et al. categorized this anomaly into three types: Type 1 [true talon], Type 2 [semi talon], and Type 3 [trace talon] in order to standardise the terminology and diagnostic criteria [1].

DENS INVAGINATUS

Dens invaginatus (DI), commonly referred to as a "tooth inside a tooth" is an uncommon dental abnormality in which the dentine and enamel are invaginated [5]. It has a prevalence of 0.3 to 10% where males are more likely to be affected than females. This anomaly can be manifested in two different forms, coronal and radicular, with coronal being more prevalent [6]. There have been a number of theories put forth regarding the cause of invaginated teeth, such as the constricted dental arch, the inner enamel epithelium growing either more slowly or more quickly, the enamel organ affected during dental development, or a tooth germ not receiving enough nutrition.

The most likely cause of Dens Invagination, is the invagination of all layers of the enamel organ in dental papillae or an infolding of the dental papilla during tooth development [2]. Infected teeth have a deep infolding of dentine and enamel that

may begin at the cusp tips and continue all the way to the centre of the root. The maxillary lateral incisors (80%) and maxillary canines (20%) are the teeth that are most affected. Bilateral events are more common to occur that is 25% [6].

CLINICAL CONSIDERATION

The instance in this case was labelled as "type I" according to Oehlers' definition of invagination since the invaginated cavities did not extend over the cemento-enamel junction and type 1 {true talon} acc to Hattab classification of dens evaginatus. Although independent diseases in different teeth have frequently been recorded in the literature, simultaneous occurrence of two Dens invaginatus with one Dens evaginatus in a single tooth has rarely been documented [2]. Periapical radiography has been used frequently for diagnosis, however because it is a two-dimensional imaging technology, it is not precise and definitive. Whereas, Cone-beam computed tomography (CBCT), offers three-dimensional dental imaging and makes it possible to see any pulpal extension into the dens evaginatus and complex anatomy of teeth due to dens invaginatus, which can assist to choose the best course of action [7].

TREATMENT OPTION

This anomaly is usually detected accidentally during intra oral examination, because it does not cause any difficulty to the patient. Management generally include a conservative approach if patient is showing no signs and symptoms. Reduction of cusp is advised to prevent occlusal interference and application of desensitising agents to prevent hypersensitivity. Pit and fissure sealants and fluoride applications must be done to prevent future caries. Patient should be recalled on the follow up visits to confirm no future disease because dens invaginatus is more prone to involve tooth endodontically [2].

This case showed the presence of dens evaginatus and two dens invaginatus in the permanent maxillary lateral incisor at the same time. Patient showed positive vitality test results with no evidence of periapical pathology. In such type of situations, it is advised to prophylactically seal the areas which are vulnerable to caries with restorative materials to avoid the development of any communication pathways between pulpal space and the oral environment. Here, deep pits and fissures were rounded off to prevent food lodgement. On follow up visits patient presented with no

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signs and symptoms, therefore prophylactic measures by giving fluoride applications were taken to prevent future disease.

CONCLUSION

Due to the clinical, pathological, and cosmetic issues they produce, the dental anomalies discussed in this study are of major concern to the dentists and parents. Since Ohlers classification for dens invaginatus was for single defect whereas the present case showed two invaginations hence this classification need to be modified according to multiple defects that are rarely written in the literature.

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