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CASE REPORT

Dens Invaginatus in a Supernumerary Tooth: A Rare Entity

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Abstract

This case report elaborates on the clinical and histopathological features of dens invaginatus in a supernumerary tooth. A 12-year-old female patient had a swelling in the upper jaw associated with mild pain and pus discharge. Intraorally, bony hard and non-tender swelling on the hard palate was present w.r.t., palatally displaced supernumerary tooth. Orthopantomogram revealed tooth-like structure superimposed with mesiodistally inclined 23. Ground and decalcified sections confirmed the diagnosis of dens invaginatus type 2. This study highlights the importance of comprehensive histopathological investigation of such cases along with history and clinical examination, the neglect of which could hamper successful treatment outcomes.

Key Words

Dens invaginatus, Supernumerary tooth, Developmental anomaly

Introduction

Dens invaginatus (DI) is a well-known developmental anomaly that often results in pulp necrosis and periradicular periodontitis.[1] Invaginations occur in either the crown or the root. Coronal invaginations are more common, with reported evidence of 10%. Oehlers classified invaginations into three types according to their morphology. Type 1 invagination remains confined to the crown, whereas type 2 invagination extends into the root as a blind sac. Enamel and dentin in the innermost part of the invagination may be developmentally poor, allowing microbes to enter the pulp. Type 3 invagination outspreads into the root and exits apically or laterally through an opening. There is generally no communication with the pulp.[2,3]

DI was first reported by Rabinowitch (1952) in a 3-year-old white boy presenting in the upper left primary molar.[4] This report presents the morphological, radiographic, and microscopic features of an extracted supernumerary tooth with a scarce variant of type 2 invagination.

Case Report

A 12-year-old female patient complained of swelling in the upper front tooth region for 4-5 months. She described it as pea-sized initially, which gradually increased and accompanied pain and pus discharge. No history of trauma was reported. Medical and dental history was non-contributory. Intraorally, an erupted supernumerary tooth

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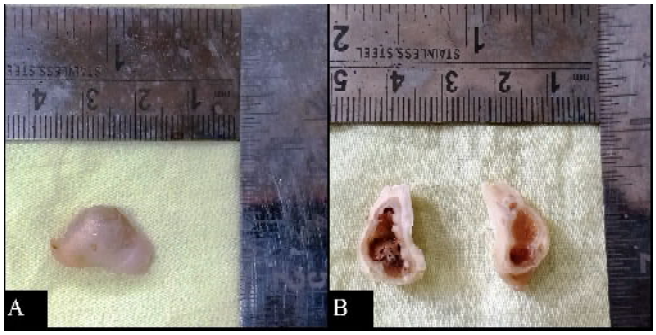

Fig 1. (A) Intact and (B) cut surface of the extracted supernumerary tooth

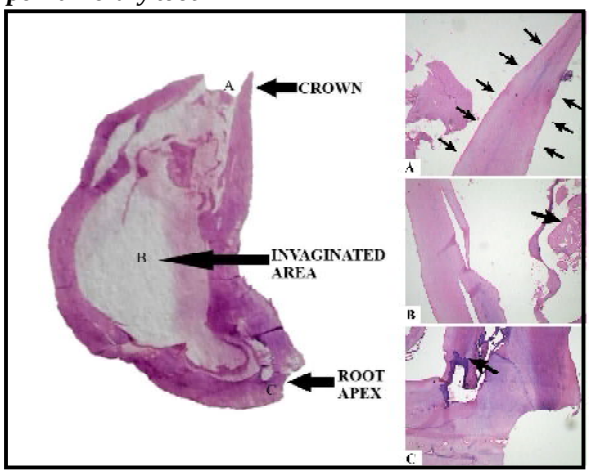

Fig 3. Microphotographs of Decalcified section. 3A: Scalloped dentin-enamel junction present on both the dentin's outer and inner surface suggest invagination of enamel (black arrows). 3B: Invaginated area showing slit-like enamel spaces in clusters (black arrow). 3C: Root apex showing abnormally placed acellular cementum surrounded by dentin (black arrow).

was present palatally to an erupted left permanent maxillary canine along with bony hard and non-tender swelling of approximate size 2x2 cm.

Orthopantomogram revealed a tooth-like structure in the left maxillary alveolus superimposed with mesiodistally inclined permanent maxillary canine. Differential diagnoses of dilated odontoma and a supernumerary tooth were considered. It was extracted and sent for histopathological examination. The extraction socket showed uneventful healing one-week postoperative examination.

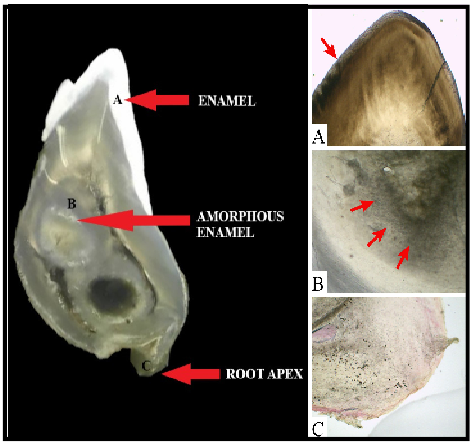

Fig 2. Microphotographs of Ground section. 2A: Normal enamel is present over the coronal portion of the tooth. 2B: Amorphous enamel-like material present in the invaginated area (red arrows). 2C: Apical third of the tooth shows cellular and acellular cementum.

Macroscopically, the tooth-like specimen was white in color and hard in consistency. It was divided into two halves. One was decalcified, and the ground section was prepared from the other (*Fig 1*). The ground section showed outer enamel with enamel rods and incremental lines of Retzius (*Fig 2A*). Dentin extended from crown till apex on one side, whereas on the other side, it extended till cervical part beyond which it revealed agglomerates of amorphous substance. Amorphous enamel-like material was present in the invaginated area (*Fig 2B*). Acellular cementum with few regions of cellular cementum was noted at the apical third of the root (*Fig 2C*).

H&E-stained decalcified section showed scalloped DEJ in the coronal portion both on the dentin's outer and inner surface, suggesting the invagination of enamel (*Fig 3A*). A few areas showed a disorganized arrangement of dentinal tubules. The space in the invaginated area showed enamel spaces associated with dentin deposits (*Fig 3B*). Well-formed cementum was seen at the closed dilated apical end (*Fig 3C*). Hence, a final diagnosis of type II DI was made.

Discussion

Developmental dental anomalies are a notable group of dental deformities. As derived from the previous studies, the etiology of dental anomalies of size, number, position, and timing of development have been suggested to be genetic and hereditary. Patil S *et al.* reported a high prevalence of anomalies of the wisdom teeth, with a prevalence of 36.7%.[5]

DI is a developmental anomaly causing deepening of the enamel organ into the dental papilla preceding the calcification of the dental tissues. Various terminologies used are 'dens in dente' by Busch (1897), 'dilated composite odontoma by Hunter (1951), and 'gestant anomaly' by Colby (1956).[6]

Corresponding to a study by Rózylo TK *et al.*, the average age of 33 patients having DI was 15.48 years (range 7-40 years). The mean age of the male and female patients was nine years (range 8-38 years) and 12 years (range 7-40 years), respectively.[7] Our case shows similar results to that of the literature reported.

All the documented case reports of DI in primary dentition are of males, which contrasts to the permanent dentition where females happen to be more at risk.[6]

Prevalence of DI ranges from 0.25 to 5.1%, affecting maxillary lateral incisors followed by supernumerary teeth, central incisors, premolars, canines, and third molars in decreasing order of frequency.[2] In a study by Rózylo TK *et al.*, 29.3% of all teeth affected with DI were supernumerary teeth. Overall, 92.7% of the invaginated teeth were present in the maxilla, unilaterally instead of bilaterally (75.8 and 24.2%, respectively).[7] These findings are also consistent with the present case.

Radiographically, the invagination has shapes varying from a narrow, undilated fissure to a tear-shaped loop facing toward the core of the pulp, as seen in the current case appearing as a radiolucent pocket bordered by radio-opaque enamel.[8]

Conclusion

This report concluded that the supernumerary tooth studied represents a variant of type 2 invagination defined by Oehlers. It has been recognized that an atypical crown form or a deep palatal pit may be related to invagination. However, the orifice is not clinically apparent in this case due to its microscopic diameter.[2] The risk of pulpal complications in these cases is probably associated with the inherently poor anatomical structures that encourage bacterial infection. Hence, early diagnosis is imperative to prevent the need for complex and challenging procedures later.[8]

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