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Occurence of Dens Invaginatus in Two of the Four Impacted Mesiodentes - A Rare Case Report

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ABSTRACT: *Supernumerary teeth are defined as excess number of teeth as compared to normal dental formula. Mesiodens is a supernumerary tooth in the central region of premaxilla between two central incisors. Multiple Mesiodens are called Mesiodentes. This additional tooth structure may cause disturbance in eruption or position of adjacent teeth. Dens Invaginatus **(DI)** is a rare tooth malformation showing an infolding of enamel and dentin of affected tooth sometimes extending deep into the pulp cavity and root portion. This paper aims to present a rare association of DI in two of the four impacted Mesiodentes in a 10-year-old girl patient causing eruption disturbance and unaesthetic appearance in anterior maxilla.*

KEYWORDS: Supernumerary teeth, Dens Invaginatus, Mesiodens, Mesiodentes

INTRODUCTION

Supernumerary teeth or hyperdontia is defined as excess number of teeth as compared to the normal series[1]. Supernumerary teeth located in the maxillary central incisor

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region, known by the name Mesiodens is the most common type[2]. It can be single, multiple,unilateral or bilateral. The term Mesiodentes is used to refer multiple Mesidens[3,4]. 76-86% of the cases show single Supernumerary teeth and 12-23% of cases reports to occur in pairs and only <1% cases reports 3 or more extra teeth[5,6].

DI is a rare developmental anomaly resulting from invagination of the enamel organ into the dental papilla during the process of odontogenesis. Prevalence is highest in Maxillary Lateral Incisor, followed by Maxillary Centrals, Premolars, Canines and least in Molars.[7] Prevalence of occurence of Dens Invaginatus in permanent teeth is between 0.3-10%[8]. It may be associated with other abnormalities such as micro or macrodontia, gemination or fusion, taurodontism or Amelogenesis Imperfecta[9]. Several variations in crown morphology including peg shaped, barrel shaped, conical, increased buccopalatal dimension, associated talon cusp etc. can be seen in association with DI. It is rare to find DI associated with a supernumerary tooth[10,2]. Extensive pubmed search revealed only 5 case reports published in literature till date[9,11,12,13,14]. On extensive pubmed search no case have been reported with four Mesiodentes, out of which two are associated with DI. The article presents a rare case of type II DI affecting two of the four impacted Mesiodentes.

Case Report

A 10-year-old girl child reported to our clinic with chief complaint of unerupted maxillary central incisors. No relevant family or medical history was revealed. No history of trauma was reported. Extra oral examiantion revealed no significant findings. No swelling or redness was appreciated in intra oral examination. The patient exhibited fairly good oral hygiene. Maxillary lateral incisor had erupted at the age of 8.5 years.

Figure 1: Radiographic investigation

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Orthopantomogram showed unerupted tooth buds of right and left permanent central incisors with incomplete root formation and associated four impacted supernumerary teeth. Two of the mesiodentes were conical in shape and inverted in position. Other two mesiodentes were bigger in size, resembling a tuberculate type and with incomplete root formation. These supernumerary teeth prevented the eruption of both the permanent maxillary central incisors (Figure 1)
As the Mesiodentes were to be surgically removed, a Cone Beam Computerised Tomography (CBCT) was indicated. The parents were informed about the benefits of CBCT and also associated risk factors were explained.

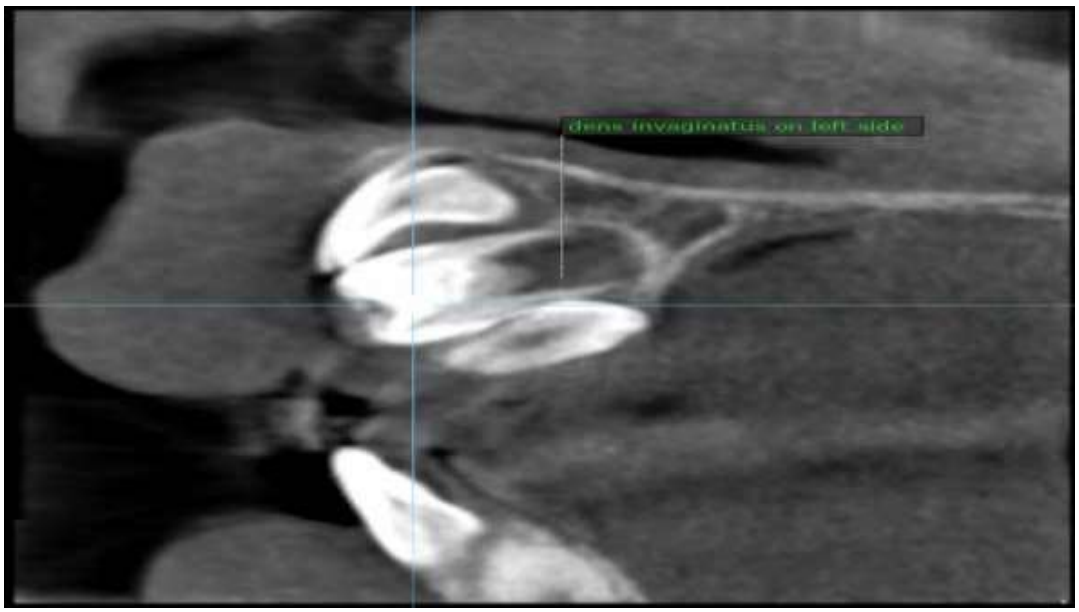

Figure 2: CBCT scan

A small volume CBCT scan of the maxillary anterior region was obtained. The images confirmed the position of the Mesiodentes. Sagittal section showed two conical inverted supernumerary teeth with complete root formation near to the palatal side, above which two other supernumerary teeth were present showing inverted 'tear drop' shaped radiolucency with radio opaque lining involving pulp chamber suggestive of Type II DI.

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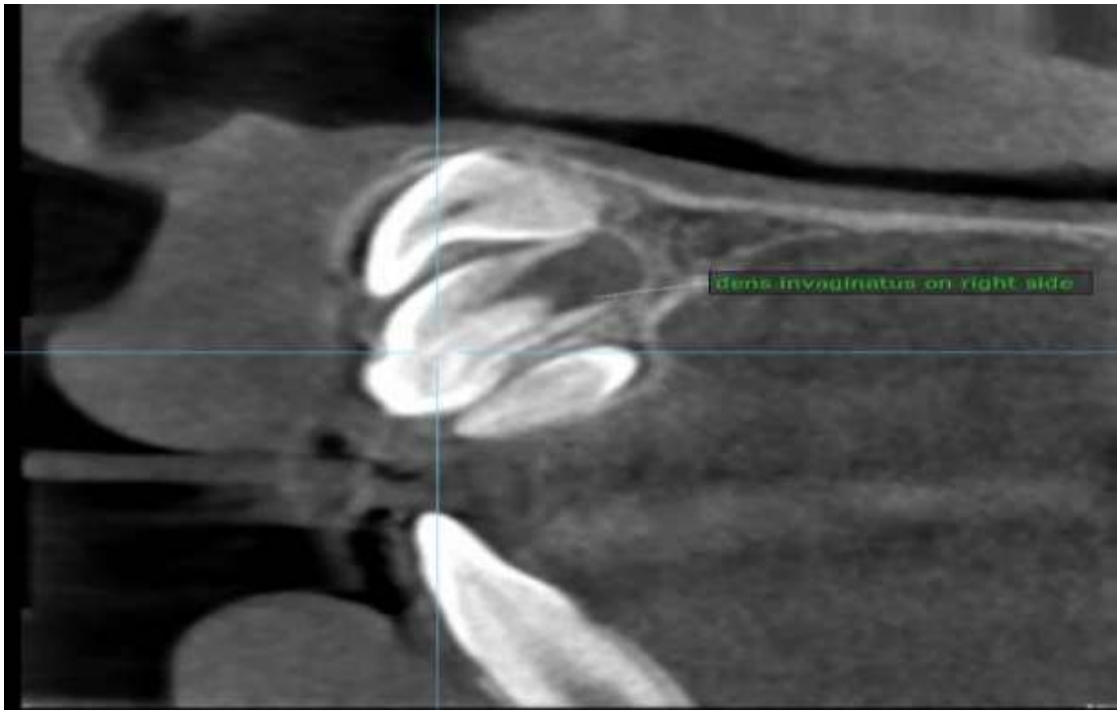

Figure 3 : Sagittal section showing dens in dente with incomplete root formation and inverted mesiodens of right side with impacted permanent incisors

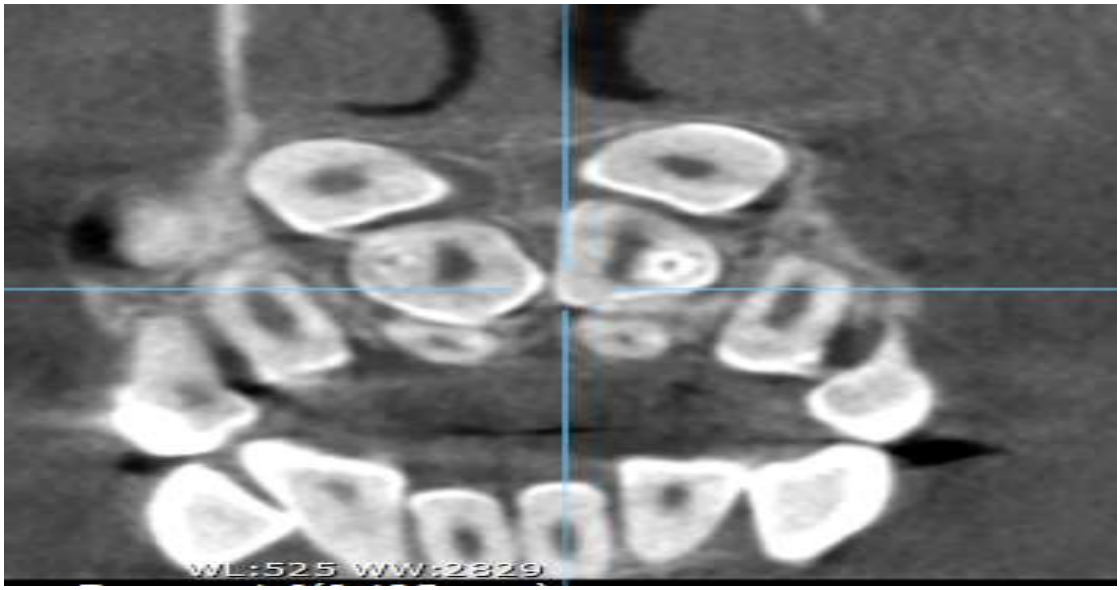

Figure 4 :Coronal section showing four impacted supernumeray teeth

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Figure 5 -3D reconsturction

The root formation of these two were incomplete with coronal position towards labial plate (figure 2, figure 3). the coronal section showed four impacted supernumerary teeth (figure 4). Figure 5 shows a 3D reconstructed image of the site.

Surgical procedure

Treatment planning comprised extraction of all four mesiodentes. Surgical procedure was carried out under local anaesthesia. A labial semilunar flap was raised extending from the permanent left maxillary lateral incisor to permanent right maxillary lateral incisor. A small amount of bone was removed to expose the labially placed mesiodentes. Once both of them were extracted, the palatally placed mesiodentes were visible and removed from the labial approach itself. The flap was closed using surgical sutures and Betadine pack placed.

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Figure 6: Extracted teeth

Extracted mesiodentes were unusual in appearance. Two of the impacted mesiodentes were bigger with crown morphology resembling tuberculate type. Root formation was incomplete with wide open apex in both of them. The labial surface showed some indentation and lingual surface showed incomplete infolding of both mesial and distal edges till midline giving a central depressed area extending till cervical part of root invading the pulp.The other two mesiodentes were smaller in size, with dilaceration in the root portion and conical shaped crown form.

A PSP image of the extracted tooth was taken and the finding of DI was confirmed

Figure 7- PSP image showing inverted tear drop shaped dens invaginatus

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DISCUSSION

Develpmental disturbance occuring during odontogenesis resulting in excess number of teeth are refered to as supernumerary teeth. Supernumerary teeth occuring in the premaxilla between two central incisor are called as Mesiodens and are more common in the permanent dentition than primary dentition[15]. Based on the shape mesiodentes can be classified as a) conical b)tuberculate c)molariform d) supplemental[2]. most common type is the conical, molariform being the rarest. Barrel shaped mesiodens with several cusps and incomplete roots are called tuberculate type. Supernumerary teeth resembling natural teeth in both size and shape are called as supplemental mesiodens. In the present case ,the crown of two of the mesiodentes were tuberculate type, with incomplete root formation and associated type II DI. The other two mesiodentes were conical type with completely formed dilacerated root.

DI is a developmental anomaly occuring due to invagination of crown or root before calcification due to unknown etiology[16]. Radiographically it appears as a radioopaque ribbon like structure with density equivalent to that of enamel, extending from cingulum into root canal and sometimes reaching till the root apex, taking the apearance of a small tooth within the coronal pulp[11].

Oehler classified DI as:[17]
Type I: Enamel lined invagination not extending beyond Cemento Enamel Junction
Type II: Enamel invading the root but remains confined as blind sac. It may or may not communicate with the dental pulp.

Type III: The invagination perforates the root in the apical area and communicates with periodontal ligament space either through apical foramen or through a pseudo foramen with usually no communication with the pulp.

In the present case, both the mesiodentes had a blind sac extending into pulp and diving it without communicating giving an inverted tear drop shaped appearance.This anomaly occurs frequently in lateral incisors followed by central incisors, premolars, canines and molars[7,18]. Association of DI with mesiodens is extremely rare and its occurence in two mesiodentes is a even rarer phenomenon. Extensive pubmed search revealed only 5 case reports published in literature till date[9,11,12,13,14]. On extensive pubmed search no case have been reported with four Mesiodentes, out of which two are associated with Dens Invaginatus. Sannomiya etal[11] presented a case of two mesiodentes associated with DI. Archer and Silverman[14] presented DI in bilateral rudimentary supernumerary teeth. In the present case, four impacted supernumerary were present out of which two were inverted conical type and two were tuberculate type both associated with DI which is very rare and unusual.

Complications arising as a result of supernumerary include delayed eruption, impaction, diastema, crowding, spacing, cystic lesion, root resorption etc. DI presents a

predisposition for development of caries by allowing irritants to enter into an area which is separated from pulpal tissue by a thin layer of enamel and dentin ultimately resulting in pulpal necrosis and abscess formation[4,17]. In the present case, presence of four mesiodentes caused eruption failure of both maxillary central incisors and hence surgical removal was the treatment of choice.

CONCLUSION

Early diagnosis and treatment of mesiodens are very important to prevent physiological, esthetic and functional problems especially in children. The present case aimed to report a rare existance of DI in two out of the four impacted mesiodentes.

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