Case Report

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Dentistry Section

Mesiodens with Supernumerary Root in a Non Syndromic Child: A Rare Case with Unusual Morphology and its Management

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ABSTRACT

Supernumerary teeth, also known as hyperdontia, are an odontostomatologic aberration characterised by the presence of an excessive number of teeth. They are divided into four categories based on their shapes and sizes: conical, tuberculate, supplementary and odontomes. The most typical location for mesiodens is the palatal midline between the two maxillary central incisors. Mesiodens is common with incidence of occurrence being 0.3-0.8% for primary teeth and 0.15-3.8% for permanent teeth. A supernumerary root is characterised as the existence of an extra root than the typical number, but a mesiodens with a supernumerary root is a very unusual condition encountered, and its occurrence in children is extremely rare. This unusual morphology is not associated with any syndromes. In the present case, the morphology of the crown of mesiodens was found to be conical in shape both clinically and radiographically, but on extraction of mesiodens unusual root morphology with a supernumerary root was seen. Variations in the crown morphology where the crown of mesiodens had five lobes that was separated by developmental grooves and root dilacerations have been noted. However, no case of mesiodens with a supernumerary root has been reported in the literature by far and this paper attempts towards it. Therefore, the present case emphasises on the importance of considering the morphological variations prior to the onset of the treatment. So, hereby authors present a eight-year-old female with rare and unusual case with a mesiodens with a supernumerary root and its management.

Keywords: Cone beam computed tomography, Hyperdontia, Mixed dentition, Root anomaly

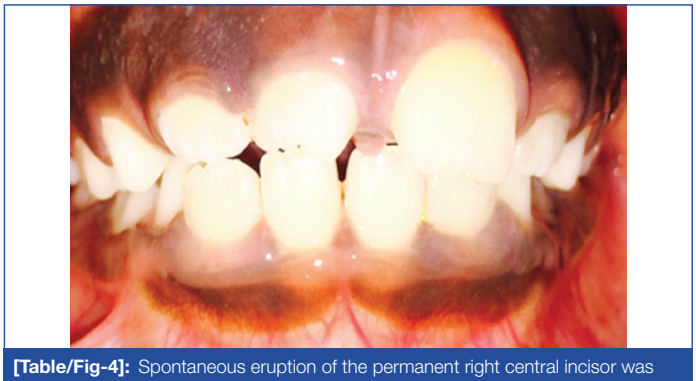
CASE REPORT

An eight-year-old female patient came to the Department of Paediatric and Preventive Dentistry with a chief complaint of a sharp and a small tooth in the upper front tooth region after the exfoliation of milk tooth. There was no associated history of pain and trauma. Medical and family history was non contributory. There were no signs of any syndrome. On intraoral examination, it was noticed that a mesiodens was present between erupting 12 and 21 [Table/Fig-1]. An Intraoral Periapical Radiograph (IOPAR) was taken in the region of 11 that confirmed the diagnosis of conical shaped mesiodens. Teeth seen were 21, mesiodens and 11 with 1/3rd of the root development [Table/Fig-2]. The abnormal angulation of 11 may be due to the erupting 12 applying pressure on erupting 11.

Cone Beam Computed Tomography (CBCT), a more recent advancement, would have been more appropriate for diagnosing similar situations however the patient was unwilling to undergo CBCT. Blood investigations were carried out to rule out any bleeding and clotting disorders. Complete blood count was advised in which, haemoglobin was 11.6 g/dL, white blood cells count was 4.83×10^9/L, platelet count was 4.44 lac/cumm, activated partial thromboplastin time was 32.7 sec and Prothrombin Time (PT) was 13.2 sec. Extraction was planned since the patient was in her early mixed dentition stage and to make space for the spontaneous eruption of 11. After a thorough explanation of the treatment strategy, informed consent was acquired, and the mesiodens was extracted, that revealed the presence of a supernumerary root [Table/Fig-3] which went unnoticed on clinical and radiographic examination, as it was a 2-dimensional (2D) image. The wound healing was uneventful and the patient presented with no postoperative symptoms. The patient was recalled after three months of extraction. Spontaneous eruption of the permanent right central incisor was observed [Table/Fig-4].

[Table/Fig-1]: Intraoral preoperative photograph showing the presence of mesiodens.

[Table/Fig-2]: IOPAR confirming the diagnosis of mesiodens.
[Table/Fig-3]: Extracted tooth exhibiting the presence of a supernumerary root. (Images from left to right)



[Table/Fig-4]: Spontaneous eruption of the permanent right central incisor was observed.

DISCUSSION

Mesiodens is a developmental disturbance occurring during odontogenesis. It may occur as single, multiple, unilateral or bilateral, erupted or unerupted, and in one or both jaws [1]. In the permanent dentition, the incidence ranges from 0.15 to 3.8%, while in the deciduous dentition, the incidence ranges from 0.3 to 0.8% [2]. Mesiodens are classified into two types depending on their shape and size: eumorphic and dysmorphic. Eumorphic teeth are those that resemble a normal sized central incisor, but dysmorphic teeth are those that have varied shapes and sizes and are classified as conical, tuberculate, supplementary and odontomes. They can form in the regular eruption direction, appear inverted, transverse, take on an ectopic position, or follow an aberrant eruption course [3]. In the present case, it was dysmorphic with a conical shaped crown and a supernumerary root.

During early mixed dentition, most mesiodens remains unerupted, with a reported range of 79% to 91% [4]. In South India, it has a prevalence of 1.2% [5] and is more common in the middle part of the upper or lower jaw; it is uncommon in the mandible [6]. However, no cases have been reported of mesiodens with a supernumerary root, unlike the present case.

The phylogenetic process of atavism (evolutionary throwback), aberrant splitting of the tooth bud (dichotomy), localized autonomous hyperactivity of the dental lamina, inheritance, and other environmental factors have all been proposed as possible causes. In any event, the most widely accepted reason of the production of extra teeth is hyperactivity of the dental lamina [6].

The presence of supernumerary roots has been the subject of speculation by a number of authors [7]. Bifurcated roots have been linked to an ingrowth of Hertwig's Epithelial Root Sheath (HERS), according to Kelly JR [8]. The clinical appearance of supernumerary roots has been linked to fusion or gemination by other studies [9]. The term supernumerary roots were used by Neville BW et al., for the presence of extra roots in a tooth when compared to normal dental anatomy [10]. In the present case, there might be chances that during the epithelial diaphragm formation some incident caused the development of a horizontal flap of the HERS, and then the horizontal flap fused and resulted in the formation of a supernumerary root [7].

Diagnosis is best done by thorough clinical and radiographic examinations using maxillary anterior periapical and occlusal radiographs for evaluation of mesiodens [5]. According to a recent study, modern imaging modalities such as CBCT are a great diagnostic tool for delivering three-dimensional information and accurate mesiodens localisation [11]. But in the present case IOPAR was taken as the patient was not willing for CBCT which would have helped us in accurate diagnosis.

Depending on the type, the position of the tooth, and the stage of dentition the management of supernumerary teeth is determined [12]. Obstruction or delay of eruption, displacement of the adjacent tooth, interference with orthodontic appliances, the presence of a pathologic disease, or intentional emergence of the supernumerary tooth, are all reasons for immediate removal of the mesiodens. One of the commonest complications of a supernumerary root is that it may break during extraction and if left in the alveolus, it may become a source of infection [13]. Therefore for a better prognosis early removal of mesiodens is indicated. Humerfelt D et al., recommends an early removal of the mesiodens for achieving a better prognosis [14]. Extraction of mesiodens in primary dentition is usually not advocated but is indicated at an early mixed dentition to allow the spontaneous eruption of permanent central incisors, which also promotes tooth alignment and reduces the need for orthodontic treatment [12].

Paediatric dentists are typically the first to notice growing malocclusions, and it is their responsibility to intervene and intercept appropriately to prevent future adverse outcomes in the primary dentition to reduce complications as an important aspect of preventive dentistry. A recent study by Yagüe-Garca J et al. stressed the importance of removing extra teeth as soon as possible to avoid difficulties [15]. Because normal eruptive forces promote spontaneous eruption of the permanent central incisors after extraction, the best time to remove mesiodens is believed to be between the ages of eight and nine years old. Additionally, behaviour management of a child is much easier at this age, and the type of anaesthesia required is less invasive [16]. It is common to be unsure whether or not to surgically remove the mesiodens, or whether to keep them in place and monitor the patient radiographically at regular intervals. Early diagnosis, regardless of the management strategy, is crucial [17].

In the case presented, extraction of the mesiodens was indicated at an appropriate time with utmost attention to avoid any possible damage to the adjacent developing permanent central incisors and promote early mixed dentition self eruption, which may result in better tooth alignment and reduce the need for orthodontic treatment. Follow-up is indispensable in these cases since the eruption status should be monitored. Considerations regarding the morphological variations are important before treatment onset.

CONCLUSION(S)

Supernumerary teeth and supernumerary root are of a huge concern to both dentist and patient because of its potential problems and complications. Although the mesiodens is a reasonably common dental anomaly, there are various modes of its presentation but a mesiodens with a supernumerary root is quite uncommon. Evaluation both clinically and radiographically using CBCT is recommended for detection of mesiodens. Management involves the extraction of mesiodens at an appropriate time and stage of dentition. Long term follow-up of treated cases is essential if surgical excision of mesiodens is recommended.

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