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Supernumerary Tooth Unveiled: A Case Report Of 9-Year-Old

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Abstract
Mesiodens, a supernumerary tooth located in the midline of the maxilla, is a relatively common developmental anomaly. This case report presents the clinical and radiographic findings of a nine-year-old boy diagnosed with mesiodens. The patient presented with complaints of discomfort and aesthetic concerns in the upper front region of the oral cavity. Clinical examination revealed the presence of an additional tooth between the central incisors. Radiographic evaluation confirmed the presence of a mesiodens, which was identified as a conical supernumerary tooth. Treatment options were discussed with the patient's guardians, including observation, extraction, or orthodontic intervention. Ultimately, the decision was made to extract the mesiodens to alleviate discomfort and prevent potential complications such as impaction or malocclusion. Follow-up examinations were conducted to monitor the patient's dental development post-extraction. This case highlights the importance of early detection and management of mesiodens to ensure optimal oral health outcomes in pediatric patients.

Keywords: *Supernumerary tooth, mesiodens, extraction*

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I. Introduction

A supernumerary tooth is defined as an excess in the number of teeth when compared to the normal dental set and can occur in almost any region of the dental arch, but with a particularly strong predilection of about 90% towards the premaxilla. 1

Mesiodens, a developmental anomaly, is an additional supernumerary tooth that appears in the midline of the maxilla, between the two central incisors. It is one of the most common types of supernumerary teeth and tends to occur during the early stages of dental development in children.

The reported prevalence in general population ranges between 0.15% and 1.9% and it is reported to be more common in males rather than females2. Variations due to differences in demographic and environmental susceptibilities may have impact on the reported prevalence.

In permanent dentition, a 0.15 to 3.8% incidence of mesiodens has been reported, with a two-fold risk of occurrence in the male population compared to the female population3

Various hypotheses have been suggested for their etiology, which include dental lamina hyperactivity, tooth bud dichotomy, and a combination of genetic and environmental factors4.

In children, the presence of a mesiodens can disrupt the normal eruption pattern of permanent teeth, causing impaction, crowding, or misalignment. Additionally, it may interfere with the development of adjacent teeth, leading to malocclusion or orthodontic issues later in life. These issues can affect both dental function and aesthetics, potentially requiring intervention to mitigate long-term dental problems.

In literature review, conventional and panoramic radiographs have been used for diagnosis and management of mesiodens. But preferably cone-beam computed tomography (CBCT) provides three-dimensional imaging of the position of mesiodens and its contact with adjacent teeth and other anatomic structures like nasal cavity and nasopalatine canal.

Mesiodens are divided into four subtypes based on morphology: conical, supplemental, odontome, and tuberculate. They may be unilateral or bilateral, single or multiple, and erupted or unerupted.5

Supernumerary teeth may be associated with syndromes, such as cleft lip and palate, Cleidocranial dysplasia, Downs's syndromes, etc4, 6

Treatment options for mesiodens in children typically involve surgical removal to alleviate potential complications and facilitate normal tooth eruption. However, the approach may vary depending on the size, position, and morphology of the supernumerary tooth, as well as the individual's dental health and age. Close

monitoring and coordination between pediatric dentists and orthodontists are essential to provide comprehensive care and optimize the long-term dental outcomes for children with mesiodens.

II. Case Report

A 9-year-old boy, presented to the department of pediatric and preventive dentistry with the chief complaint of presence of extra tooth just behind the upper front central incisors. (Fig 1)

Fig 1- Preoperative image

The boy medical history was unremarkable, with no known systemic conditions or significant illnesses. He had no history of dental trauma or previous dental interventions.

Upon clinical examination, it was noticed that a mesiodens was present palatally of the first right and left permanent incisors.

Periapical radiographs were obtained to further evaluate the mesiodens. The radiograph confirmed the presence of conical shaped supernumerary tooth located palatally between the maxillary central incisors. The mesiodens was positioned vertically palatally and appeared to be impacting the labial eruption of the left permanent central incisor. (Fig 2,3)

Fig 2- Intraoral apical radiograph

Fig 3- Occlusal radiograph

Teeth seen were 11, mesiodens and 21 with 1/3rd of the root development. The abnormal angulation of 21 may be due to the mesiodens applying pressure on erupting 21.

Blood investigations were carried out to rule out any bleeding or clotting disorders before commencing the procedure.

We opted for the treatment of extraction as the patient was in his mixed dentition stage. Written informed consent was obtained from the parents prior to treatment and the mesiodens was extracted. Post-operative recovery was uneventful. Subsequent follow-up appointments showed normal healing and no adverse effects on dental development. (Fig 4,5)

Fig 4- Extracted Tooth

Fig 5- Post operative image

III. Discussion

The first documented report of supernumerary teeth has been found in ancient human skeletal remains since the Lower Pleistocene era.7

Balk (1917) defined mesiodens as the most common among supernumerary teeth, located mesial to both central incisors; appearing peg shaped, in a normal or inverted position.8 Regezi and Sciubba9 mentioned that the anterior midline of the maxilla is the most common site of the supernumerary tooth, hence the supernumerary tooth is known as mesiodens.

It may occur as single, multiple, unilateral or bilateral, erupted or unerupted, and in one or both jaws10. 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% 11. 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.

The conical form of mesiodens is usually peg shaped, whereas tuberculate form is multicuspid and the supplemental form resembles central incisor of which conical form is the most common type of mesiodens. Mesiodens is more prevalent in Caucasian population with an even higher frequency in those of Asian descent.5

They can form in the regular eruption direction, appear inverted, transverse, take on an ectopic position, or follow an aberrant eruption course12. In the present case, it was dysmorphic with a conical shaped crown and a supernumerary root.

Usually, mesiodens have no obvious symptom and only manifest as an increase in the number of teeth, but they can cause a range of complications, including tooth impaction, delayed eruption of teeth, ectopic eruption of teeth, excessive diastema of anterior teeth, malocclusion, root deformity, occlusal trauma, and odontogenic cyst.13-16

The etiology of mesiodens tooth is not known; however, few theories have been suggested.17 These include genetic18 and environmental factors,19 hyperactivity of the dental lamina and dichotomy of the tooth bud.20 It may also occur in association with syndromes like cleft lip and palate, Cleidocranial dysplasia and Gardner's syndrome.21

Among these, the hyperactivity of dental lamina theory is considered to be the most acceptable etiologic factor in the development of mesiodens.22

Traditional X-ray examination, such as periapical radiography, lateral tomography, and pantomography, has played an important role in the diagnosis and treatment of mesiodens in the past. However, due to the inability to accurately locate mesiodens, it cannot meet the requirements of mesiodens extraction under the increasingly precise treatment mode.23,24

Various complications might occur as a result of the presence of mesiodens, including delayed eruption, crowding, spacing, impaction of permanent incisors, abnormal root formation, alteration in the path of eruption of permanent incisors, median diastema, cystic lesions, intraoral infection, rotation, root resorption of the adjacent teeth or even eruption of incisors in the nasal cavity.20

Management of supernumerary teeth depends on the type, position of the tooth and the stage of dentition. Munns25 recommended earlier removal of the mesiodens for achieving better prognosis. Extraction of mesiodens is usually not advocated in primary dentition since they often erupt into the oral cavity and thus risk of damaging the permanent incisor during surgical removal of mesiodens can be avoided.26 However, at early mixed dentition stage, the permanent central incisors erupt spontaneously after the extraction of mesiodense.27 This also promotes better alignment of the teeth and minimizes the need for orthodontic treatment.28 Close monitoring of the dentition is required after the extraction of a mesiodentes.29 Clinical and radiographic reassessment is

recommended after 6 months of mesiodens extraction and if the permanent incisor does not erupt averagely after 12 months of extraction of mesiodens, closed eruption with orthodontic mechanotherapy is recommended.30-33

Delay in extraction of mesiodens might result in failure of spontaneous eruption of permanent incisor due diminished eruptive forces, arch perimeter loss, midline shifting and mesial drifting of lateral incisors into central incisor space, which might require comprehensive orthodontic treatment with surgical exposure of the unerupted teeth.34 In order to avoid complications, the orthodontists recommend early removal of the supernumerary teeth.

IV. Conclusion

Mesiodens is a common developmental anomaly that can present with various clinical manifestations in children. Early detection and appropriate management are essential to prevent potential complications and ensure optimal dental health outcomes. Through a multidisciplinary approach involving pediatric dentistry and orthodontics, the patient can achieve a healthy and functional dentition despite the presence of mesiodens. Regular dental monitoring and timely intervention are crucial for the long-term oral health and well-being of affected individuals.