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Management Of Anterior Supernumerary Teeth In Children: A Case Series

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Abstract:
Background*: Supernumerary teeth are developmental anomalies defined as the presence of teeth in excess of the normal dental formula. Their occurrence, though relatively uncommon, can give rise to a spectrum of complications such as delayed eruption of permanent teeth, crowding, midline diastema, and occasionally cystic changes. This paper presents a case series of patients diagnosed with supernumerary teeth, outlining their clinical manifestations, radiographic findings, and the treatment approaches undertaken. A concise review of the literature is also included to provide context for the cases discussed.*
Key Word: *supernumerary teeth, mesiodens, peg lateral, hyperdontia, pediatric dentistry*

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I. Introduction

Hyperdontia is a developmental anomaly characterized by the presence of additional teeth beyond the normal dental count.[1] It is most observed in the maxilla, especially in the premaxillary region, and is less frequently seen in the mandible.[2] Supernumerary teeth can appear anywhere along the dental arch, though the anterior maxilla remains the most frequent site. The exact cause of this condition is still not completely understood, with multiple hypotheses proposed. While some studies indicate a higher prevalence in males, others, such as those by Clayton[3] and by Backman and Wahlin[4], have reported a slightly higher occurrence in females. Epidemiological data also suggest that certain racial groups, including Mongoloid populations, exhibit a greater frequency of supernumerary teeth.[5]

Supernumerary teeth are typically classified into two types: supplemental and rudimentary. Supplemental teeth closely resemble the shape and structure of normal teeth, while rudimentary teeth are smaller and often exhibit conical or tuberculate forms.[6] Other classifications of supernumerary teeth can be based on their morphology (conical, tuberculate, supplemental, odontome), anatomical location (mesiodens, paramolar, distomolar, parapremolar), position (buccal, palatal, transverse), or orientation (vertical, inverted, horizontal, transverse)[5] as demonstrated in Figure 1. Among these, mesiodens are the most commonly encountered type, as noted by Alberti et al.[2]

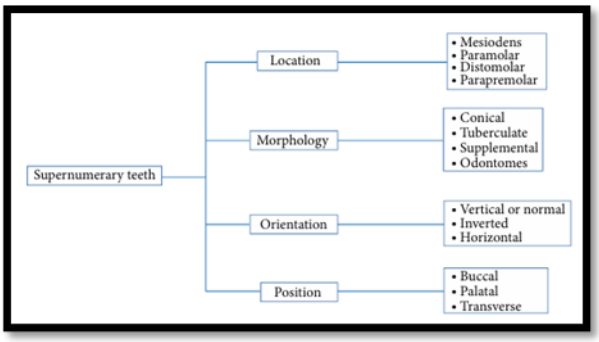

Figure 1: classification of supernumerary teeth.

Although the precise etiology is uncertain, a genetic component has been suggested due to increased occurrence within families.[7] The presence of supernumerary teeth in syndromes such as Gardner's syndrome and cleidocranial dysostosis further supports the hereditary influence.[8]

Supernumerary teeth may lead to several complications, including crowding, delayed eruption, impaction, spacing irregularities, abnormal root development, midline diastema, cyst formation, rotation, and

resorption of adjacent teeth.[9] Rarely, eruption into the nasal cavity has also been reported.[10] Considering the potential for such complications, early identification and appropriate intervention are recommended to prevent long-term dental problems.

This article presents two pediatric cases illustrating the diagnosis and management of supernumerary teeth.

II. Case 1

A 10-year-old boy reported to the department of pediatric and preventive dentistry, MGDCH with the chief complaint of an extra tooth in the upper front region, noticed for the past 2–3 years. There was no associated history of pain, swelling, paresthesia, trauma or exudate reported. No secondary changes were reported by the patient. General and systemic examination revealed no abnormality, and medical as well as family histories were non-contributory.

Intraoral examination revealed the presence of a supernumerary tooth in the anterior maxilla along with a palatally placed permanent maxillary lateral incisor (12). (Figure 2) To aid in diagnosis, a maxillary occlusal radiograph was obtained, which confirmed the presence of a supernumerary tooth situated between the permanent maxillary right central incisor (11) and the retained deciduous canine (53). (Figure 3)

After discussion with the patient's parents, extraction of the supernumerary tooth was planned under local anesthesia to prevent interference with the eruption sequence and to facilitate future orthodontic correction if required. Local anesthesia was achieved with incisive and infraorbital nerve blocks following topical application. The tooth was extracted using pediatric anterior extraction forceps without complication. (Figure 4) The patient was advised to attend regular follow-up visits for assessment of healing and to monitor the eruption of the adjacent permanent teeth.

Figure 2: Pre-op intraoral photographs showing extra tooth in upper arch with crowding.

Figure 3: Diagnostic Occlusal radiograph

Figure 4: Post extraction tooth photograph- conical shaped supernumerary tooth.

III. Case 2

A 12-year-old female, reported to the Department of Pediatric and Preventive Dentistry, MGDCH with the chief complaint of an additional tooth in the upper anterior region. The patient did not have any associated symptoms such as pain, swelling, or discharge. General and systemic examination revealed no abnormalities, and medical as well as family histories were non-contributory.

Intraoral examination revealed a firm mesiodens located palatally between the maxillary central incisors (11 and 21), along with a buccally displaced right central incisor (11). (Figure 5) The mesiodens exhibited no mobility. For further evaluation, an intraoral periapical radiograph was obtained, which confirmed the presence of the supernumerary tooth between the central incisors.

After detailed discussion with the parents, extraction of the mesiodens under local anesthesia was planned to prevent crowding and displacement of the permanent central incisors. Following application of topical anesthetic, local anesthesia was administered via incisive and infraorbital nerve blocks. The mesiodens was then carefully extracted using pediatric anterior extraction forceps without complication. (Figure 6) Postoperative instructions were provided. To relieve the crowding upper full arch banding was planned to correct the malocclusion and the patient was advised to attend regular follow-up visits to monitor healing and ensure proper eruption and alignment of the permanent central incisors.

Figure 5: Pre-op intraoral photographs showing extra tooth in upper arch with crowding.

Figure 6: Post extraction tooth photograph- mesiodens.

IV. Discussion

Supernumerary tooth (ST) is defined as “any tooth or odontogenic structure that is formed from tooth germ in excess of usual number for any given region of the dental arch”.[11] These teeth can appear on one or both sides, as single or multiple units, and may occur anywhere in the upper or lower jaws. They can be present in both primary and permanent dentitions.[12] The reported incidence is 0.3%–0.8% in primary teeth and 1.5%–3.5% in permanent teeth.[13] Males are affected about twice as often as females.[14] STs are more commonly observed in individuals of Mongoloid descent compared to other racial groups. Their occurrence, location, and shape may also differ by gender.[5]

Supernumerary teeth are reported to occur in the maxilla approximately 8.2 to 10 times more often than in the mandible, with the premaxillary region being the most frequently affected area. There is also a noted correlation between supernumerary teeth and invaginated teeth, which are characterized by a pronounced cingulum pit. This relationship may be attributed to differences in embryological development between the premaxilla and the rest of the maxillary bone. As a result, the premaxilla is more prone to developmental variations, which can contribute to the occurrence of supernumerary and invaginated teeth.[14]

The etiology of supernumerary teeth remains inconclusive. Among the proposed theories, the most widely accepted is the localized and independent hyperactivity of the dental lamina, which is believed to initiate

the development of these additional teeth.[15] Furthermore, supernumerary teeth are often observed in conjunction with various developmental and genetic syndromes, such as cleft lip and palate, cleidocranial dysostosis, Gardner's syndrome, Ellis–Van Creveld syndrome, Ehlers–Danlos syndrome, Incontinentia Pigmenti, and tricho–rhino–phalangeal syndrome.[16]

A mesiodens refers to a supernumerary tooth situated between the maxillary central incisors.[17] It is most commonly found on the palatal side of the permanent incisors, although in rare cases, it may be positioned along the dental arch or on the labial side. Typically, mesiodens are small in size, featuring a short root and a conical or triangular crown shape.[14] While they are often impacted, some may erupt into the oral cavity. However, even erupted mesiodens can cause clinical issues such as dental crowding, rotation of adjacent teeth, or cyst formation. According to one study, approximately 39% of erupted mesiodens were associated with displacement of the adjacent incisors.[18] Extraction is generally recommended as the treatment of choice, regardless of whether the tooth is impacted or erupted. This case report discusses the diagnosis and clinical management of a fully erupted mesiodens in a pediatric patient.[19]

The management of supernumerary teeth is influenced by their type and location. Early removal of a mesiodens is typically advised when it causes delayed eruption, tooth displacement, interference with orthodontic treatment, pathological changes, or erupts spontaneously.[20] Das et al. (2012)[21] noted that supernumerary teeth can hinder the natural eruption of adjacent permanent teeth, while Russell and Folwarczna (2003)[22] reported their association with malocclusion and ectopic eruption. Munns emphasized that early extraction of mesiodens improves treatment outcomes.[23]

Mesiodens are typically extracted soon after diagnosis, provided there is no substantial risk to adjacent anatomical structures.[24] Early intervention is often advised to minimize potential complications.[6] In the current case, clinical and radiographic assessments indicated that the roots of the adjacent permanent incisors were fully developed, posing little risk of damage. The surgical procedure was uncomplicated, and the patient tolerated it well under local anesthesia.

Spontaneous eruption of teeth delayed by supernumerary removal occurs in approximately 54% to 75% of cases. Mitchell and Bennett[25] examined 96 patients with 120 delayed teeth and found that 78% erupted naturally within a median of 16 months. Only 14% required a second surgical exposure, typically around 30 months after the initial removal. Early creation or availability of space shortened the eruption time. DiBiase[26] also reported that most delayed teeth erupt within 18 months post-removal, assuming they are not severely displaced and retain eruptive potential. However, if the roots of the incisors are fully or nearly formed, the likelihood of spontaneous eruption decreases, often necessitating orthodontic intervention.[27]

Factors affecting the time taken include the distance the unerupted tooth was displaced, the space available in the dental arch and the stage of root development of the permanent tooth.[16] The patient's age and the availability of space in the dental arch are the two critical factors in determining whether spontaneous eruption occurs following removal of supernumerary teeth.[28]

When both a supplemental and a normal tooth have erupted, it can be challenging to identify which is which. If both are healthy, removing the tooth that is more displaced from the arch is usually preferred to reduce crowding. Additionally, the presence of a supernumerary tooth may indicate the potential for late-forming supernumeraries, particularly in the lower premolar area. Studies report that up to 24% of patients with an anterior maxillary supernumerary later develop supplemental premolars.[14] Accurate diagnosis and a multidisciplinary approach are essential for effective treatment with minimal complications.[20]

V. Clinical Importance

Early identification and management of supernumerary teeth are crucial to prevent disruptions in normal dental development. These teeth can obstruct the eruption of permanent teeth, resulting in delayed eruption, retention of primary teeth, or impaction. Additionally, they may cause crowding, spacing abnormalities, rotation, and misalignment of adjacent teeth, as well as the formation of late-developing supernumerary teeth, all of which can affect both dental function and aesthetics. In some cases, supernumerary teeth are associated with cyst formation or resorption of neighbouring roots. Timely extraction helps to avoid these complications, facilitates proper alignment of permanent teeth, and may simplify subsequent orthodontic treatment. Therefore, routine clinical and radiographic monitoring in children is essential for early detection and effective management of supernumerary teeth.

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