

Mandibular Mesiodens: A Case Report of Rare Clinical Entity

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Abstract

Supernumerary teeth are those that are in excess of the normal series. Supernumerary teeth can appear as a single tooth, multiple teeth, unilaterally or bilaterally, and in the maxilla, mandible, or both. The presence of this condition, particularly in the mandibular anterior region, has been reported infrequently. The purpose of this paper is to report and review the occurrence of such a rare combination. A 9-year-old girl presented to the Department of Pediatric and Preventive Dentistry with the chief complaint of a malpositioned tooth in the lower anterior region of the jaw. A supplemental tooth resembling a permanent central incisor was discovered during a clinical examination. The presence of Mesiodens was confirmed by radiographic examination. The mesiodens was extracted, followed by a spontaneous closure of the diastema. This case report revealed that the early detection of mandibular supplemental incisors could facilitate early intervention, a better prognosis, and fewer complications.

Keywords: Malocclusion, Mandible, Supernumerary

Introduction

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"¹ They can happen anywhere in the mouth, be bilateral or unilateral, and may or may not be associated with a syndrome. The etiological factor related to the Supernumerary teeth has yet to be identified. Several theories have been proposed to explain the anomaly, including hyperactivity of the dental lamina, the dichotomy of tooth germs, and so on. It may also be associated with a variety of developmental syndromes such as Ehlers-Danlos syndrome Type III, Cleidocranial dysplasia, Orofacial Digital Syndrome, Trichorhinophalangeal syndrome, Gardner syndrome, and Incontinentia Pigmenti have also been reported in conditions such as cleft lip and palate.² Supernumerary teeth can be single or multiple in number. Cases of multiple (five or more) supernumerary teeth that are not associated with other systemic diseases or syndromes are uncommon, and when they do occur, the mandibular premolar region is the most commonly affected.² Supernumerary teeth are more common in permanent dentition than in deciduous dentition, with the

upper arch having a higher frequency than the lower arch and a strong preference for the premaxilla. The prevalence of hypodontia in the lower anterior region is only about 0.01%.³

Complications associated with supernumerary teeth include crowding, disturbed eruption, or retention of teeth, delayed or abnormal root formation in permanent teeth, and cyst. However, some cases of supernumerary teeth may be asymptomatic and detected incidentally during a routine radiographic examination or when normal tooth eruption is delayed or fails. To avoid such issues, early detection and action are critical.^{1,3} This article presents a rare case report of a supernumerary tooth in a 9-year-old girl located in the mandibular anterior region.

Case Report

A 9-year-old female patient reported to the outpatient department of Pedodontics and preventive dentistry of Dr. R Ahmed Dental College and Hospital with a chief complaint of a malposed tooth in the lower front region of the jaw. Her medical and family history was non-contributory. Also, there was no sign of any associated syndrome. A clinical examination of the lower anterior segment revealed five incisors, one of which was rotated. Five teeth looked like incisors: two deciduous lateral incisors and three permanent teeth that looked like central incisors. The central incisor was distolingually rotated. Minor crowding was also present in the lower segment. All of the central incisors displayed typical crown morphology with the presence of mamelons. [Fig.1] Routine radiographic examination was carried out to exclude the possibility of any other supernumerary teeth. So mandibular occlusal radiograph and Orthopantomogram (OPG) were subsequently obtained. [Fig.2] Except for the lower anterior segment, no other supernumerary teeth were found in either the upper or lower arches. The roots of all three central incisors were fully developed. The additional tooth in the lower anterior region did cause occlusion problems and there was displacement of the lower incisor right to the supplemental tooth due to which there was the presence of crowding in the subsequent teeth. Since the additional tooth had similar morphology as a central incisor and was located in the midline, mandibular supplemental mesiodens was diagnosed. The decision to extract the supplemental tooth was taken to compensate for the crowding present. Both the parent and patient were informed about the situation and the extraction of the tooth was carried out under local anesthesia, the patient was recalled after a week for a check-up related to the post-extraction wound healing which was satisfactory.[Fig.3] No treatment was planned for the closure for extraction space, as spontaneous closure would be achieved in conjunction with correction of crowding. As for other aesthetics concern, the patient had the anterior edge-to-edge bite, for which treatment was planned by maxillary sagittal expansion appliance with a quarter turn once 7 days.[Fig.4] The patient was followed up at regular intervals, and after the period of 5 months the overjet and overbite of 1mm, and the closure of the extraction space was achieved.[Fig.5]

Discussion

Teeth that are present in addition to the normal set of teeth in the dentition are referred to as supernumerary teeth. The incidence of a supernumerary tooth is twice more common in males than in females, On the other hand, Clayton and Blackman, and Wahlin reported a higher female prevalence.^{4, 5} The maxilla accounts for 90-98 percent of all supernumerary teeth, with a strong preference for the anterior region. They occur about 0.01 percent of the time in the mandibular anterior region. According to various studies, the prevalence of mesiodens varies between 0.09 and 2.05 %. In all reported cases of mesiodens, the permanent dentition was affected more frequently than the primary dentition. Mesiodens

have been reported to be present in 0.15 to 3.8 % of permanent dentition. In a survey of 2500 children in Davangere, Nagaveni et al. observed 26 mesiodentes (92.5%) in the maxilla, with only one rare type of mandibular mesiodens.⁶ Tanaka et al. described a 19-year-old Japanese girl who had bilateral completely erupted supernumerary teeth in the mandibular anterior region.⁷ Yokose et al. reported two cases of supernumerary teeth in the lower anterior region.⁸ Naganahalli et al. reported a 34-year-old male patient with the supplemental tooth in the lower anterior region. The tooth had grade 2 mobility and had to be extracted.⁹ Marya et al. described a case of congenital absence of mandibular permanent central incisors and the presence of a midline supernumerary tooth. When compared to the lateral incisors, the tooth displayed an unusual morphological pattern.¹⁰ Rossi et al. discovered a supernumerary tooth in the lower incisor region of an adult's skull. At the contact points, the supernumerary tooth was fused with the normal counterpart.¹¹ Palanisamy et al reported a case of mandibular mesiodens in a male patient aged 8years.¹² Cassia et al. discovered five incisors in the anterior mandible region in four members of the Lebanese consanguineous family.¹³ Two cases of mandibular supplemental teeth were reported in two children by Shui yin Cho.¹⁴ Mitchell classified ST as conical, tuberculate, supplemental, and odontoma in terms of form, and mesiodens, paramolar, and distomolar in terms of location.¹⁵ Mesiodens can be classified into two types, according to Primosh: supplemental and rudimentary. Supplemental mesiodens is also known as incisiform mesiodens because they resemble normal teeth.¹⁶ According to morphology, rudimentary mesiodens can be divided into three types: conical, tuberculate, and molariform. Evidence for the etiology of mesiodens suggests that genetic susceptibility, in combination with environmental factors may increase the activity of the dental lamina, resulting in the formation of the extra tooth/teeth. As etiologies for mesiodens, phylogenetic reversion theory (Atavism), splitting of developing tooth bud to form two teeth, and hyperactivity of dental lamina have all been proposed.¹⁷ The most widely accepted explanation is dental lamina hyperactivity, which argues that the rest of the dental lamina develops into an additional tooth bud, which presents as a supernumerary tooth. The role of genetics has also been considered in light of various case reports of mesiodens in siblings, twins, and families. There has also been talking of autosomal dominant inheritance with incomplete penetration. None of these theories, however, provide a complete explanation for the phenomenon.¹⁸ Different complications may arise due to the presence of ST:- Crowding, delayed eruption, spacing, permanent incisor impaction, abnormal root formation, changes in the eruption path of permanent incisors, a median diastema, cystic lesions, intraoral infection, rotation, adjacent teeth, root resorption, or even nasal cavity incisor eruption, and retained deciduous teeth are all possibilities. A Study by Kim et al, where they investigated the effects of mesodens on adjacent permanent teeth and found that mesodens caused a significant eruption related complications in 33.7 % patients.¹⁹

Before making a definitive diagnosis and treatment plan, it's critical to rule out the presence of ST clinically and radiographically. If surgical intervention is required, identifying and localizing ST is critical. Panoramic radiographs have been shown to be ineffective in detecting ST. It's also been said that a combination of radiographs is required for ST localization. Toureno and colleagues recently proposed a guideline for locating and identifying ST in two and three dimensions, which could help to reduce treatment errors and improve communication.¹⁸

Several authors have expressed differing views on the treatment of ST, particularly the timing of its removal. The majority of the authors advocate for early ST intervention. Treatment options for ST are determined by the patient's orientation and position, age, and any associated complications. Andersson and Hogstrom proposed two different viewpoints: the ST should be removed as soon as it is identified or

left until the adjacent teeth have completed root formation.¹⁹ The best time for surgery, on the other hand, is a point of contention. If ST is causing damage to adjacent teeth or causing any other complications, it is critical to have it removed at a young age. Based on a retrospective analysis, Omer and colleagues recently reported that the ideal age for ST removal is 6 to 7 years.¹ If enough/ space is created at the time of the ST removal and postoperative space is maintained, the majority of delayed permanent incisors erupt spontaneously.²⁰

In the present case, it was decided to extract the supplemental tooth as it was rotated leading to proclined mandibular incisors and edge-to-edge bite.

Conclusion: - The above article discusses the diagnosis and treatment of a seemingly harmless "mesiodens." Mandibular mesiodens is a rare occurrence, and a supplemental type is even rarer. Knowledge regarding early detection of mandibular supplemental incisors could facilitate early intervention, a better prognosis, and fewer complications.

Declaration of patient consent

Written informed consent was obtained from the parent, which was the mother of the patient, the mother has given her consent for images and other clinical information to be reported in the journal. The patient's mother understands that name and initials will not be published and due efforts will be made to conceal the identity, but anonymity cannot be guaranteed.

Figures and Legends



Figure-1:Pre-operative Clinical photographs showing Mandibular mesiodens with edge-to-edge occlusion

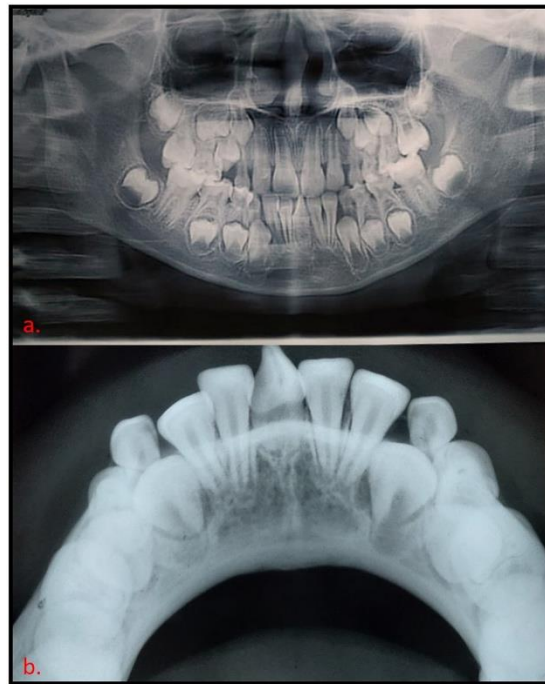


Figure-2:Pre-operative Radiographs

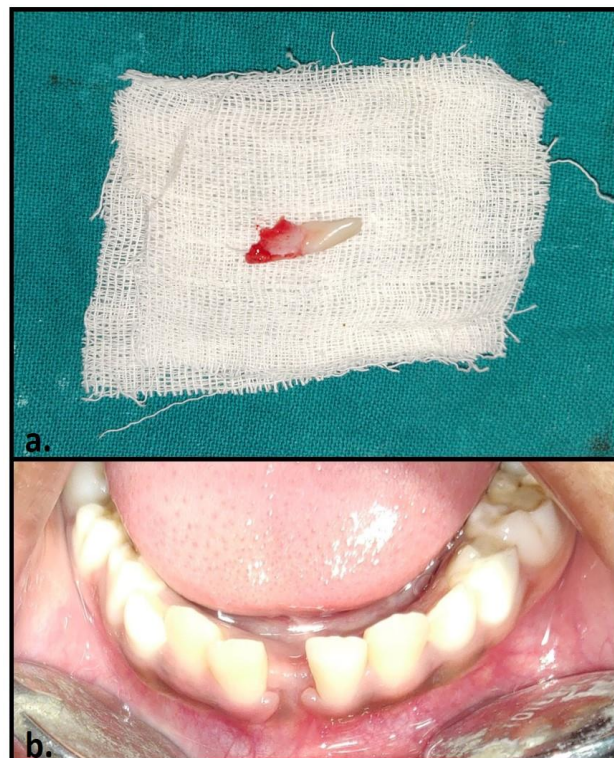


Figure-3: Post-operative Clinical photographs-a) Extracted Mesiodens, b) 7th day post-operative healed socket

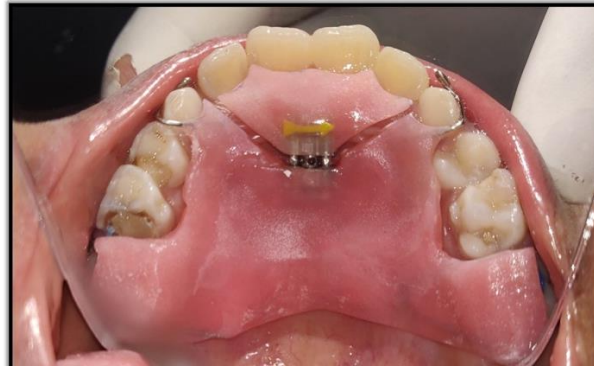


Figure-4: Maxillary sagittal expansion with slow maxillary expansion appliance



Figure-5: 5 months follow-up photograph with closed midline space

Conflict of Interest- None

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