

MESIODENS IN INDIAN CHILDREN: A REPORT OF TWO CASES AND REVIEW

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ABSTRACT: Paediatric dentistry in the current scenario is not only about teeth and gums that are visible in child's mouth, but also those structures that are hidden, difficult to identify, and often remain undiagnosed. Dentists can come across various anomalies pertaining to the crown structure during clinical practice. Supernumerary tooth is one such anomaly that is additional to the normal series and can be found in almost any region of the dental arch. They may be single, multiple, unilateral or bilateral erupted or un-erupted and in one or both jaws. Mesiodens is the most common type of supernumerary tooth found in the premaxilla between two central incisors. Here is a review of literature relating to mesiodens presented along with two case reports to illustrate some possible presentations, diagnostic features, and treatment options.

KEYWORDS: Supernumerary Teeth, Mesiodens, Supplemental Teeth

INTRODUCTION

Hyperdontia is a mammalian developmental anomaly characterized by presence of extra teeth in addition to the teeth of normal eruption series. It is also called as Supernumerary teeth, a type of developmental disturbance occurring during the period of Odontogenesis due to which teeth are formed in excess of the normal number. Supernumerary teeth are considered to be one of the most significant dental anomalies affecting the primary and early mixed dentition and are considered a multifactorial inheritance disorder originating from hyperactivity of dental lamina. Based on location in the dental arch, a supernumerary tooth can be categorized into three types: Mesiodens, Distomolar or Paramolar and have a variety of forms, i.e., conical, tuberculate, supplemental or odontoma type.¹ Primosch classified supernumeraries into two types according to their shape: Supplemental and Rudimentary. Supplemental refers to supernumerary teeth of normal shape and size and may also be termed Incisiform occurring in primary dentition. Rudimentary defines teeth of abnormal shape and smaller size, including conical, tuberculate and molariform occurring in permanent teeth. The term mesiodens was coined by Bolk (1917) to denote an accessory or

supernumerary tooth situated in between the maxillary central incisors.^{2,3}

Prevalence

They occur more commonly in the permanent dentition and the Male: Female ratio is 2:1. The most frequent supernumerary tooth is the mesiodens which is present in the premaxilla between two central incisors. The incidence of occurrence of mesiodens is 1.9% for deciduous teeth and between 0.15-3.8% for permanent teeth. Supernumerary teeth are more frequently seen in the maxilla, with a strong predilection for the maxillary anterior region. Mesiodens are the most common type, followed by maxillary lateral incisors, mandibular premolars, mandibular supernumerary molars, and maxillary premolars. Khandelwala et al., reported a prevalence of 3.18% mesiodens among 3869 school children which occurred more frequently in boys than in girls, with the ratio being approximately 2:1.⁴ A prevalence of 1.2% was found in South India and the most common area for supernumeraries was noted to be in maxillary anterior region (Mahaboob MN, et al. 2012).⁵

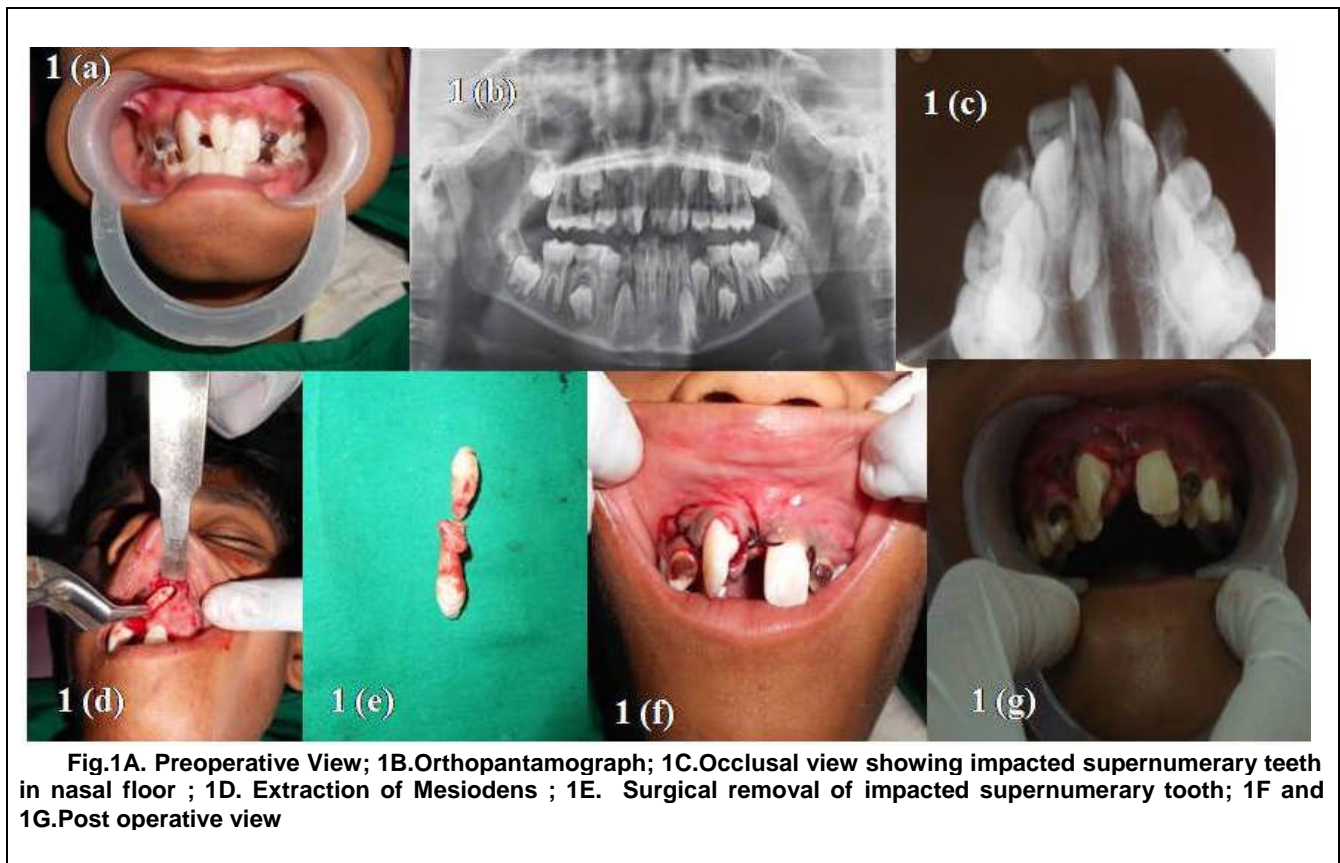


Fig.1A. Preoperative View; 1B.Orthopantomograph; 1C.Occlusal view showing impacted supernumerary teeth in nasal floor ; 1D. Extraction of Mesiodens ; 1E. Surgical removal of impacted supernumerary tooth; 1F and 1G.Post operative view

Etiology

The etiology of supernumerary teeth remains unclear. However, several theories have been suggested for their occurrence: the phylogenetic process of atavism (evolutionary throwback), anomalous splitting of the tooth bud (dichotomy), localized independent hyperactivity of the dental lamina, heredity, and some environmental factors. In any case, hyperactivity of the dental lamina is the most widely accepted cause of the development of supernumerary teeth.⁶

Complications and Associated Syndromes

The presence of mesiodens often results in complications like, retention of primary teeth and delayed eruption of permanent teeth, closure of the eruption path, rotations, retention root resorption, pulp necrosis, and diastema, as well as nasal eruption and formation of dentigerous and primordial cysts. Less common complications involving the permanent incisors include dilacerations of the developing roots and loss of tooth vitality. Other complications are formation of the primordial or follicular cysts with associated destruction of bone and oronasal fistulas. This type of problem is known to occur with some developmental disorders and syndromes such as Cleft lip and palate, Cleidocranial dysplasia, Gardner syndrome, Chondroectodermal dysplasia, Sturge-Weber

syndrome, Down's syndrome, Crouzon disease, oro-facial-digital syndrome, Hallerman-Streiff syndrome, and Fabry-Anderson syndrome. Taner et al., reported a case of four mesiodens in an 11-year-old boy with mental retardation.⁴ In the premaxillary region, where there is a failure of eruption of the permanent incisors, the effects of supernumerary teeth have been reported variably at 28% and 38%.⁷

Diagnosis and Management

Mesiodens is usually found to be impacted, with a conical crown and a single root, and often in an inverted position. It is diagnosed through clinical and radiographic examinations using maxillary anterior periapical and panoramic radiography. In addition, maxillary occlusal radiography is highly recommended for all children with dental disturbances in the premaxilla.

Management of supernumerary teeth depends on the type and position of the tooth. Immediate removal of mesiodens is usually indicated in the following situations; inhibition or delay of eruption, displacement of the adjacent tooth, interference with orthodontic appliances, presence of pathologic condition, or spontaneous eruption of the supernumerary tooth. Munns stated that the earlier the mesiodens is removed, the better the prognosis. There are two methods for extraction of mesiodens; early



Fig.1A. Preoperative View; 1B.Occlusal, 1C.periapical view showing impacted mesiodens and supernumerary teeth i.r.r. 11,21 ; 1D and 1E. Extraction of Mesiodens and supernumerary teeth and supernumerary teeth ;. 1F. and 1G.Post operative view

extraction before root formation of the permanent incisors and late extraction after root formation of the permanent incisors. Some authors recommend extraction of mesiodens in the early mixed dentition in order to facilitate spontaneous eruption and alignment of the incisors. There is controversy in the literature regarding the time of removal of any unerupted mesiodens. The immediate removal versus delay in surgical intervention following root development of the central incisor and the lateral incisor about the age of eight to ten years has been mentioned. In order to promote eruption and proper alignment of adjacent teeth, it is recommended to extract mesiodens in the early mixed dentition, which may reduce the need for orthodontic treatment. It might take six months to three years for an unerupted tooth to erupt after removal of the mesiodens. Henry and Post suggested delayed extraction of the mesiodens about the age of 10 when the apex of the central incisor nearly forms. If treatment is postponed after this age, more complex surgical and orthodontic treatment may be necessary. Garvey recommended monitoring of mesiodens in the following situations; satisfactory eruption of the succeeding teeth, absence of any associated pathologic lesions and risk of damage to the vitality of the related teeth. It has also been recommended to keep unerupted symptomless mesiodens, which do not affect the dentition. These teeth, which are usually found by chance, are better left in place under observation.^{7,8}

Case reports

The following two cases were reported to the Department of Paedodontics and Preventive Dentistry, St. Joseph Dental College, Eluru. Assessment and treatment represent some of the possible presentations of supernumerary teeth.

Case 1

A 13-year-old male presented with a chief complaint of irregularly placed upper front teeth. Examination revealed extra tooth irt rotated 11, 21 suggestive of mesiodens (**Fig. 1a**). Medical and family histories were non-contributory. Orthopantomograph examination showed mesiodens irt 11, 21 and impacted supernumerary tooth in the nasal floor that was palatally positioned (**Fig.1b**). Extraction of mesiodens and surgical removal of impacted supernumerary was done under Local Anesthesia (**Fig. 1c, 1d**).

Case 2

A 9-year-old male patient complained of irregularly placed upper front teeth. Medical and family histories were unremarkable. Examination revealed a Class I malocclusion with moderate to severe upper and lower

incisor crowding and mesiodens between 11, 21 along with midline diastema (**Fig. 2a**). Radiographic examination revealed the presence of mesiodens in relation to 11, 21 along with another impacted supernumerary tooth placed buccally, apical to the erupting mesiodens in the maxillary alveolar process (**Fig. 2b**). Treatment involved the extraction of mesiodens and impacted supernumerary teeth (**Fig. 2c**).

Discussion

Mesiodens can be a cause of great concern as they can create various pathological complications. Clinical examination, including labial and palatal palpation and radiographic assessment are essential to confirm the presence of impacted supernumerary teeth and their spatial relationship to adjacent teeth. There does not seem to be a clear consensus amongst various authors as to the optimum time for surgical removal. Usually immediate removal after diagnosing the problem is recommended, as it is believed that early intervention contributes to a favorable prognosis with minimal complications.

The cases described above represent a small sample of the possible presentations for cases involving mesiodens and impacted supernumerary teeth. It is essential to enumerate and identify the teeth present clinically and radiographically before a definitive diagnosis and treatment plan is formulated. Not all situations lend themselves to ideal treatment results. Timing of interceptive treatment should be as soon as possible following clinical detection of an abnormal eruption pattern. It has been suggested that a tooth delayed in its eruption by more than six months with respect to its antimere should be radiographically investigated. A panoramic radiograph is a most useful screening radiograph in such situations as it shows all areas of the maxilla and mandible.

Mitchell and Bennett (1969) have suggested that different types of supernumeraries have been associated with different effects on the adjacent dentition. Foster and Taylor (1979) examined this relationship and found that tuberculate types more commonly produced delayed eruption, whereas conical types more commonly produced displacement of the adjacent dentition.

Controversy exists regarding the optimal treatment of delayed eruption due to supernumerary involvement. The options include removal of the supernumerary only, removal of the supernumerary and orthodontic treatment to re-establish sufficient space for the delayed tooth, with or without surgical exposure of the unerupted tooth at the time of supernumerary tooth removal.^{7,9} According to Canoglu, et al, mesiodens can be best removed when the permanent central incisors begin to erupt, but this may not be always possible. On the contrary, Primosch, discourages early extraction of mesiodens due to the risk of iatrogenic damage to the developing adjacent permanent teeth.¹⁰

According to Soares, extraction during the early mixed dentition stage allows normal eruptive forces to promote spontaneous eruption of the permanent central incisors following extraction. Hogstrom and Andersson suggested that early interventions are preferable to take advantage of the spontaneous eruption potential of the permanent incisors and prevent anterior space loss and midline deviation.³

CONCLUSION

Detection of these accessory teeth may be fairly obvious, either because of patient's complaint or on clinical examination. Alternatively, they may be detected only after radiographic examination secondary to the host of problems encountered. The mesiodens is therefore a fairly common, though usually unperturbing but interesting dental anomaly that a dental practitioner chances upon. It can be associated with the presence of other unerupted supernumerary teeth which is evident only on radiographic evaluation. Delayed, ectopic or asymmetric eruption of the central incisors should alert the clinician to the possibility of a mesiodens. Management usually involves extraction of the mesiodens. Awareness of its incidence and behavior is therefore significant.

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