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CASE STUDY

ESTHETICAL MANAGEMENT OF MESIODENS IN YOUNG GIRL. A CLINICAL CASE MANAGEMENT

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ABSTRACT

Facial harmony and esthetics of an individual is affected when atypical and supernumerary teeth are present in the oral cavity. Rehabilitation of function and esthetics is a challenging task for a pediatric dentist especially when speech and smile is affected in young individuals. Here we present a case with mesiodens in a 10 year old female child disturbing the occlusion. Mesiodens was extracted and esthetic reconstruction of the patient was done.

Key words:

Supernumerary teeth,
Mesiodens,
Esthetic correction.

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INTRODUCTION

Supernumerary tooth is one of the developmental problems in children. The term mesiodens was coined by Bolk (1917) to denote an accessory or supernumerary tooth situated in between the maxillary central incisors (Mittal *et al.*, 2010). Mesiodens is a type of supernumerary tooth usually present in the midline between the two central incisors. Mesiodens or mesiodentes (multiple mesiodens) is the most common type of accessory supernumerary tooth present in the midline of maxilla between the two incisors (Meighani *et al.*, 2010). Oral problems such as malocclusion, food impaction, poor esthetics, and cyst formation are commonly associated with mesiodens. The prevalence of mesiodens varies between 0.09% and 2.05% in different studies. Different forms by which mesiodens erupt in the oral cavity are as single, multiple, unilateral or bilateral. The presence of multiple supernumerary teeth is called 'mesiodentes' (Gallas *et al.*, 2000). In some syndromes, mesiodens may present as a part of the symptoms however this condition might be seen in normal individuals. It seems that positive family history is one of the predisposing factors. Most of the problems associated with mesiodens are related to alter growth and development in the area.

Common complications which arise as a result of over retention of primary teeth are impaction or delayed eruption of permanent teeth, dilacerations or abnormal root development of the maxillary incisors and/or abnormal crowding or spacing of the anterior teeth. Root resorption of adjacent teeth, dentigerous cyst formation and nasal eruption of supernumerary teeth are some of the rare complication due to mesiodens (Seddon *et al.*, 1997). Here we present a case with mesiodens in a 10 year old female child disturbing the occlusion. Esthetic reconstruction of the patient was planned.

Case Report

An 10-year-old girl reported to the department of pedodontics and preventive dentistry with chief complaint of extra tooth present in the upper front tooth region. Patients concern was only esthetic. On general examination the patient was of aesthetic build, the posture was straight and gait was normal and body type was mesomorphic. On extra oral examination the patient was brachycephalic with euryprosopic facial index, profile was convex and the lips were incompetent. On intra oral examination the maxillary and mandibular arch is of U shaped. The molar and canine relation was class II in both left and right side with upper anterior proclination of overbite 5mm and overjet of 9mm. The dental midline was not coincident with facial midline.

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Figure 1. Pre-Treatment intraoral photograph of maxilla showing mesiodense with crowded anterior



Figure 2. Pre operative intraoral photograph in Occlusion showing mesiodense and huge mid line diastema and crowding



Figure 3. Intraoral photograph showing class II molar and canine relationship on right side



Figure 4. Intraoral photo showing class II molar and canine relationship on left side

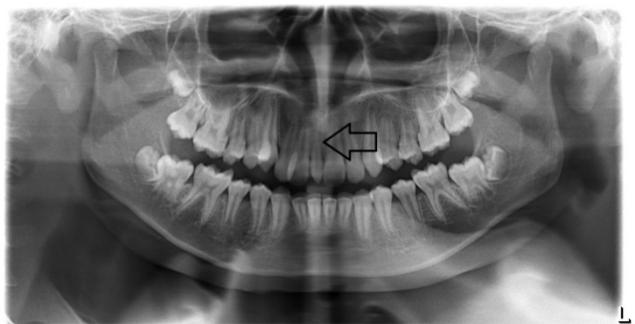


Figure 5. OPG showing mesiodens



Figure 6. Picture showing Transpalatal arch appliance for space management



Figure 7. Picture showing leveling and aligning of upper and lower arch 0.016" inch niti wire

The treatment goals were to extraction of mesiodens followed by correction of crowding in upper arch and to maintain class II molar relationship, class I canine relation and to achieve normal overjet and normal overbite. The various space analysis used were Bolton's ratio, Carey's arch perimeter analysis, Ashley Howe's analysis and cephalometric analysis. Based on the various analysis treatment plan considered were extraction of mesiodens followed by camouflage line of treatment with extraction of upper first premolar, leveling and aligning of upper and lower arch with 0.016" inch niti wire, followed by 16x22 niti wires and 17x25 niti wire will be followed by proximal stripping in lower arch, space closure with S S wire, finishing and detailing with 0.018 inch niti wire. In our case extraction of mesiodens was done under local anesthesia and space management is followed by mechanotherapy. Mechanotherapy is done by leveling and aligning of upper and lower arch with 0.016 niti wire. Space closure with S S wire, finishing and detailing is continued. Esthetic correction by

camouflage line of treatment with extraction of upper left and right first premolar is planned followed by proximal stripping in lower arch, leveling and finishing.

DISCUSSION

Supernumerary teeth are defined as those teeth in excess when compared to the normal series. Their reported prevalence is 1.9% in the primary dentition and 0.5–3.8% in the permanent dentition. Males are affected approximately twice as often as females. Supernumerary teeth can occur as singles, multiples, unilaterally or bilaterally and Maxilla, the mandible or both (Gallas *et al.*, 2000). The etiology of supernumerary teeth is not completely understood. Both genetic and environmental factors have been considered. Occurrence of mesiodens has been suggested by several theories. Atavism was originally suggested that supernumerary teeth were the result of phylogenetic reversion to extinct primates with three pairs of incisors. This theory has been largely discounted (Primosch *et al* 1981). Dichotomy theory stated that the tooth bud splits into two equal or different-sized parts, resulting in the formation of two teeth of equal size, or one normal and one dysmorphic tooth, respectively. Dental lamina hyperactivity theory this involves localized, independent, conditioned hyperactivity of the dental lamina. According to this theory, a supplemental form would develop from the lingual extension of an accessory tooth bud, whereas a rudimentary form would develop from the proliferation of epithelial remnants of the dental lamina (Amaral *et al* 2013). Genetic factors which are considered important in the occurrence of supernumerary teeth. Few cases have been reported of recurrence within the same family. A sex-linked inheritance suggested by studies has the observation that males are affected approximately twice as often as females. Supernumerary teeth may be associated with some systemic conditions such as Fabry's syndrome, cherubism, Apert syndrome, cleidocranial dysplasia, crouzon disease, cleft lip, cleft palate, Gardner syndrome and hereditary fibromatosis, associated with hearing loss and supernumerary teeth (Meighani *et al* 2010, Amaral *et al* 2013, Ersin *et al* 2004).

Classification Supernumeraries are classified according to morphology as conical, tuberculate, supplemental, odontome and according to location as Mesiodens, paramolar, distomolar, parapremolar (Abishek *et al* 2011). Diagnosis is an important aspect in recognizing such conditions. It is discussed in the literature that the sooner the diagnosis the better the prognosis. Diagnostic aids are IOPA, Occlusal film, OPG, Vista Scan, and newer advances like CBCT (Katheria *et al* 2010). Mesiodens can be suspected in case of any asymmetry in arch (Whittington *et al* 1996). It is also probable that over retention of the maxillary primary incisors, especially if asymmetric or in case of significant ectopic eruption of one or both permanent maxillary incisors is due to the presence of mesiodens (Rajab *et al* 2002). The main reasons for which it is less diagnosed in primary dentition are similar shape of tooth, difficulty in its detection by the caregiver. It is common that anterior primary mesiodens erupts and exfoliates normally before detection and could be mistaken with germination or fusion anomalies (Hummerfelt *et al* 1985). However, in permanent dentition detection of supernumeraries needs thorough clinical and radiographic examination. Panoramic, maxillary occlusal and periapical radiographs are recommended to assist the process of diagnosis of mesiodens (Wood *et al* 1987). Recent advances like CBCT can be used

for precise identification of mesiodens. Management depends on type and location of the tooth. There are two methods for extraction of mesiodens; early extraction before root formation of the permanent incisors and late extraction after root formation of the permanent incisors (Rajab *et al* 2002). 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 (Munns D *et al.*, 1981). In our case it was planned for early extraction and the same was done. Various other treatment options for management of mesiodens are the conical-shaped mesiodens converted to a central incisor, midline adjusted to an accepted level, lip trap if present with respect to the lateral incisor can be corrected and all the maxillary anteriors could be brought into arch form. Reshaping of mesiodens with a composite veneer or full coverage all ceramic crowns can also be considered. In our case extraction of mesiodens was done under local anesthesia and orthodontic management involved space management and esthetic correction by closing the diastema with mechanotherapy. It is done by leveling and aligning of upper and lower, followed by proximal stripping in lower arch, space closure with S S wire, finishing and detailing is continued. Camouflage line of treatment for esthetics with extraction of upper left and right first premolar is planned for retention of class II molar relation, to achieve class I canine relation and normal overjet and over bite.

Conclusion

One of the most commonly observed supernumerary teeth is mesiodens, a multidisciplinary team approach is needed for the management of mesiodens. The treatment of choice varies from extraction of supernumerary tooth followed by orthodontic management. Esthetic reshaping of mesiodens followed by composite veneer or all ceramic crowns can also be considered, which mainly depends on the patients perspectives towards treatment plan.

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