

CASE REPORT

Management of Mesiodens and ectopically Erupted Central Incisor

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ABSTRACT

Pediatric dentists come across children and developing malocclusion at the earliest, early recognition and interception could avoid long-term laborious orthodontic treatment. Mesiodens are the most common supernumerary teeth, in the central region of the premaxilla, between the two central incisors, which may be the cause for a variety of irregularities in the developing occlusion, in particular, can lead to the impaction or ectopic eruption of adjacent permanent teeth, in the most esthetically important zone. Presented here is a case of management of ectopically erupted right permanent central incisor caused due to supernumerary tooth.

Keywords: Ectopic eruption, Mesiodens, Orthodontic treatment, Supplemental.

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INTRODUCTION

The guidance of eruption and development of occlusion is an integral component of comprehensive oral health care for all pediatric dental patients. It should contribute to the development of a permanent dentition, i.e., in a stable functional and esthetically acceptable occlusion. Early diagnosis and successful treatment of developing malocclusions can have both short-term and long-term benefits with the goal of achieving occlusal harmony, function, and dental facial esthetics.¹ As pediatric dentists come across children and developing malocclusion at the earliest, early recognition and interception could avoid long-term laborious orthodontic treatment.² Supernumerary teeth are defined as any teeth in excess of the normal number. Mesiodens are supernumerary teeth, in the central region of the premaxilla, between the two central incisors. Mesiodens are the most common supernumerary teeth

with a prevalence of between 0.09 and 2.05%.³ Nagaveni et al⁴ reported the prevalence of mesiodens to be 1% among Indian children. The occurrence of mesiodens has been reported to be more common in males than in females.⁵ Primosch⁶ classified supernumerary teeth into two types according to their shape: Supplemental and rudimentary. Supplemental refers to the supernumerary teeth which are of normal shape and size, may also be termed incisiform whereas rudimentary describes a tooth of abnormal shape and smaller size, which includes conical, tuberculate, and molariform.^{6,7} The etiology of supernumerary teeth is not accurately known, however, the tendencies are familial. Several hypotheses have been given, such as hyperactivity of dental lamina, dichotomy, spontaneous gene mutation, or environmental factors.^{8,9} Unerupted mesiodens are often diagnosed coincidentally during a radiological examination. However, it may be diagnosed in relation to a clinically identified situations, such as lack or delay of eruption of permanent teeth, the deviation of the eruption path, rotations, retention, root resorption and pulp necrosis, and diastema; as well as formation of nasal eruption and dentigerous, and primordial cysts. Dilaceration of the developing roots and loss of tooth vitality are less common complications, seen with permanent teeth.^{10,11} Therefore, early diagnosis of mesiodens and interception has particular importance in terms of preventing such complications. This article, presents a case of erupted supernumerary teeth impeding the normal positioning and clinical management of ectopically erupted maxillary central incisor leading to an unacceptable esthetics.

CASE REPORT

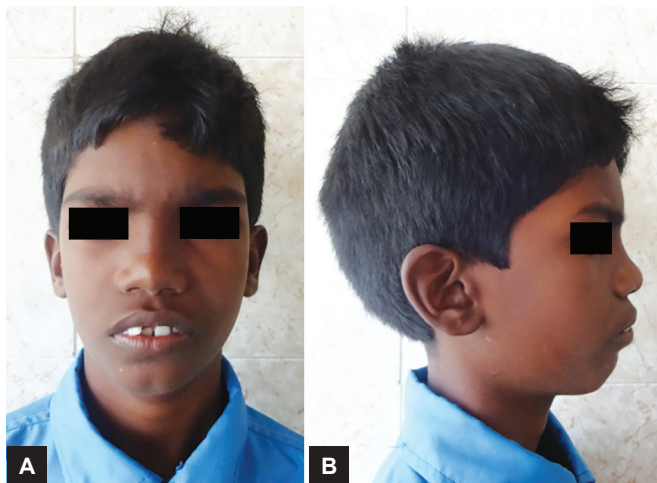
Clinical Presentation

The patient, a 12-year-old Asian male, reported to the Department of Pedodontics and Preventive Dentistry, with a chief complaint of irregularly placed upper front tooth with difficulty to purse his lips. The child's major concern was being ridiculed at school for his appearance. The patient's medical and dental history was noncontributory. Family history of presence of additional teeth was nonsignificant, however, history revealed consanguineous marriage of parents. Extraorally, he presented with convex facial profile, incompetent lips, acute nasolabial angle, and hyperactive mentalis (Fig. 1). An intraoral examination revealed transitional dentition with the

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Figs 1A and B: Preoperative extraoral view

presence of all permanent central and lateral incisors, primary canines, primary first and second molars, and all permanent first molars. A supplemental tooth was found palatal to the ectopically erupted upper right central incisor. The supplemental tooth was incisoriform in shape but smaller in overall dimension (Fig. 2). Radiographic examination of upper front teeth revealed accessory tooth with root length comparable to the adjacent incisors, and also ruled out presence of other supernumeraries (Fig. 3). It was diagnosed that the flaring of upper right central incisor was due to the presence of the mesiodens. Apart from this finding, the patient also required oral prophylaxis and restoration. Mandibular left primary first molar was carious and nonrestorable.

Treatment Objective

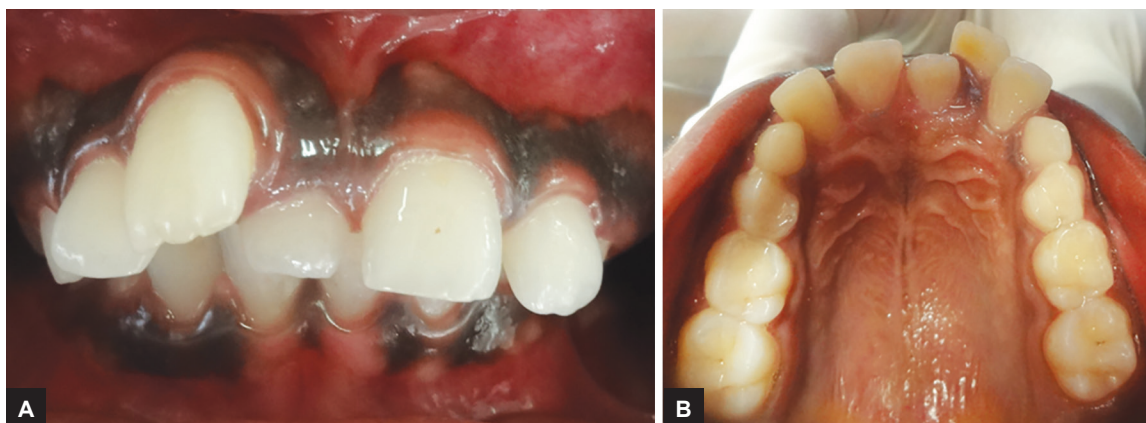
The main aim was to address the complaint of unesthetic smile and appearance. It was decided to extract the mesiodens, followed by orthodontic closure of diastema and correction of labially positioned upper right central incisor, and to fulfill the other dental needs of the patient.

Clinical Management

The patient underwent thorough oral prophylaxis and restorations. Extraction of lower left primary molar followed by space maintainer was done. The mesiodens was extracted under local anesthesia, with consent from father (Fig. 4). The resultant diastema was 7 to 8 mm. The patient was then taken up for simple orthodontic appliance therapy. In the first phase, a periodically activated labial bow was delivered for a duration of 1 month, that reduced the flaring of 21 and the diastema was reduced to 3 to 4 mm (Fig. 5). In the second phase, upper central incisors were banded and molar tubes were soldered to these. Edgewise brackets were bonded to the adjacent permanent lateral incisors and the unit was activated by placement of elastics (Fig. 6). Oral hygiene instructions were given to the patient. The patient was followed up weekly for first 1 month and then regularly for next 4 months. This was then followed by retention with removable appliance. Patient's behavior was, according to Frankel's scale, definitely positive throughout the treatment period, at the end of which remarkable improvement in esthetics was achieved (Figs 7 and 8).

DISCUSSION

Supernumerary tooth occurs due to disorder of odontogenesis resulting from the continuous budding of the enamel organ or from excessive proliferation of cells. Mesiodens has been found to be responsible for a variety of irregularities in the developing occlusion, including the impaction or ectopic eruption of adjacent permanent teeth.^{12,13} Early diagnosis and treatment of patients with supernumerary teeth are important to prevent or minimize complications. Treatment will depend on the type and position of the supernumerary tooth and the effect on the adjacent teeth.⁷ Extraction of mesiodens at a time appropriate for promoting self-eruption in the early mixed dentition may result in better alignment of



Figs 2A and B: Preoperative intraoral view

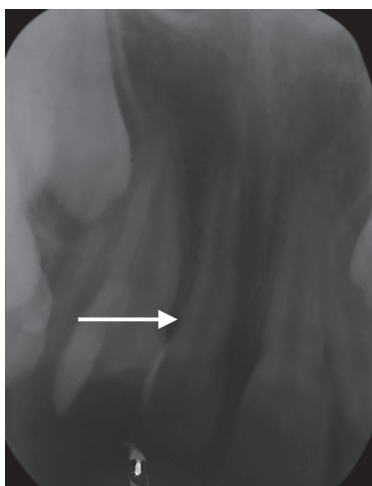


Fig. 3: Intraoral periapical radiograph showing mesiodens



Fig. 4: Extracted mesiodens



Fig. 5: Activated labial bow



Fig. 6: Molar tubes soldered to banded central incisors and edgewise brackets on lateral incisors



Figs 7A and B: Postoperative intraoral view

the teeth and may minimize the need for orthodontic treatment. Delayed treatment involves extraction of the mesiodens when the unerupted central incisor's apex is almost mature, usually around 10 years of age.¹⁴ Surgical removal should be deferred until incisor root formation is almost complete.¹⁵ The later the extraction of mesiodens,

the greater the chance that permanent incisor teeth either will not spontaneously erupt or will be malaligned when it does erupt. If the permanent central incisors have already erupted in an ectopic position, surgical removal of mesiodens and subsequent orthodontic treatment are more frequently required. A significant delay in treatment



Figs 8A and B: Postoperative extraoral view

may create the need for a more complex management.^{14,16} The closure of midline diastema, following extraction of mesiodens, by means of removable and fixed appliance therapy has been earlier reported by many authors.¹⁷⁻²⁰ Kumar et al¹⁷ reported a series of three cases of management of midline diastema caused by mesiodens and hypodontia, using simple fixed appliance therapy. Elastics were used to bring about tooth movement and derotation, while anchorage was obtained by segmental orthodontic appliance. Various elastic ligatures can be tied from the arch wire to the bonded bracket, with or without a chain on the unerupted or malposed incisor; this allows the tooth to be aligned by the application of light forces, which avoids sequelae, such as root resorption, ankylosis or devitalization.²¹ In this case, initially flaring of permanent incisor was reduced by removable appliance therapy that also helped introduce orthodontic forces to the child, which was then followed by simple fixed therapy. The need for treatment here was mainly esthetic and psychological reasons, rather than functional ones. Only after the canines erupt down along the lateral incisor roots and finally erupt into full occlusion does the maxillary midline diastema close.²² Hence, it was decided that complete correction of spaces between teeth should not be attempted as permanent canines were still unerupted. However, remarkable improvement in child's appearance and self-confidence was observed. Orthodontic therapy may be needed later for patients whose diastemas do not completely close spontaneously with growth and modulation.¹⁵ Important to mention is the increased risk of relapse, that most likely results from the significant initial displacement and rotation of the tooth, which necessitates long-term retention. A bonded lingual retainer is often recommended if the occlusion (overbite) will allow its placement. A standard Hawley or vacuum-formed retainer is used when a bonded maxillary

lingual retainer can not be used. Regardless of the type of retainer, a longer than average retention period should be used.¹⁵ Gomes et al²³ verified that the most common treatment of choice was extraction of mesiodens followed by orthodontic therapy, i.e., in 62% of cases. Erupted supernumeraries should always be extracted, unless the adjacent teeth are missing, in which case these should be retained. However, the removal of supernumerary is not the treatment of choice in all clinical scenarios. Impacted supernumeraries that are symptomless and not affecting the dentition in any manner and those found by chance are sometimes best left as they are and kept under regular observation.²⁴ In this case, a combination of surgical and orthodontic techniques was employed to improve the child's esthetic appearance.

CONCLUSION

Mesiodens is a rather common anomaly presenting with varied complications, especially displacement of adjacent teeth. Early developing malocclusions should be intercepted with the goal of restoring normal development of occlusion, function, and esthetics.

REFERENCES

1. American Academy of Pediatric Dentistry. Reference manual: Guideline management of the developing dentition and occlusion in pediatric dentistry. *Pediatr Dent* 2009/2010;31(6): 196-208.
2. Graber T.M. Orthodontics principles and practice W.B. Saunders company. Philadelphia 3rd edition 1992 p. 677.
3. Alberti G, Mondani PM, Parodi V. Eruption of supernumerary permanent teeth in a sample of urban primary school population in Genoa, Italy. *Eur J Paediatr Dent* 2006;7:89-92.
4. Nagaveni NB, Sreedevi B, Praveen BS, Praveen RB, Vidyulatha BG, Umashankara KV. Survey of mesiodens and its characteristics in 2500 children of Davangere city, India. *Eur J Paediatr Dent*. 2010;11(4):185-188.
5. Khandelwal V, Nayak AU, Naveen RB, Ninawe N, Nayak PA, Sai Prasad SV. Prevalence of mesiodens among six- to seventeen-year-old school going children of Indore. *J Indian Soc Pedod Prev Dent* 2011;29:288-293.
6. Primosch R. Anterior supernumerary teeth assessment and surgical intervention in children. *Pediatr Dent* 1981;3:204-15.
7. Rajab LD, Hamdan MA. Supernumerary teeth: Review of the literature and a survey of 152 cases. *Int J Paediatr Dent* 2002;12:244-254.
8. Taner TU, Uzamis M. Orthodontic treatment of patient with multiple supernumerary teeth and mental retardation. *J Clin Pediatr Dent*. 1999;23:195-200.
9. Nagaveni NB, Umashankara KV, Reddy BP, Radhika NB, Satisha TS. Multi-lobed mesiodens with a palatal talon cusp: a rare case report. *Braz Dent J*. 2010;21(4):375-378.
10. Meighani, Pakdaman. Mesiodens: Diagnosis and Management of supernumerary (Mesiodens): a review of literature. *J Dent Tehran Univ Med Sci* 2010;7:41-49
11. Alaçam A, Bani M. Mesiodens as a risk factor in treatment of trauma cases. *Dent Traumatol* 2009;25:25-31.

12. Nagaveni NB, Umashanikara KV, Vidyullatha BG, Radhika NB. Permanent mandibular incisor with multiple anomalies-report of a rare clinical case. *Braz Dent J.* 2011;22(4):346-350.
13. Nagaveni NB, Shashikiran ND, Reddy VS. Surgical management of palatal placed, inverted, dilacerated and impacted mesiodens. *Int J Clin Pediatr Dent.* 2009 ;2(1):30-32
14. Brand A, Akhavan M, Tong H, Hook YA, Zernick JH. Orthodontic, genetic, and periodontal considerations in the treatment of impacted maxillary central incisors: a study of twins. *Am J Orthod Dentofacial Orthop* 2000; 117(1): 68-74.
15. Huang WJ, Creath CJ. The midline diastema: a review of its etiology and treatment. *Pediatr Dent.* 1995;17(3):171-179.
16. Bryan RA, Cole BO, Welbury RR. Retrospective analysis of factors influencing the eruption of delayed permanent incisors after supernumerary tooth removal. *Eur J Paediatr Dent.* 2005;6(2):84-89.
17. Kumar A, Shetty RM, Dixit U, Mallikarjun K, Kohli A. Orthodontic management of midline diastema in mixed dentition. *Int J Clin Pediatr Dent* 2011;4(1):59-63.
18. Mittal M, Sultan A. Clinical management of supernumerary teeth: a report of two cases. *J Indian Soc Pedod Prev Dent.* 2010;28(3):219-222.
19. Alam MK. The multidisciplinary management of Median Diastema. *Bangladesh J Med Sci.* 2010;9(4):234-237.
20. Nagaveni NB, Katkade S, Poornima P, Roshan NM. Management of Impacted Maxillary Central Incisor by Sequential Appliance Therapy-A Clinical Case Report. *Int J Dent Oral Health.* 2015;1(1). doi <http://dx.doi.org/10.16966/2378-7090.118>
21. Russell KA, Folwarczna MA. Mesiodens--diagnosis and management of a common supernumerary tooth. *J Can Dent Assoc.* 2003;69(6):362-366.
22. Edwards JG. The diastema, the frenum, the frenectomy: a clinical study. *Am J Orthod* 1977;71(5):489-507.
23. Gomes CO, Drummond SN, Jham BC, Abdo EN, Mesquita RA. A survey of 460 supernumerary teeth in Brazilian children and adolescents. *Int J Paediatr Dent* 2008;18:98-106.
24. Nagaveni NB, Shah R, Poornima P, Roshan NM. An unusual presentation of mesiodens tooth with talon cusp-report of four cases and literature review. *Journal of Research and Practice in Dentistry.* 2014. DOI: 10.5171/2013.183691.