CASE REPORT

A rare presentation of bilateral mesiodens with transposition of central and lateral incisors in maxilla

Koshi Philip¹, Heera R², Elbe Peter³, R.Sreevatsan⁴, Mukundan V⁵, Anubhuti Sood⁶

¹BDS, MDS, Professor & Head
²BDS, MDS, DCR, LLB, Associate Professor
³BDS, Postgraduate Student
⁴BDS, MDS, MOrthRCSEd, MOrth RCS(Eng), Assistant Professor
Department of Orthodontics
Government Dental College
Kottayam, Kerala, INDIA

⁵BDS, MDS, Professor & Head
⁶BDS, Postgraduate Student
Department of Oral Pathology and Microbiology
Government Dental College
Kottayam, Kerala, INDIA

Corresponding Author

Dr. R. Sreevatsan
Address: Department of Orthodontics and
Dentofacial Orthopedics, Government Dental
College, Kottayam, Kerala, India - 686008
Mobile: +918281335208
E-mail- sreevatsanr32@gmail.com

Access this Article Online

Quick Response Code

www.idjsr.com
Use the QR Code scanner to access this article online in our database
Article Code: IDJSR 0141

Abstract

Supernumerary teeth are a relatively frequent finding in the oral cavity that is indicative of an aberrant process of odontogenesis, characterized by an excess number of teeth. They can be supplemental (resembling natural teeth), conical, tuberculate, or molariform. Mesiodens is the most common type of supernumerary tooth/teeth found in the premaxilla between the two central incisors. We present a rare case of 14 year old male patient who presented with bilateral mesiodens with concurrent transposition of the maxillary central and lateral incisors.

Key words: Mesiodens, Supernumerary teeth, Transposition.

Introduction

Supernumerary teeth constitute developmental disturbances occurring during odontogenesis resulting in the formation of teeth in excess of the normal number. They can occur in both the deciduous and permanent dentition. Such supernumerary teeth may occur alone or in multiples, may be unilateral or bilateral, and occur in the maxilla, mandible, or both. The term ‘mesiodens’ refers to a supernumerary tooth present in the premaxilla between the two central incisors. Mesiodens are more common in permanent than in primary dentition. The incidence of occurrence of mesiodens is 0.1-1.9% for deciduous teeth and 0.15-3.8% for permanent teeth with male to female occurrence ratio of 2:1. Complications of mesiodens are median diastema, cystic degeneration and nasal eruption along with bodily displacement, rotation, resorption or delayed eruption of permanent incisors. Mesiodens can present morphologically as a cone shaped tooth (most common), tuberculate or molariform.

Tooth transposition is the positional interchange of two adjacent teeth or the development and eruption of a tooth in a position occupied normally by a nonadjacent tooth. As such, tooth transposition is an extreme type of ectopic eruption, causing a change in the natural order or sequence of the permanent teeth. Five types of maxillary tooth transpositions have been identified: canine-first premolar (71%), canine-lateral incisor (20%), canine to first molar site (4%), lateral incisor-central incisor (3%), and canine to central incisor site (2%). Peck and Peck summarized about six separate case reports in literature and described the uncommon anomaly of maxillary lateral incisor-central incisor transposition. These reports had indicated early and severe trauma to the affected incisors: misshapen crown form, gross incisor rotations, or displacements in the presence of adequate space. No evidence exists to suggest any origin for this rare transposition type other than accidental causes.

We report a rare case of bilateral mesiodens occurring between the maxillary right and left central incisors with a concurrent transposition of the maxillary central and lateral incisor in a 14 year old male patient.
Case Report

A 14 year old male patient reported to the department of Orthodontics with a chief compliant of ‘proclined and protruding’ upper front teeth, present for the past 3 years. The patient presented with no relevant medical history. Intra oral examination revealed the presence of conical shaped bilateral mesiodens between the right and left permanent maxillary central incisors, along with the transposition of the maxillary upper right central and lateral incisors (Figure 1).

A retained upper right deciduous canine with a buccally erupting upper right canine was also observed. The premolars and molars of upper arch were in a Class I relationship. A full complement of teeth was present in the lower arch. The mesiodens were conical in shape. The patient had no other problems with the occlusion, while smiling or otherwise (Figures 2, 3).

Intraoral periapical radiograph and OPG revealed two conical teeth which were smaller in size when compared with the adjacent normal dentition, present between the maxillary permanent central incisors, with well-formed roots (Figures 4, 5).

Figure 1 - Photograph showing bilateral conical shaped mesiodens, and transposed central and lateral incisors (Frontal View)

Figure 2 Extra oral view of the patient (Smiling)

Figure 3 - Maxillary Occlusal showing the mesiodens along with the transposed central incisor and lateral incisor along with the retained upper right deciduous canine bilateral mesiodens with well-formed roots

Figure 4 - OPG showing conical shaped bilateral mesiodens with well formed roots and transposed central and lateral maxillary incisors

Figure 5- Intraoral radiograph showing conical shaped bilateral mesiodens with well formed roots
Due to the aesthetic demands of the patient, the decision to extract the mesiodens and the retained deciduous canine followed by aligning of the lateral incisor in the extraction space with subsequent reshaping to a central incisor via simple composite build up was planned. This was simulated using a Kesling setup, which was shown to the patient. Mild reshaping of the central incisor to its lateral counterpart to limit sensitivity was also decided, which would be later replaced by a crown upon the completion of 18 years. Although autotransplantation was considered and it has higher published success rates, the outcome is influenced by factors such as patient age, developmental stage of the graft, type of donor tooth, complexity of removing the transplant, type of storage media used for the graft, and the surgeon's experience. The added fact that the tooth was not subjected to previous trauma also contributed towards the decided treatment plan along with the patient’s unwillingness to undergo the required surgical procedure. The patient is currently in the alignment phase of the orthodontic treatment, with a 0.22 MBT™ full-appliance in the upper arch to provide anchorage for closing the extraction space using conventional mechanics and a “social six” strap-up for the lower arch. This setup was decided because posterior occlusion was excellent and it was decided to leave it untouched to end in a good Class I canine and molar relationship.

**Discussion**

The etiology for supernumerary teeth is not completely understood. Various theories exist for the different types of supernumerary teeth. The atavism theory, suggests that supernumerary teeth are a result of phylogenetic reversion to extinct primates with three pairs of incisors. Another theory suggests that supernumerary tooth is created as a result of a dichotomy of the tooth bud, which suggests 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. Another theory, well supported in the literature, is the hyperactivity theory, which suggests that supernumeraries are formed as a result of local, independent, conditioned hyperactivity of the dental lamina. Heredity may also play a role in the occurrence of this anomaly, as supernumeraries are common in the twins, siblings, and sequential generation of single family than in the general population. However, the anomaly does not follow a simple Mendelian pattern. Mesiodens can be classified on the basis of their occurrence in the permanent dentition (rudimentary mesiodens) and according to their morphology (conical, tuberculate, or molariform). In the present case, the bilateral mesiodens present between the permanent maxillary central incisors were conical in shape. There was no familial tendency for supernumerary teeth. The present case is rare due to the presence of bilateral mesiodens between the permanent maxillary central incisors without the presence of any other supernumerary teeth. The etiology of tooth transposition has been the subject of much controversy and is still not completely understood. Several theories have been proposed to explain the phenomenon. Multifactorial genetic factors, an interchange in the position of the developing tooth buds of the involved teeth and even trauma to the deciduous teeth in which dilacerations of the permanent incisor root was found to have all been suggested as causes for transposition of teeth by Ciarlantini et al.

The maxillary canine-to-first premolar transposition was determined to be an anomaly resulting from genetic influences within a multifactorial inheritance model. In some cases, the canine-to-first premolar transposition occurs simultaneously with developmentally absent lateral incisors and is the most frequently appearing type of maxillary transposition, comprising 71% of the cases. Transposition has never been reported in the deciduous dentition. The migration theory suggests that retained deciduous canines, observed in a large number of canine transpositions, might be the primary cause for the displacement and migration of the permanent canine from its normal path of eruption. Although not a true transposition, this migration theory may help to explain those extreme cases in which the canine erupts in the position of the incisor, second premolar or first molar. Nicola Ely et al used multivariate analysis and showed associations between unilateral transposition, gender, and the presence of peg-shaped maxillary lateral incisors; whilst bilateral transposition was more closely associated with gender and the presence of retained primary teeth. There was a poor association between both unilateral and bilateral transposition and hypodontia. Together, these results suggest a multifactorial etiology to this disorder, with both genetic and environmental factors playing an important role. In contrast to the evidence indicated in the literature, the transposed incisors had not shown any history of trauma.

**Conclusion**

We report a rare case of bilateral maxillary mesiodens with transposition of upper right maxillary central and lateral incisors with a retained deciduous canine on the same side. A case of true transposition could be inferred from the points mentioned above. The treatment plan decided was to extract the 2 mesiodens and the deciduous canine following which the spaces
would be closed orthodontically. The Lateral incisor will be reshaped into a Central by simple composite build-up and vice-versa by initial minor re-shaping and later a crown at 18 years. This treatment plan was decided due to the good periodontal support of the lateral on the OPG and the IOPA. A case against Autotransplantation was done taking into account the dental age of the patient, the completion of root development of both the incisors and no history of associated trauma on the teeth of interest.

References