

EARLY ORTHODONTIC TREATMENT OF UNILATERAL MANDIBULAR LEFT LATERAL INCISOR – CANINE TRANSPOSITION: A CASE REPORT.

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ABSTRACT:

Among dental anomalies, tooth transposition is considered the most difficult to manage clinically. Distal migration of permanent mandibular lateral incisor happens rarely. It can be discovered radiographically in the early mixed dentition & interceptive treatment is often appropriate. If left uncorrected it may erupt ectopically and the results are often unsatisfactory both esthetically and functionally. When transpositions are detected early the positions of the root apices are important in deciding where to move the transposed tooth. This article reports a case of early orthodontic treatment of a rare unilateral mandibular left lateral incisor – canine transposition.

KEY WORDS: *Migration, Transposition, ectopic eruption*

INTRODUCTION

Transposition is an uncommon type of ectopia or in which 2 adjacent teeth change positions in the arch or one tooth develops or erupts in a position occupied by a non adjacent tooth^{1,2}. It is relatively a rare developmental dental anomaly. Transposition can be complete, with crowns and roots transposed and parallel, or incomplete, with the crowns transposed but the root apices in a relatively normal position^{1,3}.

Transposition is most often associated with other dental anomalies such as missing, small, or peg shaped maxillary lateral incisors, retained deciduous teeth, malpositions, rotations, and root dilacerations of adjacent teeth^{2,3,4,5}. Prolonged retention of deciduous canine is the most common clinical finding observed in transpositions.

The maxillary permanent canine is the tooth most frequently involved in transposition, as it has the longest period of development and the longest way to travel from the point of its early formational stage to its complete eruption.

Unilateral transpositions are found more often than bilateral transpositions and the left side is more frequently involved than the right. It appears more frequently in the maxilla^{5,6,7}.

The purpose of this article is to present a case of transposition of mandibular left lateral incisor and canine and to describe the procedure used in the orthodontic treatment of this challenging anomaly.

CASE REPORT

A 9 year old boy reported to the Department of Pedodontics and Preventive Dentistry, Kamineni Institute of Dental Sciences with the chief complaint of pain on chewing in the lower left posterior region. Clinical examination revealed mobile deciduous first molar and retained deciduous lateral incisor on the left side and permanent lateral incisor on the contra lateral side. The clinical findings may suggest that the permanent lateral incisor is congenitally missing, impacted, or deflected from the path of the eruption.

RADIOGRAPHIC EVALUATION

Intraoral periapical (IOPA) and panoramic radiographs were taken (fig.1). IOPA revealed that the roots of the deciduous first molar were resorbed and OPG showed the eruption of permanent mandibular lateral incisor above the developing first premolar. The left lateral incisor exhibited an open apex. Beneath the lateral incisor, developing permanent canine and first premolar were seen. Patient was referred for orthodontic evaluation and treatment.

TREATMENT PROCEDURE

If early interceptive measures of uprighting the lateral incisor to its correct position next to the central incisor are not undertaken in a timely fashion that is before the permanent canine erupts, it will erupt in a transposed position with the lateral incisor already erupted ectopically.

The early detection and timely prevention of such a condition is recommended to prevent the development of this transposition. On early diagnosis of developing transposition interceptive treatment was initiated, which consisted of immediate removal of mandibular left deciduous first molar. Extraction of mandibular deciduous first molar was done under LA. The lateral incisor with prominent mammelons was noticed in the extraction socket. The retained deciduous lateral incisor and canine were also removed. Impression of the lower arch was made and cast was poured to appreciate the transposition of the erupting permanent lateral incisor (fig.2). Comprehensive orthodontic treatment was instituted using straight wire technique with elastic chain. The permanent left lateral incisor was uprighted and aligned to its normal position in the arch within 8 months time. Another panoramic radiograph was taken (fig.3). After complete orthodontic correction, the vitality of the transposed tooth was checked and the tooth was found vital. Following the movement, the lateral incisor must be retained in its new position until the permanent canine erupts distal to it. Lingual retainer of reinforced composite wire splint was used. After 1 ½ years of the initiation of the orthodontic treatment eruption of the first premolar was noticed (fig.4). Permanent left mandibular canine has not yet erupted. Space deficiency was noticed for the permanent mandibular canine on the left side of the

arch. Further follow-up and treatment for the same is taken under consideration.

DISCUSSION

The mandibular permanent lateral incisor may deflect from its path of eruption and migrate distally along the lingual side of the deciduous lateral incisor and canine to erupt above the developing first premolar following early loss of the deciduous first molar. The canine which will erupt in its normal position or slightly mesially, will thus become transposed with the lateral incisor. Transposition in the maxilla as a result of displacement and migration of the lateral incisor appears to be the primary reason for the developing transposition¹. The maxillary canine- first premolar transposition occurs about four times as frequently as the mandibular canine – lateral incisor with an approximate incidence of 1/1000 to 1/5,000 respectively⁸⁻¹².

The normal position of a developing mandibular permanent lateral incisor is lingual to its predecessor, and upon eruption it migrates labially to resorb the root of the deciduous tooth^{13,14}. A possible explanation for the displacement of the developing lateral incisor could be the prolonged retention of its predecessor¹⁵. Alternatively, an abnormal path of eruption of the permanent tooth may be responsible for the lack of resorption of the over retained deciduous tooth. All reported cases of ectopic mandibular permanent lateral incisors involved retained deciduous teeth. Many also exhibited an early exfoliation of the deciduous first molar. It is not clear, however, whether retained deciduous teeth may be the cause, or the result of the displacement and ectopic eruption of their successors¹⁶. Unlike the maxilla, where canine migration is the major cause for transposition, in the mandible the distal displacement of the permanent lateral incisor is the main cause for transposition⁶.

Positional changes of tooth anlage at the very early stages of odontogenesis,¹⁷ as well as genetic control within the dental follicle,¹⁸ were also suggested as possible causative factors for tooth transposition.

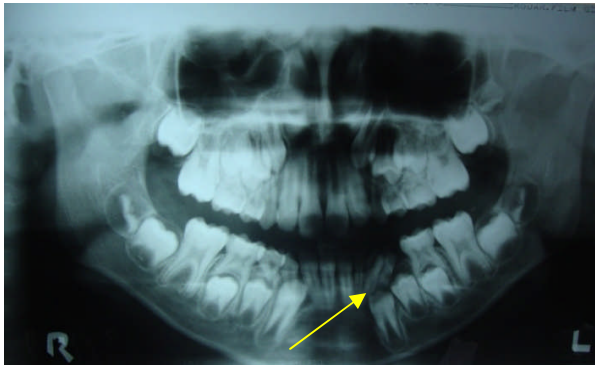


Fig 1. Transposed permanent left lateral incisor



Fig 3. Erupting left lateral incisor in transposition

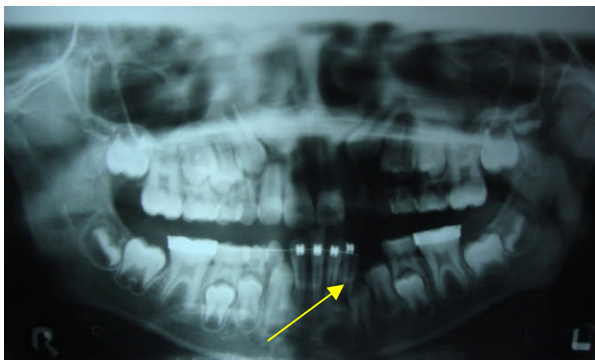


Fig 2. Correected Lateral incisor to its original position

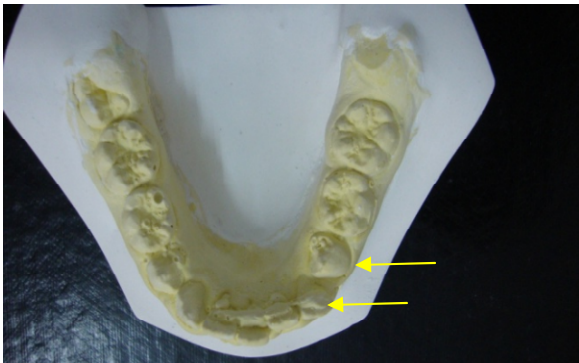


Fig 4. Corrected lateral incisor with lingual retainer, erupting first premolar

SUMMARY

An unusual situation involving the transposition of lateral incisor with canine was reported. Early diagnosis and detection of an abnormally distally displaced mandibular permanent lateral incisor at an early mixed dentition stage of dental development (by the pediatric dentist or the general practitioner) is imperative.

The treatment involved timely interceptive procedure in the form of removal of the retained deciduous lateral incisor and canine together with up righting the lateral incisor to its correct position.

This action will reduce the risk of a developing mandibular tooth transposition considerably and these also reduce the need for complex orthodontic treatment.

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