Caudodontia of Mandibular 2nd Molar with Bilateral Maxillary Canine – Premolar Transposition - A Case Report

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Abstract:

Transposition of teeth is a developmental anomaly manifested by a positional interchange of two permanent teeth. It is often associated with hypodontia, peg lateral crowding, severe rotation and malformation like dilaceration and missing teeth, retained teeth and even with impaction which are clinically important for diagnosis as well as treatment plan. However, this case is a deviation from the afore mentioned group of associated anomalies. Surprisingly, in this case bilateral maxillary canine – premolar transposition is associated with idiopathic resorption of the crown of the second mandibular molar. The persistence of only the caudal part of the tooth in such a case merits denoting it as ‘Caudodontia’ by us.

Key Words: Caudodontia, Canine – Premolar transposition, Class I molar.

Introduction:

Transposition of teeth is a developmental anomaly manifested by a positional interchange of two permanent teeth. Management of this condition is a challenging area for orthodontists. Obviously, an in depth analysis of its etiopathogenesis is required. It is important to focus on common as well as rare cases of transposition. It is well known that transposition is often associated with hypodontia, peg lateral, crowding, severe rotation and malformation like dilaceration and missing teeth, retained teeth and even with impaction of tooth which are clinically important for diagnosis as well as treatment plan (Shapira & Kuftinec, 2001). This case is a deviation in a group of related anomalies. Transposition here is associated with idiopathic resorption of the crown of mandibular second molar.

Case Report:

A 13 years old boy reported to the Orthodontics and Dentofacial Orthopaedics Department of Faculty of Dental Sciences, C.S.M. Medical University, Lucknow, with the complaint of irregular teeth. Clinical examination showed Angle’s class-I molar relationship along with maxillary bilateral canine - premolar transposition and retained deciduous cuspids. In this positional anomaly, the transposed maxillary canines were found blocked out facially between first and second premolars. The canines were slightly rotated mesiofacially and first premolars were tipped distally and rotated mesiopalatally. Maxillary deciduous canines were present creating a transient arch space deficiency (Fig. I. A-E).

Solitary affected mandibular 2nd molar, which was not erupted and showed radiographic signs of idiopathic resorption of whole coronal structure. Caries was ruled out because of non-exposure in oral cavity (Fig. II. A-C). The patient had no history of pain or trauma in relation to the affected molar.

Complete resorption of coronal part of the lower molar (Fig. III. A-B) poses a specific problem for conservative and prosthodontic approach. For the persistent part of the tooth the term Caudodontia (Caudal + odontia = Caudodontia) was coined by us.

Treatment:

For the management of maxillary canine – premolar transposition there are three options: (Ngan et al, 2004)

1. Positional correction of maxillary canine and premolar.
2. Extraction of premolar to accommodate canine.
3. Alignment of canine and premolar in the transposed condition.

We have planned to align the teeth in their ideal position to provide pleasing profile. Maxillary deciduous cuspids were extracted. 0.022”x.028” slot standard edgewise appliance was selected. After initial alignment phase 0.019”x .025”wire was installed in the maxillary arch except canines. Anterior (central incisors & lateral incisors) and posterior segments (First premolar, second premolar & first molar) were
consolidated by using figure of ‘8’ ligation. Power chain was applied from distal wing of lateral incisor bracket to the bracket wing of canines bilaterally to protract the canine to their normal position 0.014". Copper Nickel Titanium wire was ligated for alignment of permanent maxillary canines. Final finishing was done by using a series of stainless steel wire. Maxillary Hawley’s retainer was delivered after removal of the fixed appliance.

Poor morphology and malpositioned mandibular 2nd molar leads to poor prognosis as advised by the consultant Endodontists and Prosthodontists. Extraction of the pathological tooth was planned thus enabling the normal movement of wisdom tooth at the place of 2nd molar and finally alignment of the 3rd molar at the place of 2nd molar.

Good esthetic and functional occlusion was achieved within 18 months of orthodontic treatment (Fig.IV, A-E).

Discussion:

Transposition is a unique and extreme form of ectopic eruption in which a permanent tooth develops and erupts in the position normally occupied by another permanent tooth. Miel (1817) a French Dentist was apparently the first to describe the maxillary canine-premolar transposition anomaly in detail.

The Maxillary canine-premolar transposition was recently determined to be an anomaly resulting from genetic influences within a multifactorial inheritance model. In support of polygenic etiology elevated frequencies of associated dental anomalies, frequent bilateral occurrence, familial incidences and significant differences in male: female prevalence of the anomaly have been reported (Peck et al, 1993).

After examination of published records, Peck & Peck (1995) proposed the following five types of transposition:
1. Canine- first Premolar (Mx. C.P1);
2. Canine- lateral Incisor (Mx. C.I. 2);
3. Canine to first Molar site (Mx.C. to M1);
4. Canine to second Molar site (Mx.C. to M2);
5. Canine to third Molar site (Mx.C. to M3).

Fig.I: (A-E) Intraoral photographs, shows the bilateral maxillary canine - premolar transposition with retained deciduous maxillary cuspids.

Fig.II. (A-C) Radiograph showing complete resorption of coronal part of mandibular left 2nd molar.

(C) Orthopantomogram

Fig.III: (A-B) Surgically removed mandibular left second molar.
4. Lateral Incisor-Central Incisor (Mx.I.2 to I.1) &
5. Canine to Central Incisor site (Mx. C.to I1)

Unilateral maxillary canine–first premolar transposition mostly on left side is the most commonly found anomaly (Shapira 1980, Shapira & Kufinec, 2001). However, Chattopadhyay & Srinivas (1996) reported maxillary canine- lateral incisor transposition to be more frequent. This anomaly was expressed more in females than in males (Peck et al 1993).

Peck & Peck (1995) reported features of maxillary canine–premolar transposition by observing 143 cases in which 37 cases had absence of one or more permanent teeth.

Plunkett et al (1998) recorded 54 cases of transposition. Shapira & Kufinec, (2001) also studied maxillary canine–premolar transposition in relation to other dental anomalies in 65 patients, with age range of 9-25 years. They showed high incidence of congenitally absent teeth, peg shaped lateral incisors and / or supernumerary teeth.

This unique anomaly of complete absence of coronal part of mandibular second permanent molar is not reported by any other author. Although many authors reported congenitally missing teeth, peg shaped or small lateral incisors, supernumerary teeth, impacted or malposed teeth, retained deciduous teeth and root dilacerations as associated dental anomalies along with maxillary canine – premolar transposition.

**Conclusion:**

To the best of our knowledge this rare case of idiopathic resorption with transposition has not been reported earlier. This finding might give some more additive information regarding other anomalies which may be found in association with transposition cases.

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**Bibliography:**