

ORTHODONTIC MANAGEMENT OF A PARTIALLY TRANSPOSED LOWER CANINE : A CASE REPORT

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ABSTRACT

A tooth may migrate to occupy the position of another tooth in an arch. This phenomenon of site substitution by two neighbouring teeth is termed as Dental transposition. Transposition can be complete or incomplete. When both the crown & roots of two teeth exchange their place it can be called a complete transposition. When only the crown is shifted, it is an incomplete transposition.

This paper describes a case report of a 14 years old female patient reported with a partially impacted transposed lower horizontal canine with retained deciduous canine. In the Upper arch right deciduous canine was also present in patient's mouth and the permanent one was palatally erupted.

So we extracted both deciduous canines and after one year of treatment, the transposed and partially impacted lower right permanent canine was brought into arch.

KEY WORDS

Transposition, Impaction, canine tooth

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INTRODUCTION

Tooth transposition is a positional interchange of two adjacent teeth. It is identified as complete transposition when the crowns and the roots of the involved teeth exchange places in the dental arch, and incomplete transposition (or pseudotransposition) when the crowns are transposed but the roots remain in their normal positions.¹ Tooth transposition occurs more often unilaterally than bilaterally, with maxillary prevalence, and no sex preference.⁵ Tooth transposition is significantly unrelated to dental anomalies, such as congenitally missing teeth, peg-shaped or hypoplastic teeth, and impacted teeth.² Although tooth transposition may be associated with over-retained deciduous teeth, it is an isolated phenomenon rather than a syndrome.⁴

Moving transposed teeth to their normal positions is quite challenging because this requires bodily movement and translation of one tooth to pass



Fig 1 – Pretreatment Lateral cephalogram



Fig 2 - Pre treatment OPG



Fig 3 – Pre treatment Extraoral and Intraoral photographs

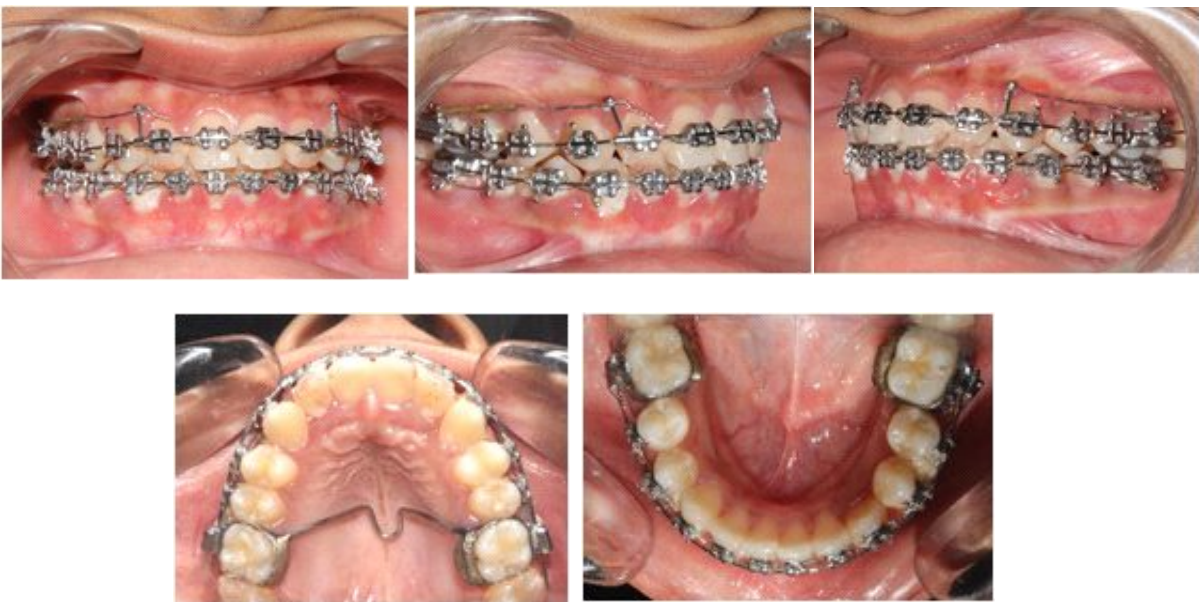


Fig 4 -Mid Treatment Intraoral Photographs

another tooth. This procedure may cause damage to the teeth and the supporting structures. Hence, in the case of complete transposition, alignment of the teeth in their transposed positions is often suggested; however, reshaping the crowns should be performed in order to achieve an acceptable aesthetic result^{6,7,11 14}

This is a case report of partially transposed lower right canine with retained deciduous canine. The tooth was meticulously moved orthodontically to its normal position.

CASE REPORT

A 15-year-old female patient came to Department of Orthodontics and Dentofacial Orthopedics, Dr. R. Ahmed Dental College & Hospital with a chief complain of retained milk tooth in lower right front region. On intraoral examination she was found to have a partially impacted & partially transposed lower right canine with retained

deciduous canine. (fig-3). Patient had normal overjet and overbite. The mandibular dental midline deviated about 1.5mm to the right. Radiographically there was impacted & partially transposed lower right permanent canine. There was deciduous lower right canine present which was maintaining the space for impacted permanent canine.

DIAGNOSIS

A 15-year-old female patient with Angle's class I molar relation on class I skeletal base with average growth pattern and partially impacted & transposed lower right canine along with straight profile.

TREATMENT OBJECTIVES

- (1) Levelling & alignment of upper and lower teeth & maintenance of proper overjet and overbite.



Fig 5- Post Treatment Extraoral and Intraoral Photographs



Fig 6 - Post treatment Lateral cephalogram



Fig 7 - Post Treatment OPG

- (2) Extraction of lower right deciduous canine and maintaining that space for impacted permanent canine.
- (3) Correction of angulation of horizontally positioned partially impacted canine.
- (4) To improve overall smile & esthetics.

TREATMENT PLAN

The treatment plan consisted of levelling and alignment of upper & lower teeth, extraction of upper & lower right deciduous canine and maintaining that space for impacted permanent canine in lower arch and palatally placed canine in the upper arch. Proper alignment and positioning of the partially horizontally impacted transposed permanent canine by placing an attachment to the tooth and using E-chain to give traction.

Patient was treated with fixed mechanotherapy using Pre-Adjusted Edgewise MBT 022 Slot Brackets, to achieve proper alignment and levelling of the maxillary and mandibular arch.

Extraction of deciduous canine was done and the space was maintained by tying the adjacent teeth with ligature wire in a figure of eight manner. Simultaneously an attachment was placed on the crown of the partially exposed lower right canine crown which was horizontally angulated and light E-chain traction was given from this tooth to lower right molar to correct the angulation of the tooth. Once the angulation is corrected, a bracket was bonded to the crown and a piggy back wire (0.012 NITI) was given along with the main archwire (19X25SS) to bring the canine into the arch. In the maxillary arch, alignment and leveling were achieved with a sequence of 0.014in and 0.016-in nickel-titanium archwires, later replaced by rectangular nickel-titanium archwires (0.017 X0.025 and 0.019X0.025 in NITI) followed by rectangular SS archwires. After 4 months the tooth was properly aligned and it was not mobile. (Fig-4)

TREATMENT RESULTS

The partially impacted & transposed mandibular right canine was brought into proper alignment with the adjacent teeth. Bilateral Class I molar, canine and incisal relationships were achieved with ideal overjet and overbite. The final radiographs indicated proper root alignment, and no root resorption. The palatally placed right upper canine was brought into the arch.

3 months follow-up showed the canine is properly aligned and asymptomatic. (Fig-5)

DISCUSSION

Tooth transposition can be of several types. Peck and Peck had classified tooth transposition according to the teeth involved into 5 types.^{3,8} These are Canine-1st premolar, Canine-Lateral incisor, Canine-1st Molar, Lateral incisor-Central incisor and Canine-Central incisor position. The etiology of mandibular canine transposition are often associated with retained deciduous canines, if it is bilateral, it suggests a possible polygenic influence.¹⁰ The definitive treatment possibilities for transpositions revolve around three treatment possibilities.¹²

1. Correcting the transposed order of the teeth
2. Maintaining the transposed order of the teeth
3. Extraction of one of the offending tooth

Correcting transposed teeth to their correct order of sequence in the arch may seem to be the best treatment option.^{9,11} In this case the root of the canine was in correct position & the crown was transposed between central & lateral incisor, so we proceeded with extraction of the deciduous canine followed by correction of transposed tooth.

CONCLUSION

In deciding the most appropriate treatment option, the clinician should consider the feasibility of treatment

plan, duration of treatment, cost, chances of damage to the supporting alveolar bone, periodontal tissues, esthetic outcome & patient motivation. If all these things are ideal, then only optimal treatment outcomes can be expected.

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