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Case Report

Maxillary canine transposition – A literature review with case report

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ABSTRACT

Tooth transposition is a severe disturbance of tooth eruptive position and their sequence, which involve certain teeth occurring at any of several specific sites in the mouth. Tooth transposition is of several types and their classification depends on the teeth involved. The review of literature aims to discuss the incidence and identifying factors related to occurrence of this dental anomaly. The present study aims to discuss about the prosthetic treatment of a patient with unilateral maxillary canine – lateral incisor transposition with the absence of permanent lateral incisor.

1. Introduction

Tooth transposition is defined as the positional interchange of two adjacent teeth within the same quadrant.[1] It is identified as complete transposition when the involved teeth get interexchanged in the dental arch and as incomplete transposition where the crowns are transposed with the roots remaining in their normal positions.[1] Excluding third molars, the maxillary canines constitute the permanent teeth which more frequently show eruption disturbances.[2] Tooth transposition is more varied and frequently seen in the upper jaw with commonest involvement of maxillary canines.[1,3,4] In 1995, Peck and Peck had classified tooth transposition according to the teeth involved into 5 types and these are Canine – First premolar, Canine – Lateral incisor, Canine – first molar position, Lateral incisor – Central incisor and Canine to central incisor position.[5]

In the present article, a literature review of canine transposition with associated identifying factors and a case report of canine to lateral incisor transposition along with prosthodontic rehabilitation have been discussed.

2. Incidence and prevalence

Tooth transposition can adversely affect the normal dentition both from the esthetic and functional aspects and therefore, it is important to know the etiological factors affecting the incidence and prevalence of this abnormality so that possible preventive measures can be established. There are various

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factors responsible for the etiology of tooth transposition along with numerous existing theories describing variables related to the location of the transposition and involvement of particular teeth. Tooth transpositions are more commonly observed in females[3–9] and the proportions observed in ratio of male and female are – 1:2,[9] 1:1.55,[5] 1:3.8[6] and 2:3.[3] Similar occurrence in both genders have also been noticed.[10] There are several etiologic factors associated with tooth transposition like genetics, interchange in the position of the developing tooth buds, trauma, mechanical interferences, and early loss of incisors.[3–11] The most common teeth involved in transposition are maxillary canines having prevalence rate of 0.14%–0.51%, particularly affecting left side unilateral transpositions.[3,12–14] Amongst them maxillary canine – first premolar transposition is the most prevalent,[15] having incidence rate of approximately 0.13% in the population, representing 71%–89.2% in total.[3,16] An autosomal recessive mutation was confirmed as the etiology of maxillary canine – first premolar transposition.[11] On the contrary, in a study performed in the Turkish population, Mx.C.I2 was the most frequent transposition having similar incidence in both gender and also involving both sides of the arch.[17]

Tooth transposition has been noticed with other dental anomalies also in various literatures, which is reported in 40% of the case with agenesis, in 25% of the cases with peg shaped lateral incisors and in 50% of the cases with retention of deciduous teeth. The unilateral or bilateral absence of lateral incisors was found in nearly 25% of the maxillary canine – first premolar cases. A significant relation ($p < 0.001$) between lateral incisor agenesis and maxillary canine – first premolar transposition was observed.[4] A multidisciplinary Approach is needed for the successful treatment of this anomaly to achieve a long-term esthetic and functional outcome.[18–26]

3. Case report

A nineteen year old female patient came to the institution with the chief complain of poor esthetics and mobile front tooth. Intraoral examination revealed presence of mobile 63, absent 22 and 23 transposed at 22. Midline diastema in the maxilla was also seen but the patient was not much concerned for that problem. On radiographic examination agenesis of maxillary left lateral incisor was found with roots of the deciduous canine almost completely resorbed (Fig. 1). All other teeth were in proper occlusion with Angle's class one occlusion. The patient was more esthetic concerned and wanted her tooth replacement earlier. Implant placement along with anatomical correction of canine as lateral incisor was also one of the options but due to financial problem implant placement was not possible. The mobile deciduous canine was extracted and an immediate removable partial denture was inserted just after extraction (Fig. 2). After healing it was decided to replace the canine space using the canine and first premolar as an abutment. Presence of canine in place of lateral incisor was advantageous as canine is supposed to be a very strong and stable abutment while in normal condition canine replacement in fixed prosthodontics is a difficult task. Supragingival wingless marginal preparation of canine and first premolar was done (Fig. 3). Canine was somewhat

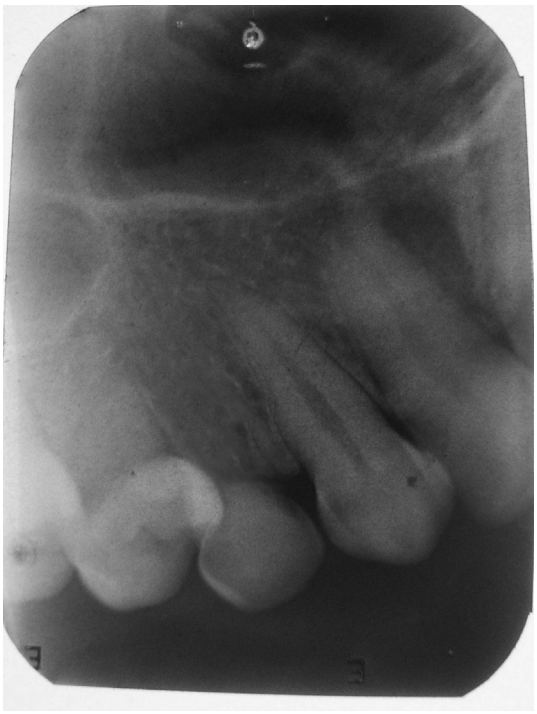

Fig. 1 – IOPA x-ray of maxillary left canine region.

overprepared labially and incisally in such a way that it could be restored as lateral incisor, however care was taken to avoid pulp exposure. Coping trial was done and finally after proper shade selection, ceramic was applied on the facial surface of the prosthesis and cemented .Group function occlusion was provided on the left side to avoid any stress on the replaced canine. Patient was quite satisfied with the esthetic and function of the fixed prosthesis (Fig. 4).

4. Discussion

Morphology and growth pattern of connective tissues of jaws are responsible for physiologic tooth migration and tooth eruption path. While the position of the tooth crypts in the upper jaw is determined by the shape of adjacent structures, particularly of the teeth located in the anterior maxilla.[27] The

Fig. 2 – Intraoral view showing immediate denture in place.