Research Paper

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# MANAGEMENT OF CANINE TRANSPOSITION-A CASE REPORT.

Medical Science

**KEYWORDS :** Canine transposition. Tooth eruption, ectopic. Tooth abnormalities.

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| **Dr. Sharan S. Sargod** | Prof., Department of Paedodontics and Preventive Dentistry, Yenepoya Dental College, Mangaluru, Karnataka |
| **Dr. Sham S. Bhat** | Prof. & HOD, Department of Paedodontics and Preventive Dentistry,Yenepoya Dental College, Mangaluru, Karnataka |
| **Dr. Raksha Ballal** | Reader, Department of Paedodontics and Preventive Dentistry, Yenepoya Dental College, Mangaluru, Karnataka |
| **Dr. Rajika Karunakaran** | Post Graduate Student, Department of Paedodontics and Preventive Dentistry, Yenepoya Dental College, Mangaluru, Karnataka |

## ABSTRACT

*Transposition of the tooth is an uncommon dental anomaly that nevertheless has important implications regarding treatment. There are many treatment options considering different factors like the age of the patient, economic status, esthetic concerns, expectations of the patient. This case report discusses the myriad of treatment options and different restorative considerations of a unilateral maxillary canine to lateral incisor transposition with retained deciduous canine.*

## INTRODUCTION

Tooth transposition can be defined as the interchanged position of an erupted tooth with another tooth in the same quadrant.[1,4]It is identified as complete transposition when the crowns and the roots of the involved teeth in toto exchange places in the dentalarch and incomplete transposition when the crowns are transposed, but the roots remain in their normal positions. The canine isone of the most commonly involved teeth in the transpositionphenomenon.[2,3] Tooth transposition generally occurs in the maxilla more on left side with female sex predilection [3,6]and is often associated with other dental anomalies, such asagenesis, deciduous canine retention, and peg-shaped maxillarylateral incisors.[2,4] The condition may occur both unilaterallyor bilaterally, but a greater incidence of unilateral caseshas been reported. Although transposition was defined in the 19th century, exact etiology of transposition is still obscure. Transpositionof tooth buds at primordial stage, migration of a tooth during eruption, heredity, trauma and absence, malformation or malpositioned lateral incisor[20] are proposed as possible etiological factors.[5,6]Deciduous canines have often been found to be over-retained in a majority of transposition cases.[1,2,5,6,13] Some authors suggested that if the roots of deciduous canines are not resorbed, then migration of permanent canines might occur.[14–17]–Studies performed on various populationsreport transpositions as rare conditions.[2,7–10]Some studies have reported that the prevalence of transposition was 0.4%[2,7-10,20].while others report 1 in 300 cases[22]. It has been reported that the transposition of teeth usuallyinvolves the canines with premolars (71%).[1,5,6,20] Most rarely seen transpositions are, maxillary canine- lateral incisor (20%) followed by canine-first molar (4%),canine-central incisor(2%),.lateral incisor to central incisor(3%).[12, 18, 19,20]

This report presents a case involving the unusual positioning of permanent maxillary canine in permanent lateral incisor site with clinical and radiological findings and conservative management of the same.

## CASE REPORT

A 14 year old male patient (Fig 1) reported to Dept of Pedodontics and Preventive dentistry, Yenepoya Dental College, Mangalore with a chief complaint of over retained deciduous tooth in upper right canine region. The relevant dental and medical history was non contributory.

On clinical examination the upper permanent right canine had erupted in the permanent lateral incisor position and deciduous canine was over retained with proximal caries. (Fig 1 )

IOPA and OPG revealed congenitally missing lateral incisor, and unresorbed deciduous canine root. (Fig 2,3) Patient had a good profile with good dentition without any crowding. A diagnosis of congenitally missing upper right lateral incisor with canine transposition[11] (Mx.C.I2) was made.

Treatment: Since the permanent right upper lateral incisor was congenitally missing and permanent canine had erupted in its place and moreover the deciduous canine showed no mobility and root resorption, It was decided to retain the deciduous canine. To prevent resorption of deciduous canine a conventional root canal treatment with gutta-percha obturation was done (Fig 4). The permanent canine was reshaped esthetically using dental burs and composit buildup to resemble permanent lateral incisor and the deciduous canine was reshaped to resemble permanent canine using composites (Fig 5,6).

**FIG 1**

**FIG 2.**

**FIG 3.**

**FIG 4**

**FIG 5**

**FIG 6**

**DISCUSSION**

The maxillary canine is the most frequently involved tooth in transposition. With lateral incisors, it is the second most frequently formed transposition about 20%. Many factors like genetics, missing incisors, localized pathologic processes, trauma, supernumerary teeth early loss of incisors, mechanical interferences and retained deciduous canines, have been reported to cause transposition[20].

In our case it was due to agenesis of permanent lateral incisor. A greater frequency of left side occurrence in unilateral transposition cases has been reported[3] where as in this case the transposition was on the right side. Shapira etal[4] described the canines longest period of development and longest path of eruption as the reason associated with high incidence of canine transposition. Guidance to eruption theory[20] has been suggested to lead to transposition.

In this case the lateral incisor on right side was congenitally absent thus guidance to canine eruption was lost leading to an opportunistic canine migration. Therefore periodic radiographic monitoring of maxillary canine after early loss of incisors is essential to avoid transposition.A thorough evaluation and treatment planning taking into account the values and expectations of the patient is required for best prognosis. The treatment options considered in this case were:-

1) Extraction of the retained deciduous canine followed by orthodontic movement of the canine to its position and a prosthetic rehabilitation using FPD cantilevered adhesive bridge or implant supported prosthesis.

2) Restoration considerations like reshaping of canines followed by composite build up or veneers.

However due to financial concerns and time required for fixed orthodontic treatment the patient chose the 2nd treatment option. In most of the cases as in this case with lateral incisor agenesis, the deciduous canines will be retained. Generally any retained maxillary deciduous anteriors should be extracted because of their unpredictable nature of root resorption[5]. Since the deciduous canine root is usually thin and small in length it becomes less favorable for canine guidance also.

In this case considering the patient's age and his reluctance to orthodontic treatment, it was decided to retain the deciduous canine temporarily followed by FPD or implant supported tooth in future. Radiographically some evidence of root resorption was noted so a conventional RCT with gutta-percha obturation was done followed by composite build up.

Camouflage of the upper canine often requires grinding of its tip, a combination of grinding and adding composite resin or a porcelain veneer. Considering the age of the patient in our case grinding and composite build up was used. The canine has a broader and higher gingival contour compared to the lateral incisor and this may make the esthetic results less pleasing in those with a high smile line[21]. This was not significant in this case since he had a low smile line.

Restorative factors to be considered while camouflaging the canine to lateral incisor.[20]

- If the mesio-distal width of the canine is similar to lateral incisor then any restorative options are possible. However if the canine is considerably larger than lateral incisor, there will be noticeable discrepancy in regards to the emergence profile. Then a crown is the only option to make the tooth smaller. International RCT may be required in some cases.

- Since the buccal curvature of the canine is greater when compared to the lateral incisor, an increased buccopalatal width of the final restoration on the mesial and distal incisal aspects of a canine is required to mimic the lateral incisor which may result in a broad incisal edge thus making incising through food difficult.

- The bucco-palatal width of canine is greater than lateral incisor so adjustments should be made to the palatal aspect of canine for protrusive guidance.

- Canine generally being darker there may be marked difference in the hue, chroma and value. Re-contouring by direct

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composite build up as by using a veneer on canine would not be sufficient due to the "See through" of the natural tooth. In such cases porcelain jacket crown will be the treatment of choice.

- Problems can exist in regard to gingival position due to difference in the crown heights, which may necessitate gingivoplasty.

**CONCLUSIONS**

Transposition of the teeth is an uncommon dental anomaly. Early clinical examination of children at about the age of 9 years is recommended for the detection of developmental anomalies. Non-eruption, incorrect eruption sequence or ectopic position of tooth should alert the practitioner to the need for supplementing the examination with radiographs. If intercepted, these anomalies may be prevented and treatment instigated to simplify orthodontic and restorative treatment in the future.

Once the transposition has occurred, a careful assessment must be carried out considering the factors like age, economics, esthetic expectations etc. The treatment plan should produce the best esthetic and functional results.

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