

## HYPODONTIA ASSOCIATED WITH TROUBLES OF ERUPTION - CASE REPORT

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### ABSTRACT

Transposition of teeth is a severe problem, which usually affects the cuspid-first premolar area. It is frequently associated with other dental anomalies such as tooth agenesis, peg-shaped maxillary lateral incisors, retained deciduous teeth, malpositions of the adjacent teeth and other teeth malformations. This paper describes the orthodontic management with fixed appliances of a case of bilateral upper cuspid- first premolar transposition associated with congenital absence of an upper lateral incisor and a lower second premolar and a peg-shaped upper lateral incisor.

**Keywords:** hypodontia, transposition, lateral incisor agenesis, first premolar agenesis

### INTRODUCTION

It is well known the fact that tooth agenesis is often associated with other dental anomalies, such as microdontia. Maxillary lateral incisor agenesis is often found together with a contralateral small or peg shaped lateral incisor [2]. Tooth transposition is accompanied in 50% of case by hypodontia (suggesting the common genetic aetiology of the two dental disturbances) [3]. Garib [4] also reports the association between missing second premolars, small lateral incisors and teeth malpositions.

This article presents the treatment of a patient with maxillary bilateral canine-first premolar transposition associated with missing upper right lateral incisor and lower second right premolar.

### CASE PRESENTATION

A 25 year old female, reported to the

dental office with aesthetic concerns. She was diagnosed as having an Angle class I malocclusion, with a skeletal class III jaw relationship.

The extra-oral exam showed an oval face, with a small lower facial height. The nasolabial angle and the labiomental groove are normal. The profile is convex. The lips are competent at repose, the lower lip is everted.

The smile is asymmetrical, not relaxed, affecting the aesthetic aspect of the face, and reveals the spaces in the upper frontal region with the first premolar in the place of the canine (Fig. 1.)

Intraoral, the exam showed two incongruent dental arches. The teeth are permanent, except 52 and 53, with a severe coronary destruction. The left upper lateral incisor is peg-shaped, the right one is

missing. There is a complete upper bilateral transposition in the canine-first premolar area. The left upper and lower third molars are present. In the lower arch, the lower right second premolar and the left first molar are missing.

As compensation, the upper incisors are proclined, the transposed canines are ectopic, in distoposition, in infraposition and vestibuloposition and tipped mesially.

The upper arch is narrow in the second premolar area, especially on the right side, sagittally asymmetrical. We notice the mesioposition of the teeth of the left upper side, in correlation with the persistence of the deciduous upper right canine.

There is a deficient bone development on the right side in the lateral incisor area and an excess on the left side in the same area. This can bring a contribution to the facial asymmetry.

She had an Angle class I molar

relationship on the right side, a mild class III canine relationship on the right side and a class II canine relationship on the left side. The incisors on the right side are in crossbite, whereas the 31 is in edge to edge relationship. So is 32, but with a tendency to crossbite. The upper right second premolar is in transversal edge to edge relationship with the antagonist. The lower midline is shifted 1.5 mm to the left of the upper midline. The upper midline is 1.5 mm shifted to the right of the maxillary midline.

Vertically, the left upper incisor are in an edge to edge relationship with the antagonists, and the right upper central incisor is 1/6 covered by the lower one (Fig. 2).

The panoramic radiograph confirmed the diagnosis of upper right lateral incisor and lower right second premolar agenesis and the complete cuspid-first premolar transposition. The right third molars are present intra-osseous (Fig. 3).



**Fig. 1. Pre-treatment facial images**



**Fig. 2. Pre-treatment intraoral images**



**Fig. 3. Pre-treatment panoramic radiographs and lateral cephalometric and its interpretation**

The lateral cephalometric radiograph revealed a class III skeletal malocclusion, a hypodivergent type ( $FMA=19^\circ$ ), bimaxillary protrusion ( $SNA=SNB=84^\circ$ ), with a horizontal occlusal plane ( $2^\circ$ ) (Fig. 3).

The treatment decision was to align the teeth in their transposed position. The first objective was to correct the frontal crossbite. The deciduous lateral incisor and canine and the third molars, except the lower left one, were extracted. An Edgewise prescription slot .022 x 0.30" appliance was chosen. .016" round Ni-Ti and .018", .016 x 0.22" and .018 x 25" stainless steel archwires were used.

The treatment lasted 32 months, with the correction of the anterior crossbite and the alignment of the cuspids in their transposed position. The first upper right premolar was moved mesially in the place of the missing lateral incisor. Two mini-screws were used in the lower arch, in order to upright the molars and close the spaces. This objective was successfully accomplished only in the right side, and partially in the left side because of

the severe bone deficit. Class III elastics (4.5 Oz) were also used. After the removal of the fix appliances, two Hawley retainers were used. The post-treatment photographs (Fig. 4, 5, 6, 7) show an improvement in the facial aspect, especially the smile, now symmetrical.

## DISCUSSIONS

Transposition of teeth is a severe problem. Its aetiology involves two main theories: the genetic influence and the transposition that took place during odontogenesis which caused a change in the tooth eruption path.

The genetic aetiology is supported by the sex-differentiation, the bilateral occurrence and the fact that transposition is usually associated with other anomalies such as tooth agenesis or peg shaped upper lateral incisor [5].

The substitution of the upper lateral incisor by the first premolar, in the case of lateral incisor agenesis, is a solution that avoids prosthetic restorations, also mentioned before by other authors [5, 6, 7].



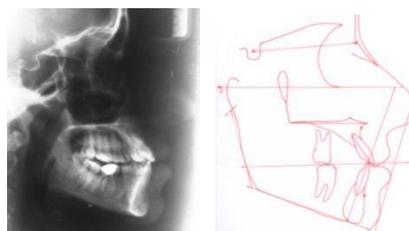
**Fig. 4. Post-treatment facial images**



**Fig. 5. Post-treatment intraoral images**



**Fig. 6. Post-treatment panoramic radiograph**



**Fig. 7. Post-treatment lateral cephalometric and its interpretation**

In the case of a complete transposition, with a change in the apices position, the teeth reposition is very difficult. That is why aligning the teeth in their transposed position is an acceptable compromise. The hypodontia made the treatment more difficult, because of the lack of quantity of bone, necessary for tooth movement and because of the poor bone quality in the tooth agenesis areas, which made the movement difficult. Closing the spaces was finally possible without the aid of implants or prosthetic restorations. The

association between hypodontia and tooth transposition confirms the fact that tooth agenesis affects the tooth eruption pattern and alveolar bone development.

## CONCLUSIONS

Hypodontia by the lack of development of tooth buds affects the development of alveolar bone at the tooth agenesis site. It remains to elucidate the hypothesis that it is could also interfere with the area near the tooth agenesis site.

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