

Original Article

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## Doble transposition canine-premolar. Case Report

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### Introduction

The transpositions are anomalies pretty rare, nearly one case in three hundred patients (1).

The definitions published are numerous.

We can simply say that the dental transposition is the change of position between two neighboring teeth and their roots.

Peek has classified five types of transpositions related to anatomic factors (1).

The transposition can also be complete or incomplete.

The transposition is *complete* when it influences both the crown and the root, and *incomplete* when it influences only the crown (2).

The cases published till now show principally compromise solutions in the therapy and the cases which present the correct repositioning in the dental arch of the transposed tooth are few (2).

The presence of dental anomalies with superimpositions is frequent (3).

In this work we want to show a case of correct introduction in the dental arch of two canine teeth transposed with premolars.

The use of the technique with the segmented arch for the solution of the case has been very important, because it allows to work on different planes at the same time.

The most frequent transposition is the premolar-canine one (4 - 5). The less frequent one is in the lower arch.

### Diagnosis

The 10 years old male patient was submitted to an orthodontic visit for diastems on the upper incisive area (Figs. 1, 2, 3 and 4).



Fig. 1



Fig. 2

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Fig.3



Fig.4

The occlusion presented a first class molar and canine relationship and there were still the presence of the primary canines.

After the first clinic examination we could not see anything particular.

The familiar anamnesis did not report any dental anomaly, transpositions, or agenesis. Only after the execution of the panoramic radiograph it has been possible to diagnose the complete bilateral transposition of both of the upper canines.

From the cephalometric radiograph point of view the patient was brachifacial (Fig. 5) and we could see clearly the position of the transposed tooth which was on a different plane related to the premolar.

After having done the panoramic radiograph (Fig. 6) we could do a correct diagnosis of bilateral complete transposition.



Fig. 5



Fig. 6

### Treatment plan

The first phase was the application of a fixed appliance in the upper arch (Figs. 7, 8 and 9).

We prepared an anchorage, applying a transpalatal bar on the upper arch during the treatment, before the operation for the recovery of the two transposed canines, which was done in different moments for both canines.

The operations were executed with a two month pause one from the other.

We started with an operation on the right canine first.



Fig. 7



Fig. 8



Fig. 9

In both sectors we needed to have access to the included elements and at the same time to maintain a sufficient band of keratinized gingiva. We proceeded to unglue a total thickness border in the first tract and a partial thickness border closer to the crown (Fig. 10).



Fig. 10

Then we repositioned it apically leaving canine's crown shown.

At the end a silky suture 4/0 was applied and then taken away after 1 week.

A utility arch of 0,16 x 0,22 blue elgiloy was applied with a distal button hole at the lateral incisive as a junction point for an elastic ligature starting from canine (Figs. 7, 8 and 9).

This allowed the canine mesial movement without interfering with the premolar and the positioning of a 0.14 nitinol wire for its alignment in the arch.

After having decided that it was possible to put the canine in the correct position, considering this first step as successful, we went ahead to do the same operation on the second transposed canine: the left one.

With a sectional in TMA 0,17-0,25 we gave a palatal torque to remove the premolar's root from the canine.

Keeping the root of the premolar away and moving the canine mesially was the aim of the first part of the treatment.

After having done the hardest part of the treatment, which was the canine's stepping over on the premolar, we put this tooth in the arch passing on an alignment with a continuous arch.

The first part of the operation involved the use of a segmented arch first, followed by a continuous nitinol arch 0.14 and then another one of 0.16. In this part, Australian thread was used as well.

A panoramic radiograph was taken to check the parallelism of the roots.

On the lower arch the fixed appliance was applied to obtain the perfect coordination between the two arches.

and a gnathologic positioner was used to give occlusion stability.

The contention period lasts more or less 2 years.

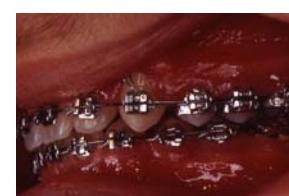


Fig. 12



Fig. 13



Fig. 14



Fig. 15



Fig. 16



Fig. 17



Fig. 18



Fig. 19



Fig. 11

A continuous rectangular wire of 0.16 x 0.22 blue elgiloy steel was applied as the final arch. A good periodontal status was obtained in the canine region (Fig. 11).

The treatment time was 18 months (Figs. 12, 13 and 14).

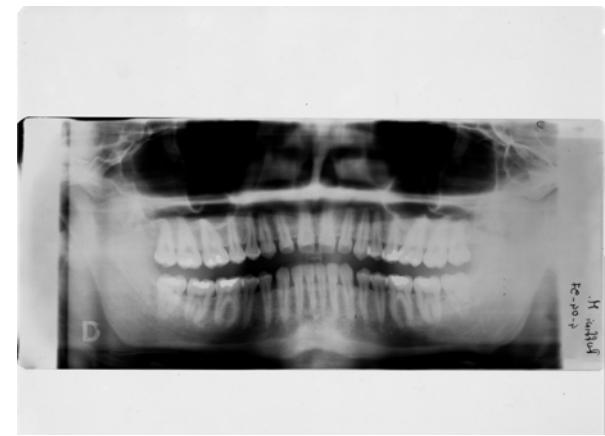


Fig. 20

At the end of the treatment (Figs. 15, 16, 17, 18, 19, 20 and 21) a lower 3-3 retainer was applied,



Fig. 21

### **Treatment plan analysis**

The aim was to make the canine step over with the premolar.

The orthodontic biomechanics and the use of the segmented technique precisely has allowed us to work on different planes and to reach the goal to bring the teeth in their correct position

The targets of the treatment have been reached.

The case has been finished in two years.

Patient's collaboration has been quite good.

The final panoramic radiograph of the operation did not show any signs of root resorption despite the difficulty of the operation.

### **Discussion**

The treatment has been completed. The most difficult part has been the search of a correct method of operation. The patient was presented during a period when the canines were still very tall and this allowed the stepping over of the premolars. The premature diagnosis and the biomechanics executed have been very important for the solution of the case.

The vestibular position of the canine has made the treatment easier.

The use of the segmented technique has been very important for the solution of the transposition permitting to work on different spatial planes.

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