

# EARLY DIAGNOSIS OF A DEVELOPING TRANSPOSED TOOTH - A CASE REPORT

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## **Abstract:**

Although the frequency of dental transposition is only about 0.4% the difficulty of treatment makes this anomaly an event of clinical interest. Maxillary Canine-Lateral Incisor Transposition (Mx.C.I2) is the developmental disturbance of tooth order characterised by positional interchange of two teeth. The children with Mx.C.I2 show mesial ectopic eruption of maxillary canine and adjacent lateral erupts distal to it. Anomaly likely results from genetic mechanism similar to those responsible for occurrences of its associated dental anomalies, and other etiological factors. The treatment decision is dependent on the *age* at which the transposition is discovered, as well as the severity and completeness of the anomaly. The present case shows an early diagnosis of a unilateral transposition of the impacted maxillary canine with a lateral incisor and its orthodontic clinical management by Modified Ballista Spring.

**Key Words:** Dental Transposition, Ectopic Eruption, Genetics, Early Diagnosis, Clinical management, Age, Severity, Ballista Spring, Impacted Canine.

## **Introduction**

Tooth transposition is the positional interchange of two adjacent teeth, especially their roots, or the development or eruption of a tooth in a position occupied normally by a nonadjacent tooth.<sup>1</sup> Although the frequency of dental transposition is only about 0.4%<sup>2</sup>, the difficulty of treatment makes this anomaly an event of clinical interest.<sup>3</sup> The present case shows how a unilateral transposition of a Maxillary Canine with a Lateral Incisor was treated orthodontically. As per classification of impacted canine it is classified as MxCI2.<sup>8</sup>

## **Case Report:**

A male patient of 13yrs reported to the Department of Orthodontics, Modern

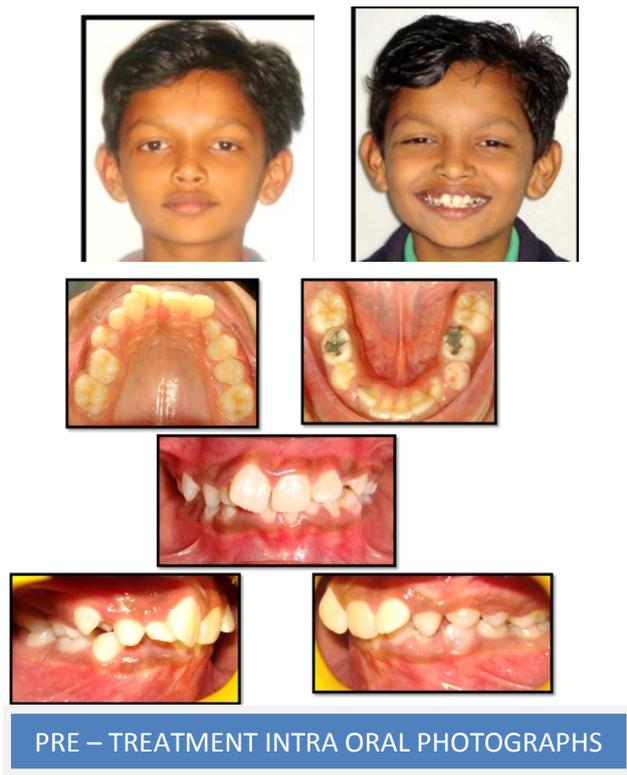
Dental College & Research Centre with a chief complaint of irregularly placed upper front teeth. On extraoral examination he had a mesoprosopic facial form, competent lips, convex profile, average clinical FMA, normal nasolabial angle. Intraoral examination reveals endon molar relation bilaterally, Rotated 11, 12, 22. Mixed dentition, with impacted (transpositioned 13) and 23. With skeletal class I pattern, anterior deep bite retrognathic mandible, short body, retruded chin, horizontal growth pattern, proclined upper anteriors.

## **Diagnosis of Transposition:**

It can be diagnosed by intra oral periapical radiograph, orthopantomogram, lateral cephalogram, CBCT (cone beam computed tomography).

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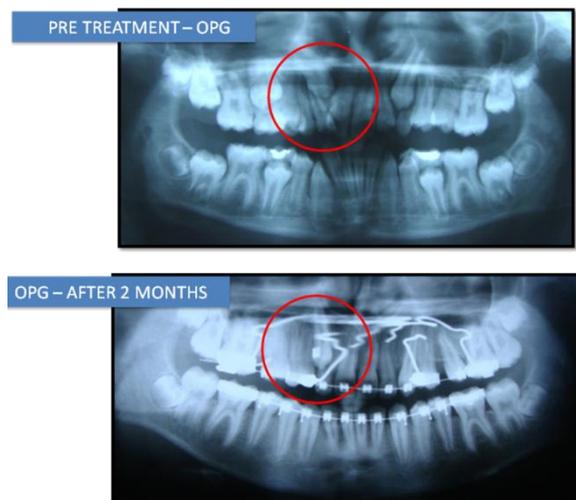
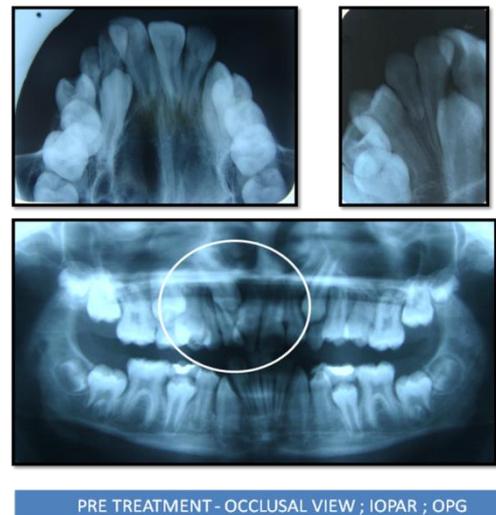


### Treatment Planning:

The treatment plan was to start with fix mechanotherapy (MBT- 022) followed by extraction of retained deciduous canines and canine was surgically exposed and relocated. Leveling and aligning. Molar distalization for correcting molar relation to class I by Pendulum appliance. Finishing and detailing.

### Treatment Progress

Extractions were done for over retained deciduous teeth, followed by raising the buccally positioned flap and surgically exposing the impacted developing transpositioned canine. A beggs bracket was bonded on the canine with an overhanging ligature wire. The flap was sutured and patient was recalled after a week. After removal of sutures placement of MBT .022' brackets were done. A modified ballista spring was soldered on accessory tube of right first molar band. Nance palatal button was attached with molar bands and cemented. Initial leveling and aligning was done by .016' NITI. The spring



was ligated to the overhanging wire of impacted canine with a force of 200 grams. Patient was recalled every month for activation of spring. After two months as the right upper canine have sufficiently appeared in buccal vestibule the spring was removed. Banding was done on upper first premolars and a pendulum appliance was cemented for molar distalization.

### Design of the Appliance:

The Ballista Spring was given by Jacoby in 1979, used for treating impacted canines.<sup>14</sup> The original ballista spring is a 0.014, 0.016, or 0.018 inch round wire, which accumulates its energy by being twisted on its long axis. Its

anchorage extremity penetrates in both headgear and edgewise vestibular tubes of the first or second maxillary molar and it is ligated to this tube. In this way, the wire cannot rotate in the tubes. The horizontal part of the wire accumulates the energy. This part of the wire was tied by a ligature on the first premolar, which allows it to rotate in the slot of the bracket as a hinge axis. The last part of the spring is bent down vertically and ends in a loop shape to which a ligature elastomeric thread can be attached. When the vertical portion of the spring is raised toward the impacted tooth, the horizontal part accumulates its energy into the twisted metal. When the vertical section is released, it bumps down like a “ballista.”<sup>14</sup>

In this case we have made a spring of 21 gauges and soldered the end to auxiliary tube of the molar band. The vertical arm is ligated to the overhanging ligature wire of the impacted transposed canine with a distobuccal force of around 200gms.

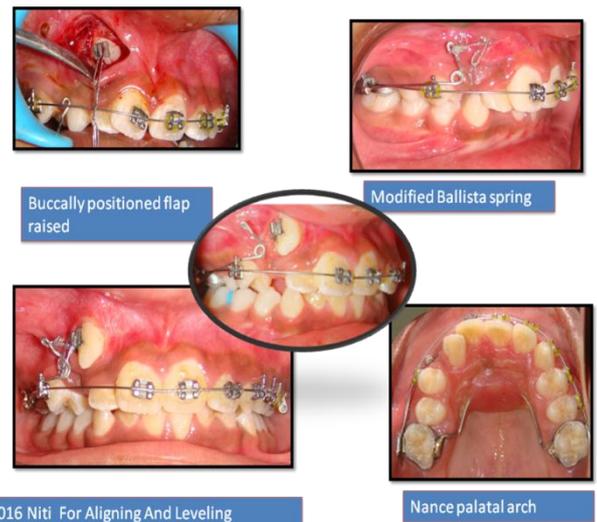
**Discussion:**

The maxillary canine is one of the most commonly transposed teeth<sup>(1,4,5)</sup> but its transposition generally occurs in combination with other anomalies such as agenesis (40%), deciduous canine retention (50%), and peg-shape maxillary lateral incisors (25%)<sup>(3,6,7)</sup>. The left side is often more involved than the right side (69%)<sup>(3,6,7)</sup>. The rate of bilateral transposition has been reported as 5%.<sup>(5,6,7)</sup>

Although the causes most frequently cited for transposition are primary canine retention or early loss<sup>(10, 11)</sup>. The transposition of analog teeth in the process of odontogenesis, deviation of the path of eruption, and heredity, no definitive conclusion has been reached.

**Why Greatest Incidence of Maxillary Canine Transposition**

The maxillary permanent canine has the longest period of development. It has the longest way to travel from the point of its early



formational stage, (under the orbit). It starts to calcify at 4-5 months after parturition and erupts at 12-13 years<sup>(12)</sup>.



**Treatment Options**

Either aligning the involved teeth, maintaining them in their transposed positions, or extracting one or both transposed teeth, or moving them to their correct anatomic position within the arch.<sup>(13)</sup> Here we have customized the Ballista Spring which was used in management of impacted canines.<sup>(14)</sup>

## Conclusions

Early diagnosis of a developing transposition is important. In fact, when incipient transposition is detected early enough, interceptive treatment should be initiated to remove retained primary teeth and guide the transposed teeth to their normal places in the arch. This can be accomplished with minimal disturbance to the surrounding tissues.

## References:

1. Sheldon Peck (AJO. 1995: 107) Classification of maxillary tooth transposition.
2. Joshi, M.R. and Bhatt, N.A.: Canine transposition, Oral Surg. Oral Med. Oral Pathol. 31:49-54, 1971.
3. Chattopadhyay, A. and Srinivas, K.: Transposition of teeth and genetic etiology, Angle Orthod. 66:147-152, 1996.
4. Peck, S.; Peck, L.; and Kataja, M.: Mandibular lateral incisor-canine transposition, concomitant dental anomalies, and genetic control, Angle Orthod. 68:455-466, 1998.
5. Joshi, M.R. and Gaitonde, S.S.: Canine transposition of extensive degree: Case report, Br. Dent. J. 121:221-222, 1996.
6. Shapira, Y.; Kuflinec, M.M.; and Stom, D.: Maxillary canine-lateral incisor transposition, Am. J. Orthod. 95:439- 444, 1989.
7. Platzer, K.M.: Mandibular incisor canine transposition, J. Am. Dent Assoc. 76:778-784, 1968.
8. Peck, S. and Peck, L.: Classification of maxillary tooth transpositions, Am. SJ.Orthod. 107:505-517, 1995.
9. Maia, F.A.: Tranaposições dentarias: Um dilema no tratamento ortodontico, Rev. Dent. Press Ortod. Ortop. Fac. 4:1-15, 1999.
10. Mader, C. and Konzelman, J.L.: Transposition of teeth, J. Am. Dent. Assoc. 98:412-413, 1979.
11. Parker, W.S.: Transposed premolars, canines, and lateral incisors, Am. J.Orthod. 97:431-448, 1990.
12. Tooth transpositions – a review of literature and treatment considerations ; Y Shapira – Angle orthodontist 1988
13. Clinical Management of Tooth Transposition- Maria Francesca- World J Orthod 2003; 4:333–342.
14. Jacoby 1979 75: 143-151: The “ballista spring” system for impacted teeth, Am. J. Orthod.

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