



Case Report

Orthodontic treatment of a patient with labially impacted and transposed maxillary canine: A unique case report

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ABSTRACT

Maxillary canines are the most common teeth involved in impaction and transposition owing to their long eruption pathway. An unusual case of labially impacted and transposed maxillary canine with maxillary lateral incisor is presented. The technique used in this challenging case includes orthodontic extrusion and alignment of the transposed teeth to their normal positions.

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1. Introduction

An Impacted tooth is defined as the one which is completely or incompletely embedded in the alveolus for more than 2 years of its normal physiological eruption timing.^{1,2} Maxillary canines are most frequently involved in impaction after third molars. The prevalence of impacted maxillary canine ranges between 1-3% and is often ectopically displaced.¹⁻³ According to the literature, several predisposing factors contributes to impaction includes ectopic position of the tooth germ, lack of eruption guidance, genetic factor, etc.^{2,3} Moreover, maxillary canines are most frequently involved in transposition with maxillary premolars and lateral incisors.⁴ The most common reason for transposition is the exchange in the position of the developing tooth buds owing to the high incidence of over-retained deciduous canines. Additionally, there are other etiological factors such as trauma, cysts or other dental pathologies.⁵⁻⁷

This article illustrates orthodontic management of labially impacted and transposed maxillary canine with respect to maxillary lateral incisor. A young girl, aged

16 years, had a chief complaint of spacings in the front teeth without any significant medical history. Intraoral examination revealed Class I malocclusion and right maxillary lateral incisor in the position of right maxillary canine and over-retained deciduous canine. The panoramic radiograph revealed impacted right maxillary canine associated with an odontome along with an over-retained deciduous tooth. Figure 1.

1.1. Treatment plan

1. Extraction of an over-retained deciduous tooth.
2. Surgical exposure of canine and removal of odontome.
3. Orthodontic extrusion of maxillary canine and correction of transposition with maxillary lateral incisor.

1.2. Treatment

The aim of the treatment is to improve the aesthetics as well as the function of the dentition. The first step in the management of this case was the extraction of an over-retained deciduous canine, removal of odontoms associated with the impacted canine and surgical exposure of the impacted canine Figure 2.

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Figure 1: Shows pre-operative OPG displaying impacted upper right canine along with over retained deciduous tooth.

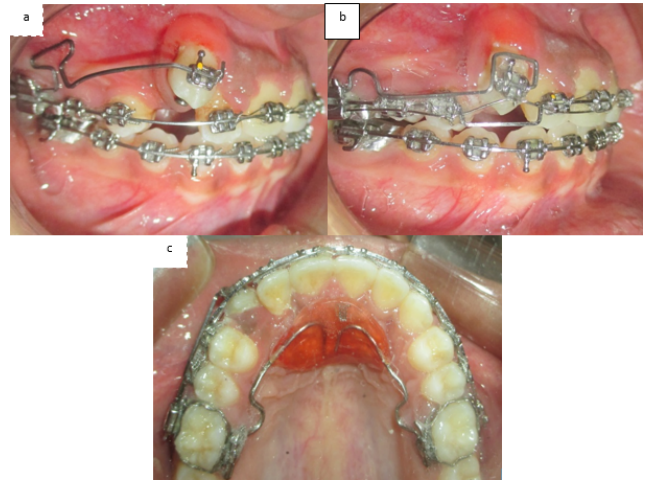


Figure 4: a: T loop for retraction of maxillary canine; b: R loop for uprighting of maxillary canine; c: Occlusal picture of nance holding arch.



Figure 2: Intraoral picture of the maxillary right canine after surgical exposure.



Figure 5: a,b,c,d,e: Post-operative intraoral picture of the case after debonding.

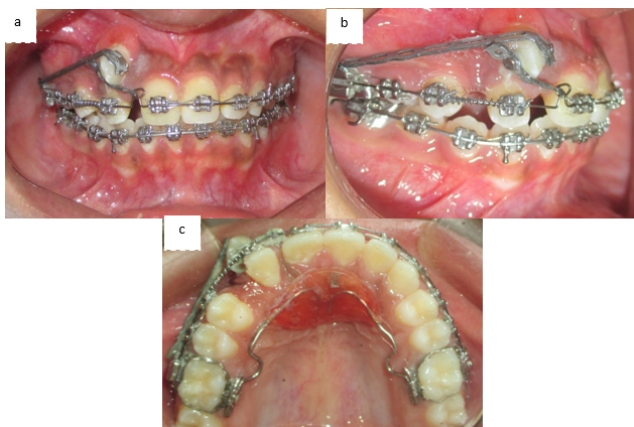


Figure 3: a, b: Illustrates use of AJ Wilcock as a base archwire for derotation of maxillary right canine; c: Maxillary occlusal view showing use of nance holding arch for anchorage.

The second step in the treatment was bonding metal brackets in the upper and lower arches and alignment and levelling of the arches. The next step was placement of an open coiled spring for mesialisation of lateral incisor, followed by distalisation and derotation of canine with e-chain on the 0.018 inches AJ Wilcock wire Figure 3a,b,c.

After complete mesialisation of the maxillary lateral incisor, a segmental T-loop was used for retraction of canine made up of 17x25 TMA wire. The T-loop was

activated 2mm every month until the desired retraction is achieved.^{8–10} This was followed by placement of R-loop made up of 17x25 TMA wire for the correction of root position of the canine. Anchorage was obtained with the help of a nance palatal arch and using 17x25 SS base archwire.^{11,12} Figure 4a,b,c.

After correction of the transposition between right maxillary canine and lateral incisor, and finishing the occlusion debonding was done followed by placement of fixed and removable retainers in both the arches.^{13–15} Figure 5.

2. Discussion

Canines are the most common teeth involved in impaction. Orthodontic management of an impacted as well as transposed canine is difficult as it is troublesome to provide root control while moving the teeth in the desired position. In this case report, we have first done surgical exposure of an impacted canine followed by mesialisation of lateral incisor and then extrusion and distalisation of the canine. Anchorage preparation was crucial in each stage of treatment. Loops mechanics helped in distalisation of canine and controlling the root position.

3. Conclusion

Orthodontic treatment of an impacted and transposed teeth is challenging because it is difficult to controlled the root position. Early diagnosis and treatment planning helps in saving the teeth. Since, canine is the corner stone tooth and it is crucial in aesthetics as well as in function, every attempt should be made to salvage the tooth with the best available treatment mechanics.

4. Source of Funding

None.


5. Conflict of Interest

None.

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