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ABSTRACT

Simplified approach in correction of highly placed canines are necessary to place the teeth in correct ideal position without disturbing the other teeth or occlusion. Prudent treatment planning is necessary to achieve the various treatment goals. This article describes two case reports for the orthodontic management of patients with labially and highly placed permanent maxillary canines.

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INTRODUCTION:

Eruptive disturbances are alterations of normal tooth eruption, including accelerated, delayed, failed, or deviated in the direction of tooth eruption.¹ Because of overretained deciduous teeth, permanent teeth haven't got enough space in the arch so that ultimately disturb the eruptive path of that teeth.

Impaction is the total or partial lack of eruption of a tooth well after the normal age of eruption.² Between 25% and 50% of the general population are affected by impacted teeth, with the incidence of upper canine impaction reportedly ranging from 0.92% to 4.3%, respectively.^{3,4} Maxillary canine impactions are twice more common in females (1.17%) than in males (0.51%).⁵ Eight percent of patients with impacted maxillary canines have bilateral impactions.⁵ Impaction of a maxillary canine is a common problem because it has the longest period of development, the deepest area of development, and the long eruption path of all the teeth.³ They are also the teeth that frequently require surgical and orthodontic intervention for their eruption.

According to Kokich and Mathews the cause of labial impaction of the canines probably is related to either a retained deciduous tooth, diversion of the canine tooth bud, or idiopathic failure of eruption of unknown origin.⁶

CASE REPORT - I

A 19-year-old female presented for orthodontic treatment with the chief complaint of impaired facial esthetics during smile due to irregular upper front teeth. She had a grossly symmetric, mesocephalic head & mesoprosopic face with

interlabial gap of 1 mm [Figure - 1]. Intraoral examination [Figure - 2] showed unilaterally labially highly placed permanent canine and crowding in lower arch. In the occlusion, she had 1 mm of openbite and a 2 mm overjet. The molar relationship was Class I. The upper dental midline was concordant with the face, and lower dental midline was shifted to left side by 3 mm. There was no relevant history of any medical problem.

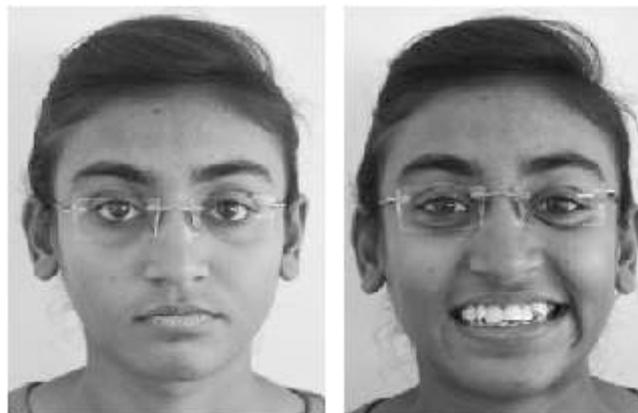
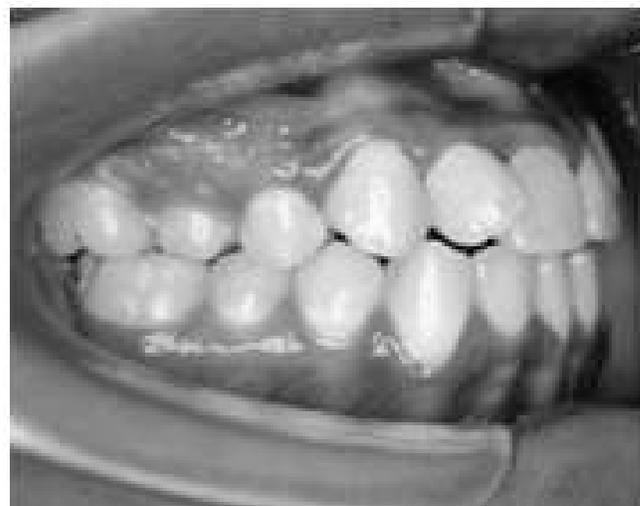


FIGURE-1



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FIGURE-2

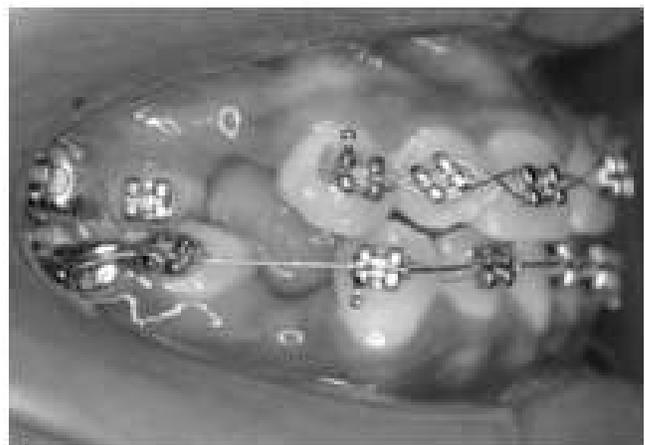
TREATMENT OBJECTIVES AND PLAN

The objectives of orthodontic treatment for the patient were to extract the first premolars and then get the labially & highly placed maxillary canine in proper position, then level and align the arches, obtain normal overjet, and overbite, and achieve a well-intercuspatated bilateral Class I canine and molar occlusion.

It was decided to use cantilever springs on the left side to pull the highly placed canines downwards in nearly maximum occlusal plane and then bond the other remaining teeth and continuous Niti wire was given including all teeth.

TREATMENT PROGRESS

Both the side first molar banding and maxillary canine bonding were done. Cantilever spring was fabricated from 17*25 beta-titanium alloy wire and attached actively to canine bracket on left side. [figure-3



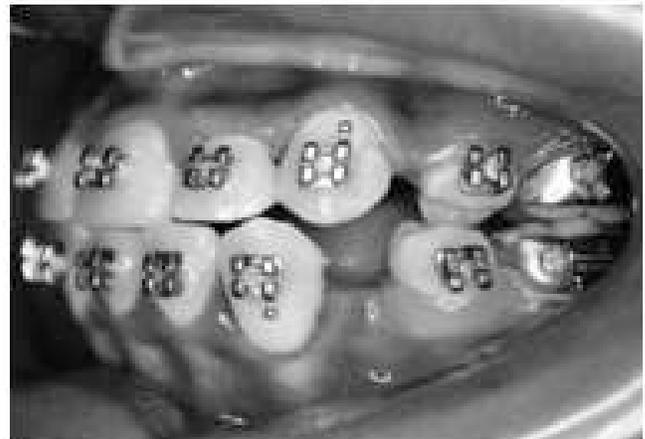
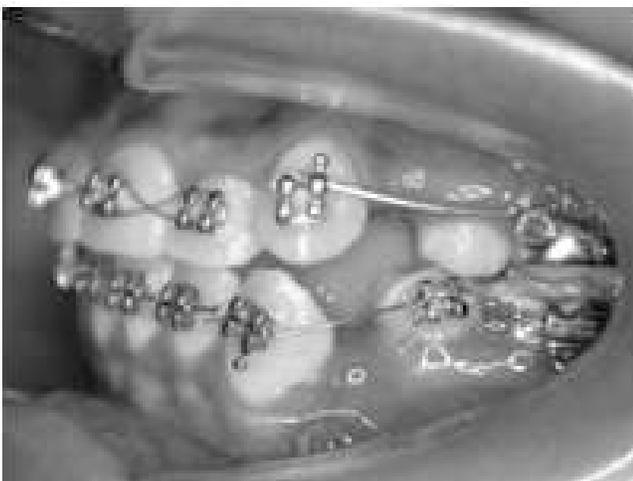
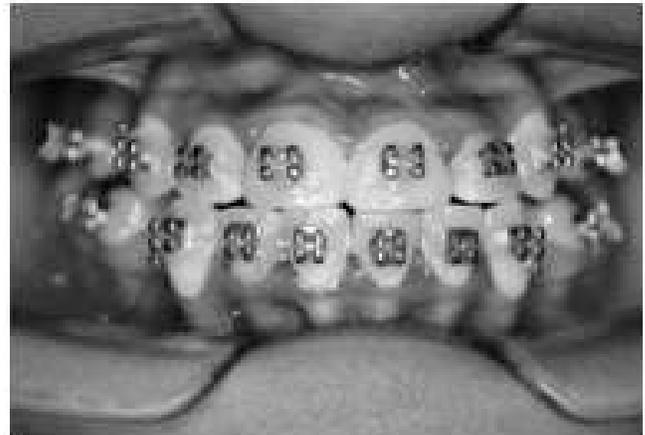
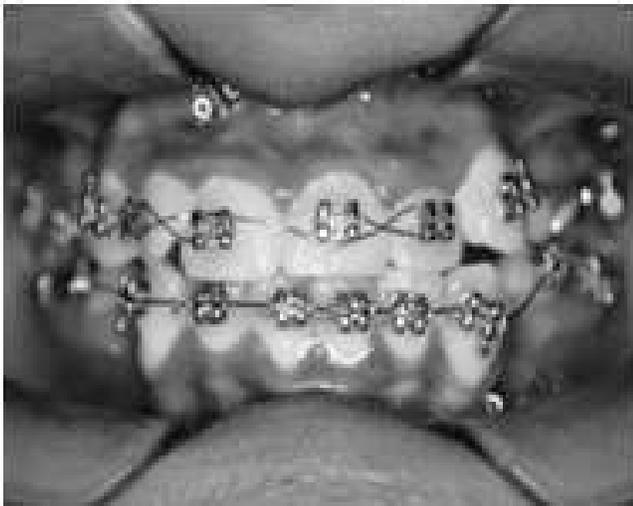


FIGURE-4

FIGURE-3

TREATMENT RESULTS

Within 2 months of active orthodontic treatment using cantilever springs, the left side canine came nearly straight to the occlusal plane [figure -4]. After that, bonded the remaining teeth and leveling and alignment was done with continuous Ni-ti wire including all teeth followed by retraction of anteriors in the extraction space. [figure -5].

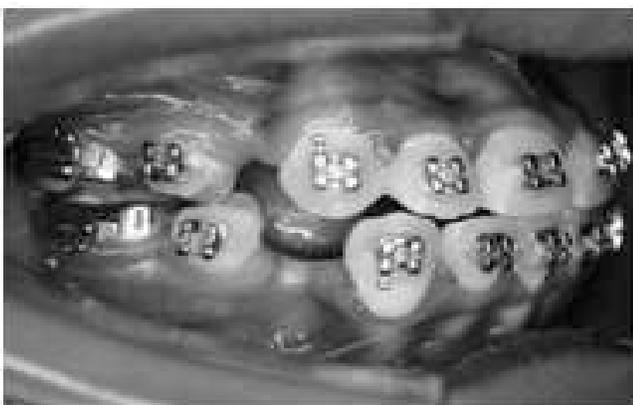




FIGURE-5



CASE REPORT - II

A 16-year-old female presented for orthodontic treatment with the chief complaint of impaired facial esthetics during smile due to irregular upper & lower front teeth and over-retained deciduous teeth. She had a grossly symmetric, mesocephalic head & mesoprosopic face. [Figure - 1]. Intraoral examination [Figure - 2] showed unilaterally labially highly placed permanent canine and over-retained deciduous canine on right side and crowding in lower arch with gingival recession in the lower left central incisor. In the occlusion, she had anterior crossbite and a 2 mm overjet. The molar relationship was end-on on right side and Class I on left side. The upper dental midline was concordant with the face, and lower dental midline was shifted to left side by 2 mm. There was no relevant history of any medical problem.

TREATMENT OBJECTIVES AND PLAN

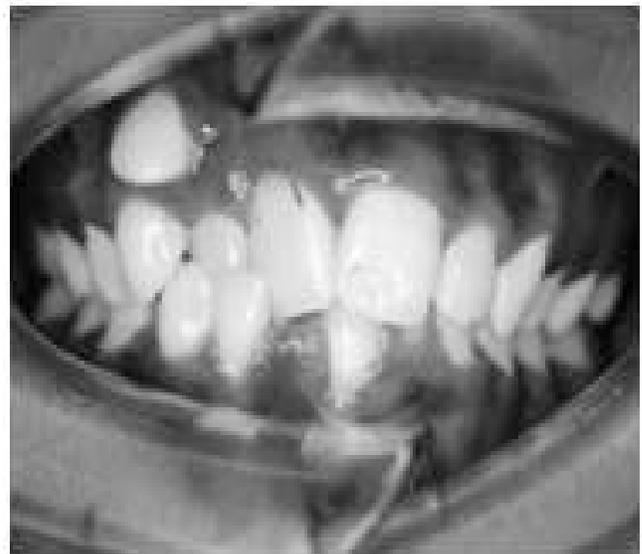


FIGURE-1



FIGURE-2

The objectives of orthodontic treatment for the patient were to extract the over-retained deciduous canine and then get the labially & highly placed maxillary right canine in proper position, then level and align the arches, obtain normal overjet, correct the anterior crossbite, and achieve a well-intercusated bilateral Class I canine and molar occlusion.

It was decided to use cantilever springs on the right side to pull the highly placed canines downwards in nearly maximum occlusal plane and then bond the other remaining teeth and to give a continuous Nitiwire including all teeth.

TREATMENT PROGRESS

The first molar banding and maxillary canine bonding was done. Cantilever spring was fabricated from 17*25 beta-titanium alloy wire and attached actively to canine bracket on rightside.[figure – 3]



FIGURE-3

TREATMENT RESULTS

Within 3 months of active orthodontic treatment using cantilever springs, the right side canine came nearly straight to the occlusal plane[figure -4]. After that, included the remaining teeth and leveling and alignment was done with continuous Ni-ti wire.



FIGURE-4

DISCUSSION

Maxillary permanent canines play an important role for an attractive smile and are also essential for a functional occlusion.

The cantilever spring is easy to fabricate and biomechanically efficient for occlusal movement of buccally & highly placed canine. When tied with the braided ligature strands, the stored energy in the spring generates optimum eruptive force in the occlusal direction.

The segmental beta-titanium alloy cantilever spring is used to provide a point force application to the canine, a low load-deflection rate, and a large range

of activation. In this statically determinate force system, the buccal segments were more efficiently managed, and intrusive side-effects were distributed over a wider area to minimize the clinical side effects.⁷

CONCLUSION

Understanding the biologic principles and proper application of the biomechanics enable us to carry out challenging tooth movements. Best treatment goals can be achieved in limited time using the magical effect of cantilever spring without interfering the other teeth or occlusion and provide good orthodontic treatment outcome.

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