Orthodontic Management of Buccally Erupted Canine with a Modified Nance Button : A Case Report

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Abstract

Ectopic canine is usually is usually a cause of class I malocclusion and is difficult to manage orthodontically as it is related to factors like severe crowding, gingival recession and midline deviation .

In this following case report we used the new approach to manage buccally placed canine using a modified nance button to maintain good anchorage control and bring the canine into its original position and correct the malocclusion.

Introduction

The prevalence of ectopic eruption of permanent maxillary canine in the general population is approximately 1-2%.[1,2] Buccally displaced canines are commonly seen in practice.

Among the few factors involved in the cause of ectopic canines a few are :a lack of space, early loss of a primary canine, root dilacerations, and an abnormal lateral root position in relation to an erupting canine.[1-7] Canine ectopia has also been associated with genetics.[8-10]

Orthodontic tooth movement of an ectopically erupted canine can be difficult as it is usually seen in cases with severe crowding .for such instances extraction is the choice of treatment plan thus making anchorage control a very important aspect of the treatment.This problem may be controlled by anchorage reinforcement measures such as a palatal arch or a Nance button.

Thus high buccally placed canines can be moved distally and occlusally using light continuous orthodontic forces.

The buccally placed canine root is covered by thin buccalbone.thus to overcome this p[roblem palatal root torque is increased, so as to decrease the risk of bone dehiscence and decrease the risk of gingival recession.[11]

In addition, the canine should be allowed to erupt in place naturally rather than to extrude it as this may lead to gingival recession.[11]

Case Report

Diagnosis

A 19 year old male patient reported to the department of orthodontics and dentofacial orthopaedics with chief complain of irregularly placed upper front teeth. The patient presented with symmetrical face and convex profile. When smiling patient showed 90% display of maxillary incisors and 0.5mm of gingiva.

Intraoral examination revealed a Class I molar relationship,4mm overjet,3mm overbite ,Upper dental midline shift to left and lower dental midline shift to right. The maxillary left canine had erupted ectopically in the arch. Model analysis shows 6mm tooth material excess in upper arch and 1mm tooth material excess in lower arch. The lateral cephalogram shows a class-II skeletal pattern (ANB:3; wits appraisal 9mm)

Fig. 1- Pretreatment Extra Oral Photos

Fig. 2-Pre Treatment Intra Oral Photos

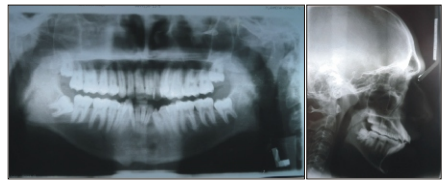

Fig. 3- Pre-Treatment Intra Oral OPG & Lateral Cephalograph

Cephalometric Values	Pre -Treatment
SNA	74o
SNB	71o
ANB	3o
Angle of Convexity	5o
Wits	9mm
FMA (Tweed's)	29o
SN - GoG-n	33o
Jarabaks	60.4%
Bjorks sum	397o
Upper Incisor to NA	40o / 12mm
Lower Incisor to NB	42o / 13mm
Lower incisor to Mand. Plane	106o
Nasolabial Angle	89o
Interincisal angle	100o

Treatment Plan

Fixed orthodontic appliance with extractions of teeth right maxillary first premolar (14), left maxillary first premolar (24), left mandibular first premolar (34), right mandibular first premolar (44) with maximum anchorage using a modified nance palatal plate.

Treatment Progress

Orthodontic treatment was started with bonding of upper and lower arch with 0.022× 0.028-in pre adjusted edgewise brackets. Initial alignment of teeth was accomplished with upper and lower 0.014 inch Ni Tiarchwires.

14, 24, 34, 44 were extracted and alignment was completed using a 19×25 niti arch wire.

A modified nance palatal plate was constructed to aid in the alignment of the buccally placed canine. A hook type of an

extension was made from the plate to which ligature tie could be attached.

A lingual button was bonded to 23. And ligation tie was given from this lingual button to the hook on the nance palatal plate to get the canine into the arch.

After the leveling and aligning 19×25 ss was placed in both upper and lower arch. No additional torque was placed on the canine. Maxillary and mandibular retainers were given to keep the ectopic canine in arch.

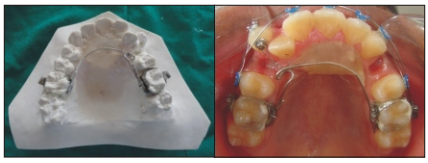

Fig. 4- Modified Nance Palatal Plate

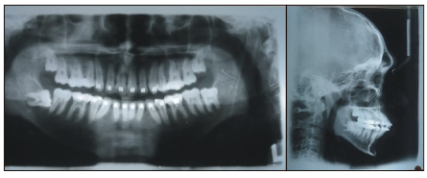

Fig. 5- Mid Treatment OPG & Lateral Cephalograph

Treatment Results

Post Treatment Extraoral photographs show a general improvement in the facial profile.

And the post treatment intraoral photographs and cast show a satisfactory dental alignment. Class I canine relationship on both the sides and class I molar relationship was maintained both sides.

Fig. 6- Post Treatment Extra Oral Photos

Fig. 7- Post Treatment Intra Oral Photos

Fig. 8- Post Treatment Retention

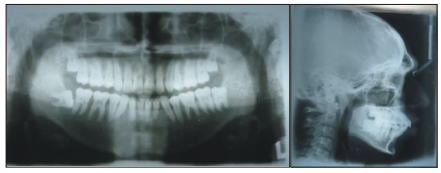

Fig. 9- Post Treatment OPG & Lateral Cephalograph

Cephalometric Values	Pre Treatment	Post Treatment
SNA	740	750
SNB	710	740
WITS	9mm	3mm
N-A-Pg	50	30
Upper Incisor to NA	400 / 12mm	290/10mm
Lower Incisor to NB	42o / 13mm	31o / 10mm
Lower incisor to Mand. Plane	106o	92o
Inter-incisal Angle	100o	117o
Nasolabial Angle	89o	96o
Upper lip to E line	1mm	-2mm
Lower lip to E line	8mm	4mm
Upper lip to S line	5mm	5mm
Lower lip to Sline	11mm	7mm

Discussion

In orthodontic practice, it is common to have patients with ectopic eruption of canine, in which buccally erupted canines are mostly encountered. Most of the cases are treated with NiTi flexible wire engaged in rotated and highly placed canine during the leveling and alignment stage. Flexibility of the NiTi wire pulls the canine in proper level and alignment with the anchorage from the adjacent tooth; in which lateral incisors and premolars are usually the anchor teeth. However during the process of alignment of buccally placed canine, there is counter intrusion of the anchorage unit satisfying the Newton's third law of motion. Finally leaving with a distorted occlusal plane.

In contrary, the retrieval of rotated and highly placed canine with modified nance button resulted to a minimal chance of distortion of the ooclusal plane. The multi-loop creates a break in continuity of arch wire resulting in minimal side effect to the anchorage unit.

Conclusion

The successful treatment of a patient with an ectopic tooth and severe crowding can be a challenging task for an orthodontist. Proper treatment of ectopic canine patients with severe crowding requires careful treatment planning by orthodontist.

The decision to extract the premolars is to be good esthetically, functionally, and for more stable results in these patients. In light of attention currently being paid to esthetics ,treatment plans for patients with ectopic canine must consider more than the orthodontic outcome.

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