

A Class III look with Buccally placed high Canine of an Angle's Class I Malocclusion treated in a Non Extraction approach

Anwar N¹ BDS, FCPS and Hassan G S² BDS, PhD

ABSTRACT

Class I malocclusion also called neutro-occlusion, this describes a normal molar relationship but there is malposition of one or more individual teeth. Treatment of Class I malocclusion varies depending on the condition and severity. However, the purpose of this report is to review the orthodontic treatment of a Class I malocclusion with buccally placed canine without extraction. This case report describes a 13-year-old girl with a Class I malocclusion, anterior and posterior crossbite, a retrusive maxilla with high canine. The Class I malocclusion with posterior crossbite was corrected with quad helix followed by non extraction orthodontic treatment with fixed appliances to correct anterior crossbite. At the end of treatment we obtained an acceptable occlusion relationship and the facial profile and the patient's smile were improved substantially.

Key words: Angle's Class I malocclusion, buccally displaced canine, crossbite, non extraction treatment.

INTRODUCTION

Class I malocclusion is the most common type of malocclusion. The prevalence of ectopic eruption or impaction of canine is 1-2 % of the general population.^{1,2} in which palatally displaced canine is twice more common than the buccally placed canine.¹⁻³ However, clinically buccally placed canines are seen more frequently. The causes for ectopic eruption or impaction of canine can be due to systemic and local factors. Environmental factors may contribute to a long eruption path of a canine. Some local aetiologies include lack of space, early loss of a primary canine, ankylosis, and an abnormal lateral root position in relation to an erupting canine.⁴ Since the normal eruption path of the permanent canine is slightly buccal to the line of arch, reduced space in

the canine area between the adjacent teeth will prevent the canine from taking up its normal position in the arch and it will remain buccally displaced.⁵

DIAGNOSIS

The patient was a girl, age 13 years, came to the Orthodontic department at BSMMU with the chief complain of buccally placed high canine. She had a straight profile with competent lips. She had a class I molar relation, buccally placed high canine, reverse overjet, with anterior and posterior crossbite. The upper lateral incisors were blocked out in crowded arch. Cephalometrically, it was found that: ANB angle = -1° , SNA angle = 75° , SNB = 76° . The interincisal angle was 121° when it was measured initially.



FIGURE 1: Initial facial and intra oral photographs

TREATMENT OBJECTIVES

Treatment objectives include correction of the posterior and anterior crossbites, improvement of the dentoalveolar and maxillomandibular relationships, improvement of facial esthetics, and establishment of a stable occlusion.

TREATMENT STEPS

Treatment began with expansion of the maxillary arch with quadhelix banded on the first molars to correct the posterior crossbite. Since the canines on both sides were high, buccally placed, our aim was to bring the canines in occlusion. Leveling and alignment was done simultaneously using 0.012 round stainless steel multiloop archwire and an omega loop in front of molars to flare the anterior segment to create the required space in the arch for proper alignment of the canines.

Once the posterior crossbite was corrected, the quadhelix was left in passive form for retention for further 3 months. All the teeth were almost aligned with the left canine in occlusion, however sufficient space need to be created to bring the right canine in occlusion. So then the wire was replaced with 0.014

round stainless steel and a buccal coil spring was given to gain space for the canine on the right side. The canine bracket was tied to the archwire and activated in every visit until it was in occlusion. After levelling and alignment round 0.016 stainless steel archwire was given on the upper arch. The lower arch was bonded and levelled with round 0.014 stainless steel archwire. When an edge to edge bite was achieved, class III elastics were used in order to create an overjet. To correct midline discrepancies, cross elastics were used followed by anterior box elastics to establish adequate overbite.

After all the teeth were aligned on both jaws, the teeth were only left with bonded brackets without archwire for the settlement of occlusion. This stage of treatment is for detailing and finishing of occlusion, attainment of proper arch form and correction of minor tooth positions and settling of occlusion.

At the end of treatment, a functional occlusion was achieved with class I molar and canine relation, correction of anterior and posterior crossbite and sufficient overjet. The patient was finally given fixed retainers on both jaws at the end of the treatment.



FIGURE 2: Treatment progression during different stages

Table 1: Summary of cephalometric measurements

Measurements	Normal	Pre treatment	Post treatment
SNA (Steiner)	82°	75°	78.5°
SNB (Steiner)	80°	76°	76°
ANB (Steiner)	2-4°	-1°	2.5°
Interincisal angle (Downs)	130°	121°	119°
FMIA (Tweed)	65°	55°	59°
FMA (Tweed)	25°	31.5°	28°



FIGURE 4 : Pre and post treatment changes

DISCUSSION

The treatment objectives were attained with the non extraction treatment protocol. 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 teeth; in which lateral incisors and premolars are usually the anchor teeth. However during the process of alignment of buccally placed canine, there is usually some intrusion of the anchorage unit and finally leaving with a distorted occlusal plane.

Keeping this in mind, we started the retrieval of a highly placed canine with multi-loop in a stainless steel wire resulted to a minimal chance of distortion of the occlusal plane. The multi-loop created a break in continuity of arch wire resulting in minimal side effect to the anchorage unit. The stainless steel multi-loop wire provided flexibility without compromising the strength of the wire providing stability to the anchorage unit.⁶ As a result, there was minimal distortion to the occlusal plane.

Adequate results were achieved through a nonextraction treatment approach. If four premolars were extracted it might have resulted in over retraction of the maxillary anterior teeth and could adversely affect the patient's profile.

The proclination of the maxillary incisors to resolve the maxillary crowding, allowed the canines to align properly in the arch and to create an adequate overjet. With this mechanism of treatment plan the patient's profile was improved markedly.

The successful treatment of a patient with an ectopic tooth and severe crowding can be a challenging task for an orthodontist. However, once the correction is successful, active retention and follow-up are essential if the patient is still growing.

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Correspondence

Dr. Nabila Anwar BDS, FCPS
 Dept. Of Orthodontics and Dentofacial Orthopaedics
 Bangabandhu Sheikh Mujib Medical University
 (BSMMU) Shahbag, Dhaka
 Cell : +88 01819153000
 E-mail : nabila_h2000@yahoo