MODIFIED POSTERIOR BITE BLOCK FOR ANTERIOR CROSSBITE CORRECTION

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ABSTRACT
A 16-year-old female patient reported to the Orthodontics Department with a chief complaint of irregularly placed teeth in the upper front tooth region. On extraoral facial patient has a mesoproscopic facial form with straight facial profile and an adequate lip seal. Whereas on intraoral examination Angles class I molar relation was present bilaterally with end on canine relation along with the anterior crossbite. In this case report, anterior crossbite is corrected by a fixed posterior bite block along with fixed mechanotherapy in both the upper arch and lower arch.

KEYWORDS: Anterior crossbite, Posterior bite plane, MBT bracket prescription.

INTRODUCTION
Anterior crossbite is caused by abnormal positioning/lingual tipping of maxillary anterior teeth in relationship to mandibular anterior teeth.1 Depending on the age of the subjects the prevalence of anterior crossbite varies between 2.2% and 12%.2

Anterior crossbite has a great impact on the facial appearance of a patient and it is also functionally unacceptable as it creates problem in speech. Anterior crossbite has multifactorial aetiology but the pathognomonic factor is mandibular prognathism which is commonly seen in Class III malocclusion.3 Other factors are retained deciduous teeth, dental malpositions and faulty incisor inclinations in both jaws can result in anterior crossbite.4

CASE REPORT
A 15-year old female patient came to the Department of Orthodontics and Dentofacial Orthopaedics with the chief complaint of irregularly placed teeth in the upper anterior region which has lead to unpleasant smile, particularly because of an anterior crossbite.

On physical examination, the patient has a mesomorphic body type. Extraoral facial examination revealed - Mesoproscopic facial form, straight facial profile and an adequate lip seal. Whereas on intraoral examination, good oral hygiene and a permanent dentition with the presence of anterior crossbite (maxillary incisor and right side canine). Angles class 1 malocclusion was present bilaterally with end on canine relation bilaterally. The shapes of both the maxillary and mandibular arches are ovoid, rotations present in respect to 14, 12,16,23,24 and 26 (Figure -1).

According to Carey’s (Carey’s 1949)5 and Arch perimeter analysis the arch length is increased by 1mm when compared with tooth material, whereas Bolton’s analysis6 revealed a discrepancy in the anterior maxillary arch by 0.1 mm and tooth material excess in the mandibular arch by 4 mm. The orthopantomogram showed the presence of all permanent teeth with no impacted or retained teeth. On cephalometric examination, it showed skeletal class I pattern with an ANB angle of 0° Class I skeletal pattern, confirmed by an angle of 31° with SNA 83° and SNB 83° angle. Patient has a predominantly horizontal growth pattern and mandibular plane (SN-GoGn = 25°, FMA = 21° and Y Axis = 54°). Upper and lower incisors were retroclined (1-NA = 12°, 1-NA = 0 mm, 1-NB = 24°, 1-NB = 2 mm and IMPA = 97°) with nasolabial angle of 103°.

Treatment protocol
- To maintain class 1 molar relationship bilaterally
- To achieve class 1 canine relationship bilaterally
- To correct the anterior crossbite
- To correct the rotations of teeth
- To correct inclination of incisor

TREATMENT PROGRESS
The non-extraction treatment plan was decided for the patient as she had a straight profile with reverse overjet and minimal crowding. Fixed mechanotherapy with posterior bite block was decided for the treatment. The correction of anterior crossbite followed with the
inclination correction of retroclined incisors which lead to increase lip support and volume and resulted in a pleasing profile.

The maxillary arch was prepared by banding 16, 26. Posterior bite was taken with wax keeping anterior in edge to edge relation (Figure -2). This bite was transferred to the working model followed by the articulation. 036” SS wire was passed above the cingulum area of lower anterior and posterior bite blocks was fabricated with self-cure acrylic (Figure -3). The bite blocks were cemented in the molar and premolar region of mandibular teeth (Figure -4) which will have an intrusive effect on the posterior teeth and it also removes the hindrance for the eruption of anterior teeth or correction of inclination of the maxillary incisors.

Orthodontic metal brackets were bonded in upper arches using a MBT system with 0.018 x 0.025 slot size. Initial levelling and alignment was done with 0.012” NiTi (Figure -4). The same wire was religated over a month for correction of the maxillary anterior inclination. After 2 months, proclination of maxillary incisor was achieved which lead to an increase in arch length and the correction of anterior crossbite.

Posterior bite blocks were removed after 2 months and bonding of MBT system 0.018 x 0.025 slot size was placed in the mandibular arch initial levelling and alignment was started with 0.014” NiTi (Figure -5).

The sequencing of orthodontic wire in the maxillary and mandibular arches which were followed are 0.014, 0.016, 0’016 x 0.022” NiTi and 0.016 x 0.022” stainless steel arch wires were progressively ligated after every 30 days.

Spaces which were created after the correction of rotation were closed by friction mechanics. Hooks were soldered in 0.016 x 0.022” stainless steel and module tie was used for the retraction and closure of space was achieved without any anchorage loss.
CONCLUSION

Anterior crossbite present whether in primary dentition or permanent dentition should be corrected as soon as diagnosed for the esthetic as well as functional harmony of the patients. Fixed mechanotherapy along with posterior bite block can be the best option in adults with anterior crossbite involving 2 or more than 2 teeth. Posterior bite block along with the fixed mechanotherapy reduces the treatment timing.

REFERENCES

