

Clinical Pearl

Turbo Expander- A Modified Bite Plane Clinical Tip for Deep Bite Correction

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To cite:

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J ContempOrthod 2021;5(2): 51-52

Received on: 21-04-2021

Accepted on: 15-05-2021

Source of Support: Nil

Conflict of Interest: None

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ABSTRACT

Deep bite is one of the commonest malocclusion seen in our routine practice. The etiology can be dental, skeletal or combination of both. Deep bite can be corrected with intrusion of the incisors, extrusion of the posterior teeth and/or surgery. Excessive overbite may impede the growth of the mandible and mandibular dentoalveolar region. It may cause temporomandibular joint disorders and increased masticatory muscle activities. Hence, early treatment of deep bite is critical. The turbo expander as discussed in this article permits disocclusion of the posterior teeth which allows extrusion of the posterior segment, and also helps in the expansion of the dental arch.

Keywords: Deep bite, Turbo expander, Bi- Helix appliance, Bite plane

INTRODUCTION

“Bite plane”, “bite plate,” or “bite block” are terms descriptive of a variety of devices that have been used for orthodontic treatment. Usually they are removable, but they may be fastened to the teeth. As a general rule, they are fabricated to fit the patient’s palate, but they may be designed to slip over the coronal portions of the teeth. It is used for forward positioning of the condyle, opening the bite and can also improve the facial outline.¹



Fig 1: Step wise Appliance fabrication: From top left to right

The Bi-Helix appliance has proven to be effective for increasing widths of inter-molar, inter- premolar, inter-canine, and dentoalveolar regions. Maxillary arch reshaping is accomplished by gradual and comfortable activations over a period of 6-12 months. Age of the patient, Facial pattern and transverse norm, Dentoalveolar maxillary transverse

hypoplasia, Oral hygiene and periodontal conditions are the considerations for this appliance.²



Fig 2: Pre treatment intraoral photographs

APPLIANCE FABRICATION

After the impression making, cast was poured with type III dental stone. A 20 gauge stainless steel wire was used for the appliance fabrication. The wire component consisted of anterior and the lateral segments. A helix was incorporated in the lateral segment at the 1st molar region. This helix was incorporated to increase the length of the wire thus increasing the flexibility and range of activation. Bilaterally lingual arm of the appliance was extended to the canines. It was then soldered to the 1st molar band. Modelling wax was then adapted in the anterior region of the hard palate; of the working model so as to prepare the anterior acrylic pad using cold cure acrylic. A thin layer of separating media was placed in the anterior region. Sprinkle on technique was used to make the anterior acrylic pad. This anterior acrylic pad with a thickness of 2-3mm served as the bite plane, aiding in the reduction of overbite and also the gingival

trauma which was created due to the increased overbite. The untrimmed appliance was retrieved and dewaxed. The borders of the acrylic pad was marked using a lead pencil and later trimmed and polished.



Fig 3: Occlusal photograph after the placement of turbo expander

CASE REPORT

A 21 year old female patient presented with irregularly and forwardly placed upper and lower front teeth. The canine relation was end on bilaterally with an increased overjet and overbite, missing 36 & 46 with mesially tipped 37 & 47, cross bite in relation to 15 and scissor bite in relation to 24. The maxillary and mandibular arches were V-shaped. Moderate amount of crowding was seen in the anterior segment of upper and lower arches. Treatment plan involved non extraction approach with dento-alveolar expansion in the upper arch followed by en-masse distalization of maxillary dentoalveolar segment using Infra Zygomatic Crestal implants and mesialization of molars in lower arch. Fixed appliance with M.B.T 0.022" x 0.028" prescription was bonded in both upper and lower arches, and simultaneously turbo expander was banded on to the 1st molars for bite opening and expansion of the maxillary arch.

CLINICAL PROCEDURE

The appliance was cemented on to the 1st permanent molars using type 1 Glass Ionomer Cement. Pre activation of the turbo expander was done before the cementation of the appliance in the oral cavity.

Initial levelling and alignment was done using 0.012", 0.014", 0.016" and 0.019" x 0.025" NiTi wires. Along with the levelling and alignment, the activation of the appliance to the range of around 4-6mm was done, so as to expand the upper arch.

By the end of levelling and alignment the crowding in upper and lower arches was relieved and also a U-shaped maxillary arch was achieved.

DISCUSSION

A study was done by Bengisu Akarsu et al³ to evaluate the effects of fixed anterior biteplane treatment on dentoskeletal structures and masticatory muscles in deep bite patients. A fixed anterior bite plane was given to the patients with Class II malocclusion to correct the deep bite and also assess their facial growth pattern. The results showed that the lower anterior facial height and total facial height increased. The mandible moved in a forward position. The maxillary and mandibular incisors inclined labially, with reduction in overbite and overjet. Similar to the results of the above study, we could appreciate an increase in the lower anterior facial height and also a significant improvement in overbite and overjet. An added advantage of this appliance would also be for anchorage reinforcement during the initial stages of treatment.



Fig 4: Mid treatment intraoral photographs after bite opening

CONCLUSION

Proper choice of appliance is of utmost priority for correction of malocclusion involving Deep bite/Cover bite with mild/moderate constriction of the maxillary arch. The Turbo Expander proved to be a reliable tool in achieving the desired results, and thereby reducing the inventory for usage of multiple appliances required in the correction of aforementioned malocclusions.

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