

## Review Article

### BLU BITE TWIN BLOCK

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#### ABSTRACT:

Twin block appliance is although itself a better appliance in terms of patient compliance as compared to Activator, Bionator and Frankel, but being a removable appliance, question about patient compliance always arises. To eliminate the factor of patient compliance, we designed an appliance on similar principles but by eliminating the removable appliance design. Another advantage of the design is that the fixed appliance can be bonded along with this design.

**Key words:** Blu bite, twin block.

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#### INTRODUCTION

The Twin Block Appliance (TBA) was introduced by W. Clark in 1977 which is used to treat Skeletal class II malocclusions that are commonly caused due to a retrognathic and / retro positioned lower jaw<sup>1</sup>. Twin block appliances are intended for the purpose of bringing the mandible forward in patients with skeletal class II malocclusion<sup>5</sup>. Early permanent dentition is an ideal stage for favourable growth, and treatment at this stage simplifies clinical management. This stage of development also allows integration with fixed appliances. If patients are treated in mixed dentition, the transitional stage should be avoided when deciduous teeth are being shed. Typical features of a candidate for the Fixed Twin Block for Orthopaedic correction are Class II division I malocclusion with mandibular retrusion having a favourable growth potential for mandibular advancement. The profile should improve with the mandible postured forward with lips lightly closed together. The patient should have good arch form and complete dental arches before treatment with a distal occlusion and an increased overjet. Any irregularity in the posterior segments should be corrected before fitting Fixed Twin Blocks<sup>2</sup>.

#### DIAGNOSIS AND ETIOLOGY

The patient complained of forwardly placed upper front teeth. Patient had mesiofacial pattern and Class II appearance, competent and everted lower lip. Intraorally he had overjet of 7 mm and 66.33% overbite. He had Class II molar and canine relation on left and right sides. His maxillary dental midline was coincident with his facial midline, and the mandibular dental midline deviated 1.5 mm to the right (Fig. 1).

The panoramic radiograph showed no difference between his right and left condylar heads. During TMJ evaluation, he did not report any muscle pain, joint pain or other symptoms typically associated with temporomandibular disease. He was at CVMI 3 stage at that time. All third molar buds could be seen on the radiograph. The lateral cephalometric analysis indicated a skeletal Class II pattern (ANB - 5°) with a hypodivergent growth pattern (SN-MP - 28°). The maxillary and mandibular incisors were proclined (U1 to SN-106°; IMPA-94°) (Fig 2; Table I).



Fig 1: Pre-treatment facial and intraoral photographs

MEASUREMENT	NORM	PRETREATMENT
SNA (°)	82°	79°
SNB (°)	80°	74°
ANB (°)	2°	5°
Wits (mm)	2 mm	7 mm
SN-MP (°)	32°	28°
FH-MP (°)	26°	22°
LFH (ANS-Me/N-Me) (%)	55 mm	55 mm

U1-SN (°)	102°	106°
U1-NA (°)	22°	32°
IMPA (°)	90°	94°
L1-NB (°)	25°	20°
U1/L1 (°)	131°	120°
Upper lip (mm)	-2 mm	+2 mm
Lower lip (mm)	0 mm	-1 mm

Table 1: Cephalometric measurements

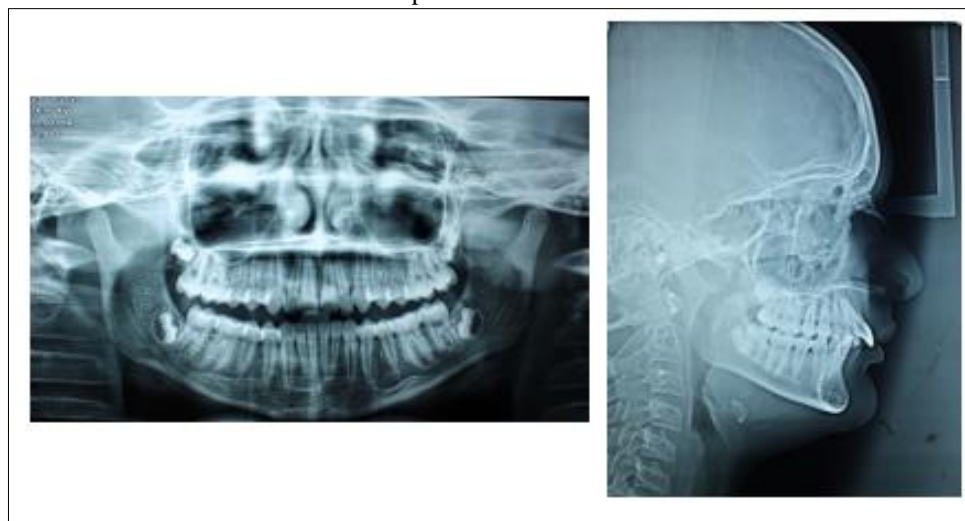


Fig. 2: Pre-treatment lateral cephalogram and OPG

**TREATMENT OBJECTIVES**

Following were the treatment objectives:

1. To achieve harmonious soft tissue profile
2. To achieve normal overjet and overbite
3. To correct proclination of upper anterior teeth.

**TREATMENT ALTERNATIVES**

Since the patient was in growth phase, the treatment alternatives were categorised as follows:

1. For pubertal phase: myofunctional appliance (fixed twin block). This was further divided into 3 phases. First was initial leveling & alignment phase, second one was fixed twin

block phase and third was finishing & detailing phase.

2. For post pubertal phase: fixed functional appliance/ Class II elastics. This phase was categorised as follows: initial leveling & alignment, re-evaluation for fixed functional appliance or Class II elastics and finally finishing & detailing.

**TREATMENT PROGRESS**

Details of this treatment plan were presented to the patient and his parents. They elected to use the Twin-block appliance to promote mandibular growth. But the clinical situation and total space analysis did not support the myofunctional appliance treatment

completely, so we started with initial leveling & alignment with simultaneous check on growth skeletal maturity (Fig. 3).

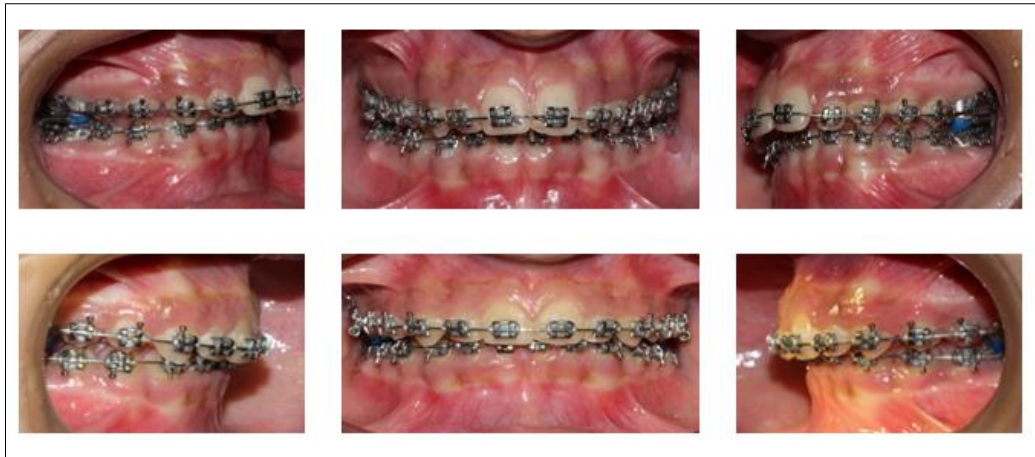


Fig 3: Fixed appliance phase



Fig. 4: Bioplast mould on patient cast

Bite was raised so that patient could be made habitual of the future appliance. Arch wire progressed from 0.016'' NiTi , 0.016×0.022'' NiTi , 0.016×0.022'' SS to 0.017×0.025'' SS. The treatment time for phase

one therapy was 10 months. After that we started with phase two of the treatment plan i.e. fixed twin block phase.

Acrylic blocks of 5mm × 5mm were fabricated with 70° inclined plane. Moulds were fabricated by adapting bioplast sheet on acrylic blocks using biostar (Fig.4).

Enamel surface was prepared. Etching and bonding agent was applied and cured on the surface of maxillary right second premolar. Blu bite was flushed into the mould, placed on the occlusal surface of

maxillary right 2<sup>nd</sup> premolar and cured with the inclined plane slanting downwards. The mould was removed easily. Next mandibular right 1<sup>st</sup> premolar was etched, bonding agent was applied and cured. Again, blubite was flushed into the mould and placed on the occlusal surface of mandibular right 1<sup>st</sup> premolar and cured. Similar procedure was followed for the left side (Fig. 5).



Fig 5: Blu bite twin block

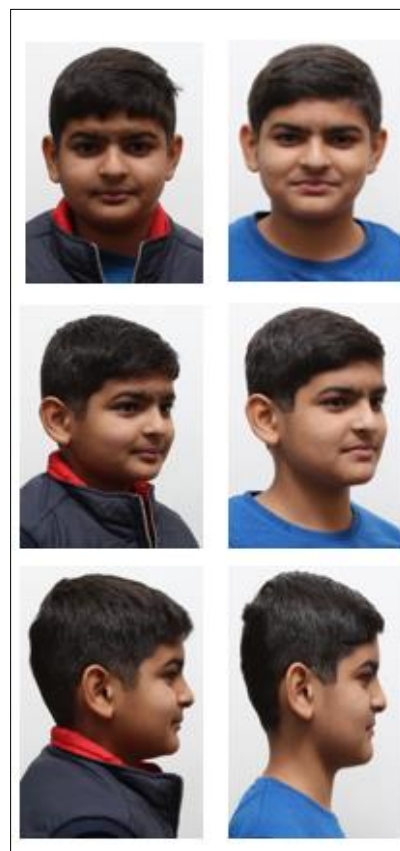


Fig 6: Pre and present extraoral photographs

There is pleasant difference in the soft tissue profile of the patient (Fig. 6).The twin block was fabricated so that edge to edge relation can be achieved between

the incisors. Pre-treatment and present situation are depicted in Figure 7.



Fig.7: Treatment progress

**DISCUSSION**

A wide range of functional appliances are available for correction of skeletal Class II malocclusions. The Twin-block corrects a Class II malocclusion effectively by way of mandibular growth stimulation associated with slight dentoalveolar effects. Early correction of a large overjet in a severe skeletal Class II malocclusion may be indicated to reduce the risk of trauma to prominent maxillary incisors during adolescence.<sup>4</sup>

For orthopaedic correction of a Class II malocclusion with a Class II skeletal relationship it is recommended that the blocks stay in place for 6 to 9 months, again related to the severity of the malocclusion. This is to allow sufficient time for bony remodelling in the condyle and glenoid fossa. Before removing the blocks, a panoramic radiograph

should confirm that the condyles are relocated in the glenoid fossa. Less severe Class II malocclusion requiring orthodontic correction can also be treated by wearing Fixed Twin Blocks for a shorter period. The full-time functional appliance gives rapid correction of distal occlusion and modifies muscle behaviour in the early stages of treatment. This is sufficient to treat a mild Class II Division 1 or Class II Division 2 malocclusion without producing orthopaedic effects. The shorter period of treatment does not allow time for significant bony remodelling, but is effective in correcting the distal occlusion. For orthodontic correction of a class II malocclusion, Fixed Twin Blocks are in place for 3 to 6 months, depending on the severity of the distal occlusion<sup>2</sup>. In this case, the treatment objectives are being achieved due to good compliance by the patient after

placement of the fixed twin block. The choice of the material for fabrication of the bite blocks was Silorane which is composed of Siloxanes and Oxirans; as this product class aims to have lower shrinkage, longer resistance to fading and less marginal discolouration. Moreover, composite twin blocks demonstrate good bonding created over acid etched enamel surface primed by bonding agents. Such bond strength is impossible to achieve with cements and acrylic bite blocks. Loose bite blocks delay functional therapy and produces inefficient results. Also, loose bite blocks have a risk of aspiration or swallowing by the patient. The feel of composite resin blocks and occlusal force transmission via these blocks, mimics so much as natural dentition, when compared to acrylic blocks. Intra oral trimming of the blocks is very comfortable and precise with diamond burs supported with water coolant sprays. Trimming acrylic with diamond burs is fussy as acrylic flakes on trimming. Also, there is no need for lab support in fabricating composite twin blocks as required for fabricating Acrylic Twin Blocks. Thus, the placement of the fixed composite bite blocks aids in the compliance of the patient during the course of the treatment and ease of repair and trimming when required at the various stages of the treatment without derailing the treatment course usually caused due to breakage and loss of the

appliance. There is a marked comfort and efficiency in the overall treatment for the Orthodontist and the patient in the overall treatment stages with Twin Blocks built with composite blocks as compared to twin blocks fabricated with acrylic.

#### BIBLIOGRAPHY

1. Sabapathy K, Giri M. Composite Resin Twin Blocks for Correction of Angle's Class II Malocclusion. Indian Journal of Public Health Research & Development. 2019 Aug 1;10(8).
2. Clark, W. and Clark, W.J., 2014. *Twin block functional therapy*. JP Medical Ltd.
3. Singh, A., Chain, S., Kulshrestha, R., Gupta, M., Passi, D. and Singh, M., 2017. Comparison between conventional Twin block and a modified Essix twin block in adolescents with Class II malocclusion.
4. Lee KY, Park JH, Tai K, Chae JM. Treatment with Twin-block appliance followed by fixed appliance therapy in a growing Class II patient. American Journal of Orthodontics and Dentofacial Orthopedics. 2016 Nov 1;150(5):847-63.
5. Shetty SK, Vigneshwaran AR, Kumar YM. Modification in transpalatal arch used in conjunction with a fixed twin block. Journal of Indian Orthodontic Society. 2019 Mar; 53(1):81-3.