

Case Report

TWO PHASE FOR A BETTER FACE!! TWIN BLOCK AND HEADGEAR FOLLOWED BY FIXED THERAPY FOR CLASS II CORRECTION

U S Krishna Nayak¹, Ashutosh Shetty², Crystal Runa Soans³ & Vivek Bhaskar⁴

A.B. Shetty Memorial Institute of Dental Sciences, Nitte University, Mangalore, Karnataka, India ¹Dean (Academics) & Head ²Professor, ³Lecturer, ⁴Post Graduate Student, Department of Orthodontics & Dentofacial Orthopaedics, A.B. Shetty Memorial Institute of Dental Sciences, Nitte University, Mangalore - 575018, Karnataka, India.

> Correspondence: Vivek Bhaskar

VIVEK Braskar Post Graduate, Department of Orthodontics & Dentofacial Orthopaedics A.B. Shetty Memorial Institute of Dental Sciences, Nitte University, Mangalore - 575 018, Karnataka, India. E-mail : vivek.libra@gmail.com.

Abstract :

Correction of a skeletal sagittal Class II in a growing child can be done either in one single phase of treatment, or in two phases, i.e a first phase of functional appliance to reduce the severity of the skeletal discrepancy, followed by fixed appliance therapy to refine the occlusion. This 2 phase treatment has quite a few advantages such as early correction of the facial profile is seen by the child and parent, which motivates them, as well as, reduces the social handicap produced as a result of the malocclusion. Hence, this case report describes the treatment of a Class II child, with a Twin block appliance followed by fixed orthodontic treatment.

Keywords: Two phase treatment, Twin block, Headgear.

Introduction :

Class II malocclusions can be due to prognathic maxilla, or retrognathic mandible, or both. In a growing patient, functional appliances are most widely chosen to correct the skeletal discrepancy making use of the natural growth potential. Usually, it is a 2 phase treatment, where in the skeletal discrepancy is corrected first, followed by detailing of the occlusion using fixed mechanotherapy.

A variety of functional appliances are at our foray to correct class II malocclusions like activator, functional regulator, twin block etc. The twin block, given by Clark ⁽¹⁾, is a very commonly used appliance for many reasons; it has reduced bulk unlike other appliances, patient adjusts to speech and other functions very quickly, it can be fixed to the teeth in



non-compliant cases, patient immediately sees the changes upon wearing the appliance which acts a s a p o s i t i v e reinforcement. Compared to other appliances, twin block seems to be more useful in causing sagittal and vertical changes.⁽²⁾

This case report is of an 11 year old boy, who presented with a skeletal Class II, who was successfully treated in 2 phases- first phase of functional therapy using Twin Block, followed by a second phase of fixed mechanotherapy.

Case Report :

An 11 year old boy, Nidhin, reported to the Department of Orthodontics, A.B.Shetty Memorial Institute of Dental Sciences with a chief complaint of forwardly placed upper front teeth.

He had no significant medical or dental history.

On extra oral examination (FIGS 1-4), he presented to be Mesomorphic, Brachycephalic and Euryproscopic, with a convex profile, consciously competent lips, Class II apical bases, and recessive chin.



NUHS



FIG 1



FIG 2



FIG 3



FIG 4

On intraoral examination (FIGS 5-10), dentition was in the mixed dentition stage. Generalised spacing was seen in the anterior segment of the maxillary arch.On occlusion, Molar relation was Class II bilaterally, with overjet of 12mm and overbite of 4mm, and the lower dental midline was shifted to the right side by 3mm.





FIG 6

FIG 5



FIG 7



FIG 9

FIG 8





The cephalometric analysis of the patient (Image 10) revealed him to be a Skeletal Class II with a prognathic maxilla, retrognathic mandible, recessive chin, horizontal growth, proclined anterior teeth and an acute nasolabial angle.

An analysis of the hand wrist radiograph (FIG 11) revealed the patient to be in the SMI 3 stage of skeletal maturation indicating 65-85% growth was still remaining.





FIG 10

FIG 11

PRE TREATMENT OPG (FIG 12)



PRE TREATMENT CEPHALOGRAM VALUES (Table 1)

Measurement	Values
SNA	87
SNB	78
ANB	9
WITT'S APPRAISAL	5mm
FMA	20
Sn-Go-Gn	30
Upper Incisor- NA	40/9
Lower incisor – NB	32/6
Lower incisor- Mandibular plane	103
Interincisal angle	100
Nasolabial Angle	80

Diagnosis:

Using the above, the diagnosis was arrived to be:

- 1. Skeletal- Class II apical bases.
- 2. Dental- Class II div 1 malocclusion.
- 3. Soft tissue- Everted lips with acute nasolabial angle.



nuHS

Visual Treatment Objective (VTO): (FIGS 13, 14)

The VTO was positive, indicative that mandibular advancement would benefit the patient.





FIG 13

FIG 14

TREATMENT OBJECTIVES:

Based on the above pre- treatment findings, the treatment objectives were to:

- 1. Correction of Class II Skeletal relationship
- 2. Correction of overjet and overbite
- 3. Obtain Class I molar and canine relationship.
- 4. Achieve optimal facial balance and esthetics.

TREATMENT PLAN:

- 1. Phase 1- Growth modification- Using Twin Block and Headgear.
- 2. Phase 2- Fixed mechanotherapy using Pre Adjusted Edgewise brackets (MBT 0.022 slot).

TREATMENT PROGESS:

1. Twin Block plus headgear:

Twin block was fabricated with a bite opening of 5mm in the pre molar region with sagittal advancement of 7 mm. (FIGS 15-19)

The appliance was delivered and the patient was asked to wear the appliance full time.



FIG 15









FIG 18

Keywords : Two phase treatment, Twin block, Headgear. - Vivek Bhaskar 76



FIG 20

Alongside, from the second month onwards, a high pull headgear was given (FIGS 20,21) with a force of 400g bilaterally. The headgear was used to restrain the prognathic maxilla.⁽⁴⁾

Headgear:





FIG 20

FIG 21

The appliance was worn full time for a period of 12 months. Post Twin Block-Headgear Intra Oral Images: (FIGS 22-26)



FIG 22







FIG 26



FIG 25





Post Twin Block-Headgear Extra Oral Images (Figs 27-31)











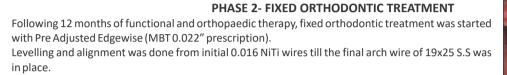
FIG 27

FIG 28

FIG 29

FIG 30

FIG 31



Mid Treatment Intra Oral Photographs (Figs 32-36)





FIG 34





FIG 36

The fixed orthodontic treatment was completed in a period of 20 months, with the total treatment time being 32 months.



FIG 37

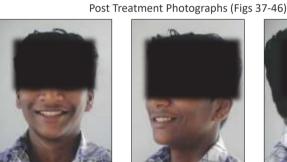


FIG 38



FIG 39



FIG 40



FIG 41



FIG 42



FIG 43



FIG 44



FIG 45





Values

85

84

1

1mm

29

30 20/4

30/5

98

125 95

TABLE 2

The patient was given a modified Hawley's retainer, which was

FIG 49

NUHC





Post Treatment Cephalogram (FIG 47)



Post Treatment OPG (FIG 48)







Measurement

WITT'S APPRAISAL

Upper Incisor- NA Lower incisor – NB

Interincisal angle

Nasolabial Angle

RETENTION: (FIGS 49-53)

worn for a period of 12 months.

Lower incisor- Mandibular plane

SNA

SNB

ANB

FMA

Sn-Go-Gn





FIG 52

FIG 53

Discussion:

Correction of sagittal discrepancies in children can be either one phase or two phase treatment. Two phase treatment offers the advantages of earlier correction of the discrepancy, followed by a reduced period of fixed appliance treatment, reduced chances of surgery at a later date.⁽³⁾

We chose the twin block appliance as it offers many advantages such as better patient acceptance, reduced hygiene demands, growth pattern of the patient etc.

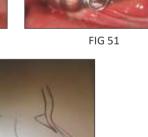
Conclusion :

In this patient, the two phase therapy with twin block and headgear helped us achieve satisfactory results. However, long term studies with large sample sizes are needed to validate this method.





FIG 50





Superimposition (FIG 54)

Superimposition shows reduced nasolabial angle, increased growth of mandible, reduced proclination, achievement of a Class I relation.





References:

- 1. Clark, W. J. (1982) The Twin Block traction technique, *European Journal of Orthodontics*, 4, 129–138.
- 2. Illing, H. M., Morris, D. O. and Lee, R. T. (1998) A prospective evaluation of Bass, Bionator and Twin Block appliances. Part 1—the hard tissues, *European Journal of Orthodontics*, 20, 501–516
- 3. J.F.Camilla Tulloch, Ceib Phillips, William R. Proffit (1998) Benefit of early Class II treatment: Progress report of a two-phase randomized clinical trial, American Journal of Orthodontics and Dentofacial Orthopaedics Vol.113, Issue 1, 62-74.
- 4. Wieslander F.W. Long-term effect of treatment with the headgear-Herbst appliance in the early mixed dentition. Stability or relapse? Am. J. Orthod. Dentofac. Orthop. 1993;104:319–329.

