

Management Of Skeletal Class Ii Malocclusion With Twin Block And Headgear: A Case Report

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Abstract:

Background. The main concern of patients and their parents seeking orthodontic treatment has always been the sagittal relationship between the jaws and dentition. The most commonly observed sagittal problems are skeletal class II maxillomandibular relationship which affects about one-third of the examined patients who seek orthodontic treatment.

This case report demonstrates the use of the Twinblock appliance and high-pull headgear in a skeletal Class II Division I patient with a prognathic maxilla and a retrognathic mandible. A 9 year old male patient reported to Department of Paediatric and Preventive Dentistry with a chief complaint of forwardly placed upper front teeth. On extraoral examination, it was found that the patient had a convex profile, incompetent lips, increased maxillary anterior teeth visibility, acute nasolabial angle, receded chin and deep mento labial sulcus. Superimposition of Post treatment with pre-treatment lateral cephalograms showed a reduction in the sagittal discrepancy. With the retraction and intrusion of maxillary anteriors by the use of head gear along with mandibular advancement by the use of twinblock gave the desired result.

Key Word: Sagittal; Twinblock; Headgear

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I. Introduction

The alignment of the teeth and jaws in the sagittal plane has consistently been the main focus for patients and their parents pursuing orthodontic care. Approximately one-third of patients seeking orthodontic treatment experience skeletal class II maxillomandibular relationship issues, which are the most frequently seen sagittal problems. Possible causes include a protruding maxilla, a recessed mandible, or a combination of both.(1)

Different options for treatment include modifying growth, using dental camouflage, and performing surgical correction. Functional appliances have been utilized for a long time in managing Class II malocclusions. These appliances are expected to cause changes in the growth of the upper jaw, improvement in the growth and positioning of the lower jaw, and alterations in the relationships between the teeth and muscles. Clark developed the Twin-block appliance, which is a commonly used functional appliance for treating Class II malocclusion.

The device can be worn for the majority of the day, enabling almost all jaw movements and clear speech. Its high patient acceptability and ability to deliver quick results also contribute to its popularity. If there is a significant skeletal discrepancy between upper and lower jaw orthopedic traction can be used together with twin block. This case study demonstrates the use of twin block in conjunction with high pull headgear in a patient who has a skeletal class II division I malocclusion, a retrognathic jaw, and a vertical maxillary excess.

II. Case Report

A 9 year old male patient reported to Department of Pediatric and Preventive Dentistry, with a chief complaint of forwardly placed upper front teeth. On extraoral examination, it was found that the patient had a convex profile, incompetent lips, increased maxillary anterior teeth visibility, acute nasolabial angle, retruded mandible, and deep mentolabial sulcus.

Intraoral examination findings included mixed dentition stage with many unrestorable grossly decayed primary molars. On occlusion, Molar relation was Class II bilaterally, with overjet of 11mm and complete over bite.

Fig 1: Pretreatment photographs



Table 1. Pretreatment cephalogram values

Measurement	Normal value	Value
SNA	82	80
SNB	80	70
ANB	2	10
WITT'S APPRAISAL	1	5
FMA	25	30
Upper Incisor- NA	22	34
Lower incisor – NB	25	20
Interincisal angle	130	115
Inclination angle	85	80

Fig 2: Pretreatment lateral cephalogram



Diagnosis:

- Skeletal – class II skeletal relation with retrusive mandible
– forwardly and downwardly tilted palate
- Dental– proclined upper incisors
- Soft tissue – everted lips

Treatment objectives:

1. Correction of Class II Skeletal relationship
2. Correction of overjet and overbite
3. Achieve optimal facial balance and esthetics.

High pull head gear for maxillary intrusion and twin block therapy for retruded mandibular correction were recommended after extraction of grossly decayed primary posterior teeth and the eruption of premolars. A twin block was fabricated with an 8mm sagittal advancement and a 4mm bite opening in the premolar area.



Fig 3

The maxillary twin block component is modified as a head gear splint with buccal tube in the molar area for the insertion of inner bow of the head gear. The appliance was delivered and the patient was asked to wear the twin block appliance full time and the head gear a minimum of 14 hours per day.



Fig. 4



Fig.5

Table 2

Post treatment cephalogram values

Measurement	Normal value	Value
SNA	82	79
SNB	80	75
ANB	2	4
WITT'S APPRAISAL	1	1
FMA	25	26
Upper Incisor- NA	22	29
L ower incisor – NB	25	26
Interincisal angle	130	121
Inclination angle	85	84



Fig 6 Post treatment lateral cephalogram



Fig 7: Post treatment photographs

III. Discussion

Sagittal discrepancies in children can be corrected either in one phase or two phase treatment. Early discrepancy correction, a shorter fixed appliance treatment duration, and a lower risk of surgery later on are all benefits of two-phase treatment. By enhancing the children's facial appearance, it also lessens the psychological trauma they experience.

Maxillary proclination in a severe skeletal Class II division 1 malocclusion should be corrected early to reduce the risk of trauma to prominent maxillary incisors. Favourable growth changes in around 75-80% of class II patients receiving early treatment with either headgear or functional appliance was noticed by Tulloch et al.(3)

Twin block is the most widely used removable functional appliance, which is based on the principles of proprioceptive stimulus, occlusion inclined plane, and functional occlusion.(4)The use of an orthopaedic traction system to assist the action of occlusal inclined planes offers a versatile appliance technique that works well for treating a variety of malocclusions where the skeletal discrepancy is significant. Vertical growth discrepancies, mandibular retrusion, and maxillary protrusion are among the indications for treatment.(5) When compared to other functional appliances, the twinblock has the advantage of greater mandibular growth because to its timing and duration of wear, which allows it to be worn while eating and is well-tolerated by patients.(6) Many research employed either combination pull headgear(7) or high pull head gear (8) with twinblock even though it has got some headgear effect. The maxillary growth was restrained by the headgear. Therefore, both mandibular advancement and maxillary restraint were used to correct class II.

IV. Conclusion

Twinblock along with extra oral traction resulted in sagittal advancement of the retruded mandible along with restricting maxillary growth. In this patient, early intervention by functional appliances resulted in using his growth potential, improved compliance and self-esteem, and desired results. Twin block -head gear therapy gave a satisfactory result however he will need a phase 2 therapy for the alignment of dentition

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