

Correction of Skeletal Class II Using Myofunctional Appliance: A Case Report

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ABSTRACT

Aim and objective: Correction of skeletal class II malocclusion by using myofunctional therapy.

Background: B.R, a 12-year old female, reported with the chief complaint of irregularly placed teeth. Clinical examination and analysis of records showed that she had an Angle's Class I molar relationship on a Class II skeletal base with retrognathic mandible and deep mentolabial sulcus. There was reduced vertical proportion. Growth pattern was horizontal.

There was increased overjet with lower central incisors missing. Transposition between 42 and 43 was seen. Oral hygiene status was fair to poor. Lips were incompetent at rest (Fig. 1).

Treatment Objective was positive, the saddle angle was normal and mandibular retrognathism was due to the reduced corpus length. The patient had not attained menarche. The cervical vertebral maturation status showed the acceleration phase of growth CVMI 2 (Cervical Vertebrae Maturity Index) (Fig. 2).

Treatment involved orthodontic fixed appliance mechanotherapy using metal brackets with 0.022 × 0.028 MBT prescription. Optimal orthodontic and esthetic result was achieved by nonextraction treatment protocol.

Keywords: Bilateral agenesis, Myofunctional appliance, Skeletal class II, Transposition.

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INTRODUCTION

Every orthodontist at some point in his clinical practice has faced the dilemma of how "best" to manage class II malocclusion, which is by far one of the most common type of malocclusions encountered. Aetiology of class II malocclusion may be due to heredity, abnormal intrauterine foetal pressure, birth injury, and traumatic injury to mandible or TMJ. It may be a dental class II or have a skeletal component.¹⁻⁴ Skeletal class II jaw relation may be due to a prognathic maxilla, retrognathic mandible, or a combination of both. Mandibular retrognathism may be due to small mandible, posterior placement of condyle in glenoid fossa or a functional retrusion. Management of class II malocclusion depends entirely upon the severity of the problem and the age at which it presents for treatment. Numerous orthodontic techniques and appliances have been introduced to treat the same. Correction of skeletal class II malocclusion by growth modulation during active growth can be achieved using various myofunctional appliances like activator, Frankel's regulator and the twin block.

Out of the array of the removable functional appliances available, "the Standard Twin Block appliance" is preferred by many clinicians due to the ease of use by the patient and ease of management of the appliance. It was first introduced by Clark in 19,886 and consists of two separate, upper and lower, removable plates with acrylic blocks trimmed to an angle of 70°. These separate plates make the twin block appliance different in comparison with other removable functional appliances, which are basically monoblocks.^{5,6} Theoretically, this plus a less bulky appearance would increase patient acceptance of the appliance. Patients would also have more freedom in their mandibular movements.

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Section 1: Pretreatment Assessment

- Patient's initials: B.R
- Age at start of treatment: 12 years
- Age at the completion of active treatment: 14 years 7 months
- Patient's complaint: "Irregularly placed teeth"
- Relevant medical history: Nil.

Extraoral assessment (Fig. 3)

Skeletal assessment

- Transverse: Acceptable facial symmetry and balance on frontal examination
- A-P: Skeletal Class II pattern with convex profile
- Vertical: Reduced vertical proportion.

Soft-tissue assessment

- Upper and lower lips incompetent at rest
- Normally positioned lips in relation to Rickett's E-line
- Nasolabial angle within normal limits.



Fig. 1: Preoperative OPG of the patient



Fig. 2: Preoperative lateral cephalogram of the patient

PRETREATMENT: BRAJESH RAJPUT 12/F



Fig. 3: Preoperative I/O & E/O records

E/O: Mesocephalic, mesoprosopic, convex profile.
I/O: Class I molar relation with missing lower central incisors.
Overjet: 10 mm
Overbite: 70%
Diagnosis: Class II Division 1 malocclusion.

TWIN BLOCK THERAPY (Myofunctional Appliance)



Fig. 4: Delivery of the twin block

VISUAL TREATMENT OBJECTIVE (VTO)



Fig. 5: VTO of the patient

Temporomandibular joint assessment

- No signs or symptoms of temporomandibular disorder.

Intraoral examination (Fig. 3)

Oral hygiene and dental health Oral hygiene status was fair-to-poor with stains and deposits on labial and lingual surfaces.

Erupted teeth: all permanent teeth except 3rd molars.

Correction of anteroposterior (A-P) skeletal discrepancy was done using functional appliance (Twin block). (Fig. 4)

The prognosis for growth modification therapy was good in this case as the Visual Treatment Objective was positive (Fig. 5), the saddle angle was normal and mandibular retrognathism was due to the reduced corpus length. The patient had not attained menarche. The

cervical vertebral maturation status showed the acceleration phase of growth CVMI 2.

Section 2: Treatment

Treatment progress (Figs 5 to 9)

- Age at start of active treatment: 13 years 6 months
- Age at the end of active treatment: 14 years 7 months
- End of retention: Ongoing
- Total active treatment: 31 months

Section 3: Posttreatment Assessment (Fig. 10)

The case was ended class III molar relationship. Canine class I was obtained and maintained. No prosthetic replacement of lower two incisor was done. Transposition was maintained. The lower

SELECTIVE TRIMMING



Fig. 6: First selective trimming

SUPPORTIVE PHASE (Anterior Inclined Plane)



Fig. 7: Supportive therapy started by giving anterior inclined plane

LEVELING AND ALIGNING



Fig. 8: Stage 1

MID-TREATMENT



Fig. 9: Mid treatment case progress

POSTTREATMENT



Fig. 10: Postoperative records of the patient

right canine was reshaped a little within the boundaries of enamel to resemble the incisor.

ANB reduced by 3 degree and mandibular effective length increased by 2mm. upper incisors were retracted by 14 degrees. Lower incisors got proclined by 4-degree irt mandibular plane.

The convexity of the profile and the interlabial gap at rest reduced. Lip trap was eliminated. The soft tissues adapted well to the changes in the hard tissues. Normal overjet and overbite were established. The midlines were coincident.

There was a good improvement in the proclination correction of upper anteriors, even without extraction of teeth, although they were little on the higher side. The lower incisor proclination levels are also slightly on the higher side.

U/L lingual retainers were given to maintain the dental corrections. The case was debonded after the mandible stabilized in its new position.

Soft Tissue

Nasolabial angle was within the normal range. The balance of soft tissues improved considerably. Lower lip position is forward in relation to Rickett's E-line, due to everted and increased thickness (Fig. 10).

CONCLUSION

Considering the severity of the case to begin with, desired result was attained. Harmonious skeletal, dental, and soft-tissue balance was achieved.

DECLARATION OF PATIENT CONSENT

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/ her/their images and other clinical information to be reported in the journal and for the extraoral picture to be published on the cover page.

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