Correction of Class II Div 2 Malocclusion Using Molar Distalization - Case Report

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Introduction

The patients with skeletal Class II malocclusion present mandibular retrusion with the upper maxilla normally positioned or retruded. Weiland and Droschi[1] found that about 37% of malocclusions are Class II. In most of the Class II cases, an abnormal pattern of mandibular posture and closure makes the diagnosis and the treatment most intriguing. Treatment of an adult Class II patient requires careful diagnosis and a treatment plan involving esthetic, occlusal, and functional considerations .[2-4] Treatment objectives are to restrict the maxillary growth and accelerate the mandibular growth to balance the skeletal relation, obtain Class I molar relation to improve functional efficiency and achieve good alignment of teeth with optimal overbite.

Epidemiologic investigations have shown that in a population; 2-5% individuals have Class II division 2 malocclusion.[5] Class II division 2 cases are often characterized by severe deep bites, lingually inclined upper central and lower incisors, and labially flared maxillary lateral incisors.

Retrusion of maxillary incisors is one of the main characteristics of Class II division 2 malocclusion [6] . High lower lip line may be the cause of retroclination of upper central incisors in ClassII division 2 malocclusion.[7] Therefore, first step in the treatment strategy is to procline the upper incisors by removable plates or protrusion utility arches and converting Class II division 2 to a Class II division 1.These patients also tend to exhibit problems with the upper and lower occlusal planes, such as deep curves of spee. The soft-tissue drape of the lips often conforms to the malocclusion, so that the lips may be redundant with a deep mentolabial sulcus. Profiles of all Class II Div 2, leave an unpleasant aesthetic impression[8]. Because of the deep bite and supraeruption of the maxillary incisors, the gingival margins of the maxillary anterior teeth are usually malaligned, and the lingually inclined mandibular incisors may have excessively high gingival margins.

Correction of dental and jaw sagittal relationships should be achieved by advancing the lower jaw. In adult Class II patients with mild-to-moderate skeletal discrepancies, dental compensation may well be the treatment of choice. A recent study has shown that patient satisfaction with camouflage treatment was similar to that achieved with surgical mandibular advancement.[9]Common treatment procedures for such patients include flaring of incisors, interproximal tooth reduction, and extractions. We present case report of 17 yrs old adult Class II Div 2 patient treated by fixed mechanotherapy.

Case Report

A 19-year-old female presented with the chief complaint of "my teeth stick out". She had a moderately convex hard- and soft-tissue profile because of a retrusive mandible. A Class II, division 2 malocclusion was associated with no overjet, 100% deep bite with average growth pattern and deep mentolabial sulcus. She had lingually inclined upper central; labially flared maxillary lateral incisors and both arches exhibited mild-to-moderate crowding. (Fig 1 a,b,c) Model analysis showed an arch length excess of 6 mm in upper arch and 2.0 m in the lower arch.

Treatment Objectives

The treatment objective in this case was to improve convex soft-tissue profile due to mandibular retrognathism. In the vertical dimension, the goal was to intrude the maxillary incisors to improve the lip-to-incisor relationship, to level the curve of spee for bite opening. In the anteroposterior dimension, aim was to correct molar & canine relation and to correct overjet. The arch width, and midlines needed to be maintained in the transverse dimension.

Treatment Plan

Orthodontic treatment was initiated with bonding 0.022" slot MBT prescription in maxillary arch. An Australian 0.014" multiloop wire was ligated as first wire to unravel crowding in upper arch. After three months of leveling and alignment when patient was on 0.018x0.025"SS wire; miniimplants were placed between second premolar and first molar to distalize first molar using indirect anchorage by open coil spring to achieve Class I molar relation.(Fig 2a,b)

Following that lower bonding was done and 0.014" Niti wire was placed. Molar distalisation was continued in upper arch for 8 months till a Class I molar relationship was achieved. .(Fig 3)

Space achieved by molar distalisation was utilized for anterior retraction using 0.017x 0.025" SS T loop wire. (Fig4) An open coil spring was placed between lower left lateral and lower left premolar to create space for derotation of lower left canine on 0.017x 0.025" S.S wire. (Fig 5) Finishing and detailing were carried out and the appliance was debonded in both arches. (Fig 6a,b,c)

An appreciable leveling and alignment was achieved with significant bite opening in both upper and lower arches. Class I molar and canine relationships were established with coinciding midlines. Overjet and overbite were improved. (Fig7a,bc) Facial balance, smile esthetics, and lip positions were improved significantly. Total treatment time was 18 months.

Conclusion

Treatment of Class II, division 2 malocclusion in adults is always challenging. Applying sound biomechanical principles to execute the mechanics plan is the surest way to achieve predictable results with minimal side effects. By using the biomechanical concepts presented here and a set of archwires designed with specific objectives in mind, the clinician can achieve the desired goals.

References

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Fig 1 Pretreatment Intraoral Photograph a) Frontal b) Left side c) Right side

Fig 2 Molar distalization using miniimplants a) Left side b) Right side

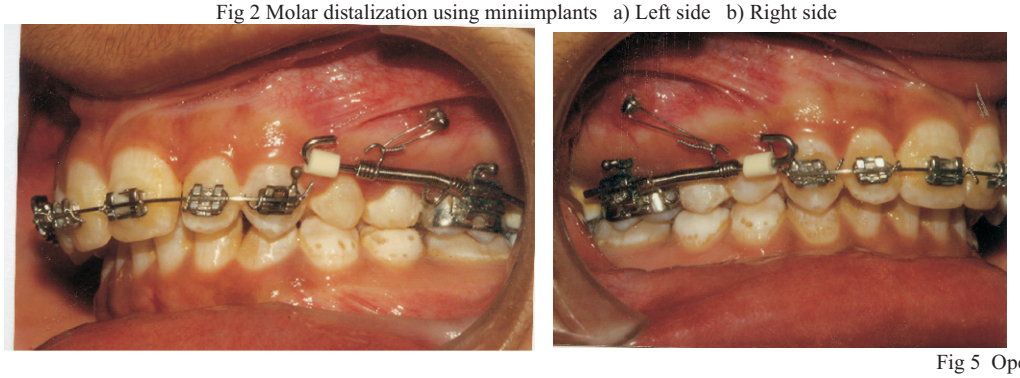

Fig 3 Significant molar distalization achieved

Fig 4 Anterior maxillary retraction using T loop

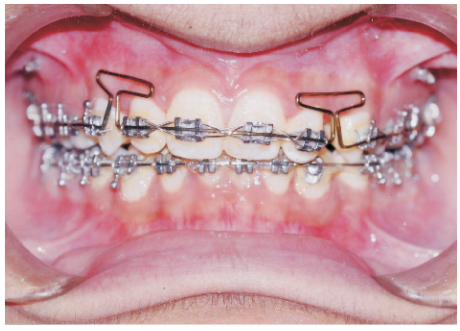

Fig 5 Open coil spring used for creation of space for lower left canine

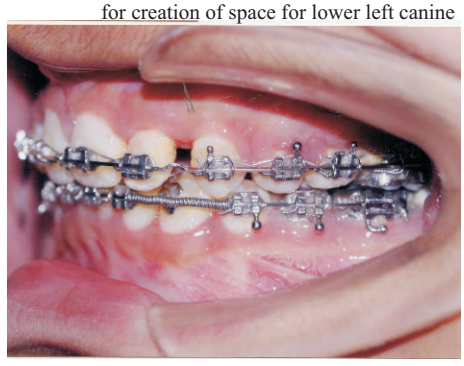

Fig 6 Final finishing and detailing a) Frontal Photograph b) Left side c) Right side

Fig 7 Post treatment Intraoral Photographs a) Frontal b) Left side c) Right side