Advansycn2- A Fixed Functional Class II Corrector in Advanced Age : A Case Report

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Abstract

Class II malocclusion has a prevalence rate of 14.5% in North Indian population. The treatment of such malocclusions should aim at correcting the skeletal deficiency in order to achieve facial harmony. This case report is of a 14 year old female patient who reported in her late adolescence (CVMI 6) with a Class II skeletal pattern, retrognathic mandible and convex profile. She was treated with AdvanSync2, a molar-to-molar fixed functional appliance for a period of 10 months and showed tremendous improvement in her facial profile, eliminating the need of surgical intervention to achieve facial balance.

Keywords- AdvanSync2, fixed functional appliance, CVMI

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Introduction

Class II malocclusion is one of the most common orthodontic problem, and it occurs in about one third of the population.[1-3] The most consistent diagnostic finding in Class II malocclusion is mandibular retrusion. A therapy able to enhance mandibular growth is indicated in these patients.[4]

In late adolescent patients, fixed mechanotherapy with fixed functional appliance is the method of choice for non-surgical treatment of class II malocclusion. It utilizes the residual growth potential to bring about minimal skeletal changes, along with dentoalveolar correction.[5]With the advent of hybrid fixed functional appliances, numerous studies have reported positive changes after fixed functional therapy.[5,6,7]The major drawback of the latest fixed functional appliances like powerscope, forsus and twin force is that, it requires the patient to be on rigid wire before functional therapy, hence losing precious growth potential during levelling and alignment. AdvanSync2 is alatest rigidmolar-to-molar class II correctorwhich is based on the philosophy of Herbst appliance, that can be placed from the start of the treatment, to bring about class II correction.[8]

The effect of AdvanSync2 on pre-pubertal patients is shown in the studies by Al-Jewair et al[9] and Jayachandran et al[10]. This case reports shows the effect of AdvanSync2 in late adolescent patient in CVMI 6.

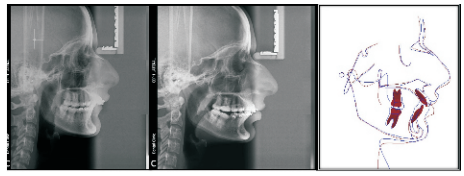
Case Report

A 14 year old female patient in CVMI 6 stage, reported with the chief complaint of forwardly placed upper front teeth. On clinical examination, she presented with Angle's Class II div 1 malocclusion with skeletal Class II bases attributing to orthognathic maxilla, retrognathic mandible anda horizontal growth pattern. The patient had a convex profile, decreased lower anterior facial height, decreased mandibular base length, skeletal deep bite with anteriorly malpositioned and proclined maxillary incisors, increased overjet and overbite, exaggerated curve of spee ,spacing in upper anterior region, mild crowding in lower anterior region, protrusive upper lip and retrusive lower lip with lip trap and retrusive chin (Fig. 1).

The patient was in post-pubertal age (CVMI 6), hence a surgical treatment plan was suggested i.e. BSSO with mandibular advancement, to achieve a class I molar and canine relationship, to improve the facial esthetics and achieve a straighter profile.

The patient refused surgical intervention, therefore anon surgical treatment plan was formulated, where the patient was given a fixed functional appliance i.e. AdvanSync2. The treatment was started immediately to maximize on the residual growth potential of the mandible, as the patient was only 14 years old and had just attained menarche. AdvanSync2 was the chosen fixed functional appliance as it was a molar-to-molar fixed functional appliance and didn't require the patient to be on rigid wire prior to placement, hence saved time, and utilize the full residual growth potential.

Standard MBT prescription brackets with 0.018" slots were used and bonding of both upper and lower arch was done simultaneously. Initially, 0.016" NiTi was placed and the patient was recalled after 4 weeks for the placement of AdvanSync2. It was placed in both the upper and lower molars. (Figure 2)



After a monthof placement, AdvanSync2 was activated by 4mm using activation shrimps, followed by another 4mm activation in the following month, making it a total activation of 8mm. The fixed mechanotherapy was continued with AdvanSync2, for a period of 10 months. At the end of the fixed functional appliance therapy, the patient had a super class I molar relationship bilaterally, with class I canine relation, reduced overjet and overbite and upright maxillary incisors.(Figure 2) After 2 months of finishing and detailing the patient was debonded. (Figure 3)

Discussion

Fixed functional therapy is an effective way to treat mandibular retrognathism in post adolescent patients, where residual growth potential is utilized, to bring about the required skeletal and dentoalveolar changes.

AdvanSync2 is a molar-to-molar fixed functional appliance that facilitates functional therapy along fixed mechanotherapy from the start of the treatment, hence reducing treatment time and saving precious growth potential.

In this patient, the pre and post fixed functional cephalometric readings (table 1) and superimposition (figure 5), show that there was minimal reduction in the ANB by 1 degree, with a insignificant increase in the mandibular length

by 0.1mm and ramal length by 2.2mm. The changes seen were mainly dento-alveolar, showing retroclination of upper incisors by 11.9 degrees, distalization of upper molar by 2mm and proclinations of lower by 10.3 degrees. The maxillary restrictive effect seen by AdvanSync2 is in concordance with the study done by Al-jewair et al[9] and Jayachandran et al[10].

Table 1 (Original) Pre and Post treatment cephalometric values

Cephalometric parameters	Pre treatment	Post treatment
SNA	83°	83.4°
SNB	76°	76.4°
ANB	7°	7°
FMA	22°	22.7°
Saddle angle	126.5°	125.8°
Articular angle	139.8°	141.9°
Go-Pg	65.8mm	65.9mm
Ar-Go	34.7mm	36.9mm
B-Pg	11.3mm	10.8mm
UI-NA	36.3°	24.4°
LI-NB	20.9°	31.2°
Ptv – U6	14.2mm	12.2mm

The overall treatment lead to a straighter patient profile, with reduction in the overjet and overbite, achievement of class I molar and canine relationship and uprighting of the maxillary incisors.

Conclusion

The therapeutic effect of molar to molar fixed functional appliance (AdvanSync2) in class II malocclusion, showed:-

1. Maxillary restrictive effect, showing distalisation of upper molar by 2mm and retroclination of upper incisor by 11.9°
2. Mandibular dentoalveolar effect showed, proclination of lower incisors by 10.3°

To conclude the dentoalveolar changes were significant with minimal skeletal effect for the correction of class II malocclusion and AdvanSync2 can be used as an effective fixed functional appliance in post-pubertal skeletal class II patients.

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