

# TREATMENT OF CLASS II NON-COMPLAINT PATIENT WITH FIXED FUNCTIONAL APPLIANCE: A CASE REPORT

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## ABSTRACT

**Background:** Management of class II malocclusion in adolescent patients by growth modulation is one of the most debated topics in orthodontics. Noncompliance has been a major concern for orthodontists.

**Case report:** This case report describes the management of severe class II malocclusion in adolescent patient using functional appliance system—Forsus to correct class II problems, which is clipped on to bands. This appliance has several advantages, as the patient cannot remove it. It acts on the teeth and jaws for 24 hours each day, patient cooperation is not a problem, and as a result the treatment time is short. There is lot of controversy about the use of functional appliances.

**Key Words:** Fixed functional appliance, Forsus, Class II malocclusion, Growth modulation.

## INTRODUCTION

Treatment of class II malocclusion has always been an enigma to the orthodontic fraternity. Skeletal class II malocclusion has been treated by various forms of functional appliances to achieve better esthetics and functional harmony<sup>1</sup>. 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<sup>2</sup>.

Treatment of class II malocclusion during deceleration stages of growth has been a

challenge and a bone of contention for various schools of thoughts<sup>3</sup>. Few orthodontists have proven that skeletal correction can be achieved even during deceleration phase of growth by using certain fixed functional appliances<sup>4</sup>. The Herbst appliance is an upper and lower fixed appliance linked by a telescopic mechanism. This mechanism holds the mandible forward in a protruded position throughout treatment to modify mandibular growth. The appliance allows opening and closing movements of the mandible, and some lateral movement. Use of Herbst appliance gives remarkable results as compared to other methods of Class II correction. The Herbst appliance

and many of the interarch appliances used to correct Class II malocclusions suffer from problem of breakage of the constituent parts. The Herbst appliance is also expensive and difficult to make<sup>4</sup>. Considering the disadvantages of Herbst appliance, in the present study Forsus appliance was used. Here, we are presenting a case of a class II skeletal malocclusion treated by using the Forsus appliance.

### **CASE REPORT**

A 12-year-old adolescent male patient reported with a chief complaint of protruded front teeth. Extraoral examination in frontal view revealed increased incisal exposure and lip incompetency. Profile view showed that he had a convex profile (Figs 1 A to C).

Intraoral findings were as follows: Severe increase in overjet of 12 mm, overbite of 6 mm, class II canine relation, class II molar relation on both right and left side, curve of Spee 4 mm (Figs 2A to C).

Cephalometric analysis revealed class II skeletal relation with ANB of 6°, normal proclination of maxillary anteriors with mild vertical growth pattern.

Orthopantomogram showed a full complement of dentition with all the third molars present. CVMI 3 assessment showed that the patient was in stage V (deceleration stage) of pubertal growth spurt.

### **Diagnosis:**

Skeletal class II relation, Angle's class II division 1 malocclusion.

### **Treatment Objectives:**

Correction of skeletal bases, Correction of molar and canine relation, Correction of Curve of Spee, to achieve ideal overjet and overbite, to attain a balanced soft tissue profile.

### **Treatment Plan:**

To change the class II relation to class I without any premolar extraction, it was decided to treat this patient with fixed functional appliance Forsus (3M Unitek) in conjunction with preadjusted edgewise appliance in single phase. A 0.022" slot MBT prescription was used. After complete banding and bonding, leveling and aligning were done in both the upper and lower arch, until a 19 × 25" stainless steel wire could be passively placed. Individually both the arches were consolidated from molar to molar with figure of eight ligature tie and active bend back was placed in the archwire distal to the molar tube. Additional labial root torque was built into the anterior segment of lower archwire. The duration of prefunctional phase of treatment was 6 months.

Then Forsus appliance was inserted (Figs 3A to C). Forsus was used for 12 months, a little longer than usual recommended duration. The occlusion was slightly overcorrected to class I, then Forsus was removed. Final finishing and detailing of occlusion were done which took about 4 months of time. After 22 months of treatment, the fixed appliance was debonded, a fixed retainer was bonded in the lower anterior region and wrap around retainer was fabricated for the upper arch.

## DISCUSSION:

Class II malocclusions resulting from mandibular retrusion are generally treated with functional orthodontic appliances that create orthopedic forces directed at the mandibular structures. These appliances influence the jaws via the following mechanisms: Remodeling of the mandibular condyle, remodeling of the glenoid fossa, repositioning the mandibular condyle in the glenoid fossa, and autorotation of the mandibular bone<sup>5</sup>.

Amongst the fixed functional appliances available, Forsus-FRD has long been proved to be one of the best treatment modality for mild to moderate class II malocclusion. It is capable of achieving class II correction in 3 to 6 months, depending upon the baseline situation and the biological response. The correction achieved is by a combination of skeletal and dental effects, 66% being dental and remaining 34% skeletal<sup>6</sup>. The mandible experienced a shift anteriorly as the most

significant effect of the Forsus appliance. Active treatment produced excellent correction of skeletal and dental relationships.

The following changes were seen with this single phase treatment using fixed orthodontic appliance and Forsus: ANB angle was reduced from 6 to 3°. Upper incisor inclination with respect to palatal plane was reduced from 115 to 106°. Lower incisors were proclined by 4°. Maxillomandibular plane angle was not significantly altered. Overjet was reduced from 12 to 2 mm. Occlusion was changed from Angle's class II division 1 to normal class I occlusion. Convexity of facial profile was reduced.

## CONCLUSION

In spite of all the present controversies about the growth modulation or functional appliances, even today functional appliances can be very useful tool in managing a class II malocclusion.

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**FIGURES:**



1a

1b

1c



1d

**Figs 1a to d:** Pretreatment extra oral photographs



2a

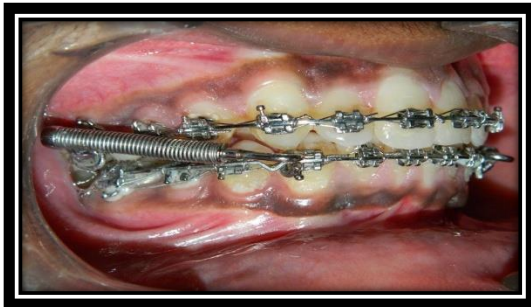


2b



2c

Figs 2a to c: Pretreatment intraoral photographs



3a

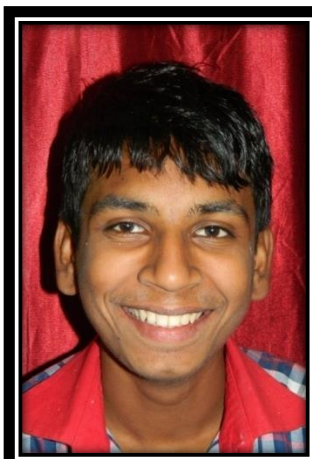


3b



3c

Figs 3a to b: During treatment intraoral photographs with Forsus



4a



4b



4c



4d

Figs 4a to d: Post treatment extra oral photographs



5a



5b



5c

Figs 5a to c: Posttreatment intraoral photographs

**TABLE:**

**Cephalometric Analysis**

<i>Cephalometric reading</i>	<i>Pretreatment values</i>	<i>Posttreatment values</i>
<b>SNA</b>	84 <sup>0</sup>	83 <sup>0</sup>
<b>SNB</b>	78 <sup>0</sup>	80 <sup>0</sup>
<b>ANB</b>	6 <sup>0</sup>	3 <sup>0</sup>
<b>Upper incisor to SN</b>	108 <sup>0</sup>	101 <sup>0</sup>
<b>Upper incisor to palatal plane</b>	115 <sup>0</sup>	106 <sup>0</sup>
<b>Lower incisor to mandibular plane</b>	95 <sup>0</sup>	99 <sup>0</sup>