A CASE REPORT OF GROWING SKELETAL CLASS II TREATED WITH FORSUS FATIGUE RESISTANCE APPLIANCE

1Muralidhar Reddy Y 1Principal, Professor and Head, Department of orthodontics, G. Pulla Reddy Dental College and Hospital, Kurnool.

2Madhukar Reddy R 2Senior lecturer, Department of orthodontics, SVS Institute of Dental Sciences, Mahabubnagar, A.P.

ABSTRACT

Growing skeletal class II malocclusions with mandibular deficiency have been treated for more than a century with different types of functional appliances. Removable or fixed functional appliances are available to advance the mandible. Fixed functional appliances have the advantage of not requiring patient compliance. They can also be used concurrently with brackets. This case report documents the successful treatment of mild skeletal class II in late stages of puberty by using Forsus fatigue resistance appliance. The Forsus appliance is a three-piece, semi-rigid telescoping system incorporating a super-elastic nickel-titanium coil spring that can effectively brings the mandible forward in a relatively shorter treatment time. It is compatible with complete fixed orthodontic appliances and can be incorporated into preexisting appliances.

KEY WORDS: Forsus Fatigue Resistance Appliance (FRD); Fixed Functional Appliance; Class II Malocclusion.

INTRODUCTION

Class II malocclusions are frequently observed in orthodontic practice. Droschl found that the frequency of Class II malocclusions to be 37% among the children between 6 and 15 years of age. Although maxillary protrusion and mandibular retrusion are both found to be the possible causative factors, McNamara reported that the most common component in a class II sample population is usually mandibular retrusion. The ideal means of correction is to target the source and try to alter the amount or direction of growth in that jaw.

Numerous orthodontic techniques and appliances have been introduced to treat Class II malocclusions, including intra-arch and interarch appliances, extra-oral appliances, selective extraction patterns, and surgical repositioning of the jaws. Intermaxillary elastics are a typical interarch method used for Class II correction. The effects of Class II elastics include mesial movements of the mandibular molars, movements and tipping of the mandibular incisors, distal movements and tipping of the maxillary incisors, extrusion of the mandibular molars and maxillary incisors, and clockwise rotation of the mandibular and the occlusal planes.

However, intermaxillary elastics rely heavily on patient compliance for their effectiveness, and compliance in orthodontics is variable and difficult to predict. Poor cooperation can lead to poor treatment results and increased treatment time.

A number of compliance-free interarch appliances have been developed. Herbst was the first fixed functional appliance, introduced by Emil Herbst in 1905. However, it was not used until Pancherz reintroduced it in the late 1970s. The studies of Pancherz, Wieslander, and McNamara et al have reported both skeletal and dentoalveolar changes with the Herbst appliance. The disadvantages of this appliance were the rigidity of the mechanism and the requirement of complex laboratory stages.

The Forsus Fatigue Resistant Device (3M Unitek, Monrovia) is an innovative three-piece telescoping spring for Class II correction. It consists of a universal spring module, an ‘L’ pin and a push rod that is available in five different sizes. It is assembled so that the appropriately sized push rod attaches directly to the lower archwire distal to the...
canine teeth, and the spring to the headgear tube via the ‘L’ pin. This is a case report demonstrating the usefulness of Forsus Fatigue Resistant Device (FRD) in a skeletal class II patient reported during the late stages of puberty.

Case report

A female patient of age 13 years came to the Department of Orthodontics with the chief complaint of forward placement of the upper front teeth. She had a square, symmetrical face with decreased lower anterior facial height with competent lips. A convex profile with posterior divergence, normal nasolabial angle and deep mentolabial sulcus was noted. She had class II molar relationship on right side and end on left side, an overjet of 10 mm and the overbite of 5 mm, with the maxillary midline coincident with the facial midline and the mandibular midline 1 mm to the right of the facial centreline. Mild spacing in the upper arch and mild crowding in the lower arch was recorded(Fig.1). The Cephalometric analysis revealed a skeletal class II relationship (ANB 6°) because of mandibular retrusion (SNA 81°, SNB 75°). The mandibular plane angles (GoGn-SN 17°, FMA 14°), Y-axis (56°) and lower facial height (50%) were indicating of hypodivergent face.

The patient was diagnosed as Angle’s class II division I malocclusion on skeletal class II jaw bases due to mandibular retrusion having hypodivergent growth pattern with deep overbite. The goal of orthodontic treatment was to reduce the overjet and overbite, and correct the molar relationship to Class I on both sides, using a non-extraction approach. It was decided that bilateral Forsus Fatigue Resistant Device would provide the mechanics necessary to achieve our aims.

Fig.1. Pre treatment Extra oral and Intra oral photographs
Treatment progress

Orthodontic treatment was started with 0.022” X 0.028” Preadjusted Edgewise System (Roth Minitwin). An initial 0.014-inch round nickel titanium archwire was used for leveling and alignment of both arches for 4 weeks followed by 0.016” NiTi wire for one month. Two months later, upper and lower wires were replaced with 0.016” X 0.022” NiTi and 0.017” X 0.025” stainless steel wires. The Forsus Fatigue Resistant Device was placed on both sides when the arch wires were on 0.019” X 0.025” SS for a period of 6 months (Fig.2). The appliance was inserted from the distal part of the head gear tube on the maxillary molar to the arch wire distal to mandibular canine. Finishing and detailing followed for 2 months after the molar correction. The active treatment was 12 months (Fig 3). Lower fixed canine to canine and upper removable retainer were given for retention.

Discussion

Class II malocclusion presents a major and common challenge to orthodontists. Various orthodontic techniques and appliances have been introduced to treat Class II malocclusions, including removable and fixed appliances, extra-oral appliances, selective extraction patterns, and surgical option. To determine the best class II device for a particular patient, the orthodontist must consider the factors as whether the patient profile is flat, concave, or convex; whether the face is long or short; whether the incisors are flared upright; whether the maxilla is prognathic or mandible retrognathic. The severity of problem and the anticipated patient co-operation also play an important role.

The case reported in this article is a young female patient at the late stage of the puberty with skeletal class II malocclusion due to mandibular retrusion. It has been shown that fixed functional appliances enhance mandibular growth and that they tend to produce a more horizontal condylar growth compared with removable functional appliances. The case was treated with fixed functional appliance using Forsus fatigue resistance appliance. FDR typically demonstrate mesial movement of the mandibular molars, tipping of the mandibular incisors, and variable effects associated with mandibular growth. The post treatment results showed significant improvement in the facial profile (ANB 3°) and class I molar relationship with ideal overjet and overbite (Fig 4).
CONCLUSION

A case of moderate skeletal class II on dental class II division 1 treated with preadjusted edgewise appliance supplemented with Forsus Fatigue Resistant Device is reported. The Forsus FRD can be used instead of class II elastics in mild cases and instead of Herbst appliances in severe cases. Forsus functional appliance work best in patients with convex profiles, but they are indicated in any class II patients except those with normal mandibles and protrusive maxillae, or with protrusive or overly large mandibles relative to other cranial structures.

References

PMid:10935954


PMid:15667839


PMid:17347290

Corresponding Author

Dr. Madhukar Reddy R MDS
Senior lecturer
Department of orthodontics
SVS Institute of Dental Sciences
Mahabubnagar,
Andhra Pradesh
Mobile:09704364411
E mail: mrachalaortho@yahoo.co.in

Vol. - III Issue 1 Jan – Mar 2011  93