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NON EXTRACTION TREATMENT OF CLASS II DIV 2 MALOCCLUSION WITH FORSUS - A CASE REPORT

Ashok P[*1], Vijayadhith C[2], Lingesh K[3], Mohanakrishnan P J[4], Anshu Rai[5]

[1] Reader, [2]Professor, [3]Senior lecturer, [4]Senior lecturer, [5]Clinical practitioner

Running title: Class II div 2 correction with Forsus appliance

Corresponding author: Pothuri Ashok[1] Reader, Department Of Orthodontics And Dentofacial Orthopaedics

Priyadarshini Dental college & Hospital, pandur, Tiruvallur, India.

Abstract:The following article gives an insight of case report of a sixteen-year-old boy with a Class II division 2 malocclusion with mandibular retrusion, severe deep bite, and concave profile. Non extraction treatment was undertaken with the use of forsus fatigue resistant fixed functional appliance. The Forsus fatigue resistance device (FRD) was effective in correcting both skeletal and dental parameters. The treatment time was 20 months. The results of non-extraction orthodontic treatment were the sagittal correction of skeletal Class II malocclusion as well as the reduction of overbite. FRD application with appropriate treatment time can result with prominent changes in the facial profile and dentition.

Indexing terms: **Class II div 2 malocclusion, Nonextraction, Fixed functional appliance.**

INTRODUCTION

The class II malocclusion is most encountered problem in the orthodontic practice, (W. R. Proffit, H. W. Fields Jr. and L. J. Moray 1997). This malocclusion according to Angle is the distal relationship of mandible when compared with the maxillary arch with variations of division 1 and 2 that expresses a characteristic trait in the malocclusion that effects both aesthetics and function (M. Alarashi, L. Franchi, A.Marinelli 2003).

The prevelance of class II malocclusion is higher in Asian population. Class II malocclusions can require different types of treatment when severity of the antero-posterior discrepancy, crowding, age, and patient compliance are considered (Rock, 1990; Bishara et al., 1995). Options for correction of Class II malocclusions include headgear, fixed and removable functional appliances, and fixed appliances with Class II elastics, extractions, and orthognathic surgery (Proffit et al., 1992; Aelbers and Dermaut, 1996).

A careful evaluation of the growth mainly remains a determinant factor for the treatment variation whether myofuctional, fixed functional, camouflage or surgical. Functional orthopedic appliances are mostly used to treat Class II malocclusion originated from mandibular retrusion (L. Franchi, L. Alvetro, V. Giuntini 2011). Appliance selection can involve removable or fixed functional appliances according to the existing anteroposterior discrepancy, cooperation, and growth period of the

patient. Nongrowing patients with Class II mandibular retrusion are mostly treated with fixed functional appliances which do not require the patient's collaboration (O. Dalci, A. T. Altu˘g, and U. T. Memikoglu 2014).

The following case report uses Forsus fatigue Resistance Device (FRD) for class II sagittal correction; Forsus is a three piece-telescopic system, which incorporates super elastic nickel titanium coil spring. The FRD attaches to the maxillary first molar and to mandibular area distal to canine or premolar. As the coil spring is compressed an opposing for is generated to push the mandible forward thus correcting the class II to class I.

CASE REPORT:

A 16 year old male patient came to department of Orthodontics and Dentofacial Orthopedics with a chief complaint of irregularly placed upper front teeth. Upon extra oral examination patient showed convex profile and lips are competent. **(Fig.1)**

Intraoral examination showed that patient had crowding in upper and lower anteriors, retroclined 11, 12, 21 and 22. There are peg shaped upper lateral 12 and microdontia in 22. Upper canines are ectopically placed. Patient showed traumatic deepbite and Angle's class II molar relation on both sides. **(Fig.2)**

Cephalometric parameters from lateral cephalogram **(Fig.3)** revealed ANB of 6 degrees and angle of convexity 8.5 degrees giving an inference of class II skeletal pattern. The patient showed horizontal growth pattern that favoured the use of fixed functional as there a residual growth remained for sagittal correction.

TREATMENT OBJECTIVES

1. Correction of deepbite
2. Correction of class II molar relation to class I
3. To achieve pleasing and harmonious profile
4. To correct crowding and peg shaped laterals
5. To align the arches

TREATMENT PLAN:

Fixed mechanotherapy using MBT and non-extraction treatment modality was considered with the use of Forsus fatigue Resistance Device (FRD) for sagittal correction.

TREATMENT PROGRESS:

Bonding done using 0.22 slot MBT appliance and initial levelling and alignment done and upper canines are brought into the arch. Levelling and alignment continued for 9 months until a heavier wire of 19x25 stainless steel wire was engaged into the brackets without any obstruction.

Forsus fatigue Resistant Device is placed in the patient and patient recalled every month for activation using the crimpable activation devices which are given along with the appliance. **(Fig.4).** The treatment of fixed functional therapy went on for 8 months and finally after achieving the desired sagittal correction, the FRD is removed and final settling is done.

Patient had Bolton's discrepancy in upper arch due to peg shaped laterals that are finally built up by composite restorations. Finally after the settling the appliance is debonded (**Fig.5a,5b,5c**). The post treatment lateral cephalogram **(Fig.6)** showed reduced ANB angle 2 degrees and pleasing profile with good functional occlusion.

RETENTION:

Fixed lingual in lower arch from canine to canine and Begg's wrap around removable plate with anterior inclined plane was given in upper arch.

DISCUSSION

Class II malocclusions due to mandibular retrusion are mostly treated by the use of functional appliance either myofuctional or fixed functional depending on the residual growth. The appliances influence the jaws using remodelling of the mandibular condyle, glenoid fossa and autorotation of the mandibular bone (Pancharez 1998).

Amongst the fixed functional appliances the Forsus is best for achieving the treatment goal of sagittal correction. The correction is achieved by the combination of both skeletal 34% and dental 66% (Mcnamara JA 1985). The ANB reduced to 3 degrees and the IMPA was increased from 102 to 106 degrees.

The reason for the increase in the IMPA is due to the force concentration of the Forsus on the lower anterior segment, causing it to procline. This increase is acceptable as the range will be from 102 to 106 degrees. There was a significant improvement in the profile due to the increase in chin prominence and also smile of the patient in pleasing and the patient is satisfied with the treatment.

CONCLUSION:

For the non-extraction treatment of class II correction the FRD proved to be an important arrow in the quiver of the treatment modalities with functional appliances.

References:

1. W. R. Proffit, H. W. Fields Jr., and L. J. Moray, "Prevalence of malocclusion and orthodontic treatment need in the United States: estimates from the NHANES-III survey," The International Journal of Adult Orthodontics and Orthognathic Surgery, vol. 13, no. 2, pp. 97–106, 1998.
2. M. Alarashi, L. Franchi, A.Marinelli, and E. Defraia, "Morphometric analysis of the transverse dentoskeletal features of class II malocclusion in the mixed dentition,"TheAngleOrthodontist, vol. 73, no. 1, pp. 21–25, 2003.
3. Rock W P 1990 Treatment of Class II malocclusions with removable appliances. Part 4. Class II division 2 treatment. British Dental Journal 168: 298–302
4. Bishara S E, Cummins D M, Jakobsen J R, Zaher A R 1995 Dentofacial and soft tissue changes in Class II, division 1 cases treated with and without extractions. American Journal of Orthodontics and Dentofacial Orthopedics 107: 28–37.
5. Proffit W R, Phillips C, Tulloch J F, Medland P H 1992 Surgical versus orthodontic correction of skeletal Class II malocclusion in adolescents: effects and indications. International Journal of Adult Orthodontics and Orthognathic Surgery 7: 209–220.
6. Aelbers C M, Dermaut L R 1996 Orthopedics in orthodontics: Part I, Fiction or reality—a review of the literature. American Journal of Orthodontics and Dentofacial Orthopedics 110: 513–519.
7. L. Franchi, L. Alvetro, V. Giuntini, C. Masucci, E. Defraia, and T. Baccetti, "Effectiveness of comprehensive fixed appliance treatment used with the Forsus Fatigue Resistant Device in Class II patients," The Angle Orthodontist, vol. 81, no. 4, pp. 678– 683, 2011.
8. O. Dalci, A. T. Altug, and U. T. Memikoglu, "Treatment effects of a twin-force bite corrector versus an activator in comparison with an untreated Class II sample: a preliminary report," Australian Orthodontic Journal, vol. 30, no. 1, pp. 45–53, 2014.

9. Panchrez H, Ruf S, Kohlhas P. Effective condylar growth and chin position changes in Hebrst treatment: A cephalometric oentgenographic long term study. Am J Orthod Dentofacial Orthop 1998;114:437-46.
10. McNamara JA, Bookstein FL, Shaughnessy TG. Skeletal and dental changes following functional regulator therapy in Class II patients. Am J Orthod 1985;88:91-110.

Figures & Figure legends

Figure 1:

A- extraoral smile
B- extraoral frontal
C- extraoral profile

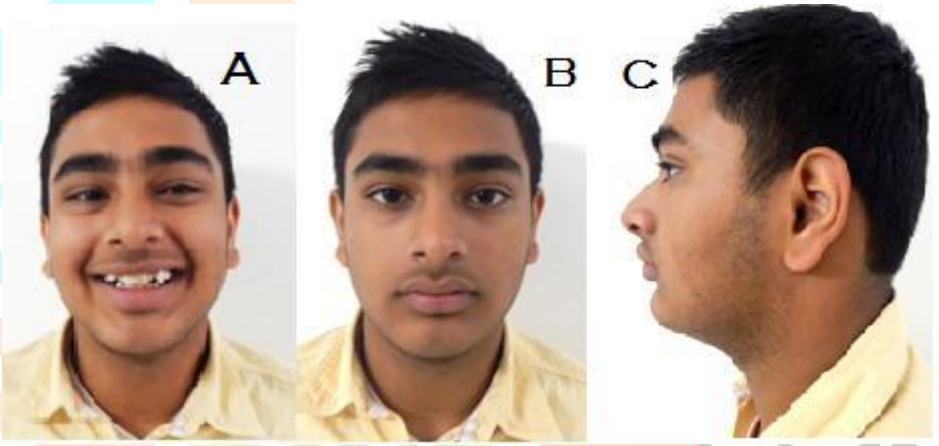

Figure 2: A- intraoral frontal

B-intraoral lateral

Figure 3: pre-treatment lateral cephalogram

Figure 4: Forsus placed after alignment

Fig 5: post treatment extraoral and intraoral

Figure 5a: A- Extraoral frontal

B- Extraoral lateral

C- Extraoral smile

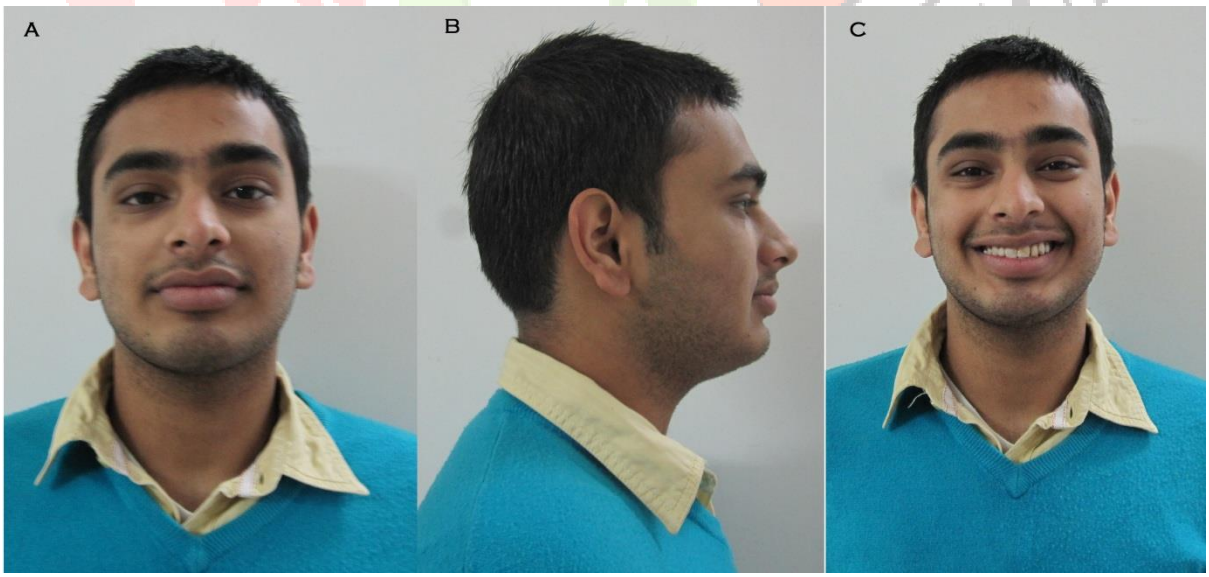

Figure 5b: A- Intraoral frontal

B- Intraoral lateral

Figure 5c: intraoral Occlusal

A- maxillary post treatment
B- mandibular post treatment

Figure 6: post treatment lateral cephalogram