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TREATMENT OF SKELETAL CLASS II DIVISION OPEN-BITE MALOCCLUSION WITH RME AND ACTIVATOR APPLIANCES: A CASE REPORT

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ABSTRACT

The aim of this case report presents a case of skeletal II and dental Class II treated with functional appliance in a male patient with increased openbite. A 9-year-old male patient was admitted to our clinic with gaping of anterior teeth. Clinical and radiographic evaluation revealed skeletal class II and dental class II anomaly and increased openbite due to mandibular retrognathia. The treatment was started with rapid maxillary expansion. After the retention period of 6 months, the treatment was continued with activator appliance to correct mandibular retrognathia. Mandibular advancement and class I molar and canine relationship were achieved after 10 months of activator use. In conclusion, in the case of dental class II, increased overjet, rapid maxillary expansion and functional treatment with activator appliance resulted in a good occlusion with normal overbite and overjet with dental class I relationships.

Key Words: *Class II division I, increased openbite, functional treatment*

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HIZLI MAKSİLLER GENİŞLETME VE AKTİVATÖR APAREYLERİ İLE İSKELETSEL SINIF II BÖLÜMLÜ ÖN AÇIK KAPANIŞ MALOKLÜZYONUNUN TEDAVİSİ: BİR VAKA SUNUMU

ÖZ

Bu vaka raporunun amacı; iskeletsel II ve dişsel Sınıf II artmış openbite'a sahip olan erkek hastanın fonksiyonel apareyler ile tedavisi yapılan olguyu sunmaktır. Kliniğimize 9 yaşında erkek hasta ön dişlerinde aralanma şikâyeti ile başvurdu. Alınan anamnezde hastanın dil itimi yaptığı öğrenildi. Yapılan klinik ve radyografik değerlendirmede mandibular retrognati kaynaklı iskeletsel sınıf II ve dişsel sınıf II anomali ve artmış openbite bulundu. Tedaviye fonksiyonel aparey olan hızlı üst çene genişletmesi ile başlandı. 6 aylık pekiştirme süresinden sonra mandibular retrognatisi ve artmış openbite'ı olduğundan openbite aktivatör apareyi ile tedavisine devam edildi. 10 aylık aktivatör kullanım sonucu mandibuler ilerletme ve sınıf I molar ve kanin ilişkisi sağlandı. Sonuç olarak, dişsel sınıf II, artmış openbite olan vakada hızlı üst çene genişletilmesi ve aktivatör apareyi ile yapılan fonksiyonel tedavi sonucunda dişsel sınıf I ilişkilerle birlikte normal overbite ve overjete sahip iyi bir okluzyon sağlanmıştır.

***Anahtar Kelimeler**: Artmış openbite, fonksiyonel tedavi, Sınıf II*

INTRODUCTION

Class II malocclusion is one of the most common problems seen in orthodontics[1]. This malocclusion is described as a distal relationship of the mandible related to the maxilla with a combination of different dental and skeletal components which can influence facial aesthetics[2]. Generally, patients with skeletal Class II show mandibular retrusion with the upper maxilla normally positioned or retruded[3]. As a result of this, the correction of dental and jaw sagittal relationships should be accomplished by advancing the lower jaw. It has been advised that functional appliances that posture the mandible forward (i.e. bite jumping appliances) could be used to obtain a sagittal increase of the lower jaw[4].

When associated with hyperdivergence and anterior openbite, Class II malocclusions have proven to be a daunting challenge for orthodontist. The position of the tongue, as well as thumb and finger sucking, are perhaps the best known physical factors that cause open bite malocclusions[5]. Hyperdivergent openbite subjects have anterior and posterior dentoalveolar heights that tend to be excessive, palatal plane angles that are flatter, as well an increased mandibular plane and gonial angle[6]. To treat such malocclusion in growing patients, it is necessary to limit maxillary displacement and intrude the molars in order to rotate the mandible upwards and forward[7,8].

The traditional treatment approaches involve headgear, functional appliances and/or orthognathic surgery. Functional orthopedic appliances are often used to treat Class II malocclusion originated from mandibular retrusion[9,10]. Appliance choice can contain removable or fixed functional appliances according to the existing anteroposterior discrepancy, cooperation, and growth period of the patient.

CASE REPORT

A 9-years-old male patient presented for an initial examination at the orthodontic clinic in good general health and without history of serious illness or injury. The chief complaint of the patient was related to the fact that the upper incisors were malpositioned. The patient presented with an Angle Class II, convex profile, 4 mm overjet and 1 mm overbite (according to 11 no tooth) (Fig.1) The hand wrist radiograph showed that the patient was prepeak skeletal stage (PP2) and panoramic radiograph of the patient didn't show any caries or pathology (Fig.2). The side profile X-ray and cephalometric tracing showed: normal positioned upper incisors (1-NA=30, 1/NA=5mm), and proclined lower incisors (1-NB=35), Class II skeletal pattern with mandibular retrognathia, ANB angle=6º, (SNA = 81° and SNB = 75º) and normal mandibular growth in the vertical orientation (SN-GoGn=33° and Y-axis=62°). A facial evaluation showed protruded positioned lower lip and slightly retruded positioned upper lip (according to Rickets's E). A treatment plan was established, starting with rapid maxillary expansion appliance, with the aim to reduce transverse deficiency of maxilla (Fig 3). The RME screw turned two times a day for the first week, and times a day for following two weeks. Then, activation of RME is achieved. RME had left in the month for 6 months for retention. After that, the treatment continued with monoblock appliance to correct mandibular retrognathia. The monoblock has an acrylic cap for the lower incisors to provide retroclination. 10 months of monoblock treatment with the correction of the molar and canine relationship and space for tooth alignment (Fig 4). As a result of dental grade II, increased openbite in the case of 1 years and 4 months of treatment as a result of dental class I relationships with normal overbite and overjet has been achieved a good occlusion.

DISCUSSION

The Class II openbite pattern of malocclusion has unique characteristics; such as severe increased overjet, with proclined lower incisors and retrognathic mandibula or increased lower anterior face height. Treatment for Class II openbite needs careful diagnosis and a treatment plan including esthetics, occlusion, and function. It is crucial to determine patient's facial profile, skeletal pattern, and severity of dental malocclusion in the treatment plan [11]. Depending on the patient's age and growth potential, there are several options for treating this malocclusion, e.g., fixed and functional appliances, headgears, and orthognathic surgery. RME and activator combined treatment is one of the most commonly used functional appliances for many years in the treatment of class II division I malocclusion. Patient can wear appliance full time with little discomfort. The use of monoblock worked for forward placement of mandible as well as for correction

of open bite; acquiring Class I molar and canine relationship; obtaining root axial inclination; satisfactory overjet and overbite; accomplish good intercuspation; enhance facial profile by decreasing facial convexity a treatment aims completed.

In this case, comparison of pre-treatment and post-treatment lateral cephalogram showed SNA decreased changed (76 to 73°), and SNB slightly decreased changed (72 to 71°). ANB angle reduced up 4 to 2°.

CONCLUSION

The result of this case report demonstrates that skeletal class II malocclusion on account of a retruded mandible can be successfully corrected with the help of growth modulation by means of RME and activator combined treatment. It also makes better skeletal bases along with soft tissue profile and gives better lip competence. As each case distinguishes from one another because of growth variability orthodontist just cannot generalized the appliance therapy. It is very important to select the cases carefully because application of knowledge and skills and good patient cooperation ensures long term stable results.

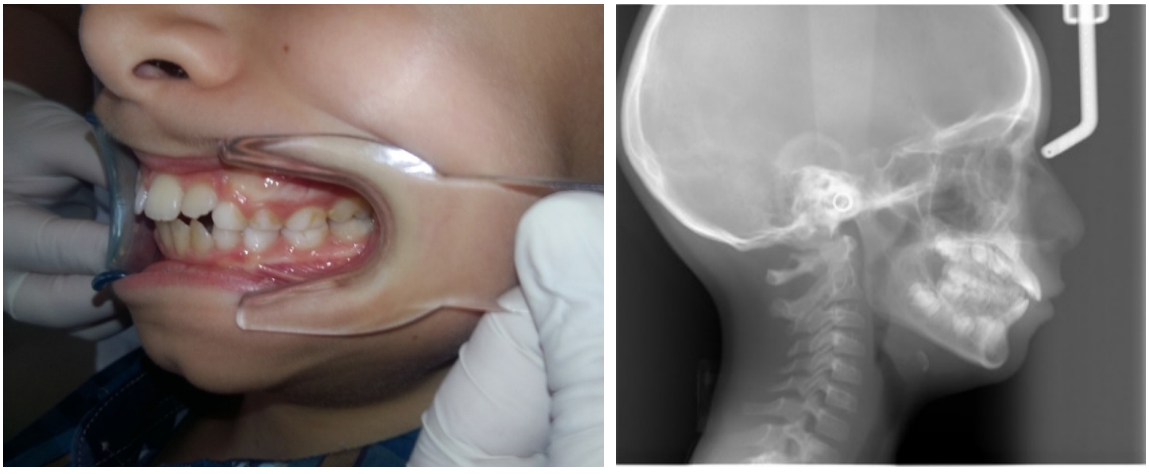

Figure 1. Initial facial and intraoral photograph and radiograph.

Figure 2. The RME appliance

Figure 3. The monoblock appliance

	Norm	**T1**	**T2**
SNA	82°±2	81	80
SNB	80°±2	75	78
ANB	2°±2	6	2
1/NA (mm/°)	4 mm ± 3, 22° ± 6	5mm/30°	5mm/25°
1/NB (mm/°)	4 mm ± 2, 25° ± 6	5 mm/32°	6 mm/34°
1/1	130° ± 6	132°	134°
SN-GoGn	32° ± 7	33°	36°

Tablo 1. Before and after monoblock

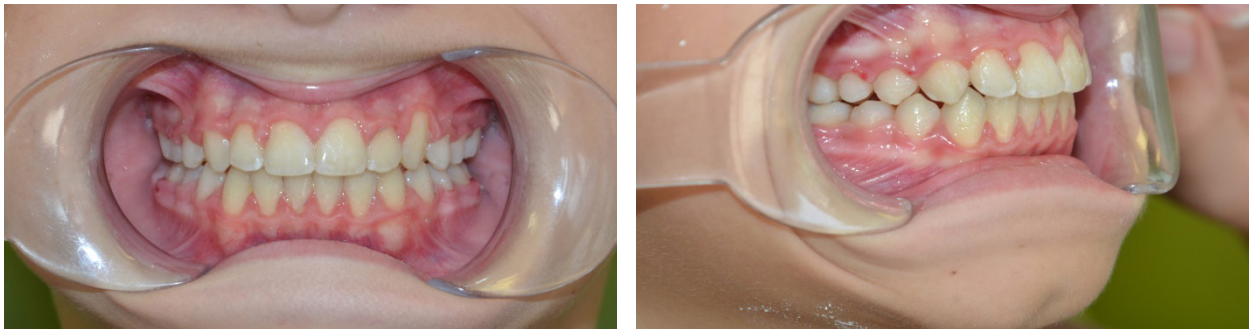

Figure 5. Final photographs

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