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A Simple and Effective Appliance for Class II Malocclusion Treatment

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Abstract

Background: Class II malocclusion dental or even skeletal is common in patients seeking orthodontic treatment. Maxillary protrusion, mandibular retrusion or the combination may contribute to develop a skeletal class II and affect facial appearance. Cases of mild skeletal discrepancy with an overall good profile can benefit from distalizing maxillary molars when there is no mandibular retrusion. Among several devices used is also Carriere Distalizer.

Aims: The aim of this short report was to evaluate treatment of class II malocclusion with Carriere Distalizer.

Methods: All patients in this study had moderate skeletal and class II dental malocclusion and a good profile. Diagnosis was performed by means of cephalometric analysis, study models. They were all treated with Carriere Distalizer. Before starting the treatment, which consisted in applying class II intraoral elastics the anchorage in lower arch was achieved by means of lingual arch.

Results and Conclusion: CarriereDistalizer provides maxillary molars distalization, derotation and correction of class II relationship in a short time period with an average of 6 months. The standard edgewise treatment mechanics for class II correction uses intraoral class II elastics after initial alignment and leveling. For the levelling to be complete it may require, depending in the severity of crowding more than 12 months. Carriere Distalizer shortens

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this time since intraoral class II elastics are used before leveling and alignment. Thus, the required collaboration of the patient is complete since it is the beginning of treatment and they are strongly motivated to see results.

Keywords: orthodoncy, dental malocclusion treatment

INTRODUCTION

According to Angle (1) class II malocclusion is the distal relation of the lower dentition to the upper to the extent of more than one-half the width of one cusp. The maxillary dentition may sometime protrude. If skeletal anteroposterior relationship between maxilla and mandible is altered, the profile becomes less esthetic.

McNamara (2) performed a study with 277 Class II patients 8-10 years old. He found that are four main elements causing the Class II characteristics: the maxillary skeletal position, the maxillary dental position, the mandibular skeletal position and the mandibular dental position. In 60% of the cases, mandibular retrusion was the cause of class II malocclusion.

There are many methods that can be used for Class II correction. In selecting the most accurate treatment protocol several factors including etiology, skeletal and dental components of the malocclusion are evaluated. Age and skeletal discrepancy determine treatment alternatives of skeletal class II that include functional treatment, compensatory and combined orthodontic treatment and orthognatic surgery (3).

Young age patients may be treated with various functional appliances (Herbst, Twin Bock). These appliances are effective in correcting skeletal class II malocclusion and perhaps also increasing length of mandible (4, 5).

Extractions are indicated in cases that cannot benefit from functional treatment but have still and acceptable profile. Extractions pattern is determined from the skeletal discrepancy in sagittal and vertical dimensions. Where an increased overjet is present and a regular mandibular arch only extraction of maxillary first bicupids is indicated (6).

Distalization is often required in skeletal and dental class II with harmonious profile. There are many appliances used to distalize maxillary molars. Classification can be depending on appliance location intra or extra orally. The intra oral appliances can also be classified based on the placement site palatally or buccally. Appliances used to distalize maxillary molars may require strong collaboration from the patients. Since not always young patients do not offer collaboration by following the recommended wearing time, most of the available distalization appliances are fixed intraoral. Limitations in use of extra oral distalizing appliance related to the missing collaboration and with the clinician's preference to have a better control of the distalization with a fixed intra oral appliance, lead to development of many intra oral fixed appliances.

Paul (7) in his study aimed to compare the efficacy between fixed and removable intra oral appliances, showed that there was no statistically significant difference between the two methods. Bondenmarkand Karlsson (8) performed a study comparing the treatment effects between head gear and Nance with NiTi coil springs and found that intra oral appliance was significantly more effective that head gear.

Carriere distalizer was introduced by Luis Carriere in 2004 (9). The appliance consists in a rigid arm bonded to the cuspid and the first molar.

The cuspid pad has a hook for class II elastics. The molar pad contains a ball that moves inside the socket. This movement provides crown up righting and bodily distalization. Another effect is distal rotation around the palatal root.

The aim of this study was to evaluate class II correction by means of Carriere distalizer appliance.

MATERIALS AND METHODS

We first used Carriere Distalizer in 2014. This is a retrospective study showing results taken from some of among 20 patients we decided to treat with this protocol. The treatment was not performed simultaneously.

Patient selection to be treated with Carriere Distalizer was done based on these criteria:

- No previous orthodontic treatment
- Dental class II malocclusion uni or bi laterally
- Mild skeletal class II with good profile.

Before starting the treatment, all patients were informed about the need to collaborate by wearing the intraoral class II elastic following prescription. All patients were treated by one of the authors of this study.

After appliance selections done by measuring each patient's model, bonding was performed following manufacturer's instructions.

In the lower arch bonded lingual arch was used to obtain anchorage for class II elastics.

After bonding the appliance, patients were given instructions regarding recommended wear time 24 h and change every 24 hours. They were also instructed how to wear and remove, as well as to wear new elastics in case of any broke before 24 hours of wearing. Elastics used were 3.5oz ¼ inch and 3/8 inch.

Patients were clinically monitored every 4 weeks. Instruction were to notify for possible appliance decementation and anticipate next visit.

RESULTS

Class I cuspid and molar relationship was achieved in all patient in an average period of 4-6 months depending on the severity of class II cuspid and molar relationship (Fig 1-4). Molar derotation was also achieved. Spacing and better alignment was observed in the anterior region indicating that spaced was gained in the posterior area. After correction of class II relationships treatment continued with bonding of both arches with 022 slot brackets and sequencing archwire to finish the case.

Figure 1. a-j. 4 months of treatment with CarriereDistalizer

Figure 2. a-j. 6 months of treatment non very collaborative patient

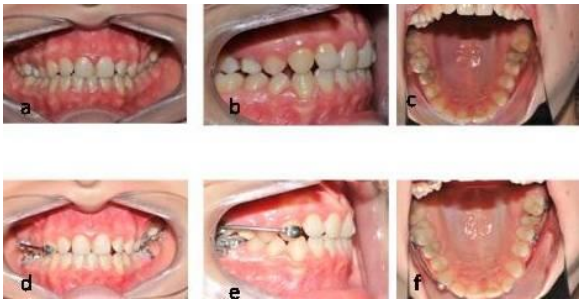

Figure 3. a-f. Unilateral class II. 3 months' result

Figure 4. a-. j Class II division II. Initial to progress in 5 months

DISCUSSION

Distalization of maxillary first molars is the preferred non-extraction treatment method in class II malocclusion (10). The developing and use of many distalization appliances provides clinicians the opportunity to choose according to the severity of malocclusion and patients specific needs. Carriere Distalizer is one of the appliances available to distalize molars in young and adult patients as well. The fast and initial correction of class II molar relationship is facilitated by absence of any wire and bracket thus avoiding friction (11). Besides, significant changes in the length of correction time between class II elastics used with fixed appliance and class II elastics used with Carriere Distalizer were observed (12). Minor alignment changes occur during the distalization of molars facilitated by spaces created in the posterior area. The overall treatment duration can be shortened since after the correction of dental class II alignment and levelling with the straight wire appliance does not require a long treatment time.

CONCLUSION

Although it is an appliance that requires patient collaboration, good results can be achieved in treating class II malocclusion when distalization of molars is required. Advantages of use consist not only in the design but also in using class II elastics in the beginning of the treatment with the patient that is motivated to have a better smile not with crowded and protruded teeth. Mild skeletal class II and molar class II relationship

hypodivergent cases have the best indications for Carriere Distalizer treatment.

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Conflict of Interest Disclosure: The authors declare that they have no conflict of interest.

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