

CASE REPORT

Orthodontic management of a Class II Division 1 malocclusion with proclined maxillary central incisors using a self-ligating system: A case report

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ABSTRACT

A Class II malocclusion is the protrusion of the upper front teeth over the lower teeth, which can be observed as an excessive horizontal discrepancy. This condition is frequently found in children who have a propensity for digit-sucking. This is a case of a 12-year-old girl who has increased overjet and mild maxillary crowding as a result of a habit like digit-sucking, which can affect the jaw's growth. A Class II Division 1 malocclusion with proclined maxillary central incisors was the subject of this report, which evaluated clinical and radiographic ways of integrating orthodontic treatment. In this case study, the upper and lower dentitions of the patient underwent orthodontic rehabilitation using a self-ligating system. A Class I or more aesthetically appealing occlusion is the desired outcome of the treatment. Good prognosis is still expected even if there were no frequent face-to-face adjustments and evaluation from the dentist, as it is one of the advantages of a self-ligating system.

Keywords malocclusion, Class II Division I, overjet, orthodontic, self-ligating

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1 | Introduction

Class II malocclusion is one of the most prevalent orthodontic issues, with a pooled global frequency of 19.56%. In mixed and permanent dentitions, the

trend of the distribution of Class II malocclusion by race was somewhat comparable.¹ Class II can be linked to hereditary factors, and new studies have highlighted the crucial role that genetics plays in determining condylar cartilage and condylar development. In classifying orthodontic

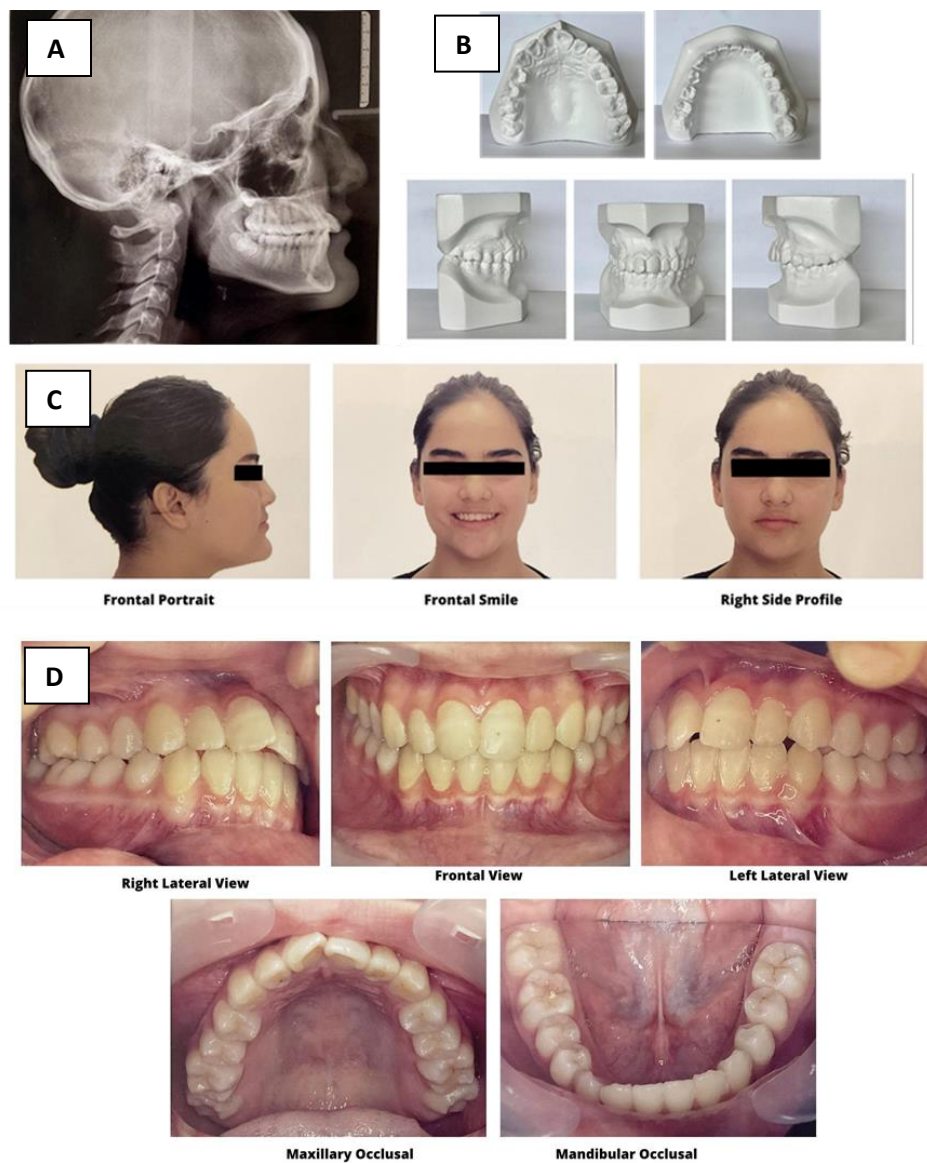


Figure 1. Pre-treatment (A) cephalometric radiograph, (B) diagnostic casts, (C) extraoral radiographs, (D) intraoral radiographs.

discrepancy, Edward Angle categorized it with Class I, II and, III, based on the normal occlusion of the first molars, wherein mesiobuccal cusp of the upper first molar is received in the buccal

groove of the lower first molar. Class I is based on the presence of normal molar occlusion, regardless of any other alignment anomalies. Class II is based mesiobuccal cusp of the

maxillary first molar occluding anterior to the buccal groove of the mandibular first molar: Class II Division 1 has a significant overjet due to the anterior maxillary teeth's proclined; Class II Division 2 has a deep overbite due to the retroclined anterior maxillary teeth. Lastly, Class III, the upper first molars mesiobuccal cusp of

anteroposterior discrepancy on the patient's left and right-side profiles, respectively, were found

2| Case presentation section

2.1 Chief Complaint

The patient complained that her teeth are out of alignment and that her grin is crooked. The foreign girl from Australia was uneasy with her smile. According to the patient, "My misaligned teeth upsets me, and I find it difficult to smile with confidence." The dentist examined her general health while dealing with her major complaint (Figure 1).

2.2 Medical History

Following an oral examination and patient interview. The patient had no medical conditions that might jeopardize the effectiveness of her treatment.

2.3 Dental History

The patient had no history of dental problems, and during the intraoral examination, a Class II, Division 1 with mild maxillary anterior crowding and

2.4 Diagnosis & Etiology

A thorough examination revealed that the patient had Class II Division 1 with some antero-posterior discrepancy and minor upper crowding. The patient also needed fluoride treatment and oral prophylaxis before starting the orthodontic procedure.

2.5 Prognosis

The patient's occlusal alignment was gradually established with the aid of the self-ligating system and the dentist's skill. Given that the patient is still young and there was a way to make the therapy convenient for her, it was a nonsurgical procedure. Since this is the patient's first dental procedure, several factors must be considered in order to provide the best possible outcome.

2.6 Treatment

After collecting and compiling pertinent information, analyzing diagnostic aids, definitive diagnosis was established which led to the decision to do a non-extraction approach using a self-ligating system to correct the Class 2 Division 1 malocclusion with maxillary anterior crowding, this choice was made for the convenience of the patient. At the beginning of the treatment, fluoride

therapy and oral prophylaxis were carried out. Orthodontic treatment started without any restorations being made. The patient's misaligned upper front teeth were straightened using an initial archwire made of .014 copper NiTi wire on both the upper and lower teeth. A month following the first phase of treatment, the first archwires in the upper and lower teeth were replaced with .016 copper NiTi wires. Adjustments, evaluation and consultation was done through online set up. As a result, in the case of Class II Division 1 malocclusion with mild upper anterior crowding and antero-posterior discrepancy, a good occlusion with normal overbite and Class I molar and canine relationship was achieved after 2 years of treatment (Figure 2).



Figure 2. Post-treatment intraoral photograph of upper and lower arch

3 | Discussion

Aesthetic really plays an important role in one's self-confidence. In this case a 12-year-old female patient presented anterior crowding which caused a Class II Division I malocclusion. The patients had consultation, which included a preliminary examination, a discussion

of their dental history, and a study of their mouth and teeth's X-rays. This aids the orthodontist in determining the best course of action, how long the therapy will last, and whether the disease is severe enough to have dental braces. Sometimes an orthodontist may believe that a different course of treatment not only will solve the issue but also better serve the patient's needs. Self-ligating braces was selected as the most appropriate treatment because the patient was a foreigner who rarely visits the country. However, before starting the treatment, oral prophylaxis and fluoride treatment should be done. Must ensure that the patient's oral environment is in excellent shape in order to prevent the spread of bacteria that could cause an infection in your mouth. Decayed tooth won't be able to sustain biting and chewing pressure, which could cause it to fracture. Additionally, it facilitates bonding the brackets to your teeth.

Due to the patient's circumstances, a self-ligating system is chosen, which is preferable because of the lockdown during COVID-19 Pandemic occurred when the patient was not in the Philippines. Additionally, one of the reasons dentists now track patients' progress online is due to the development of modern dentistry. This has become a convenient and quick approach for many people who have

busy lives and don't have time to routinely visit the dentist.²

Self-ligating braces straighten teeth without the aid of colored rubber bands by using brackets and an archwire. Self-ligating braces employ a unique bracket that clamps directly to the wire in place of the rubber bands that are typically used to connect the brackets to the archwire. Similar to traditional metal braces, the installation and treatment process involves your orthodontist attaching brackets to your teeth, bending the archwire across them, and anchoring it at either end in specific metal bands that go around your molars. The self-ligating brackets, however, are created to hold the wire in place in a specific slot where the wire glides through, as opposed to connecting the archwire to the brackets with colored rubber bands. Traditional metal braces and self-ligating braces are comparable, however self-ligating braces differ significantly in that they don't use elastic bands to link the brackets to the archwire. The archwire is instead locked into position against the brackets without the need of rubber bands since the brackets are made so that a small spring-loaded door closes over it.³

4 | Conclusions

In order to diagnose a patient's condition and determine the best course of treatment, thorough history

taking, clinical and radiographic examinations are required procedures. An immediate treatment and management of Class II Division 1 malocclusion is important and to prevent further complications, all significant factors contributing to the condition must be identified. If neglected, malocclusion can negatively impact the patient's dental health and may lower their self-esteem. Furthermore, as the patient ages it will be more difficult to correct the occlusion.

In this case, the patient had orthodontic treatment using a self-ligating system, an elastic-free brace that is more comfortable, easier to clean, and faster to complete treatment with fewer appointments required for adjustment, all of which are beneficial to the patient. Since the patient was abroad, online consultations were conducted, and with the patient's cooperation, the treatment's desired outcomes were achieved.

Institutional Review Board Statement

The study was conducted in accordance with the Declaration of Helsinki, and approved by the Ethics Committee of Southwestern University PHINMA School of dentistry.

Informed Consent Statement

Informed consent was obtained from the patient and the attending dentist.

All methods have been exhausted to maintain the anonymity of the patient.

Acknowledgments

The authors wish to thank Dr. Jelyn A. Tocmo for her willingness in sharing essential information and data used in this case report and for the faculty

members of the Southwestern University PHINMA School of Dentistry for their support in this study.

Conflicts of Interest

The authors declare no conflict of interest.

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