



Case Report: Scissor Bite Correction with Removable Expansion Plate

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Abstract. Introduction: Scissor bite is when the posterior tooth of the maxilla is too towards the opening than it should be, accompanied by the or absence of contact between the side of the cusp lingual maxilla tooth with the opening cusp of the mandible tooth. Removable expansion plate is a tools that serves to dilate the curve of the teeth that are experiencing contractions, which can be removed by the patient himself. Background: The 23-year-old female patient came to UMY Hospital complaining that the right jaw joint hurt so it interfered with activity. Patient complaints have been felt since 6 months ago. Patients have a habit of chewing on one side (using the left side) because the teeth on the right side hurt to chew. Patients 4 years ago removed ortho-deftly and wear a retainer for only 1 month. The use stopped because the retainer was gone. The last patient went to the dentist 5 months ago for scaling. Installation of orthodontics was deft about 7 years ago. Patients have scissor bite and cusp to cusp on the posterior tooth. Molar relation: Class I angle. There is a mild malposition of individual teeth.

Management: Unilateral expansion treatment is carried out using un-symmetrical parallel release expansion plates. The expansive component uses fisher expansion. The retentive component uses adam's clasp on teeth 16 and 26, 36 and 46. Use a short labial arch with a U loop at the canine.

Conclusion: Un-symmetrical parallel removable expansion plates can correct scissor bites and cusp to cusp bites in patients.

Keywords: Expansion · Unilateral · Unsintetric · Scissor bite · Cusp to cusp

1 Introduction

The development of orthodontic treatment is increasing rapidly with the times. People began to understand that teeth have several vital functions in life, namely: phonetics, aesthetics, and mastication [1]. The availability of skilled human resources in this regard affects people's interest in tidying their teeth. On the other hand, the tools and technologies available also serve as an impetus for the community to carry out orthodontic treatment [2]. Orthodontic treatment both fixed and removable has its own indications.

Removable orthodontic treatment is intended for cases of malposition or mild malrelation so that it can be corrected using the active components of the plate [3].

Dental malrelations include scissor bites or bites that resemble scissors). Scissor bite is a condition when the maxillary posterior tooth is too towards the buccal from what it should be, accompanied by the presence or absence of contact between the cusp lingual side of the maxillary tooth and the buccal cusp of the mandibular tooth, it can also be called buccal bite. Buccal bite complete can be called Brodie bite. Brodie bite is a condition where the size of the maxillary dental arch is much wider than the mandible, it can occur due to the maxillary arch being too wide or the mandibular arch being too small than normal [4]. Cases of mild malrelation can be done alternative treatment, namely arch expansion [5]. Expansion tools are divided into concave and removable. A fixed expansion device is often indicated for patients with a growth and development category, namely when the palatine suture has not closed completely because this tool has a rapid movement progress that widens the jaw arch. The removable expansion device is classified as a slow type, used to widen the dental arch only and is commonly used in adolescence to adulthood [6]. Expansion can be done if howes analysis results in basal arch or jaw arch wider than the dental arch [7].

1.1 Case Report

A 23-year-old female patient came to the Dental and Oral Hospital (RSGM) of Muhammadiyah University of Yogyakarta (UMY) with complaints of pain in the right jaw joint that interfered with activities. The complaint was felt since 6 months ago. The patient has gone to an ENT doctor to conduct an examination related to the complaint and then the patient is given joint pain relief medication. The complaint disappeared for a moment and relapsed again. Patients have the habit of chewing one side (using the left side) because the teeth on the right side hurt to chew. The patient 4 years ago took off the ortho and wore a retainer for only 1 month. Use is stopped because the retainer is missing. The last patient went to the dentist 5 months ago for scalling. Previously, the patient performed the installation of a fixed orthodontic device about 7 years ago, the patient received treatment of composite resin and amalgam on the upper and lower posterior teeth. The patient had exo radix 10 years ago. Patients brush their teeth 1–2 times a day when bathing. Patients have a bad habit of chewing one side (using the left side) with frequent frequency and intensity. This bad habit is carried out if the patient feels that the right tooth is aching and is uncomfortable to use for chewing.

According to the patient's confession, the father has a medium jaw size and normal tooth size, the patient's father also has a history of systemic diseases in the form of diabetes mellitus and hypertension. The patient's mother has teeth that tend to be neat and has a history of systemic diseases in the form of asthma. The patient's social life is a graduate of S1 MIPA Chemistry UGM. Now patients have a busy life as a make up artist as well as having an irregular diet. The general medical history of the patient, the patient is not suspected of having systemic and hereditary diseases.

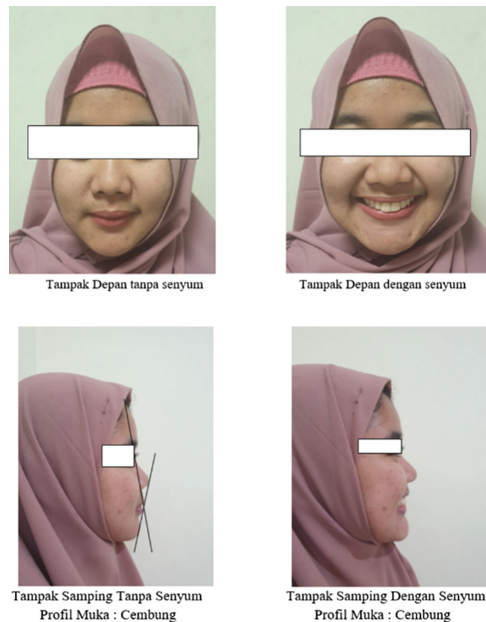


Fig. 1. Patient's face

1.1.1 Case Management

The patient first came to RSGM on January 20, 2020 and a complete examination. Then, on January 29, 2020, the patient was given indications for removable orthodontic treatment and printed a model study.

The results of the extraoral examination obtained the results of the patient's head index, namely 77.7 (mesosophaegal) and a face index of 111 (hyperleptoprosop). The patient's facial profile is convex with measurements of normal maxillary simon lines (1/3 distal C) and normal mandibles (interdental C-P). The patient's Vertical Dimension Rest Position (VDRP) is 46 mm. The patient's Vertical Dimension Centric Occlusion (VDCO) is 44 mm so that a Free Way Space (FWS) of 2 mm (normal) is obtained.

The results of the patient's intraoral examination obtained an overjet of 4.6 mm, an overbite of 3.4 mm. There is scissor bite and cusp to cusp bite in the posterior area. The first molar relation is right: class I Angle, left: klas I Angle. Right canine relation: class I, left: klas I. The midline of the incisivus of the upper jaw is more to the left 2.4 mm to the midline of the face. The midline of the incisivus of the lower jaw is more to the right 2.6 mm towards the midline of the upper jaw, Profile photo of the patient's face as in Fig. 1. Photo of the patient's centrist relationship as shown in Fig. 2. While the photo looks occlusal as shown in Fig. 3. The curved shape of the teeth of the upper jaw and lower jaw is parabolic, symmetrical. Individual dental malposition of the patient as follows: 15: Mesiopalato torsiversion; 27: bukoversion; 32: Mesiolabio torsiversion; 42: mesiolabio torsiversion and 44: bukoversion.



Fig. 2. Centric occlusion



Fig. 3. Occlusal point of view

2 Calculation Methods

The calculations carried out in this case are: pont method, korkhaus, howes and curvilinear determination. The results of the Calculation of the Pont method are (1) Growth and development in the lateral direction in the P1 inter region experienced a mild distraction of + 2.7 mm; (2) Growth and development in the lateral direction of the inter region M1 experienced a mild distraction of 1.3 mm. The result of Korkhaus' calculation is: the growth and development of the dental arch in the anterior direction undergoes a mild retraction of -1.2 mm. The results of Howes' calculations are: (1) The P index is obtained 43.3% so that the dental arch can accommodate the dentition in an ideal and stable curved state because the P index value >43%; (2) The Fossa Canina Index (FC) is obtained 46.6 so that the basal arch can accommodate the dentition in an ideal and stable state, because the value of the FC index >44%. Meanwhile, the results of the calculation of curved determination were obtained: (1) discretion on the upper jaw,

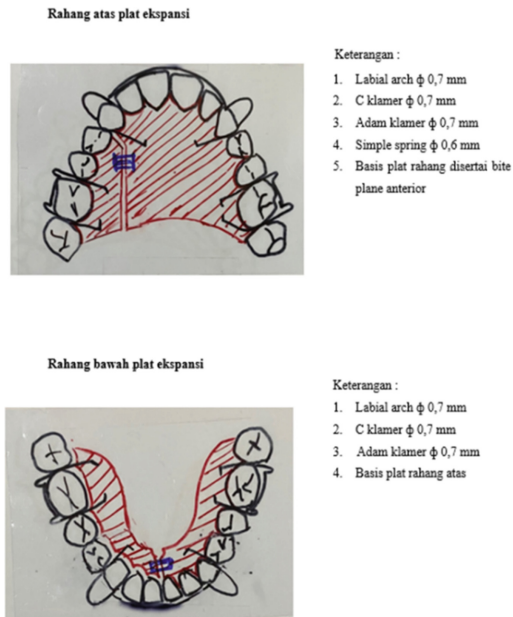


Fig. 4. Expansion plate design

namely the right +1.2 mm and the left 0 mm; (2) discretion on the lower jaw i.e. right 0mm and left +0.3 mm. The conclusion of some of these calculations indicates that the patient's condition can be carried out lateral expansion.

The diagnosis in this case is Malocclusion Angle klas I modification 4 type dental accompanied by corssbite malrelation in teeth 44 against 13, right posterior scissor bite and cusp to cusp bite on posterior, accompanied by malposition of individual teeth as follows: 15: Mesiopalato torsiversion; 27: bukoverversion; 32: Mesiolabio torsiversion; 42: mesiolabio torsiversion and 44: bucoverversion; accompanied by the bad habit of chewing one side (left side) with not frequent intensity and frequency. The treatment performed on the patient is a unilateral expansion of the right side of the upper jaw, because it will widen the upper right side so that the right posterior cusp to cups is corrected. As for the lower jaw, the left unilateral expansion is carried out so that it can correct the scissor bite on the left posterior side with the design of the tool as shown in Fig. 4.

The course of treatment in this case is: (1) providing communication, information and education about the condition experienced by the patient to the treatment plan; (2) correct the patient's malignation and correct the patient's individual malposition; (3) make post-treatment occlusion adjustments; (4) the use of hawley retainers. Treatment that has been carried out for approximately 7 months with 10 controls until the patient wants to stop treatment for a certain reason. In figure. Exposed the treatment and treatment of each patient visit from the first control to the tenth control.



Fig. 5. Centric occlusion after procedure

3 Results

There are changes leading to the patient's ideal occlusion. Individual dental malposition on gear element 15: Torsive mesiopalato (slightly corrected); 27: bukoversion (uncorrected); 32: Mesiolabio torsiversion (uncorrected); 42: mesiolabio torsiversion (slightly corrected) and 44: bukoversion (uncorrected). The crossbite in gear 44 against 13 was almost corrected; corrected cups to cusp; scissor bite is slightly corrected and the overbite changes from the original 4.6 mm to 3.6 mm. The middle line of the lower jaw towards the upper jaw moves in the ideal direction by 1.6 mm and the middle line of the upper jaw moves in the ideal direction by 1.2 mm. in Fig. 5. Visible changes in the condition of the patient's dental arch to be more ideal.

4 Discussion

Removable orthodontic treatment is a treatment specifically for cases that have malposition and or mild malrelation so that it only requires intermittent thrust from the removable plate [3]. Malocclusion is defined as an occlusion that should not and deviates from the ideal. Ideally, normal occlusion can be achieved when the teeth are in the arch of the upper jaw and lower jaw so as to form a harmonious relationship. Malrelation is terminology for malocclusion involving the relationship between the upper jaw and the lower jaw.

Dental malrelations include crossbite and scissor bites or scissor bites that resemble scissors). Crossbite or cross bite is the position of the tooth when the teeth of the upper

jaw are more palatal than the teeth of the lower jaw which are divided into two, namely the skeletal type or those involving the bone and the dental type or not involving the bone [9]. Scissor bite is a condition when the maxillary posterior tooth is too towards the buccal than it should be, accompanied by the presence or absence of contact between the lingual cusp side of the maxillary tooth and the buccal cusp of the mandibular tooth, can also be called buccal bite. Buccal bite complete can be called Brodie bite. Brodie bite is a condition where the size of the maxillary dental arch is much wider than the mandible, it can occur due to a maxillary arch that is too wide or the mandibular arch that is too small than normal [4]. Cases of mild malrelation can be done alternative treatment, namely arch expansion [5].

In the above case, it has been shown that the treatment carried out to the patient is for seven months with activation or control visits as many as ten times. At each visit, the operator performs oral hygiene index (OHI) measurements on the patient. After that, the operator performs checks on the plate: (1) retentive of the tool; (2) there is a traumatic part or not. The operator also performs calculations on the premolar index to see the results of the expansion used. The operator performs control on the patient by scheduling once a week. At the time of control, activation is carried out as much as $1-2 \times 1/4$ turn.

The expansion of the upper jaw is carried out with there are obstacles found in the treatment process as shown in Fig. 4. There was a problem in visit 6, namely the lifting of the plate on the posterior of the right lower jaw where the plate could not be fully inserted. Because of this, the operator decided to rotate the expansion plate in the opposite direction of the arrow by $2 \times 1/4$ turn on the lower jaw plate. Likewise with the visit or control 8, the rotation of the opposite direction of the arrow on the upper jaw plate was carried out by $2 \times 1/4$ turns and a reduction in the anterior verceulung of the lower jaw because it did not fit. The obstacle faced by the operator is the irregularity of the patient in wearing the tool; the patient has a busy work schedule making it difficult to go to RSGM; the shape of the plate is less good and lacks precision.

5 Conclusion

The treatment performed on the patient is the unilateral dental arch expansion of the upper jaw using an un-symmetrical parallel expansion plate with a fisher expansion screw and the lower jaw using a simtetric parallel expansion plate by reducing the verexulate on the side of the posterior tooth that is not expanded. The treatment was declared effective for correcting the patient's dental malposition which was characterized by dilating the inter-premolar by 0.6 mm and correcting the malposition of the patient's teeth leading to the ideal arch. The obstacles that occur in the treatment process are caused by the patient's instability in using the tool, causing relapse after activation. In addition, another obstacle is the lack of fitting verkelung on the teeth, causing the strength of expansion, especially in the lower jaw, to be not optimal.

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