

ACTIVATOR ELASTIC OPEN IN KLAMMT TREATMENT OF BAD OCCLUSION CLASS II DIVISION 1

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Received: 06/19/2015. Accepted: 88/28/2015

ABSTRACT

The standard elastic Klammt activator device used for Class II division 1 with mandibular protrusion and retraction smooth jaw, with better clinical outcomes in mesofacial and brachyfacial standards. It is still used in Class I malocclusion, with class II characteristics, ie maxillary protrusion and mandibular retraction, but without severe dental crowding, this paper aims to present an alternative approach to orthodontic treatment of Class bad occlusions II. Through a report of clinical case.

KEYWORDS: Orthodontics, Class II, Klammt.

1. INTRODUCTION

The malocclusion Class II is one of the most common problems in orthodontic practice, regardless of the causes, either by maxillary protrusion, mandibular retraction or combination. The malocclusion Angle Class II is characterized by an anteroposterior dental discrepancy in relation to the molar position which may or may not be associated with skeletal changes^{1,2,3}.

Studies show that in most situations, the skeletal discrepancy of Class II is not self-corrects with growth, being necessary orthodontic treatment to correct the skeletal discrepancy between bone bases. Once you define the etiology and malocclusion features, you can select the most effective method of treatment^{4,5}.

There are several approaches to the treatment of Class II, a wide variety of fixed and removable functional apparatus has been described in the literature, many studies show that the removable functional devices are a good choice of orthodontic therapy for the treatment of skeletal dysfunction making treatment effective in patients who are found in skeletal development phase^{4,6}.

Although the elastic open activator device Klammt had been independently created, it was developed parallel to Bionator Balters. The fundamental difference between the two devices was the incorporation of handles, making it more elastic Klammt player making the most functional device^{7,8,9}.

Initially the Klammt machine was a device consisting

of a modified inclined planes in the region of molars that played the role of construction bite system, which aims to correct the distocclusion by transmitting muscle stimulation to the teeth and supporting tissues, though the it was used only during the night^{7,8}.

Hans (1949) introduced a device called elastic modeler, of small size, which made it possible to use the device for longer periods of the day, which prevented the relapse of the improvements obtained in the evening. Finally, George Klammt in 1955 thought their very fragile devices and, based on that, drew a less elastic device, combining some of its elements with a cut activator in front, in order to make your toughest unit can this be used full time achieving thus a way to quickly change and function^{7,8}.

There are two types of open elastic activator, a type without acrylic projections interproximal spaces (guide surfaces), wherein the side and acrylic blocks are flat, lightly touching the posterior teeth, and others, acrylic, penetrates the interdental spaces the lingual surfaces of all teeth in the posterior segment^{7,8}.

In both types, acrylic extends over a small part of the adjunct gums. The sagittal mobility is higher in the first type. During treatment, the acrylic surface can be easily changed, by adding wear or self-curing acrylic^{7,8,9}.

The standard elastic activator apparatus consists of bilateral acrylic resin segments, upper and lower lip arches, an arch palatal type Coffin and guidewires to the upper and lower incisors. Both acrylic segments touch the palatal and lingual surfaces of the teeth of the maxilla and mandible and extend canine distal to the last molars. It is in the acrylic falling into the ends of the handles and springs, which must be adapted to the model in order to leave more space possible for the language, so that it does not have its committed functional space^{11,12}.

Lip upper and lower arches out of acrylic between the canines and the first premolars. Follow distally to the middle third of the labial surface of the second premolars or deciduous molars, maintaining a minimum distance between wires and teeth. After forming a curve

handle, returning to the previous portion, lightly touching this battery without regard to the positioning of the teeth^{11,12}.

It is documented the Klammt apparatus as a Supporting Role in Class II treatment procedure for the other side, but the labial arches should be constructed so as not to interfere with the eruption of teeth and should allow lateral and vertical growth expansion. The palatal arch originates in the region between first and second premolars or deciduous molars^{11,12}.

This arch rises steeply and is then bent at right angles to make an oval shape, which follows along the palatal mucosa, reaching the rearmost part of the tangent line to the distal surfaces of the first molars. Tucked at right angles again, down steep and is inserted into the acrylic on the opposite side between first and upper second premolars or deciduous molars. Promotes thus the union between the two segments acrylic^{11,12}.

It should be noted that the palatal arch should be as close as possible to the hard palate, maintaining, however, a minimum distance without touching it, thus avoiding cause mucosal lesions. Digital springs are placed very close to the lingual and palatal surfaces of the upper and lower incisors. In order to adjust them during treatment, it makes a compensatory curve just to get out of acrylic. Thus, front teeth, both upper and lower, are among the buccal arch and digital springs. The support of open elastic activator is on the palatal face of the upper and lower canines. If, in the absence of canines, the open elastic activator hurt the palatal mucosa, can put acrylic on the occlusal surface of molars and then remove it when the canines erupt^{11,12}.

The palatal bow is made with stainless steel wire of 1.2 mm in thickness, and all other device components wired 0.9mm. The device construction bite is obtained in the same way as for Balters Bionator, ie the edge position on board the incisors and the average matching lines if there is no premature loss of deciduous canines or crowding that changes the position of the midline^{11,12}.

This study aims to present an alternative approach to orthodontic treatment of malocclusion Class II. Through a report of clinical case, in which we used the elastic open activator device Klammt device which is an alternative treatment for malocclusion class II major clinical efficiency, easy installation and good acceptance by the patient.

2. CASE REPORT

Male patient, 8 years and 7 months old, leukoderma, Brazilian, attended the clinic Orthodontics, Faculty Inga, Maringa, Parana, with the complaint that required the use of braces, whose main complaint was: "I am with crooked teeth".

The first consultation was observed good oral health, mixed breathing and nail biting, class II division 1 mixed

dentition (Figure 1). Thus it was asked to perform the same orthodontic documentation for a better assessment and planning of the case.



Figure 1. Initial Photo. Patient categorized as Class II, Division I.

Performed with documentation were observed in cephalometric analysis (Table 1), the following changes; the maxilla and mandible presented is well positioned relative to the skull base (SNA = 80°) and SNB (= 74°), the relation between the jaws is increased (ANB = 6°); convex profile (Line H = - 2 mm); the skeletal pattern is normal tending to horizontal, evidenced by the FMA = 22° angles, SNGoGn = 30° and SNGn = 67°; the upper incisors slightly proclined (1.NS = 110°) and normal lower.

Table 1. Cephalometric measures obtained before the beginning of orthodontic treatment.

SNA	80°
SNB	74°
CoGn	100 mm
CoA	94 mm
ANB	6°
H line	-2 mm
FMA	22°
SNGoGn	30°
SNGn	67°
1 NS	110°



Figure 2. Teleradiography, hand and wrist radiographs and initial panoramic radiograph of the face.

For McNamara analysis, the patient had a small jaw (CoGn = 100 mm) compared to the size of the jaw (CoA = 94 mm) as the mandibular size for this jaw size would be between 104 and 107 mm (McNamara table). Through the analysis of hand and wrist radiographs, the patient was in juvenile growth spurt phase, with initial capping of the phalanges mesial, distal and proximal (Figure 2).

The initial treatment goal was to reposition the jaw, to verticalise the upper incisors and aligning the lower incisors. For this, we opted for the use of orthopedic aids Klammt (Figure 3).



Figure 3. Initial profile; orthopaedic apparatus of Klammt.

Once the patient was in a positive growth phase after a year of use of the device, we obtained a favorable result where the mandible was repositioned with the aid device (Figure 4).



Figure 4. The final profile.

There was an improvement in the profile curvature as seen in (Figure 4). And the upper incisors were upright, improving in the anteroposterior direction (Figure 5).



Figure 5. Final smile.

The apparatus was kept another year in the position, serving as a deterrent, and then for another six months

while we waited for the exchange of teeth to finish with braces. Finally, we were told a cephalometric and panoramic X-ray to final evaluation (Figure 6).

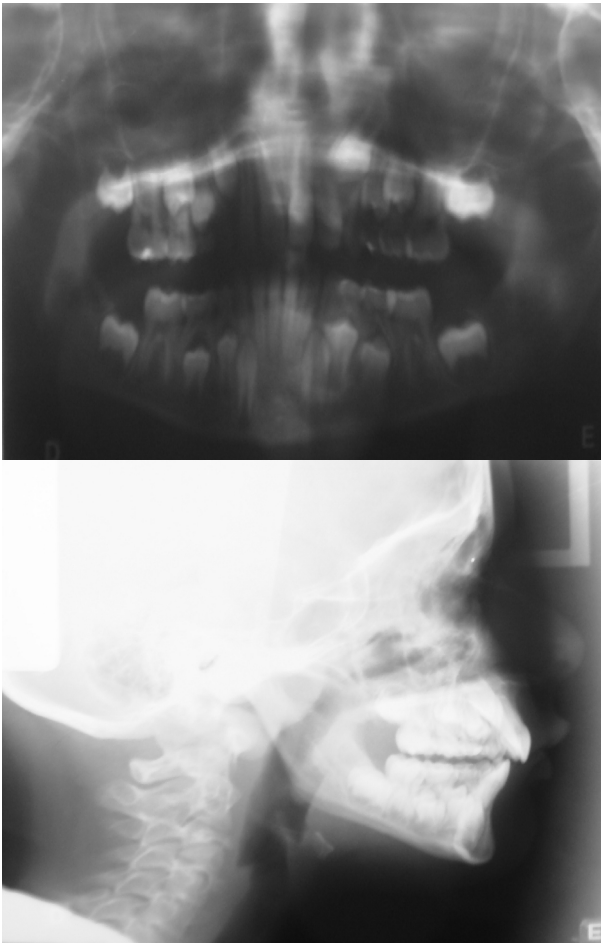


Figure 6. Radiography and panoramic x-rays of the face at the end of treatment.

3. DISCUSSION

This paper presented results similar to studies in which, too, was subject to the anterior mandible positioning or the increase in the anterior mandible growth promoted by mandibular advancement with the activator device^{5,8,12}.

The Activator Elastic Open Klammt, according to some studies, provided the previous position of the jaw. Mandibular dimensions measured by the total mandibular length (CoGn), mandibular body length (GoGn) and the branch height (CoGo) showed significant differences between patients who underwent treatment with Klammt compared with patients submitted to non-intervention^{7,8,9,10,11}.

The data from our study showed that the Class II individuals not treated had a lower increase in total mandibular length, lower increase in mandibular body length and smaller increase in the height of the mandibular

branch arising from the natural growth compared to those treated with the activator Klammt^{7,8}.

4. CONCLUSION

The elastic open activator Klammt is a functional appliance used as a good option for the treatment of malocclusion of class II division 1 during the growth phase of the patient. This device interacts with the tongue filling the basic requirements of a muscle system and thus enhances the development of oral structures, promoting change in the jaw position. We conclude that it is beneficial to use this device since the indications are respected, especially in relation to the time when you perform the treatment and level of cooperation.

REFERENCES

- [1] Angle EH. Classification of malocclusion. *Dent Cosmos*. 1899; 41(3):248-64.
- [2] McNamara JA Jr. Components of Class II malocclusion in children 8-10 years of age. *Angle Orthod*. 1981; 51(3):177-202.
- [3] Freitas M.R., Freitas DS, Pinheiro FHSL, Freitas KMS. Prevalência das más oclusões em pacientes inscritos para tratamento ortodôntico na Faculdade de Odontologia de Bauru-USP. *Rev Fac Odontol Bauru*. 2002; 10(3):164-9.
- [4] Guimarães CH Jr, Henriques JF, Janson G, De Almeida MR, Araki J, Caçado RH. Prospective study of dentoskeletal changes in Class II division malocclusion treatment with Twin Force Bite Corrector. *Angle Orthod*. 2013; 83(2):319-26.
- [5] Caçado RH, Pinzan A, Janson G, Henriques JFC, Neves LS, Canuto CE. Eficiência dos protocolos de tratamento em uma e duas fases da má oclusão de Classe II, divisão 1. *R Dental Press Ortodon Ortop Facial*. 2009; 14(1):61-79.
- [6] Henriques JFC, Maltagliati LA, Pinzan A, Freitas MR. Estudo longitudinal das características da má oclusão de classe II, 1ª divisão sem tratamento, em jovens brasileiros, leucodermas por um período médio de 3 anos e 4 meses. *Rev Dent Press Ortodon Ortop Facial*. 1998; 3(3):52-66.
- [7] Klammt G. *Ativador elástico aberto*. Rio de Janeiro: Associação Brasileira de Ortopedia dos Maxilares. 1994.
- [8] Klammt, G. *Ativador elástico aberto*. Rio de Janeiro: Associação Brasileira de Ortopedia dos Maxilares. 2001.
- [9] Flores MIR C; P. Major M; W. Major P. Soft Tissue Changes with Fixed Functional Appliances in Class II division 1- A Systematic Review. *Angle Orthodontist*. 2006; 76(4).
- [10] Simões WA. *Ortopedia funcional dos maxilares*. Caracas: Gráfica la Bononiana. 1998.
- [11] Simplicio H, Sakima PRT, Pinto AS, Ravelli DB, Sakima T. O uso do aparelho de Klammt como coadjuvante no tratamento da classe II. *Jornal Brasileiro de ORTODONTIA & Ortopedia Facial*. 2003; 8(45).
- [12] Sgarbi RS. Tratamento da classe II divisão 1 com o ativador aberto elástico de Klammt. *J Bras Ortodon Ortop Facial, Curitiba*. 1997; 2:41-8.
- [13] Morrete GA, Youssef JÁ, Patullo IMF. Ativador elástico aberto. *J Bras Ortodon Ortop Facial, Curitiba*. 1996; 1:9-14.