

Orthodontic Case Report: A Deep Bite Corrected With An Intrusion Arch

Ruben D. Perez, Daniel Cerrillo, Federico Tapia, Alicia Percevault, Josue
Villegas, Allan Jay Bernal.

ABSTRACT

Introduction: Class II malocclusion are one of the main reasons patients seek orthodontic treatment. The intrusion of incisors, either upper or lower, is done to obtain a correct overbite, the posterior extrusion and leveling of occlusal plane are some options to correct it.

Case Report: It is chosen a McNamara expander and a Jackson, then the bonding of preadjusted appliances with 0.018" slot, after 16 weeks of retention with the expander it is removed and bonded the upper appliance in posterior with sectioned arch for anterior intrusion. Once the overbite is corrected it continues with arch sequence and after the treatment objectives are completed the fixed appliance is removed and placed the retainers.

Conclusions: The correct management of biomechanics and control for the overbite correction allow us to get an adequate occlusion on our patients.

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I. Introduction

Class II malocclusions are one of the main reasons patients seek orthodontic treatment. The combination of dental and skeletal factors that contribute to the malocclusion may vary from mild to severe. The Class II division 2 it is characterized by retroclination of the upper incisors and an increased overbite¹. Within the population it is very common to observe characteristics of malocclusions in our country, the most frequent being class I malocclusion (37.3%) described by Angle followed by class II (31.9%) and type III infrequently (17.6%) without influence sex or socioeconomic level².

The intrusion of the incisors, whether upper or lower, is performed to obtain a suitable vertical overbite, extrusion of the posterior teeth, leveling of the occlusal plane among others.³

II. Case Report

A 16-year-old and 6 months old female patient, goes to the orthodontic clinic at the "Centro Universitario de Posgrado en Investigación en Salud" at the "Universidad Autónoma de Baja California" (UABC), located in Tijuana. The patient refers to the reason for consultation due to "I don't like my crooked teeth." Medical and family history without medical relevance.

During the intraoral examination and study models, a mixed dentition is observed due to the presence of the dental organ 65, a vertical overbite of 95% and a horizontal 4 mm with mismatched midlines as well as a class II canine relationship on the right side and class III on the left side. As for the molar relations, a class I is observed on the right side and on the left side a class III relationship. The dental organ 45 retained in infra-occlusion is also observed. A transverse collapse is seen in both arches (Figure 1).

Her radiographic study concludes with the diagnosis of: Female patient of 16 years of age, mesomorph, dolichofacial with slight facial asymmetry and convex profile. Tendency to vertical growth. Skeletal pattern class II division II with agenesis of dental organ 25 and upper and lower third molars. With slightly incisive upper incisors.



Fig. 1 Initial diagnostic photographs

Treatment plan

Due to the collapse that occurs especially in the upper arch and the vertical growth trend it is decided to use a McNamara expander and a Jackson but without ruling out the option of possible extractions if the result fails to be what is necessary to eliminate the upper crowding. It is planned to use fixed appliances Alexander slot 0.018 ”as well as the use of a modified intrusion arch for vertical overbite correction.

Evolution

It begins by bonding the McNamara expander from the first premolar superior to the second superior molar bilaterally (Figure 2), activations are indicated for a period of 2 months, it is used as a slow maxillary expander, then is maintained as containment.



Fig. 2. McNamara expander bonding (A); Expansion after 2 months (B)

Subsequently, the Alexander slot 0.018 ”and Jackson prescription brackets are programmed for the cementation of prescription brackets, the canine to canine brackets are placed with a 0.016 nickel-titanium arc (Figure 3).



Fig. 3 Upper appliances, arch 0.016 Niti



Fig. 4 Complete upper appliances with intrusion arch

Once the upper anterior segment is aligned, it is decided to place appliances in the lower arch and continue activating the Jackson to form the lower arch shape. After 16 weeks of retention with the expander, the upper fixed appliance is cemented in the posterior portion and sectioned arches are placed for the intrusion of the anterior superior segment and at this time it is decided to perform the extractions of the primary teeth (Figure 4).

Subsequent to the extractions of the dental organs 14, 34 and 44 a modified intrusion arch is performed for better torque control and a lower intrusion arch to assist in the correction of the vertical overbite (Figure 5).

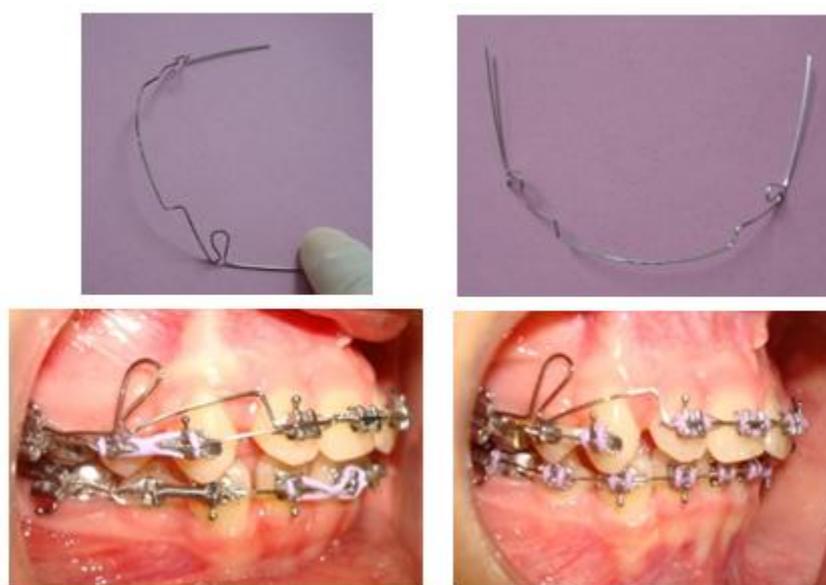


Fig. 5 Modified intrusion arch (A and B); 7 months of activation and closure of lower spaces (C); 10 months of activation (D)

Once the appropriate overbite is achieved, the sequence of arch, repositioning for root parallelism and closing of spaces continues. Once all the objectives for a functional occlusion have been achieved, he decides to remove appliances and place circumferential Hawley retainers (Figure 6).

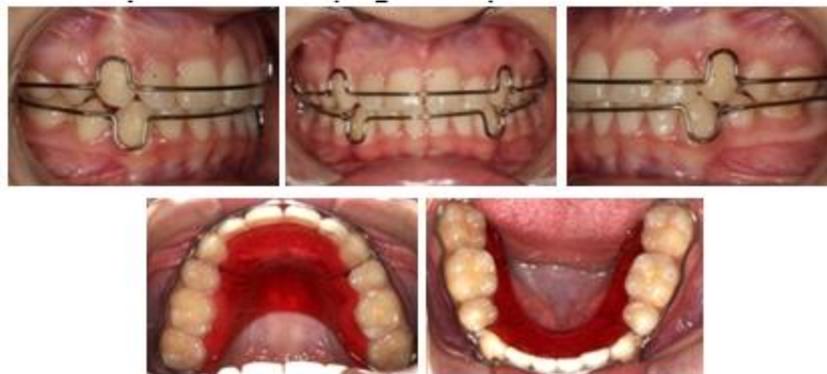


Fig. 6 Finished treatment with removable retainers.

III. Discussions

The use of a McNamara expander was aimed at correcting the occlusion plane and to achieve a class I canine relationship, all thanks to the mandibular rotation. But this brings us a side effect, the deepening of the vertical overbite. This is how it is decided to start the leveling during the use of the expander and then start with the intrusion of the previous ones and have a torque management of these.

Several studies have concluded that the intrusion of the anterior teeth shows to be more effective and efficient when a segmental arch is used, some mention an intrusion of 1.5 mm in superiors and 1.9 mm in inferiors³ while others have indicated an intrusion of up to 3 mm^{4,5}.

IV. Conclusions

An Angle class II malocclusion is a problem in most of the population, it has different characteristics depending on different factors, the main ones being the inappropriate torque of the upper incisors and an overbite both horizontally and vertically in disharmony. The proper management of biomechanics and control for the correction of these problems allow us to achieve an adequate and stable occlusion in our patients.

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