THE EFFECT OF INTERMAXILLARY ELASTICS IN ORTHODONTIC THERAPY

Cristina D. Bratu, Camelia Fleser, Florica Glavan

INTRODUCTION

Orthodontic treatment represents a major investment in the future dental health and appearance. Teeth move as a reaction to forces applied to them. In many cases, we use other teeth in the same jaw to give them resistance or anchorage, needed to provide the required forces. Most often, usually when several teeth need to move in the same direction, it is not possible to produce the change required using appliances anchored in just one jaw. During some phases of orthodontic treatment, elastics or rubber bands are used to move teeth or jaws, or sometimes both. By careful treatment planning and controlling the strength, direction and duration of forces, we aim to keep our use of elastics and headgear to a minimum. In some cases a good treatment outcome will be impossible without a lot of work using elastics, headgear or both.

The first known elastic was used by the Inca and Maya civilizations and was extracted from Hevea trees. Later, in 1728, Pierre Fouchard proposed to close anterior diastema with silk ligature. From this moment on the history of using elastics in orthodontics abounds in writers, culminating with Ricketts in 1970, which applied the Bioprogressive segmented light square wire technique advising the closing elastics conduct in open bite cases. Roth recommends short Class II intermaxillary elastics to help leveling the curve of Spee in association with extraoral forces. Langlade has the merit of developing clinical applications of elastic forces in different situations, proposing rules of biomechanics.

MATERIAL AND METHOD

Intermaxillary Class II elastics are placed on the anterior maxilla and posterior mandible. We used intraoral elastics produced by GAC International Inc. NY USA, made from latex and available in different sizes and shapes. They are available in “light”, “medium”, “heavy” and “super heavy” types, each of

ABSTRACT

Orthodontic elastics are used in all kinds of malocclusions: Class I, Class II, Class III and open bite. Their aim is to increase the movement of the mandible, without the need of multiple activations by the orthodontist. Their effects are: horizontal, vertical, transversal movements, mandible distalizing and mesializing, dental extrusion, space closing, midline shift and intercanine relation correction, opening the bite. Our study will present some of the clinical applications of orthodontic elastics in Class II and fronto-bilateral openbite malocclusions.

Key Words: intermaxillary Class II elastics, Class II/1 malocclusion, open bite, orthodontic forces.

them performing a different force on the teeth. Each bag of GAC elastics contains a bright white placer for the patient.

This study was conducted on a number of 20 patients with Class II/1 and fronto-bilateral open bite anomalies. Application of the elastics was different, depending on the clinical situation. We used classic, triangular and rectangular elastics.

In the maxillary arch, the vertical component of extrusion is smaller than the horizontal component of distalizing.

In the mandibular arch, the horizontal component of advancement is smaller than the vertical force of extrusion. In different clinical situations, the patients were instructed to wear the elastics during night and day. During daytime, intermaxillary elastics have a vertical component of extrusion that is much more significant than the horizontal component, their effect being increased by the functional movements (mastication, phonation). According to the orthodontist’s prescription, they must be changed 1-2-3 times/day. During the night, intermaxillary elastics have an equivalent vertical and horizontal component.

**Class II elastic indications:**

Class II elastics may be used for main and secondary objectives in the following clinical situations: skeletal and/or dental Class II malocclusions, anchorage reinforcement, backward movement of the upper incisors, mandibular arch advancement, buccal tipping of retruded lower incisors, bite opening (class II/2), midline deviation correction. They are recommended only after the correction of overbite and segmentation of the maxillary archwire.

The class II elastics have different effects:

a. **effects upon the maxillary arch:** upper incisors are more vertical, extrusion and downward movement of anterior occlusal plane, backward movement of the upper arch, dental distalization.

b. **effects upon the mandibular arch:** buccal tipping of lower incisors, forward movement of the entire mandibular arch, extrusion of the lower first molars.

c. **effects on the facial patterns:** forward movement of the chin, forward movement of the mandible with a posterior rotation; The lower facial height will depend on the wearing time and the amount of elastic force used.

d. **effects on the occlusal plane:** lowering of the anterior occlusal plane, sagittal correction of the Class II relationship.

**RESULTS**

**Representative clinical cases**

**Case 1**

Patient S.A. presented a Class II/1 malocclusion. After retraction of the frontal group and obtaining a functional overjet, the patient wears Class II elastics.

Effects of Class II elastics: mandible distalizing, mesial movement of the mandible, lateral extrusion.
Triangular elastics produce canine extrusion, occlusal and vertical stability of the canine, and the presence of two oblique forces, with the movement of the tooth along the bisector line direction.

Case 3

Patient F.M. presented with a Class II/1 malocclusion. In the final stage, we applied rectangular intermaxillary elastics for occlusal settling.

CONCLUSIONS

Our conclusion is that it would be advisable to use intermaxillary elastics in the finishing stage of orthodontic treatment, in order to obtain an optimal occlusion and a long time stability of the orthodontic results.

REFERENCES


DISCUSSIONS

Some clinical problems may appear even with careful clinical observation: excessive or insufficient wearing, periodontal problems of the lower teeth, unwanted space opening or closing, loss of anchorage, unwanted rotation or extrusion, abnormal tipping, temporomandibular disorders, incorrect placement of the elastics by the patient, the elastic properties may decrease or be lost.

After 2 hours from the insertion of elastics in the oral cavity, the elastic properties decrease with 30%, and after 3 hours, with 40%. After 1 month after insertion, elasticity was 50% off.

After comparing the effects of Class II elastics and the fixed functional appliances such as Herbst, other authors have found more pronounced vertical changes after elastic treatment.

The disadvantages of intermaxillary elastics are minimal and the results are optimal, with the condition of a careful diagnosis and treatment planning.

CONCLUSIONS

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REFERENCES


