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## ORTHODONTIC CONTAINMENT: THE IMPORTANCE OF POST - TREATMENT

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### ABSTRACT

**Introduction:** Malocclusion has been an aggravating factor in the development of caries, and may not be the main factor for the development of some TMDs, but it is an untreated cofactor when diagnosed. The dental crowding is a type of malocclusion with more incidence among Brazilians, which can also lead to the appearance of caries and gingival diseases. Orthodontics is the specialty that prevents and corrects the state of alignment of the teeth, healing a part of the problems of malocclusion and dental crowding. However a good orthodontic treatment with positive results depends not only on the professional but on the effective collaboration of the patient. The use of orthodontic restraint in the post treatment phase is of great importance so that there is no recurrence of tooth movement that may occur during the period of remodeling of the dental structures.

**Objective:** To review the importance of using orthodontic restraint in post treatment in order to avoid recurrence of tooth movement, taking into account the periodontal biotype and stomatognathic aging.

**Conclusion:** Due to the aging of the stomatognathic apparatus the orofacial functions can be modified, therefore for greater effectiveness and longevity of the final result of the orthodontic treatment the indefinite use of fixed inferior containment should be established and accompanied by the professional, in case of patients periodontally should be done together with professional expert in periodontics.

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## INTRODUCTION

More and more Brazilian adolescents suffer from the lack or excess of dental spaces, a study confirms that the high rate of dental crowding is an aggravating problem in aesthetics and should have a greater attention on public health, these problems can interfere in social life and in the self-esteem of adolescents (Nunes Neto *et al.*, 2014). Dental crowding is the type of malocclusion that occurs most frequently among the Brazilian population and leads to the development of caries

and gingival diseases, damaging oral health and disfavoring them aesthetically (Lima *et al.*, 2012; Porcelli *et al.*, 2015). Temporomandibular DTMs may also have their development related to malocclusions, making them an aggravating cofactor of this disease (Lemos *et al.*, 2015). Orthodontics is the specialty that prevents, intercepts and treats crowding, diastema and malocclusion. Orthodontic treatment is essential to reduce the impact of poor quality of life where the treatment period may generate dissatisfaction with the appearance, but the result of the post-treatment brings satisfaction and returns the well-being to the patient (Oliveira *et al.*, 2013).

Containment plates are used after orthodontic correction to control dental movements, it was designed to keep the teeth in the position obtained after orthodontic treatment (Abrão, Jorge, 2014). There are several containment models used by professionals in orthodontics. Among these varied orthodontic containment models, the most requested for patients are the Hawley and Begg plates for the upper arch and the lingual fixed bars and the Hawley plate for the lower ones (Assumpção *et al.*, 2012). With the advancement of the age the stomatognathic apparatus undergoes changes, causing the teeth, gums and bone tissues to change their structures, the professionals must be attentive to these changes and able to take measures of prevention and promotion of the health of its patient, orthodontics these anatomical and physiological changes may influence the treatment outcome (Freitas Júnior *et al.*, 2008). The lower dental arch is the one that suffers the most changes throughout the life, these alterations ground and explain the relapses of crowding after withdrawal of the device of containment, but, it is not possible to predict how much of movement can occur for this reason the indication of the use of the indefinite shortage (Mauad *et al.*, 2015). Some cases such as treatment of diastema closures of maxillary incisors with a fixed orthodontic appliance, the use of fixed restraint in the long term and its maintenance in the post treatment, avoids recurrence of the diastema opening (Tanaka *et al.*, 2015; Coimbra Júnior *et al.*, 2016). Zachrisson emphasizes the importance of permanent orthodontic restraint in some cases or in the long term for others, always aiming at the possibility of recurrence in the dental movement, mainly in the pubertal phase (Zachrisson, 1997). Research reports that the short period of time in the use of restraint in some cases causes relapse in movement after removal of the restraining device, the area most affected is the lower arch, with reopenings of diastema, crowding and gyroverson (Lima *et al.*, 2012). Proof of this is the study that shows patients class II, division 1, orthodontically treated with correction of the curve of spee and angulations of the lower incisors that used restraint in the upper and lower arch at the maximum 1 to 2 years after treatment after 5 years without restraint had significant relapses in overbite and in the spee curve (Freitas *et al.*, 2006). The objective of the present study was to do literary review, showing the importance of the use of orthodontic containment in posttreatment should be presented so that there is no recurrence of tooth movement, taking into account the periodontal biotype and stomatognathic appliance aging.

## METHODS

### Mesh Terms

The words were included Orthodontic Containment, Orthodontic Treatment, Aging of the stomatognathic apparatus, Dental crowding, dental diastema, dental malocclusion, periodontal disease associated with orthodontic containment. For further specification, the "anterior maxilla" description for refinement was added during searches. The literature search was conducted through online databases: Pubmed, Periodicos.com and Google Scholar. It was stipulated deadline, and the related search covering all available literature on virtual libraries.

### Series of Articles and Eligibility

A total of 45 articles were found involving temporomandibular dysfunction. Initially, it was held the exclusion existing title

and duplications in accordance with the interest described this work. After this process, the summaries were evaluated and a new exclusion was held. A total of 29 articles were evaluated in full, and 21 were included and discussed in this study.

## DISCUSSION

Due to the patient's resistance in portraying a relapse in dental misalignment with brackets, it led to the elaboration of a new technique involving the use of fixed restraint (Normando *et al.*, 2011). Concern about keeping gums healthy in orthodontic treatment and post-treatment in the containment phase worries orthodontic professionals, poor sanitation due to fixed restraints can damage the periodontium causing inflammation, plaque buildup, biofilm and dental calculus (Shirasu *et al.*, 2007). Thinking about this, some of these professionals have been developing new designs for containment, with an anatomy that allows the patient to easily clean the patient with dental wire and tape, and on the part of the professional who attributes the use of ultrasound to the dental prophylaxis maneuver in the office. Regardless of the type and model of restraint, it will always be a retention factor for plaque and dental biofilm, but those of easy hygiene contribute to the good maintenance and oral health of the patient during the period in which they should remain with the containment (Curado *et al.*, 2015; Ribeiro *et al.*, 2016). Patients undergoing orthodontic treatment with severe periodontal diseases require special attention because they have involvement in the epithelial, connective and alveolar tissues. All orthodontic treatment should be accompanied by the periodontal specialist and the right choice of posttreatment containment is of paramount importance to maintain the patient's good periodontal health (César Neto *et al.*, 2010; Bortoluzzi *et al.*, 2013). In addition to restraint, we must apply the occlusal adjustment that is performed with an indispensable procedure at the end of the treatment in order to establish the functionality of the stomatognathic system and obtain a better distribution of masticatory forces, contributing to the stability and longevity of the final treatment result (Crepaldi *et al.*, 2011). It is not uncommon for recurrence of crowding, diastemas and gyroversons in orthodontic treatments, especially in the lower arch, the cause is most often established by the early withdrawal of the restraining device (13,14), some authors recommend as long as possible because it is known that relapse is inevitable and that the stomatognathic apparatus undergoes anatomical and physiological changes with aging (12, 8), dental crowding can bring several other problems to the patient, not only aesthetics remain but also to oral health, because the highest caries index is in patients with a problem of crowding or malocclusion (2,3). Brazilian adolescents are the most affected by dental crowding, requiring orthodontic treatment to improve aesthetics and their self-esteem, cases in which the appearance of the teeth can affect their living in society (1), orthodontic treatment aims to remedy these problems, and return the facial harmony and oral health of these patients, a well-planned treatment and post-treatment with containment devices guarantee an excellent final result (5,9). Except patients with periodontal problems where the time of use of restraint should be accompanied by a professional specialized in periodontics and its time of use of restraint may vary (19, 20) for the others the indication of fixed lower contentions indefinitely is the way more effective to maintain its alignment. The criterion of time of use of restraint is determined by each professional based on their

knowledge, even with so much evidence of relapses, is an issue that needs further studies and research.

### Conflict of interests

There is no conflict of interest between authors.

### Conclusion

Due to the aging of the stomatognathic apparatus the orofacial functions can be modified, therefore for greater effectiveness and longevity of the final result of the orthodontic treatment the indefinite use of fixed inferior containment should be established and accompanied by the professional, in case of patients periodontally should be done together with professional expert in periodontics.

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