

Relapse of maxillary anterior crowding in Class I and Class II malocclusion treated orthodontically without extractions

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Abstract

Objective: The present study aimed to retrospectively compare the postretention stability of maxillary anterior incisors alignment in Class I and Class II patients. **Method:** Sample comprised 38 patients of both genders, treated with no extraction and Edgewise mechanics, divided into two groups: Group 1 comprised 19 patients, at a mean age of 13.06 years, with Class I malocclusion and initial maxillary anterior crowding greater than 3 mm. Group 2 comprised 19 patients, at a mean age of 12.54 years, with Class II malocclusion, and also with an initial maxillary anterior crowding greater than 3 mm. In the dental casts of pretreatment, posttreatment and postretention, the Little irregularity index, intercanine width and width between first and second premolars, intermolar width and maxillary arch length were measured. For intragroup comparison among the three evaluation times the one-way ANOVA was used followed by Tukey test. Intergroup comparison was performed by independent t test. To verify the presence of correlation, the Pearson correlation test was used. **Results:** Results evidenced greater stability of treatment in Group 2 (Class II), because during the postretention period, a smaller relapse of maxillary anterior crowding in Group 2 (0.80 mm) than in Group 1 (1.67 mm) was observed. **Conclusion:** It was concluded that treatment of maxillary anterior crowding is more stable in Class II malocclusion than in Class I malocclusion.

Keywords: Relapse. Maxillary anterior crowding. Posttreatment stability.

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Editor's abstract

Among the goals to be achieved with the completion of orthodontic treatment, stability is perhaps the most difficult to obtain. Researchers from all over the world have been very dedicated in trying to unravel the etiology of the orthodontic relapse of the mandibular anterior crowding, however little attention has been given when it concerns the maxillary anterior crowding. Based on this premise the authors of the present study had as objective to evaluate the relapse of maxillary anterior crowding in Class I and Class II malocclusion cases treated orthodontically without extractions. For this a sample of 48 orthodontic records of patients treated without extractions who presented initially Class I or Class II malocclusions was selected. All patients were treated with fixed appliances and Edgewise mechanics and initially had a maxillary anterior crowding

greater than or equal to 3 mm according to Little.¹ The sample was divided into two groups according to the initial malocclusion, i.e.: Group 1 - patients with Angle Class I; and Group 2 - patients with Class II malocclusion. The mean postretention evaluation time was 8.6 years for Group 1 and 8.04 years for Group 2. The variables assessed were: Little irregularity index (modified), intercanine, interpremolar and intermolar widths and maxillary arch length. The results demonstrated greater stability of the Class II malocclusion treatment, considering that during the postretention period there was greater relapse of the maxillary anterior crowding in patients with initial Class I malocclusion. With the results obtained it was concluded from this work that the Class I malocclusion treated without extraction is more relapsing than Class II when the maxillary anterior crowding is evaluated.

Questions for the authors

1) Based on the findings of the article, would you indicate different protocols for retention in the Class I and Class II malocclusions?

In theory, as the treatment of Class II malocclusion had become less stable in the long-term, the adoption of a more rigid retention protocol (extending the fixed or removable retention time) is indicated in these cases. However, we observed that the difference between the groups in relation to the amount of maxillary anterior crowding relapse was 0.87 mm. In clinical terms, a difference that tends to be almost insignificant. The clinician should keep in mind that, regardless the type of initial malocclusion, the adoption of more stringent retention protocols will, in most situations, conduct

to long-term stability of the treatments. The patient presenting Class II malocclusion should also be instructed on the importance of their compliance in the use of the retention because of the greater tendency of relapse.

2) The fact that there was greater Little irregularity index in Group 1 (Class I) at the end of treatment can not be related to the outcomes achieved? That is, cases with a better finishing would have lesser tendency to relapse?

We believe not. The relationship between "quality of finishing x orthodontic relapse" is a controversial issue in the literature. It was suggested that the better the quality standard of finishing, the greater the stability of orthodontic

treatment.^{2,3} However, recent studies found no correlation between the quality of finishing and the long-term stability.^{4,5,6,7} The results of correlation tests of this study tend to corroborate these studies. It should be noted that both groups had, at the end of treatment, satisfactory maxillary anterior alignment (Little index of 0.34 mm and 0.00 mm for Groups 1 and 2, respectively). Thus, no groups were compared that can be classified as greatly or badly finished.

3) In your opinion, what would influence maxillary anterior relapse the most: The initial severity presented by the case or the orthodontic outcome achieved?

The authors' opinion, based on this study and related works on the subject, is that both factors have no significant influence on maxillary anterior relapse. Note that individuals with strong initial crowding tend to have a larger amount

of irregularity in postretention, but this fact does not mean that there was a higher relapse. The evaluation of relapse should be based on the relationship between the amount of orthodontic correction and the amount of crowding relapse. For example, a maxillary anterior irregularity postretention of 1.0 mm in a patient with initial crowding of 3 mm would imply in a relapse of 33.3% of the correction achieved (if the treatment is finished with a perfect dental alignment). Moreover, there is also a relapse of 33.3% of the correction in a patient with initial crowding of 6 mm and which has 2 mm of crowding in the postretention. Factors such as the tension of periodontal fibers, presence of rotated teeth in the initial phase, muscular function, relapse of crowding in the opposite arch, time and retention protocol and initial malocclusion (Class I or II) clearly influence the maxillary anterior relapse.

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