ORIGINAL ARTICLE

EVALUATION OF VARIOUS PERIODONTAL PARAMETERS IN AGGRESSIVE PERIODONTITIS PATIENTS FOLLOWING ORTHODONTIC TREATMENT

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ABSTRACT:

Background: Orthodontic therapy using fixed or removable appliances has been found to be associated with plaque formation or caries incidence. Oral hygiene instructions and 3-6 month visits as well as assessment of the sulcus depth, tooth mobility, gingival recession, bone surface examinations and root planning by the dental hygienist are recommended for these purposes. Hence; we undertook the present study to assess different periodontal parameters following orthodontic treatment in aggressive periodontitis patients. **Materials & methods:** The present study included assessment of 10 aggressive periodontitis patients who under fixed orthodontic treatment.. All patients presented the probing depth of ≥ 5 mm, infra-bony defects, 1 mm or more extrusion compared to the similar tooth in the dental arch, while they were all cooperative with the follow-up examinations. Periodontal index (PI), probing pocket depth (PPD) and peirdontal parameters were examined at the end of treatment and three as well as 6 months afterward. All the results were complied and recorded and analyzed by SPSS software. **Results:** At the time of finishing of the orthodontic treatment, after three months of finishing of orthodontic treatment and after six months of finishing if orthodontic treatment, the mean value of PI was found to be 26.254, 18.512 and 10.365 respectively. Significant difference was obtained while comparing the mean PI, PPD and PID at different time intervals respectively. **Conclusion:** By maintaining follow-up examination and good oral hygiene in patients undergoing orthodontic treatment, stable results can be obtained.

Key words: Periodontal, Orthodontic, Treatment.

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INTRODUCTION

One of the biggest disadvantages associated with Orthodontic therapy using fixed or removable appliances is the plaque formation or caries incidence.[1] Dentistry has undergone significant evolution in the last two decades; there is tremendous focus on cosmetics today. The relationship between a person's physical appearance and his self-esteem is well documented.[2] Because of the importance of the stability of periodontal therapies, predetermined maintenance follow-up visits are required in patients.[3] Oral hygiene instructions and 3-6 month visits as well as assessment of the sulcus depth, tooth mobility, gingival recession, bone surface examinations and root planning by the dental hygienist are recommended for these purposes.[4]

Hence; we undertook the present study to assess different periodontal parameters following orthodontic treatment in aggressive periodontitis patients.

MATERIALS & METHODS

The present study included assessment of 10 aggressive periodontitis patients who under fixed orthodontic treatment.

Inclusion criteria for the present study included:
- Patients within the age group of 15 to 30 years,

- All patients presented the probing depth of ≥ 5 mm, infra-bony defects, 1 mm or more extrusion compared to the similar tooth in the dental arch, while they were all cooperative with the follow-up examinations.
- Patients who underwent orthodontic treatment

Exclusion criteria for the present study included:
- Patients with history of any systemic illness,
- Patients with any known drug allergy,
- Patients of more than 35 years of age

Features of aggressive periodontitis were shown in all the patients on clinical and radiographic examination. The patients received oral hygiene instructions before orthodontic treatments beginning while they were asked to brush their teeth twice a day. Periodontal index (PI), probing pocket depth (PPD), distance between incisal edge and interdental papilla, root length (RL), and defect dimensions (depth and width) were examined at the end of treatment and three as well as 6 months afterward. All the results were complied and recorded and analyzed by SPSS software. Chi-square test, student t test and one way ANOVA were used for the assessment of level of significance. P-value of less than 0.05 was taken as significant.

RESULTS

Table 1 shows the correlation of the PI at different time intervals. At the time of finishing of the orthodontic treatment, after three months of finishing of orthodontic treatment and after six months of finishing if orthodontic treatment, the mean value of PI was found to be 26.254, 18.512 and 10.365 respectively. Significant difference was obtained while comparing the mean PI, PPD and PID at different time intervals respectively (**Table 2, Table 3**).

Table 1: Correlation of PI at different time intervals

Plaque index	Mean value	P-value
PI0	26.254	0.02*
PI3	18.512	
PI6	10.365	

*: Significant

Table 2: Correlation of PPD at different time intervals

Probing pocket depth	Mean value	P-value
PPD0	1.92	0.01*
PPD3	1.74	
PPD6	1.69	

*: Significant

Table 3: Correlation of PID at different time intervals

Papilla- Incisal Distance	Mean value	P-value
PID0	0.45	0.01*
PID3	0.41	
PID6	0.65	

*: Significant, PID: Papilla- Incisal Distance

Graph 1: Showing correlation of PI, PPD and PID at different time intervals
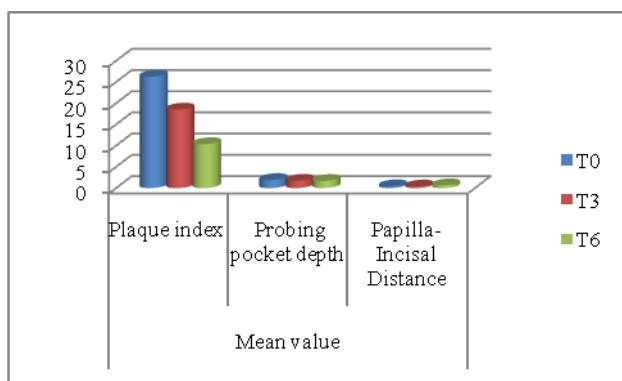
DISCUSSION

Aggressive periodontitis (juvenile or early onset periodontitis) is characterized by early onset mostly affecting young people and in the absence of significant plaque and calculus and shows a rapid progression of destruction. It has been found to show a familial pattern of occurrence with no known contributing medical history.[5-8] Localized aggressive periodontitis is characterized by involvement of at least one first molar and one incisor or second molar and two or fewer canines or premolars with greater than 3 mm of attachment loss.[9-11] Hence; we undertook the present study to assess different periodontal parameters following orthodontic treatment in aggressive periodontitis patients.

In the present study, we observed that all the periodontal parameters significantly decreased during the period of first six months after the finishing of the orthodontic therapy (**Table 1, Table 2**).

Cardaropoli D et al evaluated the role of a combined orthodontic-periodontic treatment in determining the reconstruction of midline papilla lost following periodontitis. Twenty-eight patients, with infrabony defect and extrusion of one maxillary central incisor, were treated. At baseline, all patients presented opening of the interdental diastema and loss of the papilla. At 7-10 days after open-flap surgery, the intrusive movement started. For each patient, probing pocket depth (PPD), clinical attachment level (CAL) and papilla presence index (PI) were assessed at baseline, end of treatment and after 1 year. PI was also evaluated independently in patients with narrow or wide periodontal biotype (NPB-WPB). All parameters showed statistical improvement between the initial and final measurements, and showed no changes at follow-up time. The mean residual PPD was 2.50 mm, with a decrease of 4.29 mm, while the mean CAL gain was 5.93 mm. Twenty-three out of 28 patients improved the PI score at the end of therapy. No statistical difference was recorded in PI values between groups NPB and WPB. The presented clinical protocol resulted in the improvement of all parameters examined. At the end of orthodontic treatment, a predictable reconstruction of the interdental papilla was reported, both in patients with thin or wide gingival.[12, 13]

Corrente G et al evaluated the periodontal tissue alterations following periodontal surgery and orthodontic intrusion in migrated upper central incisors with intrabony defects. Ten patients with advanced periodontal disease and an extruded maxillary central incisor infrabony defect at its mesial aspect and probing depth (PD) > or = 6 mm were included in the present study. At baseline, PD and clinical attachment level (CAL) were measured. The vertical and horizontal dimensions of the defects were assessed on standardized radiographs. Seven to 10 days after surgery the active orthodontic treatment started using the segmented arch technique, in order to intrude and move the teeth into the defects. Maintenance therapy was performed every 2 to 3 months until the orthodontic treatment was completed. At the end of treatment, mean PD reduction was 4.35 mm, with a residual mean PD of 2.80 mm. Mean CAL gain was 5.50 mm. The mean radiological vertical and horizontal bone fills were, respectively, 1.35 mm and 1.40 mm. All differences were of statistical significance (P<0.001). The present study showed that the combined orthodontic and periodontic therapy performed resulted in the realignment of extruded teeth with infrabony

defects, obtaining a significant probing depth reduction, clinical attachment gain, and radiological bone fill.[14]

CONCLUSION

From the above results, the authors concluded that by doing regular follow-up, stable post- treatment results can be obtained. However, future studies are recommended.

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