

Assessment of Periodontal Status in Patients Undergoing Orthodontic Treatment

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ABSTRACT

Aim: To assess periodontal status of the patients undergoing orthodontic treatment and to compare with those without orthodontic treatment.

Material and method: A total of 100 patients were evaluated, 50 males and 50 females. Age group selected for the study was 15 to 30 years. Community Periodontal Index for Treatment Need was used to assess the periodontal health of patients. Patients were divided in two groups, orthodontic group and non orthodontic group.

Results: Out of 100 patients 50 % were females and 50% males. Out of 50 patients in orthodontic group; 29 patients i.e. 58% had periodontal pocket (CPITN score 3 & 4). The CPITN score showed that 58% had periodontal pocket in group 1 whereas only 16 % had periodontal pocket group 2. Only 35 patients were found using Interdental brushes for cleaning.

Conclusion: Patients' undergoing orthodontic treatment finds it difficult to maintain oral hygiene which leads to increased plaque accumulation. Educating patients can help to minimize the problem.

Keywords: Oral hygiene, orthodontic patients, periodontal status, CPITN.

INTRODUCTION

Orthodontic treatment is widely accepted and acknowledged dental treatment due to its positive effects on the dentofacial complex and esthetics has immense role in building self esteem of a patient.^{1,2} Orthodontic treatment along with its good deed is also known for the complications like gingivitis, periodontitis etc. Gingivitis is one of the periodontal diseases which effects the periodontium.³ Maintaining oral hygiene in orthodontic patients is a difficult task, lack of hygiene leads to plaque accumulation and thus effects gingival health.⁴ poor oral hygiene in patients without orthodontic treatment results same.

Increased plaque accumulation, gingival hypertrophy, bleeding, and calculus formation during orthodontic treatment is very much evident.⁵ Good oral hygiene is one of the most important factors in prognosis of treatment. Brackets, modules ligature often makes it difficult to maintain good oral hygiene, however with the use of orthodontic brushes, Interdental brushes good oral hygiene can be maintained. Patients with orthodontic appliances have found to be at greater risk of caries and gingivitis.^{6,7} Poor oral hygiene could be due to lack of knowledge among patients or improper/insufficient instructions provided.⁸ Educating and motivating patients to improve oral hygiene can help to reduce its effect on periodontium.

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Table 1: Sample Distribution

Groups	Sample (n)	Percentage
Group 1	50	50%
Group 2	50	50%
Total	100	100%

Group1- orthodontic group: Group 2- non orthodontic group

GRAPH 1: GENDER DISTRIBUTION:

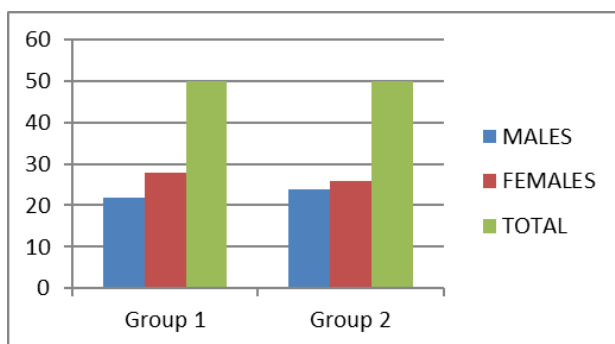


Table 2: CPTIN Score of Both Groups

SCORE	GROUP 1	GROUP 2
Score 0	2	12
Score 1	13	22
Score 2	6	8
Score 3	28	8
Score 4	1	0
TOTAL	50	50

Table 3: Comparison of CPTIN Score of Both Groups

GROUPS	SCORE 0,1,2	SCORE 3,4	TOTAL
Group 1	21	29	50
Group 2	42	8	50

Table 4: Comparison of CPITN Score of Patients Using Interdental Brushes

PATIENTS	SCORE 0,1,2	SCORE 3,4
Using Interdental brushes (35)	31 (88.5%)	4 (11.4%)
Not using (65)	32 (49.25)	33 (50.7%)

So we aimed to assess periodontal status of the patients undergoing orthodontic treatment and to compare with those without orthodontic treatment.

MATERIAL AND METHOD

A cross sectional study was planned. Sample selected for the study consisted of 50 individuals undergoing orthodontic treatment and 50 patients without orthodontic treatment. A total of 100 patients were selected for the study, 50 males and 50 females. Age groups selected for the study were patients aged between 15 to 30 years. Inclusion criteria for the study included:

1. Patients undergoing orthodontic treatment
2. Age group 15 to 30 years
3. No history of any systemic disease
4. No history of oral prophylaxis at least one month preceding their examination.

Study was approved by ethical committee. A written informed consent was obtained from patients/guardians and patients were explained in detailed regarding the study. Complete oral examination was done with the help of mouth mirror and probe. The patients were divided into two groups.

Group 1- orthodontic group

Group 2- non orthodontic group

All the patients were examined during the study period for plaque, calculus, gingival growth etc. Community Periodontal Index for Treatment Need was used to assess the periodontal health of patients.⁹

Data analysis:

All the data were collected and tabulated. Statistical analysis was done using Statistical Package for Social Sciences (SPSS) version 10. The difference in significance level at the 5 percent ($p < 0.05$) was determined.

RESULTS

A total of 100 patients were included in the study, 50 patients in each group (table 1). Out of 100 patients 50 were females (50%) and 50 males (50%). In orthodontic group out of 50, 22 (44%) were males and 28 (56%) females. Whereas in non

orthodontic group 24/50 (48%) was males and 26/50 (52%) were females (Graph 1). Numbers of females were more in our study as compared to males. Patients were aged between 15 to 30 years.

On examination of oral hygiene status it was found that majority of subjects showed score of 3 i.e. 28 patients (56%). Out of 50 patients 13 of them scored 1 (26%). Overall out of 50 patients in orthodontic group; 29 patients i.e. 58% had periodontal pocket (CPITN score 3 & 4). In non orthodontic group maximum number of patients i.e. 22 patients were score 1. Whereas only 8/50 had periodontal pocket i.e. 16% (Table 2). While comparing the CPITN score between orthodontic group and non-orthodontic group, 58% had periodontal pocket in group 1 where as only 16 % had periodontal pocket group 2 (Table 3). A statistically significant difference between advancement of periodontal disease in orthodontic and non-orthodontic groups were found ($p < 0.01$). Out of 100, 35 patients said they used Interdental brushes and 65 said they never used Interdental brush. 31/35 patients i.e. 88.5% showed no sign of periodontal pocket whereas 4/35 i.e. 11.4% had periodontal pocket. 33/65 patients i.e. 50.7 had periodontal pockets (Table 4). The present study showed that, only 11.4 % patients using interdental aids had periodontal pocket (CPITN score 3 & 4); whereas 50.7% had periodontal pocket who were not using interdental aids (CPITN score 3 & 4). There was a significant difference found in terms of patients using Interdental aids ($p < 0.01$).

DISCUSSION

Orthodontic appliances used during treatment makes it a herculean task remove plaque from the tooth and gingival surfaces and thus affects periodontal health. Gram-positive rods and cocci are generally found in early plaques. As the plaque matures these organisms are replaced by more Gram-negative and anaerobic organisms, which helps to initiate a periodontal reaction.¹⁰ according to the data available various studies have suggested that plaque buildup was more common among bracket wearers and maintain a good oral hygiene regime was often difficult.^{11,12}

In present study we examined the periodontal status of orthodontic patients and non-orthodontic patients. Total 100 patients were included in the

study and divided in two groups, 50 patients in each group. The numbers of females were found to be more in our study. However no comparisons were done between genders. In current study out of 50 patients in orthodontic group; 29 patients i.e. 58% had periodontal pocket (CPITN score 3 & 4). In non orthodontic group maximum number of patients i.e. 22 patients were score 1. Whereas only 8/50 had periodontal pocket i.e. 16%. CPITN score between orthodontic group and non-orthodontic group showed 58% had periodontal pocket in group 1 where as only 16 % had periodontal pocket group 2. Our results are similar to those reported by Dharmi B, et al they also found a statistically significant association in CPITN score between orthodontic and non-orthodontic patients.¹³ a study conducted by Naranjo et al reported that the placement of brackets influenced the ecological environment of retentive sites by the accumulation of biofilm.¹⁴

Only 35 patients reported that they frequently use Interdental brushes for cleaning, which was very less in number. The most probable reason behind it could be lack of knowledge among patients. Few authors have suggested that Interdental areas are more prone to be affected in orthodontic patients.¹⁵ In present study there was a significant difference found in terms of patients using Interdental aids ($p < 0.01$). There are studies which showed that continuous use of Interdental brushes and floss can help to reduce plaque, we agree with the authors.¹⁶

CONCLUSION

Based on the results of our study we conclude that orthodontic treatment effects periodontal health of patients however use of Interdental aids can control the situation. Increased accumulation of plaque leads to periodontal pocket and bone loss. Present study showed a highly significant difference between advancement of periodontal disease in orthodontic and non-orthodontic groups were found ($p < 0.01$). Patients should be continuously encouraged and monitored to maintain the oral hygiene. Demonstration for the use of Interdental aids and floss should be given to patients.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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