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Research Article

STUDY OF EFFECT OF ORTHODONTIC TREATMENT ON ORAL HEALTH STATUS OF PATIENTS UNDERGOING ORTHODONTIC TREATMENT

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ABSTRACT

Background: Currently the use of orthodontic appliances to correct the malalignment of the teeth was increased. But these orthodontic appliances were associated with gingival inflammation because of inadequate maintenance of the oral hygiene, which can lead to further complications. The present study was planned to compare the oral hygiene status before start of the orthodontic treatment and after completion of 10 months of the orthodontic treatment.

Materials and Methods: The study was consisted of 36 orthodontic treatment undergoing patients. The oral hygiene status was measured using Turesky-Gilmore-Glickman modification of the Quigley-Hein plaque index. Statistical analysis was performed with the help of IBM SPSS statistics 20, with the help of student's t test.

Results: There was statistically highly significant difference between oral hygiene status of the patients before start of the orthodontic treatment and after 10 months of the orthodontic treatment. (Students's t test, $p < 0.001$)

Conclusion: The results of the present study shown that the orthodontic treatment undergoing patients do not maintain oral hygiene and more emphasis should be given to educate patients for the maintenance of the oral hygiene.

Keywords: Gingival inflammation, Orthodontic treatment, Oral hygiene.

INTRODUCTION

Amongst the oral health problems, malocclusion is the third most common. Although dental and skeletal problems treated by orthodontic treatment, the use of orthodontic appliances in the mouth are commonly associated with the alterations in the oral hygiene^{1,2}.

The mechanical procedures and the use of different orthodontic appliances and equipment's increases the local soft tissue responses in the gingiva, because of the proximity of these to the gingiva.² Also greater coverage of the tooth area and complex nature or irregularities of the orthodontic appliances makes difficult to maintain oral hygiene^{1,3}.

Orthodontic treatment is often associated with the increase in the gingival inflammation and increase in the bacterial count around the gingiva as well as around the orthodontic appliances⁴⁻⁶. The importance of the oral hygiene maintenance in orthodontic treatment undergoing patients should be intensified, because it can further leads to periodontal attachment loss, gingival hyperplasia, pocket formations or other complications^{1,3,7}.

Therefore the present study was planned to compare the oral hygiene status before start of the orthodontic treatment and in the middle of the orthodontic treatment, after completion of 10 months.

MATERIALS AND METHODS

The study was included patients of age between 17 to 29 years referred to the department for start of the treatment during period of 8 months and then all patients followed till further period of 10 months. The study was carried out on 45 patients undergoing orthodontic treatment, which were selected by simple random sampling method. Out of these 45 patients 09 number of patients did not given follow-up and were removed from the study. In remaining 36 patients 21 were females and 15 were male patients. Informed consent was taken from all the patients and the study was approved by the ethical committee of the college.

Inclusion criteria:

- Patients with presence of all teeth apart from third molars.

Exclusion criteria:

- Patients which do not given follow-up.

All the patients underwent oral prophylaxis and were given oral hygiene instructions at the start of orthodontic treatment. The patients were examined before the start of orthodontic treatment and at the middle of the orthodontic treatment i. e. after 10 months of treatment and the oral hygiene status were assessed by using Turesky-Gilmore-Glickman modification of the Quigley-Hein plaque index, using basic fuchsin as a disclosing agent.

Statistical analysis:

Scores were calculated based scoring criteria of the index. The scores of all participants including males and females were summed up to get a total score. Statistical analysis was performed with using IBM SPSS statistics 20, with the help of student’s t test. Descriptive statistics were calculated; mean scores and standard deviation were obtained.

RESULTS AND OBSERVATIONS

The study was carried on 36 patients of age between 17 to 29 years. Out of these, 21 were females and 15 were males. The mean scores of the index were 1.11 and 1.03 in males and females respectively before start of the orthodontic treatment, averaging 1.07 in total 36 patients. While those of after 10 months of orthodontic treatment were 2.99, 2.50 and 2.79 respectively. (Table 1)

The comparison of the Turesky-Gilmore-Glickman modification of the Quigley-Hein plaque index scores, before start of the orthodontic treatment and after 10 months of the orthodontic treatment; shown that the scores were increased significantly and the difference was statistically highly significant. (Student’s t test, p<0.001) (Table1, Graph 1)

DISCUSSION

Malocclusion is often associated with the complications like gingivitis, improper oral hygiene, periodontitis, tempero-mandibular problems, mouth breathing and speech problems^{1,8}. The orthodontic treatment can correct or decrease the severity of these complications, but it also has some potential to damage teeth and the nearby structures. For example oral hygiene can be difficult to maintain during orthodontic treatment because of the irritation by the appliances, inability to perform adequate physiotherapy and coverage of the surface area by these appliances; which may lead to plaque accumulation and gingival inflammation^{6,8-10}.

In the present study, on comparing the oral hygiene status of the patients before start of the orthodontic treatment and after completion of 10 months of the orthodontic treatment, shown that the oral hygiene status becomes fair, and the difference was found to be statistically highly significant. The results of

the present study were in accordance to the study done by *Nasir N et al³, Boke M et al² and Ahmed I et al¹⁰*. Thus the oral hygiene maintenance was decreased in patients undergoing orthodontic treatment.

CONCLUSION

The results of the present study shown that, the patients usually do not maintain the oral hygiene after start of the orthodontic treatment. This should be taken seriously, as it can lead to further complications of periodontal problems and other complications. Thus more emphasis should be given to educate patients for the oral hygiene maintenance.

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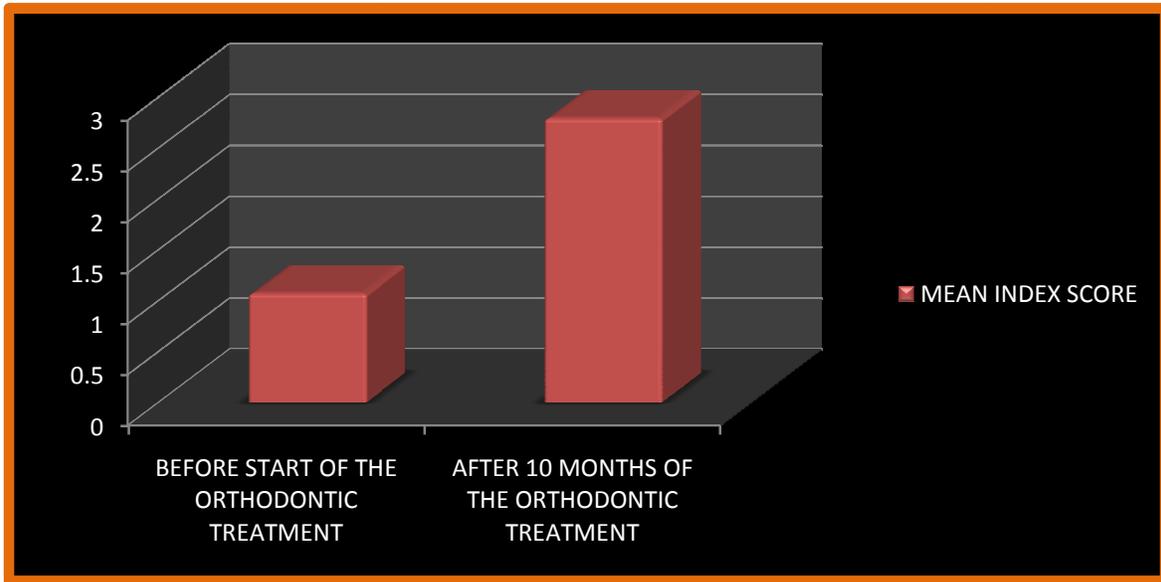
Table 1: Mean score of the Turesky-Gilmore-Glickman modification of the Quigley-Hein plaque index before start of the orthodontic treatment and after 10 months of the orthodontic treatment.

Sex	Number of patients	Before start of the orthodontic treatment	After 10 months of the orthodontic treatment
Males	21	1.11	2.99
Females	15	1.03	2.50
Total	36	1.07	2.79

Table 2: Comparison of the scores of the Turesky-Gilmore-Glickman modification of the Quigley-Hein plaque index, before start of the orthodontic treatment and after 10 months of orthodontic treatment. (Student's t test)

Patients	n	Mean ± SD	T value	P value
Before start of the orthodontic treatment	36	1.07 ± 0.31	14.24	P<0.001*
After 10 months of the orthodontic treatment	36	2.79 ± 0.65		

*p value is statistically highly significant. SD = Standard deviation.



Graph 1: Showing comparison of the scores of the Turesky-Gilmore-Glickman modification of the Quigley-Hein plaque index, before start of the orthodontic treatment and after 10 months of orthodontic treatment.

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