

## ORIGINAL RESEARCH

### Retrospective evaluation of periodontal health in patients undergoing orthodontic treatment

Nameeta Kaur

Lecturer, Department of Orthodontics, Government Dental College, Srinagar

#### ABSTRACT:

**Background:** Malocclusion has been shown to affect periodontal health. The present study was conducted to assess periodontal health in patients undergoing orthodontic treatment. **Materials & Methods:** The present study was conducted on 28 patients of both genders undergoing orthodontic treatment. Equal number of controls was also enrolled. Group I were orthodontic patients and group II was control. In both groups, visible inflammation, plaque and gingival recession was evaluated. The gingival recession was classified according to the Miller's classification. **Results:** The mean visible inflammation in group I was 5.21 and in group II was 2.35, visible inflammation in group I was 6.42 and in group II was 3.15, gingival recession was 1.48 in group I and 0.13 in group II. The difference was significant ( $P < 0.05$ ). **Conclusion:** There was significantly more plaque, inflammation and gingival recession in patients undergoing orthodontic treatment.

**Key words:** Gingival recession, Inflammation, Plaque

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**Corresponding author:** Dr. Nameeta Kaur, Lecturer, Department of Orthodontics, Government Dental College, Srinagar

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#### INTRODUCTION

Malocclusion has been shown to affect periodontal health and one of the objectives of orthodontic treatment is to promote better dental health and prolong the life of dentition. Orthodontic treatment contributes to better oral hygiene by correcting dental irregularities and reduces (or eliminates) occlusal trauma. Orthodontic treatment using fixed appliances represents a potential risk for periodontal health, as it increases the accumulation of oral biofilms and enhances inflammation of periodontal tissues.<sup>1</sup>

In these patients, periodontal maintenance programs must be carried out in conjunction to orthodontic treatment and also after completion of therapy. It is a must to have a maximum oral hygiene to receive an orthodontic treatment since appliance attached for the fixed orthodontic treatment complicates the maintenance of proper care of mouth and it is directly related with periodontal health. Changes occur in microbial ecology through the attachment of appliance and the amount of visible supra- and subgingival plaque increase.<sup>2</sup>

Some investigators have shown gingival recession to be associated with labial movement of the mandibular incisors and have therefore considered this movement as a

risk factor for gingival recession, while others have found no such association between orthodontic tooth movement and gingival recession. Moreover, it is argued that preexisting mucogingival problems can be exacerbated with orthodontic force application.<sup>3</sup> The present study was conducted to assess periodontal health in patients undergoing orthodontic treatment.

#### MATERIALS & METHODS

The present study was conducted in the department of Orthodontics. It comprised of 28 patients of both gender undergoing orthodontic treatment. Equal number of controls was also enrolled. All were informed regarding the study and written consent was obtained. Ethical clearance was obtained prior to the study.

Data such as name, age, gender etc. was recorded. Group I were orthodontic patients and group II was control. In both groups, visible inflammation, plaque and gingival recession was evaluated. The gingival recession was classified according to the Miller's classification. Results were tabulated and subjected to statistical analysis. P value less than 0.05 was considered significant.

## RESULTS

**Table I Distribution of subjects**

Total- 56		
Groups	Group I (Orthodontic)	Group II (Control)
Number	28	28

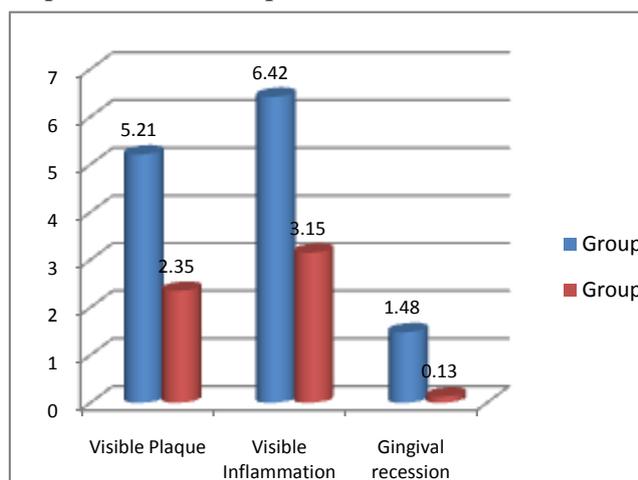
Table I shows that both group I and II had 28 subjects each.

**Table II Assessment of parameters**

Parameters	Group I	Group II	P value
Visible Plaque	5.21	2.35	0.02
Visible Inflammation	6.42	3.15	0.01
Gingival recession	1.48	0.13	0.05

Table II, graph I shows that mean visible inflammation in group I was 5.21 and in group II was 2.35, visible inflammation in group I was 6.42 and in group II was 3.15, gingival recession was 1.48 in group I and 0.13 in group II. The difference was significant ( $P < 0.05$ ).

**Graph I Assessment of parameters**



## DISCUSSION

The appliances attached for the orthodontic treatment hinders the maintenance of oral hygiene and it is directly related with periodontal health. The diagnosis of gingivitis induced by bacterial dental plaque is based on clinical signs and MGI values: oral biofilm visible at the gingival margin, colour change and alterations variation of gingival contour, edema, loss of attachment or bone resorption. Moreover, it is argued that preexisting mucogingival problems can be exacerbated with orthodontic force application. The relationship between orthodontic treatment and gingival recession has been the hot topic of many studies on orthodontics and periodontology. There are studies showing that orthodontic treatment leads to gingival recession.<sup>4,5</sup> The present study was conducted to assess periodontal health in patients undergoing orthodontic treatment.

In present study, both group I (cases) and II (control) had 28 subjects each. Karacaoglu et al<sup>6</sup> found that the average value of visible inflammation in gingiva and of gingival recession showed statistically significant increase on adults and the average values of visible plaque and inflammation demonstrated a likewise increase on adolescents when the treatment was finished. Change in gingival biotype wasn't found statistically significant in both groups. The results of the study showed that the responds of the periodontal tissue during orthodontic treatment are better in adolescents than those of young adults. Before receiving orthodontic treatment, the periodontal condition of the patient should be in healthiest possible level and this has to be maintained during the treatment.

We observed that mean visible inflammation in group I was 5.21 and in group II was 2.35, visible inflammation in group I was 6.42 and in group II was 3.15, gingival recession was 1.48 in group I and 0.13 in group II. Liu et al<sup>7</sup> suggested that fixed orthodontic treatment results in dental plaque accumulation and gingival inflammation, with a significant increase in Plaque Index (PI) and Gingival Index (GI) in a short time after orthodontic treatment started (compared to the baseline).

Mombelli et al<sup>8</sup> conducted a randomized prospective study on 60 patients with fixed orthodontic appliances (17-25 years of age) divided in three study groups. The clinical indices recorded were: modified gingival index, plaque index and sulcular bleeding index. The patients were randomly divided into three groups: group A- patients were instructed to use electric brush, water flosser and interdental brush, group B- electric brush, interdental brush and fluoride and group C- manual brushing and fluoride. Statistical comparison of the values of the indexes with the Student t test for independent samples showed statistically significant differences in all three groups of patients studied between initial and final values of all recorded clinical parameters.

Davies et al<sup>9</sup> showed, in their study of the effects of orthodontic treatment on plaque and gingivitis that children who had received orthodontic treatment had lower plaque and gingivitis levels than children who had not received treatment. They concluded that regular visits to the orthodontist are the most likely reason for improvement in oral hygiene and gingival health. Sallum et al<sup>10</sup> have reported a significant reduction in plaque index, bleeding on probing, and probing depth, the three most important parameters indicating clinical gingival health, once orthodontic appliances are removed.

## CONCLUSION

There was significantly more plaque, inflammation and gingival recession in patients undergoing orthodontic treatment.

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