

ORIGINAL RESEARCH

Assessment of effect on orthodontic treatment on gingival tissues

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ABSTRACT:

Background: The present study was conducted to assess effect on orthodontic treatment on gingival tissues. **Materials & Methods:** 116 patients who underwent orthodontic treatment was recruited. The periodontal status, including visible plaque, visible inflammation, gingival biotype, gingival recession was evaluated. **Results:** The mean visible plaque score before treatment was 2.5 and after treatment was 5.3, visible inflammation before and after treatment was 2.6 and 16.2 respectively and gingival recession was 0.14 and 0.56 before and after treatment respectively. Gingival biotype was thin in 35.2% before and 34.6% after treatment and thick in 64.8% and 65.4% before and after treatment respectively. The difference was non-significant ($P > 0.05$). **Conclusion:** There was increase in gingival recession, visible plaque and visible inflammation after orthodontic treatment.

Key words: Gingival recession, Visible plaque, Visible inflammation

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INTRODUCTION

Periodontic-orthodontic interrelationship has been subject to a lot of investigation until today, and it is a still controversial issue. 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.¹ Orthodontic treatment contributes to better oral hygiene by correcting dental irregularities and reduces occlusal trauma. Due to these reasons, it has been suggested that orthodontic treatment leads to an improved periodontal status. It seems reasonable that straighter teeth are easier to clean, and perhaps having all teeth centered in the alveolar housing and occluding correctly may promote a healthier periodontium.²

The effects seen clinically following the insertion of orthodontic appliances into the oral cavity can contribute to chronic infection, inflammatory hyperplasia, irreversible loss of attachment (permanent bone loss), and gingival recession.³ Although an association between orthodontic tooth movement and gingival recession has been mentioned in both the orthodontic and the periodontal literature, many of these studies are relevant to mandibular incisor teeth.⁴ 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.⁵ The present study was conducted to assess effect on orthodontic treatment on gingival tissues.

MATERIALS & METHODS

The present study was conducted on 116 patients who underwent orthodontic treatment. All subjects were informed regarding the study and their written consent was obtained. Ethical clearance was obtained before starting the study.

The periodontal status, including visible plaque, visible inflammation, gingival biotype, gingival recession was evaluated. The following observations were recorded presence or absence of visible plaque and presence or absence of visible inflammation at the mesial, buccal and distal sides of each teeth (except second and third molars, presence or absence of labial gingival recession before and after orthodontic treatment. The gingival recession was classified according to the Miller's classification. Results thus obtained were assessed statistically. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 116		
Gender	Males	Females
Number	42	74

Table I shows that out of 116 patients, males were 42 and female were 74.

Table II Assessment of parameters

Parameters	Before	After	P value
Visible plaque	2.5	5.3	0.01
Visible inflammation	2.6	16.2	0.02
Gingival recession	0.14	0.56	0.04

Table II, graph I shows that mean visible plaque score before treatment was 2.5 and after treatment was 5.3, visible inflammation before and after treatment was 2.6 and 16.2 respectively and gingival recession was 0.14 and 0.56 before and after treatment respectively. The difference was significant (P< 0.05).

Graph I Assessment of parameters

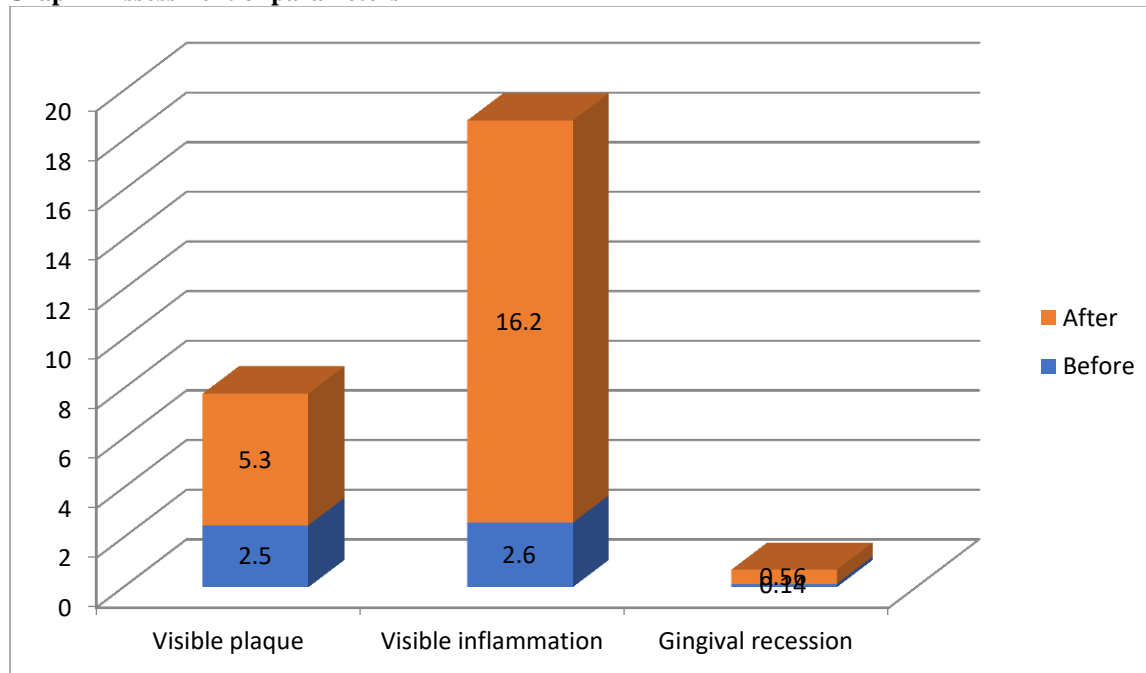


Table III Distribution of gingival biotype in jaws before and after treatment

Parameters	Before	After	P value
Thin	35.2	34.6	0.91
Thick	64.8	65.4	0.94

Graph II Distribution of gingival biotype in jaws before and after treatment

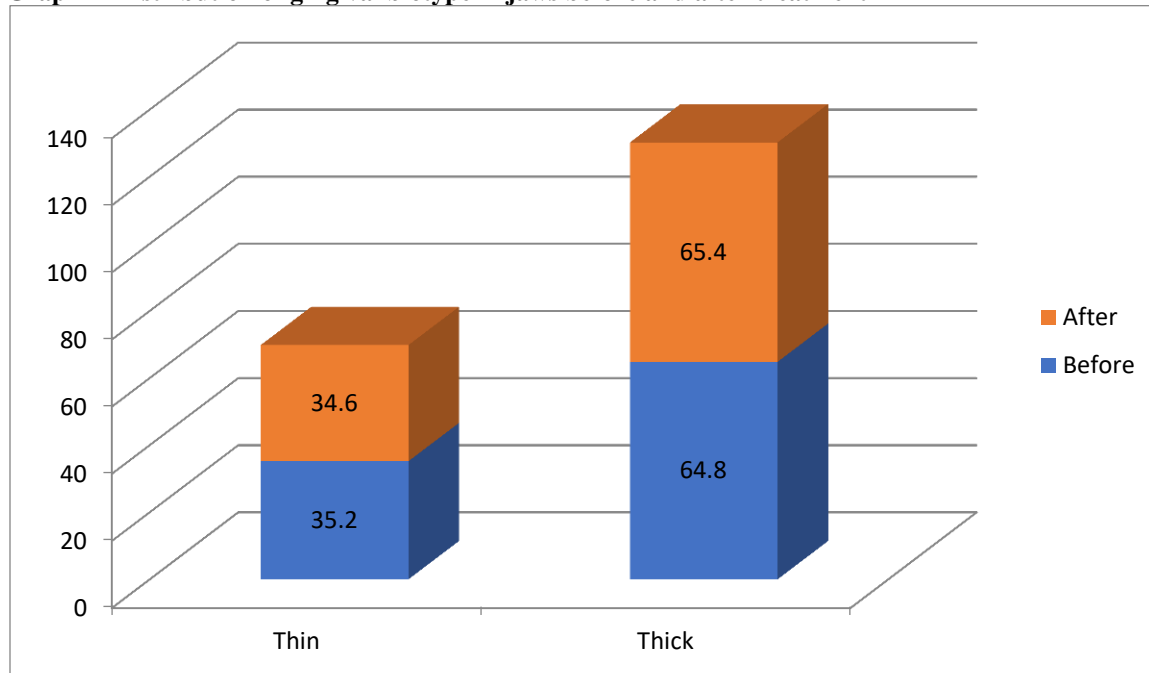


Table III, graph II shows that gingival biotype was thin in 35.2% before and 34.6% after treatment and thick in 64.8% and 65.4% before and after treatment respectively. The difference was non- significant ($P > 0.05$).

DISCUSSION

Generally, the main reasons routinely cited to justify the provision of orthodontic treatment are improvement of facial and dental aesthetics and of dental health and function. However, association between malocclusions and periodontal condition is still controversial.⁶ Some authors found significant correlations between malocclusions and periodontal condition and suggested that malocclusions are risk markers for periodontal diseases.⁷ A review of the literature conducted showed contradictory findings on the impact of malocclusion and orthodontic appliances on periodontal health, since only a few studies reported attachment loss during orthodontic treatment.⁸ It has been suggested that this contradiction may be partly due to the selection of materials and differences in the research methods employed.⁹ The present study was conducted to assess effect on orthodontic treatment on gingival tissues.

In present study, out of 116 patients, males were 42 and female were 74. Boke et al¹⁰ in their study A total of 251 patients among whom 177 were girls and 74 were boys, recruited from the records pool of the Department of Orthodontics. Intra-oral photographs were analyzed, and the presence or absence of visible plaque, visible inflammation, and gingival recession were recorded, and incisor inclinations analyzed on lateral

cephalometric films, before and after orthodontic treatment. No statistically significant difference was found in patients treated with functional appliances before and after treatment. In patients treated with fixed orthodontic appliances, visible plaque, visible inflammation, and gingival recession showed significant increases after treatment, gingival biotype did not show any significant difference. Positive correlation was found between lower incisor position and gingival recession in patients treated with fixed appliance and extraction. And also cuspids were the teeth with the highest prevalence of gingival recession.

We observed that mean visible plaque score before treatment was 2.5 and after treatment was 5.3, visible inflammation before and after treatment was 2.6 and 16.2 respectively and gingival recession was 0.14 and 0.56 before and after treatment respectively. Gingival biotype was thin in 35.2% before and 34.6% after treatment and thick in 64.8% and 65.4% before and after treatment respectively. Mahindra et al¹¹ in their study 30 orthodontic patients under fixed mechanotherapy with mean aged 19.82 years were selected. The selection criteria were: Treatment that consisted of full-mouth fixed orthodontic appliances. The clinical examination of their oral health status showed that the mean value of the plaque index (PI) was 65.24 (SD 16.43), while the gingival bleeding index (GBI) was 19.14 (SD 7.95) and the ortho-plaque index (OPI) was 53.56 (SD 8.74). Limitations: The sample size selected was small. Patients wearing orthodontic appliances were having high plaque index, gingival bleeding index and ortho plaque index scores

therefore, educating and motivating these patients remains the cornerstone for achieving optimal oral hygiene results.

A strong relationship between the abnormal positions of the teeth in the dental arch and the periodontal disorders had been previously described. Moreover, it has been shown that the number of periodontal pathogens in the anterior sites of crowded teeth is much greater than that in the sites of aligned teeth.

The shortcoming of the study is small sample size.

CONCLUSION

Authors found that there was increase in gingival recession, visible plaque and visible inflammation after orthodontic treatment.

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