

ORIGINAL RESEARCH

Assessment of effect of orthodontic treatment of oral tissues: A clinical study

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ABSTRACT:

Background: Orthodontic treatment is being more and more adopted in the adult population. The most commonly reported adverse effects of orthodontic treatment can be both local and systemic. Hence; the present study was undertaken for assessing the effect of orthodontic treatment on oral tissues. **Materials & methods:** A total of 50 subjects within the age group of 10 to 25 years who were scheduled to undergo fixed orthodontic treatment were enrolled for analysis in the present study. Radiographs were taken preoperatively and radiographic records were maintained. Fixed orthodontic treatment was started and all the patients were examined after one month. Both clinical and radiographic examination of all the patients was done at follow-up and comparison was made with pre-treatment findings. **Results:** Mean age of the patients was 15.9 years. 38 percent of the patients belonged to the age group of 16 to 20 years. 64 percent of the patients were males while the remaining were females. Gingivitis was seen in 58 percent of the patient while alveolar bone loss was seen in 8 percent of the patients. Decalcification spots and root resorption was seen in 6 percent of the patients each while pulp stones was present in 4 percent of the patients. **Conclusion:** Orthodontic treatment has significant effect on oral tissues. Hence; proper emphasis on plaque control procedures prior to initial orthodontic banding should be given as it may well minimize the inflammatory lesion often found during therapy.

Key words: Orthodontic treatment, Oral tissues

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INTRODUCTION

Orthodontic treatment is being more and more adopted in the adult population. As adult orthodontic patients may also have restorative and periodontal needs, the interaction between different specialties becomes even more important. Many periodontal patients may present with pathological tooth migration or other deformities where orthodontics may represent an important part of their treatment. Both periodontists and orthodontists should understand the results of one's work on the other's and cooperate in clinical practice to deliver the best possible treatment to their patients.¹⁻³

Pain and discomfort is a common adverse effect associated with orthodontic treatment. Previous studies have shown that 70-95% of orthodontic patients experience pain. This pain could be a reason for discontinuing treatment; previous studies have indicated that 8% and even upto 30% of orthodontic patients discontinue treatment because of pain. The pain and

discomfort associated with orthodontic treatment is characterized by pressure, tension, or soreness of the teeth. The most commonly reported adverse effects of orthodontic treatment can be both local and systemic. This includes, tooth discolorations, decalcification, root resorption, periodontal complications, psychological disturbances, gastrointestinal complications, allergic reactions, infective endocarditis, and chronic fatigue syndrome.⁴⁻⁶ Hence; the present study was undertaken for assessing the effect of orthodontic treatment on oral tissues.

MATERIALS & METHODS

The present study was conducted with the aim of assessing the effect of orthodontic treatment on oral tissues. A total of 50 subjects within the age group of 10 to 25 years who were scheduled to undergo fixed orthodontic treatment were enrolled for analysis in the present study. A Performa was made and clinical and oral

examination details were recorded. Past medical history and past dental history of all the patients was recorded. Radiographs were taken preoperatively and radiographic records were maintained. Fixed orthodontic treatment was started and all the patients were examined after one month. Both clinical and radiographic examination of all the patients was done at follow-up and comparison was made with pre-treatment findings. All the results were recorded and analysed by SPSS software.

RESULTS

In the present study, a total of 50 patients were enrolled. Mean age of the patients was 15.9 years. 38 percent of the patients belonged to the age group of 16 to 20 years. 64 percent of the patients were males while the remaining were females. Gingivitis was seen in 58 percent of the patient while alveolar bone loss was seen in 8 percent of the patients. Decalcification spots and root resorption was seen in 6 percent of the patients each while pulp stones was present in 4 percent of the patients.

Table 1: Demographic data

Parameter	Number of patients	Percentage of patients
Age group (years)	10 to 15	18
	16 to 20	19
	21 to 25	13
Gender	Males	32
	Females	18

Table 2: Effect of orthodontic treatment on oral tissues

Adverse effects	Number of patients	Percentage of patients
Gingivitis	29	58
Alveolar bone loss	4	8
Decalcification spots	3	6
Root resorption	3	6
Pulp stones	2	4

DISCUSSION

Gingival overgrowth is a very common condition in the orthodontic population that is characterized by gingival enlargement possibly resulting in pseudo-pocketing with or without attachment loss. When involving the anterior region, it may have an impact on oral health-related quality of life.⁷⁻⁹ Orthodontic appliances, as well as mechanical procedures, are prone to evoke local soft tissue responses in the gingiva. The proximity of orthodontic appliances to the gingival sulcus, plaque accumulation, and the impediments they pose to oral hygiene habits further complicate the process of efficient salutary orthodontic care. 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.¹⁰⁻¹² Hence; the present study was undertaken for assessing the effect of orthodontic treatment on oral tissues.

In the present study, a total of 50 patients were enrolled. Mean age of the patients was 15.9 years. 38 percent of the patients belonged to the age group of 16 to 20 years. 64

percent of the patients were males while the remaining were females. Gingivitis was seen in 58 percent of the patient while alveolar bone loss was seen in 8 percent of the patients. Boke F et al evaluated the relationship between orthodontic treatment and gingival health. A total of 251 patients among whom 177 were girls and 74 were boys, recruited from the records pool were included in the study. 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. Considering the relationship between orthodontic treatment and gingival health, cooperation among patients, orthodontists, and periodontists is important.⁷

In the present study, decalcification spots and root resorption was seen in 6 percent of the patients each while pulp stones was present in 4 percent of the patients. Mahindra RK et al evaluated the effects of fixed orthodontic treatment on gingival health. In the present study 30 orthodontic patients under fixed mechanotherapy mean aged 19.82 years were selected. The clinical examination of their oral health status showed that the mean value of the plaque index (PI) was 65.24, while the gingival bleeding index (GBI) was 19.14 and the ortho-plaque index (OPI) was 53.56. 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.¹⁰ Tarnow et al in 1992 and Wu et al in 2003 suggested that the filling of the interdental space with the papilla could be determined by the position of the contact point with respect to the bone crest position. Tooth reshaping may help moving the contact point more apically during orthodontic teeth approximation which might help to achieve good aesthetic results in the interdental area.¹¹⁻¹³ In 2008, Bollen conducted two systematic reviews to address the following questions: does a malocclusion affect periodontal health, and does orthodontic treatment affect periodontal health? The first review found a correlation between the presence of a malocclusion and periodontal disease. Subjects with greater malocclusion have more severe periodontal disease. The second review identified an absence of reliable evidence on the effects of orthodontic treatment of periodontal health. The existing low-quality evidence suggests that orthodontic therapy results in small detrimental effects to the periodontium.¹⁴

CONCLUSION

Orthodontic treatment has significant effect on oral tissues. Hence; proper emphasis on plaque control procedures prior to initial orthodontic banding should be

given as it may well minimize the inflammatory lesion often found during therapy.

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