Original Article

Corresponding Periodontal Health Status Of Orthodontic Patients: A Clinical Study

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Abstract

The purpose of this research was to investigate whether or not orthodontic treatment has an impact on the periodontal health of young patients. From the Orthodontics department of Dental Hospital, 50 patients were chosen at random, and their gender was not taken into consideration. An examination of the periodontium was done prior to treatment, as well as after six months and following treatment. The periodontal disease index, also known as the PDI, was utilized in order to evaluate the periodontal health of the teeth that were indexed. The findings demonstrated that patients who are currently undergoing orthodontic treatment do, in fact, show signs of periodontal disease.

Key words: Periodontal Disease Index, Oral Hygiene, and Orthodontic Appliance.

INTRODUCTION:

Importance of oral hygiene in orthodontic patients is always intensified to prevent any further periodontal disease. In the absence of oral hygiene maintenance, plaque accumulation on orthodontic appliance components is paving way to destruction of periodontal tissues. Due to greater tooth area covered and complex nature of the orthodontic appliances make it difficult to maintain oral hygiene. [1,2,3] Maintaining oral hygiene during orthodontic treatment will help in good gingival health, which reflects in final orthodontic treatment outcome. [4] But the level of gingival health knowledge among orthodontic patients is not adequate. Patients may not be aware of proper oral hygiene practices, which may lead to poor maintenance, or they may neglect these practices. Patients are not provided with the appropriate instructions, which may be a major contributing factor in patients' refusal to comply. [2,3] In spite of the fact that they have been given clear instructions, a significant number of people consistently fail to carry them out. In addition, the majority of them have inadequate expertise of upkeep. It is essential to instill in them the desire to maintain good dental health and to prepare the guidelines. It is important to evaluate the orthodontic patients' level of knowledge about gingival health at all times.

The purpose of this research was to evaluate the periodontal health of patients who were having orthodontic treatment at three different points: before to the commencement of treatment (pre-ortho), after treatment had been completed (post-ortho), and at the six-month mark during treatment (intra-ortho) (post-ortho).

THE CONTENT AND THE METHODS:

A simple random sample procedure was used to choose fifty orthodontic patients from the XXXX department of orthodontics. Of the fifty, there were 31 girls and 19 males. Patients needed to have entire dentitions, with the exception of their third molars, in order to meet the inclusion criteria. The patients who fell within the age range of 13 to 25 years old were chosen for the research, and their mean age was 17.86. Before any of the patients received therapy, they all gave their permission after having the whole research and its procedures properly described to them. At the beginning of their orthodontic treatment, each patient received an oral prophylaxes and was instructed on how to properly practice good dental hygiene.

Before beginning orthodontic therapy, the patients were checked, as well as after six months and after they had finished the course of treatment. All of the patients were examined by a single periodontist so that there would be no room for prejudice and so that there would be as few mistakes as possible.

The periodontal disease index (PDI), which was first presented by Ramjford in 1959, was used throughout the recording process. The gingival and periodontal component, the plaque component, and the calculus component make up the index. The gingival and periodontal component is the first component. All four surfaces of each of the six Ramjford teeth—the buccal, mesial, and distal, as well as the palatal and lingual—were scrutinized. The chi-square test was used to do a number of different comparisons once the data had been averaged and analyzed.

RESULT:

Eight of the patients withdrew from the study either because they refused to participate or because they did not cooperate with the researchers. The remaining 42 individuals were examined, and the results of those examinations were analyzed.

When compared to both the pre-ortho and post-ortho evaluations, the PDI of the patients showed a considerable rise when they were being evaluated during the intra-ortho phase of the orthodontic procedure.

As shown in TABLE1, however, there were no discernible shifts in the pre- and post-ortho evaluations of the patients. This was the case even when orthodontic treatment was administered.

As a result of this, one may draw the conclusion that there is unquestionably a growth in the periodontal microflora throughout the treatment of the patients, which has an effect on the patients' oral hygiene.

TABLE.1

PERIODONTAL DISEASE INDEX (PDI) [Average of 42 patients]	Gingival and periodontalComponent	Plaque Component	Calculus Component
Pre orthodontic stage	1.7	2.4	2.1
Intra orthodontic stage	3.2	3.7	3.4
Post orthodontic stage	2.1	2.7	2.3

DISCUSSION:

Patients who were candidates for orthodontic treatment were recruited for this investigation, and their periodontal health was assessed prior to, during, and subsequent to the placement of fixed orthodontic appliances. The hypothesis for this study was that the periodontal health of patients who received fixed orthodontic treatment would change over the course of the study. This hypothesis was validated by the research; however, the difference in periodontal health between patients before and after orthodontic treatment was not very significant. Patients who were receiving orthodontic treatment experienced a significant shift in the status of their periodontal and gingival tissues. It is reasonable to anticipate that the orthodontic patient's inability to properly clean their teeth will contribute to the development of gingival inflammation. In the short term, it appears that the most significant effects that orthodontic treatments have on the periodontium are gingivitis and gingival enlargement. After the placement of a fixed appliance, gingival enlargement has been observed to take place. [Citation needed] [5,6] This corroborates the findings of Naranjo and colleagues, who found that the positioning of brackets influenced the ecological environment through the accumulation of biofilm at retentive sites. This finding is in agreement with those findings. [4]. Ristic and his co-workers came to the same conclusions after observing that there was a significant rise in the clinical and microbiological parameters three months after the placement of the fixed appliance. [5,6,7] Gingival disease appears in virtually all patients undergoing treatment with fixed orthodontics at some point in the process. [8,9,10,11,12]

After the placement of a fixed appliance, gingival enlargement has been observed to take place. [Citation needed] [13,14,15] The condition noticeably improves within forty-eight hours of the appliance being removed from the equation. Because of this enlargement, the amount of time spent probing the teeth during orthodontic treatment has been shown to have increased. [17,18,19] When such iatrogenic irritations are unavoidable, the possibility of a loss of attachment can be anticipated and prepared for. [17]

During orthodontic treatment, it has been demonstrated beyond a reasonable doubt that adolescents suffer from gingivitis to a greater extent than adults [12].

It has been demonstrated that gingival recession is a common unintended effect that can occur during and/or after the orthodontic treatment. When buccal orthodontic movements are used, this effect has been observed more frequently than usual. [20] If teeth that have thin tissue are going to be moved lingually, there is a possibility that the tissue will move coronally and become thicker. This would occur if the teeth were moved coronally during the original procedure. [24] It has been demonstrated that the majority of instances of gingival recession that take place during orthodontic treatment take place in the regions of the anterior teeth, both on the upper and lower jaws. [21,22,23,25,26]

In a recent study conducted by Thornberg and colleagues [27], the researchers wanted to document and investigate changes in periodontal pathogen levels in adolescents before, during, and after orthodontic treatment. They looked at eight different types of periodontal pathogens: Actinobacillus actinomycetemcomitans (AA), Porphyrom onas gingivalis (PG), Prevotella intermedia (PI), Tannerella forsythia (TF), Eikenella corrodens It has been demonstrated that the percentages of patients who had high pathogen counts increased significantly after six months of treatment with fixed appliances (PI, TF, EC, FN, TD, and CR), but that these percentages returned to their pre-treatment levels after 12 months of orthodontic treatment.

Consequently, it is of the utmost significance that adequate oral hygiene instructions be adhered to throughout the course of orthodontic treatment.

Brushing thoroughly is essential for maintaining good gingival health, but excessive brushing can distort the gingival tissues if done for an extended period of time. Brushing incorrectly is one of the primary contributors to wasting diseases like abrasion. Regarding gingival health awareness, comparatively very few individuals have awareness, whereas the vast majority of individuals do not have that awareness. [13,14]

In this respect, the provision of orthodontic patients with accurate instructions on the maintenance of gingival health plays a crucial role. It is certain that the levels of oral hygiene standards will improve if the younger age groups are motivated and required to practice oral hygiene measures. [26,27]

CONCLUSION:

The periodontal microflora of patients experiences a significant expansion while they are undergoing orthodontic treatment. The gingival inflammation and periodontal destruction both increase as a direct result of this factor. The patient's post-treatment periodontal condition, on the other hand, can significantly improve and almost completely resemble the patient's pre-treatment periodontal status if they practice good oral hygiene and adhere to the recommended methods. Therefore, patient compliance plays an extremely important role in the maintenance of gingival and periodontal health, both during and after the orthodontic treatment.

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