



PERIODONTAL TISSUE; EFFECT OF FIX ORTHODONTIC TREATMENT

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INTRODUCTION

Malocclusion is a developmental anomaly. In the 21st century its treatment in the form of fix orthodontic treatment is vastly available worldwide. But the primary aim for its correction is now lost. Previously it was believed that malocclusion causes greater plaque accumulation and thus affects periodontal health. Straightly aligned teeth are more easier to clean. However with the advancement of research, several studies have concluded that orthodontic treatment has no effect of periodontal health. It can be concluded that the basic aim of orthodontic treatment may be restricted to physical and social betterment. However orthodontists suggest orthodontic treatment a good choice for healthy periodontium.¹

Story of orthodontic treatment has two faces: one favorable and other non-favorable. Favourable outcomes of orthodontic treatment are on appearance and confidence building of individual.

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ABSTRACT... Objectives: Object of present study is to determine the effect of fix orthodontics treatment on supporting tissues. **Study Design:** Observational study. **Place and Duration of Study:** This study was conducted at department of orthodontics, Liaquat University Hospital Jamshoro, from January 2015 to December 2015. **Methodology:** 60 hundred were selected from orthodontic clinic opd. Inclusion criteria were to select patients with complete dentitions apart from third molars. Pts with compromise periodontal tissue condition are excluded. All the patients underwent oral prophylaxes and were given oral hygiene instructions at the start of orthodontic treatment. The patients were examined before the start of orthodontic treatment, after 10 months to 12 months of treatment and the periodontal health was assessed by using CPITN (community periodontal index for treatment need) around the index teeth using WHO probe. **Results:** 22(36.7%) cases out of 60 subjects were males and rest were females 38(63.3%) cases, male to female ratio 1:1.7. Means age was 20.11 + 1.1 years. In this study CPITN Score-0 were observed in 19(31.66%) cases, Score-I in 21(35%) cases, Score-II in 14(23.33%) cases, Score-III in 5(8.33%) cases and Score-IV in 1(1.66%) case. **Conclusion:** Regular assessment during and after completion of orthodontic therapy plays big time role.

Key words: Fix Orthodontic Treatment, Periodontal Tissue, CPITN (Community periodontal index for treatment need).

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Also malocclusions such as anterior deep bite or anterior crossbite which harm the periodontium have good clinical outcomes in terms of periodontal health but these conditions are uncommon.² Orthodontic treatment is associated with gingival bleeding, inflammation and hypertrophy, plaque and calculus accumulation, small amounts of alveolar bone loss, gingival recession, soft and hard tissue defects, increased pocket depth. Orthodontic bands placed may reach alveolar bone causing destruction.³ Fixed orthodontic appliances increases the number of retention areas causing periodontal damage.⁴ Clinical signs of subgingival inflammation such as bleeding on pricking, periodontal probing depth and increvicular fluid volume has been observed during fix orthodontic treatment. Severe inflammation is rare may be because of regular follow up and counselling regarding oral health.⁵ Initially formed plaque contains gram positive organisms while later on gram negative

organisms and anaerobes predominate.⁶ P.gingivalis is member of normal microbiota and is found in 25% of healthy subjects while 79% of periodontitis patients. It is estimated that by the end of orthodontic treatment, frequency of P.gingivalis was significantly increased. Even 6 months prior to removing appliance, its concentration was higher than normal healthy periodontium.⁷ Plaque accumulation is the beginning of all periodontal diseases and increased risk of plaque accumulation among patients causes periodontal defects after orthodontic treatment. However good oral hygiene can prevent this. Orthodontic treatment followed by use of post orthodontic fixed retainers has been found to be associated with increased incidence of plaque retention and gingival recession. This tissue showed increased bleeding on probing.⁸

METHODOLOGY

This is simple random sampling study was conducted at Dental Section, Liaquat University Hospital Jamshoro, from January 2015 to December 2015. This study consisted of 60 hundred were selected during this period from orthodontic clinic opd. Inclusion criteria were to select patients with complete dentitions apart from third molars. Pts with compromise periodontal tissue condition are excluded. All the patients underwent oral prophylaxes and were given oral hygiene instructions at the start of orthodontic treatment. The patients were examined before the start of orthodontic treatment, after 10 months to 12 months of treatment and the periodontal health was assessed by using CPITN (community periodontal index for treatment need) around the index teeth using WHO probe.

RESULTS

A total of 60 patients, both males and females were included in the study. 22(36.7%) out of 60 subjects were males and rest were females 38(63.3%) cases, male to female ratio 1:1.7 (Figure-1). The minimum age was 16 years and maximum was 24 years but most of the patients were in the range of 16 to 20 years means age was 20.11±1.1 years. In this study CPITN Score-0 were observed in 19(31.66%) cases,

Score-I in 21(35%) cases, Score-II in 14(23.33%) cases, Score-III in 5(8.33%) cases and Score-IV in 1(1.66%) case (Table-I).

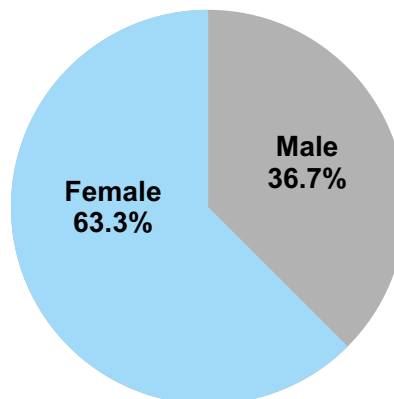


Figure-1. Gender Distribution

(CPITN) Score	Yes	%	No	%
0	19	31.66%	41	68.33%
1	21	35%	39	65%
2	14	23.33%	46	76.66%
3	5	8.33%	55	91.66%
4	1	1.66%	59	98.33%

Table-I. Community periodontal index of treatment need (CPITN) score

DISCUSSION

Ten year retrospective study concluded that orthodontic treatment during adolescence has no effect on periodontal health during adult life.⁹ Ballen et al in his meta-analysis reported no positive effect of orthodontic treatment on periodontal health.³ Sabrina et al reports no difference in periodontal health among two groups: one undergoing orthodontic treatment and other without any requirement for orthodontic treatment. However this study was conducted among dentistry students who have good plaque control and oral hygiene habits.¹⁰ In another study conducted among two groups of patients: one who had completed orthodontic therapy atleast 10 years prior compared while others were those with untreated malocclusion. When periodontal health of these two groups were compared, it was concluded that orthodontic treatment had no effect on periodontal health during later life.⁹ Sdowsky and Begole demonstrated that patients with orthodontic therapy have greater risk for

development of mild to moderate periodontal diseases. Orthodontic treatment reports no beneficial outcomes for periodontium. However according to his study results, orthodontic treatment during adolescence has negligible effect on periodontal health during adult life.¹¹ Study done on 50 young patients with class II division I malocclusions treated for an average of 19 months with extraction of first four pre-molars. Periodontal health was assessed periodically upto 2 years after completion of treatment. Patients were counselled and monitored regarding good oral hygiene. However despite this, generalized hyperplastic gingivitis of moderate severity was observed after appliance placement. However this condition improved in the first month after appliance removal.^{12,13} 2 years post-treatment, orthodontic patients showed increased loss of periodontal attachment and alveolar bone as compared to untreated group. Some studies have shown acceleration of loss of attachment after orthodontic treatment in patients because of difficulty in removing plaque.¹⁴ Naranjo et al and Ristic et al reports increased PI (plaque index) and GI (gingival index) among orthodontic patients because of bleeding and inflammation.^{15,16} Reports on periodontal health among patients undergoing orthodontic treatment differs and this might be due to the difference in clinical recording methods. CAL is the gold standard for assessment of destruction of periodontal support associated with fixed orthodontic appliances.¹⁰

There are few studies showing status of periodontally healthy individuals undergoing orthodontic treatment. Boyd et al have concluded that both healthy as well as diseased periodontium have no more increased risk of periodontal breakdown and tooth loss with orthodontic treatment. Loss of attachment was not clinically significant among adolescents however 3 of 15 adolescents have had clinically significant loss of attachment. This was due to very poor plaque control pre-operatively. This study didn't revealed any statistically significant increase in mean pocket length depth (0.5 mm). Minor increase was due to supra gingival inflammation and plaque during initial 6 months of orthodontic treatment. Authors

have concluded that steps improving periodontal health during orthodontic treatment are periodic assessment, regular plaque removal and providing oral health hygiene related education. subgingival pathogenic bacteria accumulate around 6-8 weeks after pocket cleaning therefore patients should be assessed no longer than 3 months for plaque removal.¹⁴

Moosa et al and Nasir et al assessed CPITN scores in orthodontic patients. Both have concluded that periodontal health of patients receiving orthodontic therapy is altered. majority of patients from our study had bleeding observed directly or by mirror (score 1). nasir et al had similar results. moosa et al reports that most of his patients had 4-5 mm pocket (score 3). score 4 was reported to be marked in minimum number of patients among these 3 studies.^{6,17} Majority of patients going orthodontic treatment are adolescents. In our study majority of patients belonged to 16-20 years. It is observed that there is slight decreased risk for gingivitis in patients aged 11-17 years and this risk falls significantly after 13 years of age.

Good oral hygiene has vast advantages in terms of orthodontic treatment. Horizontal reciprocating motion while tooth brushing also known as horizontal scrub technique has very efficient plaque removing techniques of all.⁵ Fluorid rinsing solutions are very in for plaque removal however it has been studied that fluoride if retained in plaques for long time can induce inflammation.¹⁸ Koch and Lindhe have suggested that regular sessions of oral hygiene stimulates sense of oral well being among children and has very positive influence on their oral habits.¹⁹

There is relationship between crowding and periodontal status but results on this relationship have contradictions. Some consider this a weak relationship while others deny.²⁰⁻²³ Investigators have greater risk to periodontal tissue on distal surface of molars and in maxillary posterior areas.²⁴⁻²⁶ Some researchers have reported that it is not uncommon to have few large periodontal defects compared with generalized small defects to be associated with periodontal

therapy.²⁷ Periodontal changes associated with banded appliances show greater inflammation and loss of attachment in comparison to bonded appliances.²⁸

Before correction of malocclusion it is necessary to analyze the periodontal health status of patient. If malocclusion is causing periodontal problems then correcting it would be beneficial to the patient. However if not so then the benefits of orthodontic therapy would be restricted to physical and psychological factors. One study has reported that there was fall in PI scores of children after removal of appliances however this fall was transient and scores reached maximum values soon thereafter.²⁹

CONCLUSION

There is ample evidence available to support the fact that orthodontic therapy has negative effects of periodontal health but these effects are insignificant in long term. Good oral hygiene can prevent the development of periodontal problems. Regular assessment during and after completion of orthodontic therapy plays big time role.

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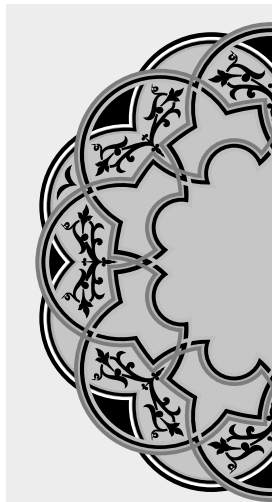
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“Impossible things are simply those which so far have never been done.”

Elbert Hubbard

AUTHORSHIP AND CONTRIBUTION DECLARATION

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2	Dr. Aamir Mehmood Butt	Supervision & Proof Reading & Contributed in concept	
3	Dr. Uzma Bashir	Data analysis	
4	Dr.Hina Memon	References	