

Frequency of Periodontal Problems in Adolescents with On-going Fixed Orthodontic Therapy

Muhammad Azeem¹, Muhammad Haseeb², Zubair Ahmed Khan³, Farheen Qureshi³,
Muhammad Iftikhar Ahsen² and Junaid Dayar⁴

ABSTRACT

Objective: The aim of the research was to find out the frequency of periodontal diseases in adolescents undergoing fixed orthodontic treatment.

Study Design: A Descriptive Cross-Sectional study.

Place and Duration of Study: This study was conducted at the Department of Orthodontics & Periodontology, de'Montmorency College of dentistry, Lahore from 2.2.2021 to 30.1.2022.

Materials and Methods: Adolescents, aged 12 to 18 years, undergoing fixed orthodontic treatment were selected by purposive sampling type method. Those orthodontic patients were selected who got no active periodontal issues at or before start of orthodontic treatment. The patients having any periodontal issues, medical disorders or systemic diseases were excluded from the study. Selected patients were examined for periodontal diseases and status at 6th month following orthodontic treatment, using World Health Organization (WHO) oral health assessment proforma. The frequency of periodontal diseases and its percentage was determined. Parameters such as bleeding on probing, probing pocket depth, gingival recession and presence of inflammatory gingival enlargement. The sample size was 50 adolescents undergoing fixed orthodontic treatment.

Results: The frequency of bleeding on probing was found to be 70%. 58% patients had at least 1mm gingival recession and 36% cases had inflammatory gingival enlargement and presence of pseudo pockets.

Conclusion: The high frequency (70%) of bleeding on probing and 36% inflammatory gingival enlargement in adolescents undergoing fixed orthodontic therapy suggests that there is dire need to focus on oral hygiene care and oral hygiene practices for orthodontic patients undergoing fixed type of orthodontic therapy.

Key Words: Orthodontics; Periodontology; Fixed Appliances, Periodontal diseases.

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INTRODUCTION

Orthodontic patients present with various problems such as problems of aesthetics, functions, risk of dental trauma at front four incisors and risk of periodontal issues.¹⁻³ Adolescents undergoing fixed appliance treatment may face various periodontal issues due to difficulty in maintenance of oral hygiene, orthodontic

forces and/or increase accumulation of dental plaque around fixed orthodontic appliances.⁴⁻⁷ Orthodontic patients undergoing fixed appliance treatment may face various complications such as white spot lesions, initial subsurface decalcifications, soft tissue trauma and ulceration, pain, transient mobility, root resorption, alveolar bone loss, allergies, orthodontic relapse and increase frequency of gingival and periodontal issues.⁸⁻¹¹

Orthodontic patients undergoing fixed appliance therapy may get various gingival-periodontal issues due to issues in maintenance of oral hygiene, dietary habits, increase accumulation of dental plaque around fixed orthodontic bands and brackets.¹²⁻¹⁴

The frequency of periodontal issues in adolescents undergoing fixed type of orthodontic therapy ranges and varies between ethnic groups and by age and sex.^{2,5,8,10,15} The increase frequency of periodontal issues in adolescents undergoing fixed type of orthodontic therapy may result in suspension or termination of on-going fixed orthodontic treatment, decrease in the compliance of orthodontic patients undergoing fixed type of orthodontic therapy and may also results in failure to achieve the desired treatment

¹. Department of Orthodontics, de'Montmorency College of Dentistry, Lahore.

². Department of Periodontology, University College of Dentistry, The University of Lahore, Lahore.

³. Department of Periodontology, FMH College of Medicine and Dentistry, Lahore.

⁴. Department of Orthodontics, IOD CMH, Lahore.

Correspondence: Dr. Muhammad Haseeb, Associate Professor of Periodontology, University College of Dentistry, The University of Lahore, Lahore.
Contact No: 0334-4375727
Email: dr.haseeb@gmail.com

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objectives of orthodontic treatment with subsequent relapse following orthodontic treatment.^{11,16-18}

In view of published literature that the frequency of periodontal issues in adolescents undergoing fixed type of orthodontic therapy in different populations is different; this study was design to find out the frequency of periodontal diseases in adolescents undergoing fixed orthodontic treatment.

MATERIALS AND METHODS

The present Descriptive Cross-Sectional study was conceived at Department of Orthodontics & Periodontology, de'Montmorency College of dentistry, Lahore, from 2.2.2021 to 30.1.2022. Adolescents, chronological ages of 12 to 18 years, irrespective of gender, undergoing fixed type of orthodontic therapy were selected by purposive sampling type method to find out the frequency of periodontal issues in adolescents undergoing fixed orthodontic treatment. The sample size was 50 adolescents undergoing fixed type of orthodontic therapy.

Fifty orthodontic patients undergoing fixed type of orthodontic therapy were selected who got no active periodontal issues at or before start of orthodontic treatment. The patients having any periodontal issues,

medical disorders or systemic diseases were excluded from the study. Selected patients undergoing fixed orthodontic treatment were examined for periodontal diseases and status at 6th month following orthodontic treatment, using World Health Organization (WHO) oral health assessment proforma.¹⁵

The frequency of periodontal diseases and its percentage was determined in orthodontic patients undergoing fixed type of orthodontic therapy. The data were analysed using SPSS 21.0. the study was conducted after taking informed consent from the selected orthodontic patients & their parents and after taking ethical approval from the institute.

RESULTS

The frequency of periodontal issues in orthodontic patients undergoing fixed type of orthodontic therapy was found to be 70%. The mean age of the selected orthodontic subjects undergoing fixed type of orthodontic therapy was 15.1 years. Out of total sample of 50 selected patients undergoing fixed orthodontic treatment, table 1 shows the nature and type of periodontal parameters present in the patients at 6th month. Out of 50, 22 (44%) were males while 28 (56%) were females. (Table No.1)

Table No. 1: Frequency of Periodontal Issues in Orthodontic Subjects (N=50)

Parameters	Frequency & (Percentage)
Orthodontic patients	50 (100 %)
Males	22 (44 %)
Females	28 (56 %)
Gingival bleeding on probing ($\geq 10\%$)	35 (70%)
Gingival bleeding on probing ($\leq 9\%$)	15 (30%)
Absence of gingival recession	21 (42%)
Presence of gingival recession 1-2mm (at least 1 tooth)	17 (34%)
Presence of gingival recession $\geq 3\text{mm}$ (at least 1 tooth)	12 (24%)
Presence of periodontal pockets $>3\text{mm}$ (two non-adjacent sites)	8 (16%)
Presence of periodontal pockets $\geq 5\text{mm}$ (two adjacent sites)	1 (2%)
Presence of gingival enlargement confined to papilla only	7 (14%)
Presence of gingival enlargement in papillary and marginal gingiva	11 (22%)

DISCUSSION

In the present study, the frequency of bleeding on probing ($\geq 10\%$) in adolescents undergoing fixed type of orthodontic therapy was found to be 70%. The percentage of cases with periodontal health as determined by (BOP $\leq 9\%$) was 30%, and this is in accordance with the research conducted by Alstad & Zachrisson. In the present study 50 orthodontic patients undergoing fixed type of orthodontic therapy were included who got no active periodontal or gingival issues at or before start of orthodontic therapy. The patients having any periodontal issues were managed at or before the start of orthodontic therapy. Selected patients undergoing fixed type of orthodontic therapy were examined for periodontal diseases and status at 6th

month following orthodontic treatment, using WHO oral health assessment proforma.¹⁵ Gingival recession (at least 1mm) was found in 58% of the cases and out of which 82% occurred in mandibular central and lateral incisors. This can be attributed to the orthodontic mechanics, since the crowded teeth can be out of alveolar envelope before the start of the fixed appliance. Awaisi et al 2021 found 29% crowding in their orthodontic population¹⁹.

In the present study, the frequency of probing pocket depth ($>3\text{mm}$) was less in adolescents undergoing fixed type of orthodontic therapy, however gingival enlargement was observed quite frequently (table 1). This may be link with the issues in maintenance of oral hygiene, dietary habits, increase accumulation of dental plaque around fixed orthodontic bands and brackets.¹²⁻¹⁴

The high frequency of periodontal diseases in adolescents undergoing fixed type of orthodontic therapy suggests that there is dire need to focus on oral hygiene care, oral hygiene habits and oral hygiene practices for orthodontic patients undergoing fixed type of orthodontic therapy.¹²⁻¹⁵ This can be achieved by following oral hygiene measures used properly by orthodontic patients and also by the proper reinforcement by orthodontic specialists during regular appointments.¹⁶⁻¹⁸ There are various published researches on the topic of the effective oral health care and education, oral health regular maintenance, and oral prophylaxis in reducing the frequency and incidence of periodontal issues in adolescents undergoing fixed type of orthodontic therapy.^{7,13-17}

There are many limitations of this conducted study such as small sample size of 50 patients undergoing fixed type of orthodontic therapy, the study was conducted at single centre and cross-sectional nature of the study. Further large-scale studies are suggested to find out the frequency of periodontal diseases in adolescents undergoing fixed type of orthodontic therapy. We did not investigate the periodontal issues at 12th month and at end of the orthodontic treatment, nor did we explore the various types of periodontal issues whether the periodontal issue was gingival or periodontal or of another type.

CONCLUSION

The high frequency (70%) of bleeding on probing and 36% inflammatory gingival enlargement in adolescents undergoing fixed orthodontic therapy suggests that there is dire need to focus on oral hygiene care and oral hygiene practices for orthodontic patients undergoing fixed type of orthodontic therapy.

Author's Contribution:

Concept & Design of Study: Muhammad Azeem
Drafting: Muhammad Haseeb,
Zubair Ahmed Khan

Data Analysis: Farheen Qureshi,
Muhammad Iftikhar
Ahsen, Junaid Dayar

Revisiting Critically: Muhammad Azeem,
Muhammad Haseeb

Final Approval of version: Muhammad Azeem

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