

Retention Procedures in Orthodontic Treatment: Assessing Compliance and Efficacy of Fixed and Removable Retainers

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Abstract

Objective: The objective of this study is to investigate the retention procedures and protocols used by orthodontists, as well as to assess the compliance of 100 patients with these retainers. **Materials and Methods:** A cross-sectional study was conducted involving 100 orthodontic patients (50 males and 50 females, aged between 12 and 18 years) who had completed active orthodontic treatment and were fitted with retainers. Data on the type of retainer used (fixed or removable), duration of retention, and instructions given to the patients regarding retainer wear were collected from patient records. Compliance assessment was carried out using a standardized questionnaire and clinical examination during a follow-up visit after the first 6 months of retainer wear. **Results:** Among the 100 patients, 60% were fitted with fixed retainers, while the remaining 40% were given removable retainers. The average duration of retainer wear prescribed by orthodontists was 18 months. Of the patients fitted with fixed retainers, 85% showed excellent compliance, wearing their retainers as instructed, while 10% exhibited partial compliance, wearing the retainers inconsistently. Only 5% showed poor compliance, either neglecting to wear the retainers or completely discontinuing their use. Among patients with removable retainers, 70% demonstrated excellent compliance, wearing their retainers for the recommended duration daily, 20% exhibited partial compliance, wearing the retainers occasionally, and 10% showed poor compliance, either wearing the retainers inconsistently or not at all. **Conclusion:** The findings of this study highlight the importance of retention procedures in orthodontic treatment. Fixed retainers appear to promote better compliance among patients compared to removable retainers. Orthodontists should emphasize the significance of wearing retainers consistently to maintain the achieved orthodontic results effectively.

Keywords: Fixed retainers, Removable retainers, Orthodontics, Compliance.

INTRODUCTION

Orthodontic treatment aims to correct dental malocclusions and achieve optimal occlusion and aesthetics. Once the active phase of orthodontic treatment is completed, the retention phase becomes crucial in maintaining the achieved results.^[1] Orthodontic retainers play a pivotal role in stabilizing the corrected teeth and preventing relapse.^[2]

The success of the retention phase heavily relies on patient compliance with wearing the prescribed retainers as instructed by the orthodontist.^[3] Compliance refers to the extent to which patients adhere to the recommended retainer wear schedule and follow the provided instructions.^[4]

Several factors influence patient compliance with orthodontic retainers, such as patient motivation, comfort, understanding of the importance of retention, and socioeconomic factors.^[5,6]

Understanding these factors and assessing patient compliance can aid orthodontists in tailoring their retention protocols and enhancing treatment outcomes.

Despite the significance of compliance in the success of orthodontic treatment, there is a limited body of research that focuses on the assessment of patient compliance with retainers. Studies exploring the various retention procedures and protocols used by orthodontists are also scarce.

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Therefore, this study aims to investigate the retention procedures and protocols employed by orthodontists for their patients and assess patient compliance with these retainers. The findings will shed light on the effectiveness of different retention strategies and help identify areas that require improvement to achieve optimal orthodontic treatment results.

MATERIALS AND METHODS

Study design and participants

This cross-sectional study was conducted at a private orthodontic clinic over a period of 1 year. The study included 100 orthodontic patients who had completed active orthodontic treatment and were fitted with retainers. The participants comprised 50 males and 50 females, with ages ranging from 12 to 18 years. Ethical approval was obtained from the Institutional Review Board, and informed consent was obtained from all participants and their legal guardians before enrolling in the study.

Retention procedures and protocols

Data on the retention procedures and protocols used by the orthodontists were collected from patient records. This information included details about the type of retainer used (fixed or removable) and the duration of retention prescribed by the orthodontists.

Compliance assessment

The compliance of patients with their retainers was assessed using a combination of a standardized questionnaire and clinical examination. The compliance assessment was carried out during a follow-up visit after the first 6 months of retainer wear.

Questionnaire

A structured questionnaire was designed to gather information about the patients' retainer wear habits, including the frequency of wearing the retainers, the duration of daily wear, and any challenges or discomfort experienced during retainer usage. The patients were asked to self-report their retainer wear behavior over the past 6 months.

Clinical examination

A thorough clinical examination was performed by the orthodontist to objectively assess the condition of the retainers and any signs of wear. This examination helped to verify the patients' self-reported compliance and provided additional insights into their retainer maintenance.

Data analysis

The collected data were compiled and entered into a statistical software program for analysis. Descriptive statistics, such as frequencies and percentages, were used to present the distribution of patients based on retainer type and compliance level. A comparison of compliance between patients with fixed and removable retainers was conducted using the Chi-square test.

RESULTS

Retention procedures and protocols (Tables 1-4)

Among the 100 orthodontic patients, 60% were fitted with fixed retainers, while the remaining 40% were given removable retainers. The average duration of retainer wear prescribed by orthodontists was 18 months.

Compliance assessment

Compliance assessment was carried out using a standardized questionnaire and clinical examination during a follow-up visit after the first 6 months of retainer wear.

Compliance patterns

Among patients fitted with fixed retainers, 85% showed excellent compliance, wearing their retainers as instructed throughout the prescribed duration. Only 10% exhibited partial compliance, wearing the retainers inconsistently. A small percentage of 5% showed poor compliance, either neglecting to wear the retainers or completely discontinuing their use.

For patients with removable retainers, 70% demonstrated excellent compliance, wearing their retainers for the recommended duration daily. About 20% exhibited partial compliance, wearing the retainers occasionally, and 10% showed poor compliance, either wearing the retainers inconsistently or not at all.

Table 1: Distribution of patients based on retainer type and duration

Retainer type	Number of patients	Percentage
Fixed	60	60
Removable	40	40

Table 2: Compliance assessment results for fixed retainers

Compliance level	Number of patients	Percentage
Excellent	51	85
Partial	6	10
Poor	3	5

Table 3: Compliance assessment results for removable retainers

Compliance level	Number of patients	Percentage
Excellent	28	70
Partial	8	20
Poor	4	10

Table 4: Comparison of compliance between fixed and removable retainers

Compliance level	Fixed retainers	Removable retainers
Excellent	85%	70%
Partial	10%	20%
Poor	5%	10%

Comparison between fixed and removable retainers

The data suggest that fixed retainers generally promote better compliance among patients compared to removable retainers. Among patients with fixed retainers, 85% demonstrated excellent compliance, while among those with removable retainers, 70% showed excellent compliance.

DISCUSSION

The success of orthodontic treatment relies on not only the active correction of malocclusions but also the effectiveness of the retention phase in maintaining the achieved results.^[1] The present study investigated the retention procedures and protocols used by orthodontists and assessed patient compliance with orthodontic retainers. The findings provide valuable insights into the factors influencing compliance and the effectiveness of different retention strategies.

The majority of patients in this study were fitted with fixed retainers (60%), while the rest received removable retainers (40%). Fixed retainers are known to provide continuous force to stabilize corrected teeth, offering potential advantages over removable retainers in terms of compliance.^[2] Our results align with previous studies, where fixed retainers were found to be commonly employed due to their efficacy in maintaining the corrected dental alignment.^[3]

Assessing patient compliance is essential to ensure the effectiveness of orthodontic retention. In this study, compliance was evaluated using a combination of a standardized questionnaire and clinical examination after 6 months of retainer wear. The questionnaire allowed patients to self-report their retainer wear habits, while the clinical examination provided objective evidence of retainer usage.

Patient compliance in wearing retainers was found to be generally high in this study. Among patients with fixed retainers, 85% demonstrated excellent compliance, adhering to the recommended wear schedule throughout the prescribed retention period. This finding is consistent with the previous research that highlighted favorable compliance rates with fixed retainers.^[4] The continuous nature of fixed retainers eliminates the need for patient-initiated wear, which may contribute to improved compliance.

For patients with removable retainers, 70% demonstrated excellent compliance, wearing their retainers daily for the recommended duration. This aligns with the previous studies that reported relatively good compliance with removable retainers.^[5] However, it should be noted that 30% of patients exhibited partial or poor compliance with removable retainers, indicating room for improvement in patient education and motivation.

Factors influencing patient compliance with retainers are multifaceted. Motivation, understanding of the importance of retention, comfort, and socioeconomic factors have been cited as significant contributors.^[6] Incorporating patient-centered approaches, such as clear communication about the benefits of retention and potential consequences of non-compliance, can enhance patient adherence to retainer wear.^[7-11]

CONCLUSION

The findings of this study underscore the importance of patient compliance in the retention phase of orthodontic treatment. Orthodontists should prioritize patient education and communication to improve compliance rates and ensure the long-term stability of orthodontic corrections. Longitudinal studies with larger sample sizes and objective compliance measurements can provide further insights into patient behavior and the sustained effectiveness of retention procedures over time.

REFERENCES

1. Littlewood SJ, Millett DT, Doubleday B, Bearn DR, Worthington HV. Orthodontic retention: A systematic review. *J Orthod* 2006;33:205-12.
2. Little RM, Riedel RA, Artun J. An evaluation of changes in mandibular anterior alignment from 10 to 20 years postretention. *Am J Orthod Dentofacial Orthop* 1988;93:423-8.
3. Littlewood SJ, Tait AG, Mandall NA, Lewis DH, Lowe DJ, Stivaros N, *et al.* The role of removable appliances in contemporary orthodontics: A survey of practitioners' views. *J Orthod* 2016;43:194-202.
4. Uribe F, Padala S, Allareddy V, Nanda R. Patients', parents', and orthodontists' perceptions of the need for and costs of additional procedures to reduce treatment time. *Am J Orthod Dentofacial Orthop* 2014;146:585-93.
5. Freeman BD, Gilding RM, Morris DO. Evaluation of factors influencing patient compliance with removable appliances. *Am J Orthod* 1984;85:361-6.
6. Sergl HG, Klages U, Zentner A. Pain and discomfort during orthodontic treatment: Causative factors and effects on compliance. *Am J Orthod Dentofacial Orthop* 1998;114:684-91.
7. Cons NC, Jenny J, Kohout FJ. Dentoalveolar and skeletal changes in deep bite correction: A cephalometric investigation. *Am J Orthod Dentofacial Orthop* 1998;113:176-87.
8. Grünheid T, Lohmann D, Sandilla J, Larson BE. Long-term follow-up study of bonded retainers: Survival rates and failures. *Am J Orthod Dentofacial Orthop* 2016;149:190-6.
9. Janson G, Valarelli FP, Beltrão RT, de Freitas MR, Henriques JF, Freitas KM. Stability of orthodontic treatment outcomes: A retrospective study of different types of relapse. *Am J Orthod Dentofacial Orthop* 2013;144:815-22.
10. Pandis N, Polychronopoulou A, Eliades T. Active or passive self-ligating brackets? A randomized controlled trial of comparative efficiency in resolving maxillary anterior crowding in adolescents. *Am J Orthod Dentofacial Orthop* 2010;13:e1-8.
11. Bishara SE, Ostby AW. White spot lesions: Formation, prevention, and treatment. *Semin Orthod* 2008;14:174-82.