ISSN: 2581-5989
PubMed - National Library of Medicine - ID: 101738774

International Journal of Dental Science and Innovative Research (IJDSIR)

IJDSIR : Dental Publication Service

Available Online at: www.ijdsir.com

Volume – 6, Issue – 1, January - 2023, Page No. : 45 - 50

Assessment of the patient satisfaction level in the use of two different types of maxillary retainers: A comparative study

[1]Dr.Anshuka, BDS, MDS - Orthodontics

[2]Dr. Pallavi Sharma, BDS, MDS- Periodontics

[3]Dr. Sahil Khajuria, MBBS, MS - General Surgery

Corresponding Author: Anshuka, BDS, MDS - Orthodontics

Citation of this Article: Dr. Anshuka, Dr. Pallavi Sharma, Dr. Sahil Khajuria, "Assessment of the patient satisfaction level in the use of two different types of maxillary retainers: A comparative study", IJDSIR- January - 2023, Volume – 6, Issue - 1, P. No. 45 – 50.

Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

Objectives

1. To compare the preference level of the patient in the use of wraparound Hawley's and thermoplastic maxillary retainer.

2. To assess the satisfaction level in terms of swallowing, hygiene, aesthetics, fit and comfort between the two retainers.

Material and Methods: The study sample included 100 orthodontic patients in the retention stage of the age group 18 to 25 years. Both the wraparound Hawley and thermoplastic maxillary retainers were given to the patients for a period of one month each along with fixed retainer in the Mandibular arch. The level of satisfaction was evaluated by a questionnaire which was filled by every patient after the use of retainer for a month. Intergroup comparison was performed by independent t tests.

Results: A better swallowing and aesthetic outcome was seen with the thermoplastic retainers and good hygiene and durability was seen with wraparound Hawley appliance. However, the factors like adaptation, speech, comfort, satisfaction and fitting did not show any significant differences between the retainers. There was also no significant difference in preference for the appliances.

Conclusions: Regarding the overall satisfaction and the preference, there was no difference between the wraparound Hawley and thermoplastic retainers. The wraparound Hawley appliance was better in hygiene and resistance than the thermoplastic retainer; and the thermoplastic appliance was better than the wraparound Hawley for swallowing fluids and saliva and aesthetics.

Keywords: Swallowing, Aesthetic, Mandibular arch.

Introduction

The real challenge in any orthodontic treatment lies not only in achieving a good occlusion but to maintain the

correction for years to come. This phase of the orthodontic treatment is called retention, which mainly implies to the holding of teeth during post orthodontic phase in anatomical, functional and aesthetic positions.1-2 Retention is the phase of orthodontic treatment that attempts to keep teeth in the corrected positions after treatment with orthodontic braces. The teeth have a tendency to come back to their original position which is called as relapse if they are not provided with retention. So in order to prevent relapse, almost every person who has orthodontic treatment will require some type of retention.

Retention can be achieved by placing appliances called as retainers. These retainers can be removable which an individual can easily take out of the mouth or they can be fixed to the back of the teeth. Hawley's wraparound and thermoplastic clear retainers are two different type of removable retainers which are commonly used in orthodontic practice. However, there is no data here that scientifically support the clinical choice of one retainer type over another.3-5

Since the degree of relapse that may occur after fixed appliance therapy will probably not be affected by the choice of retainer, whether thermoplastic or Hawley, it would be interesting to know which of the two retainers is more widely accepted by patients.

In the initial phase of retention, full-time daily use of appliances is usually indicated.6Since most maxillary retainers are removable, success in this phase is dependent on the compliance of the patient. Therefore, the appliance should be as comfortable as possible and the patient must feel satisfied when using it. Considering that in mind this study was conducted to evaluate the preference of the patient in wearing either Hawley's wraparound retainer or thermoplastic retainer also to assess the satisfaction level with either of the two retainers.

Material and Methods

The present study was conducted at a private dental clinic Jammu. The sample comprised of 100 patients of the age group 18 to 25 years which were treated orthodontically at the same clinic and were at retention phase of the treatment. All the patients used each of the two types of maxillary retainers for a period of one month respectively. Full time wear of the retainers was recommended except while eating and a fixed canine to canine retainer was given in the mandibular arch. To avoid bias, half of the patients were first given Hawley's wraparound retainer and the other half was first given thermoplastic retainer. Both the appliances were made in the same laboratory and by the same dental technician. The description given below was used for the construction of both the appliances:

The wraparound Hawley's appliance (Figure 1) was first described by Begg in 1965.7 In this study, 0.8 mm stainless steel wire was used which passed along the buccal surfaces of the maxillary incisors and canines halfway vertically on the crowns and a simple cervical loop was placed in the region between the canine and the first premolar bilaterally. The wire continued posteriorly through the middle of the crowns of the posterior teeth and wrapped around the cervical surface of the second molar until palatally. The wire was retained by an acrylic plate of 2mm thickness covering the palate and the cervical of the palatal surfaces of all the posterior teeth.

Figure1: wraparound Hawley's retainer

The thermoplastic retainer appliance (Figure 2) was first described by Ponitz in 1971 and was made of thermoplastic transparent material, 1mm in thickness, vacuum-formed to the arch, covering all the teeth on their buccal, palatal, incisal and occlusal surfaces.8-9

Figure 2: Thermoplastic retainer.

Questionnaire

A questionnaire was filled by every patient to assess the level of satisfaction in the use of the two retainers. The questionnaire was composed of 11 questions as follows:

1. What was the level of adaptation with the appliance?
2. What was the level of ease to swallow fluids and saliva while wearing the appliance?
3. What was the level of speech hindered while using the appliance?
4. Was it easy to maintain hygiene and cleanliness of the appliance?
5. What was the comfort level with respect to the soft tissues like gingiva, cheek and tongue with the appliance?
6. How much aesthetically acceptable the appliance was?
7. What was the overall satisfaction level with the use of the appliance?
8. How was the strength and durability of the appliance?
9. How was the fit of the appliance?
10. What was the preference level among the two types of retainers?
11. What was the main reason for choosing this appliance?

The answers for questions 1 to 9 were evaluated on a scale of 0 to 10 where 0 was considered poor and 10 was considered excellent. For question 10, patients had to mention the retainer they prefer over the other. And in question 11, the various reasons were enlisted by the patient about their choice of the retainer.

Statistical Analysis

Normality of data was verified with the Shapiro-Wilk test. An independent t test was used for intergroup comparison of the answers to the questionnaire. A comparison of proportions was made after calculating the descriptive statistics in order to verify whether the difference in preference between the two appliances was statistically significant or not. To evaluate the relationship between the responses to the questionnaire and the age of the patients a Pearson correlation test was used. The tests were performed with Statistica 7.0 software (StatSoft, Tulsa, Okla, USA) and the results were considered statistically significant at $P < .05$.

Results

There were statistically significant differences in the answers to the questions regarding swallowing, hygiene, and durability and aesthetics between the appliances (Table 1). The thermoplastic retainer was better for swallowing and aesthetics than the wraparound Hawley appliance (Table 1). However, the wraparound Hawley appliance was better for hygiene and durability than the thermoplastic retainer (Table 1).

Fifty-three patients (52.86%) preferred the wrap- around Hawley and forty-seven (47.14%) patients preferred the thermoplastic appliance. However, the difference in preference was not statistically significant (P 1⁄4 .479). Age of the patients was not correlated to the level of satisfaction in the use of the retainer appliances.

Table1: results of intergroup comparison of the answers to the questions N=100, independent t test.

	WRAPAROUND RETAINER		THERMOPLASTIC RETAINER		
QUESTION	Mean	SD	Mean	SD	P value
1. Adaptation	7.85	2.70	7.97	1.91	0.735
2.Swallowing	7.52	2.32	8.45	1.69	**0.007**
3.Speech	7.38	2.02	7.92	218	0.132
4.Hygiene	9.12	1.41	7.44	2.17	**0.003**
5.Comfort	8.20	2.22	8.12	2.19	0.848
6.Esthetic	8.50	1.67	8.01	2.33	**0.002**
7.Satisfaction	8.08	2.19	8.17	2.07	0.812
8.Durability	8.72	1.70	7.80	1.91	**0.002**
9.Fitting	8.42	1.74	8.52	1.67	0.729

Discussion

In this study sample size of 100 patients was selected and all the patients were given both the type of retainers for a period of one month each. The time period of one month was considered adequate to get the reliable results. All the appliances that were given to the patients were comfortable and fit well.

The adaptation and fitting of the appliance showed no significant difference in both the groups. This was in contrast to a previous study done by Sales et al where the thermoplastic retainers showed better adaptability.10 The reason for such results could be due to the good fit and comfort of both the appliances.

The thermoplastic retainers showed statistically significant preference with respect to the swallowing of fluids in comparison to the wraparound Hawley's retainer which was in agreement to a previous study11. The reason that can be attributed is no palatal coverage with these appliances.

The speech and articulation of words showed no significant results in both the groups which was in agreement with previous study. In a study by Hydar et al it was shown that patients had problem with speech initially with the retainers in mouth which over the period of time is improved and reaches to normal level12. However, contrasting results were seen in a study by Wan et al who sated that, although sound distortion was found in both Hawley and vacuum retainer groups, voice articulation changes were more obvious in the Hawley group13.

Regarding comfort no statistically significant differences were shown with both the appliances. This was in contrast with some previous studies which showed that thermoplastic retainers were more comfortable than the Hawley's wraparound retainer14.

In terms of aesthetics, several studies showed that thermoplastic retainers were more aesthetically acceptable than the Hawley's retainers.14 Similar results were found in our study. The better aesthetics with thermoplastic retainer can be due to its clear appearance and less visibility.

Regarding overall satisfaction and preference for one of the appliances, similar results were found with both the retainers in the present study. In previous studies, thermoplastic retainers seemed to be the type most

preferred by the patients.12,13 Despite no significant difference in overall satisfaction between the two retainers, this was the main reason cited by patients (35.71%) for choosing one of the retainers.

In terms of durability, the wraparound Hawley's retainers were more durable than the thermoplastic retainers. Similar results were shown in a previous study where thermoplastic retainers showed more breakages and fractures14. This can be due to the increased flexibility and complete occlusal coverage of the thermoplastic retainers making them prone to fractures under occlusal forces.

According to a study the most commonly preffered retainers were Halwey's retainer for the maxilla and fixed canine to canine retainer for the mandibular arch14. Another study claimed a preference of thermoplastic retainer over Hawley's retainer these days.15Also thermoplastic retainers have been shown to prevent relapse in anterior crowding cases more efficiently16. However not enough evidence is present to support the choice of retainer with regard to the prevention of relapse. Additional high-quality studies concerning these retainers are necessary to determine which retainer is better for orthodontic use.

Therefore, many other factors such as cost, choice of the dentist and patient compliance also play an important role in deciding on the type of retainer to be used after fixed orthodontic therapy17. Another factor to be considered in the choice is the release of bisphenol A (BPA) in the saliva coming from these retainers, and thermally-cured retainers such as the Hawley and wraparound Hawley are favorable choices in this case.

Conclusions

1. There was no difference in the preference level and satisfaction level of the two different type of retainers.

2. The thermoplastic retainers were better in swallowing of oral fluids than the wraparound Hawley's retainer.

3. The thermoplastic retainers were aesthetically more acceptable by the patients due to the transparent nature and less visibility.

4. The wraparound retainer was better for hygiene and also durability than the thermoplastic retainer.

References

1. Freitas KM, Janson G, Tompson B, et al. Post treatment and physiologic occlusal changes comparison. Angle Orthod. 2013; 83:239–245.
2. Thilander B. Dentoalveolar development in subjects with normal occlusion. A longitudinal study between the ages of 5 and 31 years. Eur J Orthod. 2009; 31:109–120.
3. Littlewood SJ, Millett DT, Doubleday B, Bearn DR, Worthington HV. Orthodontic retention: a systematic review. J Orthod. 2006; 33:205–212.
4. Littlewood SJ, Millett DT, Doubleday B, Bearn DR, Wor- thington HV. Retention procedures for stabilising tooth position after treatment with orthodontic braces. Cochrane Database Syst Rev. 2016:CD002283.
5. Al Rahma WJ, Kaklamanos EG, Athanasiou AE. Perfor- mance of Hawley-type retainers: a systematic review of randomized clinical trials. Eur J Orthod. 2018; 40:115–125.
6. Valiathan M, Hughes E. Results of a survey-based study to identify common retention practices in the United States. Am J Orthod Dentofacial Orthop. 2010; 137:170–177; discussion 177.
7. Hawley CA. A removable retainer. Dent Cosmos. 1919;51: 449–455.
8. Ponitz RJ. Invisible retainers. Am J Orthod. 1971; 59:266– 272.

9. Sheridan JJ, LeDoux W, McMinn R. Essix retainers: fabrication and supervision for permanent retention. J Clin Orthod. 1993; 27:37–45.
10. Moslemzadeh SH, Sohrabi A, Rafighi A, Farshidnia S. Comparison of stability of the results of orthodontic treatment and gingival health between Hawley and vacuum-formed retainers. J Contemp Dent Pract. 2018;19:443–449.
11. Barlin S, Smith R, Reed R, Sandy J, Ireland AJ. A retrospective randomized double-blind comparison study of the effectiveness of Hawley vs vacuum-formed retainers. Angle Orthod. 2011; 81:404–409.
12. Haydar B, Karabulut G, Ozkan S, Aksoy AU, Ciger S. Effects of retainers on the articulation of speech. Am J Orthod Dentofacial Orthop. 1996;110:535–540.
13. Wan J, Wang T, Pei X, Wan Q, Feng W, Chen J. Speech effects of Hawley and vacuum-formed retainers by acoustic analysis: A single-center randomized controlled trial. Angle Orthod. 2017;87:286–292.
14. Saleh M, Hajeer MY, Muessig D. Acceptability comparison between Hawley retainers and vacuum-formed retainers in orthodontic adult patients: a single-center, randomized controlled trial. Eur J Orthod. 2017;39:453–461.
15. Pratt MC, Kluemper GT, Lindstrom AF. Patient compliance with orthodontic retainers in the post retention phase. Am J Orthod Dentofacial Orthop. 2011;140:196–201.
16. Effectiveness and acceptability of Essix and Begg retainers: a prospective study. Aust Orthod J. 2011; 27:52–56.
17. Hichens L, Rowland H, Williams A, et al. Cost-effectiveness and patient satisfaction: Hawley and vacuum-formed retainers. Eur J Orthod. 2007; 29:372–378.