

**Speech Problems With Removable Retainers- A Questionnaire Study**

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**Abstract**

The present cross-sectional questioner study was conducted in Chennai city. The study sample includes 100 subjects who had undergone orthodontic treatment .The survey was schedule to spread over a period of 6 Months. The data was collected using questionnaire. The collected data was coded, compiled, tabulated and sent to statistical analysis.

**Result**

Patient’s compliance is greater with invisible retainer in speech and aesthetic appearance than Hawley’s and wraparound retainer. It is also reported that the invisible retainer is more cost effective than the Hawley’s retainer. In terms of durability, wraparound retainer is more durable than the other two retainers.

**Conclusion**

It was found that the invisible retainer showed a combination of aesthetic, comfort, cost effectiveness,

hygiene maintenance and least effect on speech. It will be the more favorable appliance to the patients who are more conscious about their esthetics whereas Hawley’s and wraparound will be the more favorable appliance to the patients who are more conscious about the durability of the appliance.

**Keywords**

Patient’s compliance, Beggs wraparound retainer, Hawley’s retainer, invisible retainer

**Introduction**

This is done to prevent the relapse which is the natural tendency of the teeth to move to their initial position.<sup>[2]</sup> To counteract the relapse there are many orthodontic retainers being available which helps in holding the teeth in their corrected position.<sup>[3]</sup> The Hawley retainer was designed by Charles Hawley in 1919.<sup>[4]</sup>This has been used for nearly a century since it is the most popular of all removable retention appliances.<sup>[5]</sup>Now a day the

patients seeking orthodontic treatment are much conscious about their esthetics.<sup>[6]</sup> So they are quite reluctant to wear labial fixed/removable appliances and are looking for treatment options which are more esthetic. This includes lingual orthodontics and invisible (clear) retainer.<sup>[7]</sup> The invisible retainers are clear and esthetically appealing.<sup>[7]</sup> The most versatile of all retainers used in the practice the invisible retainer is often termed as “clear retainer”.<sup>[7]</sup> This was first developed by Henry Nahoum in the late 1950s.<sup>[7]</sup> The invisible retainer, as we use them, was designed by Robert Ponitz of Ann Arbor, Michigan.<sup>[8]</sup> This retainer is actually made from a sheet of thin Biocryl™ or other similar material which is heated and adapted by suction<sup>1,2</sup> or pressure<sup>3</sup> on a working model of the dentition.<sup>[8]</sup>

### Hawley’s Retainer

The traditional Hawley’s retainer consists of clasps on the molars and also a short labial bow extending from canine to canine having retentive loops. This design can be modified into various ways to meet specific requirement [fig 1].<sup>[4]</sup>

### Indications for Hawley’s Retainers

deep bite correction (anterior bite plate addition),

1. minor movement of the anterior teeth
2. retention of transverse expansions and
3. Bite settling

### Advantages

1. easy to fabricate
2. Simple design

### Disadvantages

- a. Since it is manually fabricated there are chances for inaccuracy
- b. There are chances for acrylic to cause allergy
- c. Irritation in palate

### Invisible Retainers

Invisible retainers or clear retainer is made out of vacuum formed plastic sheets [fig2]<sup>[10]</sup>.



Figure 1 invisible retainer

### Indications

- a. Retention of rotations especially in the posterior
- b. retention in patients conscious about aesthetics
- c. open bite cases
  - a. minor tooth movement

### Advantages

1. easy to fabricate
2. Easy to maintain oral hygiene.<sup>[7]</sup>

### Wraparound Retainer

The wraparound retainer is also known as: Beggs Appliance, Beggs Wraparound Retainer [fig3].

Figure 2 wraparound retainer

### Indications

- a) Post-orthodontic treatment retention
- b) Minor tooth movements/adjustments can be achieved
- c) Occlusal setting

### Advantages

- A. Strength and durability

### Disadvantages

- a) Compromises for esthetics
- b) Causes irritation in palate since it is made up of acrylic

c) Difficulty in swallowing

## 1. Materials and methods

### I. Source of Data

1. The study subjects were chosen from patients who had completed orthodontic treatment in Thai Moogambigai dental college and hospital.

### II. Method of collection of Data

2. The data was collected by using a set of questionnaire.

#### Design of survey:

##### Sample size determination and sample selection:

In the present study, patients who had undergone comprehensive orthodontic treatment in department of orthodontics Thai Moogambigai dental college and had completed their active phase of treatment were included. A total of 100 patients were included in the study after obtaining informed consent.

Inclusion criteria:

##### Organizing the survey

##### Ethical Clearance

The study protocol was reviewed and approved by ethical committee of our university.

##### Scheduling

The survey was scheduled to spread over a period of 6 months. A detailed weekly schedule was prepared in advance. Six days in a week were allotted for conducting the study. A questionnaire related to history was given to each participant and the response sheets were collected.

##### Pilot study

The proforma was validated for construct and content validity, reliability and ease of use. Content and construct validity shows no significant changes.

##### Implementing the Survey

##### Informed consent

The proforma was developed in English only because it was expected that all patients were able to understand English and for the patients who weren't able to understand questionnaire was explained in the regional language (Tamil) by the investigators. Each participant was given a separate copy of the proforma personally by investigator and requested to fill it up.

##### Results

This survey consisted of 15 multiple choice questions. Out of 100 patients 40 patients were wearing Hawley's retainer, 30 patients were wearing invisible retainer and 30 patients were wearing wraparound retainer. Table 1 explains the outcome of the study conducted.

##### Discussion

Because of the lack of sufficient scientific evidence on retention protocol the previous recommendations seems to be based largely on personal preference. Selection of orthodontic retainer is an important area of orthodontic research and it should be given priority.

Each question is discussed separately in order to benefit the reader.

This is due to the fact that they feel embarrassed to wear retainer when away from In the present study, 62.5% of patients wear Hawley's retainer regularly as instructed, 83.3 % of patients wear Invisible retainer regularly as instructed, 63.3 % of patients wear Wraparound retainer regularly as instructed [chart 1]. whereas in study conducted by Lisa Hichens et al it is reported that 84.9% of the patients wear Hawley's retainer as instructed and 95% of the patients wear invisible retainer as instructed<sup>[5]</sup>. Hence it is important for the orthodontist to educate the patients regarding importance of wearing retainers and the recommended time duration for wearing the retainers. home since its compromising their esthetics. Hence invisible retainers

are more suitable for the patients who are more conscious about their esthetics so that they don't feel embarrassed to wear retainers when they are away from home. In the present study, 67.5 % of patients felt embarrassed to wear Hawley's retainer, 10 % of patients felt embarrassed to wear Invisible retainer, 66.7 % of patients felt embarrassed to wear Wraparound retainer when away from home [chart 3]. whereas in study conducted by Lisa Hichens et al it is reported that 17.4% of the patients felt embarrassed to wear Hawley's home and 7.2% of the patients felt embarrassed to wear invisible retainer.<sup>[5]</sup> Kalha AS et al reported that majority of the patients felt embarrassed to wear Hawley's retainer when compared with invisible retainer.<sup>[16]</sup>

The main reason was because of the wire running across on the facial side which compromises the esthetics and also makes the patient more difficult to speak. Hence invisible retainers are more suitable for the patients who are more conscious about their esthetics so that they don't feel embarrassed to wear retainers when they are away from home.

### Conclusion

It was found that the invisible retainer showed a combination of aesthetic, comfort, cost effectiveness, hygiene maintenance and least effect on speech. It will be the more favorable appliance to the patients who are more conscious about their esthetics whereas Hawley's and wraparound will be the more favorable appliance to the patients who are more conscious about the durability of the appliance.

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