

## Comparison of Essix and Hawley Retainers

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Essix retainers were introduced in 1993 as an esthetic, comfortable, and inexpensive alternative to traditional fixed and removable orthodontic retainers.<sup>1</sup> They are thermoformed from plastic, copolyester Essix sheet material and trimmed to fit over the anterior teeth from canine to canine. Patients are instructed to wear them only at night after a short period of nearly full-time wear.

One study of 430 patients wearing Essix retainers reported that 10 developed slight anterior open bites; this was attributed to their wearing the appliances longer than the prescribed time each day.<sup>1</sup> There have been no published studies of the effectiveness of Essix retainers in maintaining orthodontic corrections.

The present investigation was designed to compare the retention of Essix appliances to that of conventional Hawley retainers.

### Materials and Methods

Patients completing full orthodontic treatment at the Medical College of Virginia clinic were alternately assigned to Essix and Hawley retention groups. Those who had posterior crossbites or anterior open bites before treatment were excluded from the study. Twenty-eight patients were assigned to each group for observation during the first six months of active retention.

The Essix retainers were thermoformed from .030" sheets according to the manufacturer's instructions. The patients were instructed to wear their mandibular retainers full-time and their maxillary retainers half-time for the first four weeks, and both retainers only at night thereafter. Patients were given two retainers per arch, with one serving as a replacement in case the other was lost or broken. <sup>1,2</sup>

The Hawley retainers were made with lingual acrylic and canine-to-canine labial bows. Ball clasps or Adams clasps were used to hold the maxillary appliances, and occlusal rests were placed on the mandibular first molars. Patients wore the retainers full-time for the first three months and only at night for the remaining three months.

Occlusal measurements were taken from study casts made before treatment, after treatment, and after six months of retention. Anterior crowding was evaluated with Little's Irregularity Index,<sup>3</sup> and overbite and overjet were measured as usual. The differences between groups were tested with multivariate analysis of variance.

### Results

Sixteen of the 56 patients were eventually eliminated from the study. Seven patients—five in the Essix group and two in the Hawley group—lost their retainers and did not wear them for more than a week. The difference in loss rates was not statistically significant. Four patients from each group moved out of the area or did not show up for their six-month retention appointments. One Hawley patient requested that a fixed retainer be placed instead of the removable appliance. This left 19 patients in the Essix group and 21 in the Hawley group.

The Hawley patients showed slightly more incisor irregularity in both arches than the Essix group did (Table 1), but the difference was significant only for the maxillary arch ( $p < .05$ ). There were no significant differences between groups in the change in irregularity recorded for either arch over the six-month retention period.

Likewise, there were no significant differences between groups in the amount of change in overbite or overjet (Fig. 1). Two Essix patients and three Hawley patients showed small decreases in overbite of about .5mm each. No patient in either group developed anterior open bite.

## **Discussion**

Various clinicians have reported individual cases of anterior open bite in patients wearing Essix retainers, probably because of the posterior disclusion caused by the anterior contact of the Essix material (Fig. 2). In the present study, with patients wearing the appliances only at night after the first four weeks, there were no such cases. The number of patients with minor decreases in overbite during retention was similar to that of the Hawley group.

It has also been claimed that Essix retainers are more easily lost than traditional appliances because they are transparent. In this study, the number of Essix patients who lost their retainers was not significantly greater than the number of Hawley patients who lost theirs. However, one way to reduce the likelihood of an Essix retainer being lost is to add a colored stripe along the lingual edge of the appliance, making it more visible when out of the mouth.<sup>1</sup>

Another possible disadvantage of Essix retainers is that they may wear out and need to be replaced at least annually. We did not need to remake any retainers during the six-month study period, but several did become perforated or cracked over the subsequent six to 12 months. The manufacturer claims that the durability of the material has recently been improved.

## **Conclusion**

When Essix retainers are used as recommended, they do not appear to be any less effective than Hawley retainers in maintaining orthodontic corrections. The Essix patients in this study did not show any increased tendency to develop anterior open bites. Essix retainers were somewhat more likely than Hawley retainers to be lost, but this finding was not statistically significant.

If patients and clinicians keep in mind that replacements may be needed as Essix retainers age, these appliances can serve effectively as alternatives to traditional Hawley retainers. □

## **FIGURES**

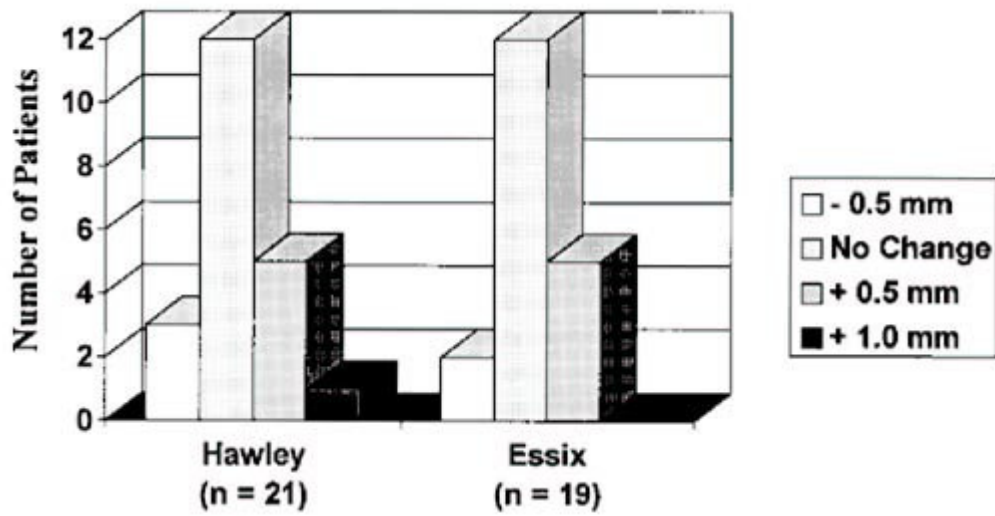


Fig. 1 Comparison of changes in overbite during six months of retention.



Fig. 2 Posterior teeth are discluded when Essix retainers are worn (right).

## TABLES

**TABLE 1**  
**COMPARISON OF CAST MEASUREMENTS (MM)**

	Hawley Retainers		Essix Retainers	
	Mean	S.D.	Mean	S.D.
<i>Maxillary Irregularity Index</i>				
Pretreatment	3.0	2.8	1.9	1.4
Post-treatment	1.0	1.2	0.3	0.5*
Post-retention	1.3	1.4	0.4	0.5*
Six-month change	0.2	0.5	0.1	0.2
<i>Mandibular Irregularity Index</i>				
Pretreatment	3.0	2.2	3.9	2.2
Post-treatment	0.8	0.7	0.4	0.6
Post-retention	1.1	0.7	0.6	0.7*
Six-month change	0.3	0.4	0.2	0.3
<i>Overbite</i>				
Post-treatment	2.0	0.8	2.1	0.5
Post-retention	2.1	0.9	2.1	0.6
Six-month change	0.1	0.4	0.1	0.3
<i>Overjet</i>				
Post-treatment	2.2	1.2	2.0	0.6
Post-retention	2.1	1.1	2.0	0.6
Six-month change	0.1	0.5	0.0	0.5

\*Differences between means are statistically significant at or below the .05 level.

### Table. 1

### REFERENCES

- 1 Sheridan, J.J.; LeDoux, W.; and McMinn, R.: Essix retainers: Fabrication and supervision for permanent retention, J. Clin. Orthod. 27:37-45, 1993.
- 2 Sheridan J.J.: The Editor's Corner: The three keys of retention, J. Clin. Orthod. 25:717-718, 1991.
- 3 Little, R.M.: The Irregularity Index: A quantitative score of mandibular anterior alignment, Am. J. Orthod. 68:554-563, 1975.

### FOOTNOTES

- 1 Raintree Essix, Inc., 1069 S. Jeff Davis Parkway, New Orleans, LA 70125.