Frequency of Relining Procedures During the Maintenance Period of Removable Prostheses: An Experiential Report

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This retrospective report describes an individual prosthodontist's views regarding clinical factors that presumably influence the frequency of relining procedures (FRP) during the maintenance period of removable prostheses. Patient selection was composed of 60 removable prosthesis-wearing individuals who had been clinically monitored and maintained at 3–month intervals for periods ranging from 5 to 25 years. The FRP was designated as the dependent value, and the number of occlusal supporting areas, number of remaining teeth, sex, and age were designated as independent values using linear regression analysis ($P < .05$). Factors influencing the FRP were the number of occlusal supporting areas and patient age; the period between relining procedures increased as occlusal supporting areas and age increased. *Int J Prosthodont 2014;27:151–152. doi: 10.11607/ijp.3799*

Prosthodontic treatment seeks to preserve the integrity of the supporting hard and soft tissues while restoring oral function, hence the need for periodic maintenance protocols.[1] These include scrupulous monitoring of the precise fit of the denture base and the prescription of relining procedures to ensure sustained and proper support of denture-bearing areas.[2] However, documented clinical protocols for determining how often relining procedures are needed still require clarification.

This retrospective report addressed two considerations for patients wearing removable dentures: *(1)* factors that appear to influence the frequency of relining procedures (FRP) and *(2)* considerations that determine timing for prosthodontic interventions or intervals between maintenance procedures.

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Materials and Methods

A convenience sample of 60 patients who provided their informed consent for participation in this study were treated with removable prostheses at a university dental hospital. All of the patients' complete dentures, overdentures, and partial dentures were provided at least 6 months after teeth extraction and maintained by one prosthodontist (YM). Postinsertion recall maintenance was performed every 3 months and continued for a minimum period of 5 years and a maximum of 25 years. At each maintenance visit, the periodontal condition of the remaining teeth, denture base fit, and occlusion were examined. Either direct or indirect relining procedures were performed whenever the same prosthodontist's evaluation judged the retention and stability of the prosthesis to be compromised. The mean interval between relining procedures during the observation period was calculated to determine the FRP.

Multiple linear regression analysis was performed in which FRP was designated as the dependent value while age, sex, number of remaining teeth, and number of occlusal supporting areas according to the Eichner Index at the commencement of maintenance were designated as independent values ($P < .05$).

Results

The mean FRP was 27 $\pm$ 20 months (range, 0 to 114 months). As shown in Fig 1, the FRP estimated from the interval increased as the number of occlusal supporting areas decreased. The mean interval was

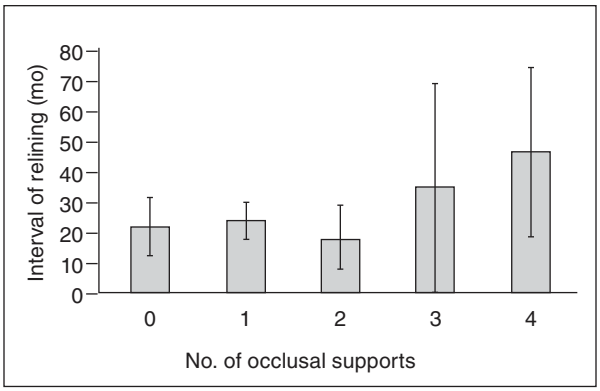

Fig 1 Mean interval of relining according to number of occlusal supports.

Table 1 Multiple Linear Regression Analysis for Relining Interval

Independent variable*	B	SE	β	*P*	Variance inflation factor
Age	−0.482	0.173	−0.281	.007	1.123
Sex	7.384	4.031	0.174	.071	1.005
No. of teeth	−0.233	0.399	−0.085	.560	2.347
Occlusal support	5.180	1.896	0.399	.008	2.371

Dependent variable = reline. B signifies the standardized partial regression coefficient, which indicates the relative importance of each variable. Multiple R = 0.529, R^2 = 0.383, $P < .001$. SE = standard error.
*Age, number of teeth, and number of occlusal supports were used as continuous variables. Sex: female = 0, male = 1.

approximately 20 months without support and 45 months with four support areas.

According to the linear regression analysis, the significant factors influencing FRP were the number of occlusal supporting areas and age. As the occlusal supporting areas and age increased, the interval between relining procedures increased (Table 1).

Discussion

Postinsertion prosthodontic maintenance is essential for preserving optimal oral health regardless of the type of prescribed treatment.[1] Removable prostheses require an accurate fit between the denture base and the underlying soft tissues to preclude adverse loading of both hard and soft supporting tissues.[2]

Residual ridge resorption (RRR) associated with tissue-borne prostheses is caused by anatomical, biologic, and mechanical factors.[3] It has also been reported that the number of occlusal support areas may be related to mechanical factors causing RRR, with age-related biologic factors acting as co-contributors.

Clinical observations from this particular patient case history series suggest consideration of the following strategy to reduce the need for relines. Prolonged maintenance of stable occlusal support by retaining teeth roots as overdenture abutments is recommended, even if their current crown-to-root ratio is not favorable.[4] Alternatively, stable occlusal support areas can be achieved by placing implants underneath the denture base, especially in unsupported distal extension areas of removable partial dentures.[5]

Results of this study also suggest that maintenance should be carried out within a shorter time interval for zero to two occlusal supporting areas, while it can be longer for three to four occlusal supporting areas or in older patients.

This case series report understandably permits only limited conclusions, since the employed evaluative criteria were the clinician's personal and unvalidated ones, which are not necessarily reproducible. They do, however, reflect traditional and globally employed protocols of clinical evaluation and maintenance procedures. Moreover, they reflect a conventional experiential approach to seeking optimal maintenance of oral tissues health in patients wearing removable prostheses. Prospective, long-term clinical studies with objective and validated evaluation methods are needed to robustly address long-term and optimal maintenance of removable tissue-borne prostheses.

Conclusion

Within the limitations of this report's study design, it may be suggested that FRP is closely related to the number of occlusal supporting areas and age. The experientially based observation suggests that when the occlusal supporting areas and age increase, the time-dependent period between relining procedures also increases.

Acknowledgment

The authors reported no conflicts of interest related to this study.

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