

Let's Give Dentures Another Chance!

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Abstract

In a complete denture patient, the supporting tissues and the prosthesis are vulnerable to time-dependent changes. The need for maintenance to keep pace with these changes necessitates a regular follow up. However, in a developing country like ours, it is not unusual to find patients either delaying or completely avoiding these follow ups citing various reasons. Often, a new prosthesis is recommended in these situations without considering the prospect of relining and rebasing. This clinical report presents a scenario where one of these maintenance therapies was undertaken to improve the fit and function of the complete denture.

Key words: Complete denture; Maintenance; Rebasing; Relining

Introduction

On an average, the life span of a set of complete denture fabricated in university settings is 10.1 years.¹ A lot can happen to these dentures and the underlying supporting tissues within that time frame which may go unnoticed because of the acquired neuromuscular adaptation over a long period of time.^{2,3,4} Changes in the denture bearing area resulting from the bone resorption and the wear and tear of the prosthesis necessitates timely follow up and maintenance or at times even require a new denture.^{5,6,7} However, for many of these prostheses, replacement is unnecessary and can be managed by refitting the impression surface, which can be achieved by relining and rebasing.

As defined by The Glossary of Prosthodontic Terms, reline is “the procedures used to resurface the intaglio of a removable dental prosthesis with new base material, thus producing an accurate adaptation to the denture foundation area.”⁸ Likewise, the term “rebase” is defined as “the laboratory process of replacing the entire denture base material on an existing prosthesis.”⁸ Depending on the extent of modification or replacement required on the denture, reline and/or rebase can be done. A rebase provides potential benefits of altering the denture architecture as a whole which can influence vertical dimension, occlusion, phonetics and functionality of the dentures in addition to providing a close adapting denture bases opposing the mucosa which can be achieved by a reline procedure alone.^{9,10}

There are numerous techniques described in the literature for both relining and rebasing; each with possible benefits and drawbacks.¹¹ This clinical report describes a unique situation where rebasing had to be done for a patient for reasons other than indicated conventionally.

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Case Report

A 58 years female patient visited the Department of prosthodontics and maxillofacial prosthetics, Peoples dental college and hospital, Kathmandu with a chief complaint of loose upper denture. The loose denture was supposedly delivered by one of the students, less than a year ago as part of the prosthodontic exercise. Her previous records stated that the dentures were acceptable on delivery.

On evaluation of the upper denture, there was lack of retention but acceptable stability. The extension was acceptable but not optimum with border inadequacies around the distobuccal area bilaterally. The posterior palatal seal was compromised. The existing vertical jaw relation was satisfactory as verified with the phonetics and physiologic rest position techniques. The centric occlusion was consistent with centric relation with no uneven occlusal contact. The patient was satisfied with the overall esthetics. On examination of the denture bearing area, there were no pathologic changes.

The dentures were removed and evaluated. The palatal vault of the upper denture's tissue surface was a bit "too smooth", features not complementing with her existing anatomy. In addition there was a small crescent perforation on the palatal surface. (Fig.1) On further inquiry, she stated that she had adjustments done on the borders and the tissue surface of the upper denture with sandpaper on numerous occasions due to discomfort. Interestingly, all these adjustments were done by herself. She validated her actions by saying that she was away in a distant village and it was impractical reporting to the hospital "just for the adjustments".

We proposed for rebasing of the upper denture that was accepted by the patient. The undercut on the intaglio surface was relieved, the border of the denture was reduced by 2 mm uniformly except for the posterior palatal seal area and the

perforation was sealed with wax. Subsequently, border molding was done with green modeling plastic impression compound and relief holes were made on the anterior part of the palate. The existing centric occlusion was used as a means to seat the denture during the final impression with zinc oxide eugenol paste.

Beading and boxing was done and dental stone was poured to obtain a master cast. (Fig.2) The master cast with the denture in place was indexed and mounted on the upper member of the articulator. After the mounted plaster had set, petroleum jelly was applied over the occlusal surface of the teeth and the palate. Fresh mix of dental plaster was placed on the lower member of the articulator and closed, making sure that the occlusal surface of the teeth just penetrated the plaster to about 1-2mm. (Fig.3a,b) The second mix of plaster was allowed to set following which the upper and lower member were separated. The denture was then carefully removed from the master cast and all traces of impression were removed from the denture. The major part of the denture base was trimmed leaving just a narrow horse-shoe of old denture acrylic resin holding the acrylic teeth together in one block. The teeth block was seated over the indentations on the lower member and secured with sticky wax. (Fig.4) The space between the master cast and teeth was waxed to the proper thickness and contour (Fig.5a,b), followed by denture processing that was carried out conventionally with heat cure acrylic resin.

Lab remounting of the polymerized denture was done to correct occlusion errors. Thereafter, the denture was trimmed, finished and polished. On delivery, the retention of the denture was remarkably improved and the patient was satisfied with the outcome. Minor occlusal corrections were done on subsequent follow up and the patient education and motivation was reinforced.



Figure 1: Self adjusted palatal surface of the maxillary denture



Figure 2: The denture and the master cast (not separated) ready for mounting on the articulator

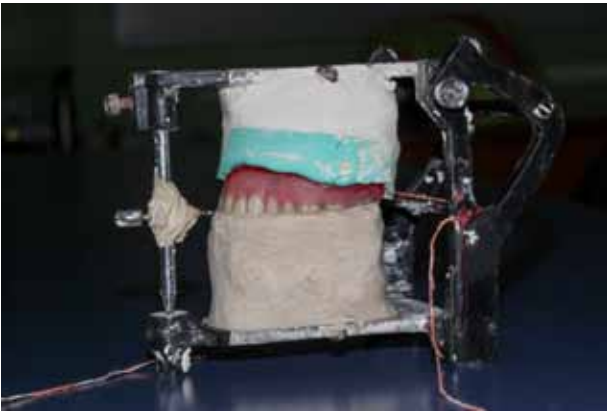


Figure 3: (a) The occlusal surface of the maxillary denture teeth making indentations on the plaster on the lower member
(b) Occlusal index formed on lower member of articulator



Figure 4: Denture base has been ground close to the teeth leaving only narrow horseshoe of acrylic resin holding the arch of teeth



Figure 5: (a) The space between the denture teeth and the cast
(b) The denture teeth waxed to the proper thickness and contour to the cast

Discussion

Maintenance therapy holds the key to a long-term survival of a complete denture. Maintenance in the form of relining and rebasing can be undertaken to avoid unnecessary replacement of the denture by a new one. From a patient perspective, it offers a relatively inexpensive alternative and avoids the necessity of refabrication that demands substantial time.

In this particular case, rebasing was considered rather than relining considering the magnitude of observed changes in the denture. In addition, there is always some degree of warpage associated with strain release from the old denture base on subsequent processing during relining which can be avoided by rebasing.¹² However, unlike the established rationale for rebasing, it was undertaken to compensate for the aggressively adjusted denture surface by the patient herself. As described by Ortman, there were number of attempts made by the patient to localize the offending area but without much success, eventually over relieving the denture and compromising retention.¹¹ Fortunately, it was repairable and there was no tissue pathology associated.

For the purpose of rebasing, articulator method was used for laboratory procedure in this case. A simple three mean value articulator can be utilized in this technique that is routinely

available in any set up, is economical and a feasible alternative to Hooper duplicator.

Conclusion

Decision to maintain a denture should always be considered prior to remaking a new one unless indicated. This especially holds true in a developing country like ours where the burden of additional costs and appointments associated with a new denture fabrication can offset the motivation of patients from seeking treatment at all.

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