

# Effect of Polished Surfaces of Lower Complete Denture on Its Stability

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## Abstract

The mandibular denture is more likely to be displaced during Function than the maxillary denture. This situation is more pronounced with bone resorption. An impression technique for the polished surfaces of the denture that comes in contact with lip, cheek, and tongue was evaluated. Comparison was done with a polished surface denture and a denture made of conventional method of arbitrary carved surfaces. The study was carried out on 18 patients and the results proved that patients were more satisfied by the polished surface denture

## Keywords

Polished surfaces, Stability, Retention, Mandibular denture

## Introduction

Complete denture construction is one of the most challenging work in dentistry. The most common complaint of elderly patients is the loose lower denture. During function like chewing, speech etc the lower denture dislodges. It is a major source of embarrassment to these patients. Psychologically also they are affected by this problem. In order to achieve retention and maintain stability, with acceptable level of function, many impression making techniques and occlusal concepts have been mentioned in the literature [5] and proved to work very well to achieve the above goals, yet satisfactory results are not always been established

The retention and stability of a denture in part is due to the exact and intimate contact between the denture base and the underlying structures with good peripheral seal secured by good impression making and with good occlusion, and with the presence of good healthy ridge. On the other-hand the greater the ridge loss (resorption) the smaller the denture base area and the less is the positive influence on retention and stability, leading to a low success rate of acceptably function denture.

The first surface is the impression surface, the second surface is the occlusion surface and the third surface is the polished surface or external surface of the denture, which is in contact with cheeks, lip, and tongue. Sir Wilford Fish [1] has described a denture as having three surfaces with each surface playing an independent and important role in the overall fit, stability, and comfort of the denture

Two common dental laboratory practices that are detrimental to the dentures are to overwax the base in thickness and then grind in the vertical grooves and produce the final contour and thickness by reducing bulk in the processed denture. The laboratories also reduce the desirable bulk at the flanges to produce thin lightweight

dentures. Overwaxing and grinding [6] away large portions of acrylic can cause undesirable stress and warpage of the denture during these procedures. Undercontouring and thinning of base causes excessive dimensional changes during curing, leaves minimal bulk for finishing and polishing and makes the denture weak and prone to early fracture in function. The most desirable procedure is to carve the wax denture pattern as exactly as possible to the final shape and bulk desired so that only minimal finishing and polishing are required. The idea of incorporating the polished surface of the denture as an aid to increase stability has been mentioned in the literature [5] and it is not a new concept, rather than the forgotten one in the practical application. Fish has recommended that the polished surfaces of the denture should be a series of inclines so that the pressure from muscular activity will retain the denture. Matthews et al [3] suggested that the correct shape for the polished surface of the mandibular denture was that developed by the action of the musculature related to the denture. Murphy [4] has published details of a technique by which the polished surfaces are molded to accommodate the adjacent soft tissue during functional movement.

## Materials and Method

A total of 18 patients were selected for this study in the Department of Prosthodontics, Dental College, Azamgarh. Out of these 11 were Male and 7 were Females. The age group selected was between 55-65 years and most of the patients had resorbed ridges

ranging from moderate to severe. All of them were unsatisfied with the lower dentures because of poor retention and stability.

Preliminary, final impressions and centric jaw relation were all carried out by conventional method. Two sets of trial dentures were made. One set was made on a duplicate cast. At try in stage both sets of dentures were examined for vertical dimension, centric relation and esthetics. One set of denture was sent to laboratory for carving.

The following procedure was followed with the second set for making the polished surfaces impression, for the lower denture by removing enough amount from the wax labially, buccally and lingually to create a space for the impression material. The teeth were coated with Vaseline to ease the removal of the impression material that might cover it. Zinc-oxide impression material was used to register the function of the surrounding tissues (lip, cheeks, tongue). The zinc-oxide paste was mixed and loaded first on the labial and buccal surfaces of the trial denture. With the upper trial denture in place, the lower denture is replaced in the mouth, the patient is asked to close in centric and instructed to do normal movements of swallowing more than one time while the Zinc-oxide is setting to register the functional movement of the cheek and lower lip. When the material is set the trial denture is removed from the patient's mouth, the excess material is removed from the teeth and the same procedure is repeated for the lingual surface of the trial denture to register the action and movement of the tongue in swallowing.

After cleaning the lower denture is ready for flasking without any alteration to the impression surface. Moreover, the laboratory was instructed not to polish these surfaces so that anatomical landmarks (lips, cheeks, tongue) in the concave and convex shapes are left unharmed. Other set was processed conventionally.

The patients were given both sets of dentures without their knowing which set was to be used first. The patient was asked to use one denture for first week and other denture for the second week. The follow up of these patients was done after two months. Surprisingly the patients stopped using the conventional denture but kept using the polished surface denture as it exhibited more stability and retention than conventional denture.

Patient complained of ulcers and redness when using the conventional denture. Moreover they required more chairside time for adjustments. There were no such problems with the polished surface denture.

## Conclusion

In conclusion as a result of this study we can assume the importance of polished surfaces of denture. The waxing procedure is often neglected in the complete denture fabrication causing problems of stability and retention in lower denture. The carving procedure is done arbitrarily leading to bulky unstable dentures. The polished surface denture can prove to be an effective option in making the patients with unstable lower dentures more satisfied.

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