CASE REPORT

Duplication of Dentures: How well Dentures can be copied using different techniques

Anand Sekhar¹, Dr. Saldanha Sharon J.R.², Dr. Thilak B Shetty³, Dr. Sujatha Deshmukh⁴

¹Intern
²MDS, Associate Professor
³MDS, Professor
⁴Tutor
Department of Prosthodontics
Manipal College of Dental Sciences, Mangalore,
Manipal University, INDIA

Corresponding Author
Dr. Saldanha Sharon, MDS
Associate Professor
Department of Prosthodontics
Manipal College of Dental Sciences
Manipal University
Mangalore-575001
E-mail: sharon.saldanha@manipal.edu
Phone: +91-824-2428716 Extn. 5661

Introduction
Elderly patients, who have been wearing complete dentures for several years, may find it difficult to adjust to a new prosthesis. One treatment option is to provide the patient with some esthetics of the previous denture by duplicating his/her old dentures. The duplicate dentures attempt to reproduce those aspects, that the patient is satisfied with for example, the polished surfaces of the denture, position of the teeth and the arch form, while selectively improving those aspects with which the patient and clinician feel the need for improvement. The original dentures provide valuable information that can be used to increase the success of the patient’s adaptation to the new dentures.

Adam drew attention to the problem of replacing old dentures and the difficulties which so often ensued. Several techniques for duplicating dentures have been developed and described over the past 50 years. These techniques offer considerable advantages to both the patient and the clinician, as they save time and money and usually ensure satisfactory results. For a denture to be considered for duplication, it must be physically and esthetically acceptable and also have adequate vertical dimension of occlusion and centric occlusion. The dentures may be duplicated entirely in wax, but since wax can be easily distorted, they may not remain stable during the subsequent laboratory and clinical procedures. Clinicians have a preference for duplicate dentures with a stable base where wax has been used to duplicate the teeth and polished surfaces. The first technique in this report describes a simple and an inexpensive procedure with which an existing complete denture was duplicated for the fabrication of a new prosthesis. This technique provides a stable base of thin correctly adapted shellac base with teeth and polished surface made in wax. It allowed desired changes to be made easily, aid in removal of the denture base at the boil-out stage of flasking, and provided maximum space to position the denture teeth. The second technique involved a variety of materials; from auto polymerizing acrylic resin to flexible mold materials.

Abstract
Many of the elderly encounter a number of barriers to obtaining dental care; some of them include immobility due to one or more chronic disorders and cognitive dysfunction. Traditional techniques for fabricating complete dentures commonly require number of visits. Elderly patients who have been wearing the same dentures for years may find it difficult to adjust to a new prosthesis. Duplicating techniques offer considerable advantages to both the patient and clinician; they save time and money and usually ensure satisfactory results. This case report describes two techniques that illustrates clinical and laboratory procedures for fabricating new dentures for a patient by duplicating existing complete denture.

Access this Article Online
www.idjsr.com
Use the QR Code scanner to access this article online in our database
Article Code: IDJSR 0142

Quick Response Code
Case Report 1
A 65-year-old female with a complaint of ill fitting (loose) upper denture and missing lower teeth was referred to the department of Prosthodontics for evaluation and prosthodontic rehabilitation. The patient’s chief complaint was replacement of her missing lower teeth and upper complete denture. The patient was satisfied with the esthetics of her upper existing complete denture.

A review of the medical history revealed that the patient was hypertensive since past 10 years and was currently being treated with medications prescribed by her physician. A review of the dental history revealed that the patient had been edentulous for approximately 5 years and was a denture wearer from past 5 years.

On oral examination, well-formed edentulous upper and lower ridges were found. Observations revealed that the maxillary denture was lacking adequate retention. Dentures were esthetically satisfactory but anterior teeth were not evenly positioned.

The patient wanted to get a new denture with enhanced retention and stability. The patient demanded the esthetics of the upper denture to be the same as in the previous. So a procedure was planned to fulfill all her requirements.

At the first clinic visit mandibular primary impression was made with alginate (Zelgan Plus Dentsply India Pvt Ltd). The patient’s maxillary denture was taken from her for an hour, in order to duplicate the polished surface and the tooth position of the denture. The denture was soaked in a calculus/stain remover solution for 15 minutes and was then brushed with soap and water.

LABORATORY STEPS INCLUDE:
- Two wax sprues were attached at the distal extension of the denture base. (Fig 1)
- Two impression stock perforated trays were used as molds.
- Irreversible hydrocolloid alginate was loaded in one tray. The polished surface of the denture was embedded in alginate and seated until the material was almost at level with the periphery of the denture. Alginate was trimmed just below the denture periphery. This created a flat border for material around the denture. When the alginate set, three locating grooves were cut, one anteriorly and one each buccally.
- The second tray was then filled with a second mix of alginate (fluid viscosity) to obtain a record of the impression surface and the two trays were closely approximated. When set, the two trays were separated and the denture removed and returned to the patient. (Fig 2)
- Transfer Base plate (Supernal Base Plate, SD Dental Corporation) was fabricated for the upper arch. (Fig 3)
- Impression trays were reassembled and held together with adhesive tape and rubber bands. (Fig 4)
- Molten wax was then poured into one of the sprue holes until it flowed out from the other. This was then left to cool. When set, the replica denture was retrieved from the mold, the sprues, and rough areas were trimmed.

At the second clinical appointment border molding for mandibular arch was done with low fusing green stick compound (DPI Pinnacle) to obtain adequate retention and stability. Final impression was made using zinc oxide eugenol impression paste (DPI Impression Paste).

At the following appointment orientation and vertical jaw relation was recorded. Maxillary occlusal plane level of the wax replica needed adjustment. Lower Occlusal rim was adjusted in the conventional manner.

Centric relation was obtained at the established occlusal vertical dimension. Upper trial denture base was used as a tray for final wash impression with light body material (Reprosil, Dentsply Caulk). Dental Stone Cast was poured. (Fig 4). The shade selection was done to match the shade of her original denture teeth. Occlusal rims were then mounted on the articulator in centric relation. The wax teeth of the replica denture were removed and replaced with new denture teeth of approximately same mold; (Fig 5) The new tooth arrangement followed the original pattern by placing the anterior teeth first and then followed by posterior teeth. (Fig 6). The denture bases were ready for the try-in stage.

At the next clinical appointment, trial was done using denture adhesive and the trial dentures were evaluated for speech and esthetics and minor adjustments were done. The casts were then dearticulated.

In the following laboratory step the duplicated maxillary wax denture base along with the lower trial denture were replaced by heat cure resin (Trevalon Denture Base Material, Dentsply) processed in the conventional manner.

At the next clinical appointment, the dentures were inserted into the patient’s mouth. (Fig 7) The post insertion instructions were given to the patient, followed by recall appointment.

Case Report 2
A 74-year-old male patient with a complaint of fractured lower denture visited the department of prosthodontics for evaluation and repair.

A review of the dental history revealed that the patient had been edentulous for approximately 10 years and had been rehabilitated with a denture. Denture history reveals he has changed his dentures thrice before, due to repeated fractures of the lower dentures. On oral examination, well-defined edentulous upper and lower ridges were found. Dentures were esthetically satisfactory. The most
recent dentures had been inserted just a few months ago. It was decided to duplicate his existing dentures.

**STEPS INVOLVED:**

- Flasks slightly larger than the patient’s dentures into which an impression material was placed to record the external surfaces of the denture was selected.
- Wax sprues were attached to the border of the denture posteriorly as in case 1. (Fig 8)
- The flasks were filled with vinyl polysiloxane impression material of putty consistency (Reprosil, DENTSPLY Caulk) and the dentures were pressed into it so that the impression material extrudes almost flush with the periphery of the denture. Border of the impression material was notched at 3 points.
- Petroleum jelly was smeared to facilitate separation of the two halves of the mold. For the fitting surface, because of undercut the same putty material was used. Press this putty into the fitting surface so that it covers the remaining periphery visible above the borders and as well as fill the flask.
- When the impression material was set, the impressions of the fitting and polished surfaces were separated, dentures were removed along with the periphery wax sprues.
- Acrylic transfer base was fabricated on the impression surface replica.
- Exact teeth shade and mold was selected using the old denture. These teeth were then positioned into the negative replica of the Occlusal and polished surface of the denture. They were stabilized in position using fevikwik (Pidilite Industries Ltd.) (Fig 9&10) Carefully reunite the 2 halves and place sticky wax along the junction. Molten wax was then flown through one sprue hole till it flowed from the other sprue. Wax was allowed to set, after which the two halves were separated and the trial base was retrieved.

The trial dentures were evaluated using conventional clinical techniques. (Fig 11) The final impressions using "closed-mouth" technique was made using elastomeric impression materials. The impression technique was used to maintain the proper jaw and tooth relations during the impression procedure. The trial dentures were then flanked and processed in the conventional way. The third clinical visit was for delivery of the complete dentures.

**Summary**

In making complete dentures by a copying technique, it is necessary to decide not only the changes / restorations to be built into the new dentures but also the degree of accuracy required in copying. The first technique described caters to the need of majority of the patients and remain acceptable in terms of cost and convenience to the patient. This technique described has several advantages. Despite the general similarity with the method described by Duthie et al., the use of alginate for the impression stage is quick and convenient. The use of base plate as transfer bases was conducive in this situation, though acrylic has been preferable as they do not warp while in the mouth, and can form a rigid tray for the wash impression. The usage of base plate and acrylic resin which are easily available makes these techniques compatible enough to be used in a clinical setup. The first technique is totally cost effective and simple method when compared to other methods. Another advantage of these techniques are the use of stock teeth which have superior properties to those made in cold-cure resin. Most of all esthetics and comfort has been addressed that plays a predominant role in patients' acceptance of complete dentures. A follow up done for the first case after two years showed that there has been no post-operative complaints with the denture delivered and is as retentive as before and the patient is very well satisfied with her duplicate denture.

**References**


