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Original Research

A Three Appointment Technique for Denture Fabrication in Geriatric Patients

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ABSTRACT:

Introduction*:* Geriatric patients are one of the most difficult patients to treat in dental clinic. It is most difficult to fulfil their expectations especially if they are old denture wearers. Such patients often doubt the clinician's skill and compare new dentures with their old ones. Denture bearing areas of such patients may be compromised due to long term of edentulism and denture wearing, which further complicate their rehabilitation. **Aim**: To develop a three appointment technique for denture fabrication in geriatric patients using existing dentures and closed mouth functional impression technique. **Material and Methods:** Twenty geriatric patients having old dentures were selected as samples. New dentures were fabricated for them using their old dentures and closed mouth functional impression technique. Satisfaction level and masticatory capacity were analysed based on specific questionnaires and a verbal rating scale from 0 to 10. **Conclusion**: Compromised geriatric patients can be managed by appropriate clinical skills.

Key words: Geriatric prosthetics, closed mouth impressions, functional impressions, replacement dentures, dynamic impressions.

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INTRODUCTION:

Jamieson paraphrased "Fitting the personality of the aged patient is often more difficult than fitting the denture to the mouth". Many patients who request replacement of complete dentures are elderly, have been edentulous for many years and have poor denture bearing areas. This patient group is often intolerant of replacement dentures which are different from their previous dentures.[1]Such patients often doubt the clinician's skill and compare new dentures with their old ones. A duplication denture technique has the advantage of minimising the number of clinical appointments[2] but at the same time it reproduces the previous design faults if any, seldom restores changed facial form and cannot employ special impression techniques to enhance retention and stability.[3]

A conventional impression making method offers a more efficient way of producing maximum base extension which, in turn can offer maximum physical retention and stability. This is particularly important when existing dentures with under extended peripheries are supported over a poor denture bearing area.[1] The impression can be made in either open or closed mouth position. Open mouth method is more preferred because the operator can easily trim the muscle and see the movement. In closed mouth method, first the vertical relation should be determined in wax.[4] The tongue movement is stronger during occlusion when the mouth is closed simultaneously, and also there is no other power to disturb ridge when the jaw is closed in occlusal centric condition. Closed mouth technique in geriatric patients can produce good impression because the impression material is functionally moulded on the surface of basal tissue while making functional movements.[5] It permits the development of physiologic muscular border moulding. The impression can also record the soft tissues under pressure to achieve good outcome.

OBJECTIVE:

The present article describes an innovative treatment approach for geriatric patients who need replacement dentures. The procedure combines the final impression making and jaw relation record in one clinical

appointment using functional closed mouth impression technique with existing dentures.

MATERIAL AND METHODS:

Twenty patients in the age group of 60- 70 reporting in the department of dentistry for replacement of their existing dentures were taken into consideration. New dentures were fabricated for them using their old dentures and closed mouth functional impression technique. Satisfaction level and masticatory capacity were analysed based on specific questionnaires and a verbal rating scale from 0 to 10.

PROCEDURE

1. Existing dentures were evaluated in the mouth for undercuts, tissue contact, under or over extensions and vertical dimension.
2. The dentures (maxillary and mandibular) were prepared before taking the impression. The entire tissue surface was relieved by 2 mm. The borders were reduced 1 mm except the posterior border of the maxillary denture.
3. Escape holes not more than 1 mm, approximately 10 mm apart, were made in the midline of the palate in maxillary denture and retromolar pads and lingual flange in the mandibular denture. These holes provide escape ways for the final impression material and control of hydrostatic pressure built up in the denture during impression making.
4. A free flowing metallic oxide paste was mixed according to the manufacturer's instructions and uniformly loaded on both the maxillary and mandibular dentures. Inert oil can be added to increase the setting time of the paste. Mandibular denture was gently inserted in the mouth followed by maxillary and the patient was instructed to close in centric occlusion slowly.
5. The patient was asked to swallow three to four times at 10 second intervals while the final impression material was still in a mouldable condition. The patient was asked to forcefully protrude the lips and vigorously contract the buccinator muscle in between swallows. This procedure developed a registration of the denture space and a proper extension of the lingual flange of the finished denture. Moulding of the buccal border of the impression was also achieved during swallowing. The vigorous contraction of the buccinator muscle prevented overextension of the buccal borders. Forceful protrusion of the lips brought the mentalis and orbicularis oris muscles into action and was responsible for forming the labial part of the impression.[7]
6. The patient was instructed to border mould the material physiologically by producing *"000"* and "EEE" sounds while in centric occlusion.[8]
7. After the material had set, both the dentures were removed and checked for voids and surface irregularities. (Fig 1a)
8. Occlusal surfaces of both the dentures were reduced approximately 3 mm eliminating all the cuspal anatomy and wax occlusal rims (record blocks) of 4 mm height were constructed on top of them for jaw relation registration. (Fig 1b)
9. Vertical jaw relation was established in the conventional manner with the record blocks in the existing dentures.
10. Centric jaw relation was established in the conventional manner with zinc oxide eugenol paste after making grooves in maxillary occlusal rim and troughs in mandibular rim at the premolar-molar region and applying petrolatum in the grooves and troughs before centric registration.
11. Both the record blocks were removed from the patient's mouth and the patient was dismissed for a day (first appointment). Since petrolatum was applied, it was easy to separate the rims without damaging the index and reattach again at the same centric relation.
12. Both the record blocks were separated. Beading and boxing of each impression was done separately and then poured in dental stone in the usual manner. (Fig 2a)
13. After the stone had set, boxing wax was removed carefully and the master casts obtained were trimmed.
14. Existing denture with the record blocks were adapted over the respective master casts and both the occlusal rims along with their respective denture and master cast were reattached at the recorded centric relation using the grooves and troughs as a guide.
15. The whole assembly was then articulated. The old dentures with their occlusal rims were removed. New trial denture bases were fabricated over the articulated upper and lower casts with autopolymerising acrylic resin.
16. Occlusal rims were duplicated in irreversible hydrocolloid and made in modelling wax over the new trial denture bases. (Fig 2b)
17. Teeth arrangement was done in the usual manner over the new trial denture bases on the articulated casts. (Fig 2c)
18. Try in of the patient was done on the second appointment.
19. The denture was processed, finished and polished in the usual manner and delivered to the patient on the third appointment.

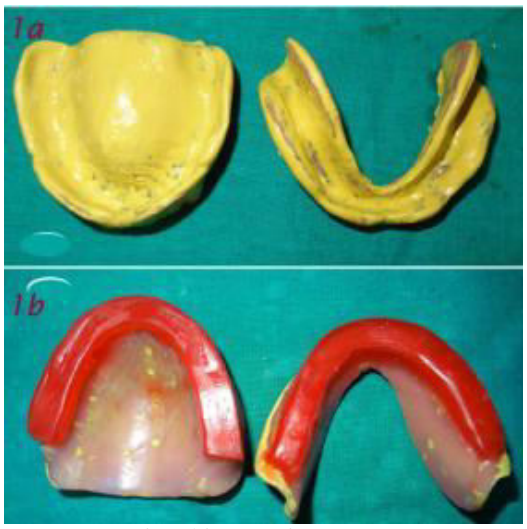

Figure 1: a- Functional impressions
b- Occlusal rims on old dentures to record jaw relations

Figure 2:
a- Beading and boxing of the mandibular impression
b- Duplicating of occlusal rim
c- Teeth setting on new trial denture bases

DISCUSSION

Most elderly patients who have worn complete dentures for many years have a poor denture-bearing foundation.[9] With the described technique, patients can benefit from closed mouth impression procedures which functionally corrects the bearing area of the original dentures, copying only the satisfactory features of old dentures and thus reducing the patient's effort to relearn the complex skills of new denture wearing. Clinical visits are also reduced. Geriatric patients who are habitual to wear their old dentures are psychologically satisfied as their used dentures are being employed to make the new dentures.

Dentures made from functional impressions differ characteristically from conventional dentures. The borders of the denture base from a dynamic impression are longer lingually and buccally in relation to the amount of extension obtained from conventional impressions[7] because the individual muscular pattern of each patient can be recorded to a larger extent than with conventional methods.

SUMMARY

The advantages of a functional type of impression have been discussed. The procedure described provides the patient with dentures that have been functionally moulded to provide maximum support and stability. Borders are developed with the utmost extension and can be considered a physiologic overextension. However, all important basic principles of complete denture construction are followed to achieve the best possible results. The greatest advantage of this technique is reduced number of clinical visits, while providing optimum treatment results. It is best suited for compromised elderly patients who need replacement dentures.

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