

Dual wash impression technique of recording impression for resorbed mandibular edentulous ridges

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ABSTRACT

Residual ridge resorption is most commonly seen in the mandible and its prosthodontic management is always a challenge to a general dentist. One of the methods of improving the retention, stability and support of such severely resorbed atrophic mandible is through proper impression technique. This article describes a modified putty wash technique for recording impression of atrophic mandible with polyvinyl-siloxane impression material.

Keywords: Dual wash impression, atrophic mandible, definitive impression, residual ridge resorption

INTRODUCTION

Residual ridge resorption (RRR) is a cumulative and irreversible process. RRR has multifactorial etiology and implicates both local and systemic causes. It is four times greater in the mandible than in the maxillae because of the smaller denture bearing surface which leads to increased stress than the maxillary ridge¹. Patient with resorbed ridge may have problems with loss of retention, such as speaking difficulties, pain and difficulty in mastication due to unstable denture. Surgical management requires patient co-operation and may not be feasible all times. Prosthodontic management of such severely resorbed ridges involves special impression techniques, arranging of teeth in neutral zone technique, use of non-anatomical teeth for the posterior teeth. Prosthetic management chiefly involves modification of the impression technique mainly to achieve stability. The main objective of impression in these conditions is the uniform application of pressure over the stress bearing areas, so that the force per unit area is reduced. McCord and Tyson advocated the use of admix impression compound for definitive impression^{2,3}. Tan et al advised a technique wherein impression was made with custom tray with window, and, fluid wax and polyvinyl-siloxane were used as impression materials⁴.

This article describes a modified dual wash impression technique for recording impression of atrophic mandible with polyvinyl-siloxane impression material.

TECHNIQUE

A 66 year old male patient reported to the department with completely edentulous maxilla and mandible with history of denture wearing for more than 10 years. On examination, mandibular ridge was atrophic (Fig.1) and was classified under American College of Prosthodontics (ACP) class IV⁵. The Impression technique utilised is as follows:

1. Mandibular preliminary impression was made with a stock tray. Tray adhesive was applied on the tray and allowed to dry for 10 minutes (Universal tray adhesive Zhermack, Germany). Preliminary impression was made using putty wash technique with condensation silicone (Zetaplus, Zhermack, Germany) in a stock tray (Fig.2).
2. Custom tray was fabricated for the mandibular ridge with self-cure acrylic resin (DPI-RR, Cold cure acrylic repair material, Mumbai) without a spacer (Fig.3). For the definitive impression, polyvinyl-siloxane impression material (Elite P&P, Zhermack, Germany) was used.
3. Tray extensions were verified and reduced two millimeters short of the sulcus and tray adhesive was applied on the tray and allowed to dry for ten minutes (Universal tray adhesive Zhermack, Germany).
4. Polyvinyl-siloxane putty material was mixed and placed all over the tray and in the borders and border molding was carried out by functional molding of the tissues (Fig.4).
5. Low viscosity polyvinyl-siloxane (Elite P&P, Zhermack, Germany) impression material was used for recording the wash impression.
6. Relief was created over the crest of the ridge by removing the impression material in that area (Fig.5).
7. Another layer of low viscosity polyvinyl-siloxane impression material (Elite P&P, Zhermack, Germany) was used for recording the final wash impression (Fig.6). The impression was disinfected with 2% glutaraldehyde solution (Korsolex, Raman and Weil Pvt. Ltd, India). Beading and boxing was done and the master cast was poured with Type III dental stone (Fig.7).

Further steps in fabrication of the complete denture were carried out in a conventional manner.

DISCUSSION

Management of resorbed ridges is always a difficult task especially in the mandible because of the anatomical limitations. Surgical management involves vestibuloplasty and ridge augmentation procedures. But they are invasive, time consuming and requires patient co-operation.

Prosthetic management of resorbed mandibular ridges involves modified impression techniques mainly to obtain maximum stability and support with sufficient retention. Different techniques and materials were described by various authors in the literature^{2,3,4,6,7,8}. Admix compound impression material used in previous techniques may have the disadvantage of discomfort produced by the heat used for manipulation⁹. In this technique, polyvinyl-siloxane impression material provides the advantage of dimensional accuracy, comfort, modifiability if necessary and multiple casts can be poured^{7,8}. Relief in the putty material in this technique helps in relieving the atrophic tissues and the dual wash impression with the low viscosity material helps in obtaining the mucostatic impression without applying undue pressure on the atrophic tissues. It is found that in a study conducted by Al Ahmed, low viscosity polyvinyl siloxane material exhibits least pressure¹⁰. A window can be created in the tray if the tissues are too flabby or displaceable. Dhananjay et al also proposed the two stage impression technique in atrophic mandible for uniform pressure distribution⁸.

SUMMARY

This technique allows for recording the atrophic mandible with uniform pressure and maximum accuracy to provide better stability and adequate retention.

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Fig.1 Atrophic mandibular ridge



Fig.2 Primary impression with Condensation silicone



Fig.3 Mandibular Special tray



Fig.4 First step in final impression with putty



Fig.5 Second step in final impression with crestal relief



Fig.6 Final wash impression



Fig.7 Master Cast