

THE DYNAMIC IMPRESSION TECHNIQUE  
FOR RESORBED RIDGES

## ABSTRACT

Resorbed mandibular ridge compromises the support, retention and stability of complete dentures. An impression procedure should be such that it gains maximum coverage. As osseous structures in resorbed ridges offer little possibility of retention and stability and also the muscle attachments are located near the crest of the residual ridge so dislocating effect is more. The simplest approach is to extend the denture base adequately for proper use of all available supporting tissues. To achieve this a good impression is required that could be accurately recorded in the impression by means of dynamic technique.

Key words: resorbed mandibular ridge, dynamic impression, tissue conditioner.

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## Introduction

Complete dentures are primarily mechanical devices but since they function in the oral cavity, they must be fashioned so that they are in harmony with the normal neuromuscular function. Residual ridge resorption is a complex biophysical process and a common occurrence following extraction of teeth. Ridge atrophy is most dramatic during the first year after tooth loss followed by a slower but more progressive rate of resorption thereafter. A definitive impression of an edentulous arch can be challenging when the residual ridges present are less than ideal<sup>1</sup>.

This case report described closed mouth impression

technique which uses tissue conditioner and final wash impression made with light body elastomeric impression material.

## CASE REPORT

A 65 years old male patient reported to the department of prosthodontics and crown and bridge, with Chief Complaint of loose lower denture posing difficulty in eating and speech. History of the patient revealed that the patient was edentulous for past 3 years and had been wearing dentures for 2 years. He got 2 sets of dentures made but was not satisfied with any of them. He complained that the previous dentures were loose and he wanted a solution for the same.

On intraoral examination it was found that the patient had completely edentulous maxillary and mandibular ridges with severely resorbed flat mandibular ridge (fig 1). Preliminary impressions of maxillary and mandibular arches were made with modeling compound impression material (fig 2). Primary casts were obtained and custom trays were fabricated. Border molding was done with type I low fusing impression compound (DPI Pinnacle Tracing Sticks) and final impressions made with zinc oxide eugenol impression paste (DPI impression paste) in conventional manner. Master casts obtained (fig 3) and temporary record bases were constructed and occlusal rims were fabricated. After establishing the vertical dimension of occlusion, lower impression was again made by using 2 applications of tissue conditioning material (Orthoplast Soft Liner), each application allowed to remain in mouth for 8-10 minutes (fig 4) and patient was instructed to close in the predetermined vertical dimension of occlusion and also patient was instructed to perform various functional movements (fig 5). After each application impression removed from mouth and checked for any denuded areas and the areas were relieved. A final wash impression was made with light bodied elastomeric impression material (Photosil light body polyvinyl Siloxane) (fig 6).

In this technique, a two step mandibular impression making was planned. The first impression of the mandibular arch with zinc oxide eugenol impression paste further enhanced the retention and stability. The bases thus formed are used for making second impression i.e dynamic impression which is more accurate. Further denture construction was done in conventional manner and denture was delivered to the

patient (fig 7). Satisfactory results were achieved with few corrections and the patient adapted easily to the dynamic denture.

#### Discussion

The success of every complete denture relies on the fulfillment of the three basic properties of retention, stability, and support<sup>2</sup>. The degree of muscular activity and the region to which the denture can be extended without displacement are important aspects of any impression technique. For individuals with an accentuated bone resorption, it is difficult to obtain good retention and stability of the complete denture due to the presence of muscular insertions near the ridge crest or border, which might cause muscular-induced displacement of the denture. In these cases, dynamic impression technique is highly recommended<sup>1</sup>.

In this particular case, the main aim of the impression procedure was to gain maximum area of coverage as osseous structures offered little possibility of retention and stability and also the muscle attachments were located near the crest of the residual ridge so dislocating effect was more. For these reasons, the range of muscle action, as well as spaces into which the denture can be extended without dislocation, could be accurately recorded in the impression by means of dynamic methods.

Dynamic dentures 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 a conventional impression<sup>3</sup>. Lingual anterior area is a very critical area for good border seal and retention<sup>4</sup>. Various functional



Fig 1- intraoral photograph of mandibular ridge



Fig 2-initial impressions



Fig 3- master casts



Fig 4-impresion with tissue conditioner



Fig 5- dynamic impresion made at predetermined vertical dimension



Fig 6- final wash impresion made with elastomeric impresion material



Fig 7- denture insertion

movements limit the flow of impression material in a downward direction but do not eliminate impression material that is located horizontally under the tongue. This material is retained and molded by the muscles thus, excluding dislocating effect in the sublingual region on the completed denture. With the dynamic impressions, the individual muscular pattern of each patient is recorded to a larger extent than with conventional methods. The advantages of dynamic impressions are: (1) avoidance of the dislocating effect of the muscles on improperly formed denture borders, and (2) complete utilization of the possibilities of active and passive tissue fixation of the denture. These advantages are the direct result of the impression material being shaped by the functional movements of the muscles and muscle attachments that border the denture base. Since functional activity of muscles and muscle attachments exclusively shapes the dynamic impression, the arbitrary elements of conventional methods are reduced<sup>3</sup>.

To provide a compatible base material for contact with dental model stone used for pouring the impression, final wash impression made with light bodied elastomeric impression material to provide a clean release of the cast material<sup>5</sup>. Because of the flow and viscoelastic properties of tissue conditioning material<sup>6</sup> the borders are molded well during functional movements, also the material is easily available, simple to use, less time consuming and pressure areas can be identified and can be corrected. The only disadvantage can be the cost of the material.

## Conclusion

Prosthetic rehabilitation of a patient with compromised residual ridge in a conventional manner is a difficult task. Modification in treatment procedure should be considered to fulfill the patient's functional demands. This technique recorded the maximum denture bearing surface area thus improving the retention and stability of the denture along with comfort and confidence in the patient.

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