

# Functional Impression for Hemimandibulectomy Cases: An Alternative Technique

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## ABSTRACT

The altered cast impression technique is preferred to derive maximum support from the residual ridge in the distal extension partial denture hemimandibulectomy cases. The traditional method is designed primarily for making a secondary impression of the ridge in the functional form to correct a master cast. These functional impression techniques are time-consuming and involve multiple steps.

This article describes a new clinical and laboratory technique in impression making. Emphasis is placed on recording the anatomical form of teeth and functional form of the residual ridge in an individual tray using two different impression materials eliminating secondary impression.

**Keywords:** Hemimandibulectomy, Mandibular prosthesis, Functional impression.

## INTRODUCTION

The management of hemimandibulectomy case is a challenge relative to rehabilitation following the surgical treatment as the soft-tissue defects compromise the denture stability, support and retention. A major factor to be considered in this regard is the support for the partial denture. If the supporting teeth or soft tissues are not used correctly and completely, subsequent mobility of abutment teeth and resorption of the residual ridge may be anticipated. The movement of denture base can be minimized by recording the tissue in functional form thereby reducing the undue tissue response.<sup>1</sup> Corrected cast impressions are suggested by some authors in all removable partial dentures in partial mandibulectomy cases<sup>2,3</sup> that include use of selective impression technique, fluid wax impression technique and materials such as modeling plastic, metallic oxide paste, fluid wax. A secondary impression made in custom tray attached to the framework only makes the definitive border control and tissue placement a bit easier. These procedures are rather time-consuming. Functional impression can also be made in an individualized full arch tray provided, the ridge is recorded under some loading. An alternative technique using two different materials in custom tray is described here.

## Technique

Diagnostic impression was made with irreversible hydrocolloid impression material and cast was poured (Figs 1 and 2).

After surveying, partial denture was designed on the diagnostic cast and custom tray was fabricated in the following manner. Two layers of base plate wax were placed on the



Fig. 1: Intraoral view of resected mandible

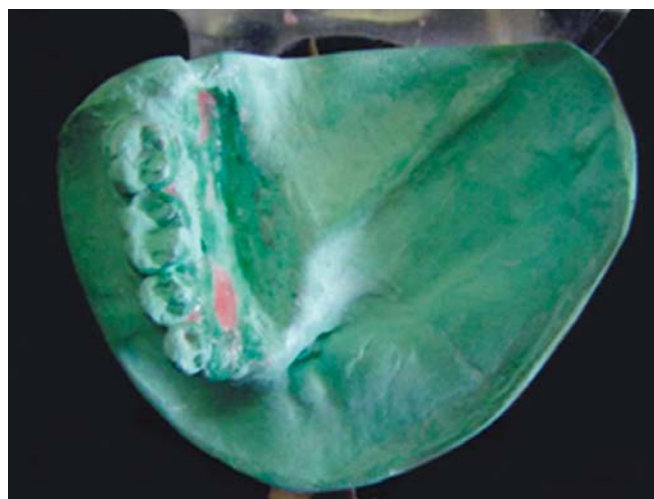


Fig. 2: Diagnostic cast

dentulous part as well as on the edentulous area. Nineteen gauge stainless steel orthodontic wire is bent into a loop and placed over the spacer. Such two loops were placed. These loops aid in support of the impression material. Windows were created on the right first molar for the orientation of the tray. Self-cure acrylic resin tray was constructed on the dentulous side. The loops were left open. Now the tray was finished and polished (Figs 3A and B).

Mouth preparations were done according to the treatment planning. The special tray was tried in the mouth. Adjustments were done.

Impression of the teeth was made with medium body Reprosil (Dentsply-DE) polyvinyl siloxane impression material. After the setting of the impression, the impression of the residual ridge was made using C-silicone high consistency, heavy bodied sta-seal f (Detax-dental Germany) special impression material. This material had prolonged setting time and smooth initial consistency that facilitated the functional border molding (Fig. 4A).

Cast was poured in type III dental stone (Fig. 4B). Further steps were carried out on the master cast itself.

## DISCUSSION

The usual principles of partial denture designs and fabrication apply to lateral defects of the mandible. With the understanding of the inherent problems associated with utilizing two different kinds of support; one basically rigid (teeth) and the other movable (soft tissue over the residual ridge), in hemimandibulectomy cases where bony support is minimal, the tissue bed is quite unyielding and is not easily displaced, capture of the buccal, labial, lingual functional contours can contribute greatly to the stabilization of the prosthesis.<sup>4</sup> In the technique described in this article, the impression of the teeth was made first in order to get the stability of the tray. This recorded the teeth in anatomical form. While making the impression of the residual ridge, the finger pressure was applied on the tray, while the heavy bodied sta-seal f is placed over the supporting loops. The tray is held firmly in its position. When patient makes the movements of the tongue, it molds the material to the functional form and the soft tissues were displaced under the heavy consistency material. However, because of initial soft consistency, the displacement was minimal and thus recorded the functional form of the ridge.



Fig. 3A: Modeling wax spacer with the retentive loop

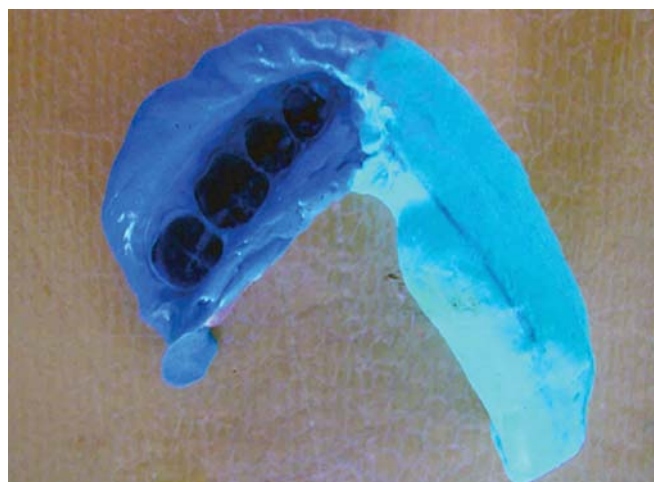


Fig. 4A: Impression of the teeth and residual ridge



Fig. 3B: The finished special tray



Fig. 4B: Master cast

The advantages of this technique are as follows: (1) Secondary impression was eliminated thereby segmenting of master cast was not required. (2) Maximum extension of borders within physiologic tolerance of bordering tissues. (3) Minimal displacement of tissues under the impression.

### **CONCLUSION**

The technique described a method of making a custom tray for resected mandibular cases and recording the teeth and the ridge in the same tray using two different impression materials under the finger loading. This method would save the chair time as well as laboratory time.

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