

## Mandibular Hollow Denture: A Clinical Case Report

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**Abstract:Background:** In highly resorbed mandibular ridge , rehabilitation of conventional complete denture is not always the best option. Modification in the impression technique or the denture is required not to trigger more resorption in the already resorbed alveolar ridge. In such case, light weight hollow denture is the preferred treatment option to slow down the risk of further ridge resorption.

**Materials and Method :** This article shows a simple technique to create a hollowness in the mandibular denture apart from the several techniques given in the literature, by using wire re-inforced suction tube wrapped with plastic cello-tape.

**Conclusion :** Wire re-inforced suction tube wrapped with plastic cello-tape can be used to create a hollowness in the mandibular denture to slow down the severe ridge resorption.

**Key Word:** Mandibular denture , Ridge resorption , Wire re-inforced suction tube.

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### I. Introduction

Residual ridges after loss of natural teeth undergo resorption, which leads to decrease in their size at varying rates in different individuals and in the same individuals at different times. Resorption affects the morphology of the alveolar ridges, leading to alteration in inter-alveolar ridge space as well as denture bearing area resulting in heavier complete denture because of the incorporation of more volume of denture base materials to cover the large restorative space due to increase inter-ridge distance.

The heavier complete denture trigger the resorption of the already resorbed ridge. So, to slow down the resorption of the already resorbed ridge, fabrication of hollow complete denture is the ideal treatment option for the elderly patients for prosthodontics rehabilitation.

### II. Case Report

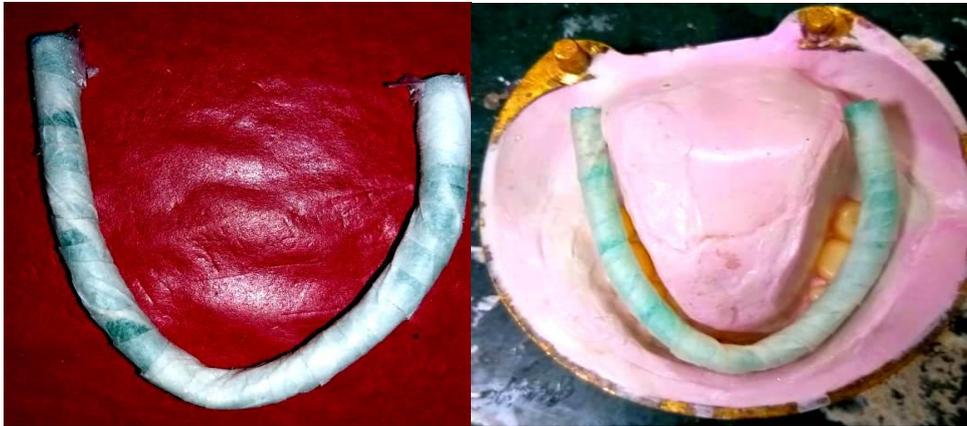
A 81 years old male patient reported to Department of Prosthodontics, with a chief complaint of difficulty in chewing due to loosening of lower denture. On enquiring about the past dental history, patient revealed that he had been edentulous for the past eight years and had been wearing the sets of denture for the past seven years. Medical history gives no relevant systemic diseases. On intra-oral examination, it was seen that his mandibular residual ridge was severely resorbed with increased inter-ridge distance.

The different treatment option was discussed with the patient keeping in mind the presenting clinical findings. He insisted for the fabrication of lower denture only as he said that the upper denture presently wearing does not have any complaint. On clinical examination his upper complete denture had adequate retention, stability, support, esthetics and phonetics. So, it was decided to rehabilitate only mandibular arch with new hollow denture.

### III. Procedure

Patient consent was taken and the steps of denture fabrication were carried out. Following the standard techniques for mandibular arch, started the primary impression, recorded using impression compound ( Y-Dents, MDM Corporation, LalKuan, Delhi, India. ) and poured it with dental plaster ( Type 2 model plaster ). After that , special tray were fabricated on the obtained primary cast using auto polymerizing resin ( DPI, Mumbai, India. ) and correction of extensions and smoothening of the periphery of the borders were done. Border molding were continued using the low fusing impression compound ( DPI Pinnacle tracing sticks, Mumbai, India. ). Secondary impression were made using ZOE impression paste ( DPI Impression paste, India. ). A denture base were fabricated using pink colour auto polymerizing resins ( DPI, Mumbai, India. ) made on the mandibular final cast. Maxillary and Mandibular relation was recorded and transferred to the semi-adjustable

articulator. Artificial acrylic teeth ( Premadent, Wazirpur Industrial area, Delhi, India.) were arranged and clinical try-in was done. After completed wax-up,flasking was done for dewaxing. After dewaxing , one part ( cope ) and the other part ( drag ) were applied separating media ( Pyrax Cold Mould Seal separating liquid, Uttarakhand, India) and dried. Took a good quality wire reinforced suction tube ( V Dent Enterprise, Ahmedabad , India. ) wrapped with plastic cello-tape and shaped accordingly into a lower ridge shape [ Figure 1 and 2 ].



**Figure no 1 and 2 :**Wire reinforced suction tube wrapped with plastic cello tape and shaped accordingly to the mandibular ridge shape.

On the dried cast ( cope part), a layer of heat cure polymerizing resin ( after mixing at dough stage ) were placed and on top of that a wire reinforced suction tube wrapped with plastic cello-tape in the shape of the residual alveolar ridge were kept carefully. Over the suction tube, another layer of heat cure polymerizing resin was placed all over it so that the whole of the suction tube is properly covered by heat cure polymerizing resins. Then the drag part of the flask was placed over the cope part properly and flasking was done by putting it inhydraulic pressure for bench curing and then heat cure polymerization procedure was done. After the curing, the suction tube was removed from the one end of the denture by pulling it out and the adequate sealed of the denture openings were done from where the suction tube was retrieved with the pink colour auto polymerizing resin. Excess was trimmed, finished and polished[ Figure 3 ].



**Figure no 3 :**Trimmed , finished and polished mandibular hollow denture where the opening ends of the denture were sealed with the pink colour auto polymerizing resin.

Then finally put to test by placing it in a bowl filled with water to check the lightness, hollowness and intactness of the denture[ Figure 4 and 5 ].



Figure no 4 and 5 :Floating test checking the lightness and intactness of the mandibular hollow denture.

#### IV. Discussion

Till now, many techniques have been described in the literature on how to create hollowness in the dentures and obturators. Fattoreet. al described the double flask technique for the obturator fabrication by adding heat cure polymerizing acrylic resin over the definitive cast and processing a minimal thickness of acrylic resin around the teeth using a different drag. Both the resin was attached using a heat cure polymerized resin.

Various techniques like Salt Lost Technique, Sugar Lost Technique, Pumice, Dental stone, Silicone putty, Cellophane wrapped asbestos, Modelling clay, etc., were used as spacer to create hollowness in the prosthesis. Some of the drawbacks of these techniques were the intersection area, increasing the chances of leakage after post insertion of the denture. The technique described in this article has many advantages over the previously described techniques for hollow denture fabrication, such as

1. Reinforced wire in the suction tube retained the shape and does not allow to move.
2. Total control of the material.
3. Easy retrieval of the suction tube from the denture.
4. Able to maintain the even thickness of the denture base material.
5. Less time consumption in creating the hollowness in the denture.
6. Easily available in the dental clinic.
7. Economical.
8. Simple method.

Disadvantage of this technique is the quality of the suction tube should be of a good one, poor quality suction tube will not be able to withstand the polymerization temperature during the curing of the denture in hot water.

#### V. Conclusion

An easy, economical, simple technique for the fabrication of hollow mandibular denture not to trigger the severely resorbed residual ridge has been described. The suction tube is used as a spacer, ensuring a uniform thickness and shape of the acrylic resin base to prevent leakage and deformation while providing the strength.

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