

Different Innovative Approaches for Rehabilitation of Patient with Severely Resorbed Ridges and Long Lip Length: Case Series

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ABSTRACT

Factors responsible for dentures are retention, stability, support and esthetics. But in the certain conditions such as long lip length or severely resorbed ridges with increased inter-ridge space, retention is a compromised factor. Severely resorbed ridges have various treatment options, but the weight of a maxillary denture is often a cause of dislodgement of denture. This article describes 3 case reports of a completely edentulous patient successfully rehabilitated with a hollow denture where a simplified innovative technique of fabricating a light weight maxillary denture was used.

KEYWORDS: Resorbed Ridges, Long lip length, Retention, Hollow denture

INTRODUCTION

Along with esthetic; physiological and functional variables are associated with successful conventional complete denture therapy.¹ Big challenge for a dentist is the rehabilitation of patient with severely resorbed ridges and long lip length. Severely resorbed maxillary edentulous ridges often leads to decrease support, retention and stability.^{2,3} Choice for rehabilitation can be implant supported overdenture and ridge augmentation but many a times the patient who reports with such a problem are geriatric patients. Such patients are having illness, economic problem and are also not interested in any kind of surgical methods. Conventional method is the cheapest procedure for them.⁴ It is not new to manage severely resorbed ridges in conventionally. In the past different materials such as dental stone, silicone putty or cellophane were used to create hollow cavity in the dentures.^{3,5,6} Dislodging factors for the maxillary denture are Weight and gravitational force. Hollow denture reduces the weight of the prosthesis.⁷

The aim of this article to represent different innovative approaches to simplify the laboratory procedures for preservation of denture bearing area and provides comfort to patients.

CASE REPORTS

CASE REPORT 1

A 60-year-old patient walked into Prosthodontic department, Chhattisgarh Dental college and research institute, Sundra-Rajnandgaon with a chief complaint of replacing missing teeth with the edentulous period for 5 years. On clinical examination, the maxillary ridge was severely resorbed. Upper lip was long and vertical dimension was also increased. Under extension, mandibular denture was seen with respect to dentiltingual flange area. Various treatment options available are Implant supported the complete denture, Conventional Complete denture and hollow maxillary complete denture. Due to financial problem, it was decided to fabricate a hollow maxillary complete denture. The patient also satisfied with the treatment modality as it was light in weight, inexpensive and non-surgical procedure.

Technique:

Upto the dewaxing stage, all the procedures were carried out by the conventional method. After dewaxing half of the heat cure Polymethyl methacrylate (**TREVALON**, **DENTSPLY**) in dough stage was positioned accurately over the dewaxed mould (Figure 1) and then salt crystals

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were placed over it (Figure 2). Remaining heat cure resin was packed above the salt crystal (Figure 3) and cured at 74 degree C for 8 hours. Three holes were made in the thickest palatal area of the retrieved denture (Figure 4).



Figure 1- Heat cure packing



Figure 2- Salt crystal placement



Figure 3- Final heat cure packing



Figure 4- Holes are made in polished surface

All the residual salt crystals were removed by flushing water with the high pressure syringe through the holes. After removal of all crystals, the escape holes were closed with self cured acrylic resin (TREVALON, DENTSPLY). Adequate seal was confirmed by immersing the denture in water (Figure 5). The dentures were inserted in the patient's mouth, and post-insertion instructions were given to patients like regarding hygiene, care and maintenance.



Figure 5- Hollow denture

CASE REPORT 2

A 55 year-old patient walked into the department of prosthodontics with a chief complaint of missing teeth. He had been edentulous for two years and had been wearing dentures for one year. Intraoral examination revealed a severely resorbed upper ridge so as an alternative the patient was treated with a hollow complete maxillary denture. Heat cured denture base fabrication was previously made with the heat cure Polymethyl methacrylate (TREVALON, DENTSPLY) (Figure 6). Till dewaxing all conventional steps were followed. After which heat cured acrylic was manipulated and when it reached dough stage, half of the heat acrylic was positioned over the dewaxed mould and the silicon putty (DUR LAB-SIL PUTTY, W + P Dental WILLMANN & PEIN) is mixed and placed over it (Figure 7) and cured at 74 degree C for 8 hours. Three small openings were made with a bur into the denture base distal to most posterior teeth & anterior region posterior to central incisors to remove the spacer (Figure 8). The silicon putty



Figure 6- Dewaxing stage



Figure 7- Silicon putty is placed

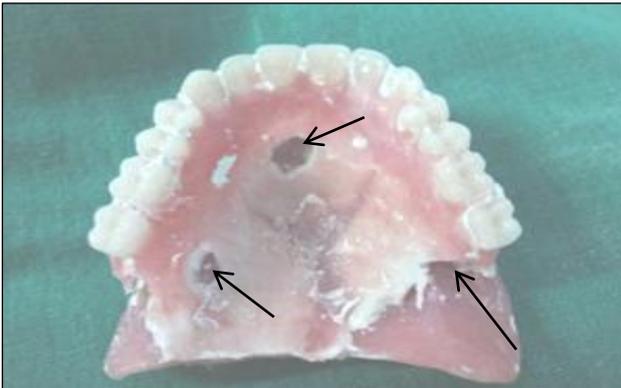


Figure 8- Holes are made in Polished surface

was then removed by scraping with a sharp instrument and the cavity was cleaned. Later, this cavity was closed with the autopolymerizing resin (**TREVALON, DENTSPLY**). The dentures were then finished and polished. The hollowness of denture was verified by observing the dentures float in water²(Figure 9).



Figure 9- Hollow denture

CASE REPORT 3

A 65-year-old patient walked into the department of prosthodontics with a chief complaint of pain due to inability to eat properly. He had been edentulous for two years and had been wearing dentures for two years. Intraoral examination revealed a severely resorbed maxillary ridge. Up to the dewaxing stage, all steps were same as in conventional denture. After dewaxing half of the heat cure Polymethyl methacrylate (**TREVALON, DENTSPLY**) in dough stage was positioned accurately over the dewaxed mould (Figure 10) and modelling wax

placed over it (Figure 11) Remaining heat cure resin was placed over modelling wax and cured at 74 degree C for 8 hours. Two small openings are made with the bur in more distal part of posterior teeth, and hollow space is created by flowing hot water through holes. Later, these openings were closed with the autopolymerizing resin (**TREVALON, DENTSPLY**) in the dough stage. The dentures were then polished in regular manner. The hollowness of denture was verified by observing the dentures float in water.(Figure 12)³



Figure 10- Modelling wax placement



Figure 11- Final heat cure packing over



Figure 12- Hollow denture

DISCUSSION

In case of resorbed ridge heavy maxillary denture have the poor bearing capacity. Extensive volume of the denture base material is always a big challenge for a prosthodontist in case of severe residual ridge resorption⁸. To improve the retention and stability of heavy prosthesis, several methods have been utilized like

modifying the impression technique, undercuts, magnets, implants etc.²

Here the first technique is known as lost salt technique. The salt crystals melt during the curing procedure and after curing it was flushed out which resulted in a hollow cavity. Lost salt technique is a convenient method and also the involved materials are economical and readily available.

Second technique described was using silicon putty as space maintaining material which has advantages such as stability, its ability to be carved and it does not adhere to acrylic resin. Its disadvantage is that the removal of putty was found to be difficult.^{2,3}

The technique 3 is easiest method. Modelling wax is melted during curing procedures and provides spaces but this method is most commonly technique sensitive. During hydraulic press, soft modelling wax may flow along with acrylic resin and creates unnecessary porosity

CONCLUSION

Hollow denture is an easy Conventional method which helps in reduces the weight and increase retention of the maxillary denture. All the three procedures are the

simplified approach for successful complete denture with esthetic, retention, stability & support.

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