

Hollow Denture : A Boon For Resorbed Ridges – A Case Report

Dr Sunil Oberoi¹, Dr Monica Sinha², Dr Sankalp Arya³, Dr Amit Jayna⁴

PG Student^{1,2}, Senior Lecturer³, HOD⁴, Department Of Prosthodontics, ITS Dental College Greater Noida, UP

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Introduction

Physiological, esthetic and functional variables are associated with successful conventional complete denture therapy^{1,2}. Extreme resorption of the maxillary denture bearing area may lead to problems with prosthetic rehabilitation. These may be due to narrower, more constricted residual ridge as resorption progresses, decreased supporting tissues and a resultant large restorative space between the maxillary and mandibular residual ridge⁴. Despite the development of dentures supported by osseointegrated implants; rehabilitation of resorbed residual ridges is still a challenge³.

The extensive volume of the denture base material in prosthesis provided to patients with large maxillofacial defects or severe residual ridge resorption, can be reduced by making the denture base hollow. Various weight reduction approaches have been achieved using a solid 3-dimensional spacer, including dental stone, cellophane wrapped asbestos, silicone putty or modelling clay during laboratory processing to exclude denture base material from the planned hollow cavity of the prosthesis⁵.

This clinical report describes a technique for fabrication of a hollow maxillary complete denture in a patient with resorbed maxillary ridge and increased interridge distance using lost salt technique.

Case Report

A male patient reported to Department of Prosthodontics, Crown and Bridge in ITS Dental College Hospital and Research center Greater Noida (U.P) with the chief complaint of difficulty in chewing food due to heaviness in his upper complete denture. On history taking, it was found that the patients was edentulous for past 8 years and had used five sets of complete dentures, however was not satisfied with any of

Abstract

Severe atrophy in one or both of the alveolar residual ridges of the complete denture patient presents difficult restorative problems. Although the resorption process is a more serious clinical problem in the mandibular arch, significant loss of alveolar bone in the maxillae can prove equally problematic. The advantage of a hollow maxillary denture for severely resorbed residual alveolar ridges is the reduction of excessive weight of acrylic resin which normally replaces lost alveolar ridge in the inter ridge space of the denture wearer. This article presents a case report of a severely resorbed maxillary ridge situation treated with a hollow maxillary complete denture with the objective of emphasizing the use of a hollow complete denture in situations where there is excessive resorption of the residual alveolar ridges and where implant treatment is not a realistic option.

them.

On examination, it was found that his maxillary residual ridge was severely resorbed with increased inter ridge distance (figure 1). The maxillary complete denture was found to be heavy. It was decided to fabricate a new set of complete denture. Patient was made aware with his present situation of left residual bone. A detailed information for implant supported overdenture including procedure and cost was told to patient but because of patient's economical reasons, a hollow maxillary complete denture opposing conventional mandibular complete denture was planned.

Technique

Maxillary and mandibular primary impressions were made using impression compound (Y-dent, MDM Corporation) after careful intraoral examination was performed. Impressions were poured in dental plaster and primary cast was made out of it. A custom tray was fabricated using auto-polymerizing methylmethacrylate resin (DPI- Cold Cure) after the spacer wax was adapted on primary casts. Maxillary and mandibular border molding was done with green stick compound (Green Stick, Prime Dental Products Pvt. Ltd.) and secondary impression was made using zinc oxide eugenol paste (DPI).

Secondary casts were poured with dental stone and permanent denture base were fabricated with heat polymerizing methylmethacrylate resin (DPI- Cure). In jaw relation, facebow transfer and intraoral gothic arch tracings were done and intraoral records were made. The selected teeth were arranged made with plaster index occlusion, followed by anterior and posterior teeth try in. (figure 2)

All the procedures were carried out by conventional method till the dewaxing stage. After dewaxing half of the heat cure PMMA (Trevalon, Dentsply India Pvt. Ltd., Gurgaon, India) in dough stage was positioned accurately over the dewaxed mould and then salt crystals were placed over it (figure 3). Above that, the remaining heat cure resin was

packed and cured at 74 degree C for 7-8 hours (figure 4). The mandibular complete denture was processed in conventional method. After curing, final dentures were removed along with their respective casts, followed by lab remounting and the processing errors were corrected. The dentures were trimmed and polished. Two small openings were made with a bur into the denture base distal to most posterior teeth to remove the salt. The salt was then removed by scraping with thick gauge wire (figure 5). The cavity was cleaned and disinfected and air dried. Later, these openings were closed with the auto polymerizing methyl methacrylate resin in dough stage. The denture was again polished (figure 6). The sealing of the cavity was then verified by placing it in beaker full of water to check for its lightness (figure 7). Prosthesis was also checked for any bubbles and surface irregularities. Tissue surface of dentures were thoroughly inspected. The dentures were inserted in the patient's mouth and checked for retention, stability and support. The final outcome of the prosthesis was ascertained from the satisfied look on the face of the patient and from the periodic follow up (figure 8). Instructions were given to patient about denture handling. Also instructions for proper oral



Figure 1- preoperative view

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Figure 2 - Trial dentures in mouth



Figure 3 - Salt placement over heat cure resin



Figure 4 – Packing with heat cure resin



Figure 5 – removal of salt by scraping



Figure 6 – finished and polished denture



Figure 7 – Hollow Denture



Figure 8 – happy patient

hygiene maintenance were explained to patient.

Discussion

Rehabilitation of patient with severely resorbed ridges and long lip length is a challenge to the dentist. Even though, the choice for rehabilitation can be implant supported overdenture, and ridge augmentation but many a times the patient who come with such a problem are geriatric patients with systemic illness, economic constrains, possess reluctance for a long. Duration treatment procedure and unwillingness for any kind of surgical procedure. Hence, the best way is to rehabilitate them with the conventional way⁶.

In general a heavy denture is going to cause poor denture bearing ability which in turn will affect retention, stability and support for the complete denture. To increase retention and stability of heavy prosthesis many methods have been tried like utilizing undercuts, modifying impression technique, use of magnets and use of implants, etc.

Severely resorbed ridges is mainly taken care by utilizing concept of broad area coverage within functional limits, decreased number of teeth, decreased buccolingual width of teeth, avoidance of inclined planes, provision for adequate tongue room, adequate inter occlusal distance apart from a hollow denture base. The advantages of hollow denture are reduction in excessive weight, decreased load on alveolar ridges and making the patient comfortable⁷.

The technique for fabrication of hollow denture described here is a simple, economical and time saving procedure with compounded advantage of reduction in the excessive weight of the prosthesis thereby helping to decrease the load on the residual ridge and making the patient comfortable. This technique has eliminated the requirement of two identical flask and putty used is non sticky and heat resistant hence helps

in maintaining the space and is easily retrievable.

Conclusion

Hollow maxillary complete denture is a valuable treatment option for a patient with severely resorbed maxillary ridge, increased inter ridge distance and long lip. Hollow dentures significantly increases the retention and stability of maxillary dentures by reducing the weight of the dentures. Besides this they also aid in preserving the existing residual ridge of the patient⁸.

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