

HOLLOW DENTURE-A NOBEL APPROACH FOR RESORBED RIDGES: A CASE REPORT

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ABSTRACT

Introduction: Severe atrophy of residual alveolar ridges poses a challenge to prosthodontist. As increased inter-ridge space results in fabrication of heavy complete dentures. The severely resorbed maxillary and mandibular edentulous arches that are narrow and constricted with increased interarch space provide decreased support, retention and stability. The consequent weight of the processed complete denture only compromises them further. Technological advancements have resulted in dentures that are lightweight, mimic the look and feel of natural teeth. This article highlights on a Lost Salt technique for the fabrication of a hollow maxillary complete denture in situation where there is excessive resorption of the maxillary residual alveolar ridge using lost salt technique was used.

Case Report: This article presents a case of severely resorbed maxillary and mandibular ridges, managed with fabrication of hollow complete dentures. It also highlights an innovative technique, Lost Salt technique used for fabrication of hollow completedenturesforpreservation of the denture bearing areas.

Conclusion: Fabrication a light weightdentureaidsinpreservation of the existing residual alveolar ridge. The technique used for fabrication of hollow dentures overcomes the disadvantages of other methods.

KEY WORDS

Lost Salt Technique, Resorbed ridges, Light weight

INTRODUCTION

Prosthontic rehabilitation may be a problem with the extremely resorbed maxillary edentulous ridges. This problem is due to increased inter-archspacebetween the maxillary and mandibular residual ridges. It decreases the retention and resistance because of the heavy maxillary complete denture. Heavy dentures, whether maxillary or mandibular are likely to cause poor denture bearing ability and excessive and constant pressure leads to bone resorption.Reducing the weight of the denture by making it hollow, aids in preservation of the existing residual alveolar ridge. Existing the technique used for fabrication of hollow dentures overcomes the disadvantages of other methods. Numerous methods and materials have been used to fabricate a light weight denture. It has also been proved that prosthesis weight can be reduced by making the denture base hollow. Different approaches like using a solid 3-dimensional spacer, including dental stone , silicone putty , modelling clay

or cellophane wrapped asbestos have been used during laboratory processing to exclude denture base material from the planned hollow cavity of the prosthesis. Though this technique was useful in estimation of the spacer thickness, but removal of putty was found to be difficult especially from the anterior portion of the denture. Moreover, the openings made from the distal end had to be sufficiently large to retrieve the hard putty. In this case reports, two edentulous male patients with severely resorbed ridges and increased interr ridge distances were treated with a hollow maxillary denture, using common salt and putty as spacer has been described.This article describes a case report of an edentulous patient with resorbed ridges where a simplified technique of fabricating a light weight maxillary complete denture was used for preservation ofdenture bearing areas.

CASE REPORT 1

A 72 year-old patient walked into the outpatient department of prosthodontics with a chief complaint of replacing missing teeth. He had been edentulous for 8years and had been wearing dentures for 5years. On examination, he had severely resorbed ridges, the upper being narrow and constricted and with an interr ridge space of 34mm. Both maxillary and mandibular

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ridges were severely resorbed. His upper lip was long, the inter-ridge distance was more than normal and vertical dimension of occlusion (VDO) and vertical dimension at rest (VDR) were more than average. The previous denture of the patient was heavy with attrited teeth and was under extended. Hence, it was decided to fabricate a new set of denture for the patient.

The treatment options for complete denture available to the patient were:

- a. Implant supported complete denture
- b. Conventional Complete denture
- c. Hollow maxillary complete denture and conventional mandibular complete denture.

After analysing each available option, it was decided to fabricate hollow maxillary complete denture. The patient also approved of the treatment modality as it was light in weight, inexpensive and non-surgical procedure.

TECHNIQUE

Preliminary and final impressions were made in conventional manner. At the time of jaw relation due consideration was given to adjust maxillary occlusal rims properly as to provide proper aesthetics to the patient with long upper lip. Teeth were selected and arranged in balanced occlusion and try-in was done first for anterior teeth and then for posterior teeth. 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.

Above that, the remaining heat cure resin was packed and cured at 74 degree C for 7-8 hours Cured denture was retrieved and 3 holes were made in the thickest palatal area. All the residual salt crystals were removed by flushing water with the high pressure syringe through the holes. After making sure that all the salt crystals have been removed, the escape holes were closed with auto polymerizing resin (Trevalon, Dentsply India Pvt. Ltd., Gurgaon, India). The hollow cavity seal was verified by immersing the denture in water, if no air bubbles are evident, an adequate seal is confirmed.

The salt crystals being heat labile melt during the curing procedure and thorough flushing after curing results in no crystals remaining in the denture thereby maintaining the integrity of the denture, avoiding the tedious effort to remove the spacer material from the denture. This technique of lost salt technique is simple to execute and utilizes a very cheap and easily available spacer material.

The advantages of hollow dentures are reduction in the excessive weight of the acrylic resin, resulting in the lighter prosthesis, and decreased load on the residual alveolar ridges thereby making the patient comfortable.

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 constraints, 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 way. Apart, from modifying the impression technique to get maximum denture bearing area, modifying the type of denture may also be better accepted by the patient. In general, a conventional (heavy) denture whether maxillary or mandibular is likely to cause poor denture bearing ability. Extensive volume of the denture base material in prosthesis provided to patients with large maxillofacial defects or severe residual ridge resorption is always a challenge to prosthodontists. To increase the retention and stability of heavy prosthesis, many methods have been tried like utilising the undercuts, modifying the impression technique, use of magnets, use of implants, etc.

The Lost Salt Technique has advantages over the other technique. The salt crystals being heat labile melt during the curing procedure and thorough flushing after curing results in no crystals remaining in the denture thereby maintaining the integrity of the denture, avoiding the tedious effort to remove the spacer material from the denture. This

technique of lost salt technique is simple to execute and utilizes a very cheap and easily available spacer material.

CONCLUSION

Rehabilitation of severely resorbed ridges is a challenge to the prosthodontist. Even though, the choice of rehabilitation can be overdentures, implant retained over-dentures, ridge augmentation, etc., many a times the patients who comes with such a problem are geriatric patients with many systemic illness. Hence, the best way is to rehabilitate them with conventional complete dentures. A simplified technique of fabricating hollow denture using salt crystals as spacer has been described.

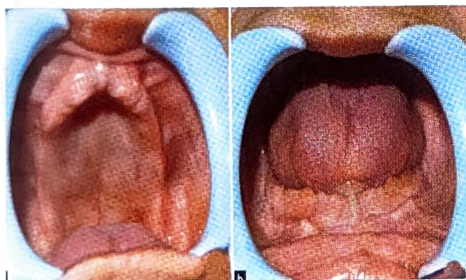


Figure1: Maxillary Resorbed Ridge



Figure2: Mandibular Resorbed Ridge



Figure 3: Primary Impression of maxillary and mandibular ridges



Figure 4: Heat cure Maxillary Denture bases

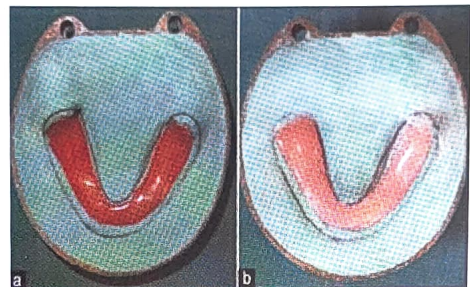


Figure 5: Heat Cure Mandibular Base



Figure 6: Uniform layer of salt



Figure 7: Uniform layer of salt



Figure 8: Investing Procedure



Figure9: Investing procedure



Figure 9: Lost Salt Procedure

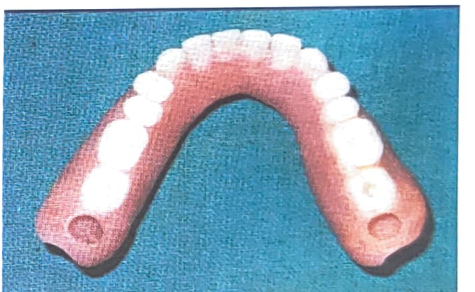


Figure10: Lost Salt procedure

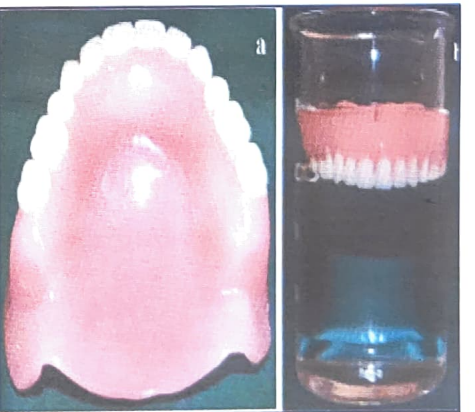


Figure10: Hollow Denture

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OFF-THE-SHELF, POWER-GENERATING CLOTHES ARE ALMOST HERE

A lightweight, comfortable jacket that can generate the power to light up a jogger at night may sound futuristic, but materials scientist Trisha Andrew at the University of Massachusetts Amherst could make one today. In a new paper this month, she and colleagues outline how they have invented a way to apply breathable, pliable, metal-free electrodes to fabric and off-the-shelf clothing so it feels good to the touch and also transports enough electricity to power small electronics.

She says, "Our lab works on textile electronics. We aim to build up the materials science so you can give us any garment you want, any fabric, any weave type, and turn it into a conductor. Such conducting textiles can then be built up into sophisticated electronics. One such application is to harvest body motion energy and convert it into electricity in such a way that every time you move, it generates power." Powering advanced fabrics that can monitor health data remotely are important to the military and increasingly valued by the health care industry, she notes.