SUCCESSFUL CLINICAL MANAGEMENT OF ATROPHIC FLABBY RIDGE WITH LIQUID SUPPORTED PROSTHESIS: A CASE REPORT

Rohit Sharma[1], Virender Singh[1], Shailee Jain[1], Narzi Parekh[1]

1 Department of Prosthodontics and Implantology, Jodhpur Dental College General Hospital, Jodhpur, India

CORRESPONDING AUTHOR: dr.rohitsharma16@gmail.com

ABSTRACT

Severely resorbed ridges with flabby mucosa often poses great challenge for Prosthodontist in providing a complete denture which is functionally acceptable and causes minimal trauma to the underlying tissues. Liquid supported denture can be a permanent solution in edentulous patients with diabetes, xerostomia and atrophied ridge. Liquid-supported dentures will have optimal stress distribution during masticatory function.he aim of this study was to evaluate the efficacy of different lengths of time of passive ultrasonic irrigation (PUI) in removing calcium hydroxide (CH) paste from root canal, using scanning electron microscopy and energy dispersive spectrometry (SEM/EDS).

KEYWORDS: liquid supported denture, glycerin, flabby ridge

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INTRODUCTION

Severely resorbed ridges with flabby mucosa often poses great challenge for Prosthodontist in providing a complete denture which is functionally acceptable and causes minimal trauma to the underlying tissues. For years, dentists have advised patients with sore mouths to leave their dentures out until the tissues have recovered to a normal, comfortable condition[1]. According to Lythe, alveolar bone is resorbed beneath restricted areas of excessive denture pressure and that new bone forms in these same areas when a new denture is made to fit conditioned mucosa[2]. Liquid supported denture can be a permanent solution in edentulous patients with diabetes, xerostomia , atrophied ridges, irritated mucosa, flabby ridge or ill fitting denture.[2] This article is to report the Successful clinical management of atrophic flabby ridge with liquid supported denture.

CASE REPORT

A female patient aged about 58years reported to the Department of Prosthodontics Crown, Bridge and Implantology in Jodhpur dental college General Hospital with completely edentulous and atrophic residual ridges in the mandibular arch (Figure1), a liquid-supported denture was planned for maxillary arch for even distribution of load and conventional acrylic resin denture for mandibular arch. A preliminary impression of the maxillary and mandibular arches was made with alginate and impressions were poured with dental plaster and the primary casts were retrieved. It was followed by Border molding with low fusing compound (Green Stick Compound) and final impression with Zinc oxide Eugenol impression paste for maxillary arch (Figure2). Now special tray cut from anterior Region and checks in patient

mouth (Figure3). Then place special tray in patient mouth and record the flabby ridge with light body (Figure4). For the mandibular arch, final impression was taken with help of macord's technique (Figure5). Tentative jaw relation was recorded and a face bow transfer was done to a semi-adjustable articulator (Wide Vue Hanau) (Figure6), and is followed by teeth arrangement (figure7).

Figure 1. Maxillary and mandibular archs.

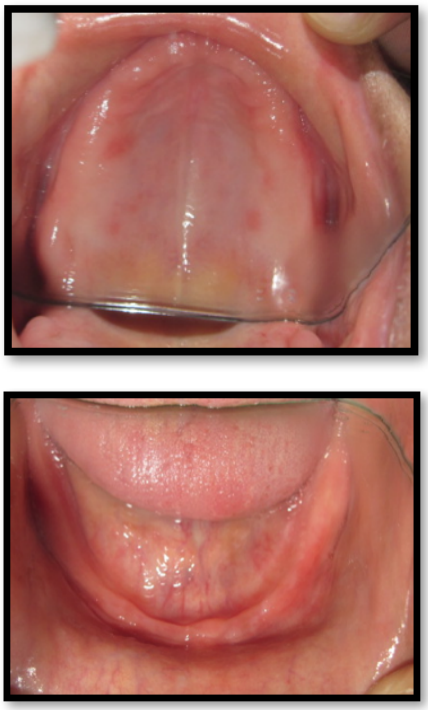
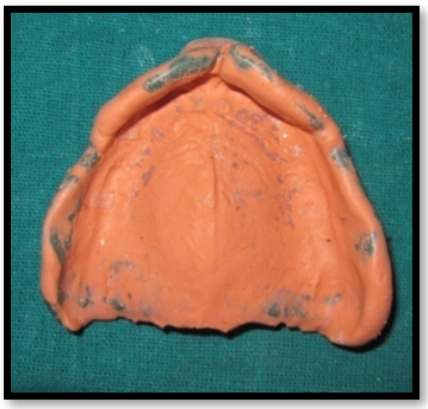


Figure 2. Final impression.



It include two step laboratory procedure in step first incorporation of flexible polyethylene 1mm at the time of packing and step second remove flexible polyethylene sheet and adept new flexible polyethylene on tissue surface of denture which 0.5mm. Now the difference between two different thicknesses which create space was occupied by liquid in the final prosthesis.

Figure 3. Special tray cut from anterior region and checks in patient mouth.

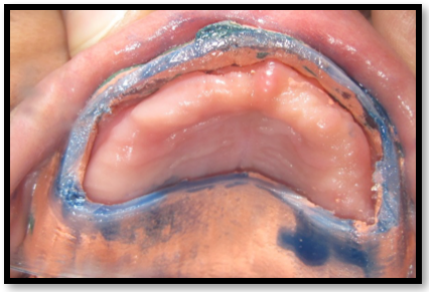


Figure 4. Record the flabby ridge with light body.

Figure 5. Final impression with help of macord's technique for mandibular arch.

A 1 mm thick, soft, flexible polyethylene sheet was incorporated at the time of packing in the maxillary denture which was 1-2 mm short of the borders. This sheet was adapted over the master cast with the help of a vacuum heat-pressed machine (figure8). Now heat cure material was packed and cured with (TRAVELON). The denture was then finished, polished and inserted into the patient's mouth to check for retention, stability, support and border extension. The patient was asked to use the denture for 1to2 weeks till she got adjusted to the new dentures[3].

Figure 6. Facebow transfer.

Figure 7. Teeth arrangement.

Figure 8. Placement of flexible polyethylene sheet at the time of packing.

The maxillary denture was now ready to be transformed into a liquid-supported denture. Putty (Polyvinyl siloxane) impression of the tissue surface of the maxillary denture was obtained to get the junction of the temporary sheet and the denture base resin. The impression was poured with dental stone, and the positive replica of the denture was obtained with the junction marked over it. New polyethylene sheet of 0.5mm thickness was adapted on this stone replica, again heat-pressed (bioart) and cut into the desired shape as on the stone replica to form the ultimate denture base. The difference between the thicknesses of two sheets was occupied by liquid in the final prosthesis. Now the temporary polyethylene sheet was removed and replaced with the permanent 0.5 mm thickness polyethylene sheet (figure 9, 10). One inlet was made in the denture bucally in the molar region (figure11). The permanent polyethylene sheet was then incorporated in the denture base with cyanoacrylate adhesive. The seal was checked properly. In areas of leakage, it was resealed till a perfect seal was obtained at the junction. A viscous liquid, i.e., glycerin was filled through the inlets (figure12) and The occlusal vertical dimension was adjusted by fitting the denture in the patient's mouth (figure13) then inlet was sealed with cold cured acrylic resin[3] (figure14).

DISCUSSION

The concept of liqid suppoerted denture is similar to that of a water bed used for the treatment of sore spots in bed ridden patients. It will have optimal stress distribution during masticatory function[4]. The denture base is covered with a pre-shaped, close-fitting, foil to keep a thin film of liquid in its place[4] (Fig. 15). This design will act as a continuous reline for the denture and thus has advantages over existing denture designs. This type of design helps in increasing retention because of close adaptation of denture base to the underlying tissue surface. When masticatory load is applied this foil can adapt to modify the form of muscosa because of hydrodynamic plasticity of supporting liquid under the foil. In this situation it acts a soft liner. When any type of masticatory forces is not applied this foil will adapt the tissues in the original position. This type of action of foil is maintained close adaptation of the denture base to the tissue which results in helping aid in retention[5, 6].

Figure 9. Removal of flexible polyethylene sheet.

Figure 10. Placement of permanent flexible polyethilene sheet.

The liquid supported denture reduces local stress of supporting tissue, which means it distributed vertical force in all over direction under denture base. Another advantage of liquid supported denture is reduced or minimized contamination of any microorganism. It means that it protects mucosa from any bacteria or fungal infection. The polyvinyl siloxane sheet and glycerin used in this type of denture is biocompatible and non irritant to the underlying tissue[7].

Figure 11. One inlet was made in the denture bucally in the molar region.

Figure 12. Glycerin was filled through the inlets.

Figure 13. Occlusal view.

CONCLUSIONS

Liquid –supported denture provides better result in compare to conventional acrylic resin denture because it provides better retension, stability due to maintained close

adaptation to the mucosa under load or rest and it also provides better preservation of remaining residual alveolar ridge as it distrubates the forces equally all over the area. it is also gives better result in flabby and inflammed ridges.

Figure 14. Inlet was sealed with cold cured acrylic resin.

Figure 15. Multidirectional distribution of force throughout fluid.

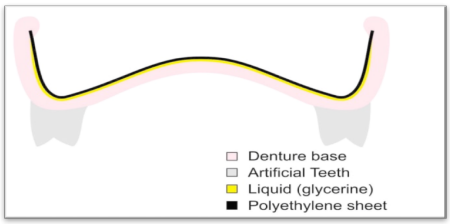


Figure 16. Postoperative view.

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