



PROSTHODONTIC MANAGEMENT OF FLABBY TISSUE USING A MODIFIED APPROACH-LIQUID SUPPORTED DENTURE: A CASE REPORT

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KEYWORDS :

INTRODUCTION-

'Flabby' or 'fibrous' are terms used alternately when there is a superficial mobile tissue on the alveolar ridge. This hyperplastic tissue displaces the denture and affects the denture stability, retention and support¹. Soft tissue replaces the alveolar bone, particularly in long term denture wearers^{2,3}. Histologically, flabby ridges are composed of hyperplastic mucosal tissue and loosely arranged fibrous connective tissue and dense collagenised connective tissue. In the soft tissue, a great amount of metaplastic cartilage and/or bone are observable^{4,5}. These soft tissue changes and bone resorption occurs because of muscle dynamics or tissue irritation, which ultimately affects the residual ridge dimensions⁶. In a flabby ridge condition, an ideal denture should be able to withstand masticatory forces and have flexible tissue surface to reduce stress concentration and trauma on the underlying tissues⁷. However, it also has to be rigid so as to support the teeth during the function. Treatment options for these patients include surgery, implant retained prosthesis or conventional prosthodontics without surgical intervention⁸, like use of soft liner which act as a cushion between the denture base and the residual ridge. But soft liners have a disadvantage of losing plasticizer over a period of time. Treatment modality has to be chosen depending on the patient's state of health and need, the extent of flabby tissue, financial capacity, and skill of the dentist. In most situations, surgical intervention or use of implants is not possible and thus conservative management is preferable option⁴. A Liquid-supported denture can hence be a solution to this problem. This paper describes the fabrication of a maxillary complete denture by a modified design, that is, Liquid-supported denture, where the presence of flabby tissue in the maxillary arch was treated with the nonsurgical approach.

CASE REPORT

A 62-year-old female patient reported to Swargiya Dadasaheb Kalmegh Dental College and Hospital, Nagpur, Maharashtra, India with the chief complaint of replacement of missing teeth with both the arches. The patient had a history of diabetes for the last 9 years. On intraoral examination, a completely edentulous maxillary and mandibular arches were observed and flabby tissue existing on the maxillary tuberosity region was observed as shown in (Figure.1). It was decided to give a Liquid-supported maxillary complete denture because of flabby soft tissues in the maxillary tuberosity region and conventional mandibular complete denture.

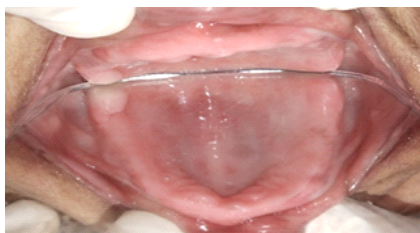


Figure 1.Maxillary ridge with flabby tissue in maxillary tuberosity region



Figure 2.Primary impression

Primary impressions were made with alginate and primary cast was obtained (Figure.2). Full complete double spacer was applied in the maxillary tuberosity region because of flabby soft tissues. Border molding was performed by using a low fusing impression compound, and the final impression was obtained. (Figure.3). Jaw relation record and trial of waxed up denture was done. The maxillary denture design was modified to make a Liquid supported denture as follows. Vacuum heat-pressed polyethylene sheet of 1.5mm thickness was adapted on the maxillary master cast. The sheet acted as a temporary spacer, and it was made 2mm short of the sulcus (Figure.4). After dewaxing, a 1.5mm temporary polyethylene sheet was adapted on the maxillary cast and denture was acrylised using heat cure resin along with the sheet.



Figure 3.Final impression



Figure 4.Polyethylene sheet apated on maxillary cast 2mm short of vestibule

The patient was asked to wear the denture for two weeks to get adjusted to it. After two weeks, the patient was recalled to convert the maxillary denture into a Liquid-supported one (Figure.5). Temporary

polyethylene 1.5mm thick spacer sheet was removed from the maxillary denture. An additional silicone putty impression was made of the tissue surface of the denture, and the cast was made of it. This was done to record the exact junction of the sheet to the denture. The impression was poured with dental stone, which will form a negative replica of the ridge. Again the cast was poured upon the negative replica to produce a positive replica of the ridge. On this cast, a 0.5mm thick final polyethylene sheet was vacuum heat pressed which created 1mm space between tissue surface of the denture and permanent polyethylene sheet. The space created due to the replacement of a 1.5mm thick sheet with a 0.5mm thick sheet was filled with a viscous liquid, that is, glycerin. This was done by making holes drilled on the buccal flange in the molar area of the denture by round bur and injecting a viscous liquid, that is, glycerine through these holes, and the hole was sealed with auto polymerizing acrylic resin. The mandibular complete denture was acrylicised using a conventional procedure. The maxillary Liquid-supported denture and mandibular conventional denture were delivered. Denture care instructions were given to the patient and was recalled for follow up.



Figure 5. Maxillary liquid supported denture

DISCUSSION-

The principle of this design was that a liquid supported denture is flexible and continuously adapts itself to the mucosa. However, it is also rigid enough to support the teeth during actual use. Thus, the denture base is covered with a close-fitting flexible sheet to keep a thin film of liquid in its place. This design will act as an advantage over the existing denture designs. When no forces are applied, the sheet remains in the resting position, acting as a soft liner and when the dentures are in use, vertically directed loads are distributed in all directions by the liquid resulting in optimal stress distribution^{4,9}. This helps in the long-term preservation of bone and soft tissues. Apart from the combined benefits of tissue conditioners and soft liners, load from biting forces and even bruxism will be distributed over a larger surface¹⁰. Liquid-supported denture provides benefits of both tissue conditioners and soft liners. This helps in the long-term preservation of bone and soft tissues. Apart from the combined benefits of tissue conditioners and soft liners, the load from biting forces and even bruxism will be distributed over a larger surface. In this case, a polyethylene thermoplastic clear sheet was used because of its softness, flexibility, and biocompatibility. For a liquid cushion, glycerine was used, which is clear, colorless, and odorless with good pharmaceutical action. The main drawback of liquid-supported denture is the relining procedure, which is not possible with this liquid supported denture¹¹.

CONCLUSION

Fibrous ridges pose a prosthodontic challenge for the achievement of stable and retentive dental prostheses. Surgical removal of the fibrous tissue and implant-retained prostheses may not be possible to be used in all cases. Considering conventional prosthodontics, the use of liquid supported denture can further improve the patient's acceptance. Liquid supported denture is based on the theory that when the force applied on the denture, the base assumes its reshaped form that is the one during processing. But under masticatory load, the base adapts to the modified form of mucosa due to hydrodynamics of the liquid improving support, retention, and stability. Liquid-supported denture with its shock-absorbing effect thus fulfills a valuable role in prosthetic dentistry. A liquid supported denture due to its flexible tissue surface allows better distribution of stress and hence provides an alternative treatment modality in such cases.

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