

Management of Flabby Ridge using Modified Window Technique and Liquid Supported Denture: A Case Report

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ABSTRACT

Introduction: Rehabilitation of patients with flabby ridges poses a great amount of difficulty for a prosthodontist. As the flabby tissues easily gets distorted while impression making, the dentures fabricated on such foundations are often compromised in its retention and stability.

Case report: Liquid supported denture fabricated using modified window impression technique in this case uses mucostatic impression technique where flabby tissue is located and the denture base is covered with a preshaped, closed fitting flexible PVC sheet which help in continued adaptation of the denture to the mucosa in the resting and functional states.

Conclusion: Liquid supported denture fabricated using modified window impression technique can stand a better option in case of flabby ridges while considering conventional prosthodontics. This concept can further improve the patient's comfort and acceptance because of uniform distribution of masticatory forces.

Keywords: Flabby Ridge, Modified Window Technique, Liquid Supported Denture

INTRODUCTION

Flabby ridges, poses difficulty and may intensify complaints of pain or looseness of complete denture resting on them. Flabby ridges show hyperplastic growth of soft tissue that replaces alveolar bone. Its prevalence is about 24% in edentate maxillae and in 5% of edentate mandibles. Rehabilitation of patients with such flabby ridge is trouble for a prosthodontist.¹⁻⁵ As the flabby tissues are easily distorted while impression making steps, the dentures fabricated on such foundations are often compromised in its retention and stability. Several treatment modalities offered in such patients include surgical excision of flabby mass, implant-supported dentures or conventional prosthesis without surgery.¹ An ideal denture base should be flexible, as it has to incessantly adapt to the mucosa. However, it also has to be rigid so as to support the teeth during function. These properties cannot be combined in one material, but are conceivable by using combination of materials.⁶ A variety of tissue conditioning materials has been put forth and soft liners has been one of them. But soft liners are transitory arrangements over some stretch of time, they lose their plastic properties.⁷ A liquid supported denture due to its flexible tissue surface can be an alternate treatment modality for flabby ridges.⁸

This case report depicts the use modified window impression technique to fabricate a liquid supported denture to eliminate the disadvantages encountered due to rigid denture base materials thereby providing proper retention, stability and

support to the denture.

CASE REPORT

A 54-year-old male patient reported to Dept.of Prosthodontics for replacement of missing teeth. The patient had a history of wearing maxillary and mandibular complete dentures since past 5 years. His chief complaint was the poor fit of the denture, and discomfort during chewing. By intraoral examination, a completely edentulous maxillary arch with flabby tissue existing in the maxillary anterior region was observed (Fig.1a). It was decided to give a Liquid-supported maxillary complete denture because of flabby soft tissues in anterior region, giving consideration to the impression technique.

Clinical procedure

The primary impression were made with alginate (Zelgan, Dentsply/caulk) to ensure minimal distortion of the displaceable (flabby) tissues . A maxillary cast was poured and the flabby ridge area was marked.(Dental stone, Type III, Kulzer) followed by fabrication of custom tray [spaced (2 mm), tissue stops] (Triad, Tru tray, Denstply) with two posterior handles (Fig.1b). A vacuum heat pressed polyethylene sheet of 1.5 mm thickness was adapted on the tray (fig.1c) The window was removed (Fig.1d) and three holes of similar dimensions were placed on the polyethylene sheet in the window area. Border molding was performed using the conventional technique with green stick impression compound (Dental Kerr Impression Compound). Following which a maxillary impression was made using medium body PVS impression material (Aquasil, Dentsply) (Fig.2a). The impression material in the area of flabby ridge was carefully removed using scalpel blade. The impression was re-seated in

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How to cite this article: Astha Agarwal, Jovanovic Boris, Sumit Kumar Misra, Devendra Chopra. Management of flabby ridge using modified window technique and liquid supported denture: a case report. International Journal of Contemporary Medical Research 2019;6(10):J10-J12.

DOI: <http://dx.doi.org/10.21276/ijcmr.2019.6.10.51>

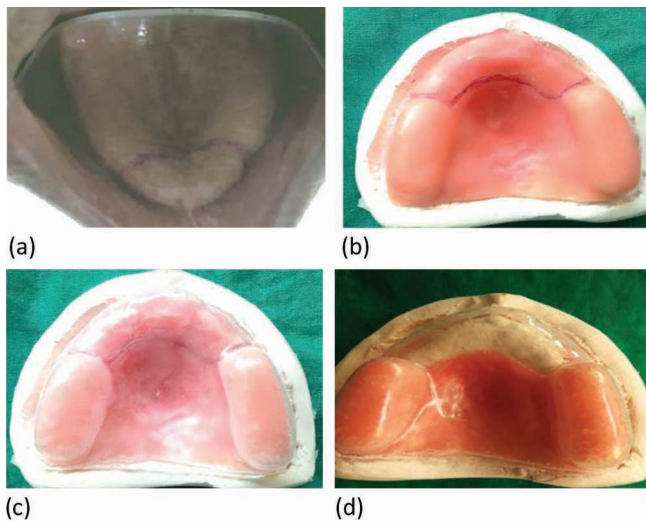


Figure-1: (a) Intraoral view of maxillary arch (b) custom tray was fabricated on the maxillary cast delineating flabby ridge area/window with pencil (c) Vacuum pressed polyethylene sheet adapted on the custom tray (d) The marked window was removed from the custom tray

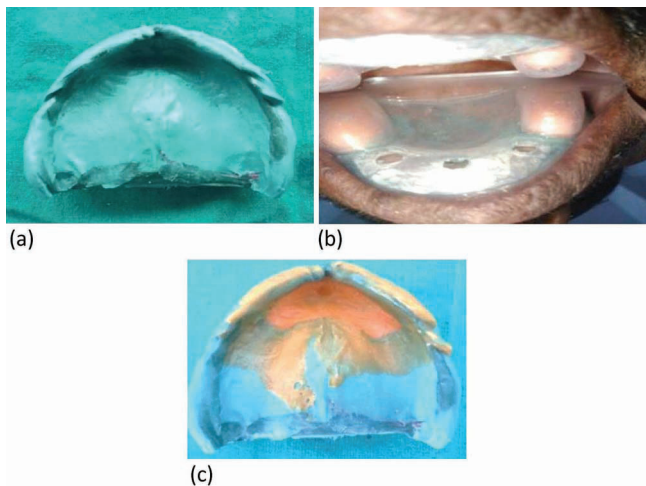


Figure-2: (a) Maxillary impression with medium body polyvinylsiloxane impression materials; (b) The window was removed and three holes on the polyethylene sheet were made in the window area, for injecting light body PVS material; (c) The completed final impression.

the patient mouth and a light body PVS impression material (Aquasil, Dentsply) was injected starting from one of the side holes passing through the middle of the polyethylene sheet until some excess material poured from the holes. (Fig.2b) Final impression was then completed (Fig.2c). Jaw relation was recorded and face bow transfer was done followed by try in.

Laboratory procedure

A 1.5 mm thin, flexible sheet was adapted over the master cast using vacuum heat-pressed machine. This sheet was kept 2 mm short of the sulcus and PPS area. During final curing this sheet was incorporated into the maxillary denture by packing it with heat cure denture resin (Travelon, Dentsply) (Fig.3a.) The denture was finished and polished. After occlusal adjustment denture was delivered to the patient. Patient was

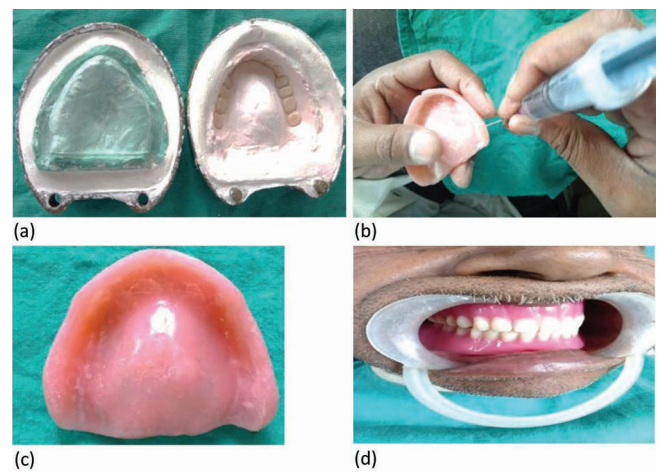


Figure-3: (a) A 1.5 mm thin, flexible sheet incorporated into the maxillary cast during packing. (b) Injecting glycerine in the maxillary denture (c) Denture filled with glycerine (d) Intra oral view with upper and lower dentures

asked to use the denture for 2 weeks till he got adjusted to the new denture. Patient was recalled after 2 weeks to convert the denture into liquid supported denture. A putty impression of the tissue surface of the maxillary denture was obtained and was poured with dental stone.

Temporary polyethylene 1.5 mm thick spacer sheet was removed from the maxillary denture. After the removal of 1.5 mm thick sheet from the denture, the borders of the 1 mm thick sheet were placed in the crevice formed. Cyanoacrylate adhesive and self cure acrylic resin were used to seal the borders and prevent escape of liquid (Fig.3b). The space created due to the replacement of a 1.5mm thick sheet with a 1 mm thick sheet was filled with viscous liquid, that is, glycerine (Fig.3c). This was done by making two inlets in the denture and injecting glycerine through these inlets and checking the vertical dimensions simultaneously. The holes were sealed using self-cure acrylic resin. Insertion of the maxillary liquid supported denture (Fig.3d), patient was informed to maintain the hygiene of the tissue surface using soft cloth or gauze. Patient was recalled after 1 day, 1 week, 1 month and 3 months. Patient was found comfortable using the denture.

DISCUSSION

Again the success of complete denture prosthesis is certainly a reflection of the impression technique instituted. While fabricating complete denture one more concern is to deal with displacement of flabby tissues during impression making step. Several impression techniques have been suggested to rule out this difficulty caused by flabby ridges with minimum amount of tissue displacement. Recording tissues at rest is repeatedly found in the literature and has gained acceptance by many clinicians. A window tray technique (Watson, 1970) has been used to achieve the concept of mucostatic impression technique where flabby tissue is located. In this technique a window is created in the custom tray over the flabby tissues anteriorly, and impression plaster is used for the flabby tissues. For the rest of the healthy denture bearing

area zinc-oxide-eugenol impression paste is used. But inability to control and uniform application of impression material was its possible limitation.⁹

The principal of this design was that a liquid supported denture is flexible and continuously adapts itself to the mucosa of flabby. Problem of flabby ridge is solved by fabricating maxillary liquid-supported denture. Liquid-supported denture is based on the concept that when the force applied on the denture is absent, the base assumes its preshaped 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.⁶ Tissue overloading is minimized due to optimum stress distribution of masticatory forces on maximum denture coverage area. The prime benefits of the liquid-supported denture includes: prevention of soreness and increased comfort level.^{6,7} Polyethylene thermoplastic clear sheet (Biostar vacuum forming machine, Scheu-dental, Germany) was employed due to its softness, flexibility and biocompatibility. The fluid utilized was glycerin in view of its clearness, thickness and biocompatibility. Glycerin is additionally utilized, as a vehicle in fluid prescriptions.

CONCLUSION

Flabby ridges, often, causes problems in denture retention as well in stability and poses a real challenge to a prosthodontist for achieving the basic objectives of impression making. Surgical intervention and implant-supported dentures may not be possible to be applied in all those clinical conditions. Liquid supported denture can stand a better option in such situations while considering conventional prosthodontics. This concept can further improve the patient's comfort and acceptance because of uniform distribution of masticatory forces.

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Source of Support: Nil; **Conflict of Interest:** None

Submitted: 09-09-2019; **Accepted:** 11-10-2019; **Published:** 30-10-2019