



LIQUID DENTURE: A TECHNIQUE TO HANDLE HYPERPLASTIC AREAS ON EDENTULOUS RIDGES

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ABSTRACT

Rehabilitation of atrophied arches with flabby tissue require greater efforts in terms of treatment planning and execution. The denture not just has to provide for uncton and esthetics but also must eschew causing any damage to the underlying tissues. Liquid denture provides for the stability required for proper working of the denture while providing the flexibility required to avoid compression of the hyperplastic tissues. This has upper edge over soft relining as this wouldn't need frequent replacement and doesn't cause significant microbial adhesion. This case report delineates the process of fabrication of liquid denture for the maxillary arch with cross-arch teeth arrangement.

KEYWORDS: Liquid denture, Flabby tissue, Complete denture, flexible tissue surface.

INTRODUCTION

A flabby ridge is a superficial area of mobile soft tissue which develops when hyperplastic soft tissue replaces the alveolar bone. It is seen in 24% of edentulous Maxillae and 5% of edentulous Mandible.^[1] This mobile tissue when under stresses during mastication could get displaced and lead to loss of peripheral seal finally resulting in loss of retention of the denture.^[2]

In complete denture, the rigid denture bases provide a stiff framework for the denture, but these rigid basses are unable to adapt to the micro-movements that the flaccid tissues exhibit. The normal heat polymerized acrylic denture bases mold into the details of the underlying tissue preventing the ease of mobility.^[3]

The ideal denture in such situations should be flexible enough to adapt to the resilient mucosa and at the same time be rigid enough to support the overlying teeth and occlusal forces. Because a single material cannot perform both the duties different approaches have been designed.^[4]

Chase in 1961 reported that, the application of elastic impression materials on the mucosal side of the rigid base relieved the traumatized soft tissue. Davidson and Boere in 1990 gave the concept of Liquid Denture; here the denture base was covered with a pre-shaped, close-

fitting, flexible foil to keep a thin film of liquid in its place.^[4]

This case report describes a more convenient process to fabricate a liquid denture.

CASE REPORT

A 63 year old man reported to the Department of Prosthodontics with a chief complaint of ill-fitting denture, since 3 years. Clinical examination revealed atrophied maxillary arch with flabby tissue in the anterior maxillae region and a completely edentulous mandibular arch. (Fig 1)

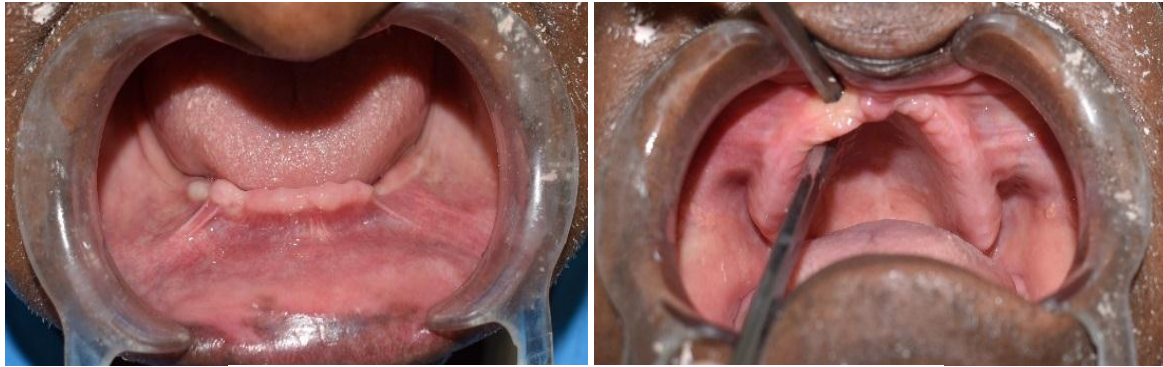


Fig. 1: Maxillary and mandibular ridges showing flabby tissue.

After thorough examination and discussion with the patient, fabrication of a liquid denture was decided.

Primary impressions were made in alginate and primary casts were obtained. The area of flabby tissue was marked on the impression which got imprinted on the cast. Double spacer was adapted in that region of flabby tissue. Custom trays were fabricated using clear autopolymerising resin and border moulding was carried out using greenstick compound. (Fig 2). The area of flabby tissue was relieved by drilling multiple holes of around 1mm diameter to ensure that the impression material did not compression the mobile tissues. (Fig 3)



Fig 2: Custom tray with multiple holes in the region of flabby tissue.



Once the impression was made it was beaded, boxed and master cast was poured. A 1.5 mm thermoplastic sheet was vacuum formed over the maxillary cast 2 mm short of the sulcus, to provide around 1mm of space for the liquid after this sheet is replaced with 0.5 mm thermoplastic sheet later.

Jaw relation was recorded and it was found that the mandibular arch was wider than the maxillary arch, hence to provide more stability cross-arch teeth arrangement was planned. (Fig 4) Try in was performed. Patient was satisfied with the appearance and construction of the denture.



Fig. 4: Cross-arch posterior teeth arrangement.

The trial dentures were flaked in normal manner, after dewaxing the vacuum pressed sheet was replaced on the maxillary cast and a layer of petroleum jelly was applied over it. (Fig 5) The flask was packed with heat polymerizing acrylic resin along with vacuum formed sheet.



Fig. 5: Vacuum pressed thermoplastic sheet of 1.5 mm placed during packing.

After curing the denture was trimmed, finished and polished. The finished denture was inserted and patient was recalled after a week.

The 1.5 mm sheet thermoplastic was removed from the denture. A Putty impression was made of the intaglio surface of the maxillary denture and pored with dental stone. This gave the exact junction of the acrylic and the thermoplastic sheet. A 0.5 mm thick thermoplastic sheet was adapted over this cast. The obtained cover of 0.5 mm was replaced in the void left behind by the previous sheet. The 0.5 mm lid was luted to the denture using cyanoacrylate resin reinforced by autopolymerising acrylic resin.

Two holes were made on the buccal flange in the second molar region and glycerin was injected in the 1mm space formed. This liquid provides the cushioning effect. The holes were sealed with autopolymerising resin. (Fig 6) This denture was inserted in patient's mouth and patient was given instruction for meticulous maintenance of the denture and patient was kept on multiple recall appointments.

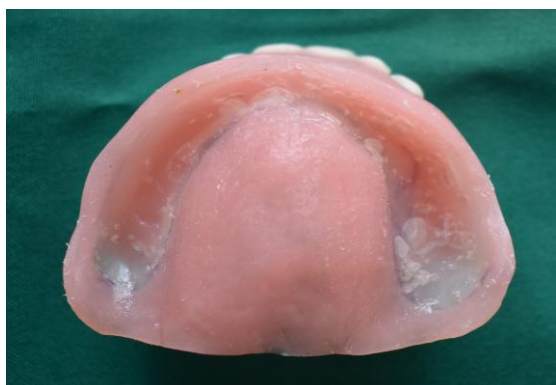


Fig 6: Maxillary denture with 0.5 mm vacuum pressed sheet with Glycerin between the denture and the sheet.

After 2 year follow up patient reported to be satisfied with the dentures.

DISCUSSION

The present case warranted a unique approach to the issue of flabby tissue at present in the anterior maxillary region. In literature we can find multiple ways to approach this issue; be it using various techniques to record the final impression or making amends on the tissue surface of the denture itself.^[5-7]

The rationale behind fabrication of liquid denture is when no forces are applied the flexible thermoplastic sheet assumes the primary shape which was formed during processing and when compressive forces are applied the flexible thermoplastic sheet adapts to the changing topography of the mobile tissues.^[8] Any forces applied on a film of liquid gets dissipated uniformly throughout the medium, similarly the forces on the denture gets uniformly distributed throughout the denture covering area due to the presence of the viscous liquid.^[9]

Boere G et al in their study stated that use of liquid denture aided in preserving the underlying tissues, avoided loss of retention, stability and support and prevented formation of chronic soreness due to the rigidity of the denture base.¹⁰

The only prerequisite is that there should be 3mm thickness of the denture base to accommodate the liquid, the flexible thermoplastic sheet as well as a layer of heat cure denture base material. The liquid added inside should have adequate viscosity and should not be volatile or cause any irritation to the tissues in case it leaks out, in the present case glycerin has been used. The junction should be sealed immaculately to avoid leaking of the liquid and to prevent ingress of fluids into the cavity. Finally the patient should be instructed to maintain proper denture hygiene to prevent any yeast infections.^[10]

When the mandibular arch is wider than the maxillary arch placement of maxillary posteriors in ideal position may not be possible as the non-axial forces can fracture the denture at the midline or in case of hypertonic musculature, the stability of the denture can be affected. In the present case report cross arch arrangement is used as to avoid loss of stability and maintain adequate support to the denture.^[11]

CONCLUSION

Flabby tissues pose great challenge to fabrication of complete denture, surgical interventions or placement of implants to surpass the situation cannot be carried out in all situations. Modifying certain procedures and certain features of the denture provide for better patient satisfaction and indirectly the outcome

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