

STABILIZING THE MOVABLE- A CASE REPORT

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Abstract

Success of the complete denture prosthesis is often measured by the amount of stability and retention it offers in function. A successful fabrication of complete denture is frequently hampered by the existence of movable denture-bearing tissues and continues to be challenging to a Prosthodontist. The stability, support, and retention of dentures on flabby ridges are affected unless effective management strategies are used. The management of flabby ridges has been approached from several angles. A balanced distribution of occlusal load, unique impression procedures, and surgical removal and augmentation, use of implants are some of the techniques used while treating flabby ridges. Among the various impression techniques used, mucostatic impression technique has been advocated for impression of flabby ridges to record the flabby tissues in a static state. The present case report represents a conventional complete denture made using a modified window technique for flabby tissues using polyvinylsiloxane impression material.

Key words: Flabby ridge, dual tray impression technique, modified window technique, balancing ramp, monoplane teeth

Introduction:

The goal of complete denture prosthodontics is to replace missing dental and alveolar structures with a stable prosthesis in order to restore esthetic, comfort, and function.

The success of complete denture depends upon maximum supporting area coverage, accurate tissue adaptation to the underlying mucosa.¹ However, there may be instances where the tissues supporting the dentures are of poor quality. Such situations appear to be a challenge to a Prosthodontist as they demand attention to the technique used to make an impression without compromising upon the basic principles. The presence of flabby ridges is one of those !

Mobile soft tissue which is located on the superficial aspect of the alveolar ridge is referred to as “flabby ridge”.² A successful fabrication of complete dentures is frequently hampered by the existence of movable denture-bearing tissues. If soft tissues get displaced while making impression, they tend to regain their natural form, and such impression will give rise to denture that will not fit properly over the recovered tissues. As a result, the dentures will lose retention, be uncomfortable, and exhibit severe occlusal disharmony. In edentulous mandibles and maxillae, the prevalence of flabby ridges was reported to be 5% and 24%, respectively.³

Etiology of flabby ridge includes long-term use of unmaintained dentures, trauma to the denture bearing area due to ill-fitting dentures, malocclusion, ridge resorption, abnormal stresses on prosthesis, and combination syndrome.⁴ It is related to residual ridge resorption as the lost bone is replaced by hyperplastic tissues. Such tissues are loosely attached to the periosteum and can be diagnosed by the blanching seen on applying light pressure.⁵ Treatment modalities mentioned in the literature include surgical excision of flabby tissue, implant supported fixed or removable prosthesis, conventional fabrication of removable prosthesis without surgical intervention.^{5,6,7}

Every treatment option has its own advantages and shortcomings and can be chosen according to the patient's requirements, systemic health, financial status.

The present case report represents a conventional complete denture made using a modified window technique for flabby ridge with better control of material flow using polyvinylsiloxane impression material.

Case presentation:

A 74 years old male patient reported to the Department of Prosthodontics, D Y Patil University, School of Dentistry, Nerul, Navi Mumbai with the chief complaint of ill fitting dentures and difficulty in eating food due to instability. The patient had been completely edentulous since past 7 years and had been a denture wearer since then. He had changed 2 sets of dentures for the same reason of inability to eat. Occlusal surface of the denture was completely worn out suggestive of instability. Patient gave a history of paralysis of right side since six years. As a result of which uncontrolled

movement of the lower jaw was noticed at the time of appointment. On intraoral examination, completely edentulous maxillary and mandibular arch was observed with displaceable anterior flabby tissue in the mandibular arch.(Fig.1) Fabrication of a new set of conventional complete denture was planned for the patient.The previous denture (Fig.2) was evaluated and relined with tissue conditioner(D-soft,Medicept) to condition the traumatic tissues .(Fig. 3)

Primary impression for maxillary arch was made using impression compound(Kerr dental) and using irreversible hydrocolloid (Zetalgin,Zermack) for mandibular arch.Impressions were poured using type II gypsum product (dental plaster,Kala bhai) and flabby area was marked on the primary cast after adequate probing intraorally.

Custom tray was made with 3 mm spacer for upper arch. (Fig 4a)A modified two tray technique was used for lower arch in which the inner custom tray was made using self cure acrylic resin(DPI cold cure) with 3 mm spacer and an outer tray was made using hard polyethylene sheet(NMD Dental,India) adapting it by vacuum pressing over the inner acrylic tray.Handle was made bilaterally to carry it inside the oral cavity. Inner acrylic tray was cut in the region of flabby tissues and 3 holes of equal diameter were made in the polyethylene sheet.(Fig. 4b). The tray was tried into the patient's mouth and the flanges were modified to be 2 mm shorter than the depth of the sulcus. Border moulding was carried out by using low fusing green stick dental impression material (Dental Kerr Impression Compound).The impression of the non flabby ridge area was made using medium body Polyvinylsiloxane impression material (Aquasil, Dentsply) (Fig.5a). The impression was carefully examined for flaws and any extra material around the edge was taken out. Additionally, a scalpel blade was used to carefully remove the impression material from the flabby ridge area.

For recording the flabby tissues, the impression was repositioned in the patient's mouth, and a light-body Polyvinylsiloxane impression material (Aquasil, Dentsply) was injected over the flabby tissue area beginning at one of the side holes and moving through the polyethylene sheet's centre until some extra material poured out of the holes (Fig 5 b).The completed lower impression (Fig 5 c)was carried out by using selective Pressure impression technique for non flabby ridge area and by using mucostatic impression technique for flabby ridge area. Final impressions were poured in type III gypsum product(dental stone, Kala bhai) and occlusal rims were made using modelling wax (Aarc dental).Jaw relation was recorded. Facebow record was made and models were articulated on semiadjustable articulator in centric occlusion.(Fig 6)

Monoplane teeth were chosen for upper and lower posteriors.Teeth arrangement was done and try-in was done in patient's mouth (Fig 7a) and patient's approval was taken.Protrusive bite was taken (Fig 7b) to record the patient's horizontal condylar guidance on the articulator.

Balancing ramp sloping upwards was made in wax distal to the mandibular 2nd molar bilaterally. Dentures were processed using heat cure PMMA(Lucitone ,Densply).

Occlusion was checked intraorally with contacts on the balancing ramp on protrusion(Fig 7 a,b).Dentures were checked for any overextension and delivered to the patient(Fig 8).

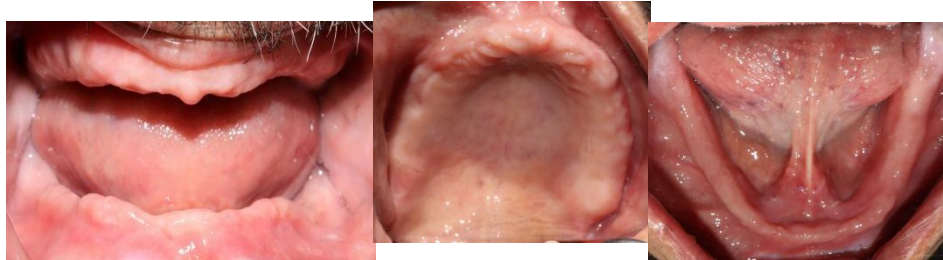


Fig.1 : Preoperative intraoral view -Completely edentulous upper and lower arch with flabby ridge in the lower anterior region



Fig.2 : Patient's old dentures with attrited upper and lower teeth.



Fig.3 : Patient's old dentures with tissue conditioner in situ

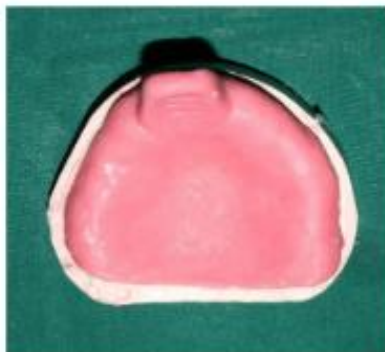


Fig. 4a :Custom tray for maxillary arch



Fig.4b :Custom tray for mandibular arch

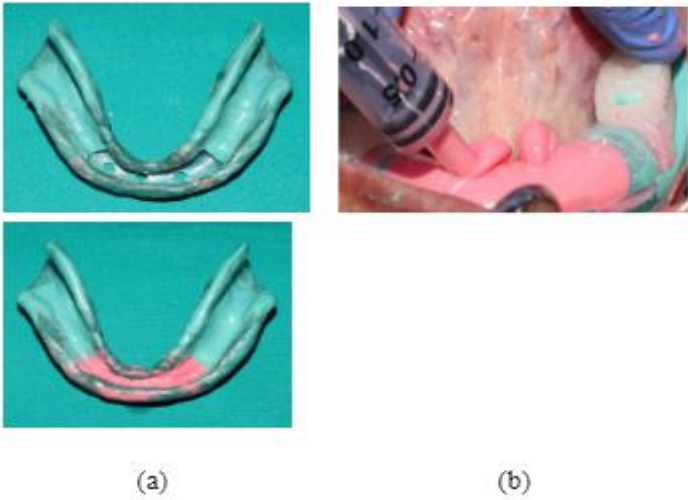


Fig. 5a :Border moulding and final impression of non displaceable tissue
Fig. 5b :Injecting light body over the flabby tissue
Fig. 5c :Final impression of complete mandibular arch



Fig.6 :Articulated casts on semi-adjustable articulator



Fig. 7a :Try in

Fig.7b : Protrusive bite record



(a)



(b)

Fig. 7a :Try in

Fig.7b : Protrusive bite record

Fig. 5a :Border moulding and final impression of non displaceable tissue
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Fig. 5c :Final impression of complete mandibular arch

Fig.6 :Articulated casts on semi-adjustable articulator

Fig. 7a :Try in



(a)



(b)

Fig 7 :Contact on the balancing ramp on protrusion - a. right lateral , b. left lateral



Fig 8 : Pre-operative and post-operative smile of the patient

Discussion

To provide a stable and retentive denture, an accurate impression of the edentulous ridge is essential. The flabby ridge if compressed during making an impression in conventional way, instability, loss of denture retention, and dislodgement of the prosthesis are encountered due to elastic recoil of flabby tissue during function.⁸ The present case report utilizes modified window technique to record the displaceable flabby tissues using Polyvinylsiloxane material of two different viscosity. Watt et al⁹, McCord and Grant¹⁰ Ahmed et al¹¹ used zinc oxide eugenol or regular body PVS to record the impression non flabby area by selective pressure technique in one custom tray and the flabby tissues were painted using impression plaster through the open window.

Due to gravitational pressures and various dental chair positions, this technique frequently faces clinical difficulties with the uniform application and control of low viscosity impression material on flabby tissues (especially for maxillary arch).

The modified window technique incorporated the use of two tray, inner acrylic one to perform the border moulding as well as to make the impression using selective pressure impression technique for area other than flabby tissues and the outer clear tray to support the low viscosity impression material over the flabby tissues allowing controlled and uniform flow of it. The inclusion of vents in the modified window approach enables for the regulated application of low viscosity materials as well as the minimal exertion of pressure to the flabby ridges. Use of polyethylene sheets as a material of choice for second tray enables good visibility to the clinician to check the

adaptation of the material to the flabby tissue surface without over or under filling the space provided.⁸

Monoplane occlusal scheme was used in the present case along with balancing ramp to improve stability and distribute forces evenly over the lower foundation area as the patient presented with poor neuromuscular control. According to Nimmo et al Balancing ramp provides tripodisation of the denture and helps in improvement in horizontal stability as there is smooth contact anteriorly on teeth and posteriorly on ramps when the patient moves from centric to protrusive or lateral positions.¹²

Summary:

The technique mentioned in this case report demonstrates an effective way of recording the flabby and non flabby tissues using dual tray- modified window technique. It revealed improved stability of lower denture in case of uncontrolled jaw movements by incorporation of balancing ramps. Patient's satisfaction at the time of delivery of denture and during its function represents success of the treatment.

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