

Prosthodontic Rehabilitation Of An Edentulous Patient With Flabby Ridge Using A Window Technique – A Case Report

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ABSTRACT

Rehabilitation of a completely edentulous patient with flabby tissue is a testing situation for a prosthodontist as it adversely affects retention, stability and support of complete dentures. Several impression techniques have been proposed to help overcome these difficulties encountered in such cases. A careful consideration and application of the principles of complete denture construction for such condition can provide a palliative form of treatment. The window impression technique uses a custom tray with a window over flabby tissues and a mucostatic impression material to minimize distortion of tissues while making an impression. First, an accurate record of the denture supporting and limiting structures is made except for the mobile tissues which are recorded in second step using light body polyvinyl siloxane/impression plaster impression material in the window area of special tray. This technique helps in maintaining the contour and recording the details of the tissues without displacing the flabby tissues. The purpose of this technique case report is to present a window technique for the impression of maxillary anterior flabby tissues for improved and controlled application of polyvinylsiloxane impression material that are routinely available in dental practice.

INTRODUCTION

Complete denture prosthodontics will remain an important part of dental education and practice. The performance of a complete denture is often a reflection of its support and retention. A master impression for a complete denture should record the entire functional denture-bearing area to ensure maximum support, retention, and stability for the denture during use.¹ There are cases where it is difficult to restore the mouth with conventional technique.

The flabby ridge or movable tissues are frequently seen in maxillary anterior ridge when the edentulous maxilla is opposed by natural teeth in the mandibular anterior region. The reported prevalence for this condition also varies among investigators, but it has been observed in up to 24% of the edentulous maxilla, in 5% of the edentulous mandible, and in both jaws most frequently in the anterior region.² Although the flabby ridge may provide poor retention for the denture, it may still be better than no ridge at all.³ The conventional prosthodontic management

of flabby ridges involves recording the flabby in a minimally displaced form, while the rest of the tissues are recorded in functional form.⁴

Different techniques have been proposed for making impressions of the edentulous arches.^{5,6} These techniques can be broadly divided into three classes according to pressure applied i.e., the mucostatic technique (non-displacive),⁷ the muco-compressive (displacive) technique,^{8,9} and selective pressure technique.¹⁰ Selection of a specific impression technique for a particular patient depends on the nature of the mucosa overlying the edentulous ridge.⁶ Making impressions is difficult when residual alveolar ridge is flat, knife edge, flabby and/or having unfavorable muscle attachment.¹¹

Many authors have proposed selective pressure impression techniques for flabby ridge impressions by modifying custom tray by window cut through, vent holes, spacer or combination¹²⁻¹⁷ Some clinicians try to solve this problem by chair side relining. Relining in such cases further displaces flabby tissue.¹⁸ Liddlelow¹³ used two

impression materials, plaster of Paris and zinc oxide eugenol in custom tray. Osborne¹⁴ proposed a technique in which he used two impression trays to record normal and flabby tissue separately and later related them intra-orally. Watson¹⁵ introduced the 'Window' impression technique. In this technique he made a window in the custom tray. This window or opening was made in the area of flabby tissue.

Zafarulla Khan et al¹⁹ described the window technique in which a primary impression was made, cast poured and an indelible pencil was used to outline the unsupported movable tissue. A single custom tray was fabricated and an opening was cut in the tray, modeling plaster adapted bilaterally on the posterior aspect to act as handles. Tray adjusted and routine border molding was done in the mouth. Tray was painted with an adhesive and regular body was used to make final impression, excess material was trimmed from the opening. The impression was placed back in the mouth and unsupported movable tissue was recorded by brushing on impression plaster which is a highly mucostatic impression material. Separating medium was applied on the impression plaster and master cast was poured.

Watt and McGregor¹⁶ proposed initial impression with fluid/mucostatic impression material. Then make impression of plaster cast with impression compound in custom tray and later adjust it in patient's mouth. McCord and Grant¹⁰ recommended use of zinc oxide eugenol or regular body poly vinyl siloxane impression on custom tray. Then cut through off wash material and tray equivalent to flabby area. Lynch and Allen¹⁷ revisited technique proposed by Watt and McGregor. They used impression compound to modify the custom tray and zinc oxide eugenol wash impression.

In contemporary dental practice elastomeric impression materials especially vinyl poly siloxane (VPS) impression materials are commonly used.^{10,12,17,20} These impression material produce good results as compared to zinc oxide eugenol impression paste, irreversible hydrocolloid and impression plaster.²¹ Metallic oxide impression paste tends to stick to the dry mucosa lining.⁶ While impression plaster is difficult to handle and pour.²² Therefore, a modified window impression technique is described which uses different viscosity VPS impression material. This is convenient to practice and comfortable for the patient.

Therefore, this article tries to discuss an impression technique for fabrication of a retentive and stabilized denture for the case of flabby maxillary anterior ridge through palliative approach.

CASE REPORT

A 52-year-old female patient reported to the Department of Prosthodontics and Crown and Bridge, Nagpur, Maharashtra, India, with a chief complaint of broken and ill-fitting denture since last 5 years. There was difficulty in eating and speaking with her old dentures.



Patient On Presentation

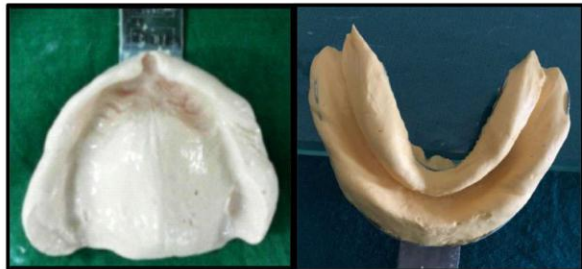
No relevant medical history was reported. On examination, it was found that there was an area of flabby tissue in the maxillary anterior region extending from the canine region from one side to the other and blanching of the tissues was seen when pressure was applied with the end of the mouth mirror. The mandibular edentulous ridge was also resorbed.



Intraoral Examination

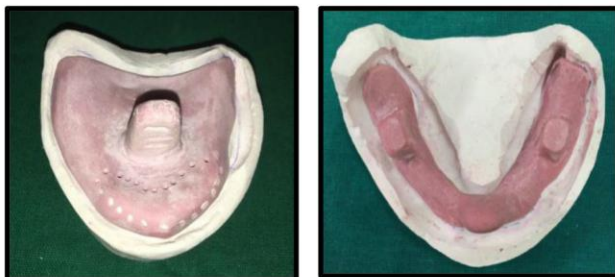
A treatment plan of fabricating a complete denture with the modification in the impression technique to achieve minimum displacement of the denture during function and maximum retention and stability was decided. It was decided to use the window impression technique for the maxilla.¹⁰

Primary impressions were made with irreversible hydrocolloid, mucostatic impression material to record the tissues in a minimally displaced form.



Primary Impressions

The impressions were poured in Dental plaster. The flabby areas were identified on the cast and marked with an indelible pencil. A spacer of modeling wax with 1mm thickness was adapted on the cast. Closely fitting custom trays were fabricated in autopolymerizing resin and checked in the mouth. Any overextensions were reduced. Also, holes were made on the tray in the flabby tissue area for the desired window section.



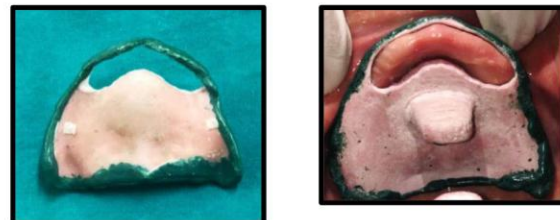
Custom Trays And Holes Made On Maxillary Tray For Desired Window Preparation

Softened green stick tracing compound was added in segments and border molding was carried out using the sectional method for the maxillary arch until the functional depth of the sulcus was recorded.



Border Molding

A window was cut in the impression through the impression tray exactly corresponding to the holes made on the tray, the wax spacer was then removed from the custom tray and the impression was made with zinc oxide eugenol paste. Any excess impression material in the flabby area was removed.



Sectioned Window Wash Impression With ZnO Eugenol Impression Paste

The impression was placed in the mouth, and light body polyvinyl siloxane was syringed on to the flabby tissues exposed through the window, followed by placement of gauze piece and reinforcement with dental plaster. It is allowed to set and the maxillary impression was removed from the mouth as one impression.



Flowing Light Body Impression Material In The Window



Placement Of Gauze

Region.



Reinforcing With Plaster



Final impression

After adequate disinfection of the impressions, they were beaded, boxed and poured properly. Master casts were poured in dental stone.



Master Casts

Rims were fabricated and jaw relation was recorded.



Wax Rims



Jaw Relation



Facebow Record



Facebow transfer

Shade selection and trial was done.



Teeth Arrangement



Try-in in patient's mouth

Complete denture was fabricated in the conventional manner. Dentures were inserted in the patient's mouth and instructions regarding denture care, its hygiene and maintenance were given. It had good retention and stability with proper recording of flabby tissues.



Denture Insertion

DISCUSSION

Flabby ridge also called as fibrous ridge or displaceable ridge is mobile soft tissue present on the superficial aspect of the alveolar ridge. Ellsworth Kelly in 1972 reported that mandibular anterior teeth cause trauma to maxillary anterior ridge as all occlusal forces are directed on to this area. This results in loss of bone from the anterior maxilla with subsequent fibrous tissue hyperplasia. The mucosa is highly movable and loosely attached to underlying periosteum of the bone. This flabbiness, comprised of loose fibrous and dense collagenized connective tissue, is usually seen in anterior region of an edentulous mouth.²³

Flabby ridges can be successfully treated with proper prosthodontic approach, either alone or in interdisciplinary combination with surgery. Surgical removal of flabby tissue is possible if there is adequate bone height. However, it results in short sulcus depth that further needs a small surgical intervention i.e. vestibuloplasty. This can be corrected with ridge augmentation, but again it causes either resorption or rejection of graft. Sclerosing agents such as sodium morrhuate have been advocated to be injected in such flabby tissues making it firm and fibrosed. However, anaphylactic reactions, patient discomfort, loss of firmness are some of the drawbacks reported due to such sclerosing agents.²⁴

For patients with flabby ridges, when dentures are fabricated using the conventional impression techniques, the patient often complains of "looseness" of the dentures. This is because the flabby tissues recoil when recorded in a displaced form and dislodge the dentures. Prosthodontic

management of a patient with a flabby maxillary ridge can be a challenging problem and taking care to consider the influence of both the impression surface and occlusal surface detail is paramount.

Standard mucocompressive impression techniques are likely to result in an unretentive and unstable denture as the denture constructed on a model of the flabby tissue in a distorted state. The use of selective pressure or minimally displaced impression techniques should help to overcome some of these limitations. Other treatment modalities for the scenario described in literature include surgical “debulking” or excision of the flabby tissues and the use of dental implants. Surgical “debulking” of flabby tissues is mainly a historical concept nowadays. The rationale behind its use was that removal of flabby tissues would result in a “normal” compressible denture-bearing area on which a mucocompressive impression technique could be used. Some of the difficulties caused by this approach include the fact that many complete denture patients are elderly or have complex medical histories, for which any form of surgery is contraindicated. One is reminded of the concept that prosthodontic therapy should be concerned with the “conservation of what remains, rather than the meticulous replacement of what has been lost.”²⁵

The current paper describes a simple technique to record flabby tissues in their undisplaced state using readily available clinical materials such as polyvinyl siloxanes. The advantage of choosing light body polyvinyl siloxane impression material is that, due to the inherent nature of the material, different consistencies can be achieved by varying the pressure applied on the

material during mixing.²⁶ McCord and Grant²⁷ and Ahmad (2008) described window technique which ensures peripheral molding resulting in peripheral seal because window, holes, or vents are prepared after the final impression is made.

The suggested method eliminates the excessive displacement of the soft tissues at the secondary impression; thus, a physiologic and anatomic registration of the attached and the unattached tissue of the denture-bearing areas is attained. Most commonly used materials in such scenario are irreversible hydrocolloid, impression plaster and elastomeric impression material.^{28,29} The displaceable tissue is then recorded in minimally displaced position, and the peripheral seal is re-established which is lost due to the window prepared.²⁵

CONCLUSION

Flabby tissue poses a difficult situation while rehabilitating a completely edentulous patient. Surgical excision and dental implant therapy are alternatives in such cases, but may not be feasible in those patients because of medical illness or expensiveness of treatment. Implementation of some modifications in current impression techniques and newly introduced materials with improved physical and handling properties, flabby ridges can be treated effectively without any additional visits of patients in clinical practice.

This paper has described an impression technique for the management of a denture-bearing area that contains flabby tissues. In this simple technique for making wash impression of highly displaceable maxillary anterior ridge with low viscosity polyvinyl siloxane and zinc oxide eugenol impression material is explained. The choice of impression materials and design of the custom tray used for making final impression to reduce the pressure on the displaceable tissue is very important. The materials used are readily available and used in contemporary general dental practice. Even general dentist can deal up such cases in primary health care centres. The time required for the specialized impression technique is not excessive.

DECLARATION OF PATIENT CONSENT

We certify that we have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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CONFLICTS OF INTEREST

There are no conflicts of interest.

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