

Window impression technique: A prosthetic approach to flabby ridges

Suryaakant Deogade^{1*}, Pushkar Gupta²

¹Associate Professor, ²Professor, ¹Dept. of Prosthodontics, G.D.C.& H, Nagpur, ²Dept. of Prosthodontics, H.D.C&H, Jabalpur, Madhya Pradesh

***Corresponding Author:**

Email: dr_deogade@yahoo.co.in

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.

Keywords: Impression technique, Flabby ridge, Polyvinyl siloxane, Hypermobile tissues, Mucostatic, Complete denture.

Introduction

The success of complete denture prosthesis is often a reflection of its retention, stability and support offered during its usage in function.⁽¹⁾ A definitive complete denture impression should record the entire functional denture-bearing, relieving and limiting areas to ensure maximum retention, stability and support for the prosthesis.⁽²⁾ Unfortunately, difficulties arise when the quality of denture-bearing areas are not ideal and demonstrate 'displaceable' or 'flabby ridges' in denture foundation. The available literatures indicate that the prevalence of flabby ridges occurs up to 24% of edentulous maxilla and in 5% of edentulous mandible.^(3, 4)

Flabby tissue is a common finding in long-term denture wearers indicating a hyperplastic growth of mucosa that replaces alveolar bone.⁽⁵⁾ This hypermobile growth of maxillary and mandibular ridges affects the wearing of prosthesis by the patient. Ill-fitting dentures cause a constant trauma to the underlying tissues resulting flabby ridges.⁽⁶⁾ Ellsworth Kelly⁽⁶⁾ 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.^(3,7-9)

Construction of dentures over flabby foundation poses a great challenge to a prosthodontist while rehabilitating patients with flabby ridges. So many therapies that are suggested in such cases include surgical excision of flabby mass, implant-supported dentures or conventional prosthesis without surgery.⁽⁵⁾ Implementation of treatment modality depends on

medical health and requirement of the patient, extent of flabby tissue, financial burden on patient and skill of the prosthodontist.⁽¹⁰⁾

Displacement of flabby tissues during impression making step is always a concern while fabricating complete denture. Hypermobile tissues which are displaced during impression making tend to return to their undistorted form, making fit of prosthesis difficult for patient. Also results in loss of retention, stability, support and gross occlusal disharmony of the prosthesis.⁽¹¹⁾ Several impression techniques⁽¹²⁻¹⁶⁾ have been suggested to rule out this difficulty caused by flabby ridges. In the window technique, two separate impression materials such as zinc oxide eugenol impression paste for the normal tissues and impression plaster/low viscosity elastomeric for the flabby tissues are used. A. Impression plaster is a mucostatic impression material and produces little or no pressure, but it is difficult to handle and to pour also it offers little advantage over low viscosity polyvinyl siloxane materials.⁽⁵⁾ Light body polyvinyl siloxane is also a mucostatic material. It is dimensionally most stable, elastic material and records undercuts. The purpose of this article is to describe an impression technique for flabby ridges that makes use of impression plaster/low viscosity polyvinyl siloxane impression material routinely available in general dental practice.

Case Report

A 65-year-old male patient visited the Department of Prosthodontics, Government Dental College and Hospital, Nagpur, with the chief complaints of loose complete dentures. The patient had been edentulous since last 10 years and had two sets of complete dentures made from two different dentists. Existing dentures were ill-fitting when checked intraorally. He reported difficulty in speaking as well in eating the food

with the existing set of dentures. History of any past medical or systemic illness was absent as discussed with the patient. On intraoral examination, an area of flabby tissue was observed in the maxillary anterior region that was extending from the canine region from one side to the other. Blanching of flabby tissue was noted when pressurized with the blunt end of mouth mirror. Treatment options like implant-supported dentures, preprosthetic surgical excision of flabby tissue, etc., were given to the patient. But, the patient denied for the options explained to him and was more interested for the conventional approach of denture construction. Therefore, other options were ruled out and the final treatment plan included the use of window impression technique for the maxillary arch. Final treatment plan was discussed with the patient and an informed consent was obtained from him.

Technique

A preliminary impression of the maxillary edentulous arch was made using an irreversible hydrocolloid impression material ((Dentalgin; Prime Dental Products, Mumbai, India)) and was poured in dental plaster to obtain a primary cast. Extension of flabby area was marked with the help of marking pencil on the maxillary primary cast. After that, proper wax spacer (Modeling Wax; Deepti Dental Products, Ratnagiri, India) was adapted such that there were four tissue-stops to stabilize the tray in maxillary arch. Over it, a special tray was fabricated using auto-polymerizing acrylic resin (DPI cold cure; Dental Products of India, Mumbai, India) and the borders were reduced to 2 mm short of the sulcus. Border moulding was performed with the help of low-fusing impression compound (DPI Pinnacle, Tracing Sticks Dental Products of India, Ltd). Window was prepared in the custom tray in the area of flabby tissue (Fig.1). This was done using round and fissured bur. After this, the spacer was removed and the definitive impression was made in zinc oxide eugenol impression paste. The excess material over the window cut off with sharp scalpel blade and the flabby area was recorded using an impression plaster (Fig. 2&3). Impression plaster was applied with a painting brush in proper consistency so that it wouldn't run out of the area. The impression plaster should be stiff enough to be applied with a brush. Apply a separating medium over the plaster part of the impression before pouring it.



Fig. 1: Border molded special tray with open window at the flabby area



Fig. 2: Definitive impression made with zinc oxide eugenol impression paste

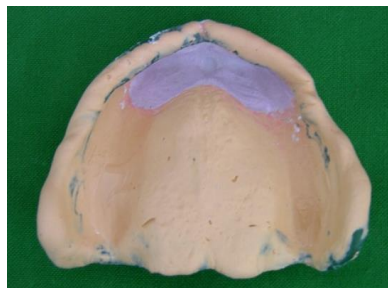


Fig. 3: Completed definitive impression with flabby area recorded in impression plaster

If elastomeric impression material is available, then tray adhesive can be applied on the borders and on the tissue surface of the tray. Allow the tray adhesive to dry for 10 minutes before loading the tray with elastomeric material to obtain a chemical bond between the tray and the material. The definitive impression can be made with monophasic polyvinyl siloxane impression material (Reprosil; Dentsply DeTrey GmbH, Konstanz, Germany) and the excess over the window opening can be trimmed away with sharp scalpel blade (Fig. 4). The flabby area can be recorded with light body polyvinyl siloxane (Reprosil; Dentsply DeTrey GmbH, Konstanz, Germany). This can be injected with syringe on to the flabby area exposed through the window made in the special tray (Fig. 5).

In both the conditions, place the impression plaster/light body elastomeric material in such manner so that it will prevent the distortion of the soft hypermobile tissue. After adequate disinfection of the impressions and beading/boxing procedures, impression can be poured in type III dental stone to obtain the master cast.

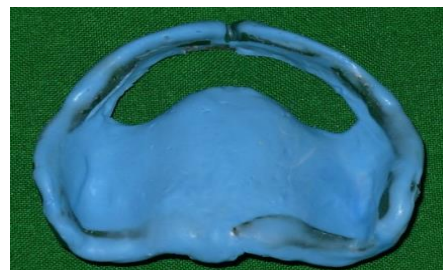


Fig. 4: Definitive impression made with polyvinyl siloxane elastomeric impression material

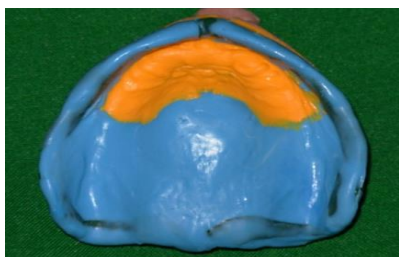


Fig. 5: Completed definitive impression with flabby area recorded in light viscosity elastomeric impression material

Discussion

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.⁽¹⁷⁾

Conventional impression techniques used to record such flabby tissues often results in unretentive and unstable dentures. Creating holes/ windows or wax reliefs decreases the hydraulic pressure while impressing flabby areas, thus minimizing the distortion/ displacement of hypermobile tissues. Utilizing these alternatives while making secondary impression can be useful in recording flabby tissues in their anatomic or undistorted form.^(6,18) This case report discusses the window impression technique to minimally displace the flabby tissue recording it in its undistorted form. This favors the health of oral tissues along with providing adequate retention, stability and support for the prosthesis.⁽¹⁹⁾ While in use, loosening of prosthesis is the most commonly observed complaint from the patients with flabby ridges. Usually it can be corrected with chair-side reline, but the viscous reline material further displaces the flabby tissue. The displaced tissues again recoil back to its previous form making dentures loose. This difficulty encountered is solved by using the described impression technique, in which the flabby area is recorded in minimally displaced or anatomic form and rest of the tissues are recorded in functional form. Elastomeric materials are more preferred over zinc oxide eugenol impression paste of impression plaster, as they are less brittle and less messy to use. However, there is no significant difference in retention and stability obtained from both, zinc oxide eugenol impression paste and polyvinyl siloxane material.⁽²⁰⁾ Those patients in which medical conditions don't allow dental implant therapy or those who deny undergoing

invasive surgical intervention for correction of flabby tissues can be successfully treated by window impression technique.

Conclusion

Flabby tissue poses a difficult situation while rehabilitation of completely edentulous patients. 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. The materials used are readily available in dental clinics. Even general dentist can deal up such cases in primary health care centres.

References

1. Fenlon MR, Sherriff M, Walter JD. Comparison of patients' appreciation of 500 complete dentures and clinical assessment of quality. *Eur J Prosthodont Rest Dent* 1999;7:11-4.
2. The British Society for the Study of Prosthetic Dentistry. Guidelines in prosthetic and implant dentistry. London: Quintessence, 1996.
3. Carlsson GE. Clinical morbidity and sequelae of treatment with complete dentures. *J Prosthet Dent* 1998;79:17-23.
4. Xie Q, Nahri TO, Nevalainen JM et al. Oral status and prosthetic factors related to residual ridge resorption in elderly subjects. *Int J Prosthodont* 1997;55:306-13.
5. Crawford RW, Walmsley AD. A review of prosthodontic management of fibrous ridges. *Br Dent J* 2005;199:715-9.
6. Kelly E. Changes caused by a mandibular removable partial denture opposing a maxillary complete denture. *J Prosthet Dent* 1972; 27:140-0.
7. Zarb GA, Bolender CL, Carlsson GE. Boucher's prosthodontic treatment for edentulous patients. 11th ed. London; ST. Louis; Mosby;1997.p.36.
8. Basker RM, Davenport JC. Prosthetic treatment of the edentulous patient. 4th ed. Blackwell; Oxford; 2002. p. 286-9.
9. Magnusson BC, Engstro'm H, Kahnberg KE. Metaplastic formation of bone and chondroid in flabby ridges. *Br J Oral Maxillofac Surg* 1986;24:300-5.
10. Shrivastava R, Deogade S, Mantri S. Liquid-supported denture-a boon to flabby ridges. *Annals Prosthodont Restor Dent* 2017;3(1):38-41.
11. Lytle RB. The management of abused oral tissues in complete denture construction. *J Prosthet Dent* 1957;7:27-42.
12. Osborne J. Two impression methods for mobile fibrous ridges. *Br Dent J* 1964;117:392-4.
13. Watson RM. Impression technique for maxillary fibrous ridge. *Br Dent J* 1970;128:552.
14. Freeman SP. Impressions for complete dentures. *J Amer Dent Asso* 1969;79:1173-86.
15. Khan Z, Jagers J, Shay J. Impressions of unsupported movable tissues. *JADA* 1981; 103: 590-92.
16. Devlin H. A method for recording an impression for a patient with a fibrous maxillary alveolar ridge. *Quint Int* 1985; 6: 395-7.

17. Desjardins RP, Tolman DE. Etiology and management of hypermobile mucosa overlying the residual ridge. *J Prosthet Dent* 1974;32:6:19-38.
18. Allen F. Management of the flabby ridge in complete denture construction : *Dent Update* 2005; 32: 524-8.
19. Lynch CD, Allen PF. Management of the flabby ridge: using contemporary materials to solve an old problem. *Br Dent J* 2006; 200:258-1. 13. Chee W, Jivraj S. Treatment planning of the edentulous mandible. *Br Dent J* 2006; 201: 3377.
20. Appelbaum EM, Mehra RV. Clinical evaluation of polyvinyl siloxane for complete denture impressions. *J Prosthet Dent* 1984;52:537-9.