

Mishmash Impression Technique for Managing Maxillary Anterior Fibrous Ridge

Poonam Kulkarni¹, Rahul S. Kulkarni², Rupal J. Shah³, Bharti Tomar⁴

¹ Associate Professor, Department of Prosthodontics, Sri Aurobindo College of Dentistry, Indore, Madhya Pradesh, India

² Private Practitioner, Kulkarni Dental Clinic, Madhya Pradesh, India

³ Professor & Head, Department of Prosthodontics, Government Dental College & Hospital, Gujarat, India

⁴ Director, the Healers Dental Group, India

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Abstract

Introduction: Flabby or fibrous ridge is one of the consequences of long term wearing of complete dentures. It can develop where hyperplastic soft tissue replaces the alveolar bone and is a common finding, particularly in the upper anterior region of long term denture wearers. Forces exerted during impression making can result in distortion of the mobile tissue unless managed appropriately; such flabby ridges adversely affect support, retention and stability of complete dentures. Many impression techniques have been developed to help overcome this problem. While these vary in the method applied, they are similar in their complexity, are often quite time-consuming to perform and rely on materials not commonly used in contemporary general dental practice. The purpose of this article is to describe an impression technique for flabby ridges using rubber base impression materials, routinely available in general dental practice.

Key words: Flabby ridge, Special tray, Mishmash impression technique, Rim handle.

Introduction

Flabby ridge is more common in maxillary alveolar ridge in comparison to mandibular alveolar ridge. Although the reported prevalence has varied, it has been shown to be up to 24% in edentulous maxillae and 5% in edentulous mandibles. Flabby ridge is an area of mobile soft tissue in maxillary or mandibular alveolar ridges. When alveolar bone is replaced by hyperplastic soft tissue, development of flabby ridge takes place. Prevalence of flabby ridges is most common in maxillary anterior region of patients who are long term denture wearers. Desjardin and Tolman, suggested in their study that there are various etiological agents for the development of flabby ridge such as atrophy, bone resorption, nutritional deficiencies, pressure, functional forces and patients with parafunctional habits (1). Displacement of this mobile denture-bearing tissue by masticatory forces leads to altered denture positioning and loss of peripheral seal. Distortion of mobile tissue can take place by the forces exerted during impression making. This results in poor stability & compromised function & appearance of the denture. Kelly (2) first described combination syndrome in 1972 as being caused by the presence of opposing natural teeth to a complete denture in an edentulous area. In his three year observation each patient wore a complete maxillary denture opposed by mandibular natural anterior teeth and a distal extension removable partial denture. During his observations, he noticed resorption of alveolar bone in anterior maxilla, enlargement of

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tuberosity & bone resorption under mandibular denture base. Palmvist et al (3). carried out a comprehensive review of studies investigating ‘combination syndrome’ in 2003 and reported that there was no substantiation to support the conviction that bone resorption in anterior maxilla is related to presence of anterior mandibular teeth. Moreover, no evidence was found to indicate that the use of a mandibular removable partial denture in these instances can prevent anterior maxillary bone resorption. This is possibly not astonishing when the many complex factors controlling bone metabolism are considered.

Classically ‘flabby ridges’ are composed of mucosal hyperplasia and loosely arranged fibrous connective tissue over a more dense collagenous connective tissue. In the soft tissue, varying amounts of metaplastic cartilage and/or bone have been accounted.

In literature, there are many impression techniques for flabby ridges. If the degree of mucosal displacement is minimal, one part impression technique or selective perforation tray technique may be considered (4). Controlled lateral pressure technique has been advocated by many authors for cases with a fibrous posterior mandibular ridge (5-7). Palatal splinting using a two-part tray system was described by Osborne in 1964. In this technique, two overlying impression trays are used for recording maxillary arches with displaceable anterior ridges. A precise modification of this approach was described by Devlin in 1985 (8). In selective composition flaming technique, the original comparatively undistorted shape of the fibrous tissues is retained while the tissues more proficient of functional denture support are recorded in a displaced state during impression making (4). Two part impression technique includes: Mucostatic and muco-displacive combination. This technique was first described by Osborne in 1964 for impressions in mandible and has been a popular technique by many authors as it ensures that pressure exerted by the tray does not cause distortion of the mobile tissues (7, 9, 4, 10).

The problem with all techniques is that they depend on materials such as impression plaster, impression compound and zinc oxide and eugenol. In two part impression technique plaster has been used for making second impression. Drawbacks of using plaster are, difficulty in border contouring because the impression plaster drags down, as it does not have a self-supportive consistency. Impression plaster cannot be used in undercut areas. Many rubber base impression materials are currently available in the market with varying consistencies and dispensing methods. The purpose of this article is to present modified form of osborne’s two part impression technique for flabby ridges.

Case Presentation

A 59 year old male patient came to the OPD of the Department of Prosthodontics of Government Dental College, Ahmedabad for replacement of missing teeth in upper and lower arches. The patient was a denture wearer for the past 3 years and described the existing dentures as “loose.” On examination the patient was completely edentulous in upper and lower arches. The area of anterior right canine to left lateral incisor region in maxilla was flabby (Fig 1). The treatment options were explained to the patient. The patient was not willing to undergo surgical procedures so as a substitute, upper and lower complete dentures were fabricated with a combination of impression techniques & impression materials.



Figure 1. Intra-oral view of the flabby maxillary anterior ridge

- The preliminary impressions were taken with alginate (Neocolloid; Zhermack) with edentulous perforated trays and casts. The displaceable tissue was marked on the impression and transferred to the primary cast.
- A maxillary custom tray was fabricated using clear autopolymerising acrylic resin (RR self-cure acrylic resin, Dentsply, India) covering all the tissues except the flabby area (Fig 2). Clear acrylic resin was preferred for tray fabrication as tissue blanching underneath the tray could be easily evaluated, thereby making it easier for the operator to relieve pressure spots on the tray



Figure 2. Anterior open clear acrylic custom trays with rim handle design

Tray adjustment & border molding of the firm supported areas was carried out and then impression was recorded with zinc oxide paste (Cavex outline impression paste, Ultimate dental, Moorabbin, Melbourne) (Fig 3, 4, & 5).



Figure 3. Border molded tray of the firm supported areas

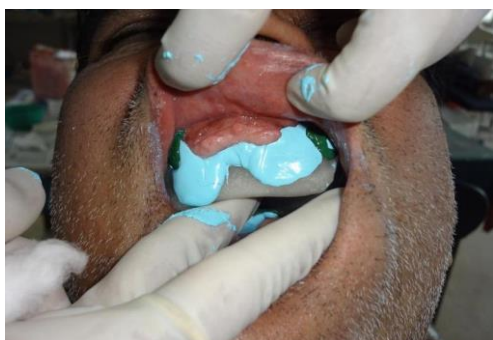


Figure 4. Final impression of firm supported areas with cavex by mucodisplacive technique



Figure 5. Final mucodisplacive impression of the firm supported areas

- Tray adhesive was applied around the border of the tray of the first impression in the flabby area & the tray was inserted into the patient's mouth, then putty body of the rubber base impression material (Speedex, Coltene, Whaledent product, Switzerland) was placed over the flabby ridge area & molding of the impression material around the labial border was done to record the impression (second stage impression) of the flabby area (Fig 6).



Figure 6. Putty body impression of flabby anterior ridge by mucostatic technique

- Second stage impression of the putty body was scrapped adequately from the flabby region by a putty cutter & final impression of the flabby region, without displacing the flabby tissue was recorded with the light body of the rubber base impression material (Speedex, Coltene, Whaledent product, Switzerland) (Fig 7 & 8).



Figure 7. Mishmash impression technique for second stage impression

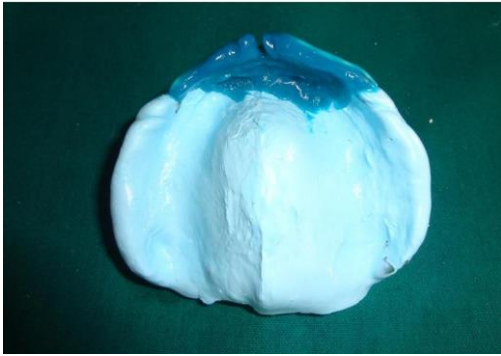


Figure 8. Mucostatic & mucodisplacive mishmash final impression

- In this way impression of the displaceable mucosa can be recorded tidily without distortion of the tissue.
- Maxillary & mandibular impressions were poured immediately & upper & lower complete dentures were fabricated conventionally.

Discussion

There are surgical over and above prosthetic treatment options to deal with the flabby tissues with its advantages and disadvantages. Mainly, there are three options to manage the flabby ridge including: surgical removal of fibrous tissue prior to conventional prosthodontics, implant retained prosthesis either fixed or removable & Conventional prosthodontics without surgical intervention. If we go surgically, then it will result in inadequate ridge height with little or no retention and resistance to lateral forces.^[11] So surgical excision is mainly a precedent concept & it is appropriate only when age, general health, dental history, motivation and personality favor surgical treatment (1).

Excellent retention of denture during function can be achieved by a muco-displacive impression technique; the reason is that the vascular contents of the blood vessels are displaced into the interstitial spaces. However, during rest, denture becomes loose as blood re-enters the tissues altering its contours & eventually affects the retention & stability of the denture (12, 1, 13-18). An unretentive and unstable denture is caused by mucodisplacive impression technique. In accordance with the theories of impression making, limitations of the muco-displacive impression technique can be overcome by selective pressure or minimally displacive impression technique. Ideas of impression making are based, particularly for hypermobile tissues, on principle of pressure (6). It is infeasible to register flabby tissue in an unstrained position, as meager introduction of trays and exertion of force result in tissue displacement (9, 16, 19). In

above given mishmash technique, firm, supported mucosa was recorded under compression while the flabby or fibrous ridge was recorded without compression.

Mucostatic technique enabled a satisfactory recording of ridge hyperplasia by avoiding overcompression of the tissues.

The choice of impression techniques depends on the personal preferences based on the principles of impression making as well as material selection (4).

At present, the published facts do not clearly support the superiority of any one of the techniques over the others.

In this particular case, authors favored a mucostatic & mucocompressive impression techniques for flabby ridge & firm supported ridge respectively, by using modified tray with uncovered section on the fibrous ridge. As per Crawford & Walmsley (19) the design of this modified special tray can vary from a completely uncovered section of the arch to a window overlying the unsupported mucosa.

In the present case, the position of the handle of the tray was also modified. A rim handle design was given to prevent falling of unset impression material back into the mouth when the patient was either in supine or in semi supine position.

Conclusion

Flabby or Fibrous ridges create a prosthodontic challenge for the triumph of stable and retentive dental prostheses. Prominence has diverged from surgical removal of the fibrous tissue. Implant retained prostheses may not be the most appropriate treatment option for many patients. When taking into account conventional prosthodontics, there are a diversity of impression techniques existing to tackle the problems caused by the unsupported tissue during denture construction; On the other hand, there is currently a lack of scientific proof of advantages of any technique over another. In selecting the method, the site and size of unsupported tissue, plus the patient's presenting complaint should be considered. In the present article, the described mishmash technique records the flabby ridge very neatly & precisely.

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Corresponding Author

Poonam Kulkarni

Address: 103 & 104 First Floor, Rohini Apartment, Nandgaon.

Indore (Madhya Pradesh) - 452001

Phone numbers: +917024765475

E-mail address: poonamrahulkulkarni@gmail.com