



Prosthetic Management of Flabby Tissue By Modified Massad's Technique- a Case Report

Dr. Eaketha P Lokesh⁽¹⁾, Dr. Sheejith M⁽²⁾, Dr. Swapna C⁽³⁾

1. POST GRADUATE, DEPT: OF PROSTHODONTICS, KMCT DENTAL COLLEGE),

2. PROFESSOR & HEAD OF THE DEPARTMENT, DEPT: OF PROSTHODONTICS, KMCT DENTAL COLLEGE),

3. PROFESSOR, DEPT: OF PROSTHODONTICS, KMCT DENTAL COLLEGE)

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ABSTRACT

Achieving retention and stability in severely compromised edentulous cases is a challenge to the prosthodontist. Satisfying with a complete denture prosthesis may vary among edentulous patients. Improper impression recording adequately affects the stability of the denture. Flabby ridges and severely resorbed ridges are some situations where the conventional technique needs modification. This paper presents a case report of a special impression technique for recording a flabby ridge.

KEYWORDS: Flabby ridge (displaceable tissue), Massad's technique, Neutral zone, Admix technique.

I. INTRODUCTION

The quality of a complete denture prosthesis is best weighed by its gallantry in preserving the remaining tissues. Despite delivering a good prosthesis, poor maintenance, inadequate tissue rest, and lack of patient co-operation to attend recall visits can cause extensive tissue damage. (1)

The pursuance of a complete denture often depends on its retention and stability. According to the guidelines by British Society for the Study of Prosthetic Dentistry, "a working impression should record the entire functional denture bearing area to ensure maximum support, retention, and stability of the denture during use". (2) (3) However, achieving retention and stability will be a tedious procedure for the dentist, if the quality of the denture bearing area is compromised.

Complete dentures are primarily mechanical devices, which must be in harmony with normal neuromuscular function. All oral functions, such as speech, mastication, swallowing, smiling, and laughing, involve the mutualistic actions of the tongue, lips, cheeks, and floor of the mouth which vary in each individual. Failure to locate the cardinal importance of tooth position, flange form and contour often leads to dentures which are unstable and suboptimal, albeit they

were skillfully designed and constructed. The coordination of complete dentures with neuromuscular function is the foundation of successful, stable dentures. (4)

Alvin et al. (5) reported the effectiveness of a neutral zone technique to fabricate a stable complete mandibular denture for a maxillofacial patient without implants. The neutral zone is defined as the potential space surrounding the mandibular denture between the lips, cheeks, and tongue. (6) The neutral zone technique is indicated, for example, for a mandibular surgical reconstruction a patient whose residual tongue function is good but whose tongue, when in function, moves together with the grafted flap on the floor of the mouth. (7)

Flabby ridge is actually the replacement of the alveolar bone by fibrous tissue with poor denture supporting properties, most commonly seen in the anterior maxillae as a result of the combination syndrome (Kelly Syndrome) due to the excessive load of the residual ridge. (8) (9) Flabby ridges could arise as a result of unplanned or uncontrolled dental extraction, long-term denture wear without maintenance, poor systemic health, trauma from the denture base, malocclusion, ridge resorption or due to aberrant forces on the prosthesis. (1) (10) (11) Most of the dentures fabricated on a displaced tissue will provide an ill-fitting prosthesis, because the impressions are recorded on tissues already distorted by the old dentures. The soft tissues displaced during conventional impression making tend to blanch, resulting in poor retention, stability, and support.



II. CASE REPORT

A 60 year old male patient reported to the Department of Prosthodontics, KMCT Dental College, and Kerala, India with the chief complaint of loosening of upper and lower dentures during speaking, swallowing and chewing. Patient has been using a complete denture for the maxillary arch and removable partial denture for mandibular arch for past ten years. Patient had two sets of maxillary complete denture fabricated in different intervals and both the dentures are unstable. Patient desired for a new set of dentures. Systemic examination revealed that the patient was diabetic for past 15 years and is under medication with controlled blood sugar levels.

Extra oral examination revealed straight profile with no facial asymmetries. There was sunken appearance of cheeks. Intraoral examination revealed completely edentulous maxillary and mandibular arches with increased interarch space. Flabby tissue was found in maxillary anterior region which blanched on pressure application (Fig 1). Mandibular ridge was severely resorbed, knife edged with movable tissue extending onto the residual ridge (Fig 2).

Various treatment options were explained to the patient, but considering the financial constraints and systemic health conditions, patient did not opt for an implant-supported overdenture. Thus, a new denture with appropriate impression technique and occlusion was planned. Neutral zone recording was planned for the mandibular arch to increase the denture stability. Before commencing the treatment, the patient was advised to discontinue his existing dentures for one week.

RECORDING FLABBY RIDGE IN MAXILLARY ARCH:

Flabby ridge over the maxillary arch was recorded using a modification of the Massad's impression technique. This technique is used to achieve minimum displacement of the fibrous tissue. Moreover it records the final impression in a single visit by eliminating the need to fabricate a custom tray. An edentulous perforated stock metal tray was selected according to the patient's ridge size and shape. The tray selected should be 2 mm short of the sulcus.

Tissue stops (Fig 3) were created in the maxillary stock tray using a heavy viscosity impression material (Zhermack Elite HD+). For this, small spherical pieces of heavy viscosity material was placed – one in the anterior region, one in the posterior region, and one in the palatal region. The tissue stops were allowed to be set by

placing the tray in patient's mouth creating 2-3 mm of space (Fig 4).

Single step border moulding was performed using heavy viscosity material (Zhermack Elite HD+) and in areas where the tray was shorter than 2 mm, excess material was added accordingly. After the material was set, the tray was removed from the patient's mouth and examined to evaluate the border extension details. Final impression was recorded using medium body impression material (Zhermack Elite HD+) in the tuberosity region and light body impression material (Zhermack Elite HD+) of the remaining tissue surface (Fig 5). Different viscosities of impression materials were used, therefore the load bearing area can be recorded in functional state, and the flabby areas and relief areas can be recorded under minimal displacement. The border extension and integrity of the final impressions were evaluated. Impressions were boxed and poured with dental stone (Kalabhai Kalstone dental stone).

FOR MANDIBULAR ARCH:

Primary impressions were made using impression compound (mucocompressive impression material) in stock trays. Primary cast was made in type II dental plaster. Full wax spacer (12) is adapted, except in the buccal shelf in mandibular arch with tissue stops (2x4 mm) in canine and first molar region. Custom tray was fabricated in self-cure acrylic resin. Sectional border molding was done using the green stick modelling compound. Final impression (Fig 6) made in zinc oxide eugenol (DPI impression paste) using selective pressure technique and master cast were made in dental stone.

RECORDING OF JAW RELATION

Wax occlusal rims (Hindustan modelling wax No: 2) were made and jaw relations were recorded. Master cast are mounted on a 3-point articulator.

MODIFICATION OF MANDIBULAR RECORD BASE:

Special record base was fabricated for the mandibular arch with retentive wire loops (cribs) (Jaypee Stainless steel wire 19 Gauge) attached in accordance with the recorded vertical height. Maxillary occlusion rim and modified mandibular record base with wire loops were evaluated intra-orally for their fit & ensured that the loops do not interfere with muscle movement during function. Maxillary rim was left in the mouth to provide enough support to the facial musculature during making the neutral zone impressions.

RECORDING OF NEUTRAL ZONE



Before recording the neutral zone impression, the patient was made to sit in the upright position with the head unsupported. Maxillary wax rim was inserted in the mouth and reassessed for support & occlusal plane. Admix technique (14) (by Mc Cord & Tyson) was used. Impression compound and green stick in the ratio 3:7 was softened in a water bath at 55-60° Celsius. The softened compound was kneaded and rolled according to the crest of the ridge and adapted to the retentive loop with the established vertical dimension. The attached roll of the compound was reheated in the water bath and was carried into the patient's mouth. With the record base firmly seated, the patient was asked to perform a series of actions such as swallowing, speaking, sucking, pursing of lips, pronouncing vowels, sipping water and slightly protruding the tongue several times which simulated physiological functioning. These actions molded the material by muscle activity. After 10 min, the impression was removed from the mouth (Fig 7). The neutral zone impression obtained was placed on the master model. Locating grooves were cut on the master cast and was covered with a silicone putty index around the impression on both the labial and lingual sides (Fig 8). The admix compound rim was removed and the index was replaced. The index would preserve the space of the neutral zone. Teeth arrangement was done exactly following the index. The position of the teeth was checked by placing the index together around the wax try in.

COMPLETION OF DENTURE:

Trial denture insertion was done and the patient was asked to repeat functional movements. Phonetics were checked and esthetics was assessed. Then the dentures were processed in a conventional manner. Finishing and polishing of the denture was done carefully so that the contour of the polished surfaces remained unaltered. On insertion of the denture, minor occlusal discrepancies were corrected (Fig 9). Dentures enhanced the appearance, retention, and stability during function because they are in harmony with their surrounding musculatures.

III. DISCUSSION

Recording of an accurate impression plays an important role in complete denture fabrication. Flabby ridges and severely resorbed ridges are such a common difficult situation which challenges the dentist. Resorption of the residual ridges is a continuous process and produces a flat & sometimes concave foundation. (15) In edentulous patients, support to the lips and cheeks is no longer available, they tend to collapse into the oral cavity.

Simultaneously, the tongue will try to expand into the space. In such situations, certain anatomic and physiologic factors must be considered for the success of complete denture treatment. (16).

The concept of neutral zone recording was put forward by Wilford Fish and Russell Tench. (17). The main hypothesis of the neutral zone approach to complete denture is to locate that area in the edentulous mouth where the teeth should be positioned, so that the forces exerted by the muscles will tend to stabilize the denture rather than unseat it. Neutral zone recording is more difficult when the patient is not able to perform proper functional movements of the cheeks, tongue, or lips due to any disease or trauma to the orofacial structures. Many edentulous patients do not prefer dental implants even though it provides better retention and stability because of added cost, maintenance and need of additional surgery. Therefore, in such patients, the neutral zone concept can be utilized to improve esthetics, support of soft tissues function and improved articulation of speech. (18) Various authors have published articles on neutral zone by using different materials. Modelling plastic, soft wax, silicone, polyvinylsiloxane, tissue conditioners, and polyether. None of them have devised any new recording techniques. Neutral zone technique is also indicated for patients undergoing mandibular surgical resection, segmental mandibulectomy, marginal mandibulectomy, maxillectomy, brain surgery, partial glossectomy, Parkinson's disease, patients with severe neurological disorders, severely resorbed residual ridges and mandibular continuity defects. (18)(19)

Numerous techniques have been described in the literatures for recording flabby ridges. In this case report, Massad's technique was modified (7) (11), which makes the final impression in a single visit by eliminating the need to fabricate a custom tray from the cast obtained from the preliminary impressions. In this technique, the stock tray (edentulous, perforated) is selected in accordance with the size and shape of the patient's ridge. Tissue stops are created using heavy viscosity impression material. For this, spherical pieces of material are placed in one in the anterior region, one in each posterior region, and one in the palatal area (maxillary tray). Then the tray is placed in the patient's mouth allowing for 2-3 mm of space. The stops were then allowed to set in the patient's mouth. Border molding of the impression was now done using heavy viscosity impression material. After border molding, impression was allowed to be set, removed and examined to evaluate the extension of the border details. Final impression of



the maxillary ridge was then made using medium body impression material in the tuberosity region and light body impression material of the remaining tissue surface, while final impression of the mandibular ridge was made using light body impression material. Different viscosities of the impression material were selected so as to record the load bearing area in the functional state and the other areas, which is flabby tissue and relief areas, under minimal displacement.

IV. CONCLUSION

Fibrous/ displaceable tissues and severely resorbed ridges are challenges for a prosthodontist as retention and stability of the prosthesis cannot be predicted. This paper summarizes various techniques for recording flabby tissue and the need for recording the neutral zone. To fulfil the patient's functional and esthetic desires, many modifications should be considered from the conventional procedures. These procedures can be done without any additional appointments. Implant supported prosthesis may not be suitable for all patients, in such situations, a denture fabricated in the conventional method might satisfy the patient.

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Fig 1: Completely edentulous maxillary arch with flabby tissue over the anterior region



Fig 2: Completely edentulous, severely resorbed mandibular arch



Fig 3: Placement of heavy viscosity material for creating tissue stop



Fig 4: Tissue stops of 2 mm created and border molding done



Fig 5: Final impression recorded irt maxillary arch



Fig 6: Secondary impression recorded irt mandibular arch using zinc oxide eugenol



Fig 7: Recorded neutral zone



Fig 8: putty index around the recorded neutral zone

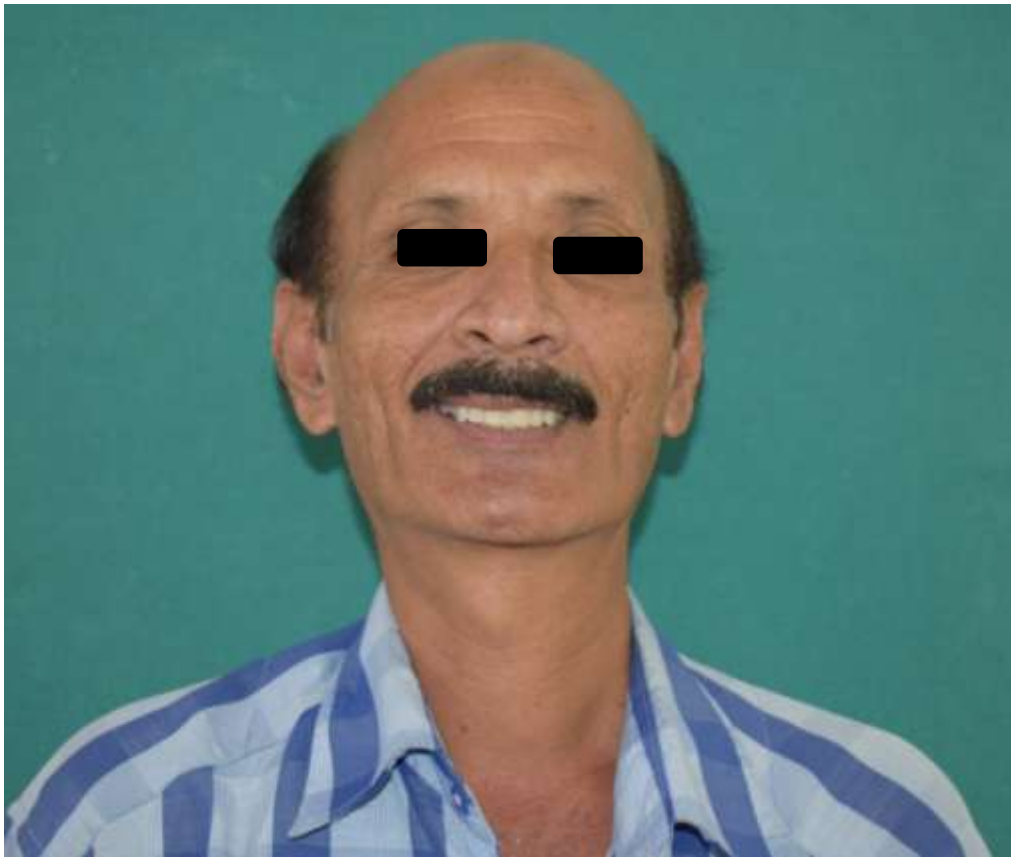


Fig 9: Patient with the final prosthesis