

Prosthodontic management of maxillary flabby & mandibular resorbed ridges: A case report.

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Abstract:

Flabby ridges as well as resorbed residual ridges compromise the support, retention and stability of complete denture. Masticatory forces can displace this mobile denture-bearing tissue, leading to altered denture positioning and loss of peripheral seal whereas stability of lower denture in resorbed cases is usually the distinguishing factor between success and failure. When proper technique is not applied to record these compromised ridges patient often complains of discomfort and loose dentures in such a situation. Conventional prosthodontics require specialized impression techniques for management of these ridges. The present case report illustrates two-part impression techniques for management of flabby ridges for maxillary and cocktail impression technique for resorbed mandibular arches.

Keywords: Flabby ridges, hyperplastic tissue, severely atrophic mandibular ridge.

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Introduction

The performance of a complete denture is often a reflection of its support and retention.^[1,2] 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.'^[1,3] However difficulties arise when the quality of the denture bearing areas are not suitable for this purpose. Displaceable, or 'flabby ridges' may give rise to complaints of pain or looseness relating to a complete denture that rests on them.^[1,4] Prevalence of flabby ridges occurring in up to 24% of edentate maxillae and in 5% of edentate mandibles have been reported.^[1, 5-7] The management of severely resorbed ridge also poses a challenge to the prosthodontist as alveolar bone tends to resorb under complete lower denture.^[8] It is also accepted that the rate of resorption varies from person to person and within the same person at different times and sites.^[8,9] The present case report illustrates management of flabby ridge in maxilla using a two-part impression

technique described by Osborne in 1964. Crawford and Walmsley had described it as two part impression technique: mucostatic and mucodisplacive combination. It ensures that pressure exerted by the tray did not cause distortion of the mobile tissues. The management of severely resorbed mandibular ridge using cocktail impression technique was used to improve the stability of mandibular denture by combining various techniques to obtain an accurate impression.

Case Report

A 74 year old male patient reported to the Department of Prosthodontics and Crown & Bridge, with a chief complaint of difficulty in chewing with the present denture, which he was wearing since last 12 years. The sequence of loss of teeth was maxillary posterior teeth first followed by mandibular posteriors, maxillary anteriors and lastly the mandibular anteriors.

On clinical examination, it was found that pre-maxilla was too flabby (Figure 1, 2) and mandibular ridge was severely resorbed

(Figure 3). The technique used for maxillary impression was based on combination of mucostatic and mucodisplacive impression techniques ensuring that pressure exerted by the tray did not cause distortion of the mobile tissues. Whereas, for mandibular impression Cocktail impression technique was used which is a combination of Dynamic impression, McCord Tyson & closed mouth technique.

Impression of displaceable tissues in maxillary arch:

1. The displaceable areas were identified intraorally using T- burnisher and preliminary impression was made with impression compound (Pinnacle, Bombay Burmah Trading Corporation Limited). The impression was poured in Type II gypsum.
2. An auto-polymerizing acrylic resin (RR Cold cure, DPI, India) special tray with rim handle on the anterior part was constructed so that the flabby ridge area was left uncovered by the special tray (Figure 4). It was designed in order to prevent unset impression material falling to the back of the mouth when the patient was supine.
3. Using low fusing impression compound border moulding was then carried out followed by final impression with zinc oxide-eugenol impression paste (DPI, India). A thin mix of impression plaster was applied using a paint brush to make an impression of the displaceable mucosa. (Figure 5).

Impression of severely resorbed ridge for mandibular arch:

1. For mandibular arch, customized tray was fabricated with auto-polymerising acrylic resin (Rapid Repair, Dentsply, Gurgaon, India) (Figure 6) according to Dynamic Impression Technique. Tray with 1 mm wax spacer and cylindrical

mandibular rest in the posterior region were made at increased vertical height.

2. Medium-fusing impression compound was softened, placed on top of the mandibular rests and inserted in the patient's mouth (Figure 7). Patient was advised to close his mouth so that the mandibular rests fit against the maxillary alveolar ridge. This helped to stabilize the tray in position by preventing anteroposterior and mediolateral displacement of the tray during definitive impression.
3. Lingual surfaces of mandibular rests were made concave, to provide space for the tongue to move freely during functional movements.
4. McCord and Tyson's technique for flat mandibular ridges was followed for definitive impression. Impression compound (DPI Pinnacle, The Bombay Burmah Trading Corporation, Mumbai, India) and green tracing stick (DPI Pinnacle Tracing Sticks, The Bombay Burmah Trading Corporation, Mumbai, India) in the ratio of 3:7 parts by weight was placed in a bowl of water at 60° C and kneaded to a homogenous mass that provided a working time of about 90s.
5. Wax spacer was removed, this homogenous mass was loaded and patient was guided to close his mouth on the mandibular rests. For recording the functional state, patient was instructed to run his tongue along his lips, suck in his cheeks, pull in his lips and swallow by keeping his mouth closed, as in closed mouth impression technique, till the impression material hardens.
6. On removal from the mouth, impression was chilled and reinserted to check the denture bearing area for pressure sensitivity by applying heavy finger pressure on the impression to simulate functional loads. The operator should place the thumbs on the underside of the mandible and squeeze.

7. Reheating the impression in whole or part, or adding more material to deficient areas should not be done as this will result in flow of material which in turn will result in differential loading of the tissues. The retrieved impression was visually inspected (Figure 8) for surface irregularities, disinfected and poured (Figure 9).
8. Following this, denture was fabricated in the conventional manner and delivered (Figure 10). At post-insertion appointments, the patient was satisfied with the dentures with respect to esthetics, comfort and function.

Discussion

Every patient has unique treatment requirements. The important aspect of rehabilitation are the proper diagnosis and treatment plan.^[8] Making a good impression is the first step in fabrication of an acceptable denture. Compromised edentulous ridges are one of the many challenges encountered by the dentist in fabrication of a complete denture. As age advances in an individual, and the long term wearing of ill dentures will leads to bone resorption, which results in poor quality denture bearing area, thereby progresses to conditions like excessively resorbed ridges and flabby tissues.^[9] The three main approaches to the management of the flabby ridge are surgical removal of fibrous tissue prior to conventional prosthodontics, implant retained fixed or removable prosthesis and conventional prosthodontics without surgical intervention.^[7,10] Conventional prosthodontics is preferred over surgical removal, since, flabby ridge may provide substandard retention for the denture base, it may be more desirable than no ridge at all. When adequate care is not taken for fabrication of complete denture for a flabby ridge the patient would usually complain of poor comfort and a "loose" denture.^[10] The alveolar bone due to its resorption is replaced by hyperplastic soft

tissues which is displaced by masticatory forces leading to altered denture positioning and loss of peripheral seal. Forces exerted during impression making can result in distortion of the mobile tissue. In the present case, impression plaster was considered as an acceptable material since it is an excellent mucostatic impression material and because of absence of any severe undercut in the maxillary arch.^[10] Residual ridge resorption is a diminishing quantity and quality of the residual ridge after extraction. Atwood postulated that there are four major etiologic factors that cause RRR: anatomic, prosthetic, metabolic, and functional factors. Various authors described intensive denture wearing as one of the functional factor that causes increased residual ridge resorption.^[9] The cocktail impression technique used for mandibular atrophic ridge described here utilizes the customized tray fabrication according to Dynamic impression technique, impression material recommended by McCord and Tyson's technique followed by functional impression as in closed mouth impression technique. In the atrophic mandible, problem arises from the inability of the residual ridge and its overlying tissues to withstand masticatory forces. Muscle attachments are located near the crest of the ridge, with greater dislocating effect of the muscles. For these reasons, the range of muscle action & extend of the denture should be within the physiological limits of the muscle activity. Dynamic methods can be used to make such impressions. Customized tray that is fabricated in this technique has the advantage of avoidance of dislocating effect of the muscles and complete utilization of the possibilities of active and passive tissue fixation of the denture. Mandibular rests that fit against the maxillary alveolar ridge stabilizes the custom tray by preventing horizontal displacement of the tray during final impression. These features of the tray directly result in the impression material

being shaped by the functional movements of the muscles and muscle attachments that border the denture base.^[8]

Conclusion

Necessary steps to prevent further damage to patient's already vulnerable residual ridge are taken into consideration. The impression technique used in this case report are simple, easy to use, convenient for the clinician, well tolerated by the patient, economical and less time consuming.

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Figures

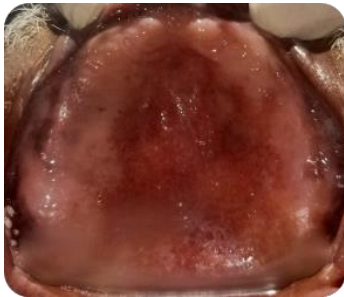


Figure 1



Figure 2



Figure 3

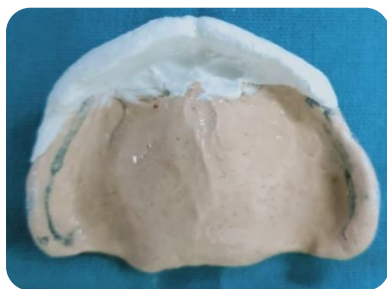


Figure 3



Figure 4



Figure 5



Figure 6



Figure 7



Figure 8