



CASE STUDY

PROSTHODONTIC MANAGEMENT OF RESORBED RIDGE BY "COCKTAIL IMPRESSION TECHNIQUE"

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ABSTRACT

The management of resorbed ridge has always posed a challenge to the prosthodontist for years. Obtaining a satisfactory stability in mandibular dentures has long been a challenge for every clinician. Severely resorbed ridges as in Atwood's Order V and Order VI pose serious difficulties in providing successful dentures. Stability of lower denture in such cases is usually becomes the determining factor between success and failure. This clinical case report presents a case of severely resorbed ridge managed using the cocktail impression technique to improve mandibular denture stability in an atrophic mandibular ridge.

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INTRODUCTION

The management of highly resorbed ridge has been an enigma of the prosthodontist and clinicians for ages. Residual ridge resorption is an unending process. (Atwood, 1996) Atwood has categorized resorbed ridges into six orders ranging from preextraction state (Order I) to the atrophic depressed mandibular ridge (Order VI). (Atwood, 1963) Highly resorbed residual mandibular ridge is a common finding in elder patients, accompanied with thin, atrophic mucosa, lower threshold of pain, diminished resiliency of tissues and reduced musculotonicity accompanied by poor adaptive capacity. Providing a stable lower denture for such patients is essential but it is never easy for the dentist to do the task (Prithviraj et al., 2008). An accurate impression is the first step towards a successful denture that will help to ensure that the complete denture is stable, and will also provide physiological comfort to the patient (Jacobson and Krol, 1983). The use of ridge augmentation and implants is generally advocated for such patients. However, treatment option of ridge augmentation and

implant procedures require surgical intervention and are more complicated as compared to conventional dentures can have an equivalent positive impact on the health related quality of life. (Fernandes et al., 2001) So, efforts have been made to improve stability of mandibular denture by combining various techniques to obtain an accurate impression.

Case Report

A 59 year old female patient reported with difficulty in speaking and chewing. She was diagnosed with Atwood's order V ridge (Fig.1). Preliminary and definitive impressions were made following the cocktail impression technique. (Praveen et al., 2011) An over extended preliminary impression was made with the objective to record the entire support area for the denture base. Preliminary impression was made using impression compound (DPI Pinnacle, The Bombay Burmah Trading Corporation, Mumbai, India) by open mouth technique. Customized tray (Fig.2) was fabricated with autopolymerising acrylic resin (Rapid Repair, Dentsply, Gurgaon, India) according to Dynamic Impression Technique (Tryde et al., 1965). The tray had a 1 mm wax spacer and cylindrical mandibular rests in the posterior region that were

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Fig. 1. Resorbed Mandibular Ridge



Fig. 2. Custom Tray with vertical Studs



Fig. 3. Custom tray intra oral view



Fig. 4. Custom tray stabilized using impression compound for closed mouth impression



Fig. 5. Intra Oral view while making Cocktail Impression



Fig. 6. Functional movements during closed mouth impression



Fig. 7. Final impression (McCord and Tyson)



Fig. 8. Post-operative Smiling

made at increased vertical height (Fig.3). High-fusing impression compound is softened, placed on top of the mandibular rests and inserted in the patient's mouth. Patient is advised to close her mouth so that the mandibular rests fit against the maxillaryalveolar ridge (Fig.4). This helps to stabilize the tray in position by preventing anteroposterior and mediolateral displacement of the tray during definitive impression. (Praveen *et al.*, 2011; Tryde *et al.*, 1965) Space was made for the tongue by making the lingual surfaces of mandibular rests concave. (Praveen *et al.*, 2011) McCord and Tyson's technique for flat mandibular ridges followed for definitive impression. (McCord and Tyson, 1997) Impression compound and green tracing stick (DPIPinnacle Tracing Sticks, The Bombay Burmah Trading Corporation, Mumbai, India) in the ratio of 3:7 parts by weight is placed in water at 60°C and kneaded to a homogenous mass that provides a working time of about 90 seconds. Wax spacer is removed, this homogenous mass is loaded and patient is guided to close his mouth on the mandibular rests (Fig.5). The patient was instructed to run her tongue along her lips, suck in her cheeks, pull in her lips and swallow water by keeping her mouth closed, for recording the functional state of oral structures till the impression material hardens (Fig.6). On removal from the mouth, impression is chilled and reinserted to check the denture bearing area for pressure sensibility by applying heavy finger pressure on the impression and the thumbs on the underside of the patients' mandible to simulate functional loads. If the mucosa has been properly loaded, the only discomfort that the patient should report is where the thumbs press on the lower border of the mandible⁸. Reheating the impression in whole or part, or adding more material to deficient areas is contraindicated to prevent the flow of material which in turn will result in differential loading of the tissues. The retrieved impression (Fig.7) is visually inspected for surface irregularities, disinfected and poured. After this a conventional complete denture was fabricated (Fig.8)

DISCUSSION

Every patient has unique treatment requirements. Proper diagnosis and treatment plan are the most important aspect of any rehabilitation plan. Cocktail impression technique is a combination of different impression techniques to obtain a definitive impression. (Praveen *et al.*, 2011) The technique described here utilizes the customized tray fabricated according to Dynamic impression technique described by Tryde (Tryde *et al.*, 1965), impression material recommended by McCord and Tyson's technique for atrophic mandibular ridge (McCord and Tyson, 1997) followed by functional impression as in closed mouth impression technique. In the atrophic mandible, one of the principal functional problems, other than instability, arises from the inability of the residual ridge and its overlying tissues to withstand masticatory forces. (McCord and Tyson, 1997) Furthermore, the 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, as well as spaces into which the denture can be extended without dislocation, must be accurately recorded in the impression. (Tryde *et al.*, 1965) Such impressions can be made by means of dynamic methods. Customized tray that is fabricated in this technique has the advantage of avoidance of dislocating effect of the muscles on improperly extended denture borders, and complete utilization of the possibilities of active and passive tissue fixation of the denture. (Brill *et al.*, 1965) Mandibular rests that fit against the maxillary alveolar ridge offer the advantage to stabilize the

custom tray by preventing horizontal displacement of the tray during definitive 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. For recording the functional position of the muscles, impression material recommended by McCord and Tyson for atrophic mandibular ridges was used. (McCord and Tyson, 1997) This homogenous material permits to mould an impression of sufficient viscosity to obtain the definitive impression in a single step. The working time of 90 s is sufficient to allow the patient to perform all the functional movements. Combination of impression compound with green stick is used as recommended by McCord and Tyson for definitive impression, because this has better body, requires less chair side time and economical as compared to tissue conditioner or relin material. During the entire procedure, custom tray is stabilized by mandibular rests to obtain an accurate, stable, single step, functional impression.

Conclusion

This article highlights the impression technique to achieve effective retention, stability and support for Atwood's Order VI ridge deformities. Moreover, necessary steps to prevent further damage to patient's already vulnerable residual ridge are taken into consideration. By following this combination of impression techniques to obtain a definitive impression, it would be possible to economically yet effectively rehabilitate a patient with flat, atrophic, depressed, mandibular ridge thereby improving the function.

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