

Management of Resorbed Ridge with Flabby tissue: A Case report

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Abstract

The presence of displaceable denture-bearing tissues over severely resorbed edentulous ridges often presents a difficulty in making complete dentures. Displacement and compression of the flabby ridge results in trauma to the soft tissue and cause soreness in that region. Dentures fabricated on resorbed flabby ridges have compromised stability, support, and retention unless adequate measures for its management are employed. Also, masticatory function requires a unique coordination with muscles and oral structures. If the denture fabricated is placed in a neutral zone where the displacing forces of tongue, lips, cheeks and modulus are balanced, then the denture will be retained more effectively during function. Thus, this article describes clinical case of severely resorbed mandibular ridge with flabby tissue using window

technique, green all compound technique and neutral zone.

Introduction

Complete denture therapy is unquestionably among the age old forms of dental treatment used to rehabilitate an edentulous patient. The key to success in rehabilitating patients with complete denture therapy lies in precise execution of the treatment plan formulated by evaluation of a complete comprehensive history and thorough examination.¹ It could be well said that prosthodontics is one of the branches of dentistry where a good impression is important key to a effective diagnosis and treatment. This statement holds more importance in cases of resorbed mandibular ridges where we have minimum tissue to fulfill the fundamental requirement of retention, stability and support.² Extreme resorption of the maxillary

and mandibular edentulous ridges results in sunken appearance of cheeks, unstable and non retentive dentures with associated pain, soreness and discomfort. The stability of complete dentures is also influenced by the surrounding neuromuscular system in the oral cavity. Oral functions, such as speech, mastication, swallowing, smiling, and laughing, involve the synergistic actions of the tongue, lips, cheeks, and floor of the mouth that are very complex and highly individual³. In case of severely resorbed ridge, the retention and stability of complete denture becomes unfavorable especially in the mandible. Implant overdenture can provide long-term prognosis and more stable outcome compared to conventional complete dentures. However, for some medically compromised, financially constrained patients, this therapy may not be a superior choice to new conventional dentures.³ Therefore, techniques to improve retention and stability in severely atrophic ridge cases must be considered for fabricating a denture in harmony with forces exerted by the tongue, lips, cheeks, and floor of the mouth. This could be accomplished with the help of the neutral zone technique in which a denture is constructed in muscle balance through physiologically optimal denture contours and physiologically appropriate denture teeth arrangement. Moreover difficulties arise when there is presence of hypermobile tissue along with the resorption of ridge further compromising the quality of the denture-bearing areas. Flabby ridge gives rise to complains of pain or looseness relating to a complete denture that rests on them. When hyperplastic tissue replaces the bone, a flabby ridge develops which is often seen in long-term denture wearers and clearly related to the degree of residual ridge resorption. Surgical excision techniques or use of dental implants has provided clinicians with methods of addressing this particular difficulty. Even if surgical elimination of the

flabby ridge is a logical treatment in many situations, care must be used when the ridge is extremely reduced. As suggested by Laskin the surgical reduction of atrophic ridges often leaves a low, flat ridge or sharp ridge covered by thin, scarred mucosa.⁴ This resultant tissue may not provide an improved anatomic foundation unless vestibuloplasty is used to extend sulcus. Although the flabby ridge may provide poor retention for the denture, it may still be better than no ridge at all. Therefore, this article describes prosthodontic management of patient with severe mandibular ridge resorption having flabby tissue in the anterior region.

Case Report

A 66 year old patient who had been a denture wearer since last 6 years reported to department of prosthodontics, C.S.M.S.S. dental college and hospital with chief complain of ill fitting lower denture and broken upper denture (Fig 1). An intraoral examination revealed a well rounded maxillary ridge with adequate height and resorbed mandibular ridge with hypermobile flabby tissue in anterior region (Fig 2a and 2b).



Fig 1: Preoperative image

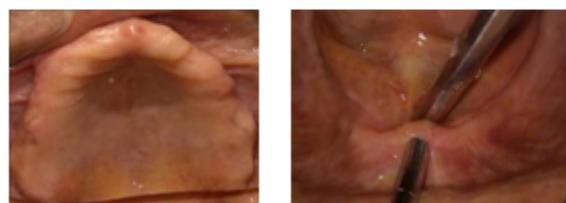


Fig 2(a and b): Preoperative intraoral image

Procedure

1. Primary impression of maxillary arch was made with impression compound and mandibular preliminary impression was made with admixed technique. Impression compound (Y-Dents Impression composition, MDM Corporation, Delhi, India) and low fusing impression compound (DPI Pinnacle Tracing Sticks, Bombay Burmah Trading Corporation, Mumbai, India) in the ratio of 3:7 parts by weight were placed in a bowl of water at 60°C and kneaded to a homogeneous mass that provided a working time of about 90 s. This homogenous mass was loaded, and the patient was made to do various tongue movements.⁵(Fig 3).



Fig 3: Primary impressions

2. Primary casts were poured with dental plaster (Fig 4a and 4b).



Fig 4(a and b): Primary casts

3. Maxillary custom tray was fabricated with tray material.(Fig 5)

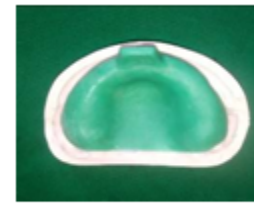


Fig 5: maxillary custom tray

4. As mandibular ridge was severely resorbed, it was decided not to have a spacer during the fabrication of the custom tray.⁶ Custom tray was fabricated with window in the area where flabby tissue was present¹(fig 6).



Fig 6: Mandibular custom tray with window

The custom tray so fabricated, was evaluated intra-orally to see that there is at least 2 mm space for the material to be used for border molding (Fig 7).



Fig 7: Mandibular custom tray with window evaluated for extensions

5. Border molding was done advocating green all compound technique in which low fusing impression compound was heated in waterbath. Sufficient material was taken to provide adequate bulk to mold the borders. The loaded tray was then tempered in warm water (55° C). The tray with low fusing compound loaded was then inserted in position intraorally. Labial and buccal borders were molded and the patients were asked to perform various tongue movements to mold the lingual flange.

Any excess low fusing impression compound on the periphery was trimmed with a Bard-Parker Blade No. 15.

6. Each section of the impression was defined by reheating and re-moulding.

7. Impression was then scraped in those areas which required to be provided with relief.

8. Tray adhesive (3M ESPE VPS Tray adhesive) was then applied over the tray. The final wash impression was made with light viscosity polyvinyl siloxane impression material (Virtual light body fast set wash material, Ivoclar Vivadent) (Fig 8).



Fig 8: green all compound technique

9. Excess material that had flown in the area of window was removed with bard parker blade. Final impression was then repositioned and the light body impression material was syringed over the flabby tissue to record it without exerting any pressure in its mucostatic form (Fig 9).



Fig 9: final impression of flabby tissue with light body polyvinyl siloxane

The so obtained impression was then beaded, boxed and a mandibular final cast was poured in die stone (Fig 10a and 10b).

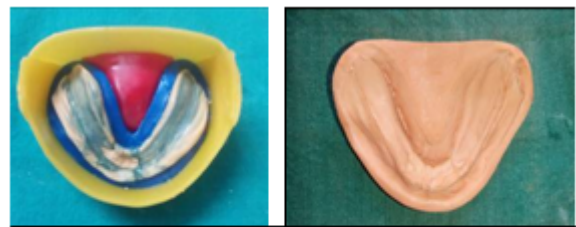


Fig 10(a and b): final impression beaded and boxed and master cast poured with die stone

10. The permanent record bases were fabricated over which occlusal rims were made.

11. Maxillary rim was shaped to adequately support the musculature labially and buccally. Orientation jaw relation was recorded to transfer the relation of maxilla to the skull with the help of facebow (Fig 11) to hanau h2 semi adjustable articulator.



Fig 11: facebow transfer



Fig 12: jaw relation transferred to Hanau h2 articulator

Vertical and centric jaw relation was recorded and transferred to hanau h2 articulator (Fig 12) An additional self cure acrylic resin denture base is fabricated with retentive loops (Fig 13a) made of thin orthodontic wire following the crest of the ridge.⁷ 3 vertical pillars of clear acrylic resin fabricated one at the anterior and 2 at the posterior molar region at established vertical dimension (Fig 13b).



Fig 13(a and b): self cure acrylic denture base with loops and acrylic resin pillars

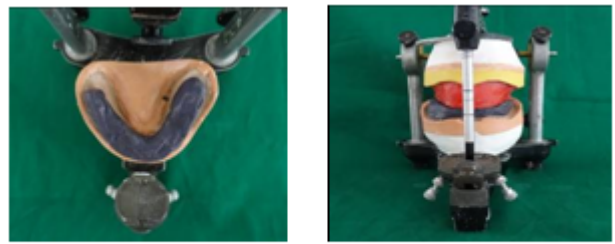


Fig 14(a and b): Neutral zone impression

12. This autopolymerising denture base was then placed intraorally and evaluated for any interference offered by the loops and vertical pillars to the muscle movements.

13. Before making the neutral zone impression, the patient was made comfortable in an upright position with the head unsupported. Maxillary wax rim was inserted in the mouth and reassessed for support & occlusal plane.

14. The impression compound and green stick in ratio 3:7 was softened in a water bath at 60⁰ C . The softened compound was kneaded and a roll was formed and adapted to retentive loops . The attached roll of 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 like swallowing, speaking, sucking, pursing lips, pronouncing vowels sipping water and slightly protruding the tongue several times which simulated physiological functioning. These actions molded the material by muscle activity. The set impression was then removed from the mouth.⁸

15. The neutral zone impression so obtained was placed on the master cast (Fig 14a and 14b), v shaped notches were placed on the land area of the master cast in order to locate the plaster index which was made around the neutral zone impression both on buccal and lingual sides (Fig 15).



Fig 15: Plaster index

16. The neutral zone impression was then removed and index was replaced with the help of locating notches to fabricate wax occlusal rim. Mandibular teeth were arranged in this neutral zone. the position of the teeth was then evaluated by placing the index around the teeth arranged for trial. The teeth were arranged following the lingualised occlusion scheme (Fig 16).



Fig 16: teeth arranged in neutral zone and verified by plaster index

The waxed up dentures were placed in the mouth and patient was asked to repeat all the movements previously mentioned. Esthetics, phonetics and occlusion were assessed (Fig 17).



Fig 17: trial denture

17. The dentures were then processed as a conventional denture. Finishing and polishing of denture was done carefully so that the contour of the polished surfaces remained unaltered. On insertion of denture, minor occlusal discrepancies were corrected and the denture was delivered to the patient (Fig 18 and 19).



Fig 18: Denture delivery



Fig 19: Post operative image

Discussion

The success of a complete denture depends on a getting a correct primary impression. In this technique, the primary impression was recorded using an admixed technique due to its lower compressibility and better flow characteristics.⁵ Looking at the severity of the resorption of the residual ridge and on examination of the OPG, it was decided not to have a spacer during the fabrication of the custom tray. The custom tray itself is made of light cured/self cured tray material and it

encompasses

the entire denture bearing area. In cases of poor foundation such as these, it becomes very difficult to re-orient the tray correctly every time for sectional molding. Thus the recommended technique for all mandibular poor foundation cases is the Green all compound technique.⁶

Fish pointed that out of three surfaces of the denture, the polished surface is bounded by the tongue and the cheeks. Dentures are involved in normal physiologic movements such as mastication, smiling, swallowing, speech, and swallowing. Hence, the denture should be in harmony with these functions because physiologically unacceptable denture is responsible for poor prosthesis stability and retention, insufficient facial tissue support, less tongue space and compromised phonetics. Denture fabricated over a severely resorbed mandibular ridge by neutral zone impression technique will insure that the muscular forces aid in retention and stabilization of the denture rather than dislodging the denture during function.⁸ It has the advantage of the stabilizing potential of the surrounding soft tissues, instead of being dislodged by them. Retention and stability of dentures are improved, especially in the severely atrophic ridges.³

The search for an ideal artificial tooth arrangement that maximized denture stability, comfort, aesthetics and function have occupied the dental literature for many years. Of the many schemes that have been presented to the dental profession, lingualized occlusion has emerged as one of the most popular schemes. It is a valuable concept because it blends many of the anatomy and the mechanical schools of thoughts. It has the advantages of both anatomic and non-anatomic occlusion. Lingualized occlusion can be defined as, the form of denture occlusion that where the maxillary lingual cusps articulate with the mandibular occlusal surfaces in centric

working and non-working mandibular positions. It is particularly helpful when the patient places high priority on esthetics but non-anatomic occlusal scheme is indicated because oral conditions such as severe alveolar resorption, a Class II jaw relationship, or displaceable supporting tissue. If the non-anatomic occlusal scheme is used, esthetics in the premolar region are compromised. With Lingualised occlusion, the esthetic result is greatly improved while still maintaining the advantages of a non-anatomic system. Anatomic posterior (30-33 degree) teeth are used for maxillary denture. Tooth forms with prominent lingual cusps are useful. Non anatomic or semi anatomic teeth are used for mandibular denture. Either a shallow or a flat cusp form is used. Narrow occlusal form is preferred where resorption of residual ridge has occurred.

Modification of mandibular posterior teeth is accomplished by selective grinding which is always necessary regardless of the material used. Maxillary lingual cusp contact mandibular teeth in centric occlusion. Lateral forces are reduced because only the lingual cusp of the maxillary teeth provides the sole contact with the mandibular posterior teeth. Lingualised occlusion provides a mortar and pestle type of occlusion with cusp teeth to provide a smaller occlusal contact for more efficiency and control of resultant forces.⁹

Conclusion

This case report has described the management of a severely resorbed ridge with flabby tissue. The materials used are readily available. Impression of resorbed ridge was made using Green All compound technique while efficiently recording the flabby tissue in its mucostatic form.

Hence, modifying impression technique with the incorporation of neutral zone concept and lingualised

occlusion enhanced the stability of denture, thus improving its quality.

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