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Research Paper

Fabrication of Complete Dentures for A Patient with Resorbed Mandibular Anterior Ridge Using All Green Technique.

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ABSTRACT: *The loose and unstable lower complete denture is one of the most common problems faced by denture patients with highly resorbed ridge. The management of such highly resorbed ridges has always posed a difficulty to the prosthodontist.Obtaining consistent mandibular denture stability has longbeen a challenge for dental profession. The simplest approach often is to extend the denture base adequately for proper use of all available tisues.To achieve this goal impression of the resorbed mandibular ridge is very important. The objective is to develop a physiologic impression with maximum support of both hard and soft tissues.In such cases, an innovative technique of impressionmaking by using a close fitting tray and anelastomeric impression material tomake a proper impression to achieve maximum retentionand stability.This article describes an impression technique used for highly resorbed mandibular ridge using an all green impression technique, to gain maximum retention andstability.*

Keywords: *Resorbed mandibular ridge, impressiontechnique, allgreen impression technique*.

I. INTRODUCTION

The management of highly resorbed ridge has always been a challenge to the prosthodontists. The alveolar bone resorption under complete lowerdenture is known to both, the clinician as well as complete denture user [1]. It is also accepted that the rate ofresorption varies from person to person [2]this is because the rate of resorption is fast in the mandible than in the maxilla. Achieving maximum stability and retentionmay be of utmost importance for patients with atrophiedmandibular residual ridges [3]. The impression technique playsthe substantial role. A good impression plays an important rolein the successful treatment in cases of resorbed mandibularridges where there is inadequate tissue to fulfil therequirement of retention, stability and support [4]. Anaccurate impression is the foundation of a good functionalprosthesis as it determines the retention and comfort of theprosthesis. Today's clinicaltechniques are an amalgamation of the original prosthodonticphilosophies. A Dynamic impressiontechnique were also proposed with the intent of maximizingsupport from underlying tissues.4 The changes in impressiontechniques can be attributed to evolution of newer impressionmaterials and better understanding of underlying tissues.Long term edentulism and use of ill-fitting dentures result insevere resorption of edentulous ridges, making a definitiveimpression challenging. This paper presents a novel, costeffective technique for impressing a class IV edentulousridge (Fig-1) with the intent of maximizing retention,stability, tissue support, without over compressing the tissueswith the help of readily available dental materials.

Case Report

A 66 years old female patient reported to the department ofProsthodontics and crown and bridge, Dr Z.ADental college Amu Aligarh with a chief complaint ofloosening of lower denture. The patient was apparently ingood health and did not report any significant medical history.

Patient was a denture wearer but not satisfied with theprosthesis due to poor stability. On intraoral examination, ahighly resorbed mandibular ridge was observed. There was nohypermobile tissue on palpation (Figure 1).

Technique:

1. As the mandibular alveolar ridge was severelyresorbed and sulcus depth was very shallow. For proper recording of residual ridge Preliminary impression was madeusing McCord's technique. [3 parts impressioncompound +7parts greenstick compound]in a metal stock tray.(Fig-2)

2. The Impression was washed and poured in impression plaster. Cast was retrieved and spacer wax extending from left canine to right canineregion was adapted

3. custom impression tray was fabricated on the preliminarycast using self-cure acrylic resin(DPI-RR Cold cureacrylic repair material).border extension ofthe tray was kept ss 2 mm short of the vestibules. (Fig-3)

4. Modeling plastic impression compound (greenstick) wasSoften by heating over the flame and loaded over intaglio surface of thespecial tray.After Tempering the tray was seated over the denture bearing area,and the labial and buccal borders were molded.(fig 4)

5. Green stickmaterial was trimmed from crest of anterior ridge providing the required relief. (Fig-5)

6. After applying tray adhesive on the impression and tray borders andallowd it to dry(Universal tray adhesive Zhermack).Wash impression was made with light body polyvinyl siloxane (ExpressTM VPS impression material light body regular set).(fig 6)

7. After this denture was fabricated using conventional denture fabrication methods and denture was delivered(fig 7).Patient was recalled for follow up at 24 hours ,1 week and one month interval. Patient was happy with the denture and her complaint of loose lower denture was no more.

Fig .1 intra oral view

Fig.2 preliminary impression

Fig 3. Special tray with spacer wax adapted on resobed anterior area

Fig.4 All green impression

Fig.5 Scrapping of border molding compound at resorbed area

Fig.6 Final wash impression with light body addition silicon

Fig.7 Processed denture

Fig.8 Postoperative view

II. DISCUSSION

The problems associated with class IV mandibular ridge aremany, most evident being the frustration of the patient due tolack of retention of denture. Osseo integrated dental implantshave emerged as the "gold standard" for treating edentulouspatients as they provide unique option of completerehabilitation. However, they come with their ownrestrictions; notably cost and surgical risk. Implants in resorbed ridges have high surgical risk complications due tothe need of regenerative techniques to improve the foundationfor implants. Medical, social problems, in addition to costfactor may contraindicate autogenous bone transplantation.8Therefore; conventional dentures still remain as a viablesolution for majority of the ageing population. The impression of the completely edentulous arch is thesingle most contributing factor towards achieving retention,stability and support. Modifications of impression techniqueshave been tried in the past with a view of maximizingretention, stability and support of the denture.4, 6, 7, 9theprimary impression should fulfill the objectives of retention,stability and also provide functional support which is ofparamount importance in resorbed ridges in order to preservethe ridges.Soft tissues have varying degrees of displacement. They canbe placed within physiological limit up to 2-2.5mm withoutundergoing compressive trauma.10 The tissues in the buccalshelf of the mandibular ridge do not resorb to the same extentas the anterior mandible as it is covered with dense corticalbone, it is usually at right angles to the occlusal plane and tothe vertical occlusal forces.3The impression technique takes into consideration thevarying histological characteristics of the soft and hard tissuesin the mandible. The focus is on primary impression, spacerdesign , secondary impression and the choice of impressionmaterials.The primary impression in this technique makes use of lowfusing green stick that is less viscous than impressioncompound and does not over compress the tissues as the latterdoes. It also possesses better flow and handlingcharacteristics and records accurate details11.The histological characteristics of the tissues that cover theresidual alveolar bone, the nature of the residual ridge bone,and its positional relationship to the direction of stresses thatwill be placed on it determine the spacer design. Spacer waxwas adapted in the anterior region. Custom tray provides adequate spacefor the impression material, records functional form of theprimary stress-bearing area and anatomic form of the area thatcannot withstand functional loading. This helps indevelopment of denture bases that exert additional pressureon primary stress bearing area when functionally loaded andrelieve the areas not able to withstand the stresses. The goal isachieved by restricting the flow of

impression material in theprimary stress bearing area and scraping out the material fromother areas.In this technique, green stick compound was used for bordermolding.12 It is a viscous material with low flowcharacteristics (70% at 45oC)9 and when placed in a closedconfined, it causes tissue placement without compression.There is no finger pressure exerted on any part of the tray. Tray is held by placing 2 fingers on the tray in the buccal shelf areaand the thumb supporting the chin.Final impression was made by light body poly vinyl siloxaneproviding accurate recording of the ridge as it applies lowest pressure during impression making procedure and providesexcellent record of minute details of the residual ridge in itspassive form. The space for the elastomeric material isprovided by scraping off the compound from the intagliosurface of the impression except the buccal shelf area. Thismakes it a true functional recording of the edentulous jaws.Close adaptation to basal tissues ensures maximum retention,stability and support.An alternative to the use of elastomeric light body material isfluid wax. However, greater convenience, better handling andflow characteristics make light body a preferable choice.

Summary andConclusion:

The presented procedure describes a simple, quick andreliable technique to impress the resorbed mandibular ridgeusing a custom tray, green stick compound and elastomeric impression material. Area to be relieved, namely the crest of the ridge, is impressed in anatomic form and the primarystress-bearing area is recorded in its functional form ensuringhealthy state of the tissues for extended periods. This technique combines both traditional and contemporarymethods and the amalgamation leads to prosthesis with betterretention and stability. Use of a viscous materials in a closefitting tray allows physiological compression of tissues in theprimary stress bearing areas. Elastomeric impression materialhelps in recording finer details of the ridge. Thus thistechnique helps in maximizing the functional support fromthe edentulous ridge. Due consideration is given tohistological characteristics of the tissues and ensures the preservation of the residual alveolar ridge, thereby fulfillingall the objectives of impression making. Furthermore, readilyavailable dental materials were used making this techniqueeasy to adapt and master. As it is a new technique, itsusefulness and relevance needs to be evaluated further.Patient education is mandatory prior to and following thetreatment as Patientmust understand the limitations of dentureperformance prior to the treatment.

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