Case Report

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Tunnel technique for maxillary and mandibular flabby ridge using palatal splinting tray system :clinical report

ABSTRACT:

Complete dentures function in the oral cavity of geriatric patients hence they must be in harmony with the normal neuromuscular system. 'Fibrous' or 'flabby' alveolar ridges pose significant problems during impression making retention and stability are compromised due to movable underlying tissue. These mobile denture-bearing tissues are displaced by masticatory forces and thus they alter the position of denture with resultant loss of peripheral seal. Forces that are exerted during impression making cause distortion of mobile tissues. Resulting in instability affecting function. In this paper, the authors have proposed a newer technique of impression making of the flabby tissues along with the application of neutral zone concept is also incorporated into impression making which ensures an accurate and easy impression of these flabby tissues leading to successful complete denture therapy

Keywords: Flabby ridge, impression techniques, Osborne technique, complete denture, neutral zone, palatal splinting.

Introduction:

Making an impression of a Flabby ridge has always been challenging for Prosthodontist , because it affects the retention and stability of the denture. Flabby ridge is form due to fibrous tissue deposition in place of bone and get displaced due to forces during impression making and mastication . It is mostly seen in maxillary and mandibular anterior region due to alveolar bone resorption . There are various reasons for the development of flabby tissue, these include complete maxillary denture opposing natural mandibular anterior teeth and partial denture replacing the posterior teeth , traumatic occlusion ,wearing denture during night, dentures constructed with anterior porcelain teeth and posterior resin teeth, loose , ill fitting dentures as well as dentures with wrong centric occlusion relation, and occlusal disharmony.[2]Studies have shown that flabby ridges occurs in 24% of maxillary and in 5% of mandibular edentulous ridges [3]. These case report elicit the method of proper impression making and positioning of artificial teeth within the neutral zone.

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Case Report

A 65-year-old male patient came to the OPD of the Department of Prosthodontist with a chief complaint of replacement of missing teeth in maxillary and mandibular arches. The patient revealed the history of ill fitting dentures since 7 years and the teeth were completely attrited. The Patient also revealed the history of wearing the dentures during night. There was no history of diabetes, hypertension or any other systemic disease (figure 1). On clinical examination the patient was completely edentulous in maxillary (figure 2). and mandibular arches(figure 3).. imple

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Maxillary anterior canine-canine region (figure5). and the mandibular canine-canine region were completely flabby and movable (figure 4). The patient was informed about various treatment options available such as surgical excision of flabby ridge, along with implant supported prosthesis but patient was not ready to undergo any surgical procedure due to long treatment time and high cost. So it was decided to fabricate the denture that was esthetically and functionally viable for him. This article describes a simple but modified impression technique – palatal splinting and teeth arrangement with the neutral zone technique which provided good retention, stability, and esthetics for the patient.

Figure 1: Extra Oral View Of Patient

Figure 2 : Maxillary Resorbed Ridge

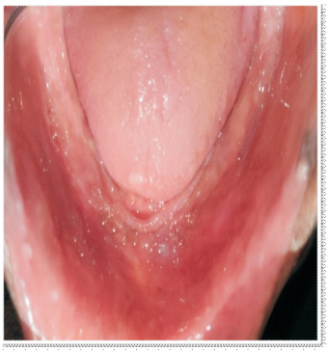

Figure 3 : Mandibular Resorbed Ridge

Figure 4 : Mandibular Anterior Flabby Region

Figure 5 : Maxillary Anterior Flabby Region

Figure 6 : Primary Impression Made With Irreversible Hydrocolloid Material

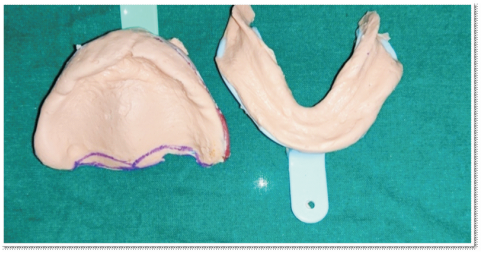

Figure 7 : Primary Cast Retreieved

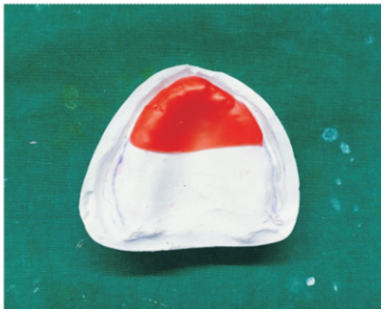

Figure 8 : Wax Spacer Over Flabby Area

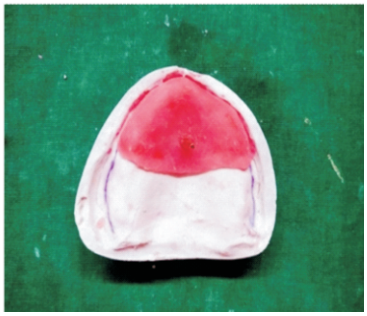

Figure 9 : Maxillary Tray with Anterior Guidance Rod

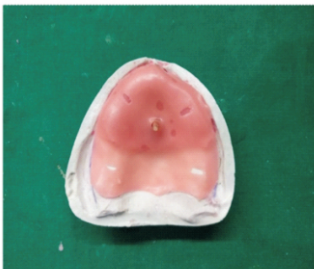

Figure 10 : Wax Spacer Over Maxillary Tray

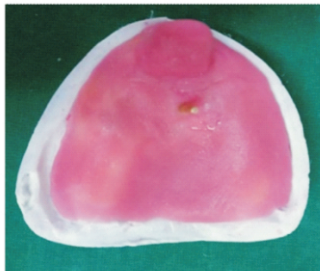

Figure 11 : Custom Tray Envelope Maxillary Tray

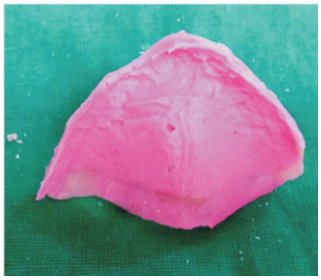

Figure 12 : Anterior Tray with Final Impression

Figure 13 : Mandibular Final Impression

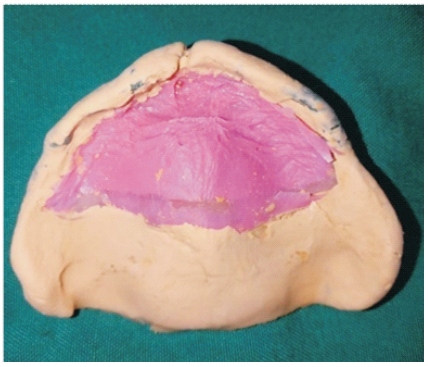

Figure 14 : Custom Tray with Final Impression

Figure 15 : Final Cast Retrieved

Figure 16 : Tentative Jaw Relation Mounted on Hanau Wide View

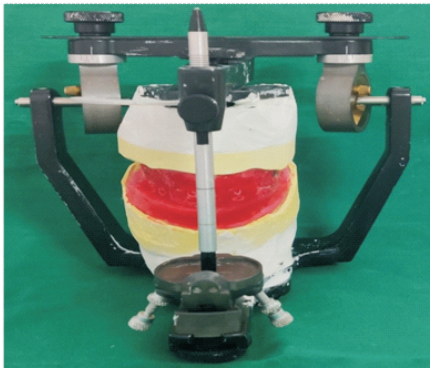

Figure 17 : Tentative Jaw Relation Mounted on Hanau Wide view

Figure 18 : Wax Blocks Cut at Molar and Central Incisor

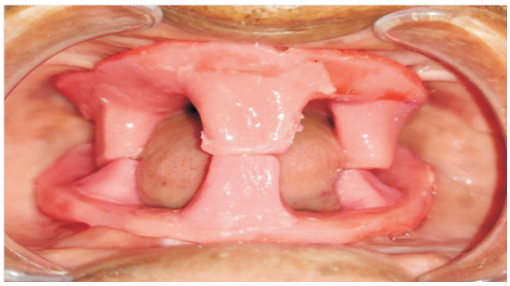

Figure 19 : Assessment of Fit of Record Bases

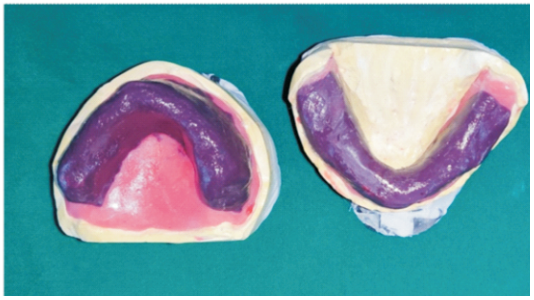

Figure 20 : Neutral Zone Recorded

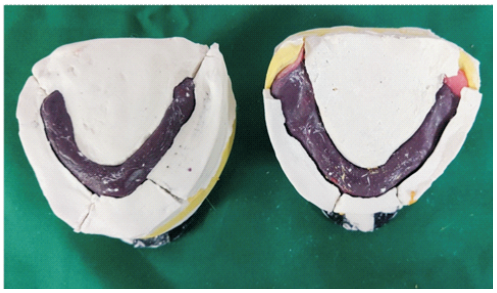

Figure 21 : Plaster Indices Formed Around Compound Rim with Neutral Zone Recording

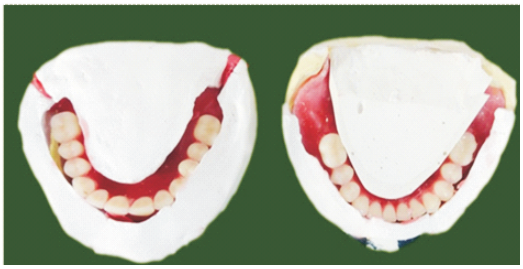

Figure 22 : Trial Denture Verified in the Plaster

Figure 23 : Denture in Occlusion

Figure 23 : Post Rehabilitation Photograph

Procedure :

1. The primary impressions of maxillary and mandibular denture bearing areas were made with low viscosity irreversible hydrocolloid impression material (figure 6). After making primary impression, the impression was poured in dental plaster and primary casts were prepared (figure 7).
2. The displaceable areas was identified and marked with the indelible pencil on the cast, then single uniform layer modelling wax was adapted (YDents, MDM Corporation, Delhi)as spacer over the identified displaceable areas on the maxillary cast and mandibular cast (figure 7).
3. A maxillary anterior tray with guidance rod of autopolymerising acrylic resin (PyraxSelf cure) was made for the anterior flabby region(figure 9). The anterior guidance rod was made proclined to allow the second full palatal tray to be guided in an oblique upward and backward direction to envelope the anterior maxillary tray (figure 11).
4. The spacer wax of 0.5mm thickness was adapted with four tissue stops ; two in canine region and two in 1st

molar region. Spacer wax covered the anterior maxillary tray and the second tray that is custom maxillary tray was fabricated over it using anterior rod as guidance (figure 10).

5. Then, wax spacer was removed from the maxillary anterior tray and an impression was made using light body addition silicone(Aquasil Ultra Monophase, Dentsply,USA) of the flabby ridge (figure 12). When this impression material was set in the anterior maxillary tray, the final impression was made in the 2nd custom tray using zinc-oxide eugenol impression paste (figure 14) covering the maxillary anterior tray recording all other areas of denture base of maxillary arch. With the help of anterior guidance rod this prevents displacement of the mobile ridge.
6. Impression was removed from patients mouth after the material sets and was poured in type III (gypsum product) dental stone (Kalabhai, USA) and master cast was made (figure 15)
7. Both the record bases were fabricated using self cure acrylic resin. Wax rims were made over the record bases for recording tentative maxillomandibular jaw relations. By using spring bow, the maxillary cast was oriented to the Hanau wide vue2 articulator. The vertical & centric jaw relation was done using Niswonger's Technique and mounting was done on Hanau wide vue 2 articulator (figure 16).
8. Vertical stop were made using autopolymerizing acrylic resin. By removing the wax This vertical stop were made at three places of central incisor and first molar on either side. After the resin sets remaining wax was removed(figure 17).
9. Temporary record bases were checked in patient mouth that they don't interfere with muscle movements (figure 18). Now the mixture of 3 parts of impression compound and 7parts of green stick compound (admix technique) was kneaded in a hot water bath and placed in areas were wax was removed for recording neutral zone. During this procedure the patient was asked to make various ;dynamic movements for 10 minute like puckering of the lips, swallowing, sucking, pouting, grinning and by producing exaggerated sounds like OOO and EEE to record the neutral zone (figure 19)
11. The record bases were again checked on the articulator, so that the maxillary and mandibular rim are at same vertical height .
12. Plaster indices was made of the neutal zone (figure 20). Impression compound was removed and wax was poured within the space of plaster indices.
13. Teeth arrangement was carried out in this wax occlusion rim and was verified using plaster indices (figure 21).
14. Try in of the denture was carried out in patient mouth (figure 22). And when the position was confirmed the processing of the denture was done by the conventional method .Finishing and polishing of denture was completed and then delivered to the patient (figure 23).
15. All the instructions were given to the patient and he was asked to wear the denture for 24 hrs before his recalled vist to the next day, and after 1 week for follow up.

Discussion :

In complete denture prosthesis retention and stability but it become a challenging procedure to when it comes to flabby ridge due to unfavourable tissue changes. In these case impression procedure need to be change to improve the stability of flabby ridge.

Many authors have described various impression procedures to overcome the problem associated with flabby ridge.

Magnusson et al. described a technique in which two impression materials were used , zinc oxide and eugenol over the normal tissues and impression plaster over the flabby area. Crawford et al. showed a procedure in which two trays were fabricated and impressions were recorded with two different materials and were then oriented intraorally.

Osborne first made an final impression using zinc oxide eugenol impression paste and then created “window” in the custom tray over flabby tissue and then painted impression plaster over flabby tissue.

In this paper, the case presented describes a tunnel technique for maxillary and mandibular ridges. Using the palatal splinting technique in this procedure palatal tray was used to prevent upward displacement of flabby tissue and custom maxillary tray was use to prevent backward displacement of flabby tissue and to minimize the distortion of flabby tissue.

There are many other treatment option to treat flabby ridge but they have there own advantages and disadvantages such as when it come to surgical excision of flabby tissue then it might result in shallow ridge which would cause difficulty in

bearing lateral forces to the denture .No doubt that implant would definitely solve these problems but again there are other factors i.e surgery, treatment time, cost, etc.

Conclusion :

This article provides a novel approach in the management of flabby ridges. The neutral zone technique for denture fabrication has an advantage that it stabilizes the denture with the surrounding tissues, instead of being dislodged by them. Retention and stability are improved especially in the severely atrophic ridges. The technique described is simple and utilizes the routine materials used for denture fabrication, at the same time minimizes the errors in achieving the treatment goals.

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