# SALVATION OF SEVERELY RESORBED MANDIBULAR RIDGE WITH NEUTRAL ZONE TECHNIQUE: A CASE REPORT

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**ABSTRACT**

The design of prostheses to replace lost teeth and resorbed ridges is largely determined by the position and amount of morphological change in the denture bearing area of the jaws. The neutral zone concept implies acquired muscle control especially by tongue, lips, and cheeks towards denture stability. Advocates of neutral zone agree that lack of favorable leverage is observed when teeth are positioned directly over the ridge. By employing neutral zone concept, the dislodging muscle energy can easily become a retentive and stabilizing force. A modern neutral zone technique is presented for physiologic registration of denture tooth positions and denture base contours.

## INTRODUCTION

The basic objectives of complete denture therapy for patients with severely resorbed residual alveolar ridges include the placement of functional and esthetic dentition in harmony with the normal neuromuscular function. Neutrocentric concept requires that posterior mandibular denture teeth be arranged to occupy as central a location as possible; relative to the denture foundation, without disturbing adequate tongue function to facilitate denture stability during occlusal loading[1]. The commonly used method involves making wax occlusal rims on record bases.These rims must contact evenly in centric relation, and this often presents difficulty[2]. Several studies have compared dentures fabricated using neutral zone and conventional techniques.

FIG 1

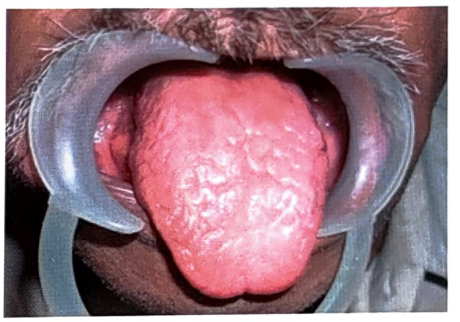

FIG 2

## CASE HISTORY:

A male patient named aged 65 years reported to the department of prosthodontics with completely edentulous and severely resorbed mandibular ridge **(figure 1)**.

The patient also presented with epulis fissuratum in both upper and lower arches, fissured tongue and angular cheilitis **(figure2)**.

On intraoral examination, tongue was fissured with macroglossia. The mandibular arch was severely resorbed (Atwood's class IV) with shallow sulcus depth. Patient was wearing denture for the last 10 yrs., but was not satisfied with it due to reduced vertical dimension. He had also undergone surgery for removal of epulis fissuratum in both jaws one month back.

## TREATMENT OBJECTIVES

1. To rehabilitate the patient with complete denture therapy.
2. To achieve maximum prosthesis stability, comfort and function.
3. To locate the neutral zone and accordingly arrange the denture teeth and contour the complete denture polished surfaces.
4. To minimize the ongoing diminution of the residual alveolar ridges.
5. Restoration of lost vertical dimension to about 5mm.

## TREATMENT PROCEDURE

The patient was explained about the treatment procedure. In the first step, primary impressions of the upper and lower jaw was made with impression compound and poured with impression plaster.

1. Maxillary and mandibular secondary impressions were made after border moulding. Lower secondary impression was made with light - body elastomeric impression material and was poured using plaster-pumice method and a wax rim was constructed for both arches.
2. At the same time, denture bases were also made for both jaws which were a plate of acrylic adapted to the respective ridges, without handles, with spurs or fins projecting towards the opposite arches.
3. Wax rims were used to record a tentative vertical dimension and centric relation. The 5 mm of the vertical dimension was also raised from the pre-

FIG 3

FIG 4

FIG 5

FIG 4

vious denture . After the jaw relations were established, denture bases were adjusted to these dimensions with softened compound and green stick.

4. The lower denture base with the softened impression compound and green stick in the ratio of 3:7 was placed in the patient's mouth; this tray was very carefully adjusted to be sure that it was not overextended and remained stable during opening, swallowing and speaking.

5. The patient was then asked to talk, swallow, drink some water, whistling, pursuing the lips etc. After 5-10 mins., the set impression was removed from the mouth and examined. In doing so, reciprocating pressures have been exerted upon the compound, which had gradually molded into a state of neutral balance.

6. Occlusal plane was established for the lower arch by placing the upper wax rim and lower compound rim and guiding the patient to centric relation.

7. The same procedure was performed for the upper arch with lower wax rim and upper softened compound rim. The occlusal plane in compound was thus established for both arches at determined vertical dimension and centric relation **(figure 3)**.

8. The putty index was made for both upper and lower compound rims to recover the occlusal rims in wax .

## THE PUTTY INDEX

Equal ratio of base and catalyst were hand mixed and adapted to the facial and lingual surfaces of both upper and lower compound rims seated on their respective casts without covering the occlusal surface. After 10 minutes., the set impression material was carefully removed from the compound rims. The buccal and lingual portions were removed as two separate pieces. The shape of the dentures is now permanently registered in these putty indices **(figure 4)**.

The impression compound is now destroyed down to the bare acrylic resin. The red baseplate wax is slowly melted in a enamel bowl and poured into the index through the space between the labial and lingual indices on the occlusal surface. When the index is opened, a hard wax duplicate of the low fusing compound has been formed. Thus, both upper and lower wax occlusal rims were formed **(figure 5)**.

## DENTURE PROCESSING

The wax trial dentures were tried in the mouth to check the esthetics, phonetics and occlusion. After finishing and polishing, the denture was inserted and post-insertion instructions were given **(figure 6)**.

## DISCUSSION

The neutral zone philosophy is based upon the concept that for each patient there exists within the denture space a specific region where the function of the musculature will not unseat the dentures and where forces generated by the tongue are neutralized by the forces generated by lips and cheeks[4]. When the residual alveolar ridges have resorbed significantly, denture stability and retention are more dependent on correct position of teeth and contour of the external surfaces of dentures. The advantage of this method is that the changes that might occur in vertical dimension during recording of the neutral zone can be prevented by the vertical occlusal stops[5].

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