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## NEUTRAL ZONE CONCEPT-A VIABLE OPTION FOR RESORBED RIDGES IN COMPLETE DENTURE-A CASE REPORT

DR RASMITA SAMANTARAY<sup>1</sup>, DR M KRISHNA KUMARI<sup>2</sup>, DR ASHUTOSH SAHU,<sup>3</sup>DR NAGA VENI SOMAYAJI<sup>4</sup>,DR PALLAWI SINHA<sup>5</sup>

1,2-SENIOR LECTURER,HITECH DENTAL COLLEGE AND HOSPITAL

3,4,5,6-READER, HITECH DENTAL COLLEGE AND HOSPITAL

### Abstract-

Long term edentulous patients pose a big hassle of loss of balance in the mandible complete dentures due to excessive resorption of because of lower edentulous ridge. It is imperative in the part of a prosthodontist to rehabilitate those patients to near everyday normal mastication. Masticatory function needs a novel coordination with muscles and oral structures. If the dental plate is placed in a very zone where the displacing forces of tongue, lips, cheeks and modulus are balanced, then the dental plate are maintained additional effectively throughout function. This zone is thought as neutral zone. If the dental plate strays outside within the neutral zone it will be unstable throughout the activities like talking, swallowing and chewing. The neutral zone technique is employed to minimize the displacing forces of the encircling structures. this is often a case report during which neutral zone impression technique was accustomed solve the matter of denture plate stability.This paper confers neutral zone technique in a functional approach to conquer the problem of instability of lower dentures and restoring the upper tooth in the anterior region to lessen the biologic activity of resorption of ridge following extraction of tooth.

Key Words- Neutral Zone, Poor Neuromuscular Coordination, Over Musculature,Denture Stability & Retention.

## Introduction-

In a Completely edentulous patient three alternative option come to play while making plans for a good treatment. The implant supported fixed partial denture (Hybrid Denture), Implant supported overdenture and conventional denture using conventional techniques/strategies. Implant treatment is guided by many factors such as availability of bone, systemic disease of the host, cost factor and maintenance of the prosthesis by the patient.

“While planning for a complete denture, all oral functions such as speech, mastication, swallowing, smiling and laughing, demands the synergistic actions of the tongue, lips, cheeks and floor of the mouth that are very complex and highly individual. Failure to recognize the cardinal significance of tooth position and flange form and contour often results in dentures which are unstable and dissappointing, regardless of the fact that they are skill-fully designed and with expertisely created. The coordination of complete dentures with the correct neuromuscular perform is that the solely foundation to victorious and stable denture”<sup>1</sup>.

When all the natural tooth had been lost, there exists inside the oral cavity a void which is the potential denture area. This region is the “potential space” present between the lips and cheeks on one aspect and the tongue on the alternative, that this area is that space wherein the forces among the tongue and cheeks or lips are identical”<sup>2</sup>

“According to GPT-10-The neutral-zone is outlined as that space that exist for every individual patient, there exists inside the plate space a selected space wherever the perform of the muscular structure won't unseat the plate and wherever forces generated by the tongue are neutralizedd by the forces generated by the lips and cheeks”<sup>3</sup>

The impact of position of tooth and flange contour of denture influences the stability of denture. Placing the artificial teeth in the neutral zone has two thoughts behind the philosophy.”First, the teeth will not interfere with the normal muscle function, the forces exerted with the aid of the musculature in opposition to the dentures are more favorable for balance and retention.”

This document describes neutral zone technique for resorbed mandiular ridges and retaining the good prognosis maxillary tooth so the width and height of the alveolar ridges can be preserved in the maxillary arch.

## Case Report-

This case presents a 65 year old female who has been completely edentulous since 10 years and had previously gone for denture treatment once but reported again with a chief complain of loosened upper & lower denture.

On examination it was found that the lower alveolar ridge was completely resorbed and upper denture was tooth as well as tissue supported conventional denture. Sufficient interocclusal space was present. Treatment option of implant therapy was given to the patient. The CBCT report revealed insufficient bone in the lower alveolar ridge and upper posterior alveolar ridge. Hence it was planned to go for tooth supported overdenture of upper arch and lower denture using neutral zone concept. Intentional RCT for 13,23 was done. The Respective tooth was prepared to receive a metal coping.



FIG-1-Mandibular Arch



FIG-2-Metal coping IRT 13,23

Primary Impression was made with alginate for both maxillary and mandibular arches. For maxillary arch while making a secondary impression border moulding with green stick compound followed by light body impression material was made. For mandibular arch border moulding with green stick compound followed with zinc oxide impression material was used.



FIG-3-Primary impression with alginate



FIG-4-Primary Impression with Tray conditioned done with compound



FIG-5-Secondary Impression made with Light Body



FIG-6-Secondary Impression made with ZNOE paste

Two sets of denture base was made for lower arch .first one used to record tentative jaw relation and the second one was used to make fins embedded in the acrylic so that it can adhere the low fusing compound.Facebow transfer was made.

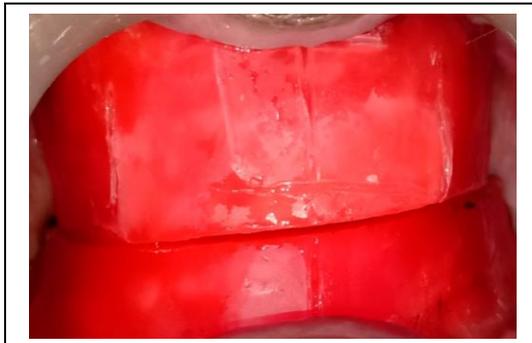


FIG-7 Tentative Jaw Relation



FIG-8-Facebow Transfer

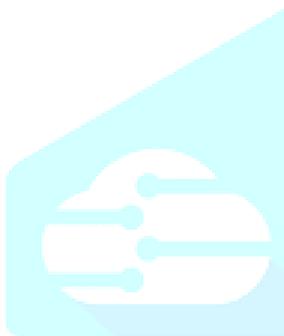
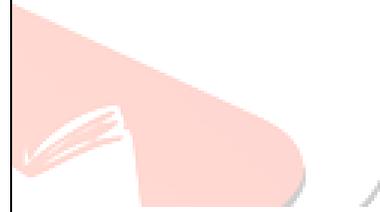


FIG-9-Wire loop attached to the lower rim



These loop help with the retention of the low fusing compound. The lower special receptacle with the softened low fusing compound in 65o C water tub was placed within the patient’s mouth; this receptacle was very fastidiously adjusted within the mouth to make certain that it had been not overextended and remained stable throughout gap, swallowing, and speaking. The patient was then asked to speak, swallow, drink some water, etc. when 5– 10 min, the set impression was aloof from the mouth and examined.



FIG-10 -Loop Rim In patient’s mouth



FIG-11 -Neutral Zone Recorded with



FIG-12-Wax rim in Neutral zone

The compound occlusal rim was then aloof from the bottom plate and also the index is once more replaced in neutral zone space and this will be preserved using putty index and teeth were organized within the neutral zone recorded from the patient exactly following the plaster index. (Figure 5) The position of the teeth was checked by putting the index along round the wax try-in. Once the waxed up dentures were prepared, they were checked within the patient's mouth for esthetics, phonetics and occlusion followed with wax trial.



FIG-13-Wax Trial

Once the trial was deemed satisfactory, the dentures were processed, finished and inserted.

### Discussion-

Every attempt made to save the natural tooth reminds me of DE Van's golden statement "Perpetual preservation of what remains is more important than the meticulous replacement of what is missing".so an try to restore the upper canine tooth was done to maintain the alveolar ridge and overdenture is also a feasible option which not also preserves the ridge but also provides retention of the denture.overdenture also provides a sense of satisfaction by the patient that some tooth present in his/her oral cavity.

“Fish pointed that out of the 3 surfaces of the dental plate the polished surface is finite by the tongue and therefore the cheeks”. Those are concerned in traditional physiological movements together with speech, chewing, swallowing, smiling, and laughing. Subsequently, the fabrication of the dental appliance should be harmonized with these functions.

Technique defined here is supposed to emphasize and illustrate the scientific cost of recording the physiologic dynamics of oral and perioral muscle function and of using this information to develop complete denture contours and denture tooth positions”. Arranging artificial teeth in this neutral zone results in achieving two vital targets :-

1. Prosthetic teeth doesnot interfere with regular muscle function; and
2. Regular oral and perioral muscle activity imparts force against the complete dentures that serves to stabilize and retain the prostheses rather than causing displacement of the denture.

Traditional techniques used for these sufferers bring about denture contours that may not facilitate prosthesis balance in opposition to predicted oral and perioral muscle function. This will result in ill fitted prosthesis which might be flawed and become uncomfortable for the denture wearing patient.

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**Address of Correspondence:**

Dr Rasmita Kumari Samantaray

Senior Lecturer, Dept. of Prosthodontics, Crown & Bridge and Implantology

Hitech Dental College & Hospital

## References-

1. Wright CR. Evaluation of the factors necessary to develop stability in mandibular dentures. *J Prosthet Dent*. 1966;16(3):414-30.
2. Fahmy FM, Kharat DU. A study of the importance of the neutral zone in complete dentures. *J Prosthet Dent*. 1990;64(4):459-62
3. The glossary of prosthodontic terms. *J Prosthet Dent* 2005;94:10-92.
4. Beresin VE, Schiesser FJ. The neutral zone in complete and partial dentures. Mosby Co., Page 15; ed 2: 1978.
5. Russell AF. The reciprocal lower complete denture. *J Prosthet Dent* 1959;9(2):180-190.
6. Makzoumé JE. Morphologic comparison of two neutral zone impression techniques: A pilot study. *J Prosthet Dent* 2004;92(6):563-8.
7. Tinker A. Ageing in the United Kingdom — what does this mean for dentistry? *Br Dent J* 2003;194(7): 369–372.
8. Basker RM, Harrison A, Ralph JP. A survey of patients referred to restorative dentistry clinics. *Br Dent J* 1988;164(4):105–108.
9. Atwood DA. Post extraction changes in the adult mandible as illustrated by micrographs of midsagittal sections and serial cephalometric roentgenograms. *J Prosthet Dent* 1963;13(5):810–824.
10. Ohkubo C, Hanatani S, Hosoi T, Mizuno Y. Neutral zone approach for denture fabrication for a partial glossectomy patient: A clinical report. *J Prosthet Dent* 2000;84(4):390–393.
11. Fish EW. An analysis of the stabilizing factors in full denture construction. *Br Dent J* 1931;52:559–570.
12. Fish EW. Using the muscles to stabilize the full lower denture. *J Am Dent Assoc* 1933;20:2163–2169.
13. Lott F, Levin B. Flange technique: an anatomic and physiologic approach to increased retention, function, comfort and appearance of dentures. *J Prosthet Dent* 1966;16(3):394–413.