



# Neutral zone concept applied in implant-supported mandibular complete denture (treatment of a retrognathic patient)

Lect. Dr. Mustafa Saadi Ali

# Introduction

Neutral zone concept aids to produce complete denture more suitable, since it harmonizes the prosthesis to anatomic structures.

Over the years, several authors contributed to the development of the neutral zone concept which states that the denture should be placed where the forces between the lips and the cheeks are neutralized by the tongue forces during normal neuromuscular function.

The correct buccolingual arrangement of the artificial teeth in the neutral zone is essential to allow harmonious interaction between involved muscles in normal function and the prosthesis which may prevent lack of retention and stability, discomfort and oral damages.



# Introduction

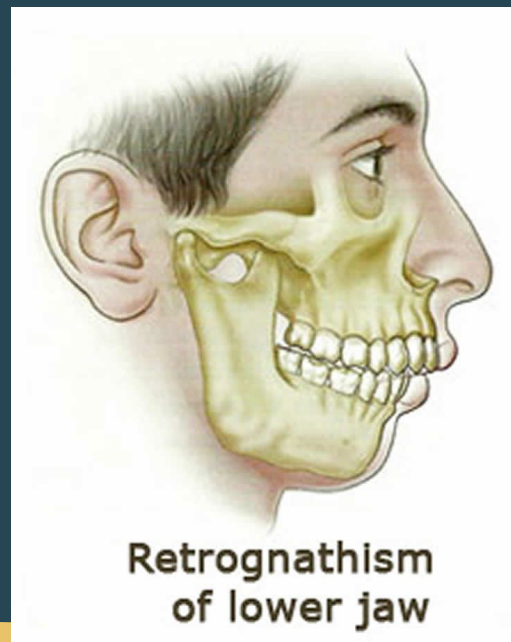
In implant-supported complete dentures, retention and stability problems are not a concern. However, in some situations, nonfunctional artificial teeth position causes oral lesions, discomfort, and phonetics problems.

Although neutral zone is a technique developed for conventional removable complete denture, it can be useful in implantology.



# Overview

This case report describes the use of neutral zone technique for making a new mandibular screw-retained implant-supported complete denture for a patient with severe retrognathism, who had a previous implant-supported complete denture that provoked oral injuries, phonetic problems, and discomfort.



# History and clinical examination

A 64-year-old man with a maxillary conventional complete denture and a mandibular screw-retained implant-supported complete denture reported discomfort, injuries in labial sulcus, phonetic problems, and difficult cleaning under the mandibular prosthesis.





## Procedure

The maxillary conventional complete denture was not replaced once it was suitable in terms of esthetic and functional parameters. It was taken an impression of the maxillary complete denture to obtain the maxillary cast that was mounted in a semi adjustable articulator, transferred by face-bow.

Open tray impression technique was used to transfer the positions of the mandibular implants



# Procedure

A neutral zone record base was made in acrylic resin, and modeling plastic impression compound. The patient was asked to perform actions of smiling, pursing the lips, sucking, and tongue movements to register a position where buccolingual forces are neutralized.



# Procedure

The vertical dimension of occlusion was adjusted intraorally with the maxillary removable complete denture seated in place. The mandible was guided carefully into centric relation and an interocclusal record was made with condensation silicone.

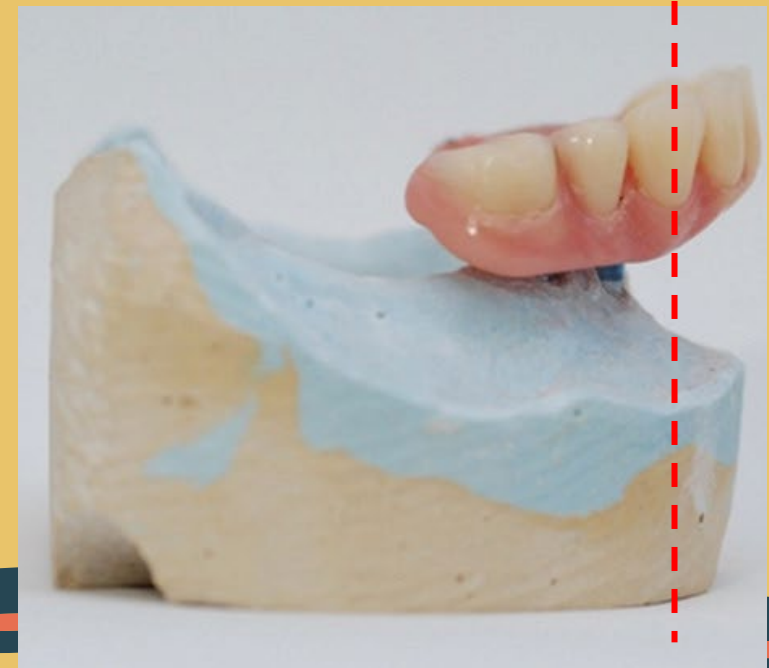
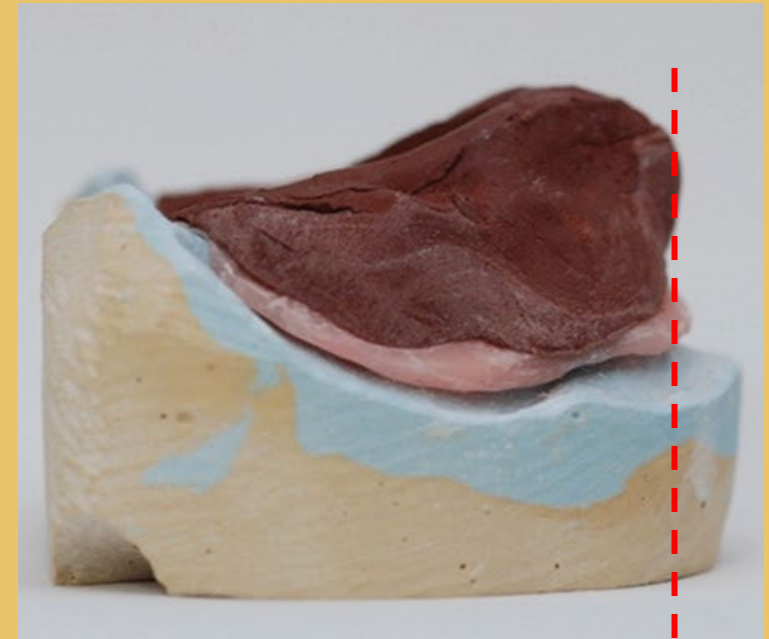




# Procedure

After silicone polymerization, the record base was removed from the mouth, and the mandibular cast was mounted in the semi adjustable articulator.

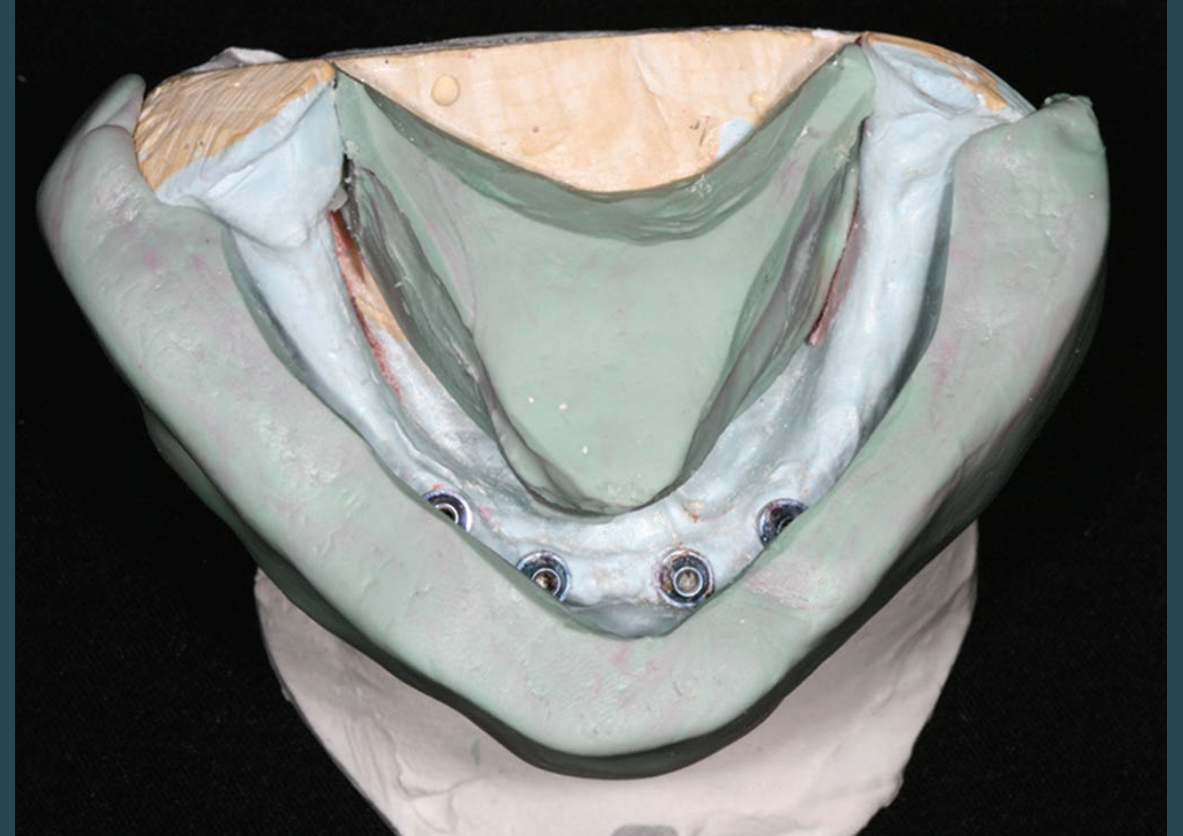
A comparison between the previous prosthesis with the neutral zone record shows a major invasion of the neutral zone.



# Procedure

Lingual and labial indexes were made with condensation silicone over the neutral zone record to guide the teeth mounting on the mandibular definitive cast, limited to the neutral zone.

The modeling plastic impression compound was removed from the record base and the index was replaced to establish the space of the neutral zone



# Processing and insertion

Metal bar fabrication and the teeth arrangement were made respecting the index limits. Waxed trial denture was checked intraorally with regard to occlusal vertical dimension, centric relation, esthetics, and phonetics.

The denture was invested, processed, finished and polished using conventional methods.





## Conclusion

Although the neutral zone is not a new technique and it is usually used to provide stability, retention and comfort in cases of severe ridge resorption and severe neurological disorders in removable complete dentures, its use in implant supported prostheses was also useful.

It should be indicated for implant-supported fixed complete denture treatments with severe retrognathism to provide a reliable functional pattern for the artificial teeth positioning, leading to a comfort, and better oral functions, and to prevent the Class I teeth arrangement which compensates the accentuated retrognathism and places the anterior teeth too far labially leading to limitation of labial sulcus, generating discomfort, oral lesions, phonetic problems, interfering with the dynamics of the masticatory muscles.



**Thank you  
so much!**