

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



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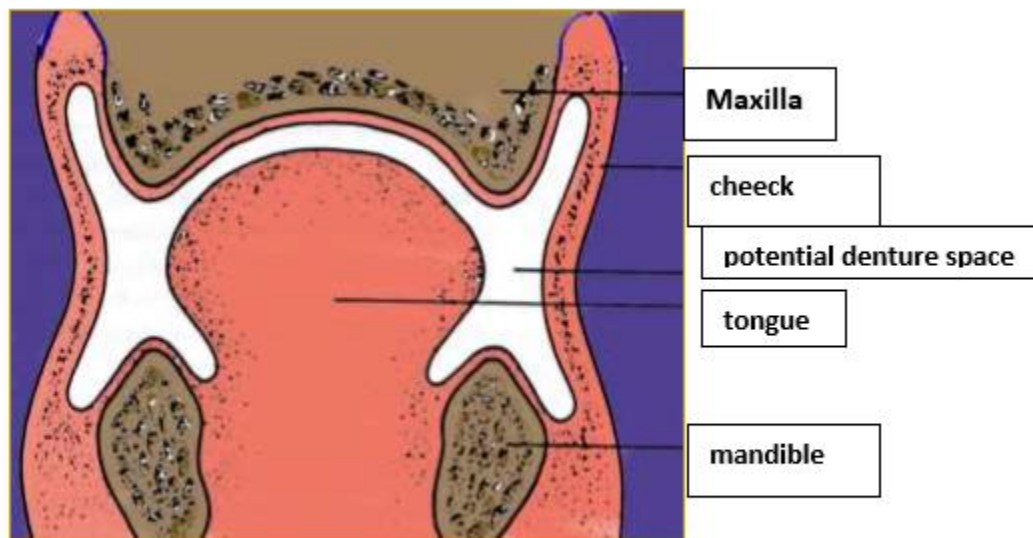
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NEUTRAL ZONE

The lower denture commonly presents the most difficulties with pain and looseness being the most common complain. This is because the mandible atrophies at greater rate than the maxilla and has less residual ridge for retention and support. The Neutral Zone technique is most effective for patients who have had numerous unstable and unretentive lower complete dentures. These patients usually have highly atrophic mandible and there has been difficulty in positioning the teeth to produce a stable denture.

Neutral Zone (N.Z.) Is That :- Area in the potential denture space where the forces of tongue pressing outward are neutralized by the forces of the cheeks and lips pressing inward.

Since these forces are developed through muscular contraction during the various functions of chewing, speaking and swallowing . They vary in magnitude and direction in different individuals.



Cross section/ The potential denture space

INDICATIONS:-

N.Z. is indicated when stability and patients acceptance of lower C.D. are in question.

1. Severely atrophic mandibular ridge
- 2- Patients with prominent and highly attached mentalis muscle, lateral spreading of tongue as a result of poor transition from dentate to edentulous state and sever resorption.
- 3- Patients with diminished neuromuscular control such as those with a history of stroke , Parkinson,s disease or patients with impaired motor innervations to oral and facial muscles as a result of brain surgery.
- 4- Patients with a typical shape or consistency of oral and perioral structure for example. patient who have scleroderma, marginal or segmental mandibulectomy and partial glossectomy.
- 5- N.Z. technique can be used to locate optimal position for implants in cases of implant supported or retained the overall outcome of treatment.

Muscles Involved in the N.Z.

The musculature of the denture space can be divided into two groups:-

- 1- Those muscles which primarily dislocate the denture during activity (Dislocating muscles).
- 2- Muscles that fix the denture by muscular pressure on the polished surfaces (Fixing muscles). These can then be further divided according to their location on the Vestibular (labial and buccal) side or lingual side of the dentures.

Dislocating Muscles

Vestibular:

- Masseter.
- Mentaalis.
- Incisive labii Infer.

Lingual:

- Medial Pterygoid.
- Palatoglossus.
- Styloglossus.
- Mylohyoid.

Fixing Muscles

Vestibular:

- Buccinator.
- Orbicularis oris.

Lingual:

- Gnioglossus.
- Lingual vertical.
- Lingual transverse.

Materials Used for N.Z. Impression:-

- 1- Impression plaster.
- 2- Impression waxes.
- 3- Tissue conditioner.
- 4- Impression compound.
- 5- Regular bodies silicon.
- 6- Hard relining.
- 7- Polyether.

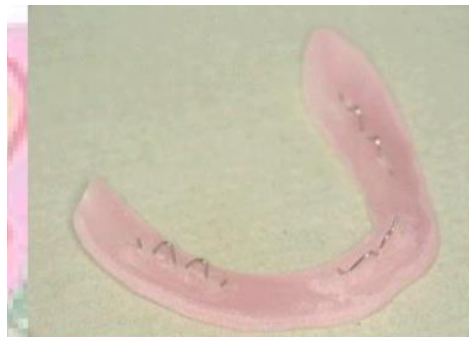
Neutral Zone Impression Technique

The loose and unstable lower complete denture is one of the most common problems faced by denture patients. One of the methods used to solve this problem is the neutral zone technique. The neutral zone is the area where the displacing forces of the lips cheeks and tongue are in balance. It is in this zone that the natural dentition lies and this is where the artificial teeth should be positioned. This area of minimal conflict may be located by using the neutral zone technique. The artificial teeth can then be set up in the correct positions. This technique is described below.

- Primary and final impressions of the upper jaw and primary impression for the lower jaw are taken and models were prepared. On the upper model wax rim is made and a lower special tray is constructed. The special tray is a plate of acrylic adapted to the lower ridge, without a handle, with spurs or fins projecting upwards towards the upper arch. These help with retention of the impression material.



1) A lower edentulous arch



2) A lower acrylic special tray with metal spurs to aid retention of the impression material

- The upper wax rim is adjusted as in normal registration for a complete denture. The lower special tray is placed in the mouth. Two occlusal pillars are then built up in self-cured acrylic on opposite sides of the lower arch. These pillars are molded and adjusted to the correct height so as to give the usual 3mm freeway space.

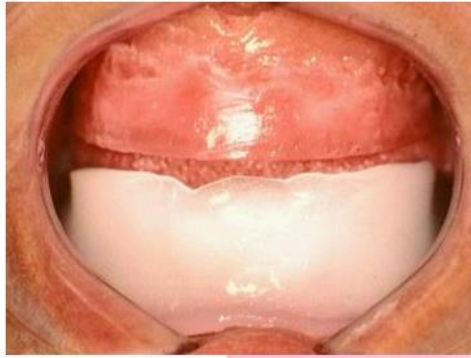


3) Occlusal pillars have been built up in green stick to the correct occlusal height



4) Establishing the correct occlusal height

- A thick mix of heavy body silicone impression material is then placed around the rest of the lower special tray, distally and mesially to the occlusal pillars. Then impression material is applied to the base plate and retained by the wire loops and or acrylic pillars. The patient is then asked to talk, swallow, drink some water etc. After 5-10 minutes the set impression is removed from the mouth and examined. The impression material will have been molded by the patient's musculature into a position of balance. Then a light body silicone material is put on the tissue surface and on the heavy body to make a final impression for the facial and lingual surfaces. It is useful if the chosen material has relatively long working time to allow the required movements to be carried out before the material becomes rigid. Also denture is fitted in the patient mouth as it may help to control recording material and prevent it from being displaced in a labio-occlusal direction.



5) The impression material being molded within the mouth



6) A completed silicone impression

- After applying petroleum gel separating medium, plaster index are then constructed in the lab, by surrounding the impression with plaster and a stonecast.



7) A plaster index used to locate the teeth to the neutral zone.

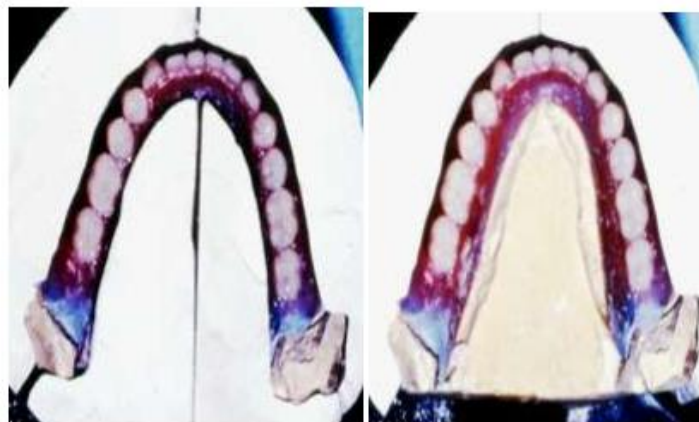


fig:- plaster index

- When the silicone and the tray is removed, a temporary denture base constructed and a gutter corresponding to the neutral zone is left behind that filled with wax to form bite rim in the neutral zone.
- Tooth arrangement and initial wax up for the soft tissue contours. The teeth may then be placed into the neutral zone.
- Then lingual index are being removed and buccal index after that.
- Intra oral try in

The resulting denture should feel more comfortable and be more stable and retentive because the denture should not interfere with or be displaced by the functions of the lips, cheeks and tongues.



8) The teeth positioned in the neutral zone leaving plenty of tongue space

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