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## CASE STUDY

### CASE REPORT-ON LINGUALIZED OCCLUSION

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#### ABSTRACT

Lingualized occlusion represents an established method for development of function and esthetics in complete denture articulation. The chewing pattern and masticatory efficiency of the patient with denture depend's upon the scheme of occlusion of complete denture. (Occlusal designs on masticatory ability and patient satisfaction with complete denture, 2013) The choice of occlusal scheme will determine the pattern of occlusal contacts and the direction of forces that are transmitted through the bases of denture, will depend upon intensity of contacts achieved in the denture. That is why occlusal scheme is considered important factors in the design of complete denture.

## INTRODUCTION

An ideal occlusion is a hypothetical or theoretical concept based on the anatomy of teeth and rarely found in nature. OCCLUSION is defined as a static relationship between missing and masticatory surfaces of maxillary and mandibular teeth. There are numerous concepts techniques and philosophies concerning complete denture occlusion. The profound effect on success or failure of the prosthesis will depend upon the occlusion you provide to the patient moreover if the occlusion is simple to adjust and arrange and esthetics is pleasing what more could u ask for?. In lingualized occlusion the upper lingual cusp function in a shallow fossa of lower teeth. There is no contact between the mandibular buccal cusp and palatal maxillary cusp which might result in inclined contact between the buccal cusps of either tooth in lingalized occlusion. The wall inclination present in the fossa of lower teeth is 10-12 degrees in which longer and sharper lingual cusp of upper teeth function in an area 2-3 millimeter in diameter around the centric stop. There is reduction in tipping forces during function when lingualizing the occlusion over the crest the lower ridge seats. (Michael J. Maginnis)

#### Importance

This form of occlusion is very efficient for mastication and this leads to much better intake of nutrients for the patient. This

form of occlusion is much easier to manage clinically because the number of contact points to control it is greatly reduced compared to the functional type of arrangement. Vertical forces are directed more centrally on the mandibular alveolar ridge, which creates more stability and less tilting effect on denture. (Occlusal designs on masticatory ability and patient satisfaction with complete denture, 2013) The facial muscles and cheeks are well supported by more buccally placed maxillary molars, which increases the esthetic value even more. Upper posteriors can be positioned more buccally on the ridge because only the lingual cusp are active and should be situated at the top of maxillary ridge. In many cases this eliminates the need for cross bite arrangement and improve the functional and esthetic aspect of denture.

#### Indications

- 1 When esthetics is a prior concern for patient butoral conditions indicate a non-anatomic occlusal scheme.
- 2 When single complete denture opposes removable partial denture (combination syndrome).
- 3 Patients with Para functional habits and in which more favorable stress distribution is desired. Displaceable supporting tissues.

#### Advantages

- Cross arch balance. (Lingualized occlusion revisited, 2010)

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- Lateral forces are minimized due to good penetration of food bolus.
- Good esthetics.
- Anatomic, semi anatomic, zero degree teeth can be used.
- The vertical forces which are centralized upon the mandibular residual ridges provide an area of closure allowing easier accommodation to unpredictable basal seat changes.
- It provides simplified occlusal adjustment.
- Cross bite can be avoided in almost cases. (Lingualized occlusion, 2011)

**Disadvantages:**

Lateral displacement occurs when there is wear of maxillary lingual cusp or mandibular fossa.

**Other occlusal schemes are**

- Neurocentric occlusion
- Linear occlusion
- Non anatomic occlusion
- Balanced occlusion.

Neurocentric occlusion: was developed by Devan. The key objectives are the neutralization of inclines and centralization of forces which acts on the basal seat when the mandible is in centric relation to the maxilla. There are five elements in this occlusal scheme. They are position, proportion, pitch, form and number. (Enhancing stability, 2013) Linear occlusion: this concept advocates a straight line of points or knife edge contacts on artificial teeth in one arch occluding with flat non anatomic teeth in the opposing arch there by reducing unfavorable occlusal forces. Non anatomic occlusion: Sears introduced monoplane occlusion with balancing ramps. According to this concept the teeth which are flat mesiodistal and buccolingually are used, oriented as close as possible parallel to the maxillary and mandibular mean foundation plane. Balanced occlusion: The bilateral, simultaneous, anterior and posterior occlusal contact of teeth in centric and eccentric positions. It is not seen in natural dentition.



**Figure 1. Preoperative view**

**Case report**

A 55 year old female patient reported with the chief complain of missing teeth and wanted the replacement of the same. Patient is diabetic. On examination it was found that the upper and lower arches were edentulous, the ridges were severely

resorbed and esthetics was prior concern to the patient. Treatment planned for patient was complete denture fabrication with lingualized occlusion (Figure 1).

Primary impression were made using rigid reversible material. Custom tray was fabricated on the cast obtained from primary impression. Border molding was done and secondary impressions were made in a close fitting tray with zinc oxide eugenol. The obtained impression was poured with dental stone, record bases were fabricated and occlusal rims were made. Jaw relation was recorded to determine the vertical dimension. Once the vertical dimension was determined the records were transferred to the articulator. Teeth arrangement was done using lingualized occlusion- concept given by Payne in 1941. The teeth arrangement was done such that only the maxillary palatal cusp touching the lower central groove. Both the buccal cusp was free of contact. (Figure 2 and 3)



**Figure 2 & 3. Teeth arrangement based on Payne's concept Try-in was done.**

Once the patient was satisfied with the esthetics and facial appearance, the rims was processed and delivered to patient (Figure 4 & 5)



**Figure 4 & 5. Insertion**



**Figure 6. Postoperative view**

## DISCUSSION

The end result of any prosthodontics treatment is to restore esthetics, function and form (Figure 6). The denture fabricated with this type of occlusion in centric working and non-working mandibular positions articulate when the maxillary lingual cusp was in contact with mandibular occlusal surfaces. The buccal cusps are free of contact and free of interference when allowed for movement in lateral excursions. The lingualized tooth set up creates more room for tongue, reduces the risk of cross bite and is excellent for atrophied ridges. Giving this type of occlusion to the patient enhances esthetics, increased chewing efficiency and no post insertion adjustment for tissue irritation. Hence patient is satisfied with this type of occlusion. (Sutton and McCord, 2007) The various treatment option would be fabricating a complete denture using neutral zone technique, monoplane occlusion. The lingualized occlusion is certainly one of the choices for many reasons- It is very efficient for mastication. The number of contact points to control greatly reduced and easier to manage with this form of occlusion. Easier to achieve in the laboratory. When esthetically viewed gives natural and pleasing appearance. (Importance of lingualized occlusion, 2009)

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