

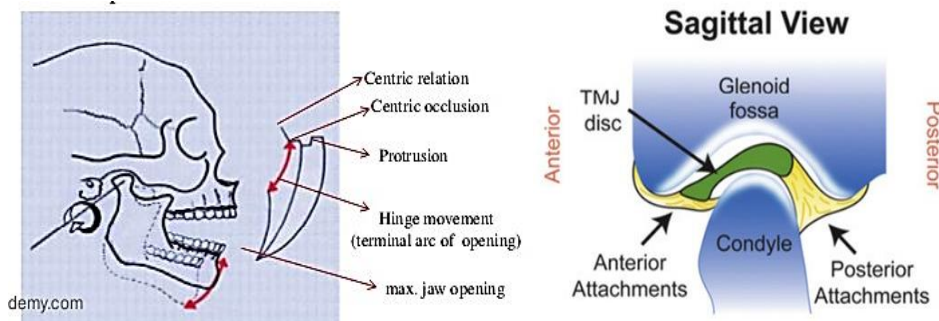
## Occlusion in Complete Denture

Occlusion in complete denture must be developed to function efficiently and with the least amount of trauma to the supporting tissues.

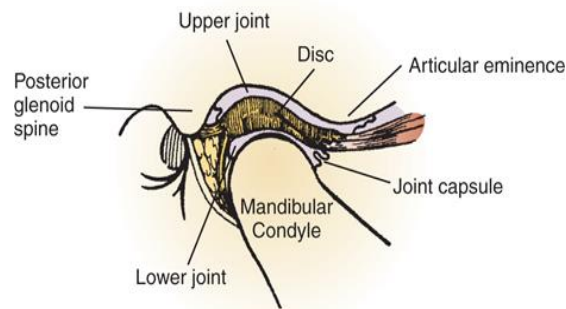
**Occlusion:** Occlude means 'to close'. This word is used to describe the static contact relationship between the incising or masticating surfaces of the maxillary or mandibular teeth or tooth. It is the static contact of the teeth that exist after the jaw movements have stopped. It is the contact relationship of the upper and lower teeth. All occlusal forms should at least have a tripod contact in centric relation.

### Centric relation:

- The most posterior relation of the lower to the upper jaws from which lateral movements can be made at a given vertical dimension.
- The most retruded physiological relation of the mandible to the maxilla and from which the individual can make lateral movements. It is a condition that can exist at various degrees of jaw separation. It occurs around the terminal hinge axis.
- The most posterior relation of the mandible to the maxilla when the condyles are in the most posterior unstrained position in the glenoid fossa from which lateral movements can be made at any given degree of jaw separation.



- The maxillomandibular relationship in which the condyles articulate with the thinnest avascular portion of their respective disks with the complex in the anterior-superior position against the slopes of the articular eminencies. This position is independent of tooth contact. It is restricted to a purely rotary movement around the transverse horizontal axis.

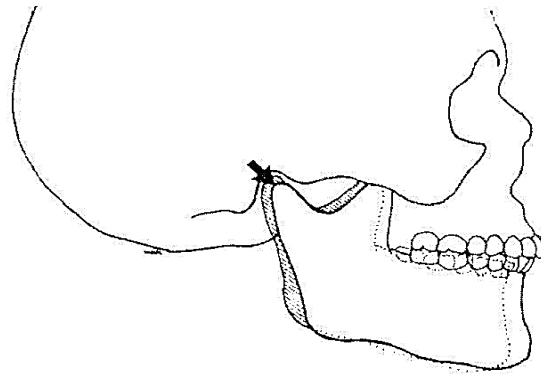


### **Importance of Centric relation:**

1. It is a significant jaw position in prosthodontics and especially in complete denture construction.
2. It is a reproducible and recordable position, which can be repeatedly developed and thus serves as a reliable guide to develop centric occlusion in complete dentures.
3. Centric relation becomes a starting point to plan and execute the occlusion.
4. Centric relation is related to the terminal hinge axis. In centric relation, condyles exhibit pure rotation without any translation.
5. This position is more definite than the vertical relation and is independent on the presence or absence of teeth.
6. The final act of masticatory stroke ends in centric relation. It is a functional position.
7. It is a border position and the posterior limit of the envelope of motion.

**Centric occlusion:** the occlusion of opposing teeth when the mandible is in centric relation. This may or may not coincide with a maximum interception

**Maximal Intercuspal Position:** The complete intercuspatation of the opposing teeth independent of the condylar position.



*The continuous line denotes maximal intercuspation position, the shaded area and dotted line denote the positioned centric occlusion.*

**The transverse horizontal axis:** An imaginary line around which the mandible may rotate within the sagittal plane.

**Occlusal Pattern:** The form or design of the masticatory surfaces of a tooth or teeth based on natural or modified anatomic or non-anatomic teeth.

**Occlusal Interference:** Any tooth contact that inhibits the remaining occluding surfaces from achieving stable and harmonious contacts.

**Articulation:** Refers to the dynamic contact relationship of maxillary and mandibular teeth as they move against each other during function.

**Free Mandibular Movement:** Any mandibular movement without interference.

**Balanced Occlusion:** It refers to the bilateral, simultaneous, anterior, and posterior occlusal contact of teeth in centric and eccentric positions.

## **Objectives**

The basic principles to be achieved by any occlusion concept are:

- 1- Preservation of the remaining tissues.
- 2- Proper masticatory efficiency.
- 3- Enhancement of denture stability.
- 4- Enhancement of phonetics and esthetics.

## **Difference between natural and artificial occlusion**

- 1-** The teeth in natural dentitions are retained by periodontal tissues that are uniquely innervated and structured. In complete artificial occlusion, all the teeth are seated on compressible mucosal tissues.
- 2-** In natural dentitions, the teeth receive individual pressures of occlusion and can move independently. In complete artificial occlusion, teeth cannot move independently.
- 3-** Malocclusion of natural teeth may be uneventful for years. Malocclusion of artificial teeth may affect all the teeth and the denture base.
- 4-** Non-vertical forces on natural teeth during function affect only the teeth involved and are usually well tolerated, whereas in artificial teeth the effect involved all of the teeth on the bases. It is usually traumatic to the supporting structures.
- 5-** Incising with the natural teeth does not affect the posterior teeth. Incising with artificial teeth results in lifting of the denture in the posterior region.
- 6-** In natural teeth, the second molar is the favored area for masticating hard foods. Heavy pressures of mastication in the second molar region with artificial dentition will tilt the base.
- 7-** In natural teeth, bilateral balance is rarely found; if present it is considered balancing side interference. In complete articulation teeth, bilateral balance is desired for base stability.
- 8-** In natural teeth proprioception gives the neuromuscular system control during function. Not present in complete articulation teeth and the mandible in function will end its chewing stroke in the most favorable physiologic position, which is very close to the centric relation.

## **Fundamentals for artificial occlusion**

- 1-** The smaller the area of the occlusal surface acting on food, the smaller will be the crushing force on food transmitted to the supporting structures.
- 2-** Vertical force applied to an inclined occlusal surface causes a non-vertical force on the denture base.
- 3-** Vertical force applied to a denture base supported by yielding tissue causes the base to slide when the force is not centered on the base.

4- Vertical force applied outside (lateral to) the ridge crest creates tipping force on the base.

### **The requirement of Complete Denture Occlusion**

1- Stability of occlusion in centric relation position and in an area forward and lateral to it.

2- Balanced occlusal contacts bilaterally for eccentric contacts.

3- Unlocking [removing interference] the cusps mesiodistally so that the denture can settle down when there is ridge resorption.

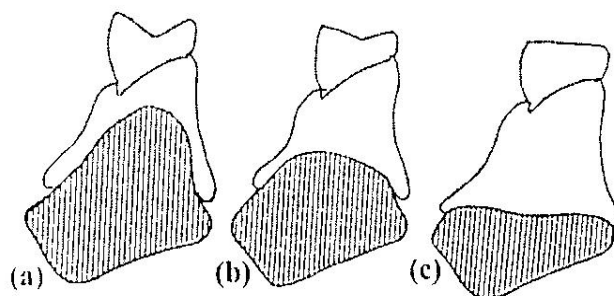
4- Control of horizontal forces by buccolingual cusp height reduction according to the residual ridge resistance and inter-ridge space.

5. Functional lever balance by favorable tooth to ridge crest position.

6. Cutting and shearing efficiency of the occlusal surface (sharp cusps or ridges) equivalent to natural dentition.

7. Anterior clearance of teeth during mastication.

8. Minimum occlusal contact between the upper and lower teeth to reduce pressure during function (lingualized occlusion).



*Reduction of cusp height according to the ridge height*  
*(a) Well formed ridge can resist horizontal forces of cusped teeth*  
*(b) The use of reduced cusp height with resorbed ridge*  
*(c) The use of flat non anatomic teeth with flat ridge*