Complete denture occlusion

Occlusion has been described as the most important subject in all the disciplines of

dentistry, and for good reason, because the way the teeth come together, and function

together. Occlusion has also been described as one of the most confusing subjects in all the disciplines of dentistry. Attempts to understand occlusion have ranged from the mechanical, mathematical and geometrical analysis of tooth contact and jaw movement, to the biological and functional analyses based on the behavior of natural dentitions under different environmental conditions.

Terminology:

Occlusion is “the static relationship between the incising or masticatory surfaces of themaxillary or mandibular teeth or tooth analogues" (Occlusion=contact between teeth).

While **Articulation** refers to" static &dynamic contact relationship between maxillary &mandibular teeth as they moves against each other during function".

Centric relation:

The most retruded physiological relation of the mandible to the maxillae to and from which the individual can make collateral movements. It is a condition that can exist at various degrees of jaw separation. It occurs around the terminal hinge axis.

Or:The maxillo-mandibular relationship in which the condyle articulate with the thinnest avascular portion of their respective disc with the complex in the anterior-superior position against the slopes of the

articular eminencies. This position independent of tooth contact. It is restricted to a purely rotary movement around the transverse horizontal axis.(bone-to bone relation).

Maximum intercuspation:

The complete intercuspation of the opposing teeth, independent of condylar position.

Centric occlusion: The occlusion of opposing teeth when the mandible is in centric relation. This may or may not coincide with maximum intercuspal position in natural dentition.(tooth-tooth relation).

Working side:- is the side that the mandible moves towards in lateral excursion.

Non-working side:- is the side that the mandible moves away from during lateral excursion.

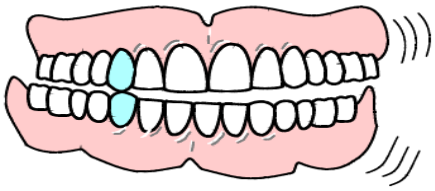
Natural teeth	Artificial teeth
1. Fixed in bone 2.Supported by periodontal ligament 3.Tooth move into socket during mastication because of elasticity of ligament 4.When teeth , move one side during mastication the other side is not affected 5. When teeth move in socket, they produce stretching effect and exert tensile force 6.Tensile force produce stimulation to under lying bone 7.Physiologic stimulation maintain good health of the bone 8.To maintain the stimulus optimal occlusion of natural teeth is important	1. Rest on residual ridge 2.not fixed to soft tissue 3.Denture move toward tissue because of resiliency of mucosa 4.When teeth meet on one side ,the other side loses balance upsetting retention and stability 5.Compression of soft tissue causes displacement of the supporting tissue 6.Compression causes pressure on mucosa of affecting vascular supply of bone 7.Instability of denture causes loss of bone because of leverage 8.To maintain the supporting tissue in good health ,planed occlusion is necessary.

Occlusion in the natural dentition are:

The pathways the teeth take are dependent on the cusps and morphology of the occlusal surfaces of the teeth, as well as on the morphology of the joints. In chewing, the lower teeth move across the uppers, passing through the intercuspal position, usually without stopping. The intercuspal position is used during chewing, swallowing, and during deliberate clenching of the teeth. During function, the presence of unworn cusps usually results in a separation of the teeth on one side, whilst the teeth contact on the other side of the arch. This is observed most obviously during lateral movements but also occurs in protrusive movements when the anterior teeth contact and the posteriors do not.

The concepts of natural occlusion are:

1. **Mutually protect occlusion:** canine protection occlusion : the basic premise of canine protection occlusion is that:



A. On laterotrusive movements of the mandible, only the canines (possibly first premolars) contact &therefore protect the remaining dentition from adverse occlusal torsion forces on contacts to & from centric occlusion.

B. Furthermore, it is contended that canine protection occlusion is the ideal type of functional occlusion for the natural dentition & is the functional occlusion type toward which restorative &orthodontic treatments should be directed.

C. The advocates of canine protection occlusion argued that humans innately possess the long and dominant canine, they further argued that the canine is the strongest human tooth type &has the most sensitive proprioceptive fibers.

They therefore concluded that the canines are the best teeth to protect the occlusion from eccentric forces that occur on movements to and from centric occlusion.

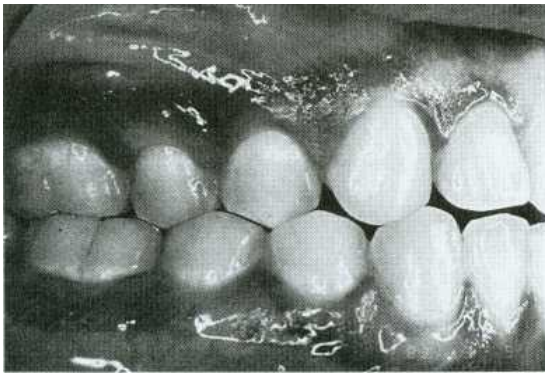
2. **Group function:** exists when there are multiple contact relations between the maxillary &mandibular teeth in lateral movements on the working side where by simultaneous contact of several teeth acts as a group to distribute occlusal forces.
3. **Balanced occlusion:** this type of occlusion rarely found in natural dentition &considered as an occlusal interference:

a. The balancing contacts, for the most part, were contacts & not interfernces.
b. Next, most balancing side contacts were on the distal sides of the posterior molars.

Occlusion in complete denture:

To establish proper occlusal relationship between artificial teeth in CD, you have to consider: the absence of direct attachment between the dentures &the patient's musculo-skeletal system requires a different set of guidelines of good occlusal practice, in addition all the teeth are attached to one base so the force on a single tooth may affect all the base.

When replacing natural teeth with artificial teeth, it is imperative that the replacement function in harmony with the entire system of jaws, muscles &joints.



Objectives of occlusion in CD:

- Preservation of remaining tissues.
- Proper masticatory efficiency.
- Enhancement of denture retention.
- Enhancement of phonetics &esthetics.

Requirements of CD occlusion:

1. Stability of occlusion at centric relation &in an areas forward &lateral to it.
2. Balanced occlusal contacts bilaterally.
3. Control of horizontal force by buccolingual cusp reduction according to residual ridge resistance, from of the arch &inter-arch distance.
4. Functional lever balance by favorable tooth-to- crest ridge position.
5. Cutting, penetrating, &shearing efficiency of occlusal surfaces.
6. Anterior incisal clearance during all posterior masticatory movement.