

CROWN AND BRIDGE

OCCLUSION

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Occlusion: Relationship of the mandibular and maxillary teeth when closed or during excursive (side to side) movements of the mandible; when the teeth of the mandibular arch come into contact with the teeth of the maxillary arch in any functional relationship.

One of the objectives of the restorative dentistry is to place the teeth in harmony with the TMJ. This will result in minimum stress on the teeth and joint, with only a minimum effort expended by the neuromuscular system to produce mandibular movements. When the teeth are not in harmony with the joint and the movements of the mandible, interference is said to exist.

Centric Occlusion

Centric occlusion Is the occlusion of opposing teeth when the mandible in centric relation. This may or may not coincide with maximum intercuspation.

Centric Relation

Centric relation is a bone-to-bone relation. It is the relation between the maxilla and the mandible when the Condyles are in the rear upper most mid most in the Glenoid fossae. It is a relation where the condyle is in a hinge position.

It may also be defined as the untranslated hinge position of the mandible in its relation to the maxilla. More simply, it may be defined as the physiologic centering of the condyles in the cranium. At this centered position, there is an absence of translation.

The most recent definition is that “the centric relation is the maxillo-mandibular 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 shapes of the articular eminencies”.

Is the most posterior position of the mandible relative to the maxillae at a given vertical dimension. This is a relationship of **THE BONES** of the upper and lower jaws without tooth contact or with teeth only barely contacting before closing teeth into maximum intercuspation.

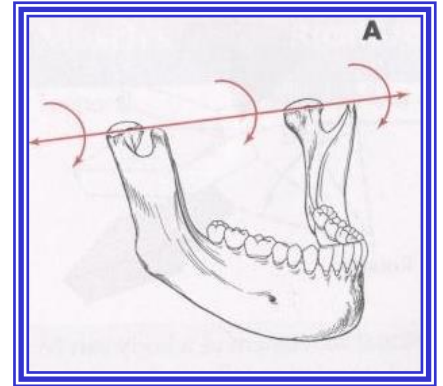
The goal is to create occlusal contacts in posterior teeth that stabilize, instead of creating deflective contacts that may destabilize the mandibular position.

The occlusion in a restoration should be made in harmony with optimum condylar position.

MANDIBULAR MOVEMENTS

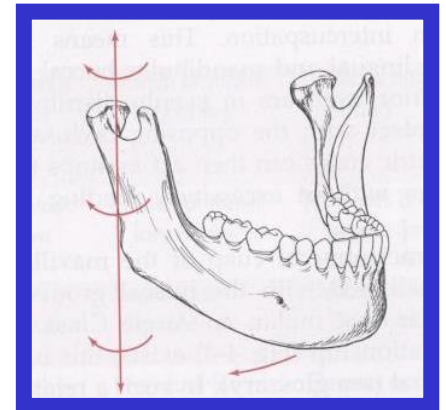
•HORIZONTAL AXIS

This movement happens when the mandible in centric relation makes a purely rotational opening and closing border movement around the terminal hinge axis.



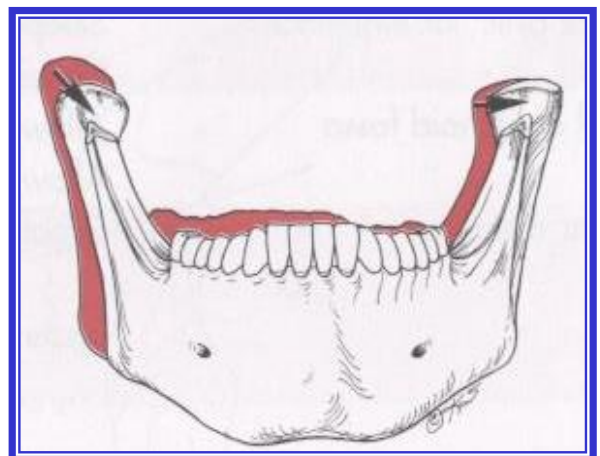
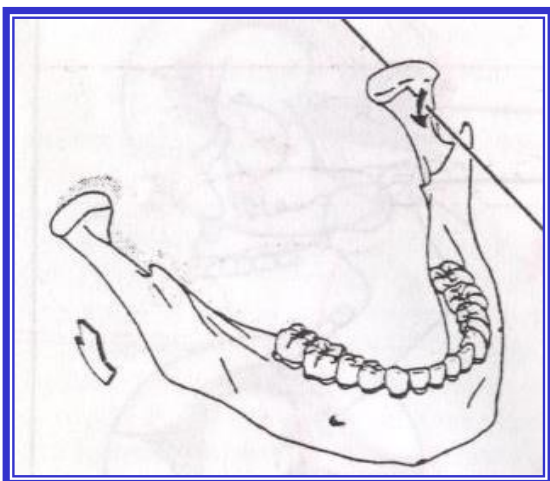
•VERTICAL AXIS

This movement occurs in horizontal plane when the mandible moves into a lateral excursion. The center of this rotation is a vertical axis extending through the rotating or working-side condyle.



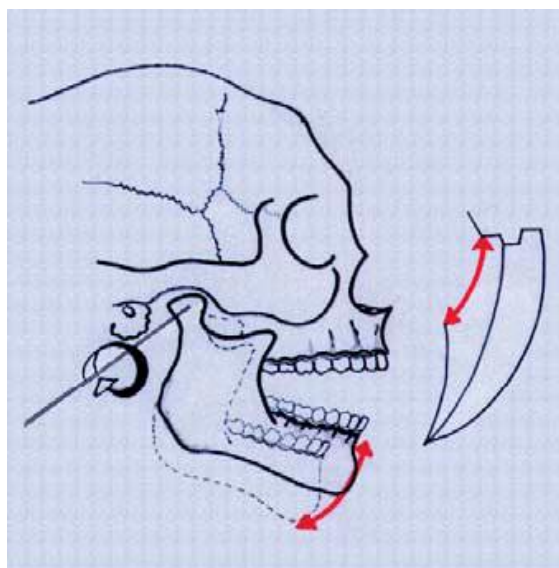
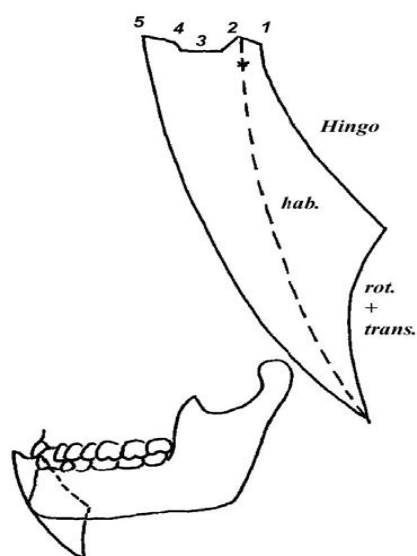
•SAGITTAL AXIS

When the mandible moves to one side, the condyle on the side opposite from the direction of movement travels forward. As it does, it encounters the articular eminence of the glenoid fossa and moves downward simultaneously.



HING MOVEMENT

- The up and down motion of the mandible as the result of the condyles rotating in the TMJ within 10-to 13-degree arc, which creates a 20-to 25-mm separation of the anterior teeth.



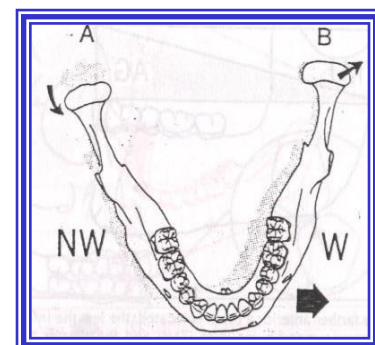
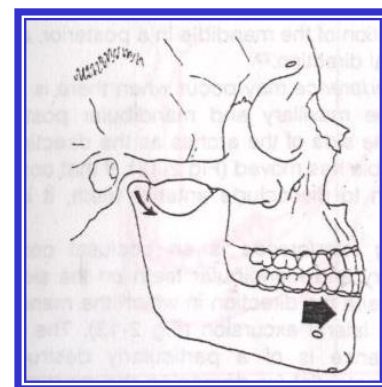
- In maximum opening, the condyle translates forward, with the disc still interposed.

PROTRUSIVE POSITION

- When the mandible slides forward so that the maxillary and mandibular anterior teeth are in an end-to-end relationship. Ideally, the anterior segment of the mandible will travel a path guided by contacts between the anterior teeth, with complete disocclusion of the posterior teeth.

WORKING-SIDE (LATEROTRUSIVE) & NONWORKING-SIDE (MEDIOTRUSIVE)

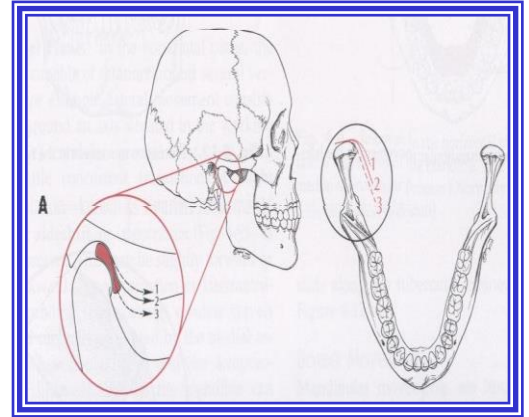
- If the mandible is moved to the left, the left side is the working side, and the right side is the nonworking side.
- The condyle on the nonworking side will arc forward and medially.
- The condyle on the working side will shift laterally and slightly posteriorly.



THE DETERMINANTS OF MANDIBULAR MOVEMENT

A-THE POSTERIOR DETERMINANT

The two condyles and the contacting teeth
Posteriorly, the right and left TMJs, the teeth of the maxillary and mandibular arches; and overall, the neuromuscular system.



B-THE ANTERIOR DETERMINANT

•POSTERIOR TEETH

- 1- Provide the vertical stops for mandibular closure.
- 2- Guide the mandible into the position of maximum intercuspation, which may or may not correspond with the optimum position of the condyles in the glenoid fossae.

•ANTERIOR TEETH

Help to guide the mandible in right and left lateral excursive movements and in protrusive movements.

CONTROL OVER THE TOOTH DETERMINANT BY

- ◀ Orthodontic movement of teeth.
- ▶ Restoration of the anterior lingual surfaces.
- ▶ Restoration of the posterior occlusal surfaces.
- ▶ Selective grinding, of any teeth that are not in a harmonious relationship.

Intercuspal position and anterior guidance can be altered, for better or worse, by any of these means.

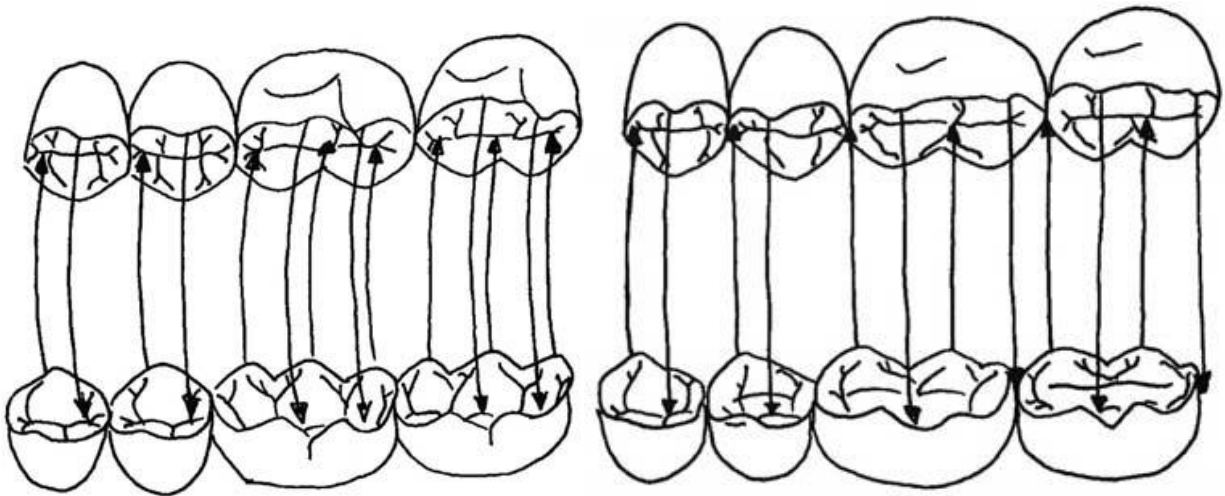
THE NEUROMUSCULAR SYSTEM

- ☀ The proprioceptive nerve endings in the periodontium, muscles, and joints.
- ☀ Through reflex action, it will program the physiologic paths of movement.
- ☀ Dentists have indirect control over this determinant. Procedures done to the teeth may be reflected in the response of the neuromuscular system.

Static Occlusion

Types of Occlusion Relationship:

1-Cusp - Ridge Pattern of Occlusion: The relation between the upper and lower teeth is such that one stamp cusp of the same tooth fits into the embrasure area of two of the opposing teeth. This cusp-ridge arrangement is called a “tooth-to-two-teeth” occlusion, or “cusp - embrasure” occlusal pattern.



2-Cusp-Fossa Pattern of Occlusion:

In this pattern, most or all of the stamp cusps fit into fossae. The “cusp -fossa” relationship normally produces an interdigitate relation of the cusps and fossae of one tooth with the cusps and fossae of only one opposing tooth. This pattern may also be called "tooth -to-one-tooth" occlusion.

Advantages of Cusp-Fossa over Cusp-Marginal Ridge Pattern of occlusion:

A cusp fossa relationship produces an interlocking of the upper and lower teeth, thus giving maximum support in centric occlusion.

The forces are closer to the long axis of each tooth, giving a more efficient chewing apparatus. The occlusal forces are along the long

axes of teeth: less tipping. There is elimination of food impaction between marginal ridges. The teeth are more stable, with more stable occlusion. Because the cusps make their contact with their ridges, not their tips, there is lesser wear of the cusp tips.

Long Centric:

Long centric or “Freedom in Centric” is an occlusal concept, in which a flat region is built between the retruded position and the maximum inter-cuspatation, without a change in the vertical dimension.

This flat region, having a length of 0.5-1mm, gives the mandible freedom to close in Centric or slightly anterior to it without any interference.

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