Second Stage

9. lecture

Horizontal Jaw Relations

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Horizontal jaw relations: It is the relationship, of the mandible to the maxilla in a horizontal plane; it can also be described as the relationship of the mandible to the maxilla in anteroposterior and side to side direction.

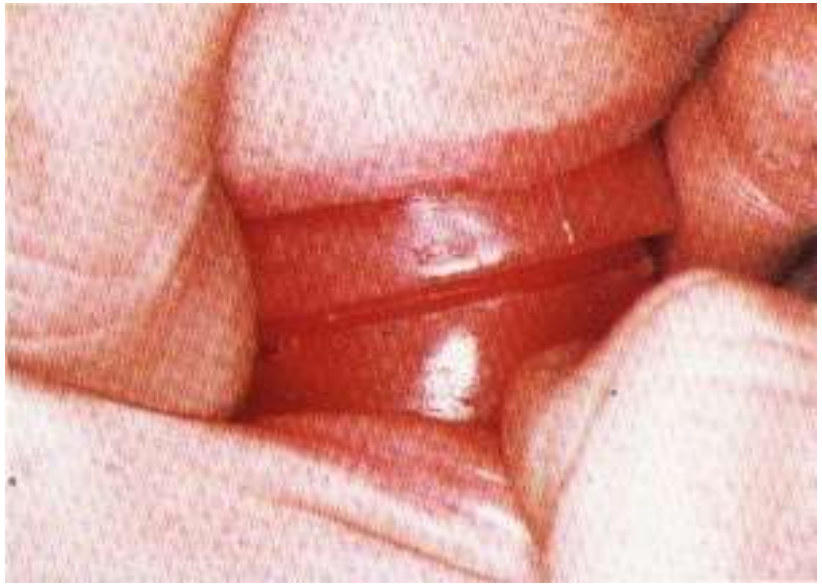
The horizontal relations include:

1. Centric jaw relation.
2. Eccentric jaw relation.

a. Protruded or forward relation.

b. Left or right lateral relation.

Centric jaw relation: The most retruded relation of the mandible to the maxilla when the condyles are in the most posterior unstrained position in the glenoid fossa from which lateral movement can be made at any given degree of jaw separation.



Centric occlusion: It is the occlusion of the opposing teeth when the mandible is in centric relation.

Importance of centric jaw relation (significance):

1- It is a reference position from which the mandible can move to any eccentric position and return back involuntarily.

2- It is learnable, repeatable and recordable position.

3- It is the start point for developing occlusion.

4- Functional movement like chewing and swallowing are performed in this position, because it is the most unstrained position.

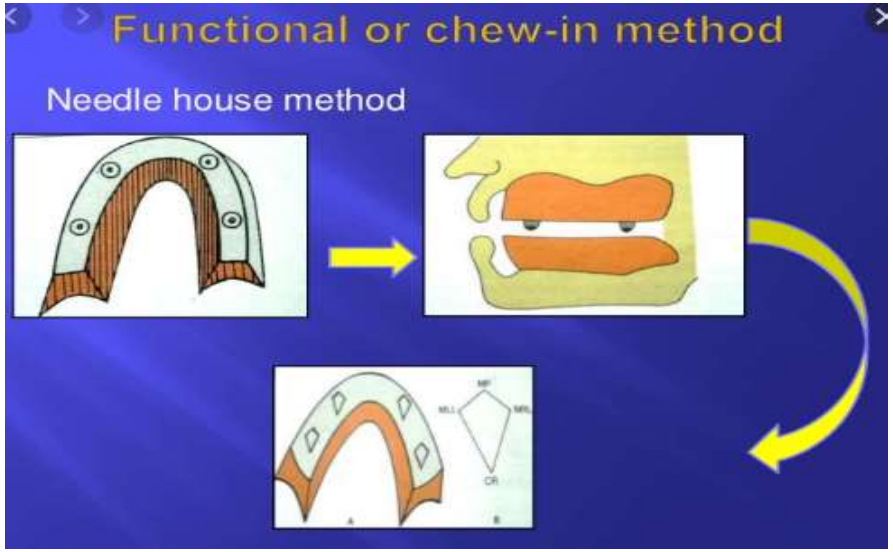
5- It is a reliable jaw relation, because it is bone to bone relation.

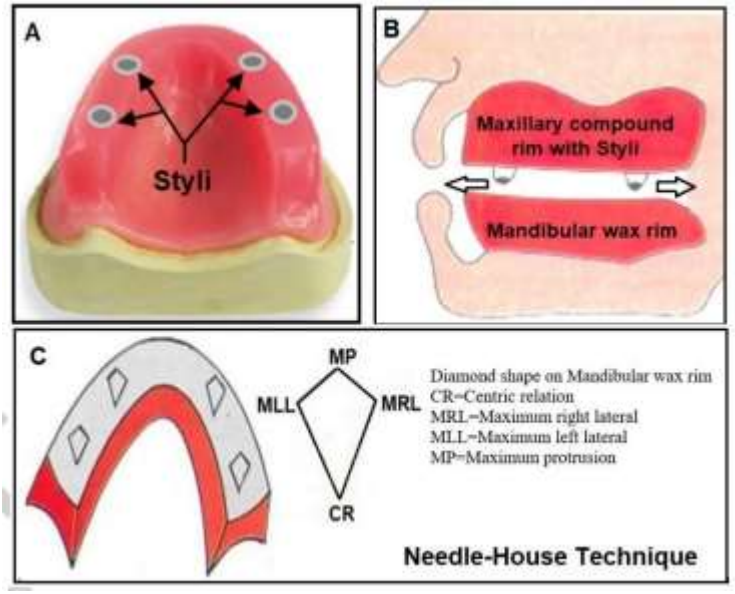
Methods of recording centric jaw relation:

1. Functional "chew - in" methods.
2. Graphic method.
3. Tactile or inter occlusal check record method.

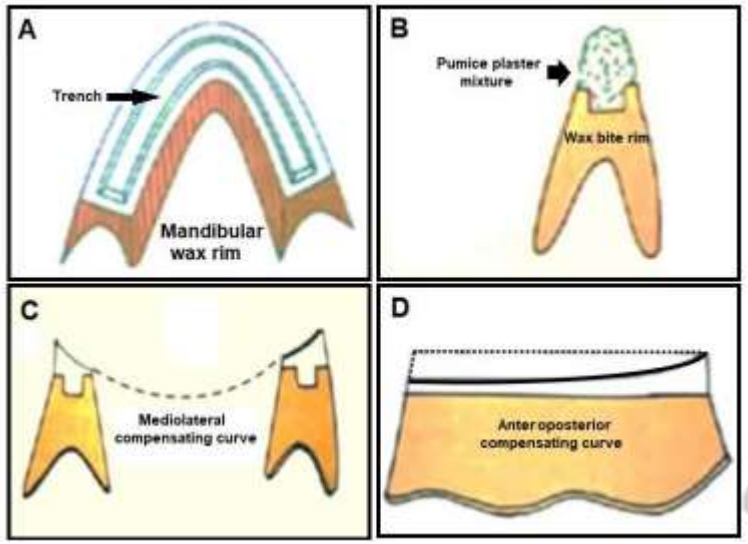
1- Functional methods:

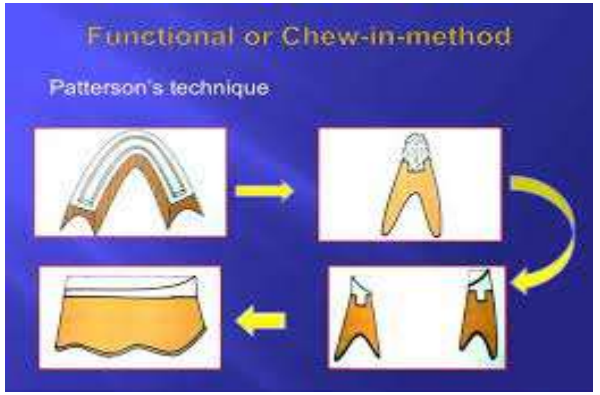
A- Needles - House techniques: The needle - House method use compound occlusion rims with four metal styli placed in the maxillary rim. When the mandible moves with the styli contacting the mandibular rim and cut four diamonds shaped tracings. The posterior most point of this diamond pattern indicates the centric jaw relation.



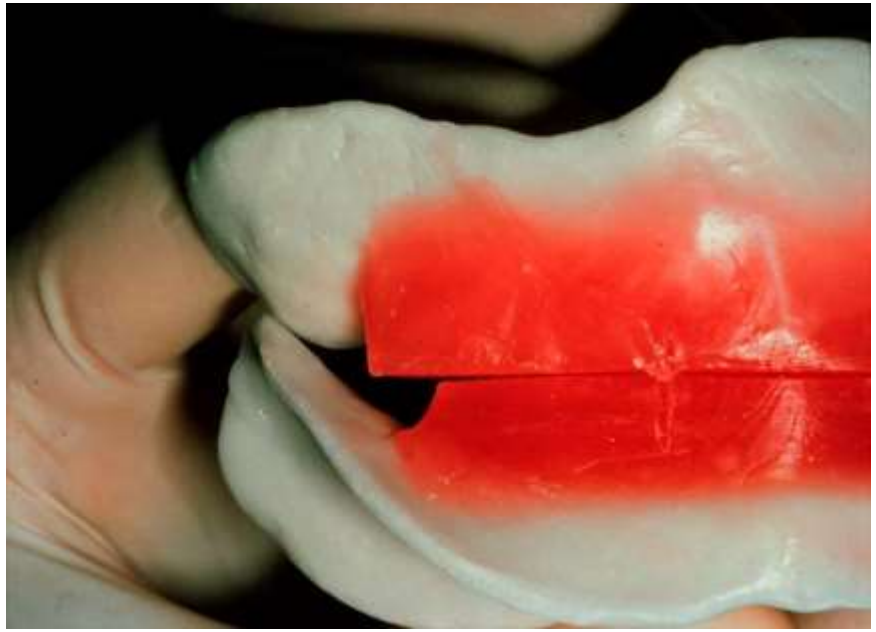


B- Patterson techniques: The Patterson method uses wax occlusion rims. A trench is made in the mandibular rim and a mixture of half plaster, and half pumice is placed in the trench. The mandibular movement generates **compensating curves** in the plaster and pumice. When the plaster and pumice are reduced to the pre - determined vertical dimension of occlusion, the patient is instructed to retruded the mandible and the occlusion rims are joined together. The disadvantages of Needle House and Patterson techniques involve lateral and anteroposterior displacement of the recording bases in relation to the supporting bone while the record is being made.

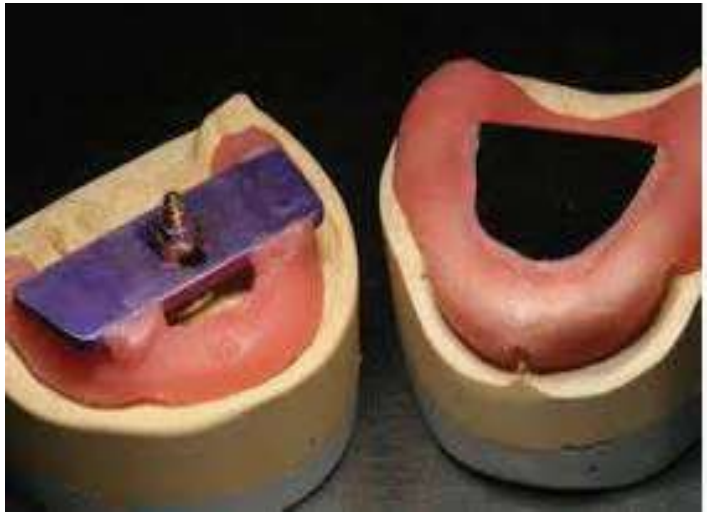




C- Swallowing techniques: In this method, sot cones of wax are placed on the lower record base. The wax cones contact the upper occlusion rim when the patient swallows. This procedure is supposed to establish both proper vertical and horizontal relation of mandible to maxillae.



2- Graphic methods: The graphic methods record a tracing of mandibular movement in one plane (horizontal plane). These movements in the horizontal plane describe a figure known as the Gothic arch tracing, also known as arrow point tracing. The apex of the tracing is the centric relation position, with the two sides of the tracing originating at that point being the limits of lateral movements. A needle point tracing made on a tracing table coated with carbon or wax can be used to indicate the relative position of the upper and lower jaw in the horizontal plane. Graphic methods are either intra oral or extra oral depending upon the placement of the recording device. The extra oral is more accurate, move visible and larger in comparing with intra oral tracing.



3- (Tactile) or inter occlusal check record method: In inter occlusal method the centric relation is recorded by placing a recording medium between the record bases when the jaws positioned at centric relation. Materials that are commonly used for inter occlusal records include plaster, wax, Zinc oxide eugenol paste, cold cure acrylic, impression compound, silicon or polyether. The patient closes into the recording medium with the lower jaw in its most retruded position and stops the closure at predetermined vertical relation. This method is simple because mechanical devices are not used in the patient mouth and are not attached to the occlusion rims. This method has the advantage of causing minimal displacement of the recording bases in relation to the supporting bone.

(Indications of inter occlusal check record):

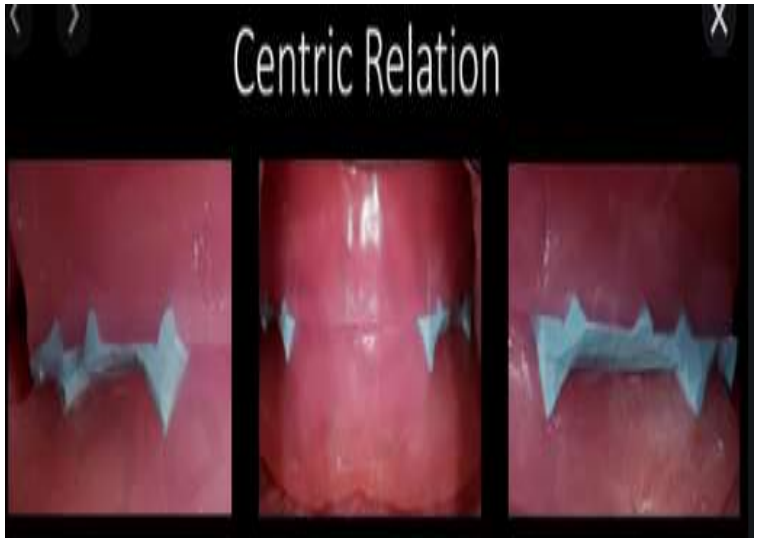
1- Abnormally related jaws.

2- Displaceable, flabby tissue.

3- Large tongue.

4- Uncontrollable mandibular movements.

5- It can also be done for patients already using a complete denture.



Methods for assisting the patient to retruded the mandible to centric jaw relation:

1- Instruct the patient by saying "Let your jaw relax, pull it back, and close slowly and easily on your back teeth".

2- Instruct the patient to contact with his tongue a piece of wax placed on the posterior palatal seal area and slowly close.

3- The patient is asked to try to bring his upper jaw forward while occluding on the posterior teeth.

4- The head is tilted back, so that the resulting tension of muscles under the chin makes protrusion more difficult.

5- The patient is asked to swallow and closes slowly.

6- Instruct the patient to do routine jaw exercises.

Factors that complicates centric relation record:

1- Resiliency of the tissues supporting the denture bases.

2- Stability and retention of the record bases.

3- The TMJ and its neuromuscular mechanism.

4- Amount of pressure applied in making the record.

5- Technique employed in making the record.

6- The ability of the dentist.

Eccentric jaw relations: Any relationship between the jaws other than centric relation.

Lateral jaw relations: The relation of the mandible to the maxilla when the lower jaw is in a position to either side of centric relation.

Protrusive jaw relation: The relation of the mandible to the maxilla when the mandible is thrust forward.

Methods of recording eccentric jaw relation: The records are made in the same manner as for centric relation record for protrusive, left and right lateral movement. Inter occlusal eccentric records may be made on the occlusion rim before the teeth are set up or on the posterior teeth at the try in appointment. When this record is made on Hanau articulator, the following formula is used to obtain an acceptable lateral inclination:

L= H/8 + 12

L = lateral condylar inclination.

H = horizontal condylar inclination in degrees as established by the protrusive relation record.