Maxillo mandibular relation records
The occlusal plane is defined as the average plane established by the incisal and occlusal surfaces of the teeth."
Importance of orientation of occlusal plane

- Anteriorly, occlusal plane mainly helps in achieving esthetic & phonetic.
- Posteriorly, it forms a milling surface, where tongue & buccinator muscle are able to position the food bolus onto it, and hold it there during mastication.

Incorrect of occlusal plane would hamper esthetics, phonetics, & mastication. It may affect stability of complete denture & ultimately result in alveolar bone resorption.
The vertical length of the maxillary occlusion rim

• Anteriorly extend 2mm below relaxed lip & oriented to be parallel to inter pupillary line.
• Posteriorly the vertical length and occlusal plane are made to be coincide with (Camper's line).
• (Camper's line, ala-tragus line) line passing from the lowest point of the ala of the nose to the center of the tragus of the ear.
The vertical length of the mandibular occlusion rim

- Anteriorly: the level of the mandibular occlusion rim with the level of the lower lip & angle of the mouth.
- Posteriorly: the vertical length of the rim with level of the retromolar pad.
Evaluation of the form of occlusion rims

- The labial form of occlusal rim should provide adequate lip support and labial fullness.
- The buccal form of occlusal rim should provide support for the cheeks.
- If the occlusal rims placed more buccally results in cheek biting and displacement of dentures by buccal musculature.
- If the occlusal rims placed more palataly and lingually affects speech and results in restriction of tongue movements and displacement of dentures.
Vertical relations
Rest vertical dimension The distance between two selected points one on the fixed part (maxillae) and one on the movable part (mandible) when the maxillofacial musculature is in a state of tonic equilibrium.

Occlusal vertical dimension The distance between two selected points one on the fixed part (maxillae) and one on the movable part (mandible) when occluding members (teeth) are in contact.
Free way space (interocclusal distance)

- It is defined as the distance between the occluding surfaces of the maxillary and mandibular teeth when the mandible is in the physiologic rest position.
- \( \text{FWS} = \text{RVD} - \text{OVD} \)
- In complete denture fabrication for edentulous patients the free way space should be 2-4 mm at premolar region.
Effects of increased vertical dimension

- Discomfort to the patient.
- Trauma to denture bearing area and underlying mucosa.
- Increased lower facial height (elongated face).
- Stretching in facial muscles.
- Pain and clicking in TMJ.
- Clicking of the teeth which results in rapid wear of acrylic teeth.
- Increased resorption of alveolar bone.
- Difficulty in swallowing and speech.
Effects of decreased vertical dimension

- Decreased lower facial height.
- Cheek biting.
- Angular cheilitis due to folding of corners of the mouth.
- Loss of lip fullness.
- Deepened wrinkles of the face result in aged appearance.
- Decreased masticatory efficiency.
- Pain and clicking in TMJ.
There are many factors that affect the measurement of vertical dimension which is:

1. Patient must sit in upright position with head unsupported.
2. Any tension should be avoided.
3. Special attention and enough time should be given to those patients having neuromuscular disorder.
4. No valid method for all patients, so it is advisable to use several methods and compare the result.
Recording the rest vertical dimension (physiological methods):

- Facial measurements after swallowing and relaxing (reference points)
- **Tactile sense** (opening ------ closing)
- **Phonetics** (emm, conversation)
- **Facial expression** (skin tone and the lips contour) should be relaxed.
- **Anatomic land marks** (Willis guide) which is designed to measure the distance from the pupil of the eye to the rima oris (corner of the mouth) and the distance from the nasal spine to lower border of the mandible when measurement is equal the jaw at rest.
Recording the occlusal vertical dimension (mechanical methods):

- Pre-extraction records
- Profile photographs
- Radiography
- Articulated cast
- Facial measurements

- Former dentures

- Edentulous patients (wax occlusion rims)
Evaluating vertical dimension

- The inter occlusal distance (free way space) is the distance or gap existing between the upper and the lower teeth when the mandible is in the physiological rest position. It is usually 2-4 mm when observed at the position of the first premolars.

- The closest speaking space is the closest relationship of the incisal edges of the mandibular teeth to the maxillary teeth during rapid speech (sounds ch, s, j).
• Patients tactile sense
• Swallowing followed by relaxing (cones of a soft wax)
• Phonetics (3, 33) (5,55) (Emma)
• Esthetic (tone of the facial skin, lip support and fullness)
Horizontal relations
**Horizontal jaw relations:** are the relations of the mandible to maxilla in a horizontal plane or in anteroposterior direction.

- **Centric Relation**
  - the most retruded relation of the mandible to the maxillae when the condyles are in the most posterior unstrained position in the glenoid fossae from which lateral movement can be made, at any given degree of jaw separation
  - It is a bone to bone relation.
• **Eccentric relation** any relation of the mandible to the maxillae other than centric relation
• **Protrusive relation** is the relation of the mandible to the maxillae when the mandible is thrust forward
• **Right & left maxillomandibular relation** are the relations of the mandible to the maxillae when the mandible is moved either to the right or left side
Methods used to make centric relation record:

FUNCTIONAL (CHEW IN):

- The patient produces a pattern of mandibular movements by moving the mandible to protrusion, retrusion, and right and left lateral.
- The Patterson technique and the Needles – House technique are examples of the functional method.
GRAPHIC METHOD:

- **Arrow point tracing:** it is one dimensional graphic methods record a tracing of mandibular movements in one plane.
- **Pantograph:** it is graphic record of mandibular movements in three planes.
- Graphic methods are either *intraoral* or *extraoral*, depending upon the placement of recording device. The extra oral tracing is preferable because it is more accurate, visible and large.
TACTILE OR INTER OCCLUSAL CHECK RECORD:

- The tactile or inter occlusal check record method is referred to as a **physiologic method**.
- The normal functioning of the patients proprioception and tactile sense is essential in the making of an accurate record.
- The records are made using a recording medium (impression plaster, zinc oxide eugenol, impression compound and wax) between the occlusion rims or the trial denture bases.
- The patient closes into the recording medium with the lower jaw in its most retruded position and stops the closure at a predetermined vertical relation.
Preparing Occlusion Rims

- Place 3 widely separated lines between the rims in the centric position *(mid line & canine eminences)*

Check that record base **heels**(rims do not touch)
Registering Centric Relation

Two sharp “V”-shaped notches in the molar/premolar area of each sided wax depth \(1-2\, \text{mm}\)

Ensure adequate notch depth
• Apply thin layer of recording medium.
• Instruct the patient to close in centric relation position.
• Check the record.
• Place **Alluwax** into a 1-2mm slot in maxillary rim
• Fill to slight excess
• Ensure wax is dead soft
• Hot water bath for softening (use care)
• Instruct the patient to close in centric relation position.
• Hold position until set 1-2 min
• Remove both rims together
• Chill and separate
• Registration Should be Sharp, Not Rounded
• Seal the upper and lower bite rims.
• Be sure that the midline and canine lines of the upper and lower arch coincide.
• No contact at the heals.
Factors that affect the centric relation record:

- Resiliency of the tissues supporting the denture bases.
- Stability and retention of record bases.
- The temporo-mandibular joint and its neuro muscular mechanism.
- Technique employed in making the records.
- Amount of pressure applied in making the records.
- The skill of the dentist.
Thank you for listening.