

Lec.12 Part 1

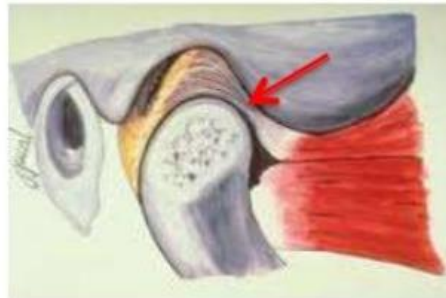
Occlusion of complete dentures

DR. Zeena Farhan

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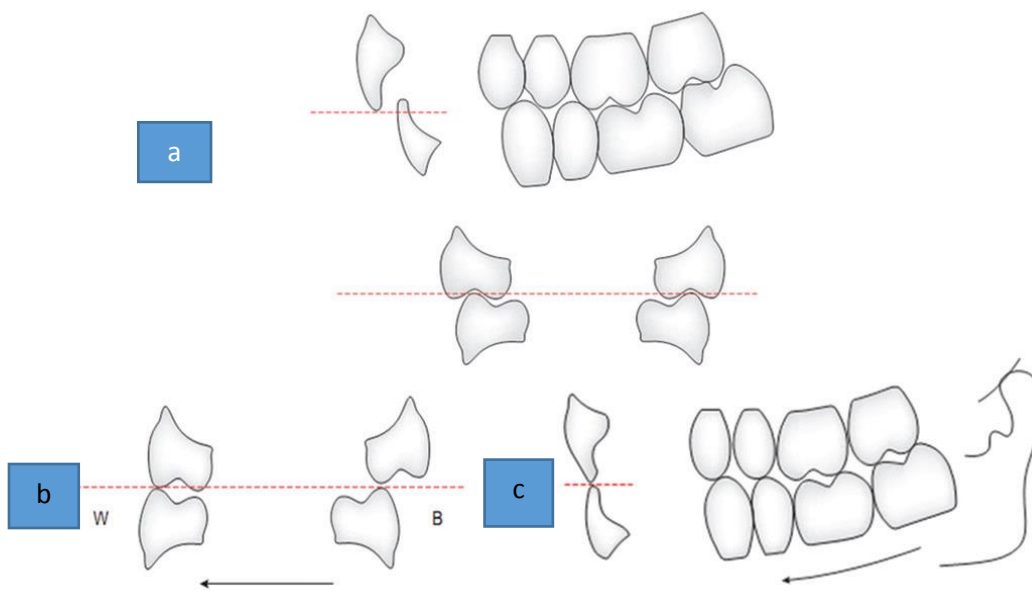
Definitions

- **Occlusion:** Static relation between occluding surface of maxillary and mandibular teeth when they are in contact in centric, eccentric relation, while some consider occlusion not pure static as denture base moves over resilient mucosa.
- **Articulation:** dynamic contact of maxillary, mandibular teeth occur when mandibular make close grinding into and away from centric position While teeth still in contact.
- **Centric relation:** bone to bone relation, in which the condyles articulate with the thinnest avascular portion (non innervated) of their respective disks with the complex in most anterior superior position against the shapes of articular eminencies. This position is independent of tooth position contact. It is restricted to purely rotary movement above the transverse horizontal axis.



- **Centric occlusion:** occlusion of opposing teeth when the mandible in centric position. It may or may not coincide with intercuspal position
- **Maximum intercuspation:** intercuspation of opposing teeth regardless of condylar position. Used instead centric occlusion in complete denture occlusion
- **Centric occluding relation:** Maximum intercuspation when mandible in centric relation (centric occlusion coincides with centric relation). It is used in complete denture occlusion
- **Eccentric occlusion:** static protrusive and lateral (left and right) working and balancing contact.

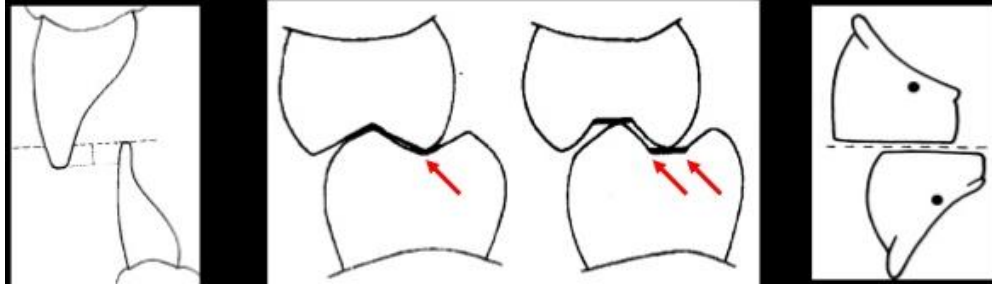
- **Balanced occlusion:** simultaneous contact (at least 3 points) between maxillary and mandibular teeth in centric and eccentric (protrusive and lateral) positions within normal range of functional movement.
- **Balanced articulation:** bilateral simultaneous contact between maxillary and mandibular teeth when mandible move to and from centric to eccentric relation and with smooth gliding motion without interlocking during dynamic sliding, (maintain contact without cusp interference) within normal range of mandibular function. It needs pantographic tracing to adjust condylar guidance on fully adjustable articulator.



(a) Balanced occlusion: In centric occlusion, (b) balanced occlusion: In right lateral position, (c) balanced occlusion: In protrusive position

- **Muscular (Habitual) position:** coincide with tooth position in dentulous patient, but not reproducible after tooth extraction due to loss of proprioception and inclination of glenoid fossa. For edentulous patient, it is called habitual position. Avoid constructing the occlusion of complete denture in this position

- **Long centric:** Free gliding non-interfering occlusion from centric relation to muscular centric occlusion position to provide freedom in centric, obtained by widening of central fossa of anatomical posterior teeth.



Advantages of long centric:

1. Create horizontal area of contact instead point of contact lead to less trauma to the ridge and high stability.
2. Allow settling of mandibular denture as residual resorbed ridge occurs without locking of cusp and loss of occlusion.

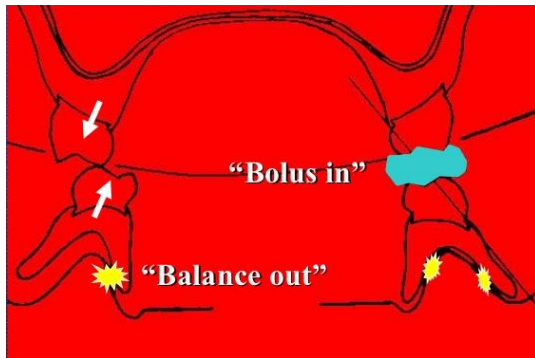
Objectives:

1. Improve mastication and swallowing without tipping or rotation of the base.
2. Improve aesthetics (size, shade, arrangement of teeth), and phonetics.
3. Preserve soft tissue (decrease soreness), and hard tissue (decrease pressure as increased force reduces blood supply and increase residual ridge resorption)
4. Improve patient psychology
5. Increase stability and retention of denture.

Requirements

1. Lever balance:

Obtaining a stable relation between denture base and the ridge (basal seat) when bolus of food interposed between the teeth on one side and a space is created between the teeth on the other side. It stabilizes the denture during mastication till tooth contact occurs



- Achieved by:

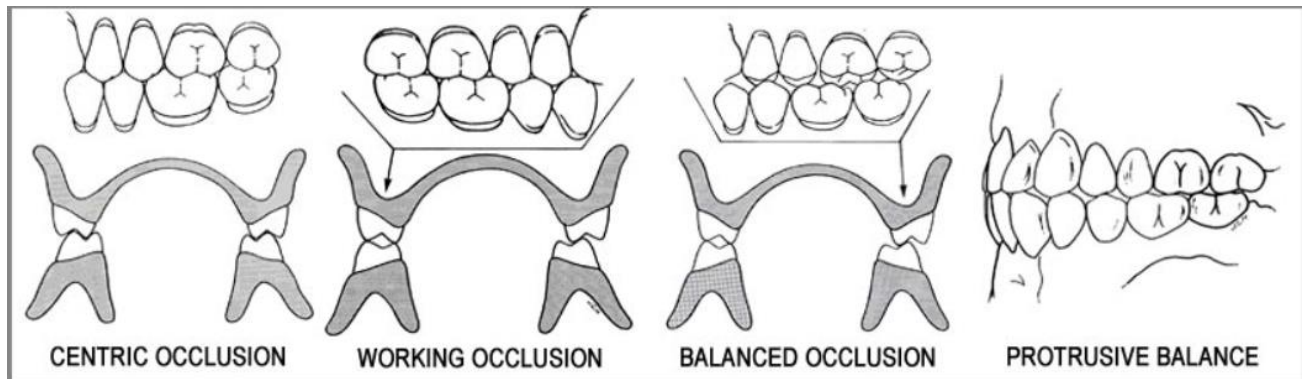
- a. Denture base: maximum extension (snow-shoe principle), wide load distribution, decreased denture base movement, centralize force anteroposterior
- b. Occlusal plane: Set teeth close (near) to the ridge, occlusal plane bisects interridge space.
- c. Position of the teeth: on the crest of the ridge or lingual to the crest (lingualized occlusion)- Set teeth in neutral zone
- d. Occlusal table: reduce buccolingual and mesiodistal width (decrease load/ unit area, provide space for the tongue)- remove the last molar tooth- reduce cusp eight-wide grooves, fissures, spill ways. Use cutting edge-use acrylic teeth than porcelain teeth- avoid steep cusp inclines
- e. Vertical dimension: avoid excessive VD- provide good freeway space

2. Occlusal balance:

Obtaining a stable relation of teeth to each other. Types include:

- a. Bilateral occlusal balance: simultaneous contact in centric and eccentric movement. It includes the following contacts:
 - Working side contact: act as group function, transmit force of occlusion vertically, central load anteroposterior
 - Balancing side contact: contact posteriorly during protrusion, contact when working side contact, smooth gliding contact without interference
 - Incisal contact: sharp, no contact during mastication, flat incisal guidance contact in protrusive only

b. Unilateral occlusal balance: simultaneous contact of the teeth at working side only. Used in removable partial dentures



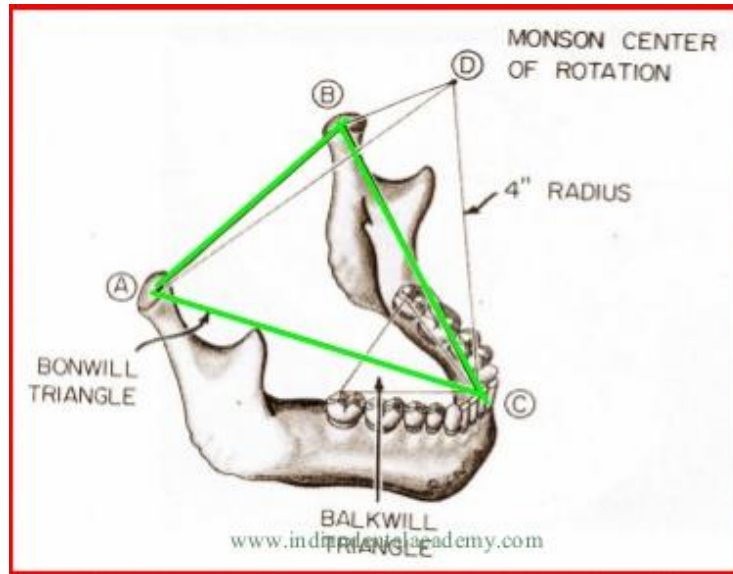
Difference between natural and artificial occlusion

	Natural teeth	Artificial teeth
Increased load	move interdentally in the socket to adjust occlusion	move as one unit on denture base if occlusal interference occur leading to loss of denture stability
Reaction to pressure	vertical in tension lead to bone apposition (stimulate osteoblast)	lead to bone resorption and interfere with blood supply and stimulate osteoclast activity
Malocclusion (premature contact)	no response	immediate response led to loss of denture stability, soreness
Incising	not affect posterior	affect posterior. Avoid incisal contact in complete denture as if settling occurs due to residual ridge resorption, mandible move forward, upward to compensate, maintain occlusion, leading to trauma to anterior ridge
Balanced	if present lead to destructive	necessary for stability

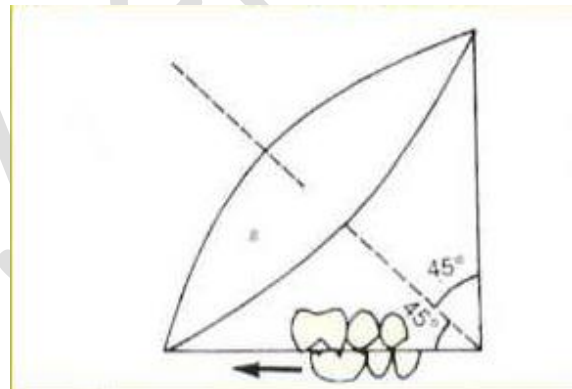
occlusion	changes (anterior should disengage posterior)	
Proprioception	Present: avoid premature contact	Absent, denture base shift with premature contact leading to ridge resorption
Non-vertical force	affect tooth only resist non-axial force by periodontal ligament	affect whole denture base so forces should be directed perpendicular to ridge to avoid tipping. No resistance to non-axial force, denture displacement
Area of mastication	at 2 molar area more favorable lever	at 2 premolar and 1 molar as pressure on second molar will tilt the denture base
Teeth position	may be present outside ridge (malposed)	teeth placed on crest of ridge
Cusped teeth	no problem	lead to instability, use long centric, use flat teeth

Theories of occlusion

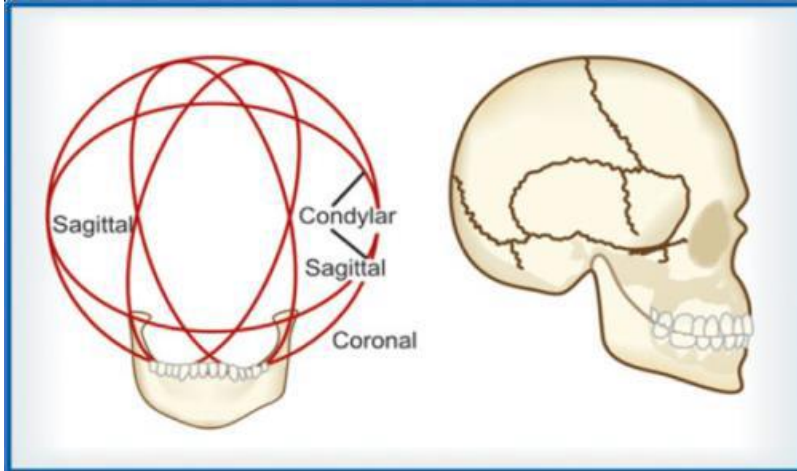
1. Bonwill equilateral theory: teeth move in relation to each other in equilateral triangle (distance between each condyle and incisal point = 10cm)



2. Hall conical theory: lower teeth move over the surface of upper teeth over a surface of cone with an angle of 45 degree between central of cone and occlusal plane



3. Monson spherical theory lower teeth move over surface of upper teeth as over surface of sphere with diameter 20cm and center of sphere at glabella, so teeth should be arranged with compensatory curves (curve of spee and poster lateral curve of Monson)



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