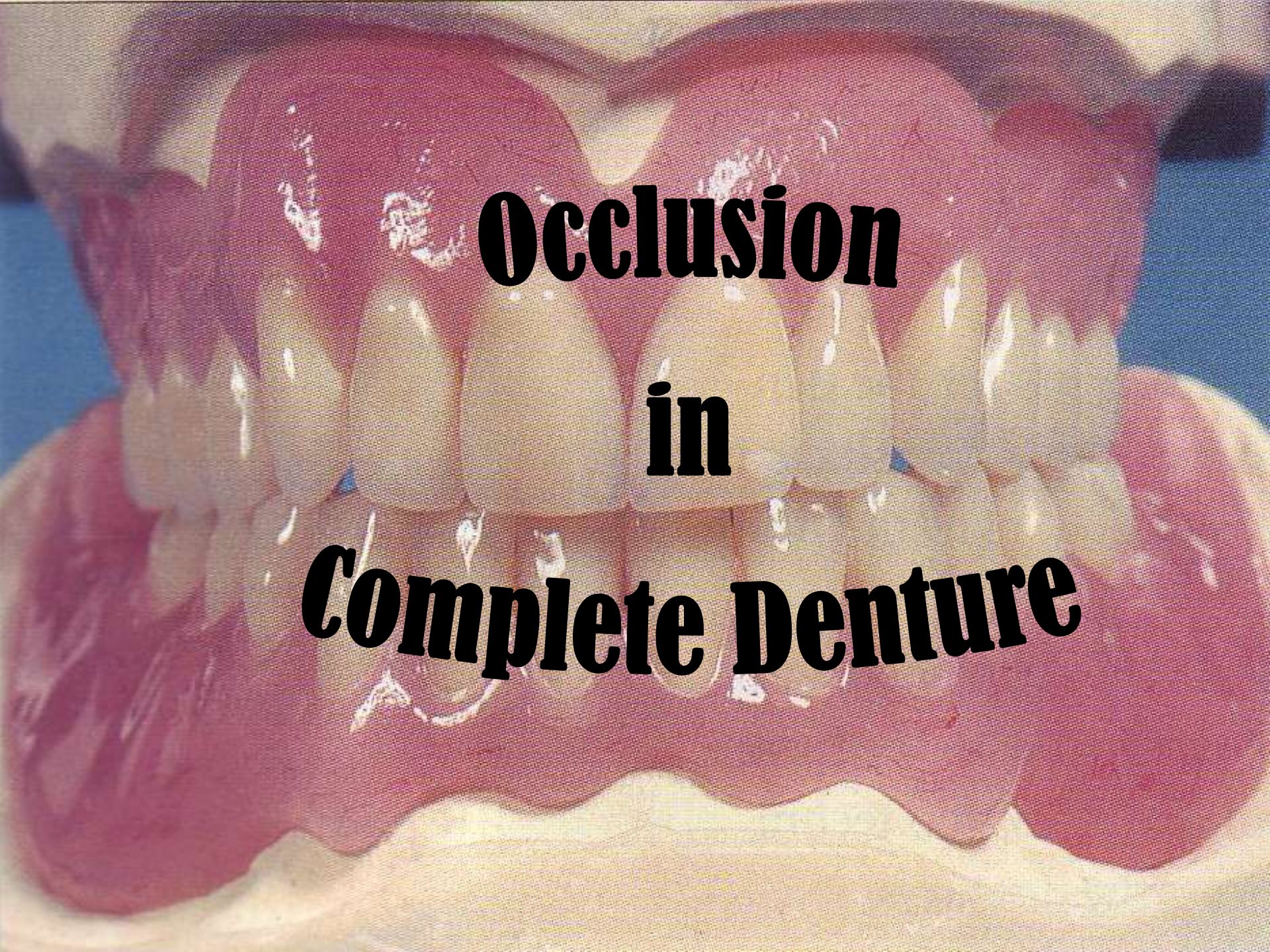

Occlusion
in
Complete Denture

# Occlusion in Complete Denture

***Parts of the occlusal scheme***

Types of complete denture Occlusion

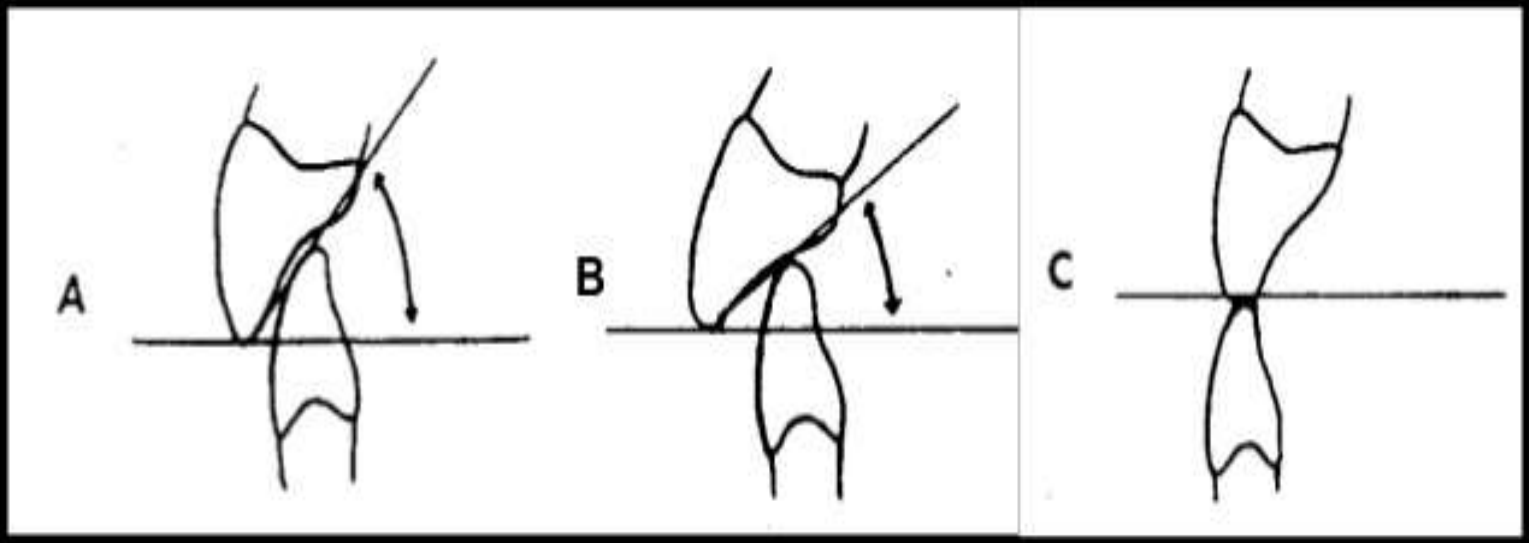
1). Balanced occlusion

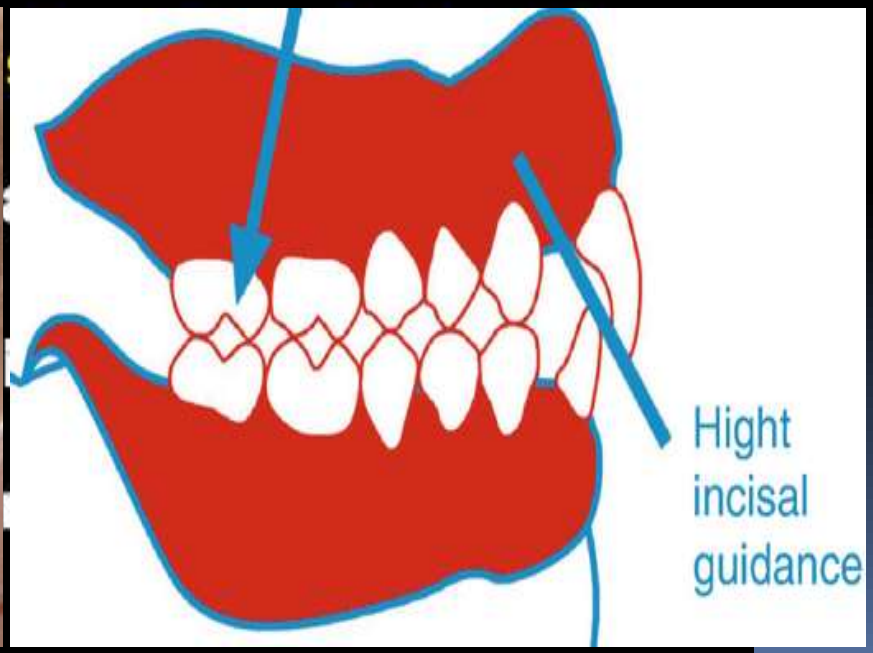
2). Monoplane occlusion

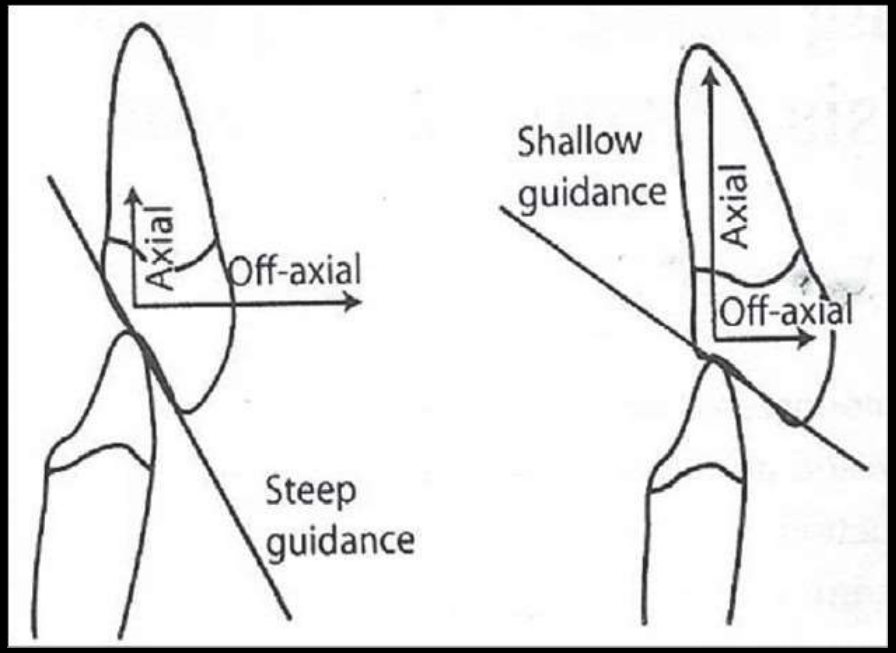
3). Lingualized occlusion

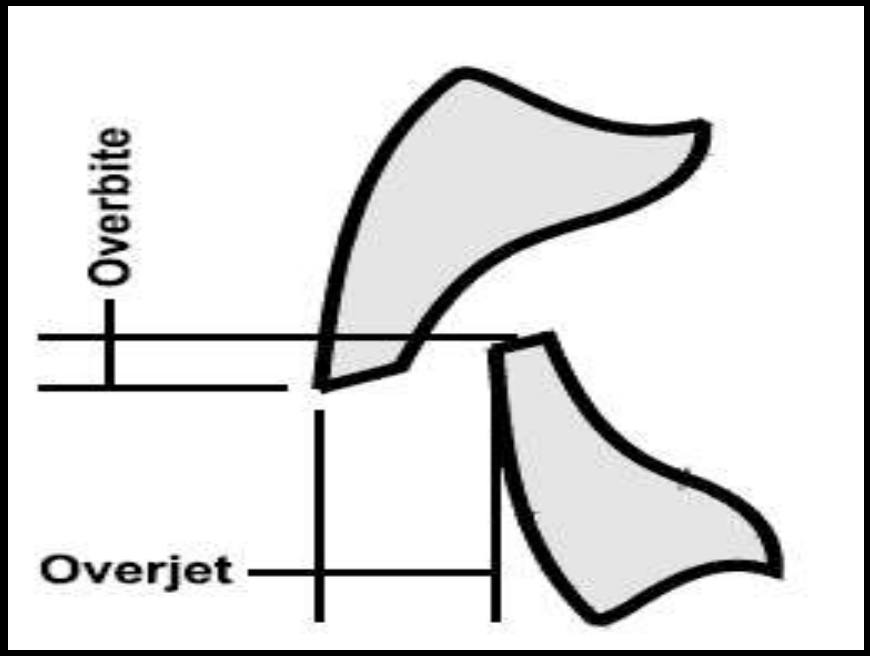
Factors Affecting the balanced occlusion
(Law of Articulation)

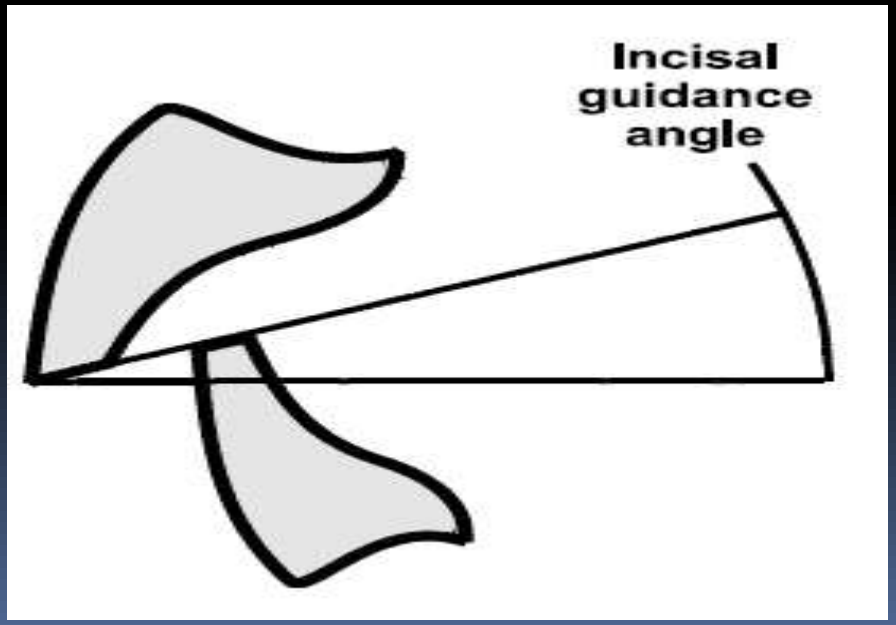
- Condylar guidance.
- Incisal guidance.
- The occlusal plane.
- The compensatory curves.
- Cusp angulation.

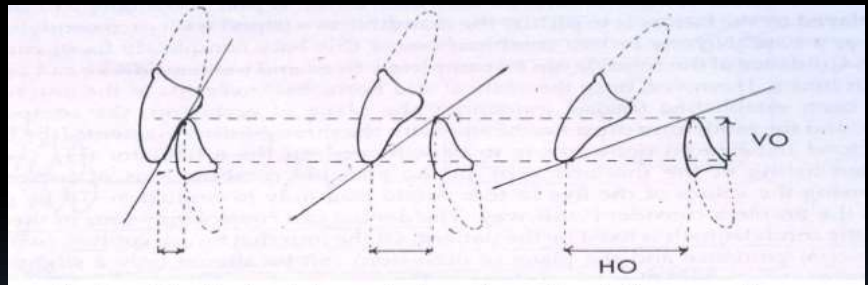

A
B
C


Hight
incisal
guidance

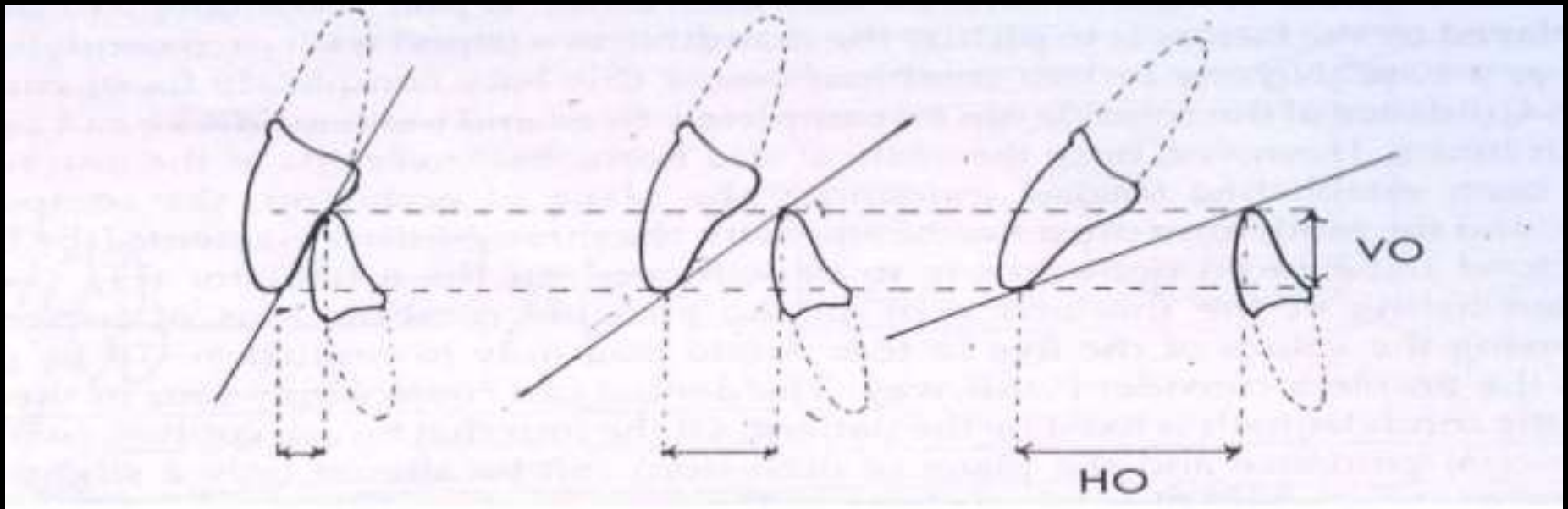



- Angle of incisal guidance is largely under influence of dentist
- This factor is influenced by amount of horizontal, vertical overlap
- Greater horizontal overlap = lesser angle of inclination
- Lesser the vertical overlap = lesser angle of inclination




- Angle of incisal guidance is largely under influence of dentist
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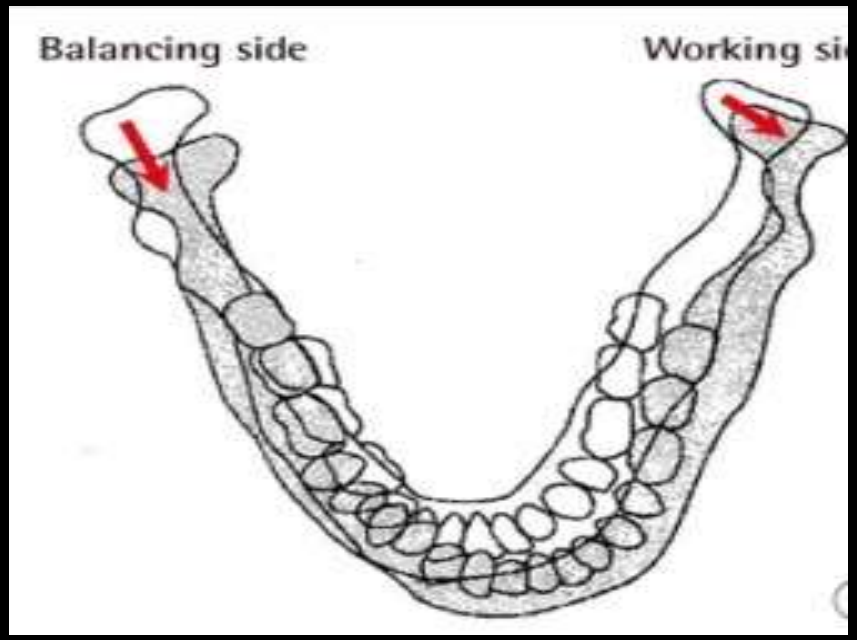
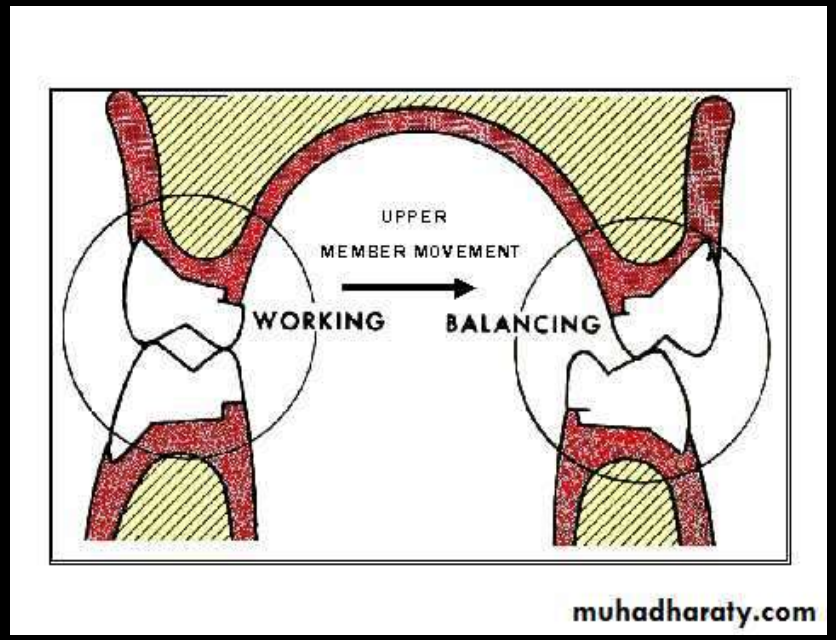
- Greater horizontal overlap = lesser angle of inclination
- Lesser the vertical overlap = lesser angle of inclination

# Working units

# &

# Balancing Units


Balancing side
Working si


UPPER
MEMBER MOVEMENT
WORKING
BALANCING
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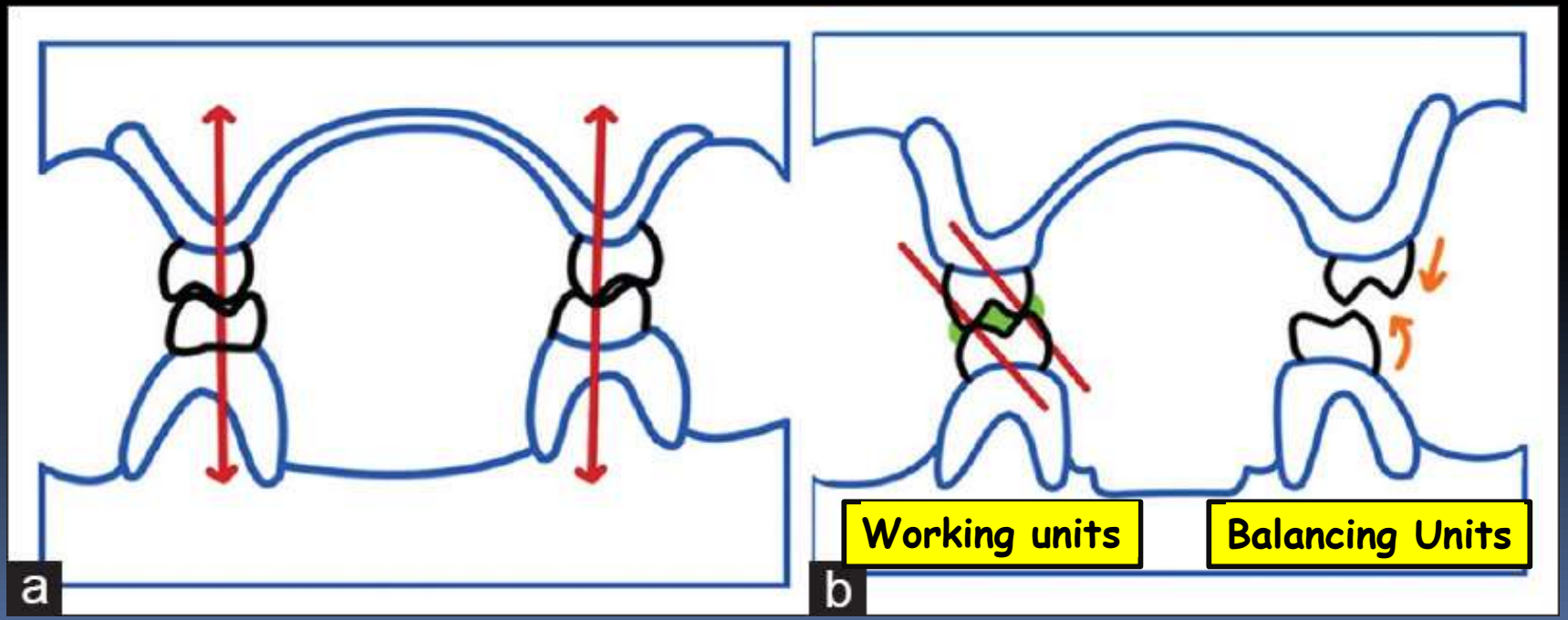

a
b
Working units
Balancing Units

# Types of complete denture Occlusion

1). Balanced occlusion
2). Monoplane occlusion
3). Lingualized occlusion

# Balanced occlusion

*Balanced occlusion in complete dentures can be defined as*:

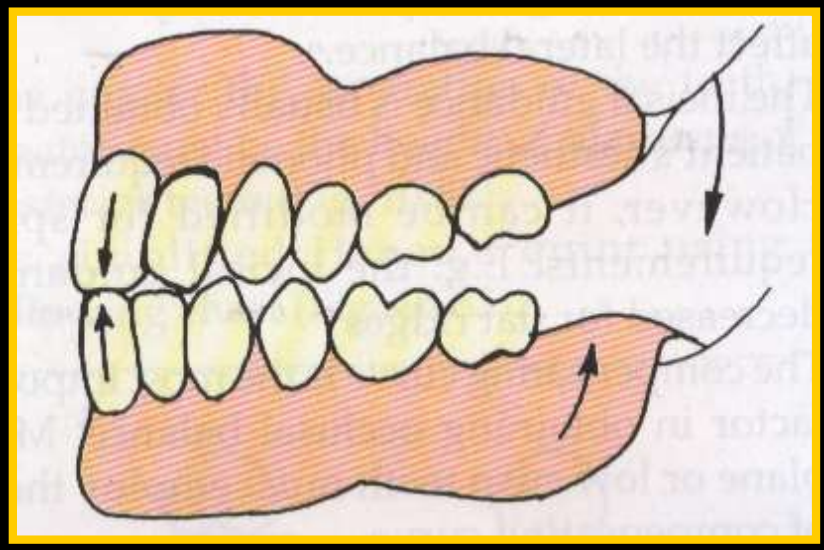
- **The simultaneous contacting of the maxillary and mandibular teeth on the right and left side and in the posterior and anterior occlusal areas in centric and eccentric positions.**

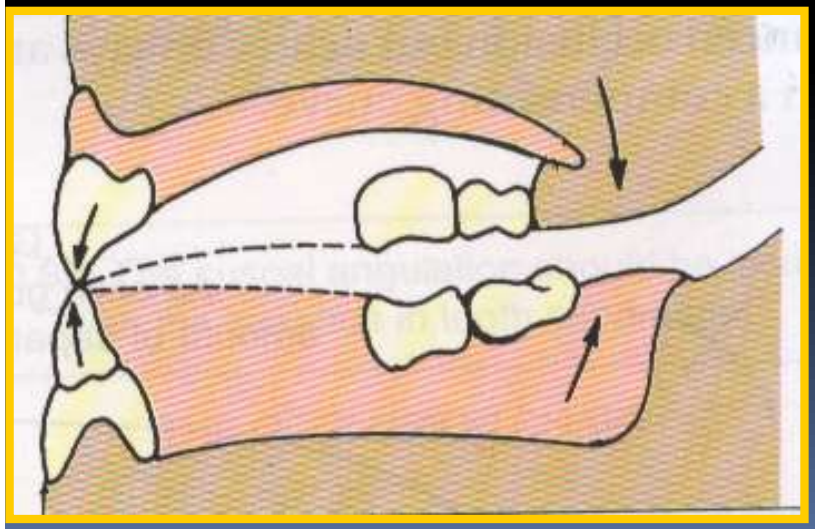
- **Developed to limit tipping or rotating of the denture bases in relation to the supporting structures.**


Working
Balancing
Protrusive

# Mechanics of balanced occlusion

In natural teeth when the mandible is protruded so that the incisal edges of the upper & the lower teeth contact, there is a gap between the upper & lower posterior teeth, this is termed as "**Christensen's phenomenon**".



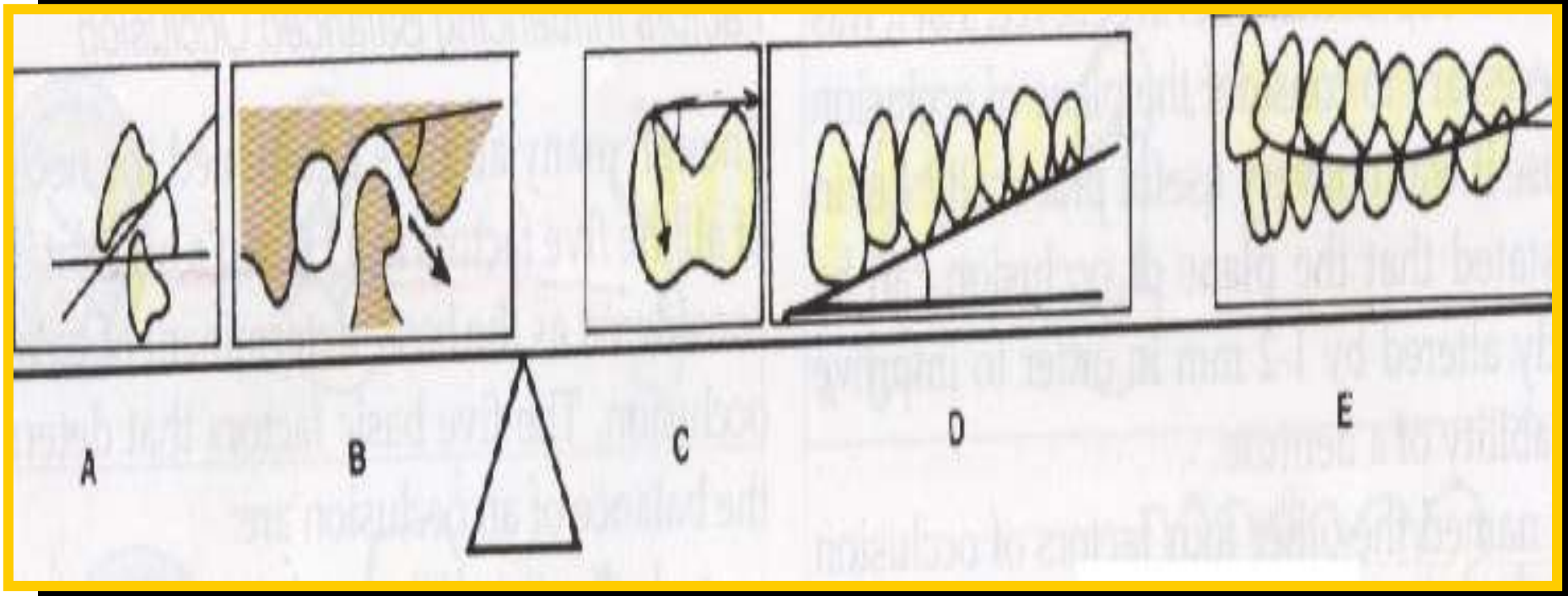


But this occlusion could cause tipping of the denture in the posterior region. Thus simultaneous anterior & posterior contacts are required when mandible is protruded.

# Factors Affecting the balanced occlusion (Law of Articulation) (Hanau quint)

*There are five factors involved in eccentric occlusal balance in complete dentures.*

- **Condylar guidance**
- **Incisal guidance**
- **The occlusal plane**
- **The compensatory curves**
- **Cusp angulation**



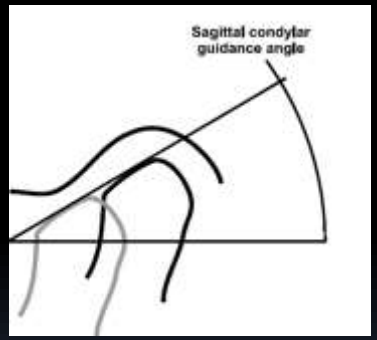

A). Incisal guidance B). Condylar guidance

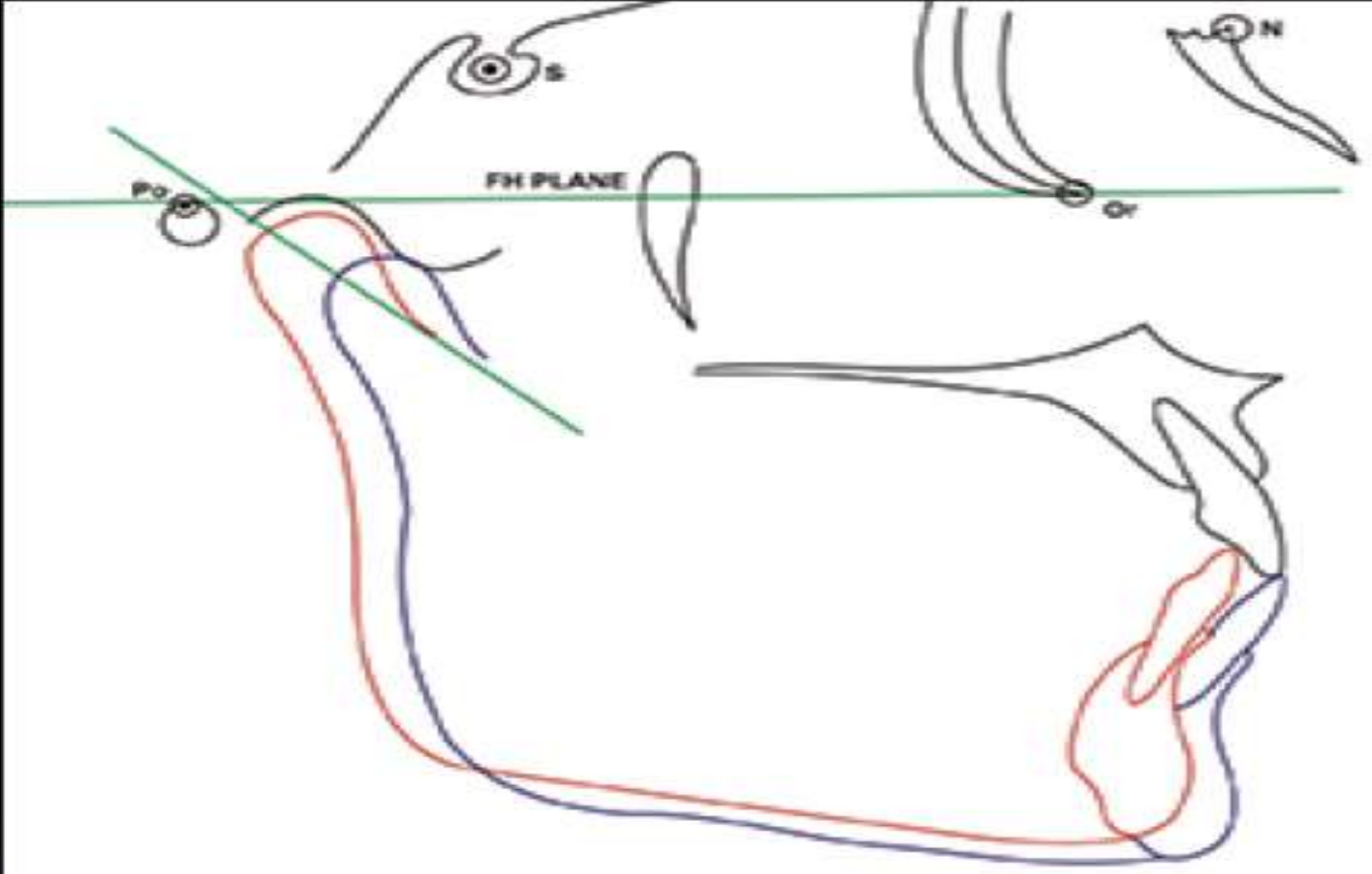
C). Cuspal angulation D).plane of occlusion

E). Compensating curve. A balance of these five factors is required for balanced occlusion

# Condyler Guidance:

The angle between the protrusive condyle path (down the eminence) and a horizontal reference plane (Frankfort horizontal plane).



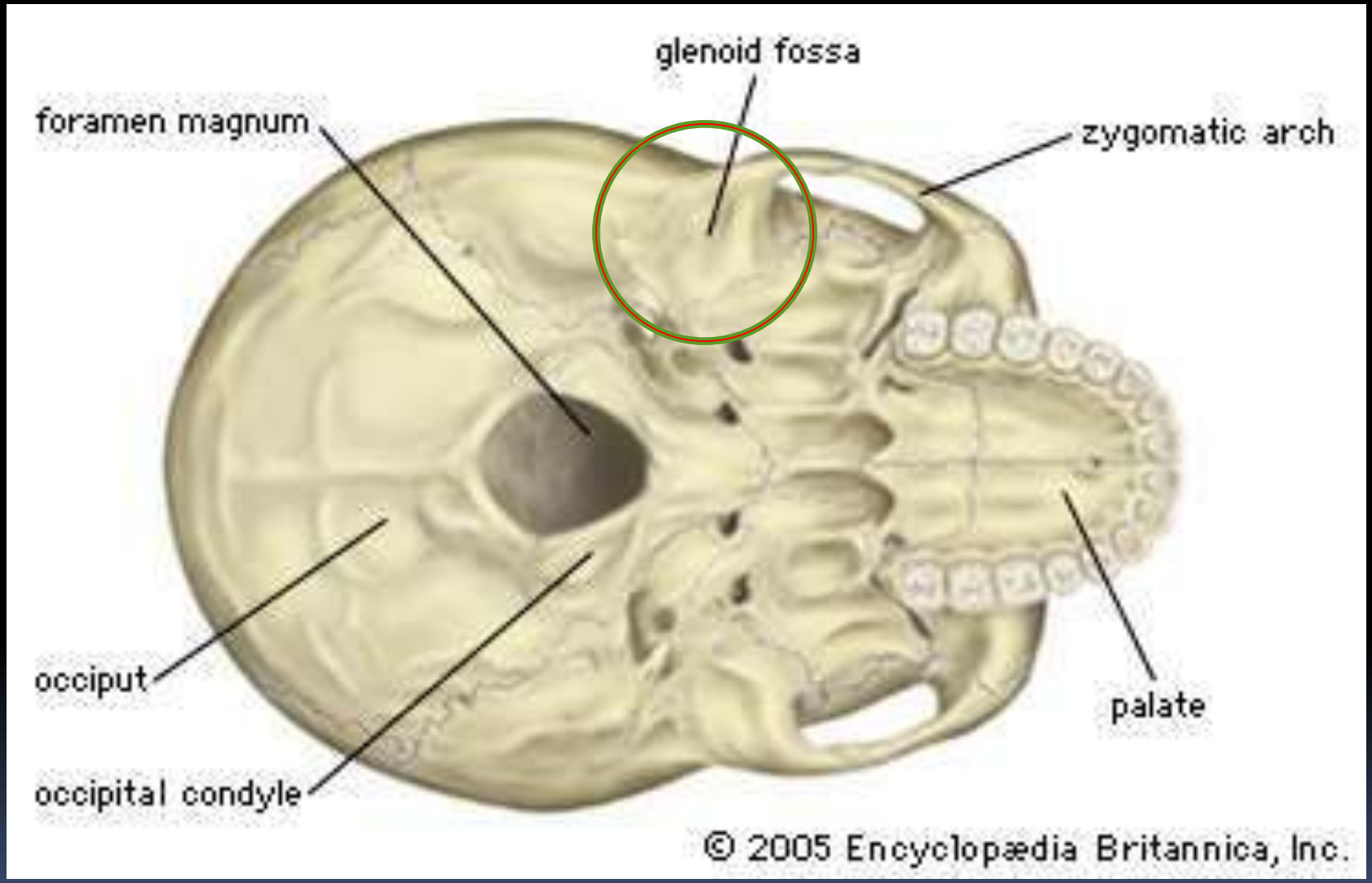

POSITION OF THE MANDIBLE AT MAXIMUM INTERCUSPATION

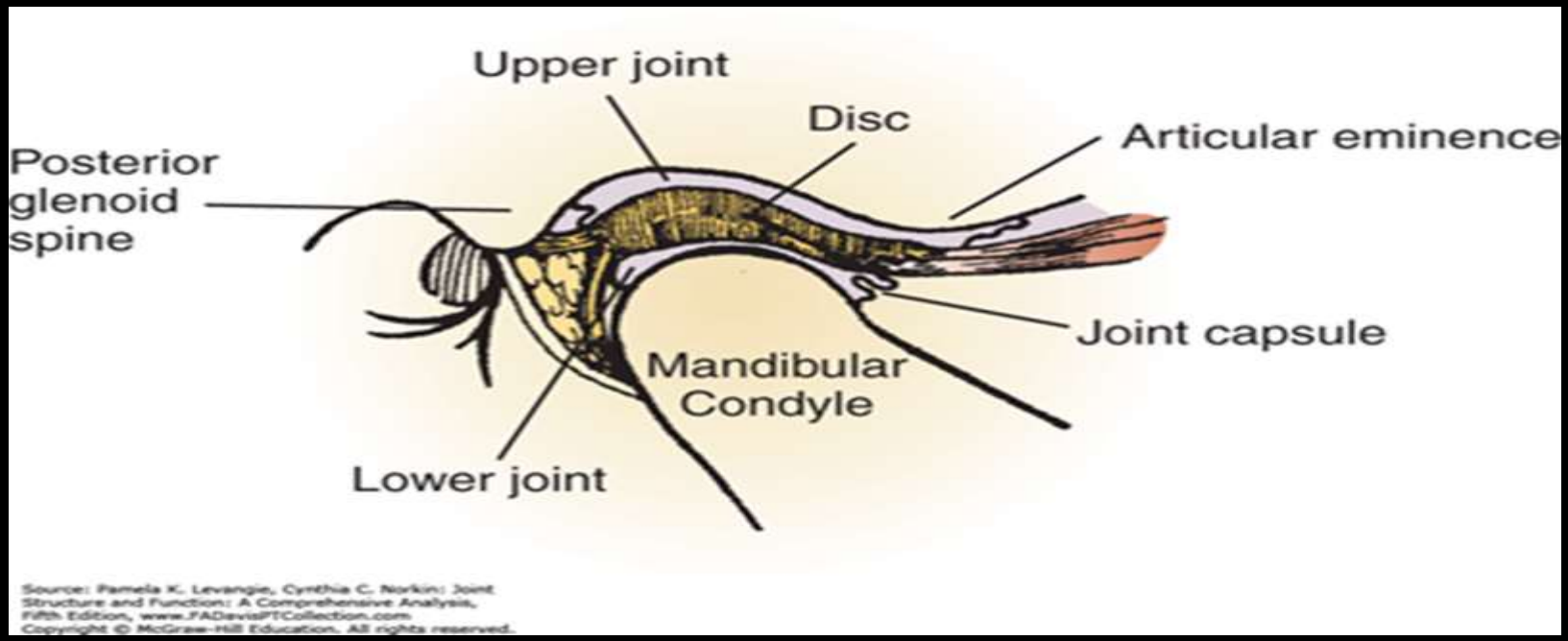
POSITION OF THE MANDIBLE AT 6 MM PROTRUSION

HCG DETERMINED BY PROTRUSIVE METHOD

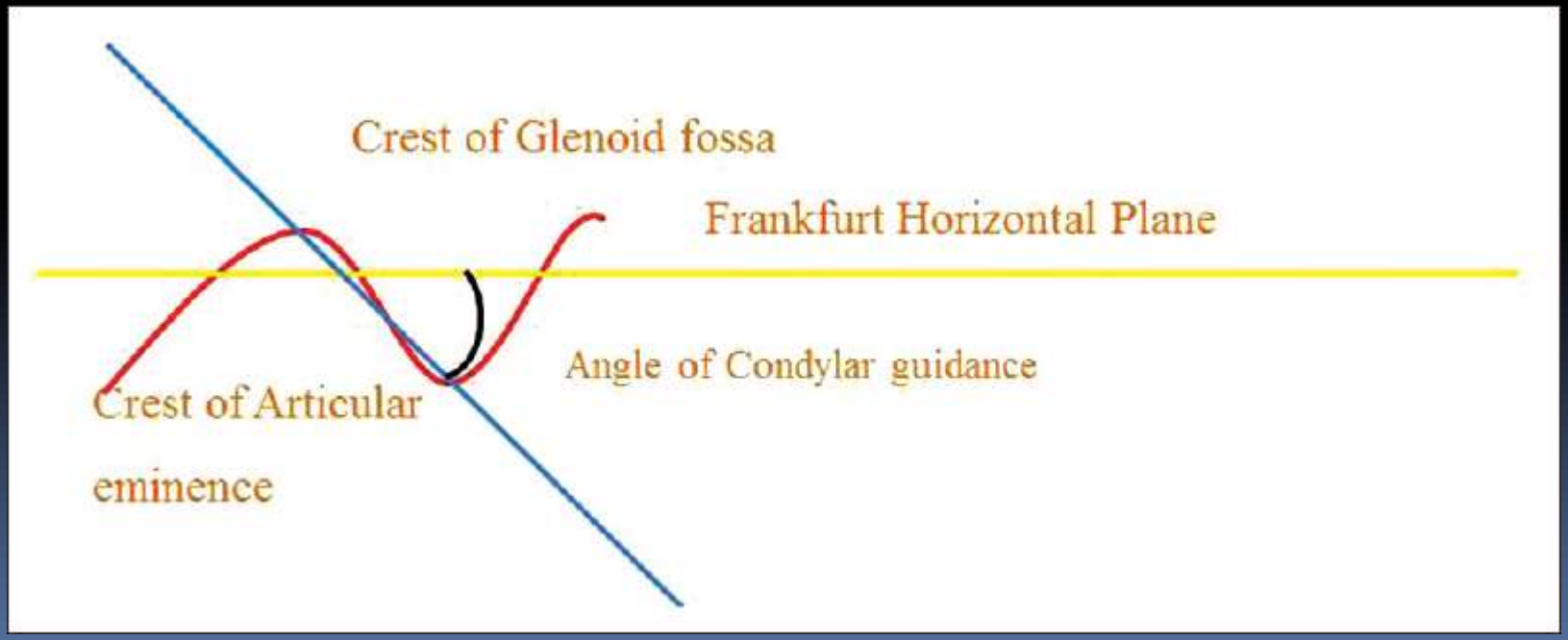
## Condylar guidance

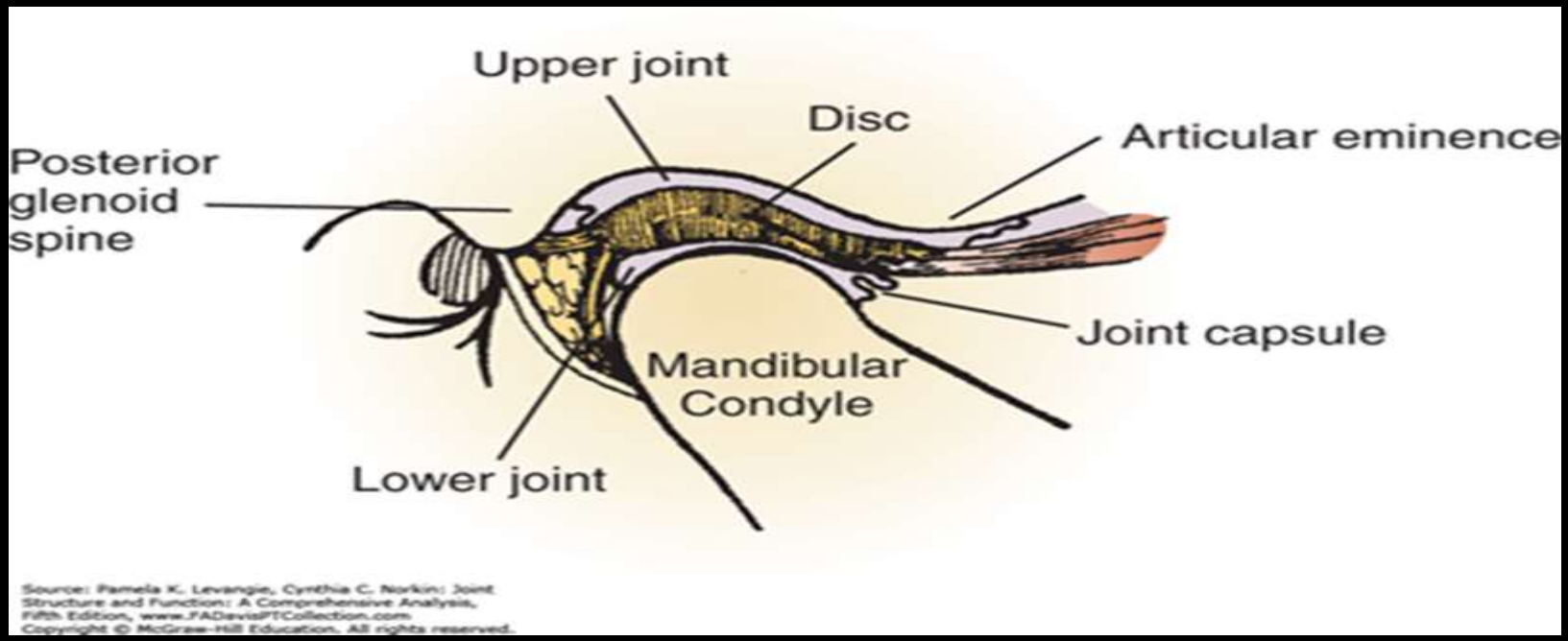
It is definite anatomic feature that **depends on the inclination of the floor of the glenoid fossa**. It should be determined on the patient and set on the articulator by eccentric records.


glenoid fossa
foramen magnum
zygomatic arch
occiput
occipital condyle
palate
© 2005 Encyclopædia Britannica, Inc.

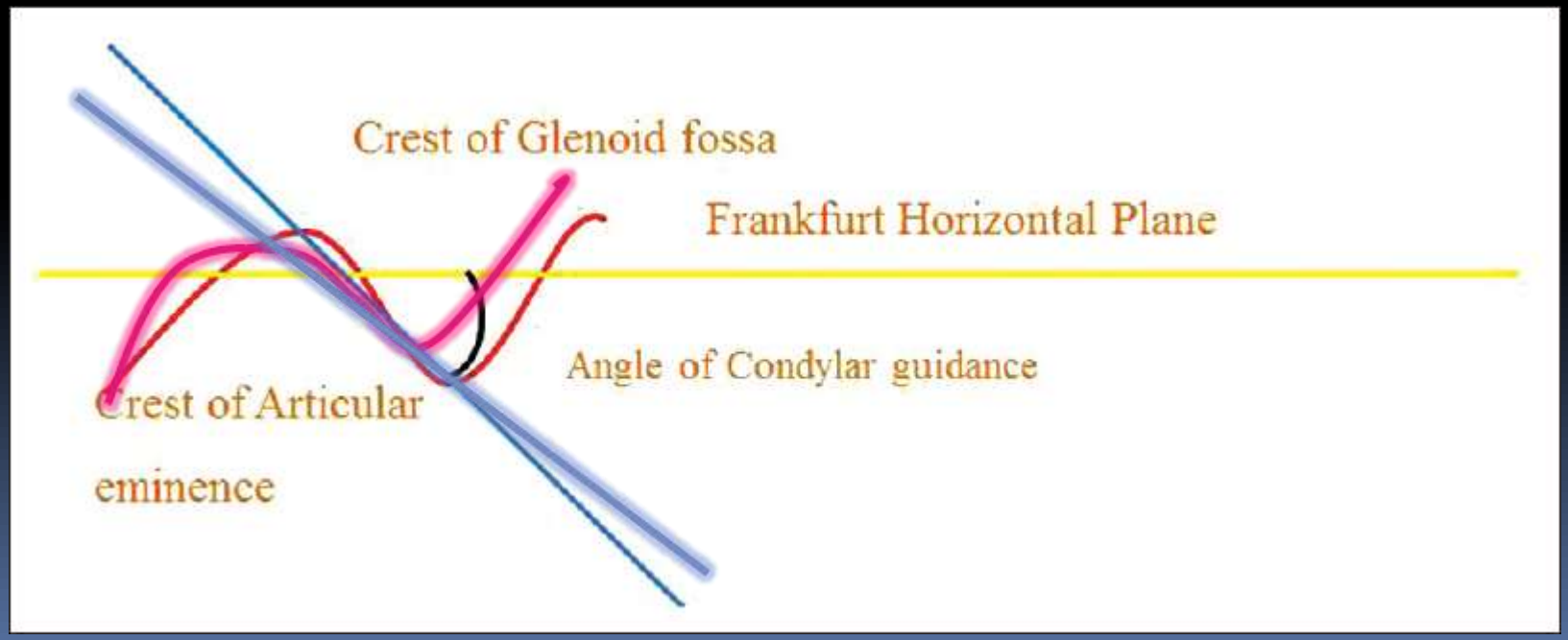




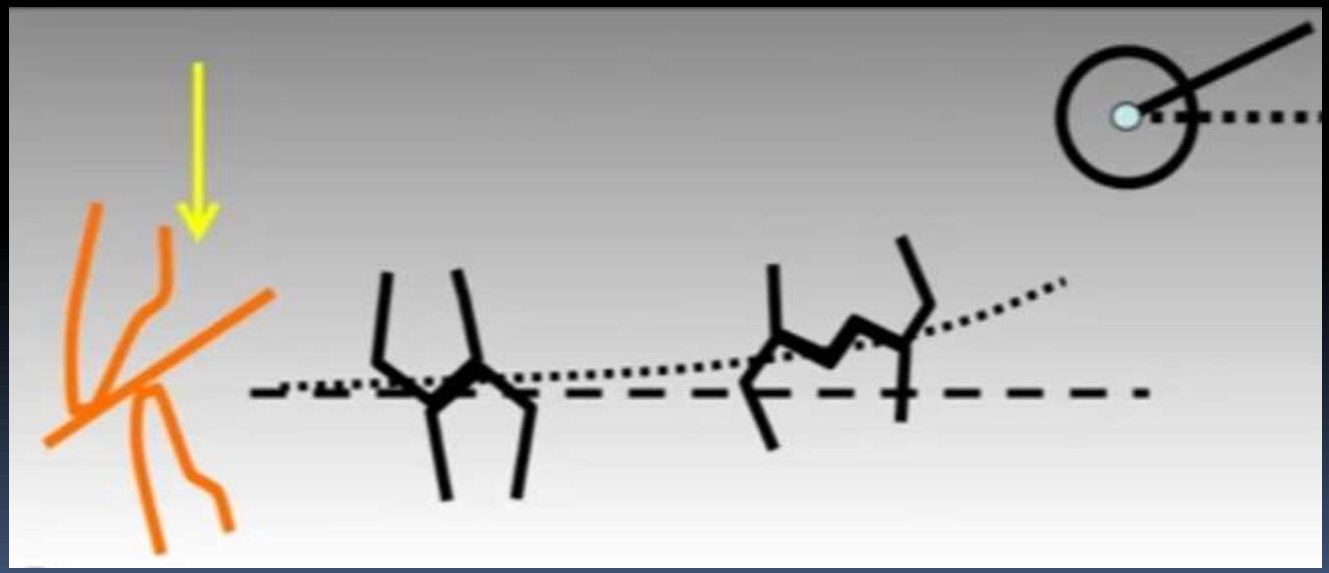




# (2).INCISAL GUIDANCE

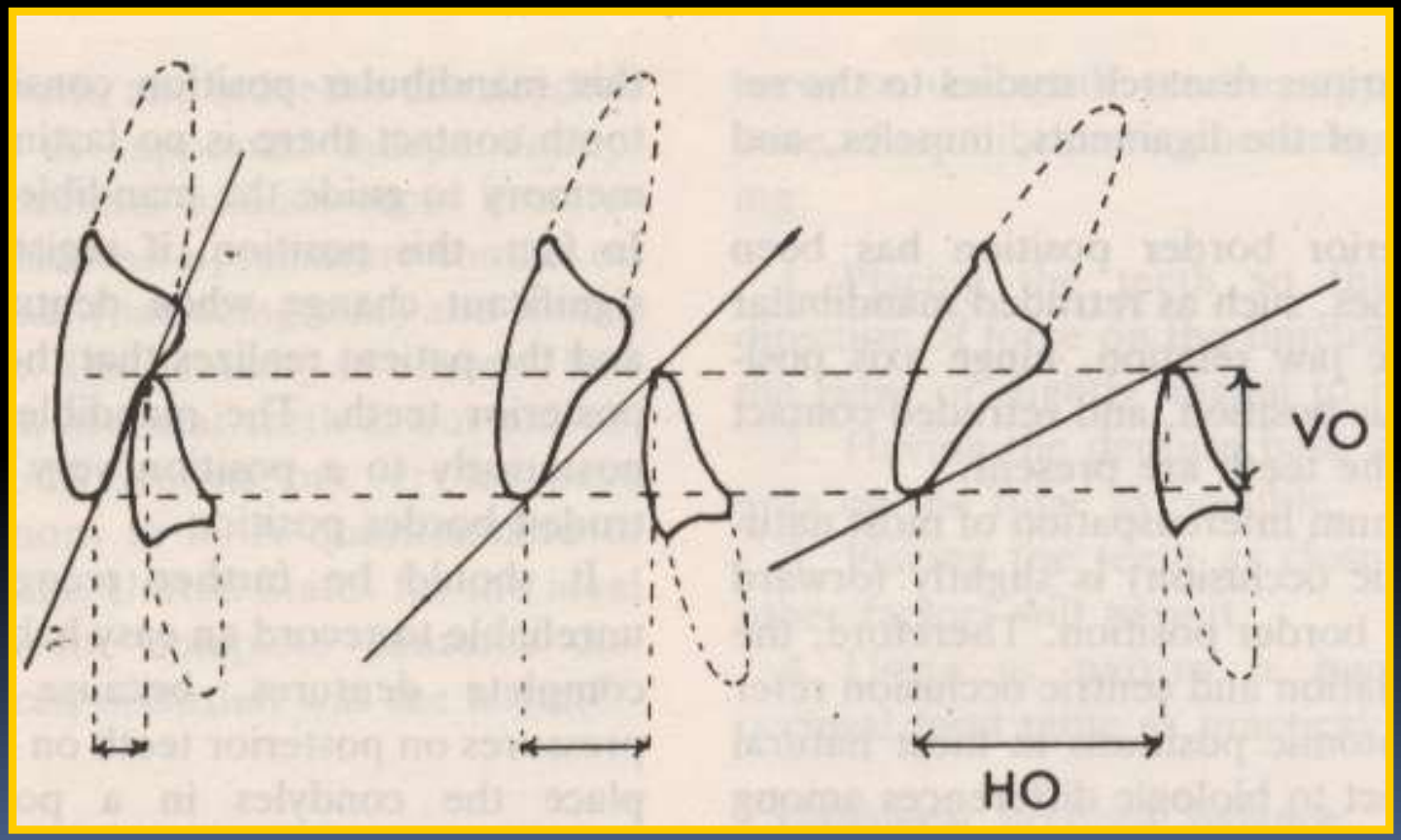
Defined as *"The influence of the contacting surfaces of the mandibular and maxillary anterior teeth on mandibular movements"*



# Component of incisal guidance:

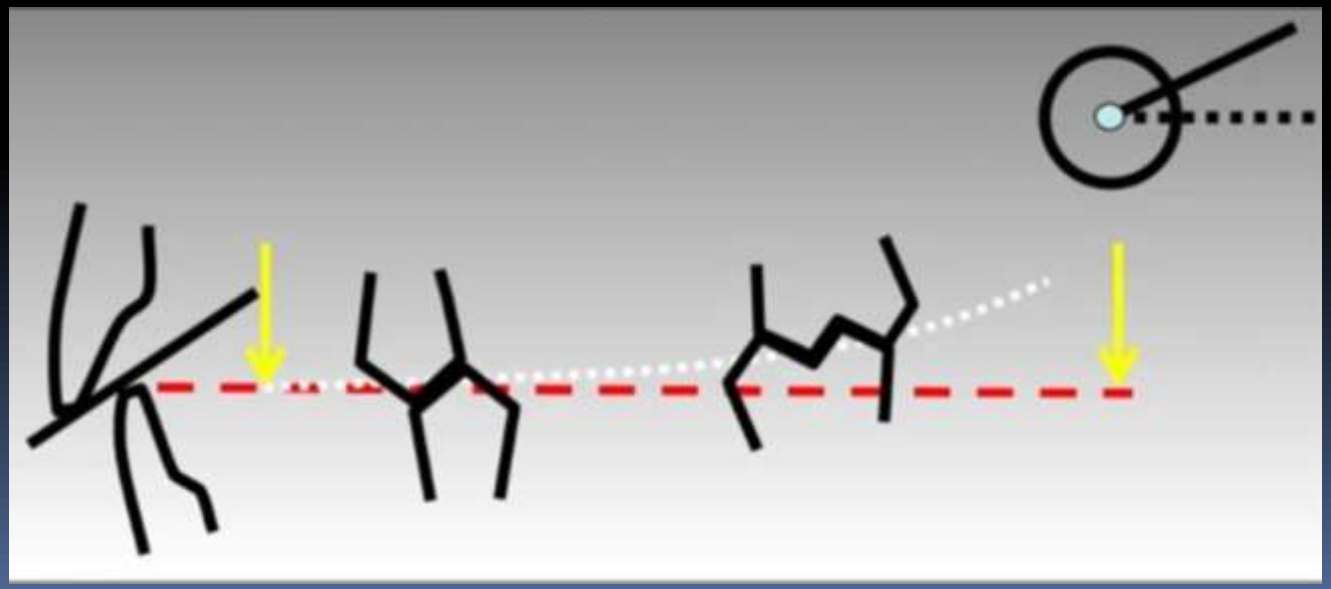
1). Horizontal component

2). Vertical component



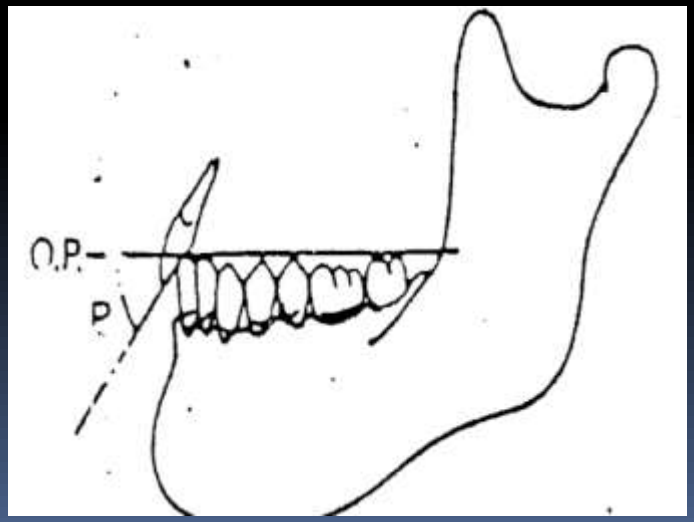
# 3). PLANE OF OCCLUSION OR OCCLUSAL PLANE-

Defined as *"An imaginary surface which is related anatomically to the cranium and which theoretically touches the incisal edges of the incisors & the tips of the occluding surfaces of posterior teeth. It represents the mean curvature of the surface.*



# 3). PLANE OF OCCLUSION OR OCCLUSAL PLANE-

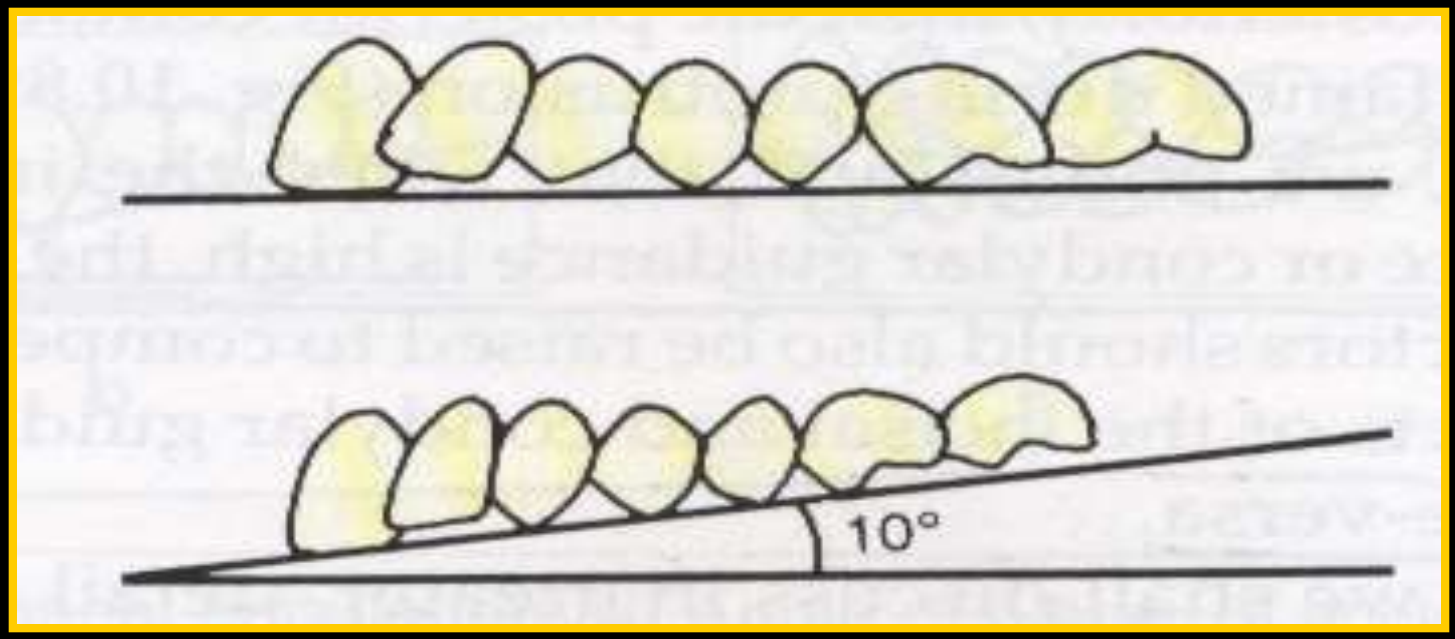
- Established anteriorly by height of lower canine and posteriorly by height of retromolar pad.
- Parallel to ala-tragus line or campher's line & tilting of the plane >10° is not advisable



# ORIENTATION OF THE OCCLUSAL PLANE

**INTERPUPILLARY LINE**

**CAMPER'S PLANE**
**ALAE-TRAGUS LINE**

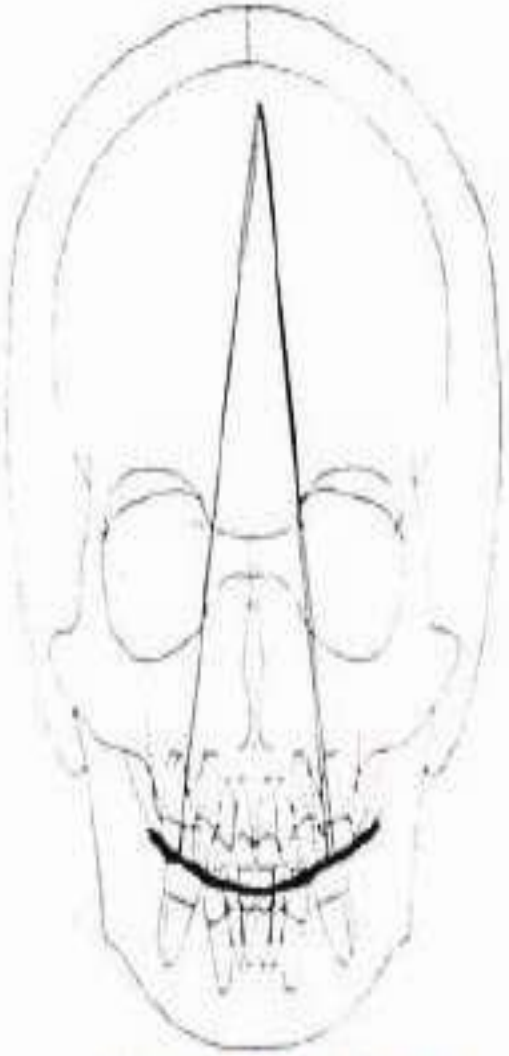



- Raising the occlusal plane in the posterior will minimize the vertical separation of the teeth in eccentric movement and aid in balancing denture occlusion
- The plane of occlusion can be altered to a maximum of 10°

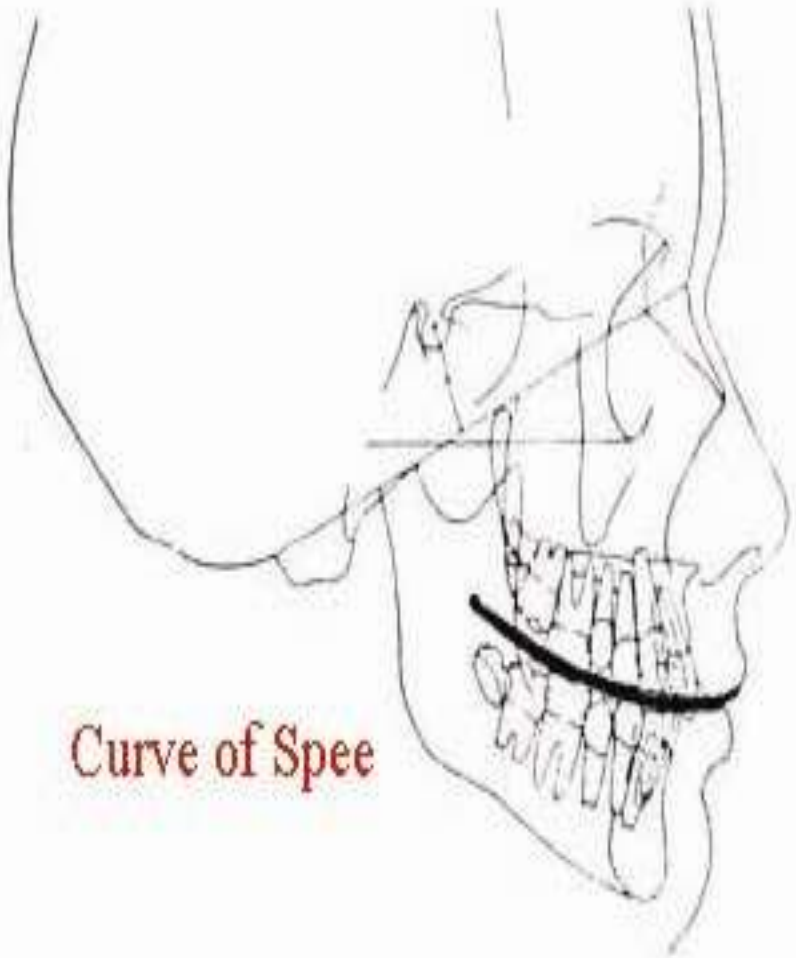
# 4). COMPENSATING CURVE

- *"The anterioposterior and lateral curvatures in the alignment of the occluding surfaces and incisal edges of artificial teeth which are used to develop balanced occlusion"*
- Determined by inclination of posterior teeth and their vertical relationship to occlusal plane.
- 2 types of curves

  1). Anterioposterior compensating curve
  2). Lateral compensating curve



Curve of Wilson

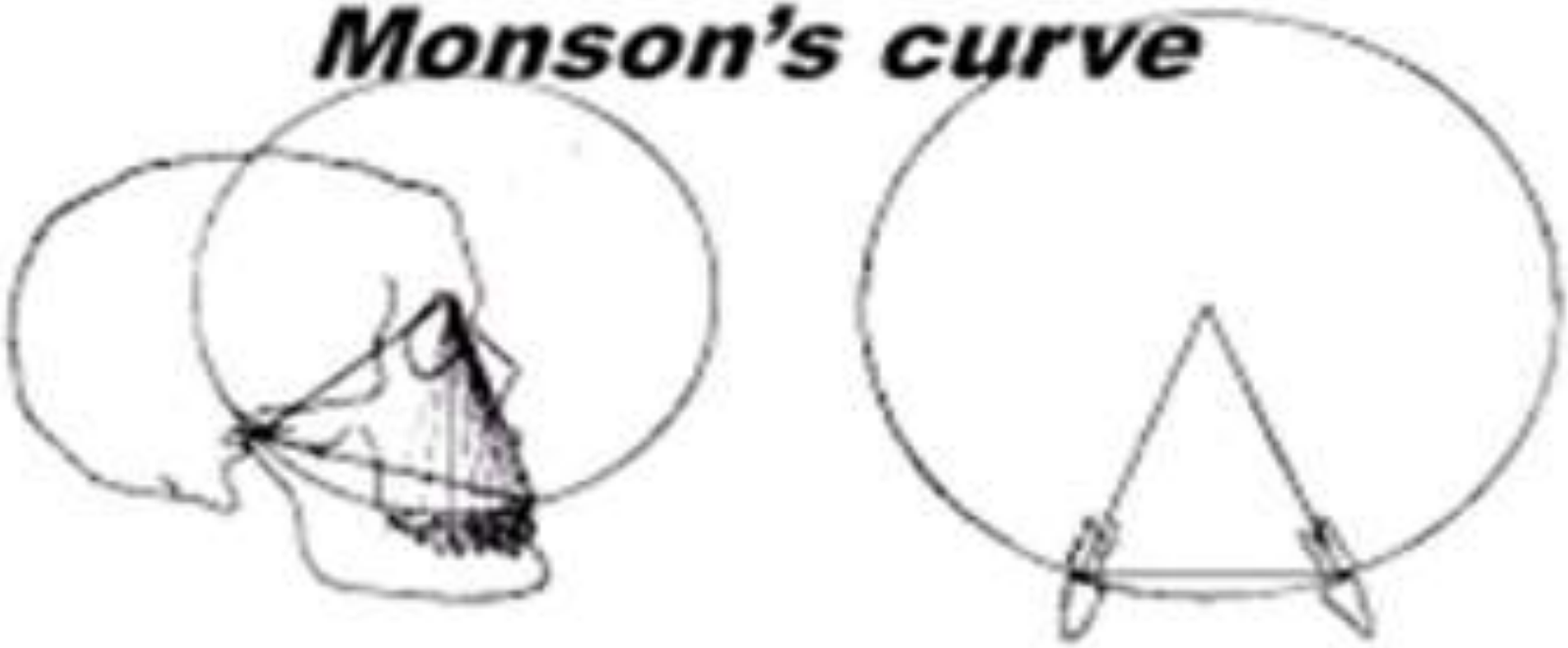


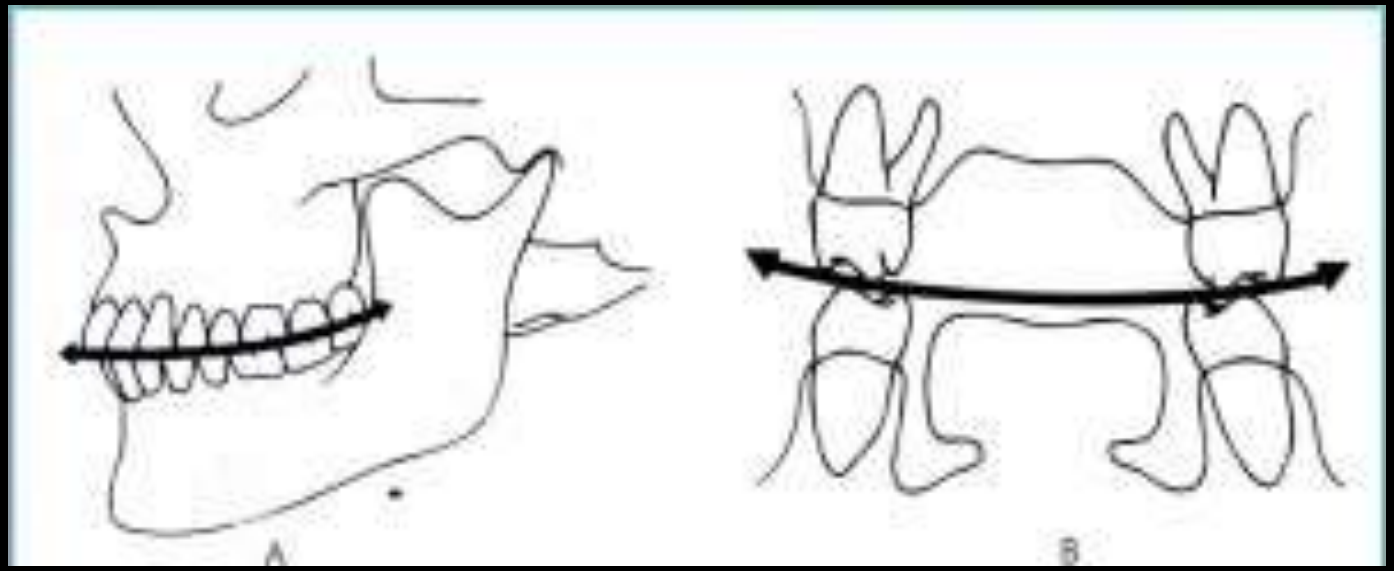
Curve of Spee

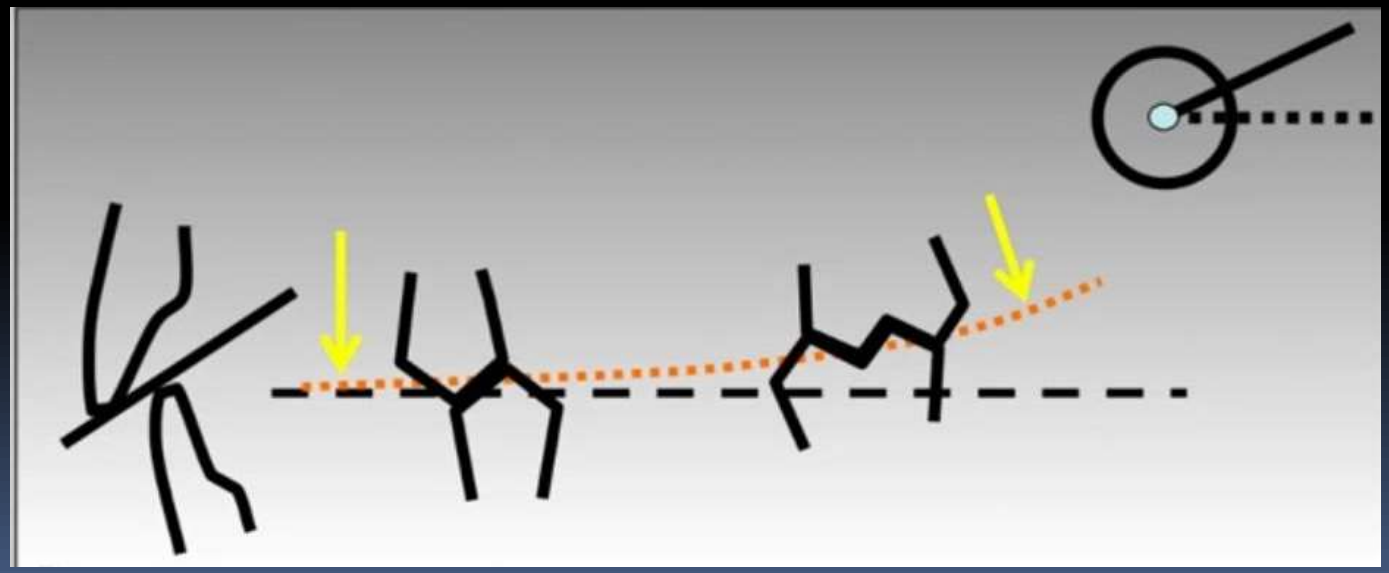
## Spee's curve

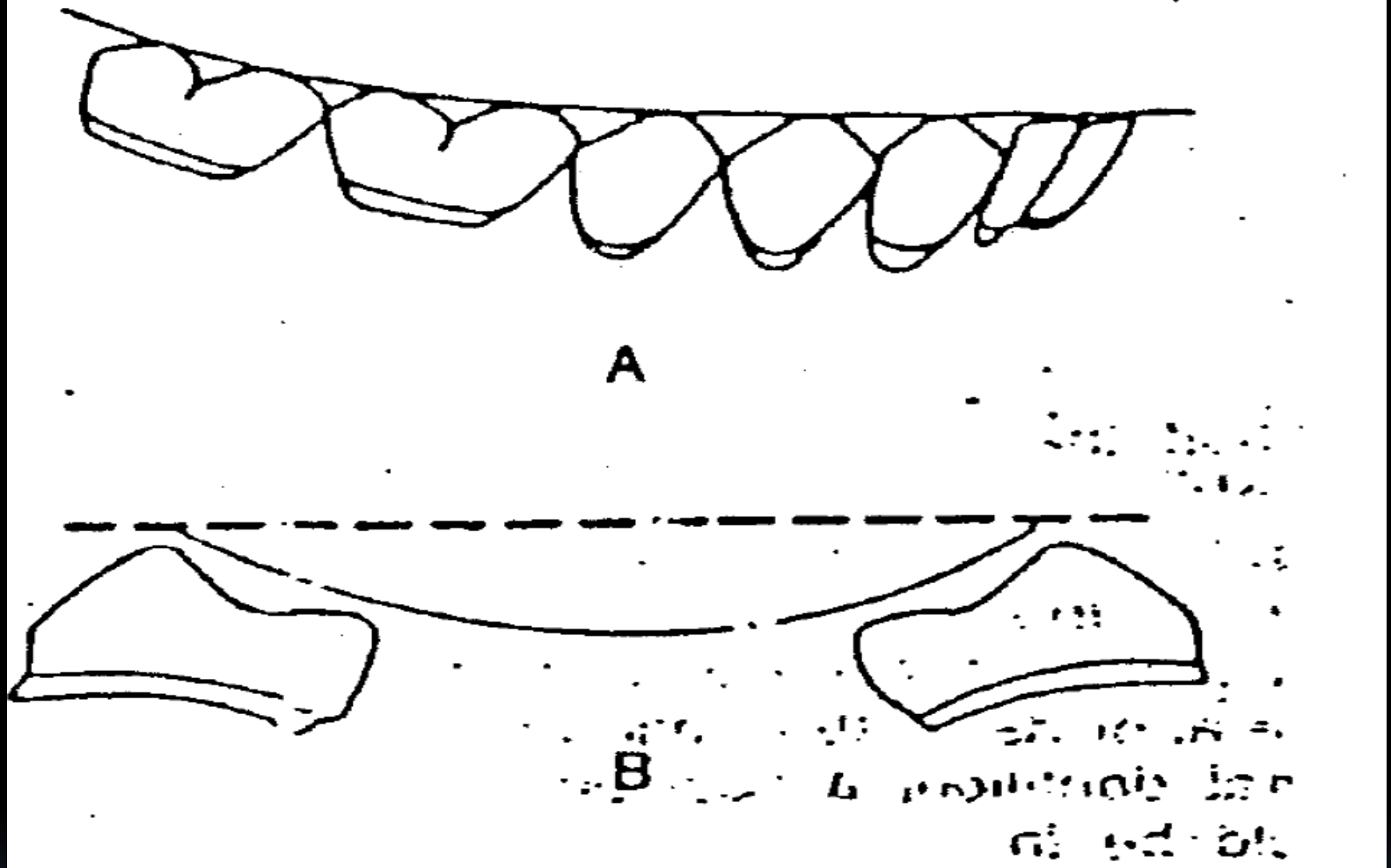
## Wilson's curve

## Monson's curve




A
B

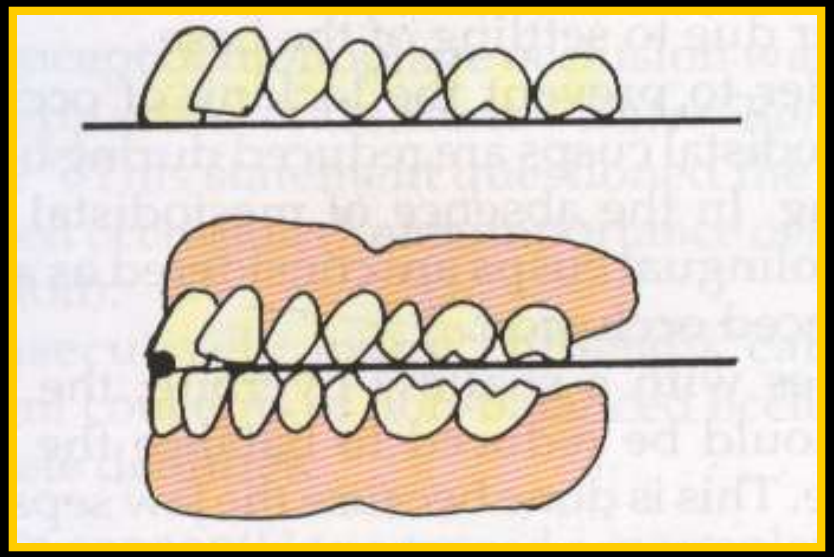




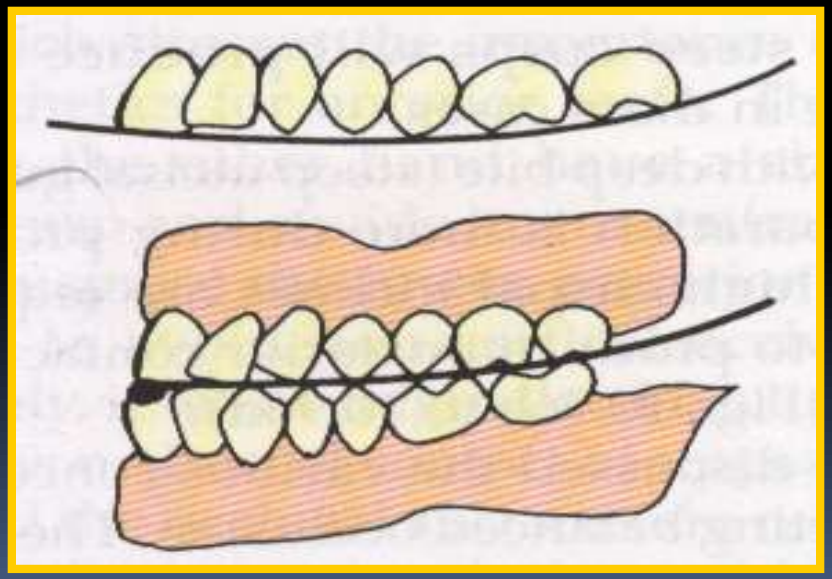

# COMPENSATING

# CURVE X

- Posterior teeth separation when the curve of spee not incorporated

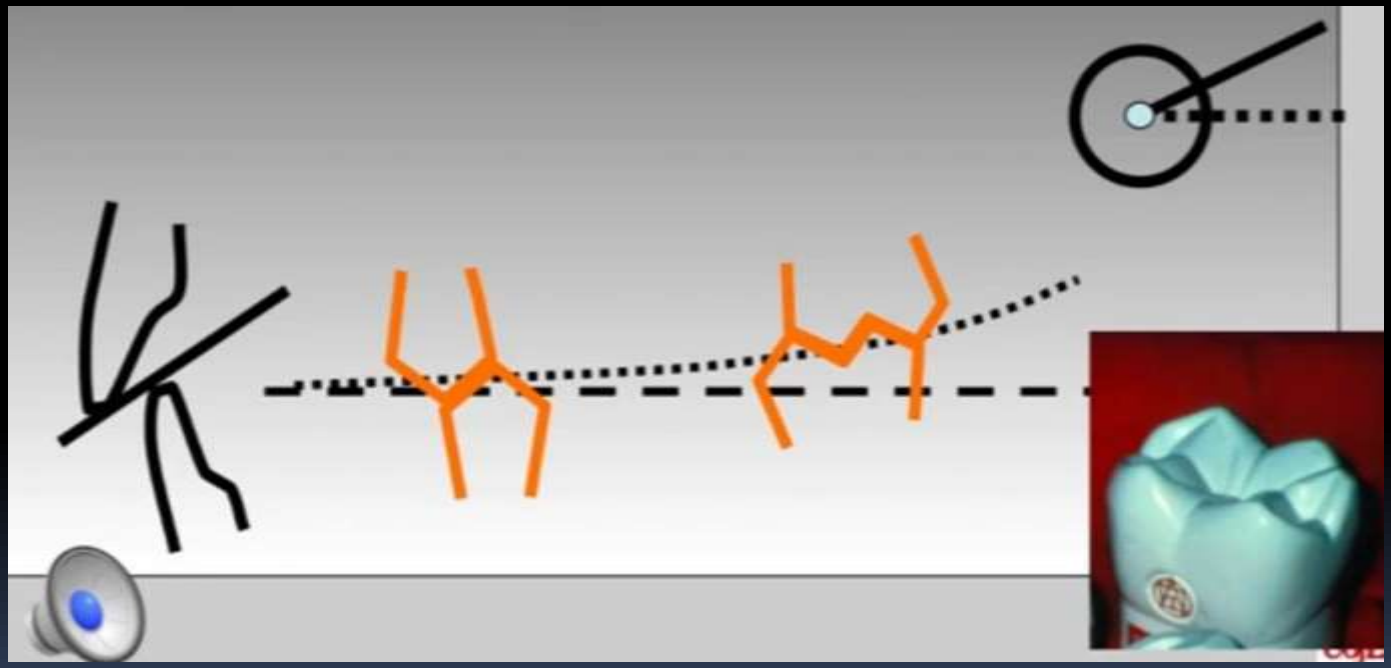


- Incorporating the curve spee will provide posterior tooth contact during protrusion



# 5). CUSPAL ANGULATION -

*"Angle made by the average slope of a cusp with the Cuspal plane measured mesiodistally or buccolingually".*

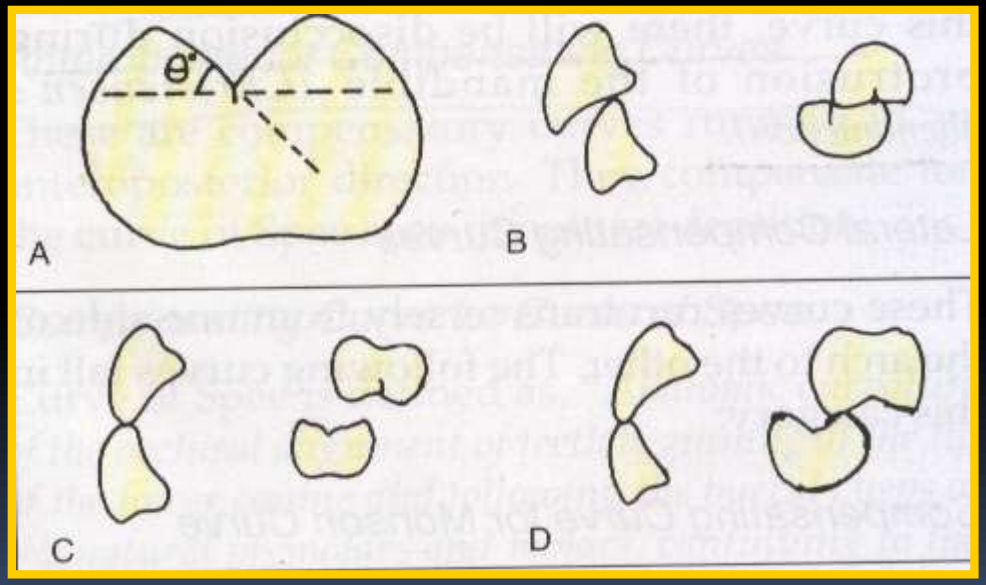


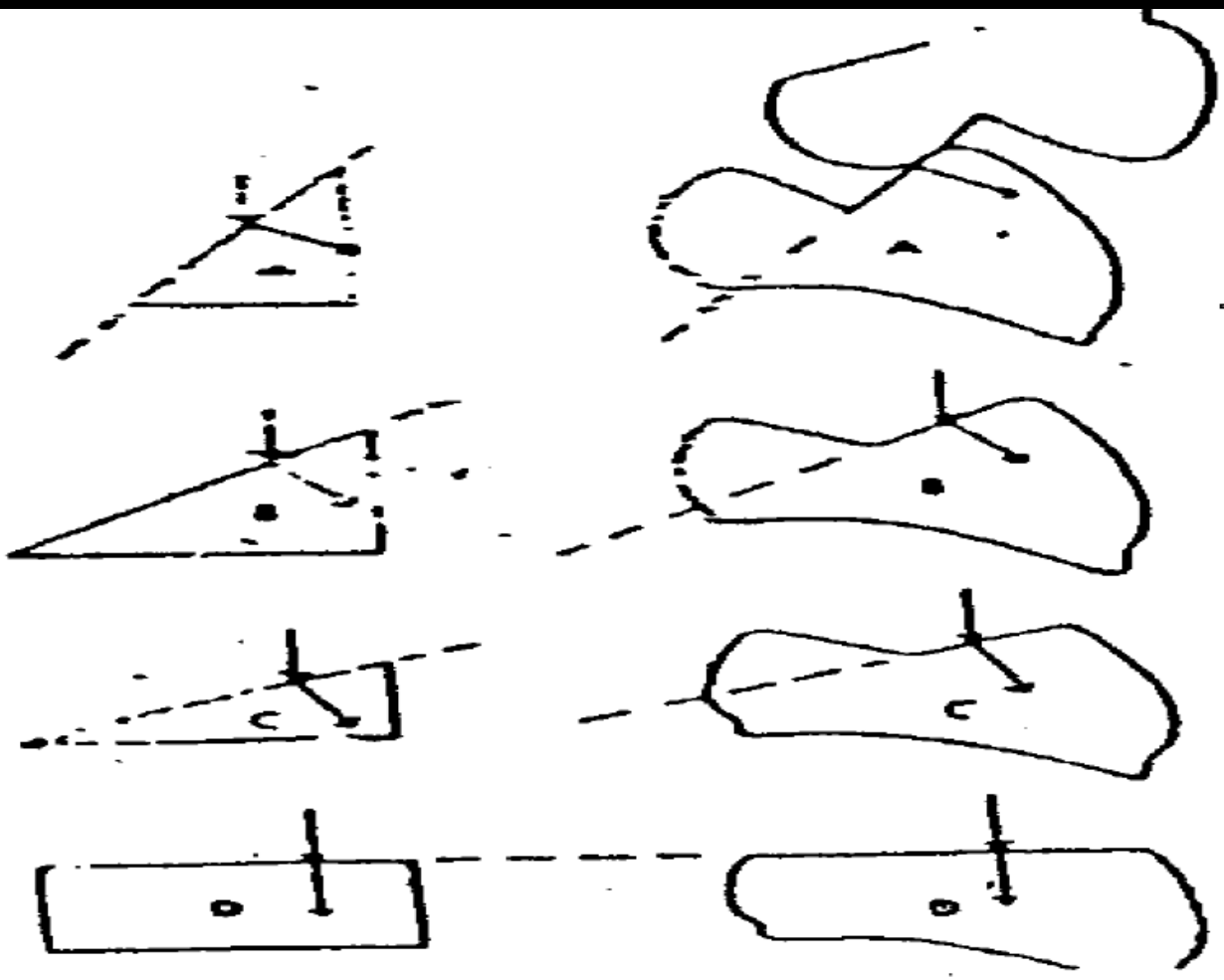
# 5). CUSPAL ANGULATION -

*"Angle made by the average slope of a cusp with the Cuspal plane measured mesiodistally or buccolingually".*

- It is an important factor that modify the effect of plane of occlusion & the compensating curves.
- Mesiodistal cusps are reduced to prevent the locking of cusps
- In shallow bite cases- cuspal angle should be reduced to balance the incisal guidance.

In Deep bite cases with steep incisal guidance, the jaw separation is more during protrusion.Teeth with high cuspal inclines are required for these cases.

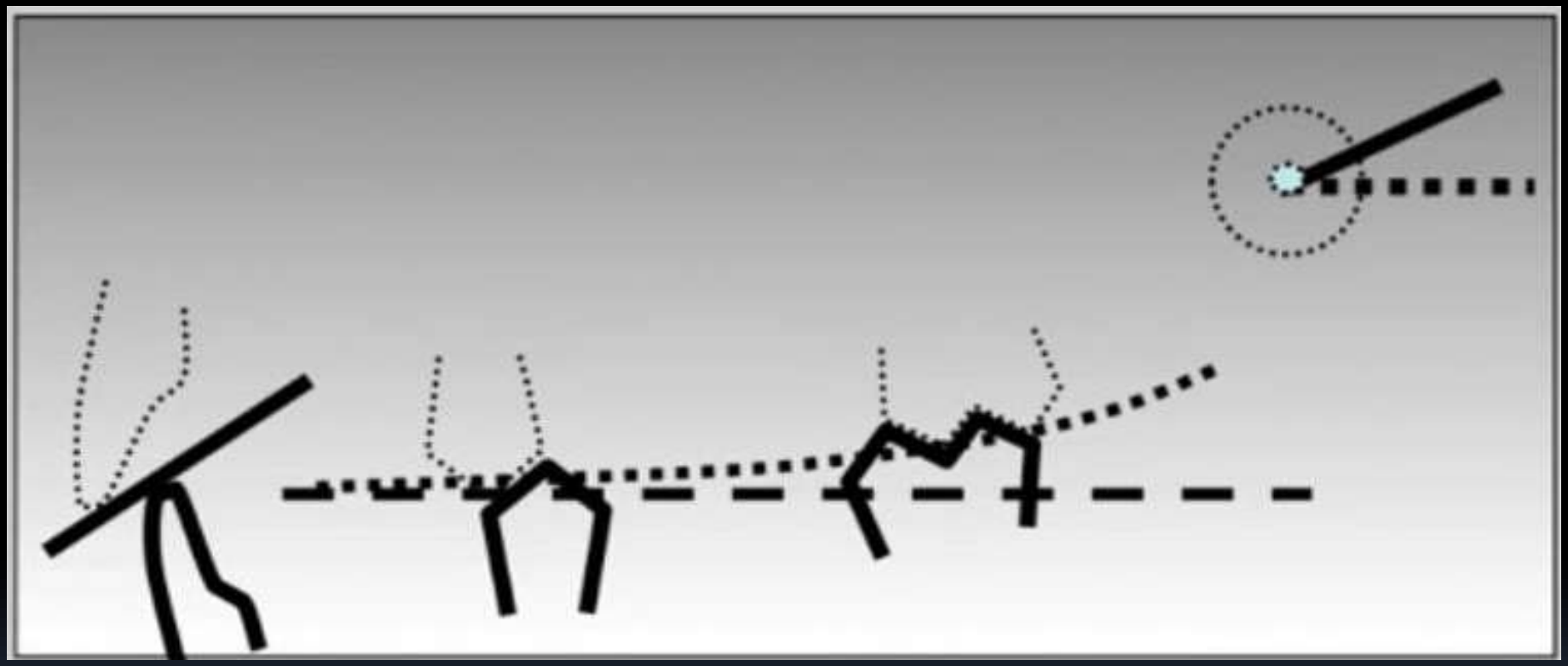


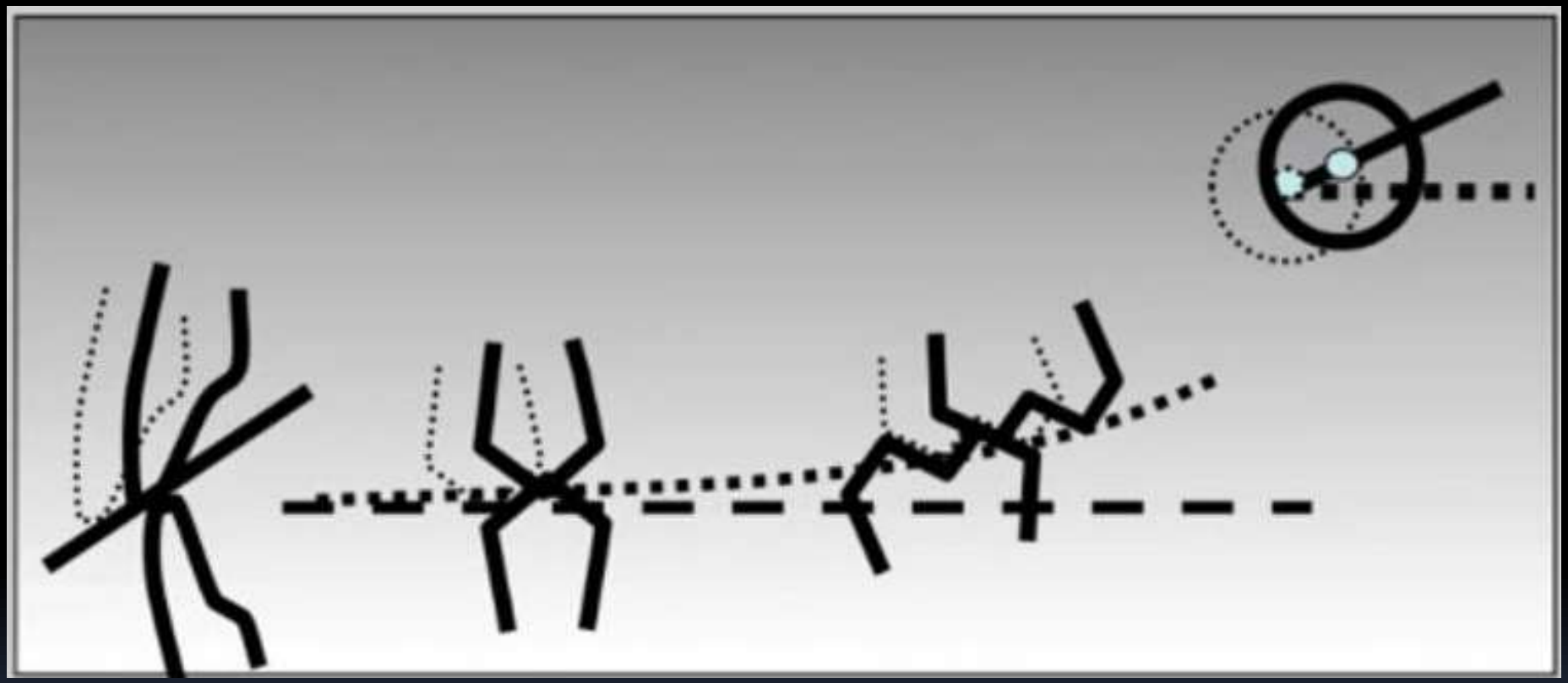


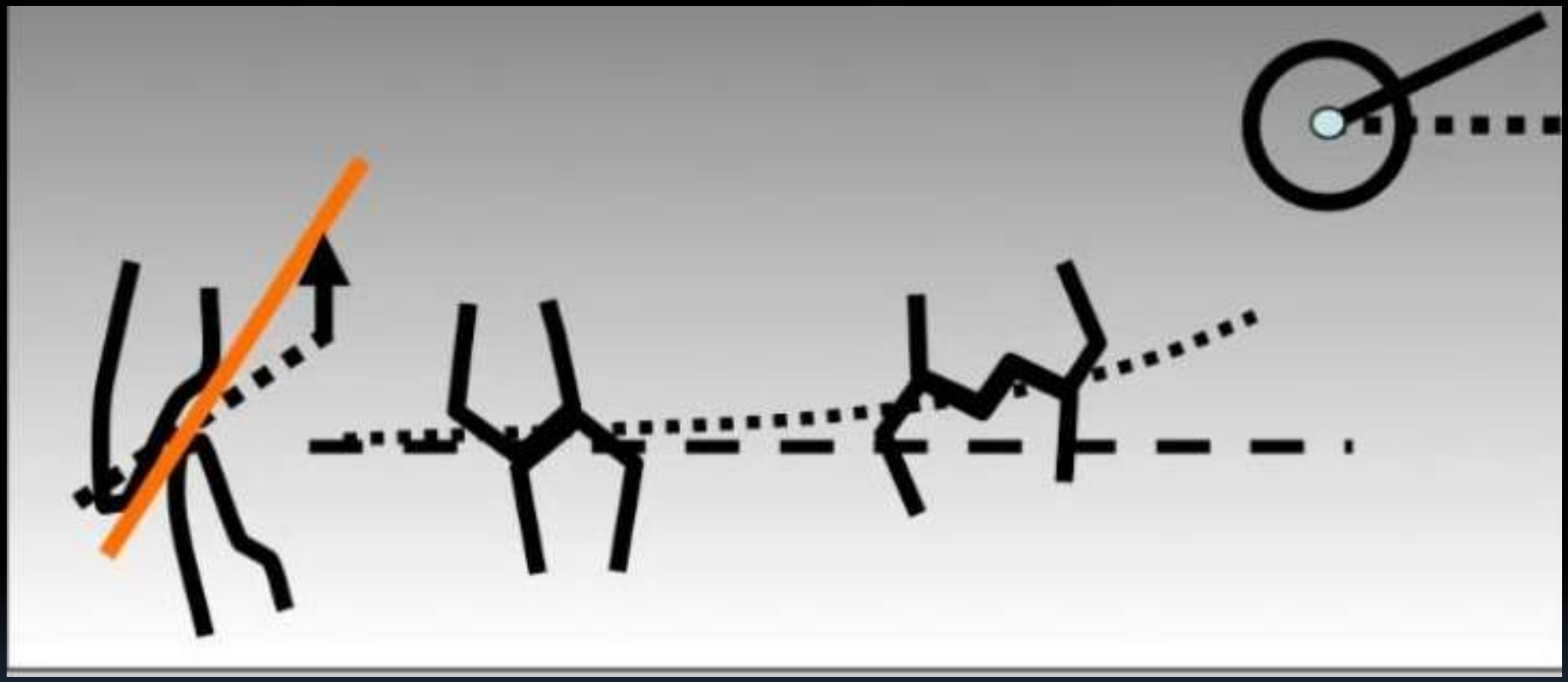
CUSP HEIGHT

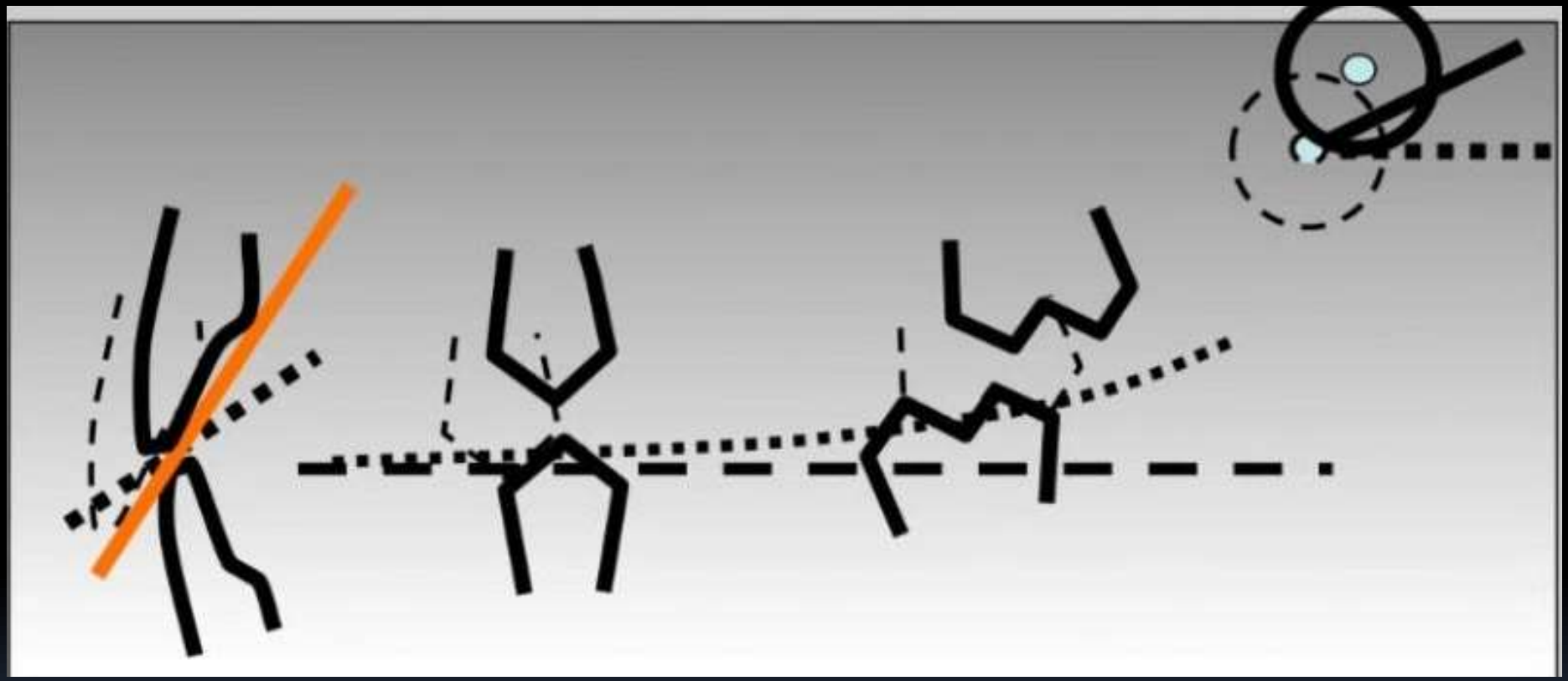
$$C = \frac{\text{Condylar Inclination} \times \text{Incisal Guidance}}{\text{OccPlane} \times \text{Cuspal Inclination} \times \text{CompCurve}}$$

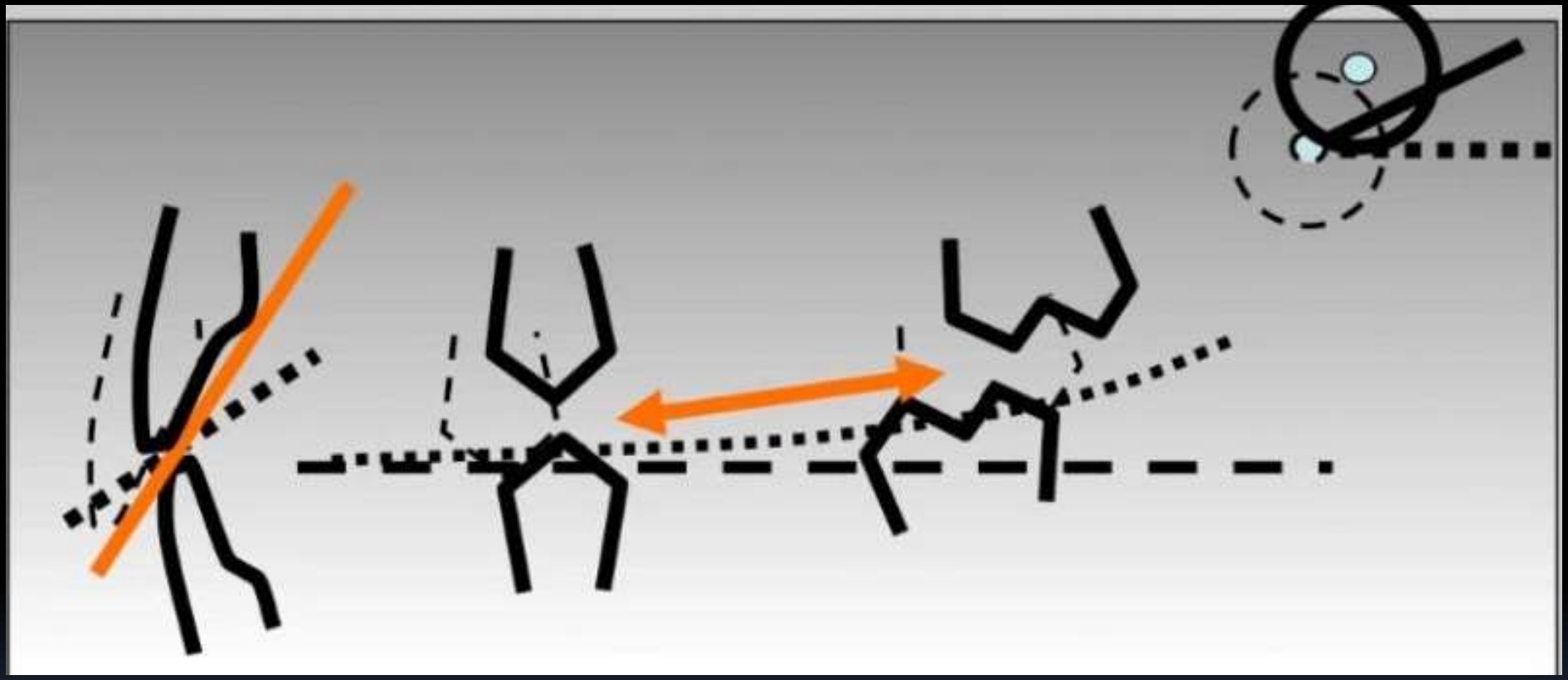
C = Balanced Occlusion

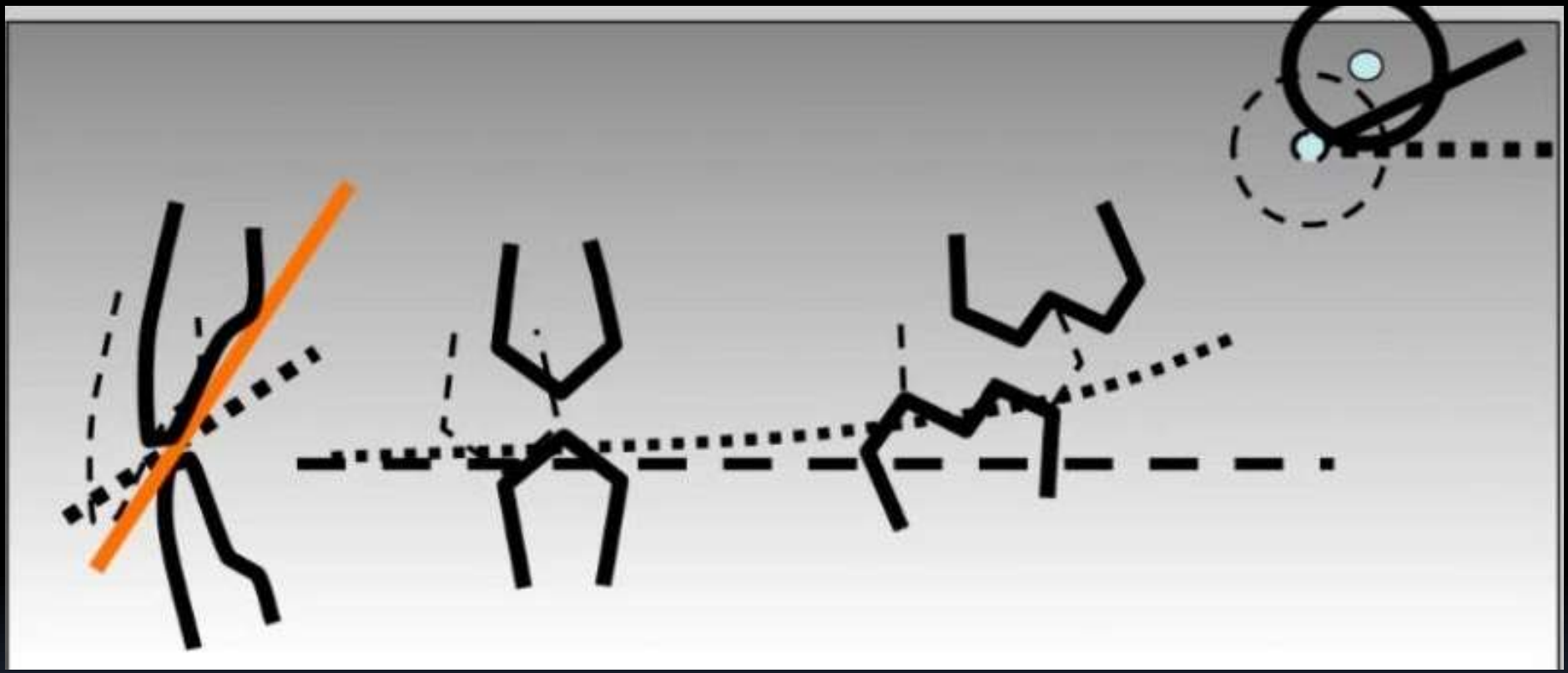


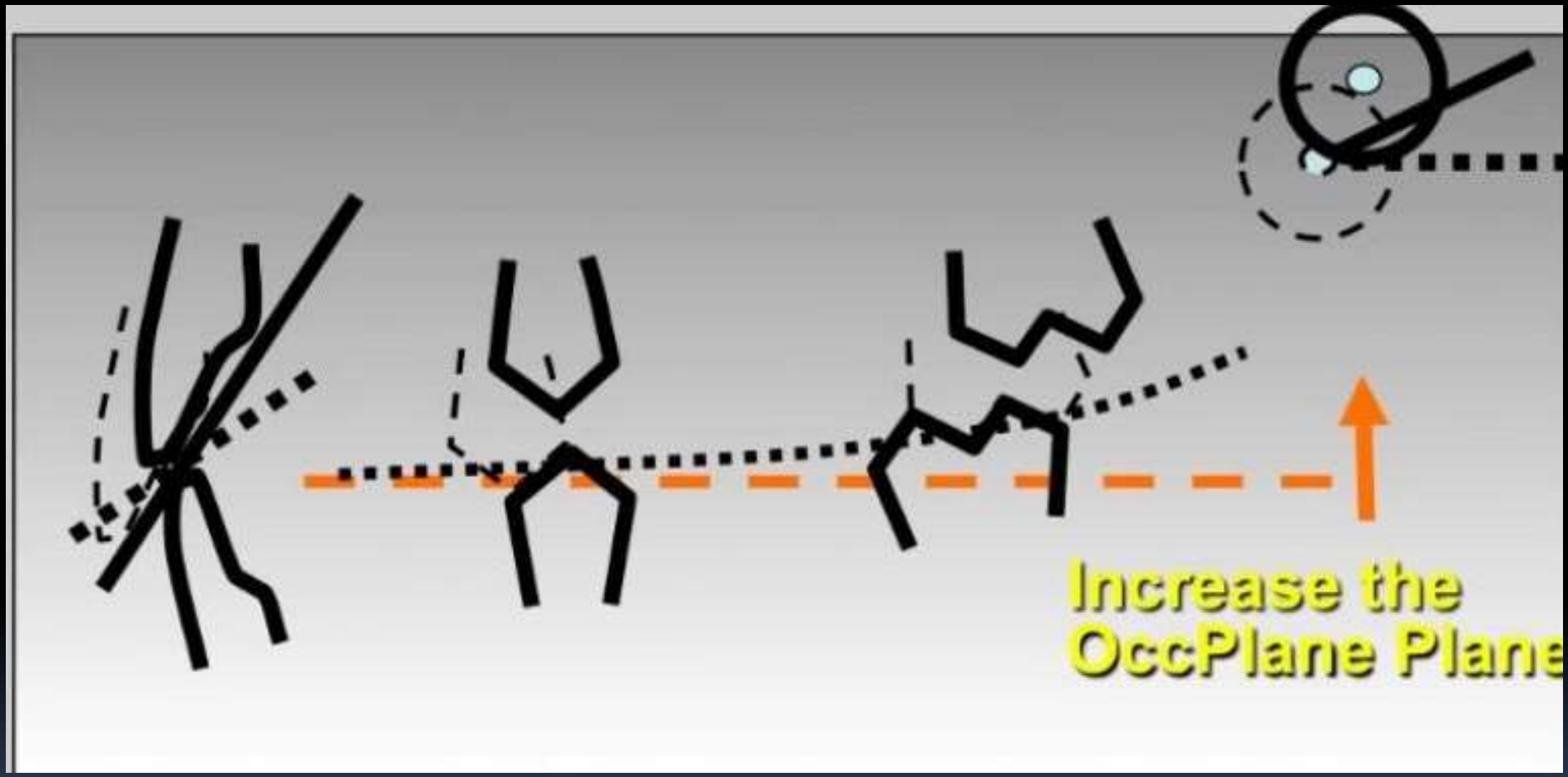


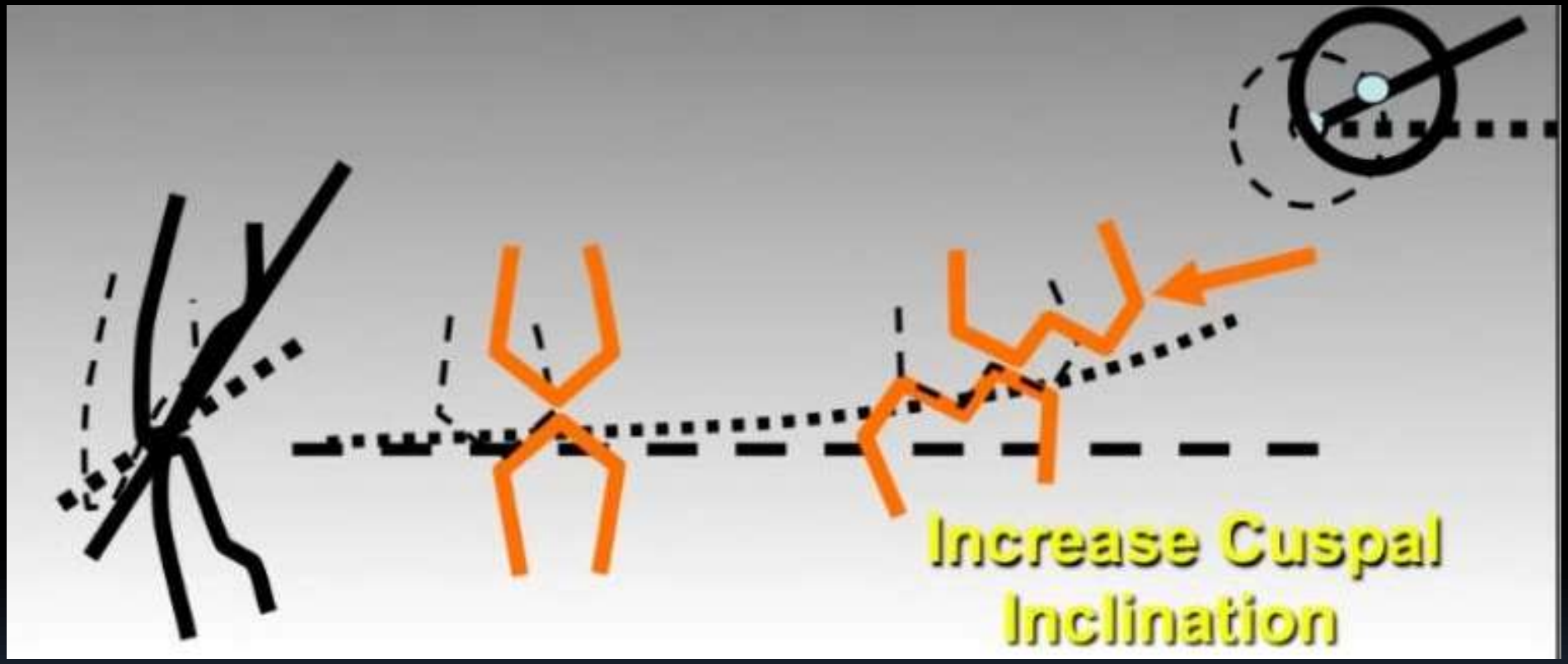


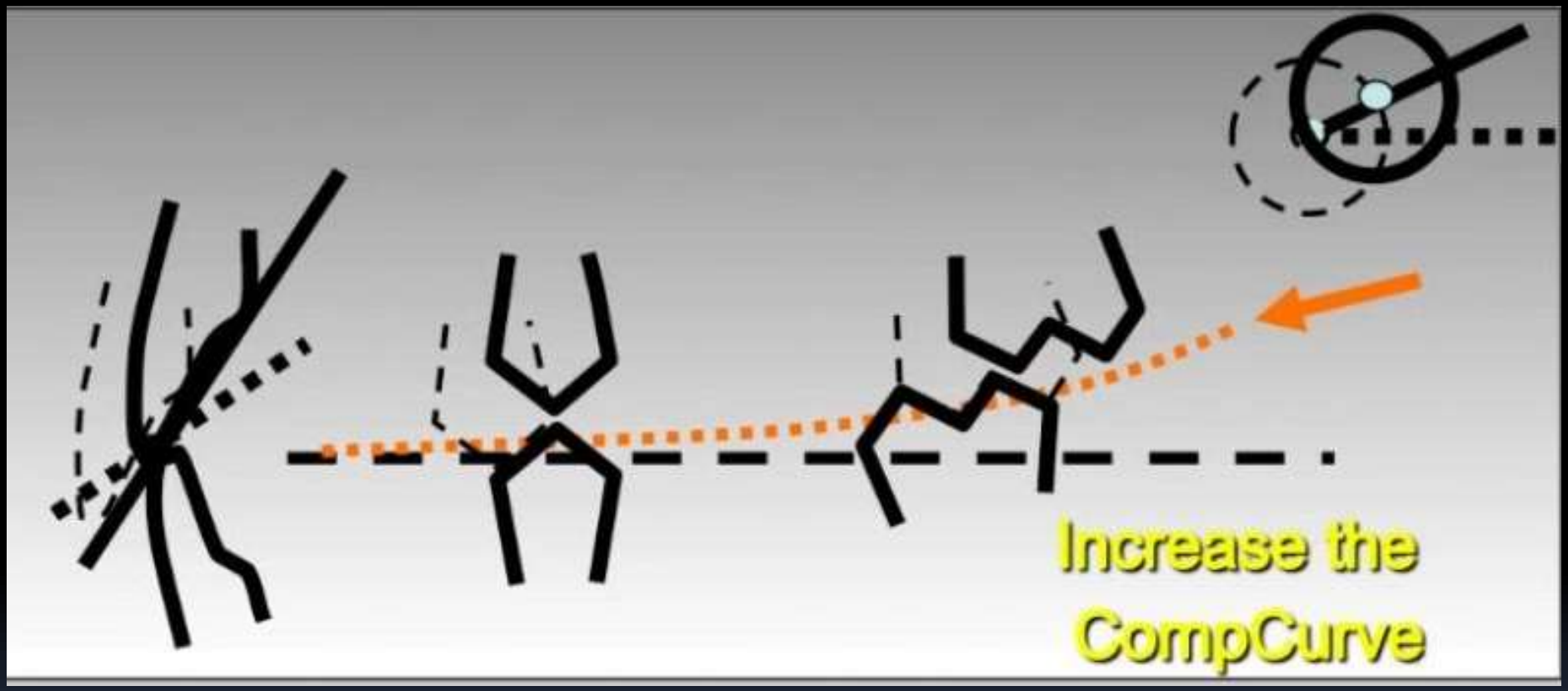


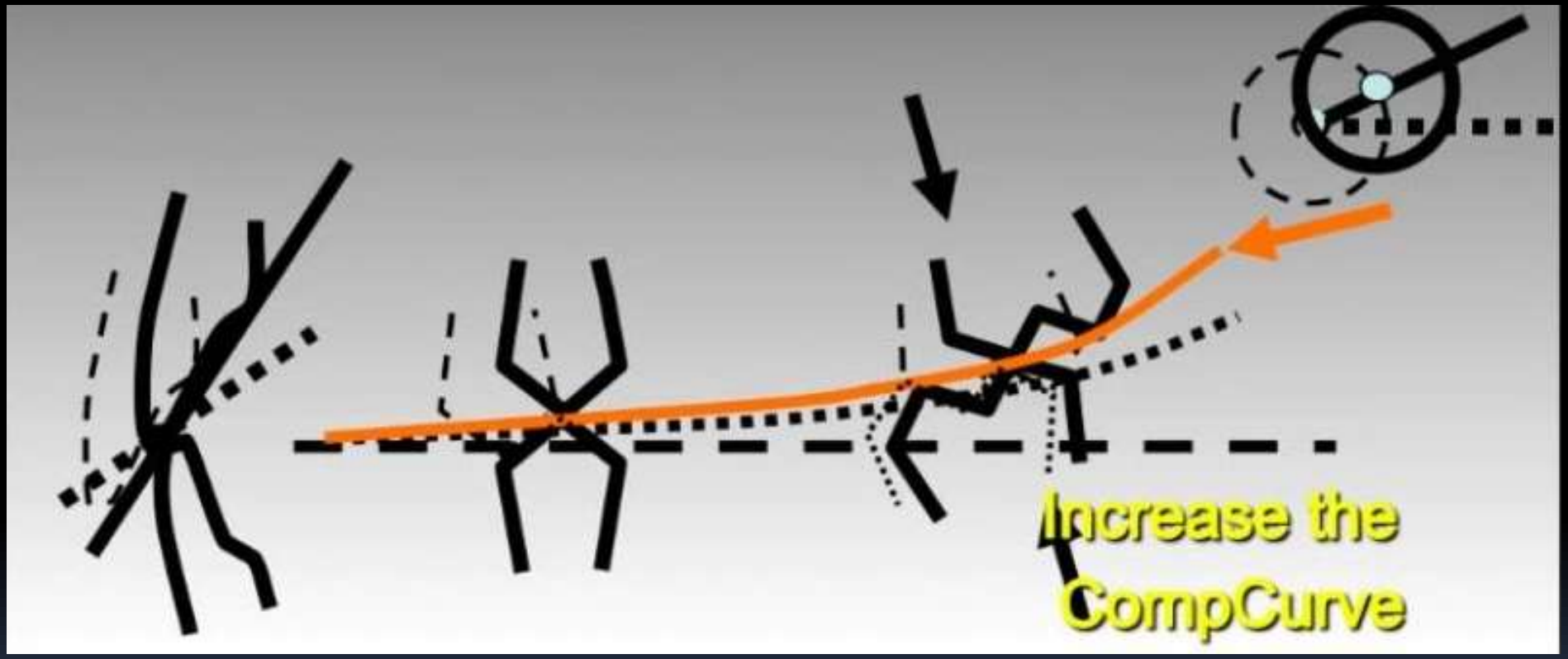





Increase the
OccPlane Plane


Increase Cuspal
Inclination


Increase the
CompCurve


Increase the
CompCurve

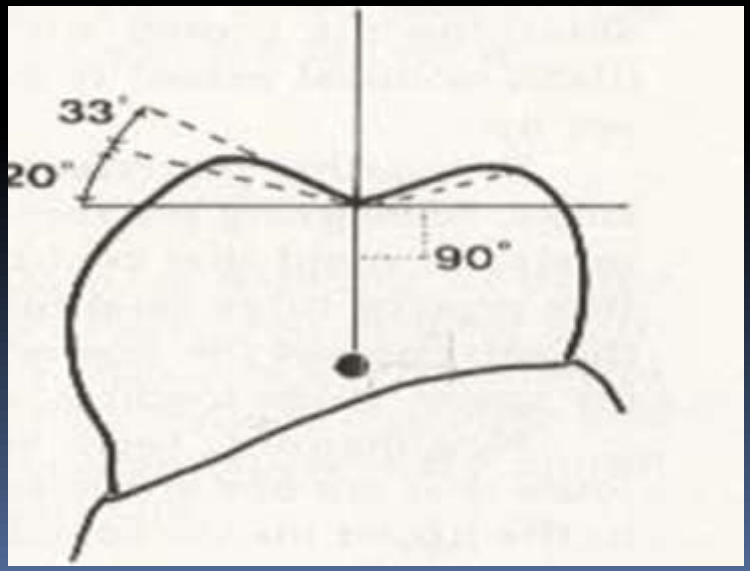
# Interaction of the five factors

Of the four factors that the dentist can control two of them **(the incisal guidance and the plane of occlusion)** can be altered only a slight amount because of esthetic and physiologic factors.

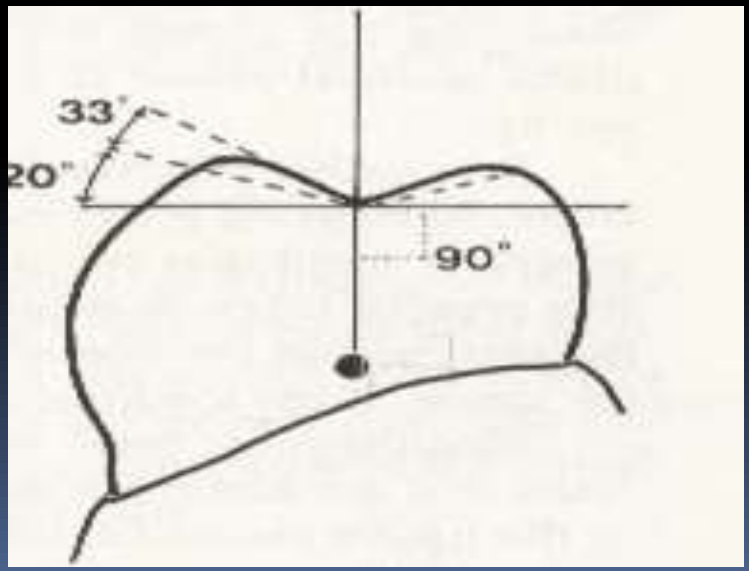
The important working factors for the dentist to manipulate are **the compensating curve and the inclinations of cusp** on the occlusal surfaces of the teeth.

# Types of posterior teeth

1. **An anatomic tooth** is one that is designed to simulate the natural tooth form. The standard anatomic tooth has inclines of approximately 33 degree or more.

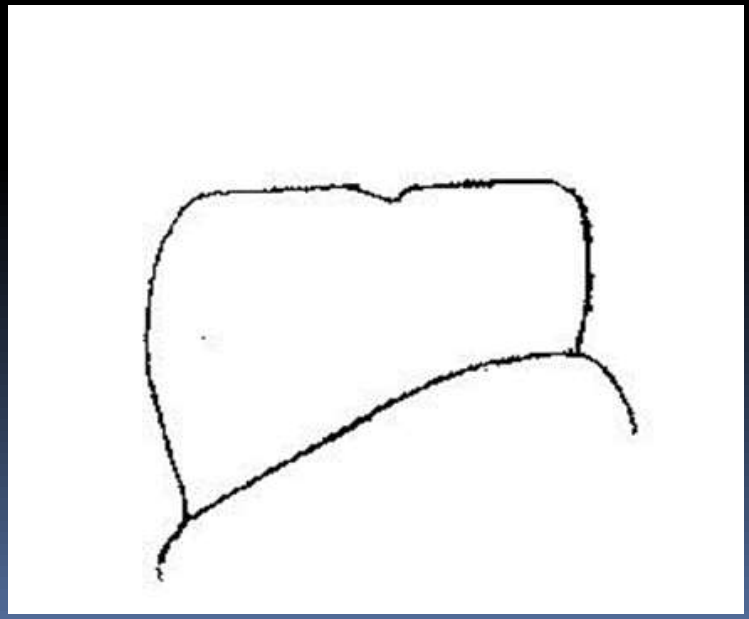


**2**. when the cusp incline is less steep than the conventional anatomic tooth of 33 degree it can be classified as a **modified or semi anatomic** tooth. It can be considered basically anatomic and will articulate in three dimensions.

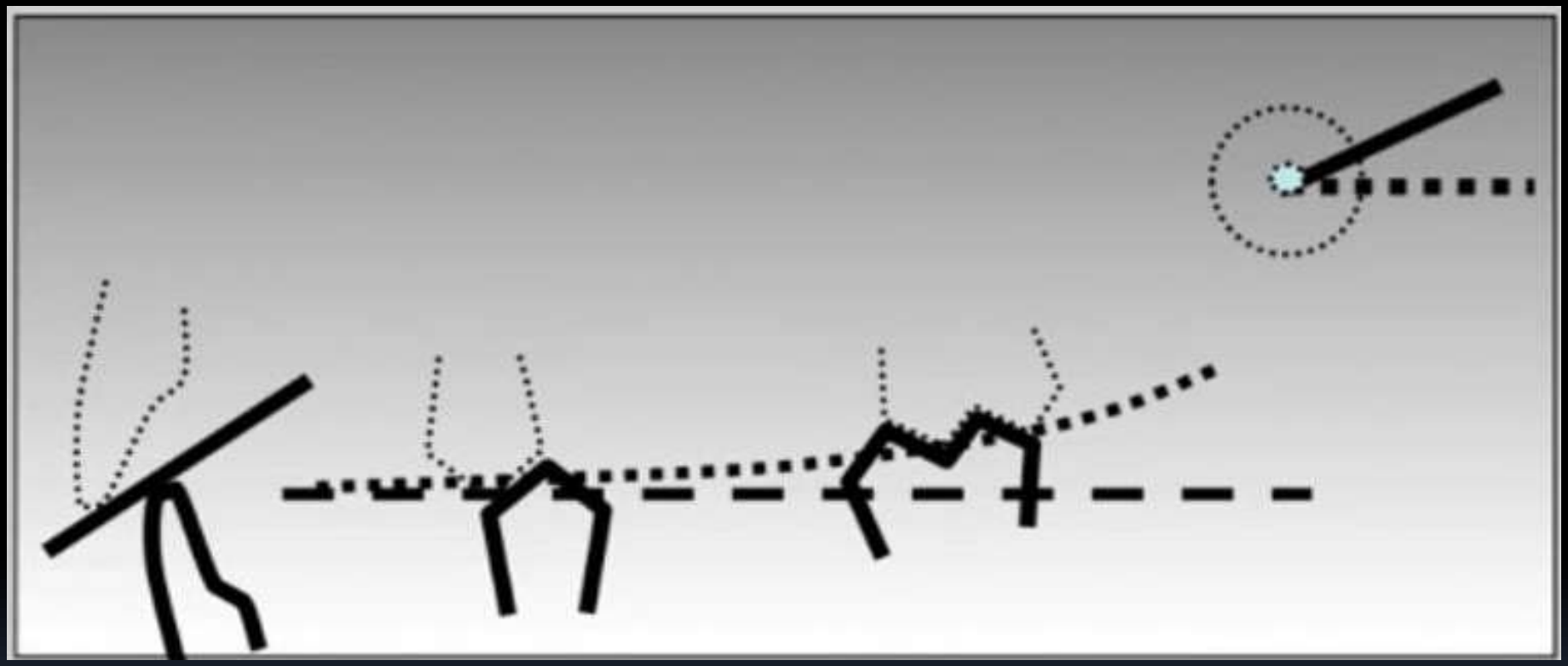


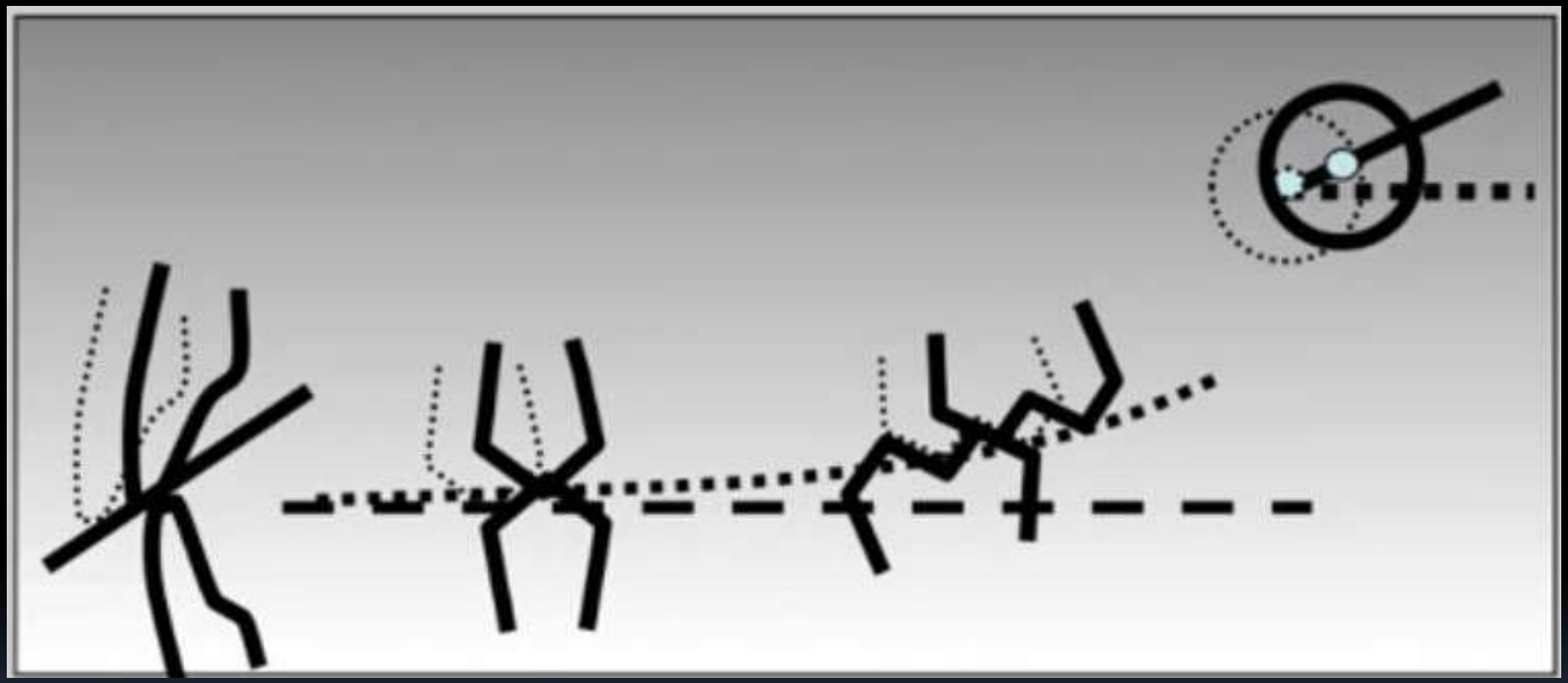
## 3. A nonanatomic

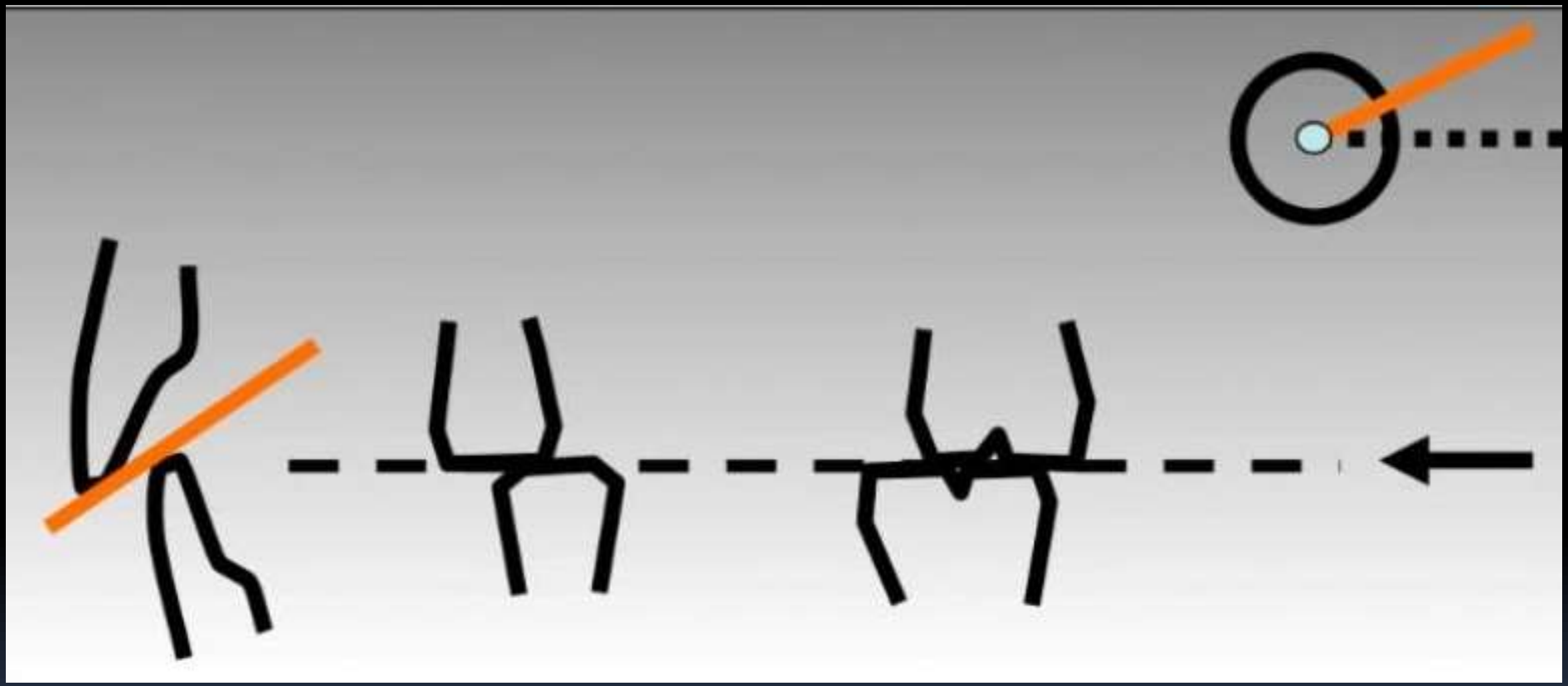
tooth is essentially flat and has no cusp heights to interdigitate with an opposing tooth and has **depression or groove**.

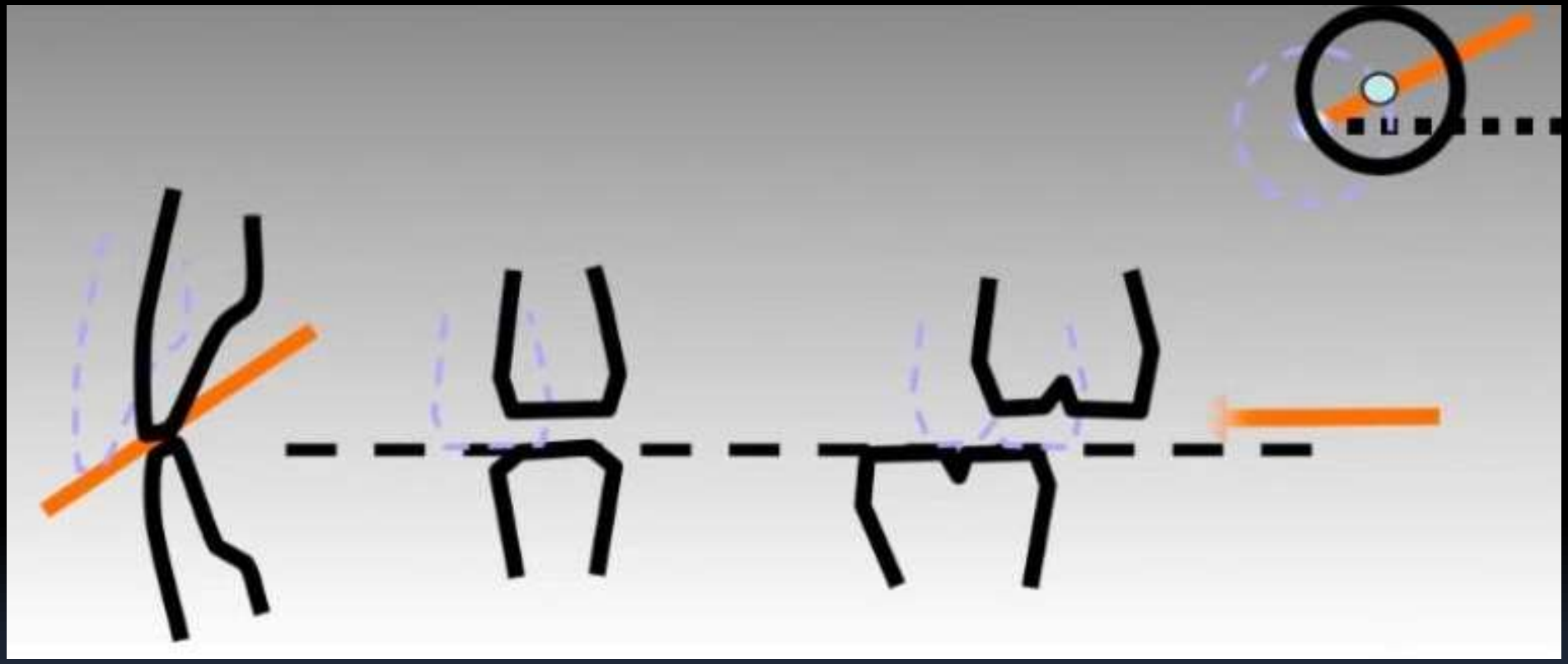


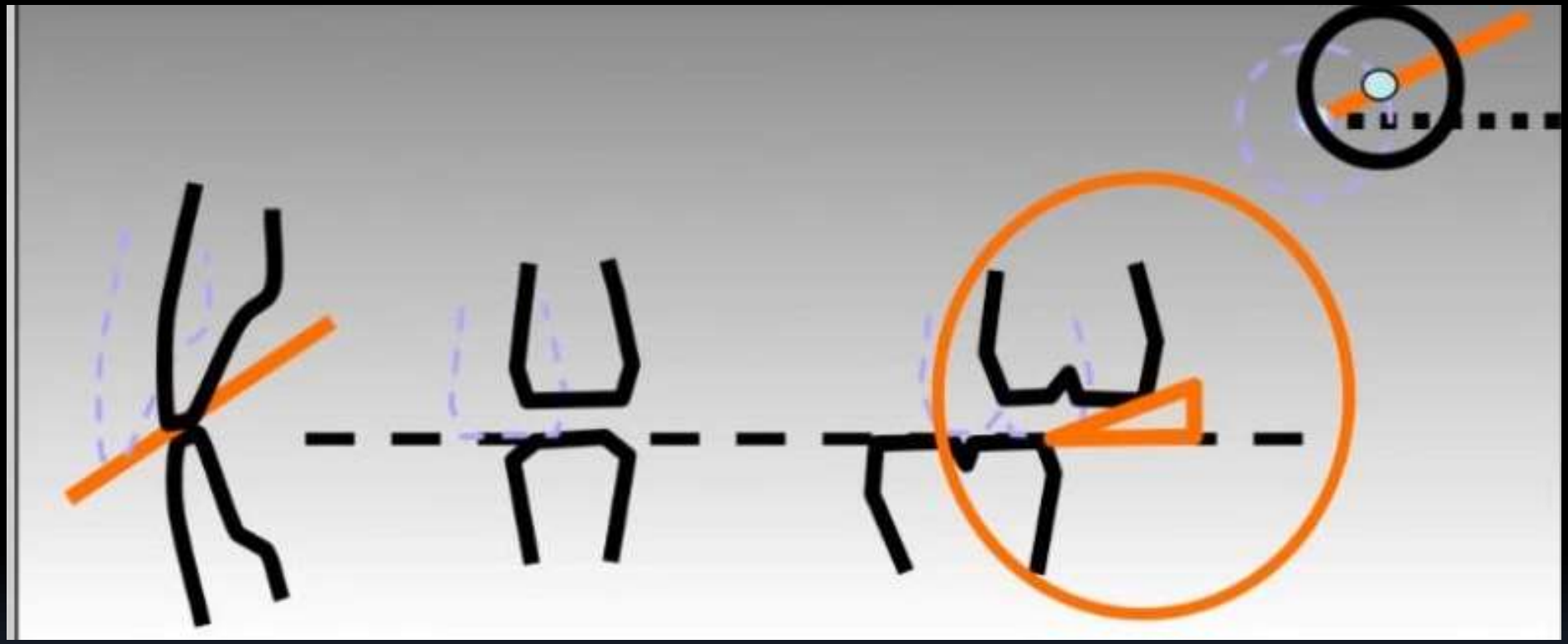
# Balanced Occlusion with Non Anatomic or Flat Teeth

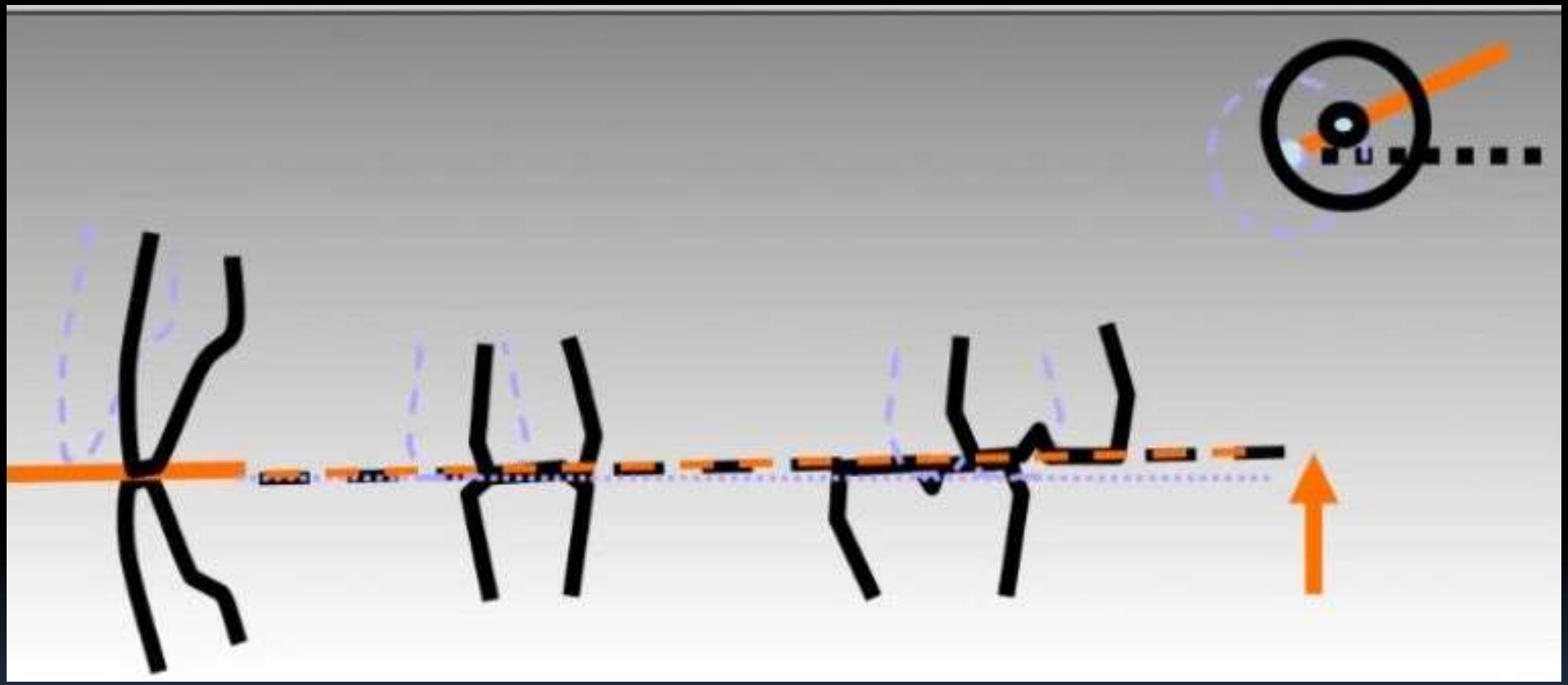








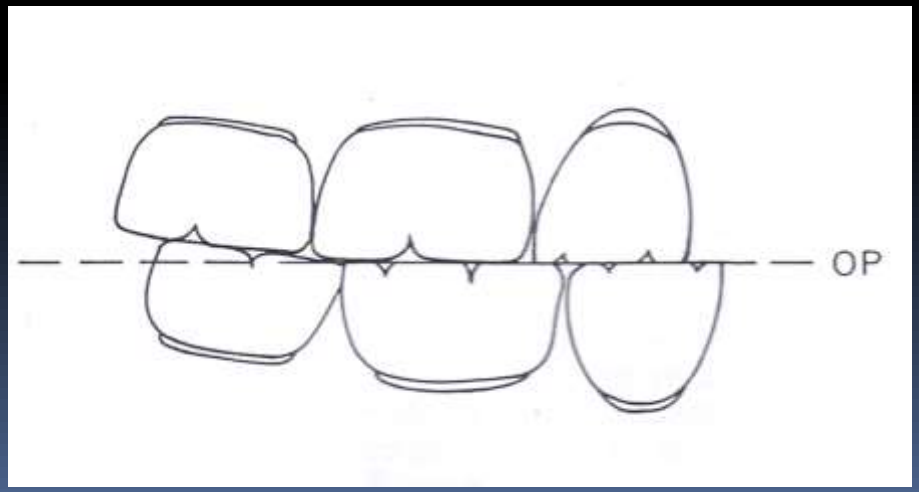




# Balanced Occlusion with Non Anatomic or Flat Teeth

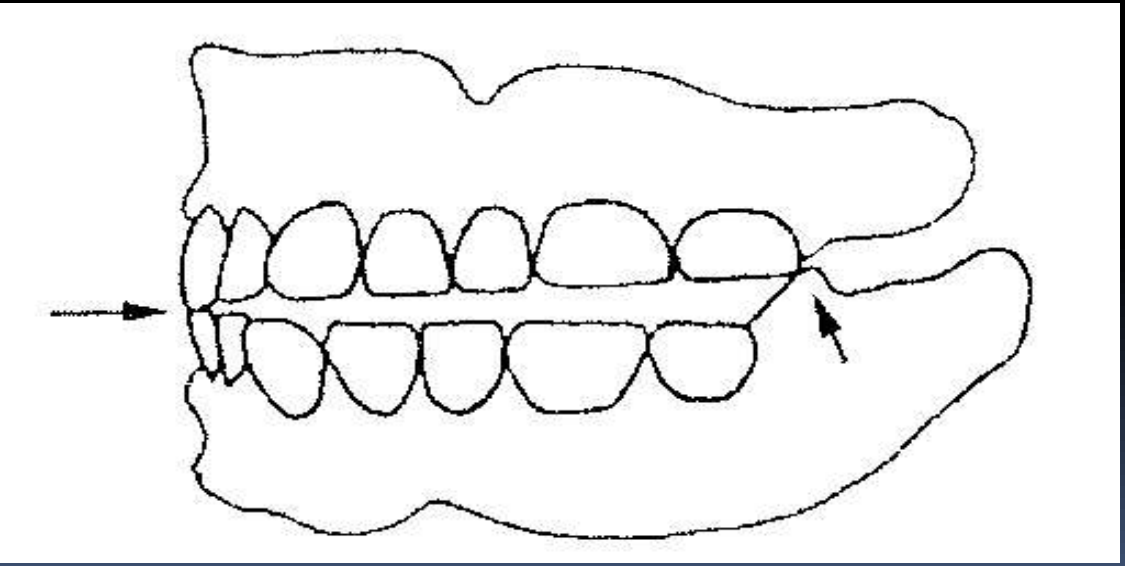
Balanced occlusion with cuspless teeth can be achieved by several ways:

## 1-Zero-degree teeth with inclination of the lower second molar

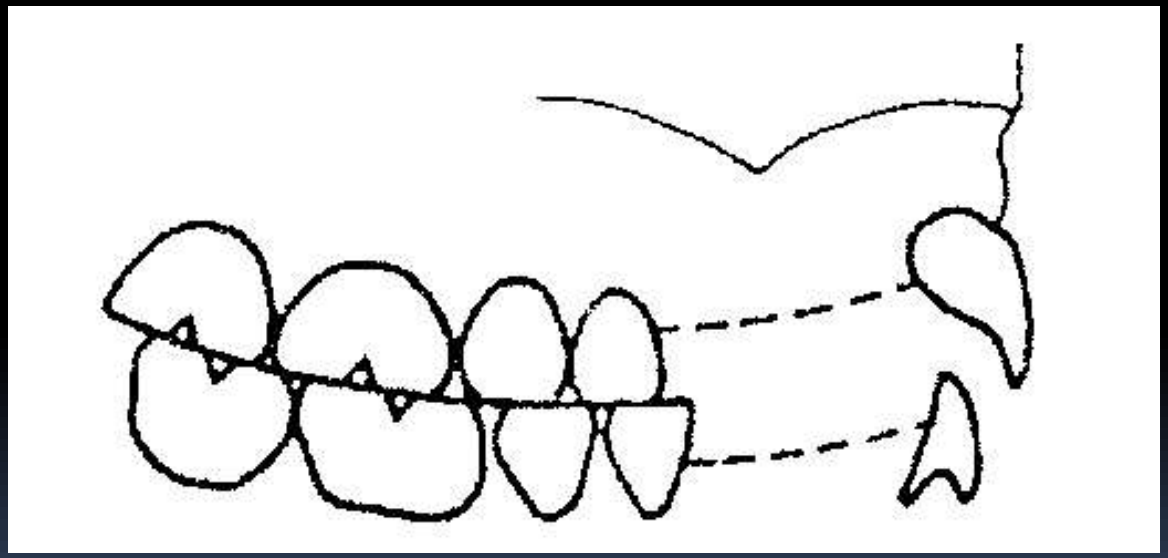


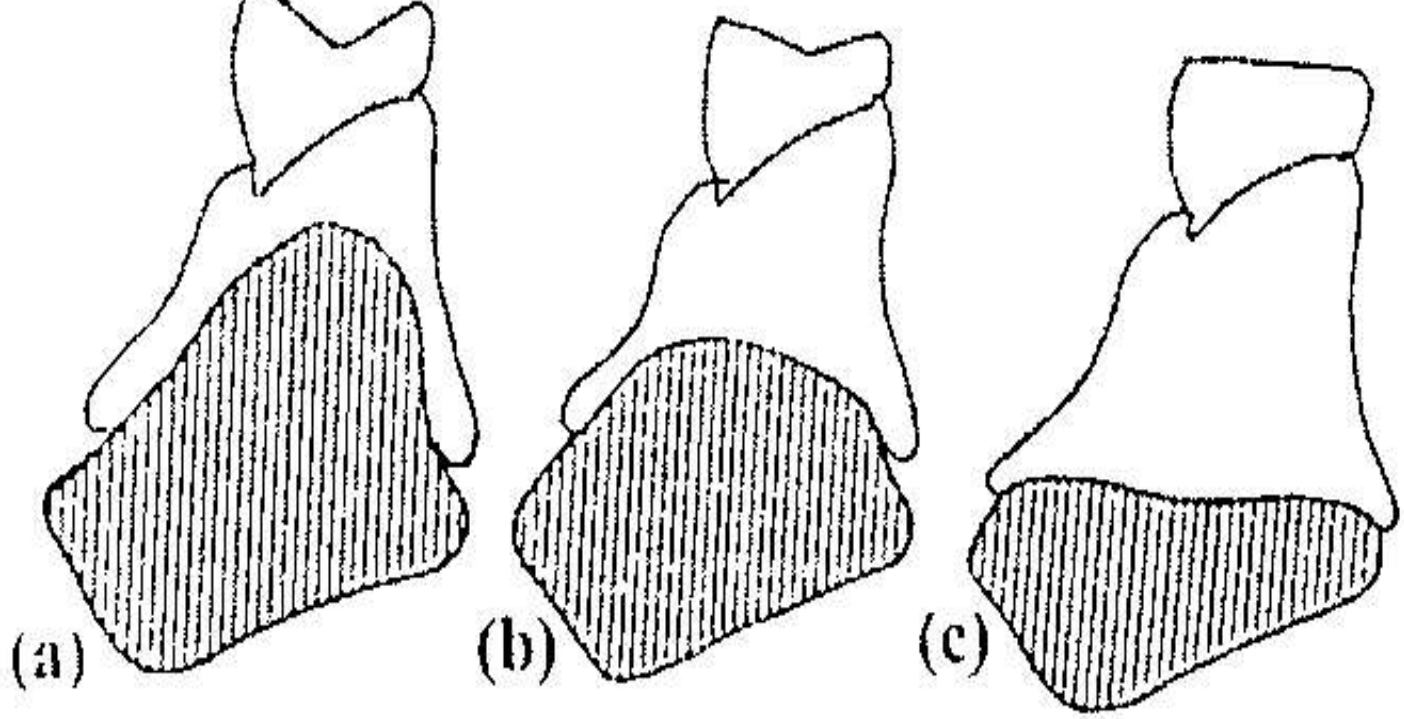

tilting the second molar

2- **Zero-degree teeth with balancing ramps placed posterior to the most distal molar.**



3. **Zero-degree teeth set to steep compensatory**.






*Reduction of cusp height according to the ridge height*

*(a) Well formed ridge can resist horizontal forces of cusped teeth*

*(b) The use of reduced cusp height with resorbed ridge*

*(c) The use of flat non antomic teeth with flat ridge*

# Monoplane or Non balanced Articulation

It is also called **neutrocentric occlusion** .In this type of occlusion

- Non-anatomical cuspless teeth (zero degree) are used.

- The occlusal plane flat and parallel to the upper and lower residual ridges.

- No compensating curves are created.

- The teeth are set flat with no medial or lateral inclination, elimination of inclined plane therefore more stability.

- The patient is instructed to avoid incising with anterior teeth to avoid displacement of the denture.

- The teeth are arranged without vertical overlap.

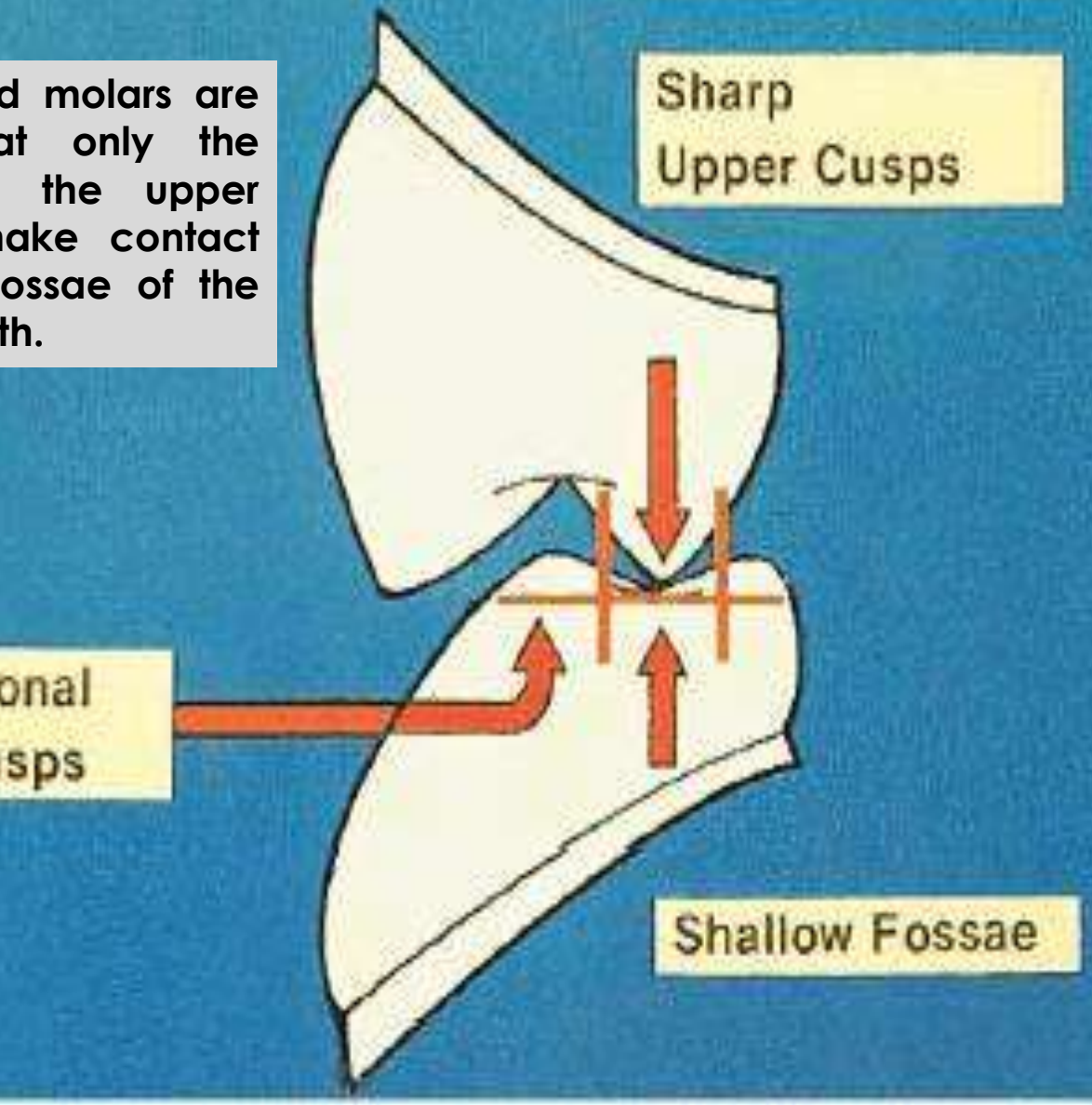
- The buccolingual width of the teeth is reduced.
- The number of teeth is reduced.
- When the foundation tissues is compromised, i.e. severely resorbed ridge, knife-edge, flabby tissues.

# Lingualized OCCLUSION

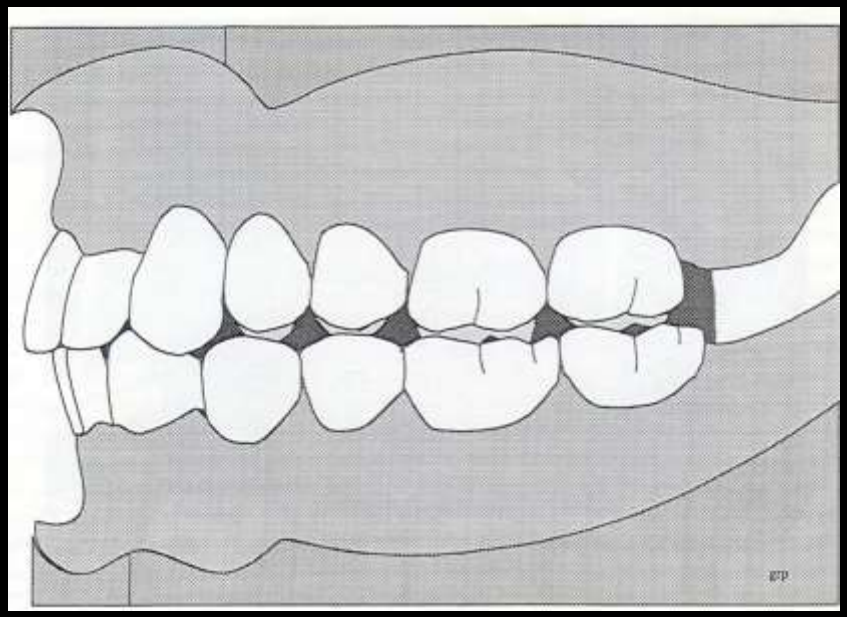
The lingualized occlusion concept is a variation of the bilaterally balanced occlusion concept.

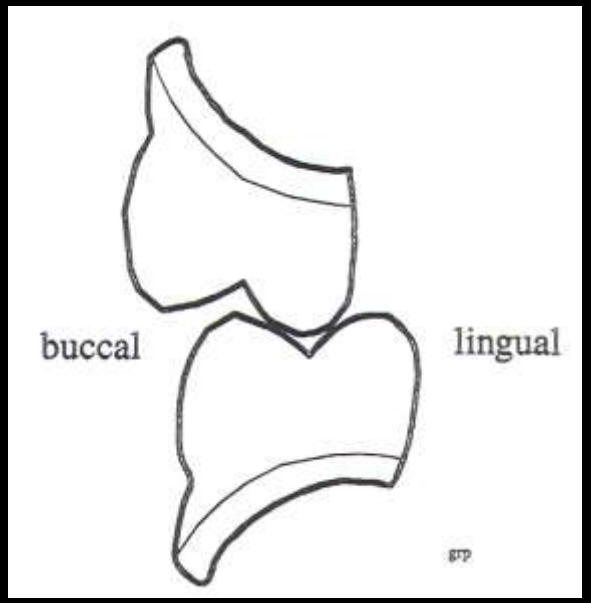
# LINGUALIZED OCCLUSION

**The premolars and molars are arranged so that only the lingual cusps of the upper posterior teeth make contact with the central fossae of the lower posterior teeth.**



# Lingualized OCCLUSION






Balanced lingualized class I arrangement

Tooth- to- tooth

Max. Li cusp to central fossa

| Characteristic | Anatomic | Lingualized | Neutrocentric |
|---|---|---|---|
| l. Better esthetics | + | + | - |
| 2. Ease of penetration (decreased vertical stress) | + | + | - |
| 3. Denture stability during parafunctional movement. | + | + | - |
| 4. Simpler technique, less precise records | - | + | + |
| 5. Decreased lateral forces | - | + | + |
| 6. Ease of adjustment | - | + | + |
| 7. Good for Class ll and Class III jaw relation. | - | + | + |
| 8- Good stability, forces centralized and neutralized | - | + | + |

# CONCLUSIONS

There is no one ideal occlusal scheme to fit all the variety of patient situations and requirements.


Thank
you