



Arrangement of the artificial teeth

It's the placement of the teeth on a denture with definite objective in mind or it's the setting of teeth on temporary bases.

Rules of artificial teeth arrangement:

Maxillary cast

- 1- a line is drawn parallel to the frontal plane that touches the anterior margin of the incisive papilla aids in the positioning of the upper central incisors
- 2- the midline follows the mid palatal suture and bisects the incisive papilla this line is perpendicular to line 1.
- 3- the canine eminence line is recorded on the cast when its present



The center and base of the papilla used as reference

Mandibular cast:

- 1- a line is drawn parallel to the frontal plane bisecting the residual ridge aids in positioning of the mandibular central incisors
- 2- a point designates the distal of the mandibular canine

3- a line follow the crest of the residual ridge from the canine point to the middle of the retromolar pad aids in the buccolingual position of the mandibular posterior teeth.

4- a line that bisects the vertical height of the retromolar pad aids in establishing the vertical position of the occlusal surfaces of the posterior teeth.



Arrangement of anterior teeth

The anterior teeth should be arranged to provide:

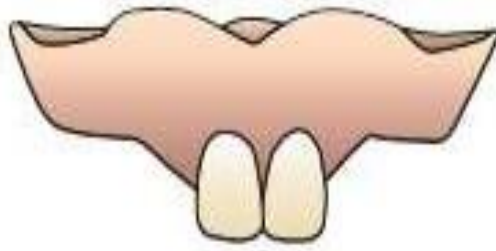
- 1- proper lip support
- 2- permit satisfactory phonetic
- 3- pleasing esthetic

A. arrangement of the upper anterior

teeth 1- upper central incisor:

In the frontal view: the contact points between right and left central incisors should coincide with the midline of the cast. The incisal edge of each one should touch the occlusal plane. The long axis is perpendicular to the plane.

In the sagittal view: should have slight labial inclination (5 degree)



In the occlusal plane (horizontal):

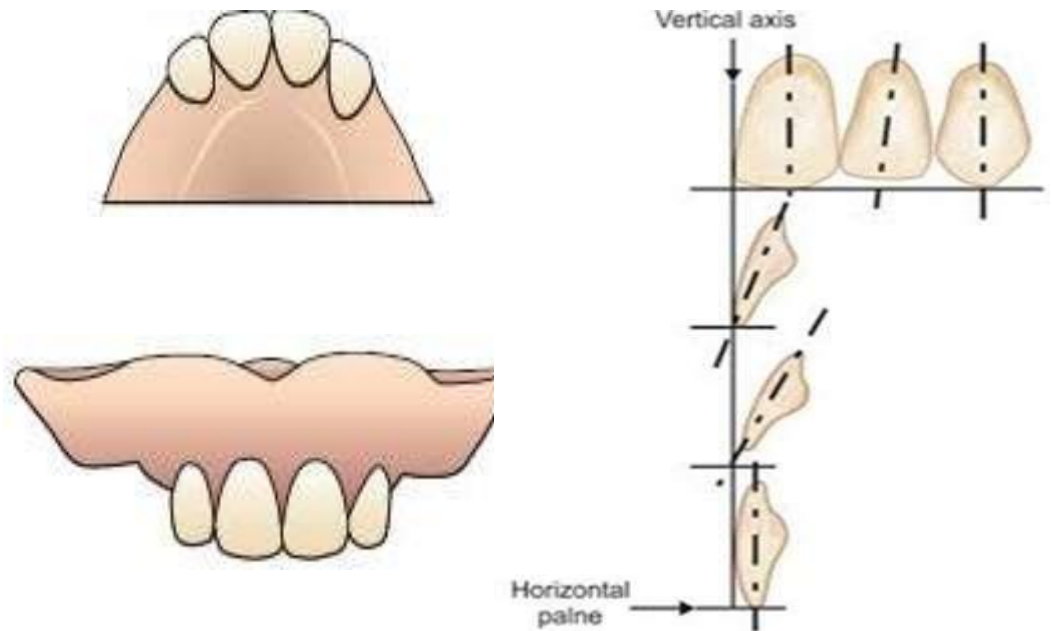
the two central incisors should be placed to give the beginning of the curvature of the arch. Generally, the labial surfaces of the two central incisors will be 8-10 mm anterior to the center of incisive papilla.

2- Upper lateral incisor:

In frontal view: the incisal edge is 1 mm above the occlusal plane and the long axis show little distal inclination.

In the sagittal view: the upper lateral incisor should have slight labial inclination (10 degree).

In the horizontal view: the cervical area is depressed more than the central incisors and the distal edge should be rotated to form the arch curvature.



3- Upper canine:

In frontal view: the tip of the canine should touch the occlusal plane and the long axis is perpendicular to the plane.

In the sagittal view: the long axis is vertical.

In the horizontal view: The upper canine represents the upper corner of the mouth and the turning point of upper arch also it forms the transition from the anterior teeth to posterior teeth.



Arrangement of the lower anterior teeth:

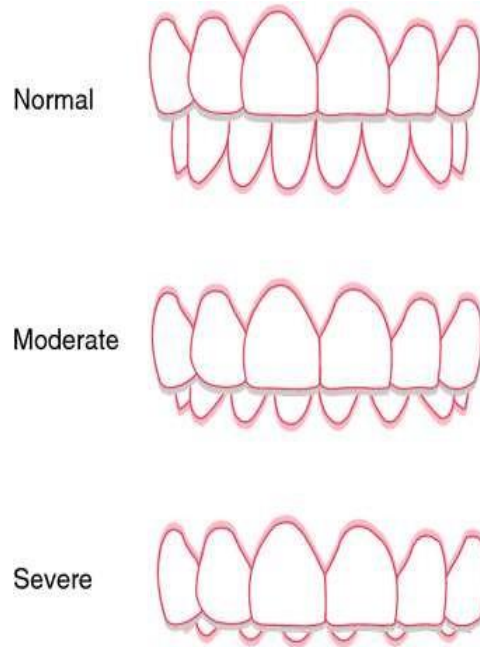
1- Lower central incisor:

In frontal view: the long axis is vertical and the midline of the lower centrals should coincide with the maxillary mid line.

In sagittal view: should have slight labial inclination. The incisal edge should have 1 mm of vertical overlap (overbite) and 1mm of horizontal overlap (overjet) in respect to maxillary central incisor.

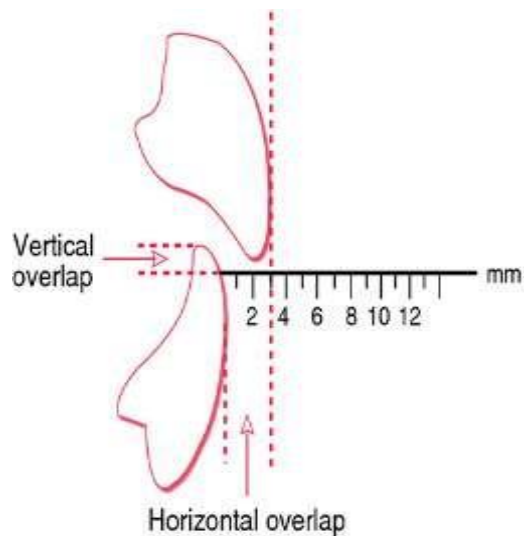
Overbite (vertical overlap)

It is the extension of the upper anterior teeth over the lower teeth in a vertical direction when the opposing posterior teeth are in contact in centric occlusion.



Overjet (horizontal overlap)

It is the projection of upper anterior teeth beyond their antagonists in a horizontal direction.



2- Lower lateral incisor:

In frontal view: the long axis has slight distal inclination to the occlusal plane

In sagittal view: is fairly upright and the incisal edge should be 1 mm of horizontal and vertical overlap in respect to central incisor.

In horizontal view: the distal edge rotated lingually to have the arch curvature

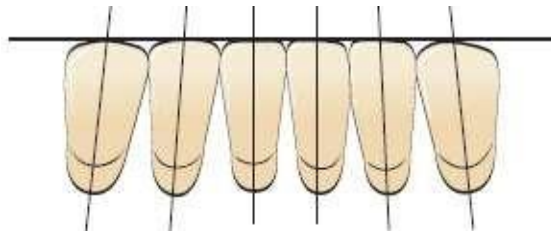
3- Lower canine:

In frontal view: the long axis has slight distal inclination and the tip of lower canine should be placed in the embrasure between upper lateral and upper canine.

In sagittal view: the long axis has slight lingual inclination

In horizontal view: the cervical area is prominent.

The arrangement of anterior teeth should follow the form of the arch which is either square, tapered or ovoid.

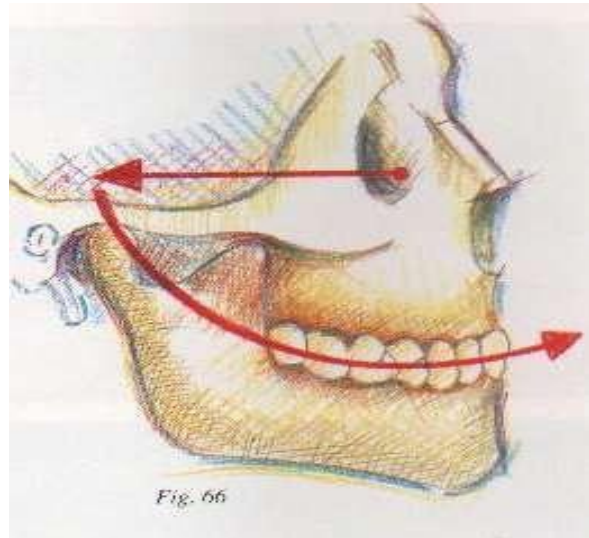


Arrangement of the posterior teeth:

Correct placement of posterior teeth is important for the retention and stability of both dentures.

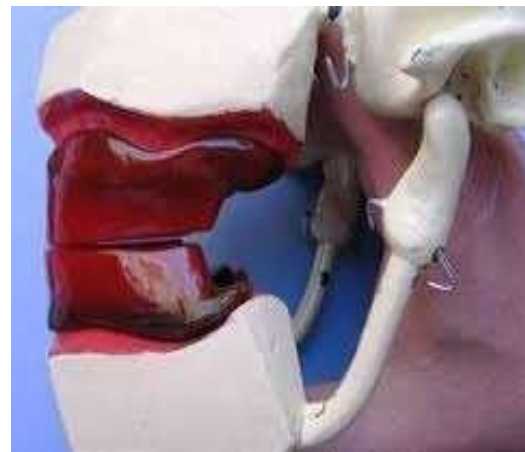
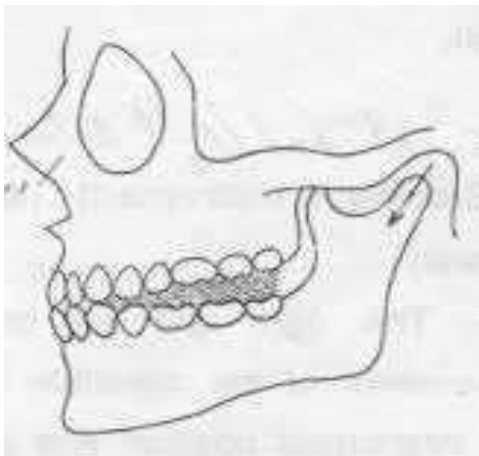
Prior to arrangement of the posterior teeth we must understand some of the definitions which is related to posterior teeth arrangement:

1- Curve of spee: The curvature of the mandibular occlusal plane beginning at the tip of the lower incisors and following the buccal cusps of the posterior teeth, continuing to the anterior border of the ramus.



2-Christensen's phenomenon:

A gap occurring in the natural dentition or between the opposing posterior flat occlusal rims when the mandible is protruded (posterior open bite) it can lead to instability in full denture unless compensating curve are incorporated into the denture.



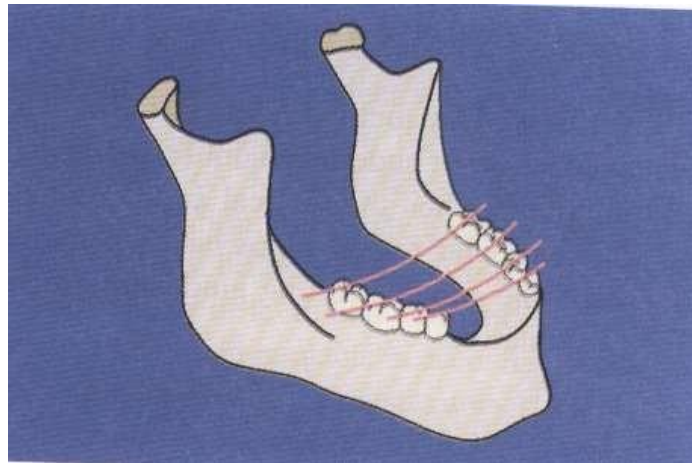
3- Compensating curve:

The antero-posterior and lateral curvature in the alignment of the occluding surfaces and incisal edges of the artificial teeth which is used to develop balanced occlusion (It compensates the opening that occurs during forward and lateral movement of the mandible)

4- Curve of Wilson (lateral curve)

Curvature in a frontal plane through the cusp tips of both the right and left molars (buccal and lingual cusps). Such curvature is concave with the lower point in the middle due to lingual inclination of the long axis of the mandibular molars.

(Take its name from Dr. George H. Wilson who first described it in 1911).



Curve of Wilson helps in two ways:

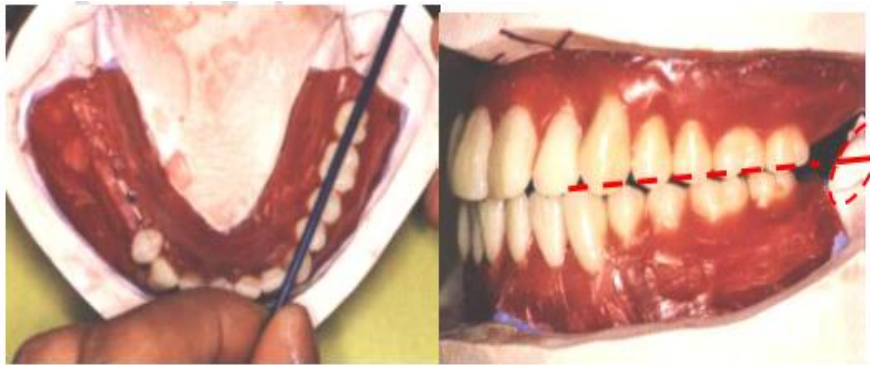
- A. Teeth are aligned parallel to the direction of medial pterygoid (closes the jaw) for optimum resistance to masticatory forces.
- B. The elevated buccal cusps prevent food from going past the occlusal tables.

I- Arrangement of the mandibular posterior teeth

The mandibular posterior teeth will be before the maxillary posterior, because there are more anatomical landmarks to locate the guidelines which are:

A- The line of the crest of the mandibular residual ridge, which extends between the middle of retromolar pad and tip of mandibular canine, the central grooves of the mandibular posterior teeth should coincide with this line.

B- The line extending between the tip of mandibular canine and upper 2/3 of retromolar pad will determine the height of mandibular posterior teeth.



1- MANDIBULAR FIRST PREMOLAR

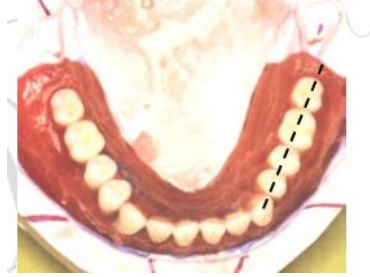
In buccal view

The tooth should be set perpendicular to the occlusal plane. The tip of its buccal cusp should be 1 mm below the line is planed from the tip of canine and the 2/3 of the vertical height of retromolar pad.



In horizontal view

The central groove should be over the crest of residual ridge.



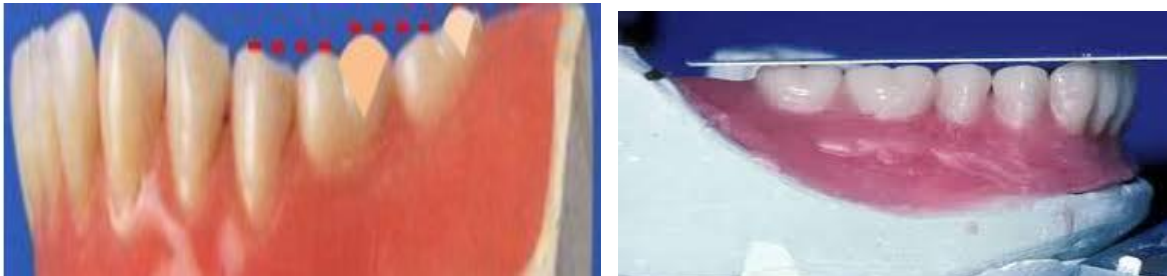
2- MANDIBULAR SECOND PREMOLAR

It should be arranged in the same way as mandibular first premolar.

3- MANDIBULAR FIRST MOLAR

In buccal view

The mesiobuccal cusp should be 1 mm below the line, and the distobuccal cusp should be $\frac{1}{2}$ mm below the line.



In horizontal view

The central groove should coincide with the crest of the residual ridge.

4- MANDIBULAR SECOND MOLAR

In buccal view

The mesiobuccal cusp is $\frac{1}{2}$ mm below the line, and the distobuccal cusp should touch the line.

In horizontal view

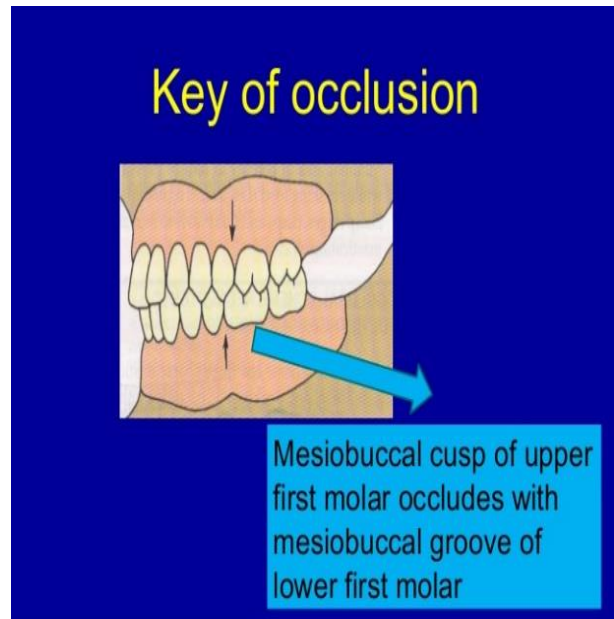
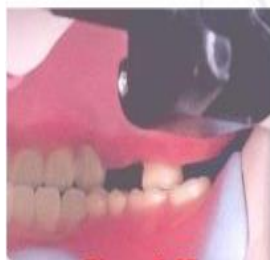
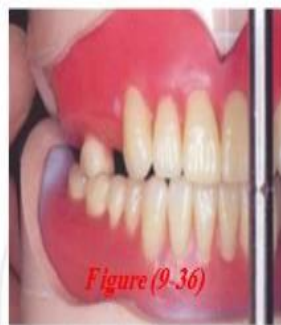
The central groove should coincide with the crest of the residual ridge.



II. Arrangement of Maxillary Posterior Teeth

1- MAXILLARY FIRST MOLAR

In order to get normal molar relation, the mesiobuccal cusp of maxillary first molar should rest in the buccal groove of the mandibular first molar, and the mesiopalatal cusp should seat into the central fossa of mandibular first molar.



2- MAXILLARY SECOND PREMOLAR

The buccal cusp should seat into the embrasure formed between the mandibular second premolar and first molar.

3- MAXILLARY FIRST PREMOLAR

The buccal cusp should seat into the embrasure between the mandibular first and second premolars.

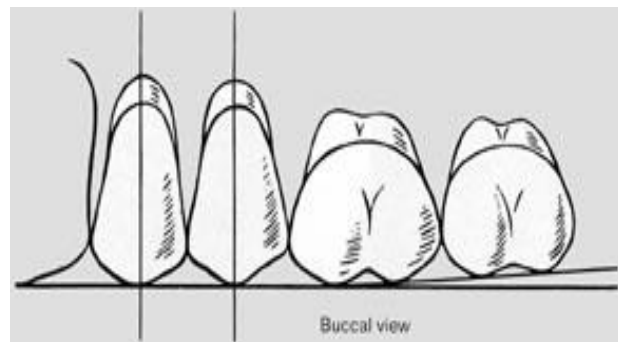
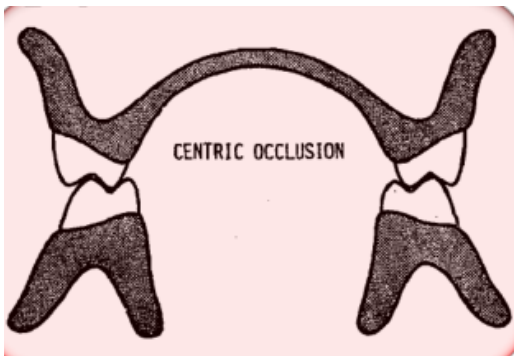
4- MAXILLARY SECOND MOLAR

The mesiobuccal cusp should rest in the buccal groove of mandibular second molar, and the mesiopalatal cusp should seat into the central fossa of the mandibular second molar.



Maxillary teeth overlap the mandibular teeth horizontally; the overlap must be present posteriorly to prevent cheek biting. The long axis of each maxillary tooth is distal to that of corresponding mandibular tooth. Each tooth in both arches is opposed by two teeth, except the mandibular central incisor and the maxillary second molar.

This arrangement of posterior teeth will provide maximum contact between the occlusal surfaces of mandibular and maxillary teeth in centric occlusion.



Common errors in arrangement of teeth

- 1- Setting mandibular anterior teeth too forward in order to meet maxillary teeth.
- 2- Failure to make the canine the turning point of the arch.
- 3- Setting the mandibular first premolars to the buccal side of the canines.
- 4- Failure to establish the occlusal plane at the proper level and inclination.
- 5- Establishing the occlusal plane by an arbitrary line on the face. When it is too low or too high, it is not look natural and cause difficulty in the mastication.
- 6- The posterior teeth should not appear longer than those teeth when the patient smile, the patient will have (reverse smile).
- 7- Teeth arranged too far toward the tongue or palate, there will be dark space between the cheek and teeth when patient talk or smile (dark buccal corridors).



