

Prosthodontics



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Arrangement of Artificial Teeth

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Contains of this lecture

Arrangement of Anterior Artificial Teeth

- Sequence of anterior teeth arrangement
- Guide lines of artificial teeth arrangement:
 - 1. Arrangement of maxillary anterior teeth
 - 2. Arrangement of mandibular anterior teeth.

Arrangement of posterior artificial teeth

- Standardized parameters
- The guide lines used in arrangement of posterior teeth:
 - 1. Arrangement of maxillary posterior teeth: -
 - 2. Arrangement of mandibular posterior teeth

Normal occlusion

Common errors in arrangement of teeth.

Arrangement of anterior Teeth



Arrangement of Anterior Artificial Teeth

In Prosthodontics, the term **arrangement** would refer to:

a procedure of locating, tilting, rotating and spacing artificial tooth / teeth in relation to the plane of reference and to each other with the objective of creating a natural appearance and based on biomechanical requirements of complete denture treatment.

Sequence of artificial teeth arrangements

there are several methods in sequence of teeth arrangement

- First method: starting with upper anterior because there is a constant relation between upper centrals and incisive papilla. Then we set lower anterior, then upper posterior teeth, and then lower posterior teeth.
- Second method: start with upper anterior teeth, then upper posterior teeth, then lower anterior teeth, and finally lower posterior teeth.
- Third method: start with upper anterior, then lower anterior, then lower posterior teeth, and finally the upper posterior teeth.

Position of anterior artificial teeth in relation to the lips

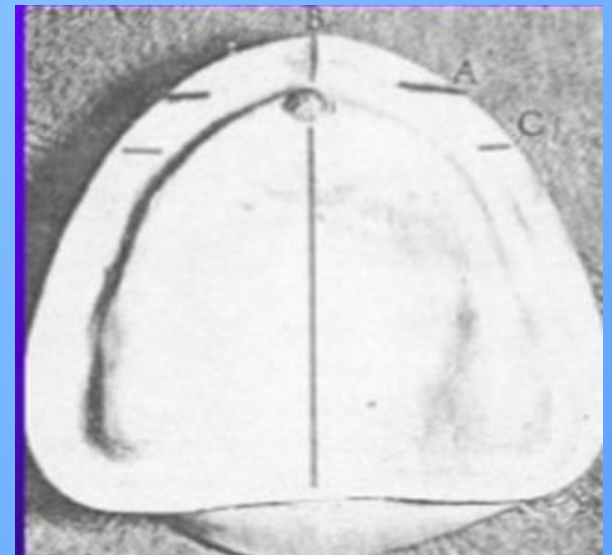
- The teeth lip relationship **varies between individual** where the position of the teeth and the mobility of the lips influence the amount of teeth exposed during smiling.
- Usually the incisal edges of the upper incisors are placed **2-3mm** below the rest position of the upper lip at the time of the registration of the jaw relationship, the upper bite rim have been adjusted to provide a suitable support for the upper lip.

Guide lines 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.



Guide lines of artificial teeth arrangement:

Mandibular cast: -

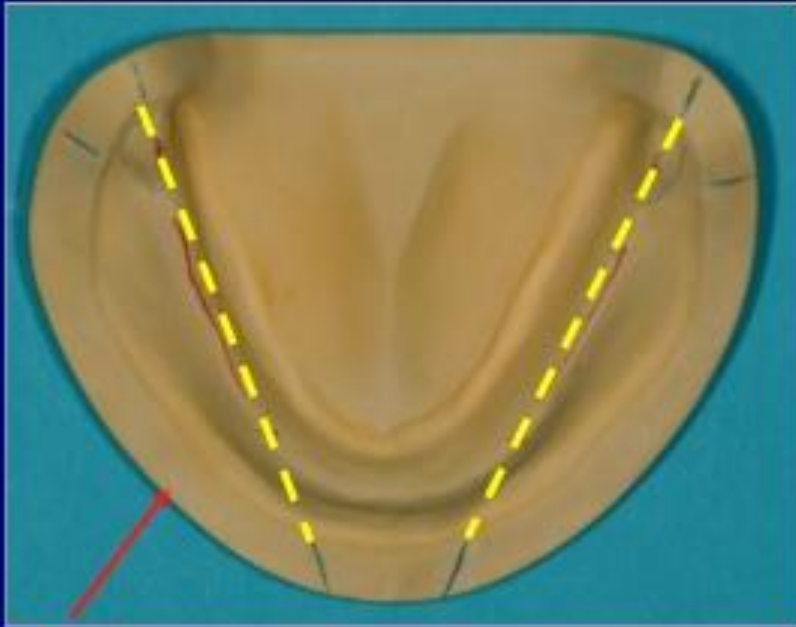
A line is drawn parallel to the frontal plane bisecting the residual ridge, aids in positioning of the mandibular central incisors.

2- A point designates the distal of the mandibular canines.

3- A line follows the crest of the residual ridge from the canine point to the middle of retromolar pad, aids in the determining 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.

Midpoint of retromolar pad



Land

Lines indicating
the crest of the
ridge

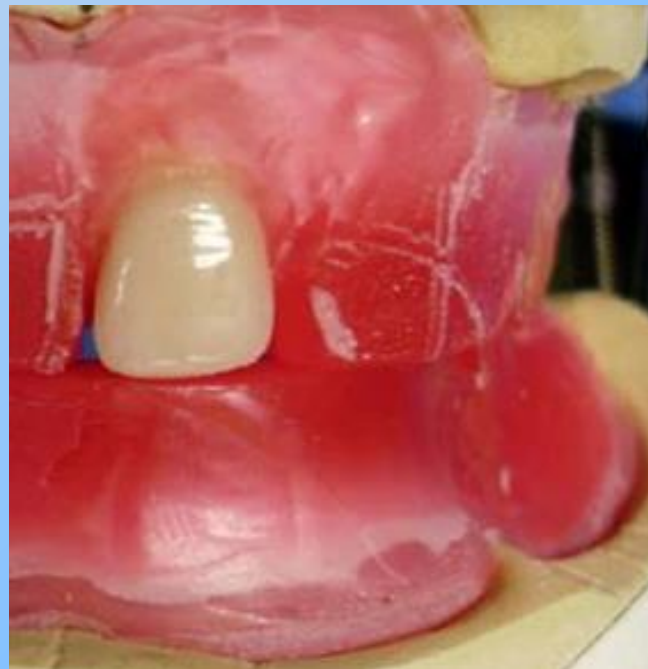
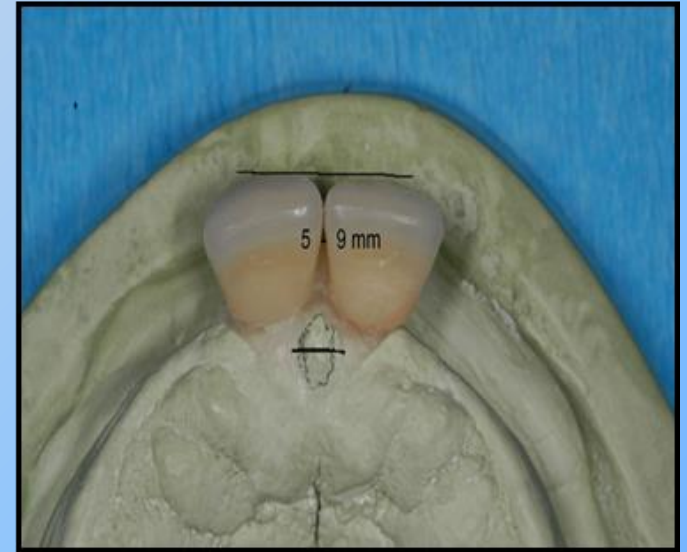
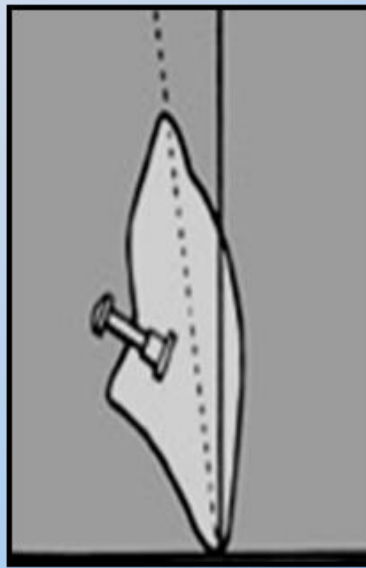
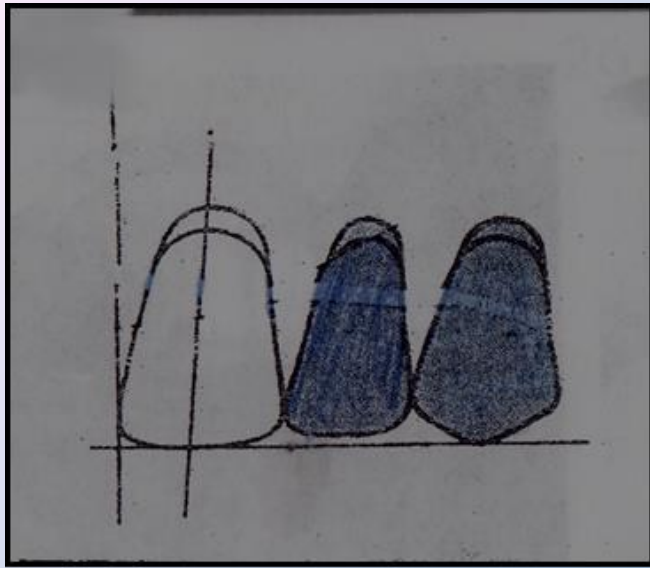


Mark on land
indicating the
midpoint of the
retromolar pad

1. Arrangement of maxillary anterior teeth

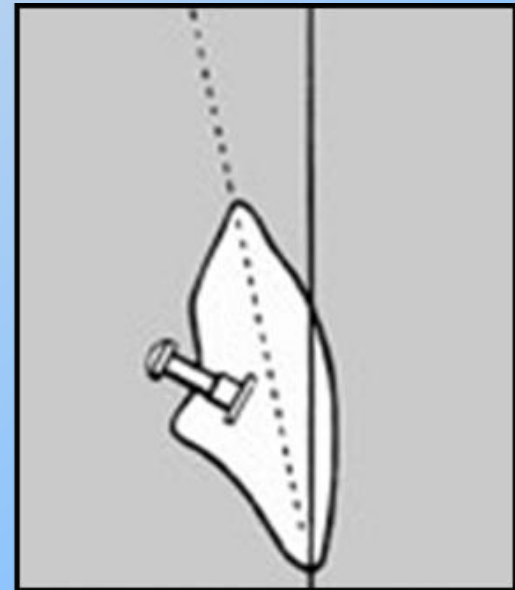
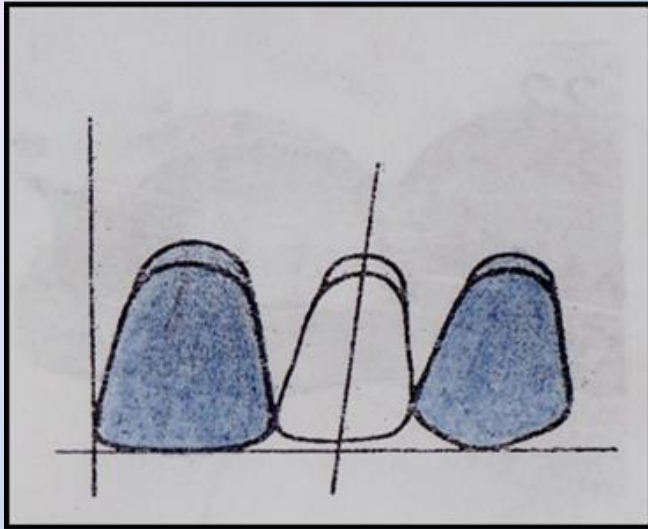
a. Maxillary central incisors.

1. The long axis of the tooth shows slight distal inclination to the perpendicular.
2. The contact point should coincide with the midline of the face.
3. The incisal edge should touch the mandibular occlusion rim.
4. The neck of the tooth should be slightly depressed.
5. The facial surface of the central incisors should be 5-9 mm anterior to the center of the incisive papilla.



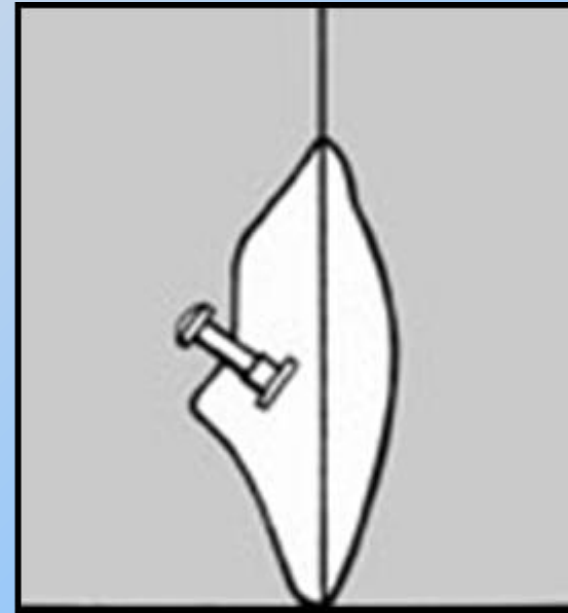
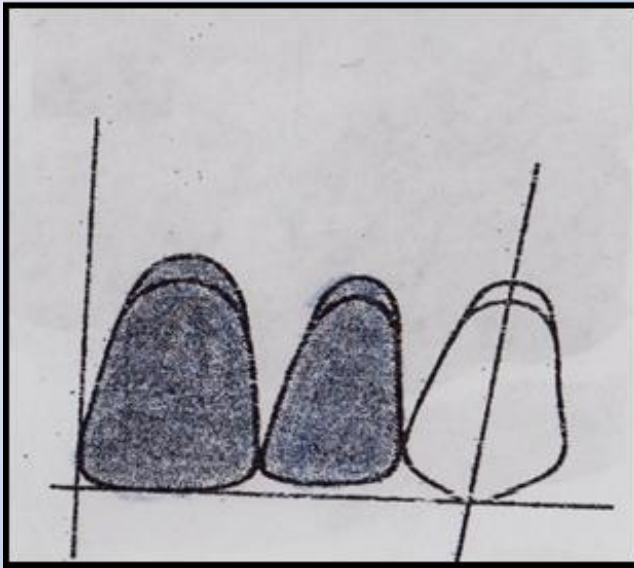
b. Maxillary lateral incisors

1. The long axis of Maxillary lateral incisor shows slightly more distal inclination than the central incisor.
3. The incisal edge of the lateral should be raised approximately 0.5-1mm from the mandibular occlusion rim.
4. The neck is depressed more than central incisor



c. Maxillary canines

1. The long axis should be perpendicular to the occlusal plane.
2. The incisal edge of the canine should touch the mandibular occlusion rim.
3. The mesiolabial aspect of the canine should be visible when viewed from the anterior. This will be accomplished by tilting the neck of the canine slightly to the distal (in addition to being tilted to the buccal).
4. The neck of canine is prominent.



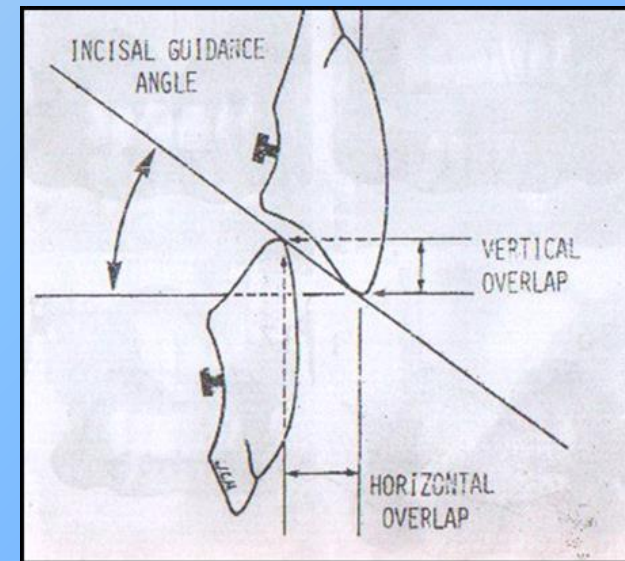
Arrangement of mandibular anterior teeth

Overbite (vertical overlap); -

It is the vertical 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 upper anterior teeth beyond their antagonist in a horizontal direction.

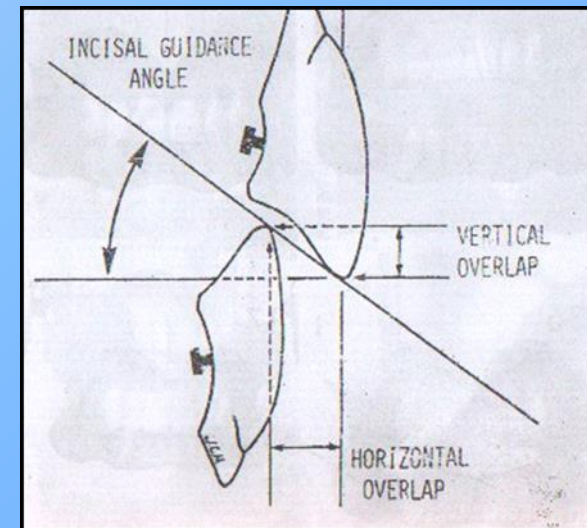


Incisal guide angle is the angle formed by a line drawn through the incisal edges of the maxillary and mandibular incisors in a horizontal plane.

In complete denture treatment this angle is determined by the **dentist**.

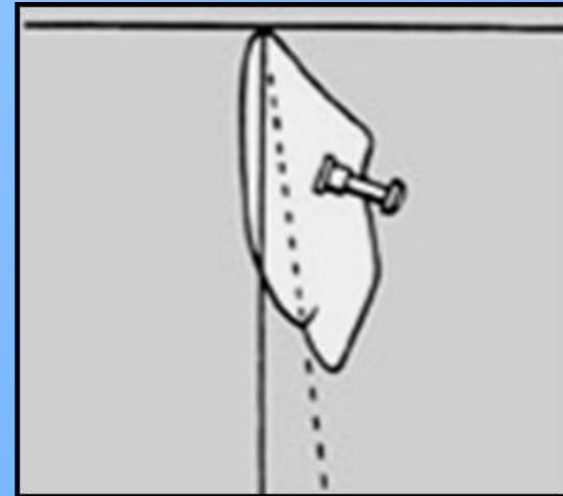
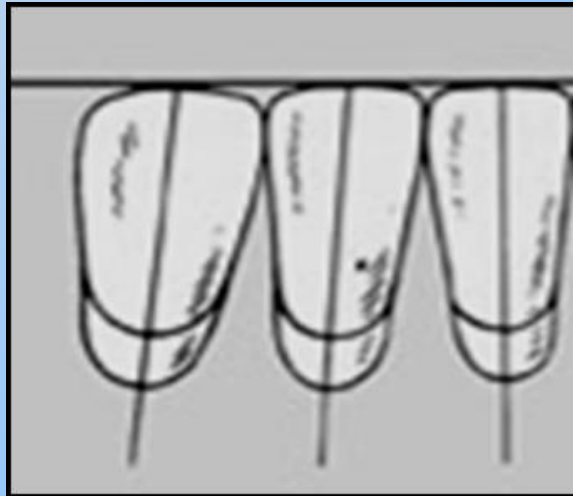
In denture fabrication the mandibular incisors should **not touch** the maxillary incisors in centric relation.

The incisal guide angle should be kept **as low as** possible to allow free movement of the teeth in eccentric jaw movements without compromising denture stability.



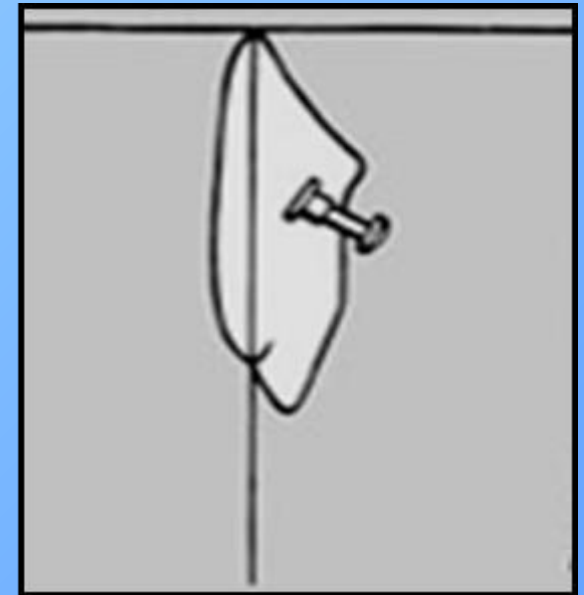
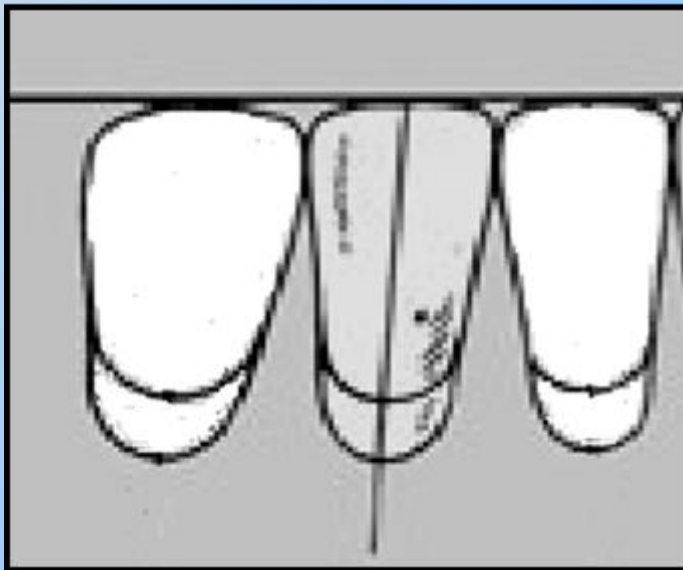
a. Mandibular central incisors

1. The long axis of the mandibular central incisor should be set perpendicular to the occlusal plane.
2. Set the mandibular central incisors so that the maxillary incisors cover them (2-4 mm horizontally and vertically).
3. The contact point of mandibular incisors should coincide with the midline of the maxillary teeth.
4. In horizontal view the distal edge rotated towards lingually to have the arch curvature.



b. Mandibular lateral incisors

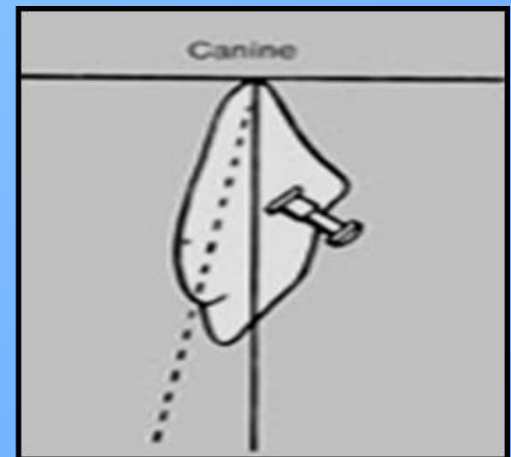
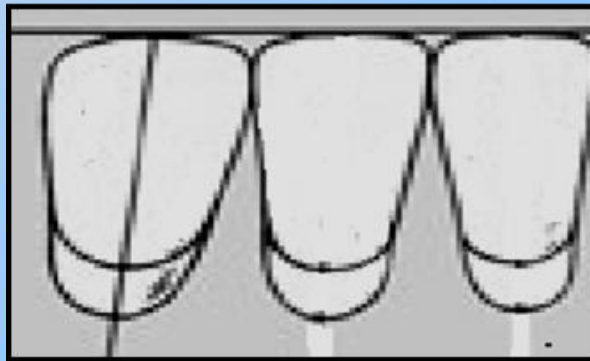
1. The long axis of the mandibular lateral incisor should be slightly inclined distally at the cervical portion of the tooth.
2. The occlusal height should be the same at the central incisors



c. Mandibular canines

The long axis of the mandibular canine is nearly perpendicular to the occlusal plane with a slight distal inclination.

2-The tip of the canine should be at the same occlusal height as the mandibular central and lateral incisors.

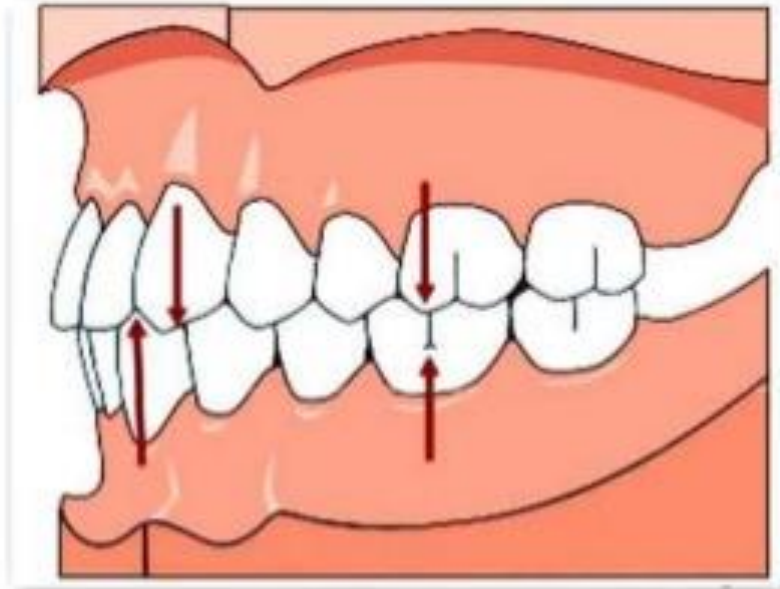


I-Key of occlusion:

It denotes the relationship of upper and lower teeth during function.

1- Canine relationship:

the mesial incline of the upper canine aligns with the distal incline of lower canine



The anterior teeth are set so as to follow the **arch form** of the patient's residual ridges.

The incisal edges of the anterior teeth should be set to correspond to the shape of the arch.

A square arrangement is indicated for a square-shaped maxillary residual ridge, a tapering arrangement for a tapering ridge form, and an ovoid arrangement for an ovoid arch.







The lower anterior teeth



Arrangement of posterior teeth

Principles of posterior teeth arrangement

- 1. General position of teeth.**
- 2. Buccopalatal relation.**
- 3. Relation to clinical midline.**
- 4. Relation to occlusal plane.**

Standardized parameters

1. Compensating Curves.

a. Curve of Wilson' as transversal compensating curve.

b. Curve of Spee' as sagittal compensating curve.

2. Optimum intercuspitation of the antagonists

Curve of Wilson

Transversal compensating curve.

It runs frontally (transversally), touching the cusp tips of the posterior teeth.

In the lower arch, it is produced by an even inclination of the right and left molars towards the lingual, corresponding to an inclination towards the buccal in the maxilla.

When setting-up complete dentures, the teeth should be positioned along this curve.



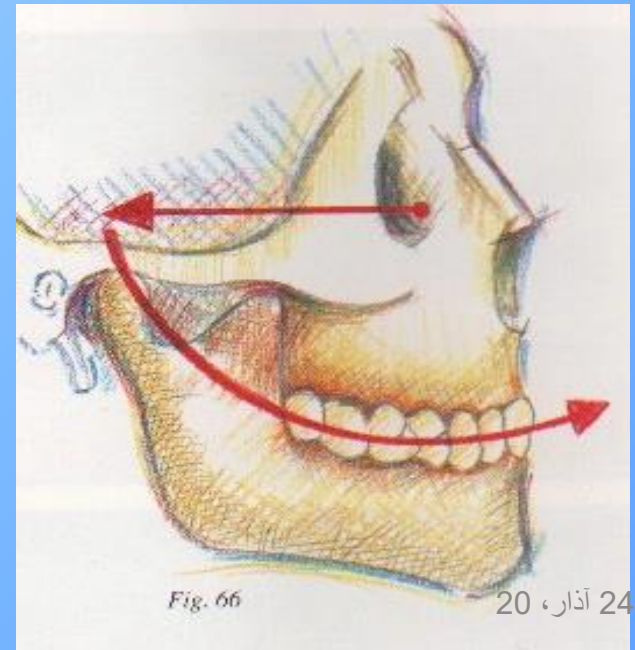
Curve of Spee

Sagittal compensating curve.

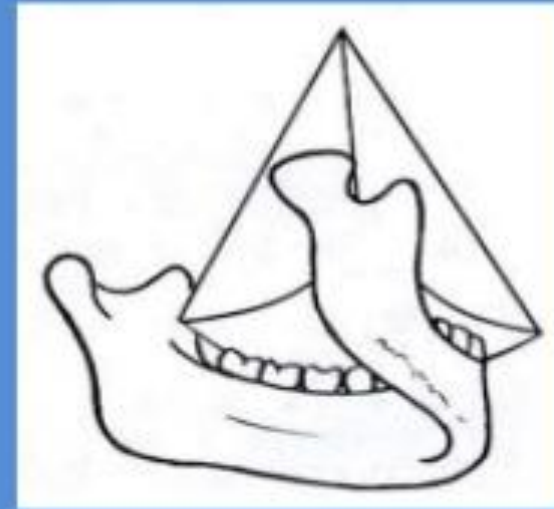
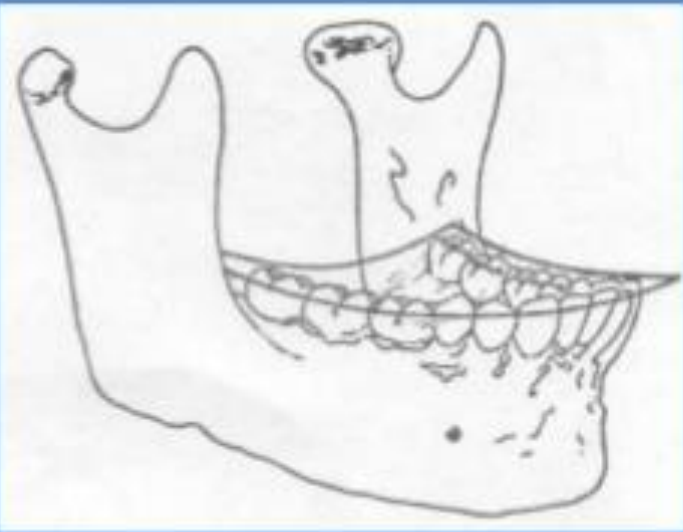
Its bow-shaped line of occlusion in dentition.

Spee described it as the "shifting path" of the mandible.

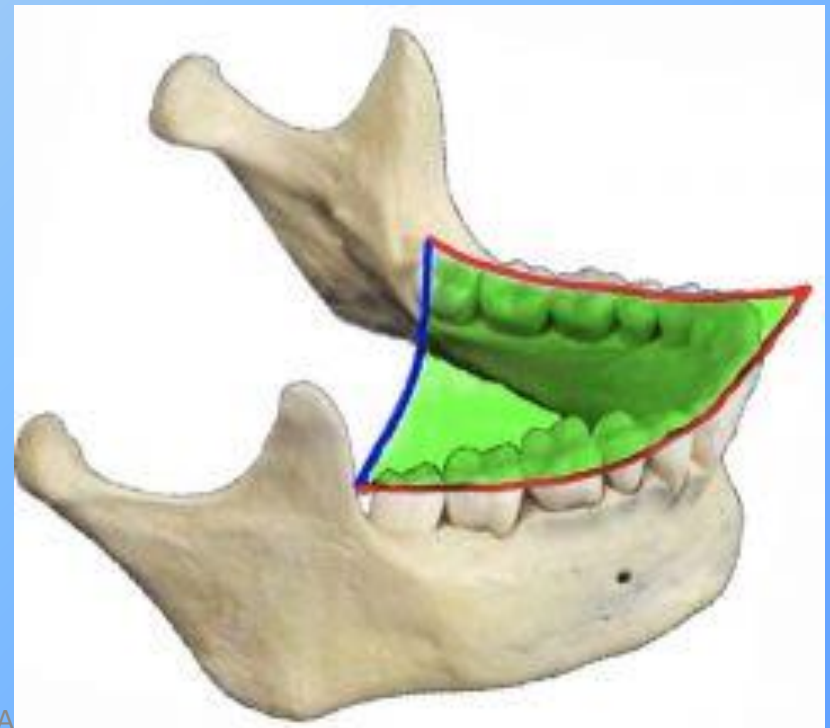
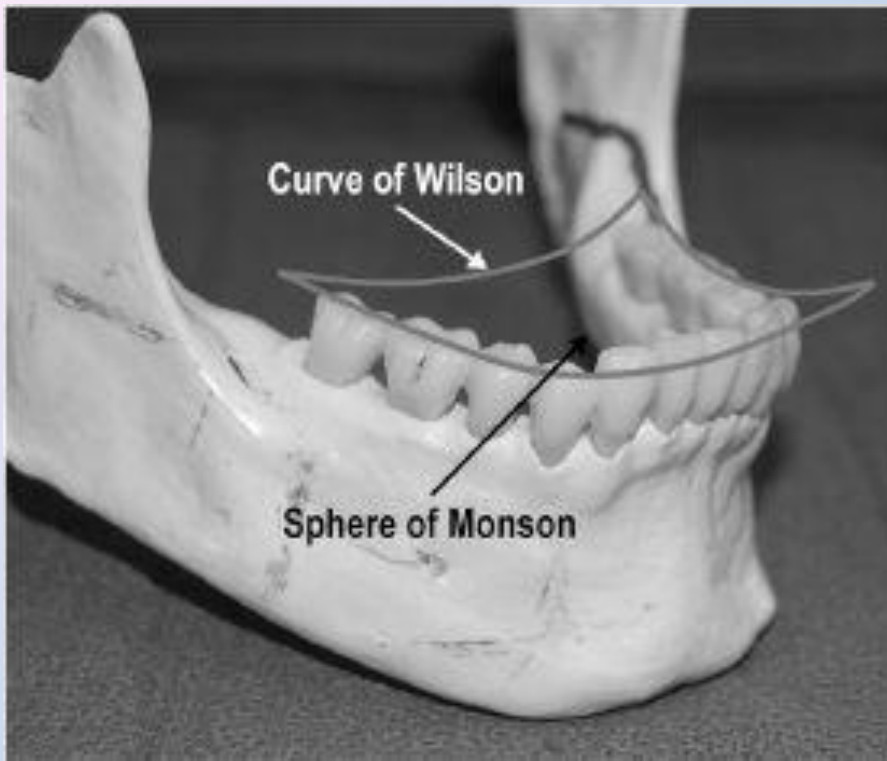
The segment of the circle drawn has its center in the orbital cavity.



Curve of Monson

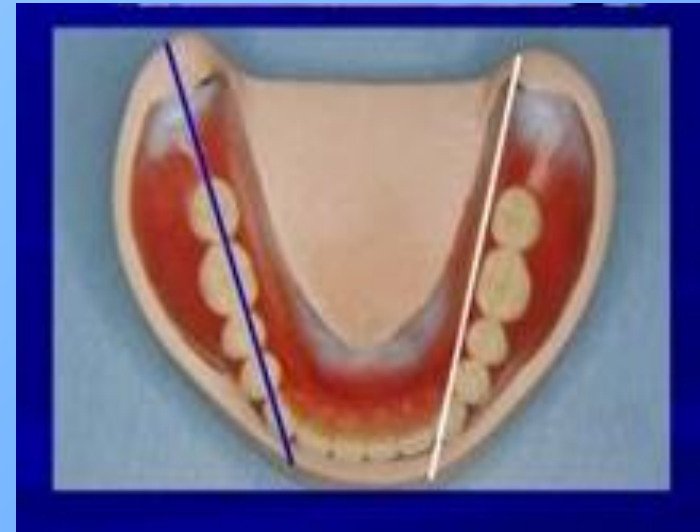
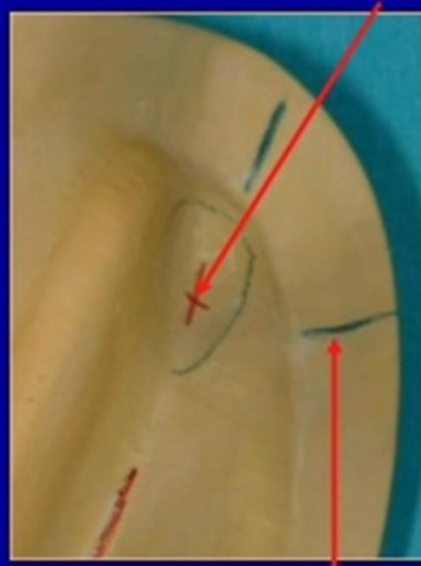
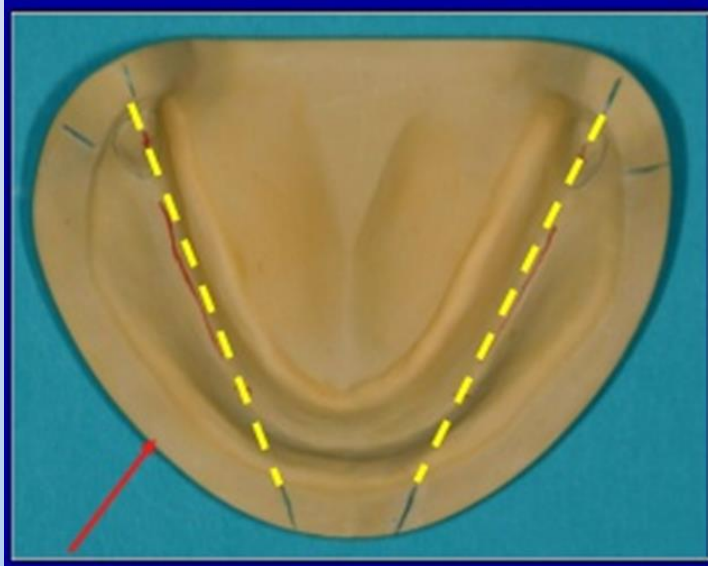


- **Combination** of curve of **Spee** and the curve of **Wilson**.
- **coronal** and **sagittal** planes.
- **concave** for the **mandibular** arch and **convex** for the **maxillary** arch.
- in **centric occlusion** form a segment of a **sphere of 4 inches** radius with the center of the sphere at the **glabella**

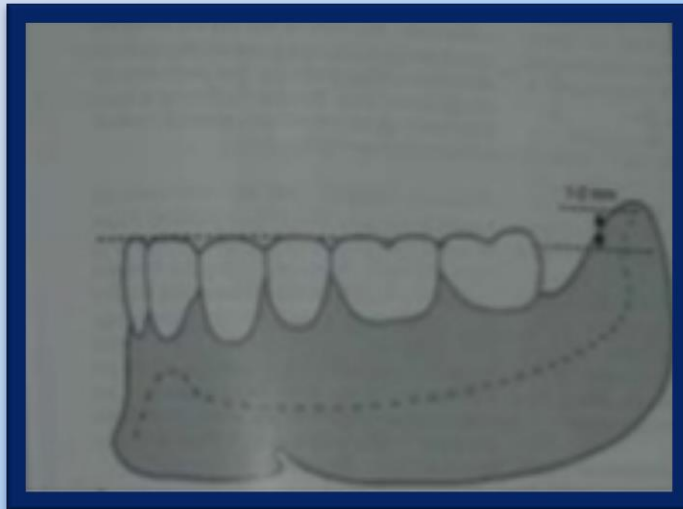


The guide lines used in arrangement of posterior teeth:

1. The line of the crest of lower residual ridge. Which extend between the middle of retromolar pad, and tip of lower canine, the central grooves of the lower posterior teeth should coincide with this line.



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



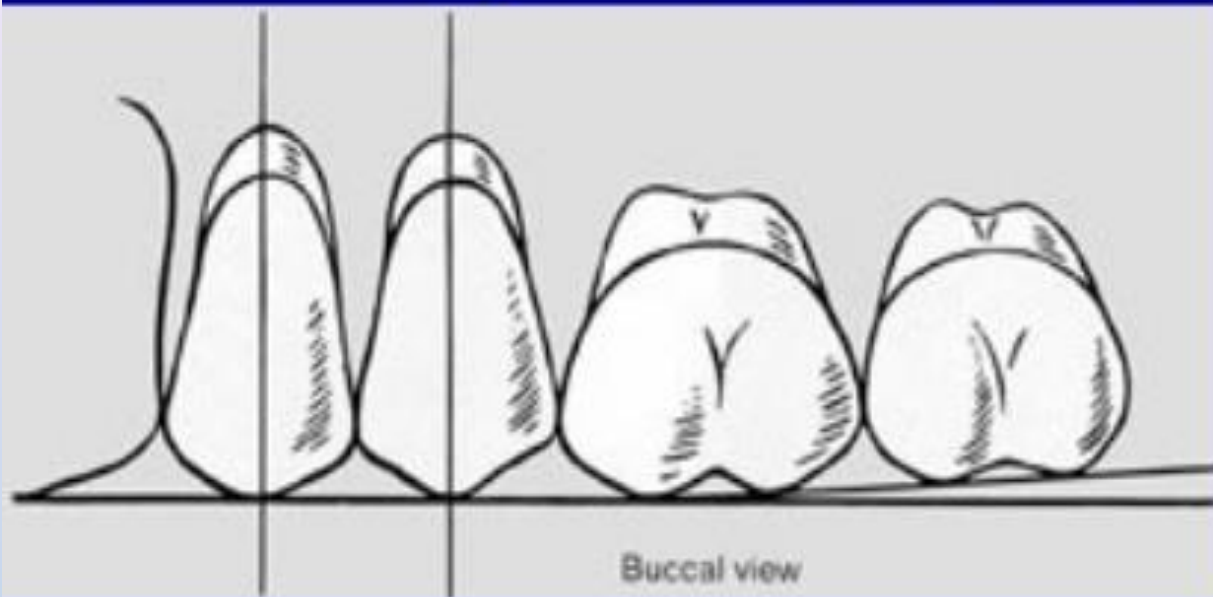
1. Arrangement of maxillary posterior teeth:-

a. Maxillary premolars:

- 1. Premolars are set vertically to occlusal plane.**
- 2. Facial cusp of maxillary 1st premolar touch the occlusal plane while the lingual cusp is raised from occlusal plane approximately 1\2 mm**
- 3. Facial and lingual cusp of maxillary 2nd premolar touch the occlusal plane.**
- 4. Lingual cusp should be over the crest of the ridge**

MAXILLARY POSTERIOR TEETH

Maxillary First and Second Premolar



First premolar

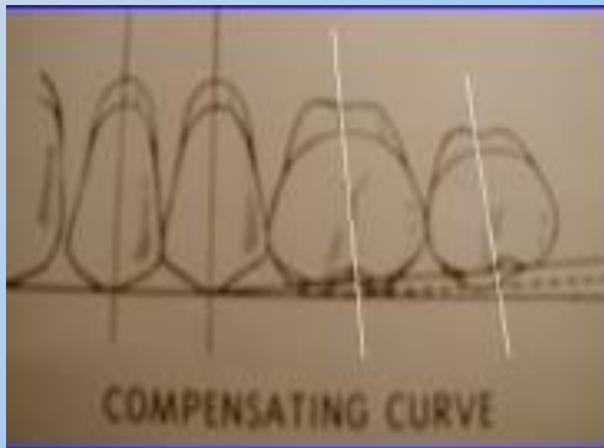


Second premolar



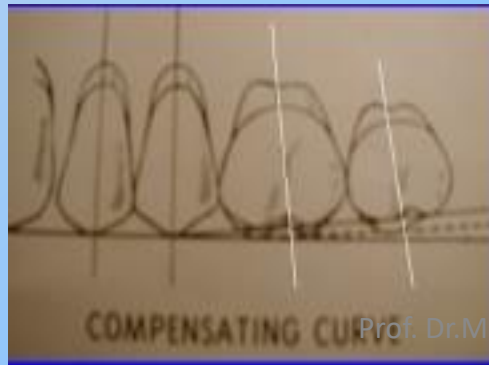
b. Maxillary molars:

1. The inclination of maxillary molars are mesially and slightly lingually to create a 6 degree upward curve.
2. Mesiolingual cusp of maxillary 1st molar should touch the occlusal plane and the lingual cusps are over the crest of the mandibular ridge
3. Maxillary 2nd molar are set with no cusp touches the occlusal plane. All the lingual cusps are over the crest of the mandibular ridge



b. Maxillary molars:

5. Facial cusps of maxillary teeth form a gentle curve, while the lingual cusps form a similar curve about 1\2 mm below the facial cusps .
6. Use a template to check the buccal alignment of canine, premolars and mesial buccal cusp of maxillary 1st molar should touch the template, while the distobuccal cusp not touch.
7. To check the buccal alignment of maxillary posterior teeth, all four cusps of maxillary molars touch the template while the premolar do not touch the template.



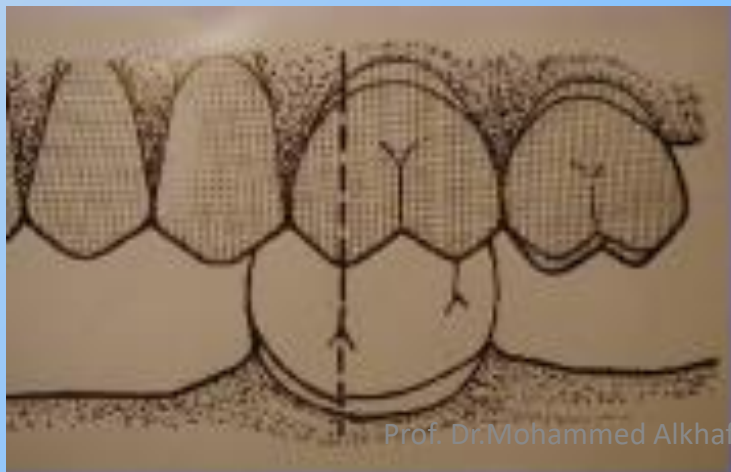
Maxillary Second Molar



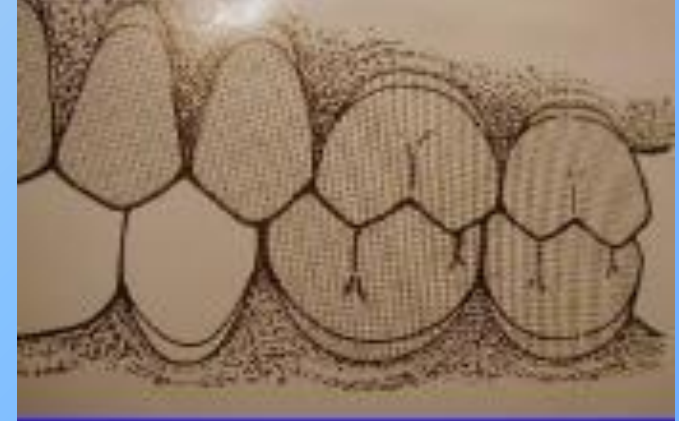
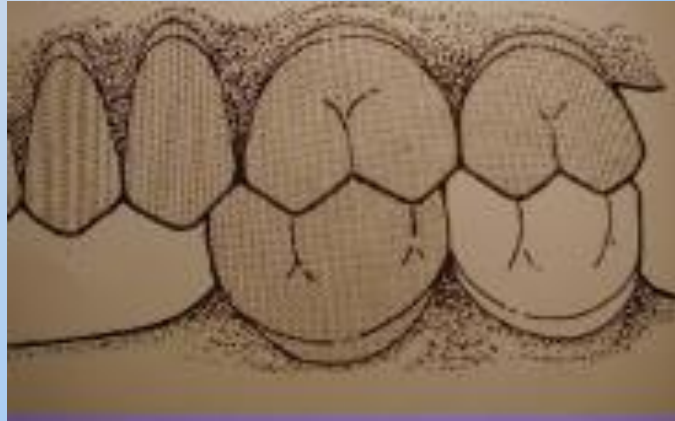
2. Arrangement of mandibular posterior teeth

a. Mandibular molars

1. The Mandibular 1st molar is first set into centric occlusion.
2. Mesio-buccal cusp of maxillary 1st molar fit in to the buccal groove of mandibular first molar.
3. The mesiolingual cusp of 1st maxillary molar fit into the central fossa of the Mandibular first molar.



4. Set the mandibular 2nd molar, The mesio-buccal cusp of maxillary 2nd molar fit in to the buccal groove of mandibular 2nd molar.
5. Then set mandibular 2nd premolar, its cusp tip should be positioned in the embrasure between maxillary 1st and 2nd premolars.
6. The last tooth are mandibular 1st premolar which should be position in the embrasure between maxillary canine and maxillary 1st premolar.



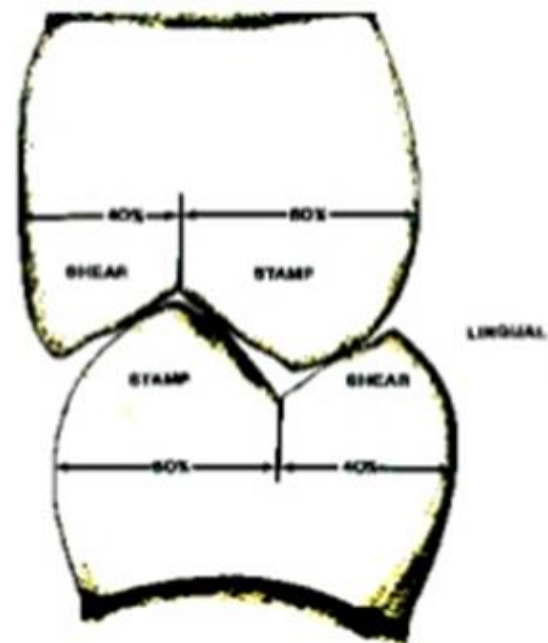
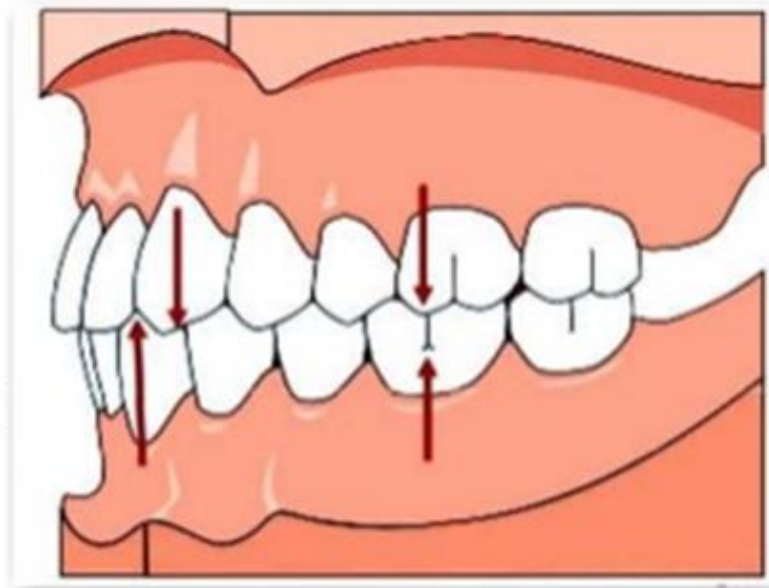
7. mandibular premolars follow the curvature of the canine.

8. mandibular posterior teeth are set on or slightly lingual to the crest of the ridge.



2- Molar relationship:

- **The mesiobuccal cusp of maxillary first molar should align with the mesiobuccal groove of mandibular first molar.**
- **The mesiolingual cusp tip of mandibular first molar should fit into the central fossa of the upper first molar.**













Completed teeth arrangement



Common errors in arrangement of teeth.

1. Anterior teeth positioned incorrectly (not following the contour of the lower lip) .When making f and v sound the anterior teeth will contact the mucosal part of the lower lip.



Common errors in arrangement of teeth.

2. Setting mandibular anterior teeth too forward in order to meet maxillary teeth.
3. Failure to make the canine as the turning point of the arch.
4. Setting mandibular 1st premolar to the buccal side of the canines.
5. Failure to establish the occlusal plane at the proper level and inclination.
6. Establishing the occlusal plane by an arbitrary line on the face.
7. Lack of rotation of anterior teeth to give a narrower effect.
8. Setting the mandibular posterior teeth too far to the lingual side in the 2nd molar region which cause tongue interference and mandibular denture displacement.

Conclusion

- Selection and Arrangement of teeth is an art based upon biomechanical factors, governing the ultimate success of dentures.



Thanks