Selection of posterior tooth
Shade (color)

- Shade of posterior teeth should be harmonized to the shade of anterior teeth.
- **Maxillary first premolars** are sometimes used for esthetic more than function, so it's advisable to select premolar teeth with **lighter color** than the other posterior teeth, but not lighter than anterior teeth.
Bucco-lingual width.

- The **bucco-lingual** width of posterior teeth should be slightly **narrower** than **natural teeth** to decrease occlusal surfaces which direct **less stress during function** to supporting tissue, and also enhance the development of the correct form of polished surfaces of the denture.
Mesio-distal width:

- The mesio-distal width of posterior teeth should be equal to the distance between canine line and anterior border of maxillary tuberosity for upper teeth.

- For lower teeth should be equal to distance between canine line and anterior border of retro molar pad area. (the width with in design limit)
The occluso-gingival height

The occluso-gingival height or length is controlled by the available inter-arch distance, and amount of bone resorption.

The length of the maxillary first premolar should be comparable to that of maxillary canine to have the proper esthetic effect.
Occlusal form

- Selecting the tooth to be used is based on the concept of occlusion to be developed, the philosophy of occlusion to be fulfilled, and the accomplishment approached.
Occlusal from

**Anatomic tooth**

- Selecting the tooth to be used is based on the concept of occlusion to be developed.
- An anatomic tooth is one that designed to simulate natural tooth form has cusps, grooves and inclined planes. The cuspal angle is 30, 33 degree or more.
**Modified or semianatomic tooth**: 

The cusp incline is less steep than the conventional anatomic tooth (like 20 degree or less) it can be classified as a modified of semianatomic tooth. It can be considered basically anatomic and will articulate in three dimensions.
Use for patients with:

- Esthetic concerns
- Coordinated jaw movements
- When balanced occlusion is planned
- normal ridge relations and well developed ridges.
Advantages of anatomic teeth

1. Aesthetically acceptable
2. More efficient thereby reducing the forces
3. They can be arranged in balance
Occlusal from (anatomic teeth)

Disadvantages of anatomic teeth

- More horizontal forces during function
- **Fast bone resorption**
- Cannot be used in severely resorbed cases
Occlusal from (non-anatomic teeth)

- The non-anatomic form (cuspless or flat teeth):
- Has flat occlusal surface with shallow grooves and no cusps.
- Selection of a suitable form of posterior teeth depends on individual requirements.
Occlusal from (non-anatomic teeth)

- Non anatomic form; however, may be used in the following condition:
  a- **cross-bite ridge relation**. In this condition, the lower posterior teeth are in a buccal relation to the upper posteriors which is the reverse of that in normal ridge relation.
  
  **b-cases suffering from T.M.J. disturbances.**
Advantages of non-anatomic teeth

- Comfortable
- Greater range of motion (in parafunctional jaw habits)
- Less horizontal and or torqueing forces
- Can be used in severely resorbed ridges and patients with poor neuro muscular coordination
Disadvantages of non anatomic teeth

- They look unnatural
- Less cutting efficiency
Material

- Acrylic resin
- Porcelain
- Combination between acrylic resin and metal
- Cross-linked acrylic
Acrylic teeth

Acrylic teeth unite with the denture base resin by chemical union they can be used in cases having

A. insufficient inter-arch distance.

B-in flat and flabby ridge they are less harmful to the underlying tissues because of their great resilience.
Cross linked acrylic teeth:
High wear resistance than conventional acrylic
Porcelain teeth unite to the denture base by mechanical means, anterior porcelain teeth have pins in their lingual surfaces while posterior teeth have holes in their under surfaces.

Porcelain teeth are preferred particularly for young person because they look more vital.
<table>
<thead>
<tr>
<th>PROPERTY</th>
<th>ACRYLIC</th>
<th>PORCELAIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Composition</td>
<td>Polymethyl methacrylate</td>
<td>Porcelain material</td>
</tr>
<tr>
<td>Weight (specific gravity)</td>
<td>Lighter</td>
<td>Heavier</td>
</tr>
<tr>
<td>Attaching to the denture base</td>
<td>Chemical bond</td>
<td>Mechanical</td>
</tr>
<tr>
<td>Sound</td>
<td>Natural</td>
<td>Clicking (noisy)</td>
</tr>
<tr>
<td>Color stability</td>
<td>May change with time</td>
<td>More stable</td>
</tr>
<tr>
<td>Abrasion Resistance</td>
<td>Low</td>
<td>High</td>
</tr>
</tbody>
</table>
Acrylic teeth with amalgam inserts

- to reduce occlusal wear when opposing porcelain teeth
- when constructing a complete denture with a functionally generated path concept.
Cast gold occlusal

- **Indication**
- Opposing by natural teeth
- Opposing by occlusal surface
- Opposing porcelain teeth
Arrangement of teeth in complete denture
Guides to position of posterior teeth
Retromolar pad

- The maximum extension posteriorly of any artificial tooth is anterior border of Retromolar pad.
Maxillary Tuberosity

- Teeth should not be set on the Tuberosity as it can lead to lever imbalance and might lead to cheek bite in posterior region.

- When space permits, 4 maxillary posterior teeth can be placed opposing 3 mandibular posterior teeth, to provide support to cheeks.
Relationship with tongue

- Occlusal plane should be located in relation to lateral surface of tongue near demarcation zone between dorsal keratinized mucosa & ventral non-keratinized mucosa.
curves

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**:

It is an anatomical curvature of the occlusal alignment of teeth, beginning at the tip of mandibular canine and following the buccal cusps of the natural premolars and molars, continuing to the anterior border of the ramus of mandible.

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.
Compensating curve: It is the anteroposterior, and lateral curvature in the alignment of the occluding surfaces and incisal edges of artificial teeth, which is used to develop balanced occlusion. (It compensates the opening that occurs during forward and lateral movement of the mandible)
Buccal Limit

- Teeth should not be set too far off the ridge.
- Placing too far Buccally can cause:
  - Cheek Biting
  - Esthetic problems due to obliteration of Buccal corridor.
  - Denture instability due to lever imbalance & muscle function.
Buccal Corridor

- Space between buccal surface of posterior teeth & inner surface of cheeks
- Excessive buccal corridor results when posterior teeth are set too far ligually. Resulting dark space appears excessive & unaesthetic.
- Inadequate buccal corridor occurs when posterior teeth are placed too far buccally, causing obliteration of buccal corridor.
Individual orientation of maxillary teeth
Arrangement of maxillary posterior teeth
Setting the mandibular teeth first

- The lower posterior teeth are placed buccolingually along a line extending from the tip of the canine to the middle of the retromolar pad. This line should pass through the central fossae of the premolars and molars.
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\(\frac{1}{2}\) mm**

3. **Facial and lingual cusp** of maxillary **2nd premolar** touch the occlusal plane.

4. The facial cusp of maxillary **1st premolar** should be seat into the embrasure between the mandibular **1st and 2nd premolars**.

5. Lingual cusp should be over the crest of the ridge.
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. The mesiobuccal cusp of upper 1st molar should rest in the buccal groove of the lower 1st molar, and the mesiolingual cusp should seat into the central fossa of lower 1st molar.
b. Maxillary molars:

4. Maxillary 2nd molar are set with no cusp touches the occlusal plane. All the lingual cusps are over the crest of the mandibular ridge.

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.
Occlusal view of arrangement of maxillary posterior teeth

The labial ridge of the canine, the buccal ridge of the first and second premolar, and mesiobuccal ridge of the first molar are lined in one plane.

Buccal ridges of molar are angled slightly inward from a line extending along the facial surface of canine and two premolars.
Arrangement of mandibular posterior teeth

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

- Set the mandibular 2nd molar, the mesio-buccal cusp of maxillary 2nd molar fit in to the buccal groove of mandibular 2nd molar.
- Then set mandibular 2nd premolar, its cusp tip should be positioned in the embrasure between maxillary 1st and 2nd premolars.
- Mandibular premolars follow the curvature of the canine.
- Mandibular posterior teeth are set on or slightly lingual to the crest of the ridge.
Teeth arrangement in retrognathic mandible (skeletal Class II)

- Problem:
  - arrangement of anterior teeth more lingually than their normal position that lead to loss of upper lip tension and the youthful appearance may disappear.
  
  Difficulty to obtain correct cuspid relations due to a smaller cuspid width of the lower arch when compared to the upper arch.
Solution:

To improve the appearance without loss of denture retention the upper anterior teeth are arranged at higher level than the natural teeth without altering their anteroposterior position.

In severe cases leave out a lower central or lateral tooth to overlap lower teeth to obtain the correct cuspid relationships.
Teeth arrangement in retrognathic mandible (skeletal Class II)

- Setting posterior teeth: will be in cross bite
- Second premolar set in an end to end manner buccally
- The buccal cusps of the upper teeth occlude with the fossae of the lower teeth
- The lingual cusp of the lower teeth are set up higher than buccal cusps
Teeth arrangement in prosthodontic mandible (skeletal Class III)

- problem

where the mandible is now in advance of the maxillae. Characteristically the incisor relations in the natural teeth are either in edge-to-edge relationship.

Solution:

normal cusped teeth can be set with a reverse overjet and the cuspal inclines adjusted to allow for excursive movements.
set upside down: the first quadrant teeth are swapped with the third quadrant and the second with the fourth. The only compromise this entails is in the appearance of the premolars – lower premolars do not look as pleasing as their upper counterparts when placed in that position.

use cuspless teeth, and rely only on the compensating curves to achieve bilateral and antero-posterior balance.
many Thanks!