Selection of artificial teeth

Teeth selection is very important as the selection of the appropriate shade, size, and form of the artificial teeth determines the esthetic and function of the denture.

Objectives in teeth selection

1. The teeth should be in harmony with the surrounding tissues.
2. They should maintain the vertical dimension.
3. They should be efficient for mastication.
4. **Anterior teeth** are selected predominantly based on ***esthetic***, whereas the **posterior teeth** should be selected based on the ***function***.

Selection of artificial teeth includes:

1. Selection of anterior teeth.
2. Selection of posterior teeth.

Selection of anterior teeth

Anterior teeth are primarily selected to satisfy esthetic requirements, so the dentist's professional obligation is to give the patient adequate information, guidance, and opportunity to choose their teeth. Anterior teeth selection is the area of prosthodontic care in which the patient should be given a primary responsibility to determine the **esthetic outcome**.

Records of shade, size, and form of teeth could be obtained from pre-extraction records which include

1. Preserved extracted teeth.
2. Previous diagnostic casts with natural teeth.
3. Pre-extraction radiograph.
4. Pre-extraction photograph
5. Observation of teeth of close relatives.
6. The old denture might help in teeth selection by asking the patient if he/she (likes or dislikes) the teeth then decide to change or not.

Factors to be considered when pre-extraction records are not available

1. Shade **2.Size** **3.Form**

Shade

It is the degree of darkness of the color. There are two basic shades, the yellow and grey, and the other shades vary in between.

Many patients will ask for very light shade, tell them that **the proper shade gives more natural appearance**, never force the patient to accept a shade that they do not want, they will never be satisfied with the denture.

The factors of shade selection

1. Age

The ***younger*** the patient, the ***lighter*** the shade is preferred. The shade of natural teeth will be ***darker*** with ***age because of***

a. Deposition of secondary dentin.
b. Consequent reduction in size of the pulp chamber.
c. Wearing a way of enamel.
d. External staining of the exposed dentin from oral fluids, foods, or tobacco.

2. Gender

The gender may affect the shade; it seems that ***females*** are given ***lighter and brighter*** teeth than males.

3. Complexion

The color of the face should harmonize the shade of the teeth. **Lighter teeth** are suitable for ***lighter skin***, while **darker teeth** are suitable for ***darker skin***. Although people with dark skin seemed to have very light teeth, this is because of contrast in the skin and teeth color.

4. Patient preference

Show the patient a complete shade guide and select the two tabs that are the lightest and the darkest, hold them against the patient lip and ask them to point to the one that they prefer this method called **(method of pair comparison)**. More than two or three shades should be selected and comparison between them would help in final right selection.



Size

To select the size of anterior teeth, we have to consider the following:

1. Length

The length of anterior teeth is controlled by:

A. Length of upper lip

- In ***short lip*** more than **2 mm** seen from the maxillary central incisors.
- In ***medium lip*** length **1.5-2 mm** seen from the maxillary central incisors.
- In ***long lip*** **nothing** can be seen from the maxillary central incisors.

B. Level of lower lip

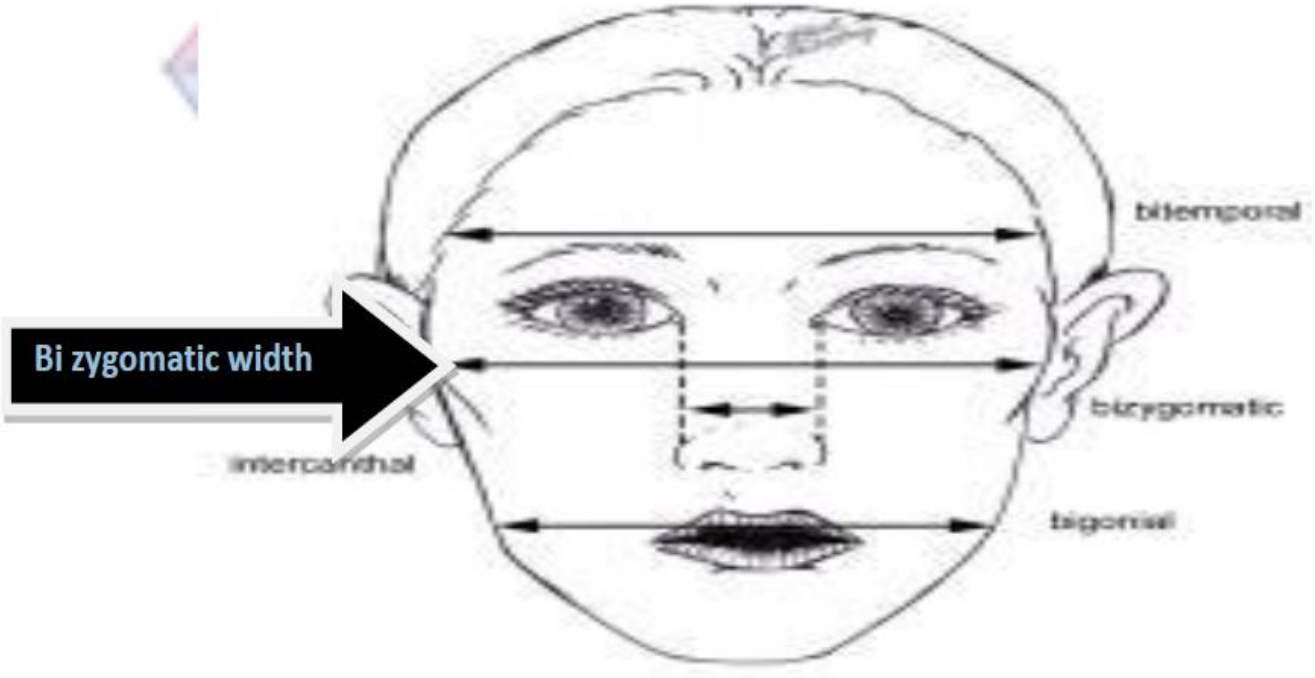
Length of mandibular anterior teeth should be **with the level of lower lip**

C. Inter- ridge distance

When the space is available, it is more esthetically acceptable to use a **tooth long enough** to eliminate the display of the denture base (teeth are more attractive in appearance than denture base materials).

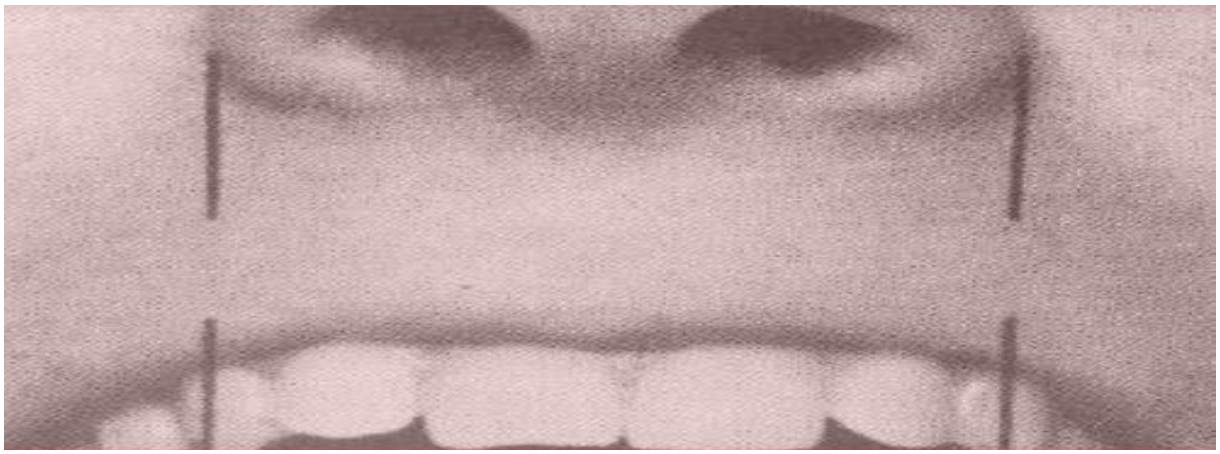
2. Width

- The width from the tip of left canine to the tip of right canine is almost **equal to the width of the nose** (***interalar width***) when measured by the ***caliper***. **(Width of six anterior teeth = interalar width + 7 mm)**
- The **width of maxillary central incisor equals** approximately to **1/16** of bizygomaticwidth, and the **width of maxillary anterior teeth** equals to **1/3.3** of bizygomatic width.
- Width of the anterior teeth can be measured on maxillary occlusal rim depending on the intraoral anatomical landmarks like: (buccal frenum, corner of the mouth, and canine eminence).



3. Patient preference

Use the method of pair comparison to assist a patient to decide what size of tooth they prefer. Set two different sizes of teeth on a piece of wax rope, place them under the upper lip, and find out which one the patient prefers. Two or three presentations may have to be made to reach a suitable decision.



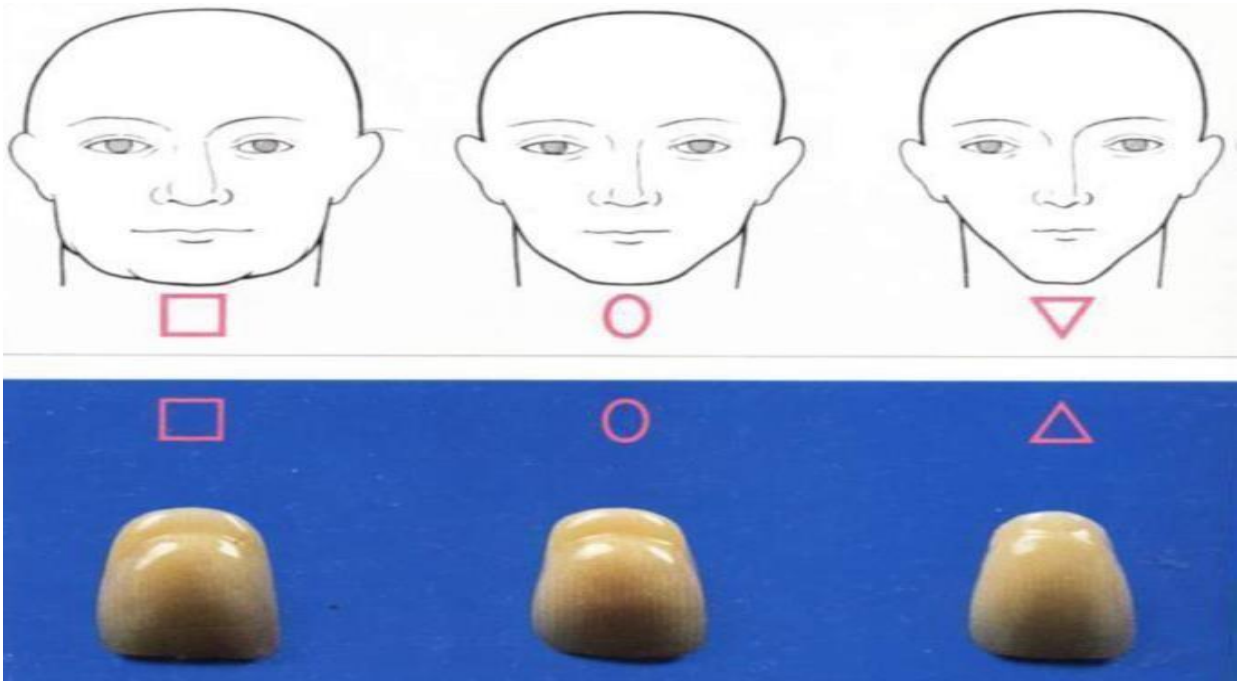
Form

The form or outline of anterior teeth depends on the following factors:

1. Facial form

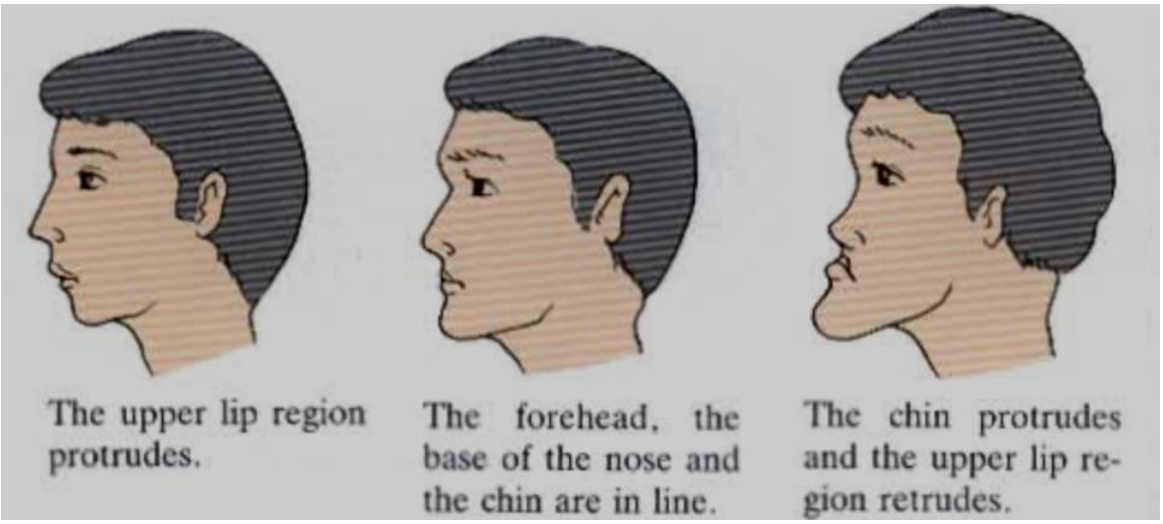
✓ According to frontal outline

The face could be classified into: **square, ovoid, and taper**. The maxillary central incisor form should be in harmony with patient face.



✓ According to profile

The face could be classified into: **convex, concave**, and **straight**. The labial surface of maxillary central incisor viewed from mesial aspect should be in harmony with profile of face.



2. Gender

✓ Masculine(Male) form: is associated with ***square***, ***cuboidal***, and ***angular*** form.

✓ Feminine(Female) form: is associated with ***more rounded***, ***ovoid***, and ***tapering*** features.

3. Age

In ***old patients*** the teeth tend to have ***square form*** due to attrition, more round features disappear and line angle quite seen in those patients.

4. Personality

It seems reasonable that a large vigorous type of persons have teeth of more square, large teeth with prominent markings, different from those of delicate appearing persons.

5. Patient preference

Allow the patient to select between the same size teeth but different forms. Set two different forms of teeth on the right and left sides of a piece of wax rope, and ask the patients which they prefer.

Selection of posterior teeth

Posterior teeth are selected for:

1. Shade 2.Size 3.Occlusal form

Shade

Shade of posterior teeth should be harmonized to the shade on anterior teeth, maxillary first premolars are sometimes used for esthetic more than function, so it is advisable to select premolar teeth with lighter color than the other posterior teeth, but not lighter than anterior teeth. Generally the shades of **posterior teeth** are slightly ***darker*** than anterior teeth.

Size

- **Occlusogingival height**

It is determined by the available inter-arch distance. The occlusal plane should be located at the midpoint of the interocclusal distance. The length of the maxillary first premolar should be comparable to that of maxillary canine to have the proper esthetic effect. The height of posterior teeth usually **divided into *long*, *medium*, and *short*.** ***Long posterior teeth*** are generally ***more esthetic*** in appearance than are shorter teeth.

- **Buccolingual width**

The buccolingual width of posterior teeth should be slightly narrower than natural teeth, because the **broader occlusal surfaces will direct more stress** during function to supporting tissue, leading to **increase in the rate of ridge resorption**. Broader teeth **encroach** into the tongue space **leading to instability of the denture**. Also, the teeth should not encroach into the buccal space to avoid cheek biting.

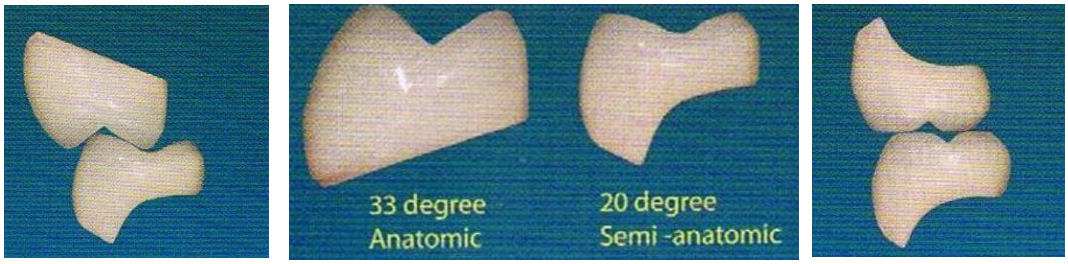
- **Mesiolingual width**

The combined mesiodistal lengths of all **maxillary posterior teeth** in that side of the arch should be equal to the distance between **canine line, and anterior border of maxillary tuberosity**. For mandibular posterior teeth, the mesiodistal lengths should bee qual to distance between the **canine line and anterior border of retromolar pad**.

Occlusal form

There are two forms

A. **Cusp form** (**anatomical teeth**) They have anatomical teeth have cusp angles 33;20; 5;
B. **Non cusp form** (**cuspless form**) They also called ***monoplane***, ***flat plane***, or ***zerodegree***.



Advantages of cusp form teeth

1. More efficient in chewing.

2. They can be arranged in balanced occlusion in eccentric position.

3. The cusp fossa relationship between the maxillary and mandibular posterior teeth forms a definite point for return to centric occlusion.

4. More acceptable esthetically.

5. More compatible with surrounding oral environment.

Advantages of non-cusp form teeth

1. Offer less resistance in non-masticatory movement like (bruxism); therefore less damaging to the supporting structure.

2. More comfortable.

3. Offer less resistance to lateral forces therefore, they are indicated in excessively resorbed ridges.

4. Allow greater range of movement which is necessary in patient with malrelated jaws.

5. They can be used with less damaging effect than cusp form teeth in patient with uncoordinated neuromuscular control which jaw relation records are not repeatable.