**Lec. 10 Selection of artificial teeth for Dr.Makarem Almomen**

**Completely edentulous patients**

Definition:

The selection of a tooth or teeth of a shape, size and color to harmonize with the individual characteristics of a patient.

Classification of patients:

1. Patients with remaining natural teeth
2. Patients who have old denture
3. Patients without remaining natural teeth and without old denture

Objectives:

1. Esthetics
2. Masticatory function
3. Correction of speech defects
4. Preservation of the remaining tissue and muscle tone

Anterior teeth selection:

Guides for the anterior teeth selection:

1. Pre-extraction guides

* Study cast: most reliable guide in selecting the size, shape and position of the natural teeth
* Photographs: most recent photographs with patient smiling. Facial photographs is usually helpful for determining the anterior teeth placement, arch form, and lip support
* Radiographs
* Previous partial dentures

1. Post extraction guides

* Extracted teeth: give clue about the size, shape and mould of the artificial teeth but not the color
* Old dentures of the patient: asking patients in the initial interview, what he/she likes or dislikes about his/ her appearance.

when pre and post extraction records are not available or not useful in selection of anterior teeth then the following methods can be used:

Selection of the anterior teeth:

1. Size of anterior teeth
2. Form of anterior teeth
3. Shade of anterior teeth
4. size of anterior teeth:
5. Width of anterior teeth
6. Length of anterior teeth
7. Thickness of anterior teeth
8. Width of the anterior teeth

* Bizygomatic width:

width of maxillary central incisor= bizygomatic width of the face/16

width of six anterior teeth=bizygomatic width of the face/3.3

* Cranial circumference

Total width of maxillary anteriors= cranial circumference/10

* Size of the maxillary arch: The size of the teeth should be compatible with the size of the arch.
* Width of the nose:

vertical parallel lines extending from the lateral surfaces of the ala of the nose onto the labial surface of properly contoured upper occlusal rim will give indication of the position of the cusp tips of the maxillary canine teeth.

* Canine eminence:

If well-defined, the distance between lines drawn on the master cast of the upper jaw at the distal aspect of the eminence may give inter canine distance.

* Width of upper anterior teeth= width of the nose +6mm
* Corner of the mouth: the distance measured between the two commissures (angles of the mouth) will represent the width of the upper six anteriors from the distal surface of the canine to the distal surface of the other canine.

1. Length of anterior teeth

* The vertical distance between the ridges: the length of the teeth is determined by the available space between alveolar ridges, it is more esthetically acceptable to use a long tooth to eliminate the display of the denture base.
* The lips: the labial surface of the maxillary anterior teeth support the upper lip and the amount of the central incisors visible below the lip is about 2-3 mm in young people and less about 1- 2 mm in elderly people. That extension will vary in relation to the fullness of the lips.
* When the teeth are in occlusion and the lips are together, the labial incisal third of the maxillary anterior teeth support the superior border of the lower lip.
* High lip line (when the patient smile): determine the cervical third of anterior teeth.
* Low lip line (when the patient relax): determine the incisal third of anterior teeth.

1. Thickness of the anterior teeth: it has important role on phonetics. In general, thicker teeth have preference in selection (ease with setting) and better esthetics.

Note: the width of most natural maxillary central incisors is over 8.5mm and any tooth less than 8mm is rare. The combined width of the maxillary six anterior teeth is normally 46mm or more and anything less 45mm is very unusual.

1. Form of the anterior teeth:

The outline form of the anterior teeth should be harmonize with the shape of the patient’s face.

* The form and contour of the face: They classified the human face into three basic types: square, tapering and ovoid may have combination of two or more of these basic forms.
* Sex: curved features= female

Square features=male

* Age:

Older age= outline more square. The labial surface seem flatter and the outline form appears more square

1. Shade of anterior teeth:

* Patient age: with age, darker, while lighter teeth are suitable for young patients.
* Patient complexion: light teeth for fair skin, blue eyes, dark teeth usually for dark skin and black eyes.

**The following facts are true for nearly all natural teeth:**

1. The neck of the tooth has a more pronounced color than the incisal edge
2. The incisal edge if not worn is more translucent than the body of the tooth and is usually of a bluish shade (composed entirely of enamel)
3. The upper central incisor are lightest teeth in the mouth followed by the laterals and canines. Posterior teeth are usually uniform in color.
4. Teeth darken slightly with age.

**Aid for selecting a shade**:

Shade guides- the shade guide tooth should be moistened and selection made in the normal light:

1. Outside the mouth along the side of the nose
2. Under the lip with the incisal edge exposed
3. Under the lip with only the cervical end covered and the mouth open.

Posterior teeth selection

Posterior teeth are selected for color, buccolingual width, mesiodistal length, vertical height (occluso-gingival length) & occlusal form.

1-**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 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.

2-**buccolingual width**: the buccolingual width of posterior teeth should be slightly narrower than natural teeth to decrease occlusal surfaces which direct less stress during function to support tissue, & also enhance the development of the correct form of polished surfaces of the denture.

3-**mesiodistal length**: the mesiodistal length of posterior teeth should be equal to the distance between the distal of canine & maxillary tuberosity for upper teeth. For lower teeth should be equal to distance between the distal surface of canine & anterior border of retro molar pad area.

If the residual ridge anterior to retro molar pad area slopes upward, smaller teeth or even fewer in number must be used. Placing a tooth on an inclined plane should be avoided, otherwise dislodgment of denture occurs.

4-**occlusogingival height**: the occlusogingival height or length is controlled by the available inter-arch distance. The length of the maxillary first premolar should be comparable to that of maxillary canine to have the proper esthetic effect.

5-**occlusal form:** based on the occlusal form posterior teeth classified as:

a- anatomic teeth: are designed to simulate the natural tooth form. Anatomic teeth have cusp angle 33, 20 degrees.

b- non anatomic (cuspless) form teeth: also called monoplane or zero degree teeth. They were designed without cusps to allow for intercuspation anywhere along the occlusal plane anteroposteriorly.

Indication of anatomical teeth:

1. In well-formed ridges where good support and retention can be expected
2. Where balanced occlusion is planned
3. Patient with good neuromuscular control

**Advantages of anatomic teeth**:

1-more efficient in cutting food.

2-can be arranged in balance occlusion.

3-the cusp fossa relationship between upper & lower posterior teeth form definite point for return to centric occlusion.

4-more acceptable esthetically.

5-more compatible with surrounding oral environment (because of natural shape).

Indications of non-anatomic teeth:

1. In flat ridge cases to minimize the lateral destabilization forces
2. When balanced occlusion is not planned
3. In abnormal jaw relationships or when it is difficult to record centric relation as in patients with poor neuromuscular control.
4. Patients with cross bite tooth relations
5. Patients with habits such as bruxism

**Advantages of non-anatomic form teeth:**

1-offer less resistance in non-masticatory movement like bruxism, therefore less damaging to the supporting tissue.

2-more comfortable.

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

4-allow greater range for movement which is necessary in patients with mal-related jaw.

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