

PROSTHESIS

COMPLETE DENTURE



Lec 13

Selection of teeth

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Selection of teeth

> Aim of recording the jaw relation :

- 1) Proper lip contour to give proper lip support.
- 2) Proper placement of the occlusal plane (tooth position).
- 3) Correct vertical dimension of occlusion (nose to chin distance).
- 4) Placement of line on the occlusion rim to aid in the selection and arrangement of teeth (midline & canine line & lip line).
- 5) Recording of centric relation at the vertical dimension of occlusion .
- 6) Face-bow to transfer the relationship of the maxilla to the condyle to the articulator .

ANTERIOR TEETH SELECTION

Guides for anterior teeth selection:

Pre-extraction guides

- a) Pre-extraction casts and shade determination .
- b) Photographs.
- c) X-ray.
- d) Extracted teeth.
- e) Old denture



According to the patient's facial characteristics.

> Maxillary anterior teeth:

> Helpful guides in selection of tooth size:

- ✓ Generally, large people have large teeth; men usually have larger teeth than women.
- ✓ The approximate location of the distal surface of the canines is at the corner of the mouth.
- ✓ The width of the natural central incisor is over 8.5 mm rarely less than 8 mm, the width of all maxillary anterior teeth is normally 46 mm if it is less than 45 mm is very unusual.

1) Size

a) Width:-

1) Bi-zygomatic width

- ✓ The average width of the maxillary **central incisor** is estimated to be **1-16** of the **bi-zygomatic width . measured by flexible ruler or facebow**
- ✓ The combined width of the **six maxillary anterior** is slightly less than **one third (3.3)** the **bi-zygomatic width.**
- ✓ The bi-zygomatic width is determined by using a face-bow as a caliper in conjunction with a ruler.

2) The buccolingual centers of the hamular notches :

The width of the six maxillary anterior teeth equals the distance between the buccolingual centers of the hamular notches plus 5 mm.

3) Intercanine distance:

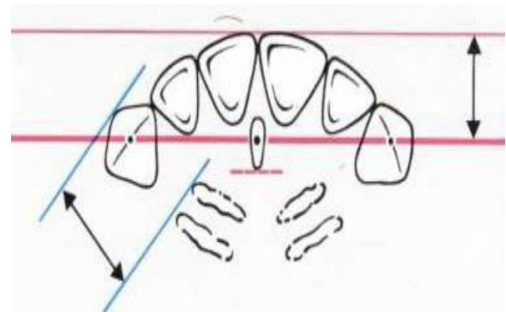
- ✓ The distal surface of many natural maxillary canines is positioned at the corner of the relaxed mouth.
- ✓ The patient is asked to relax with lips in light contact and with a pointed instrument a mark is made on the occlusal rim to represent the tip of the canine.
- ✓ The distance between these marks represent the total width of the six maxillary anterior teeth from the distal of the canine on one side to the distal of the canine on the other side.
- ✓ This distance is measured by using a flexible ruler.

4)The width of the nose:

- ✓ Vertical parallel lines extending from the lateral surfaces of the ala of the nose onto labial surface of the occlusion rim will give an indication of the position of the cusp tips of the maxillary canine teeth.

5)The incisive papillae:

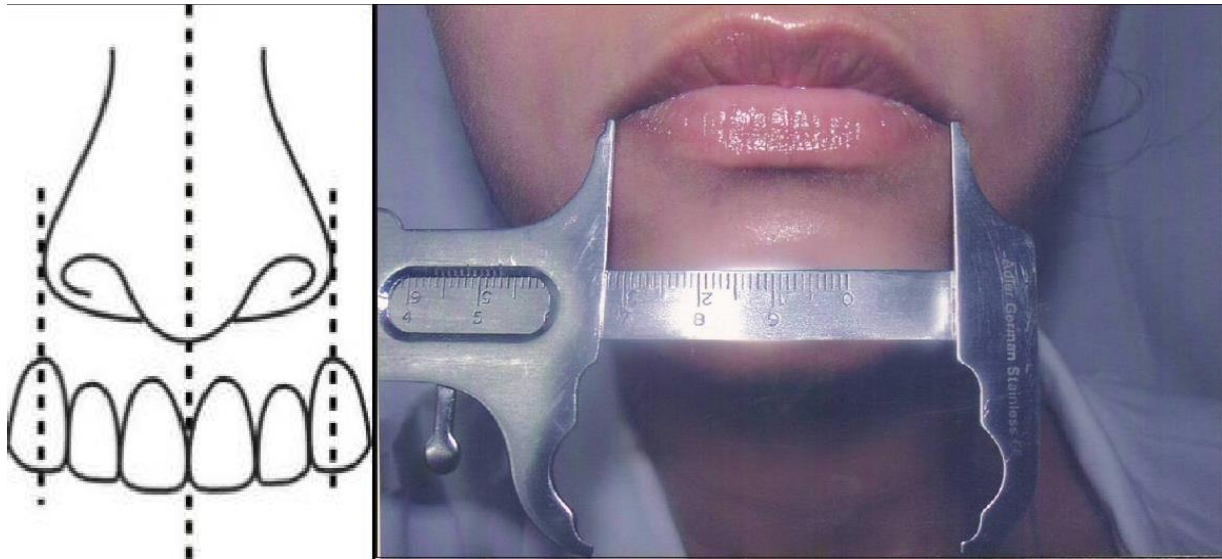
- ✓ It has been demonstrated that a line parallel to the coronal plane contacts the natural canine teeth near the tips of the cusps.
- ✓ This may be used as a guide to determine the width of the anterior teeth and position the canine teeth.



5) Cranial circumference:

- ✓ The cranial circumference has been found to have a direct relationship to the width of the six maxillary anterior teeth.
- ✓ The horizontal circumference of the cranium about a plane passing through the glabella and the maximum occipital point is said to be 10 times the width of the maxillary anterior teeth.

7) The distance measured **between the two commissures** (angles of the mouth) will represent the **width of the upper six anterior from the distal surface of the canine to the distal surface of the other canine most common used method**.



b) Length

➤ **Length of the tooth** is determined by use of guideline on properly contoured occlusion rim :

1) **The vertical distance between the ridges:**

- ✓ The length of the teeth is determined by the available space between the alveolar ridges.
- ✓ When the space is available, it is more esthetically acceptable to use a tooth long enough to eliminate the display of the denture base.

2) **The lips:**

- ✓ The length of maxillary six anterior teeth is determine by the lip length as follow; the labial surfaces of the maxillary teeth support the upper lip and the amount of the central incisors visible below the lip is about 2-3 mm in a young person and less than half amount in an elderly patient

a) Lip length : incisal edge must show 2-3 mm below relaxed lip line

b) Mobility of the upper lip: Some individuals expose all the upper anterior teeth and a considerable amount of gum when they smile, while others show very little teeth.

c) Vertical overlap (overbite): Deep vertical overlap results in the exposure of a greater length of tooth than an edge-to-edge incisal relationship

- d) **High lip line** : line represent maximum elevation of the lip during function
 e) (smiling) cervical line should positioned in high lip line . need long teeth.

- 3) **Age**: by aging wear and attrition occur thus tooth should be more shorter .
 4) **Speech** : F/V letter pronounced when the incisal edge of upper incisor touch the lower lip
 5) **Length of face / Length of the tooth = Width of the face /Width of the tooth**

c) **Thickness of the anterior teeth**

- ✓ The thickness of the anterior teeth has considerable bearing on phonatics.

2) **Form**

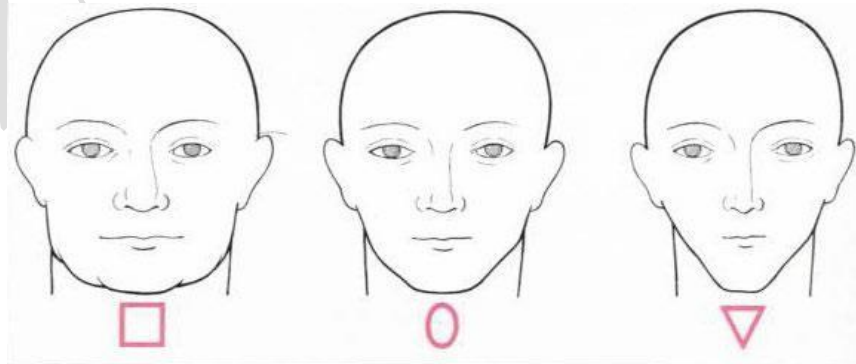
➤ **Shape of the arch** :

- ✓ It was realized that there was some relationship between the shape of the edentulous upper arch and the upper incisor teeth it may be
 ✓ Square ----- tapering ----- ovoid .

➤ **Shape of the face** :

- ✓ It was claimed that the shape of the upper central incisors bears a definite relationship to the shape of the face.
 ✓ Determine the form and contour of the face from the frontal view; the clinician imagines two lines, one on either side of the face, running about 2.5 cm in front of the tragus of the ear and extends to the lower border of the mandible and to the forehead.

- ✓ The form of the human face is classified into square, tapering, and ovoid



➤ **Patient profile** :

- ✓ A tooth viewed from the mesial or distal aspects should conform to the contour of the profile of the face.
 ✓ To determine the facial profile, check three points the forehead, the base of the

- ✓ If the three points are in line, the profile is straight, used a straight inciso-gingival labial surface of the anterior teeth.
- ✓ If the three points are in convex shape, use a convex labial surface of the anterior teeth.
- ✓ If the three points are in concave using a flat labial surface inciso-gingival

➤ **Dentogenic concept** : based on age , sex , personality :

a) Age:

- 1) Natural teeth wear with age, grinding the incisal edge simulate this wearing.
- 2) Chips or notches can be placed on the incisal edges
- 3) The interproximal surfaces near the gingival margin can be ground to provide a tooth with more depth.
- 4) Roughened of the labial surface.
- 5) Shape of the teeth is square or, square taper.

b) Gender:

- ✓ The squarance of tooth form tends to portray masculinity, where more rounded incisal and proximal contours indicate femininity.

c) Personality:

- ✓ Large, rugged man would tend to have teeth of a size and form different from those of a delicate appearing woman.

✓ **Masculine moulds :**

- Form : square
- Labial surface : flat
- Line angle : sharp
- Color : darker

Feminine moulds :

- Form : oval
- Labial surface : curved
- Line angle : rounded
- Color : lighter

3) Shade: (Color)

The color of the teeth like the form must be in harmony with the surrounding environment if they are to appear natural.

➤ **Selection of a suitable shade depends on:**

❖ **The following guidelines for the shade selection:**

- 1) People with fair complexions have teeth with less color, so the teeth are lighter and are in harmony with the color of the face.
- 2) People with dark complexion have darker teeth that are in harmony with coloring of the face.
- 3) The teeth shade is compatible with the general coloring of the skin, hair and the iris of the eye. All these factors can be changed by a natural or artificial cause, the most acceptable features for the teeth color selection is the color of the eye sclera.
- 4) Younger patient exhibit a greater vitality and brilliance and require lighter shade. Older patients tend towards less brilliance and darker shades.
- 5) Maxillary central incisors are the lightest teeth in the mouth; maxillary laterals
- 6) and mandibular incisors are slight darker; canines are darker.
- 7) The color of hair in young age .. **Black hair (yellow teeth)yellow hair ... whiter teeth**

➤ **Mandibular anterior teeth :**

- ✓ Selection of the six lower anterior teeth is relatively a simple, procedure each set of upper anterior teeth has a corresponding set of lower anterior teeth which match it in the size, form, and color.

Posterior teeth selection :

- ✓ The shade of the posterior teeth should harmonize with that of the anterior. (only first premolar is important in esthetic so made lighter than other posterior)
- ✓ The length of the posterior teeth depends on the interarch distance between the ridges when the occlusal vertical dimension is determined.
- ✓ **Narrowing occlusal plane (penetrate food bolus easily , less displacement of the denture , can designed to prevent check and lip and tongue interference)**
- ✓ **To determine the buccolingual dimension 2 lines are drawn from the tip of the lower canine one to the buccal surface of the retromolar pad, the other to the lingual surface of the retromolar pad, the in between space determine the buccolingual width of the mandibular posterior teeth.**
- ✓ It is advisable to select upper posterior teeth as long as possible so that the premolars will be esthetically in harmony with the canine.
- ✓ **The class III patient** has large mandible and small maxilla measuring the length of

- ✓ the residual ridge from the distal surface of the canine to the beginning of the retromolar pad indicate the selection of a large posterior teeth which may not accommodate by the maxillary ridge. In this type of ridge relationship the selection of the posterior teeth should based on the maxillary ridge requirement.
- ✓ **The class II patient** has large maxilla and small mandible, this may indicate the using of small teeth, and natural size posterior teeth can be used without overloading the ridge by leaving out one of the posterior teeth.
- ✓ Eliminating a premolar from the set-up is the solution for obtaining the proper distal length; if more reduction is required the second molar can be dropped out of

➤ Posterior teeth forms:

1) Anatomic teeth :

- ✓ Are those that have been carved to simulate natural teeth with cusps, grooves and inclined planes. Example of the artificial anatomic teeth **is thirty three degree teeth.**
- ✓ Dentists using anatomic teeth usually believe **in balanced occlusion,** that is, teeth on both sides of the arch should be in contact when the jaw makes excursive movements, this type of teeth is **suitable for young healthy patients with good ridges.**
- ✓ **Dis adv :** during lateral force give lateral force tend to dislodgment of denture.

2) Non anatomic form or monoplane teeth :

- ✓ Non anatomic teeth have **flat occlusal surfaces (without cusps).(0 angle)**
- ✓ This type of teeth does not function efficiently unless the occlusal surface is provided with cutting ridges and spill ways.
- ✓ Dentists using this type of tooth generally do not believe in balanced occlusion, but feel that uniform contact of the teeth in centric relation is all that is required in dentures.
- ✓ They also feel that this type of teeth **transmit less destructive force to the tissues.**
- ✓ This type of teeth **is suitable for old patients having poor ridges** with poor neuromuscular control.
- ✓ **In class II , class III and in bruxism**
- ✓ **Crossbite tooth relationship**
- ✓ **Poor neuromuscular control , Severely resorbed ridges**
- ✓ **Patients who have a large discrepancies between centric jaw relation and centric occlusion.**

3) Semi-anatomic teeth :

- ✓ Semi-anatomic teeth are a hybrid between anatomic and non anatomic teeth. They have low cusps and contain various geometric occlusal carvings to improve the efficiency of these teeth. Examples of the semi anatomic teeth are **twenty degree teeth.**

TOOTH MATERIAL

- ✓ For many years, porcelain was the favorite tooth material because of the rapid wear of the acrylic resin.
- ✓ However, with the tendency for porcelain teeth to chip and fracture, acrylic resin gained popularity.
- ✓ The new generation of hard acrylic resin teeth has considerably lessened the use of porcelain teeth. (IPN interpenetrating polymer network)

| | Acrylic teeth | Porcelain teeth | Metallic teeth |
|--|--|--|--|
| Modification and polishing | Easy modified and polished | Difficult to modify and polished | Difficult to modify and polished |
| Load transmitted to ridge | Absorb force (resilient) so less ridge resorption | Not absorb force (brittle) transmit it to ridge so more ridge resorption . | More resilient than porcelain and more brittle than acrylic. |
| Attrition & wear | Easy wear of tooth | No or less wear | No or less wear |
| Solubility in oral fluids and dimensional changes | Insoluble – some dimensional changes | Insoluble – inert in oral fluids No dimensional changes | Insoluble – inert in oral fluids No dimensional changes |
| Esthetic | Good but not as porcelain | Perfect esthetic | Not esthetic |
| Mode of retention | Chemical | Mechanical via pins or diatoric teeth | Mechanical |
| Coefficient of thermal expansion | The same | High co. of thermal expansion so crazing and cracking occur | Near acrylic denture base so no crazing |
| Maintenance of vertical dimension (VOD) | Low abrasion resistance Wear is significant Wear can result in reduced VDO | Excellent abrasions resistance Hard -wear is insignificant VDO tends to be maintaine | Excellent |

| | | | |
|-------------------------------------|---|---|---------------------------|
| Effect on opposing occlusion | Can oppose natural teeth or metallic occlusal surface | Abrades opposing tooth enamel – metallic surfaces | Not abrade opposing teeth |
| Clicking sounds | None of contact with opposing teeth (natural) | Noise | No sound |

➤ **Upper and lower posterior teeth can be:**

- ✓ Both porcelain.
- ✓ Both acrylic.
- ✓ A combination of porcelain and acrylic resin teeth on opposing dentures can be used. It softens the impact sounds, reduces friction, and eliminates chipping. Upper posterior porcelain anatomic teeth with lower non-anatomic resin teeth
- ✓ Upper and lower posterior acrylic teeth with upper and lower anterior porcelain teeth is contraindicated because the resin teeth will wear rapidly resulting in occlusal discrepancies which in turn cause destruction of the underlying tissues.

➤ **Guides for arrangement of teeth :**

- ✓ Guide for arranging anterior teeth is the esthetics & speech.
- ✓ The guide for arranging the posterior teeth is enhancing the stability of the denture to provide better function .
- ✓ In posterior teeth to achieve stability should use non-anatomic tooth.....but decrease function
- ✓ To achieve good function use anatomic tooth but decrease stability
- ✓ To use anatomic tooth and give good stability use of balanced occlusion