

**Ministry of Higher Education and Scientific Research.
Al-furat Al Awsat Technical Institute
N ajaf Technical Institute
Department of Prosthodontics Technologies**



Partial Denture

FIRST STAGE

lecture One

Introduction / Definition of dental prosthesis,

Terminology of Partial denture,

benefit of partial denture

Preparation BY
Baeda hasoon salman

Terminology:

- **Prosthetics:** The art and science of replacing missing body parts.
 - **Prosthesis:** Is any artificial replacement of an absent part of the human body.
 - **Prosthodontics:** The branch of dental art and science that deals with the replacement of missing teeth and oral tissues.

 - **Dentulous Patient:** A patient having a complete set of natural teeth.
 - **Edentulous Patient:** A patient having all teeth lost.
 - **Removable Prosthodontics:** Replacement of missing teeth and associated structures with a prosthesis designed to be removed and replaced by the wearer; include: Removable complete prosthodontics.
Removable partial prosthodontics.

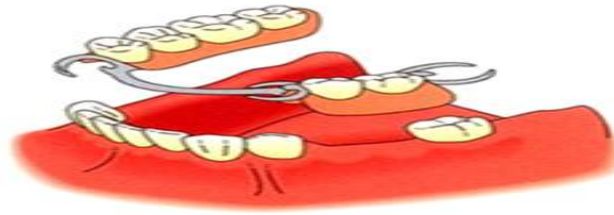
 - **Partially Edentulous Patients:** Patients having one or more but not their entire natural teeth missing.
- Removable Partial Denture:**
Removable Dental Prosthesis (appliance) replacing one or more natural teeth and associated oral structures.
- ❖ **Free End Edentulous Area** (Distal extension edentulous area) (Free End Extension FEE): An edentulous area, which has an abutment tooth on one side only.
 - ❖ **Bounded Edentulous Area:** An edentulous area, which has an abutment tooth on each end.

❖ **Abutment:** A tooth, a portion of a tooth, that serves to support and/or retain prosthesis.



Partial dentures replaced a number of lost teeth within proximity of one another. Partial dentures most often involved the use of plates. Plates with artificial teeth attached to them were secured in the mouth with clasps to replace the lost teeth.

The construction of partial dentures first required impressions- much like today's dentures- prior to construction. This ensured that they fit the patient's specific mouth configuration. Once the dentures were constructed, they were inserted into the mouth and attached to other teeth via the clasps.



Free end Extension

Bounded Saddle

What is the benefit of partial denture?

- 1- Improve mastication.***
- 2- Improve speech .***
- 3- Improve the T.M.J problem .***
- 4- Improve the psychology of the patient***
- 5- Improve the abutment tooth from moving toward the missing tooth***
- 6- Prevent the trauma to the soft tissue.***
- 7- Prevent food impaction between teeth.***
- 8- Improve the esthetic appearance.***
- 9- Prevent the opposite tooth from moving toward the missing tooth***

Each tooth in dental arch effect by forces

- 1. Force of occlusion.***
- 2. Force of tongue.***
- 3. Lip and cheek force***

Advantages of removable partial denture over fixed partial denture

- 1. RPD constructed for any case whilst FPD are confined to short spans bounded by healthy teeth and with a normal occlusion.***
- 2. Cheaper than fixed partial denture.***
- 3. They are more easily cleaned.***
- 4. They are more easily repaired.***
- 5. No tooth reduction is required.***
- 6. Cross-Arch Stabilization (Counter leverage).***

Disadvantages:

- 1. Can cause caries.***
- 2. Can damage the supporting tissues of the teeth and gum margins.***
- 3. May loosen the natural teeth by leverage.***
- 4. Can cause traumatic damage to the palate.***
- 5. Clasps can be unaesthetic.***

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***Partial Denture
FIRST STAGE
lecture two***

***Classification of partially edentulous arches
, Kennedy classification And Modification ,
Applegate's Rules for Classification***

Preparation BY
Baeda hasoon salman

CLASSIFICATION BASED ON SUPPORT

There are three types of RPDs or partially edentulous arches based on the tissue(s) which provide support. Support is the resistance to movement of the denture toward the edentulous ridge.

RPDs maybe tooth supported, tissue supported, and tooth tissue supported.

1. The Tooth Supported RPD

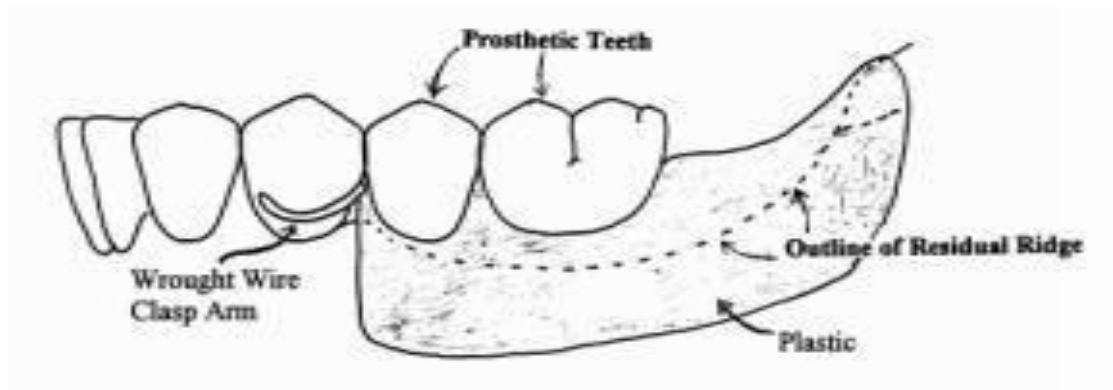
Tooth Supported RPD (Tooth borne) removable partial denture, where the load are distributed on abutment teeth only.

2. The Tissue Supported RPD

Tissue supported RPDs are primarily supported by the tissues (mucosa overlying bone) of the denture foundation area. They may obtain some tooth support by contact of the denture above the height of contour of the natural teeth.

3. The Tooth-Tissue Supported RPD

The tooth-tissue supported RPD is supported at one end by natural teeth, which essentially do not move, and at the other end by the denture bearing tissues (mucosa overlying bone)



CLASSIFICATION BASED ON ARCH CONFIGURATION

(Arrangement)

The most widely accepted system of classification of RPDs and partially edentulous arches was proposed by Dr. Edward Kennedy in 1923. It is based on the configuration of the remaining natural teeth and edentulous spaces.

According to these factor:

1-type of saddle area.

2-Location of saddle area.

3-Number of saddle area.

Saddle area. the area left after tooth extraction and they are two types:

A-Bonded saddle area.

B-free end saddle area.

The basic classification:

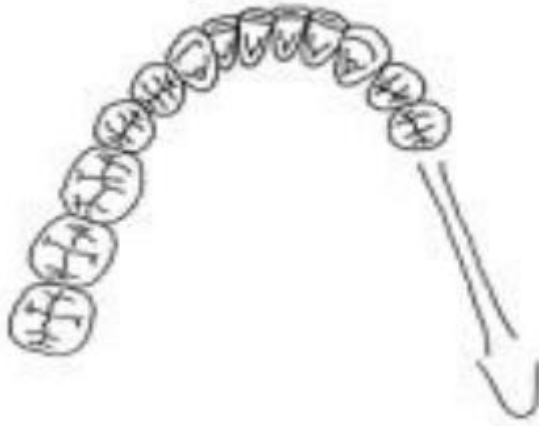
Class 1

Bilateral edentulous areas, located posterior to the remaining natural teeth



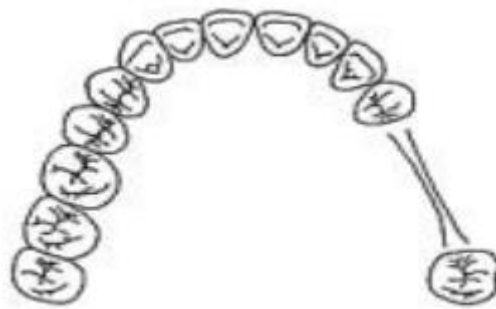
Class 2

unilateral edentulous areas, located posterior to the remaining natural teeth



Class 3

A unilateral edentulous area with natural teeth remaining both anterior and posterior to it.



Class 4

A single, but bilateral edentulous areas, crossing the mid line, located anterior to the remaining natural teeth.



Edentulous area other than those determine in the basic classes were named (MODIFICATION. It is written as a number 1,2,3, ... etc. depending on the numk of the extra edentulous span.

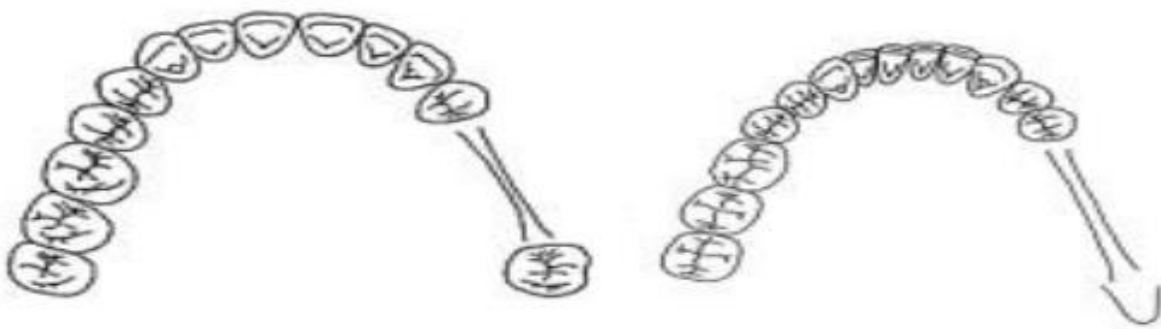
Applegate's Rules for Classification

Applegate provided 8 rules to govern the application of Kennedy's system.

1-for multiple edentulous areas.

2-for better understanding Kennedy classification.

Rules(1) Classification should follow rather than precede any extraction of tee that might alter the original classification.



Class3 become Class2

Rule 2

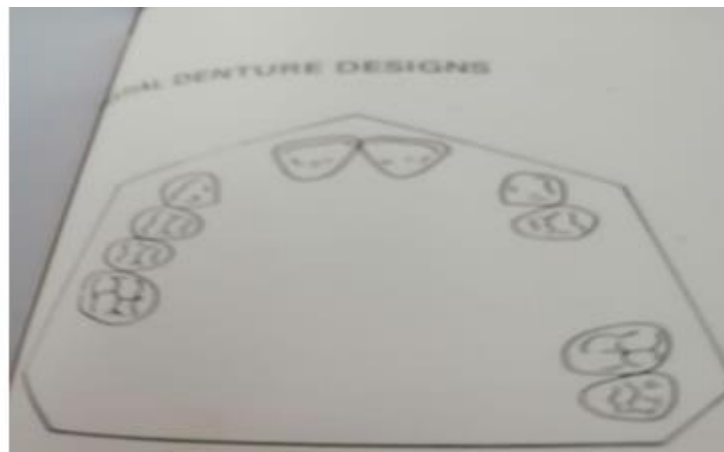
If the third molar is missing and not to be replaced, it is not considered in the classification.

Rule3

If the third molar is present and is to be used as an abutment, it is considered the classification.

Rule 4

. If the second molar is missing not to be replaced it is not considered in the classification. E.g. Class 3mod 2



Rule5.

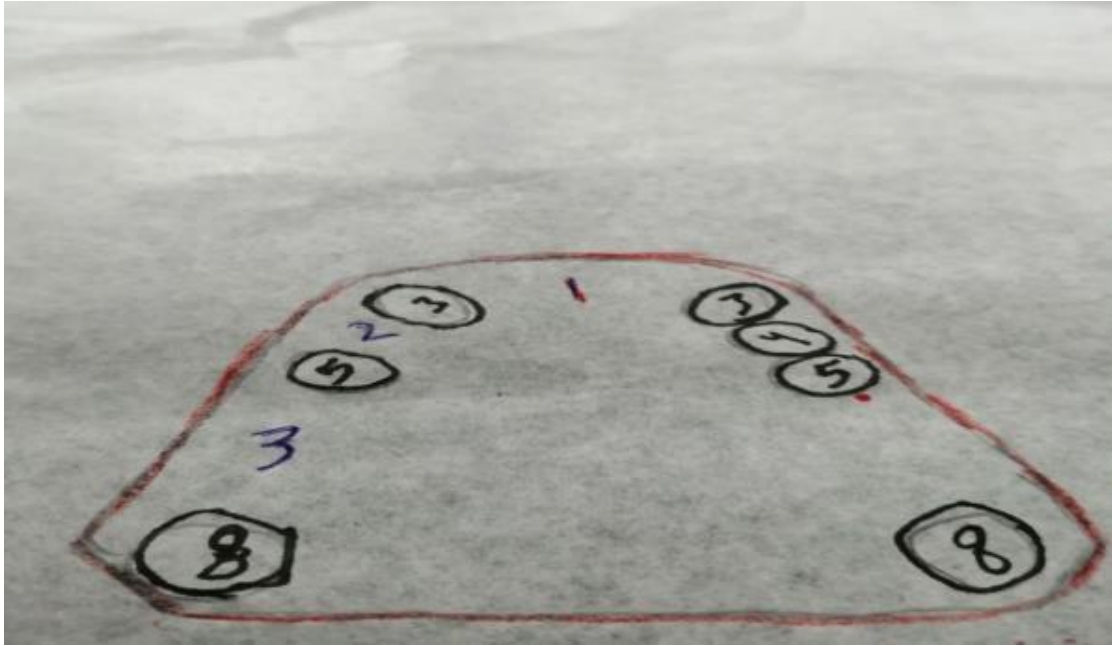
The most posterior edentulous area always determines the classification.

Rule6.

Edentulous area other than those determine in the basic classification are referred to as a modification. And are designated by their number number of such spaces (not number of missing teeth).

Rule7.

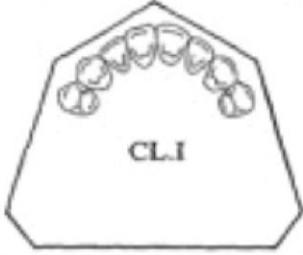








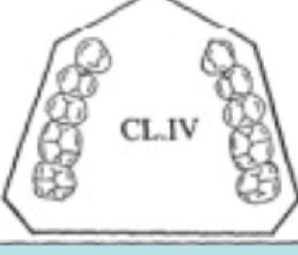
The Extant of modification is not considered, only the number of additional edentulous area.



Rule8.

There is no modification area can be included in Class 4 arches. (any other edentulous areas laying posterior to the single bilateral areas & crossing the midline will consider as a classification instead of modification)

KENNEDY CLASSIFICATION

 <p>CL.I</p>	 <p>CL.I Mod. I</p>	 <p>CL.I Mod. II</p>
 <p>CL.II</p>	 <p>CL.II Mod. I</p>	 <p>CL.II Mod. II</p>
 <p>CL.III</p>	 <p>CL.III Mod. I</p>	 <p>CL.III Mod. IV</p>
 <p>CL.IV</p>	<p>No Modification</p>	

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Partial Denture

FIRST STAGE

lecture Three

The Material Used in Primary impression

***Types of impression trays , Materials
used for construction of special trays***

Preparation BY
Baeda hasoon salman

Impression tray: Is a dental device used to carry any types of impression materials to the mouth.

Types of impression trays:

1. **Stock tray:** it is made of metal or plastic used for more than one patient usually to take a primary impression; it is either perforated or non-perforated



2. **Special tray (or individual tray):** it is made of acrylic used for only one patient take final impression; it is either perforated or non-perforated according to impression material.

Dental impression: it is a negative replace of dental arch (dental arch=teeth + tissue)

Primary impression: it is a negative replace of dental arch from which study cast is fabricated, it is taken by use of stock tray.

Final impression: It is a negative replace of dental arch from which master cast is fabricated; it is taken by use of special tray.

Study cast: It is reproduction of dental arch made by pouring of plaster in primary impression.

Master cast: It is reproduction of dental arch made by pouring stone in final impression and on which the partial denture are made.

Purposes of study cast:-

- 1-It is studied for diagnosis of the case.
- 2-It is studied for planning the treatment.
- 3 - On which we do special tray.

Advantages of special tray:

1. Easy to manipulate, quicker than modifying stock tray and provides more accurate impression.
2. Economy in impression material as less impression material is required for the special tray than that required for the stock tray.
3. Provides even thickness impression and this will minimize tissue displacement and impression dimensional changes.
4. More comfortable to the patient because it is less bulky than stock trays and provide small bulk impression.
5. More accurately adapted to the oral vestibules and it help to produce impression of correct extension which is important for better retention of the denture.

Materials used for construction of special trays:

1. Commonly constructed from cold cure acrylic resin or auto polymerizing acrylic resin.
2. Heat cure acrylic resin.
3. Light cure acrylic material.
4. Impression compound after certain modifications.
5. Shellac base plate.

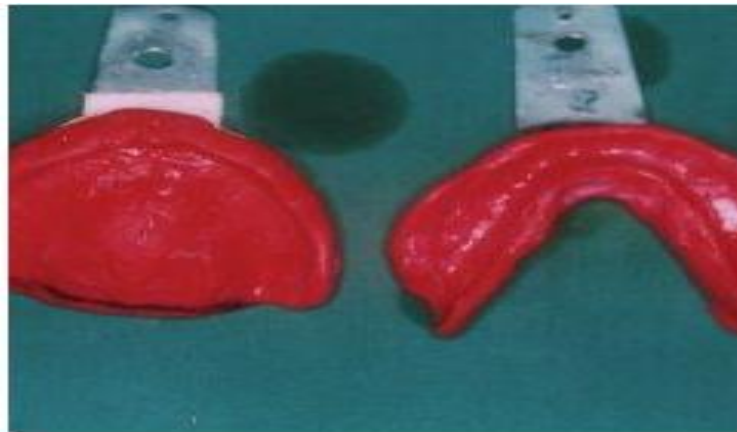
Impression material

1. Rigid impression material:

- a- Plaster impression for final impression of complete denture.
- b- Zinc oxide eugenol for final complete denture.

2- Thermo plastic impression material:-

- a- Impression compound for primary impression of complete denture.
- b- Impression wax for primary of complete denture.



3- Elastic impression material:-

- a- Reversible hydro colloid (e.g.) Agar –agar used for final impression of fixed and removable partial denture.
- b- Irreversible hydro colloid (e.g.) alginate which is used for primary and final impression of partial denture.



4. Elastomers material: Used in final impression of partial denture (fixed and removable) + complete denture (e.g.) poly sulphate, poly ether, silica

***Elastomers classified into 3 types and each type has the previous 3 forms:**

- A. Polysulphide impression material.
- B. Polyether impression material
- C. Silicon impression material.

following procedure is recommended for fabricating custom final impression trays:

- Outline tray extension 2 to 3 mm short of where you think final denture will end. (This line should cross the palate beyond or distal to where the final will end).
- - Mark the outline of the palatal and ridge crest stops (maxillary only).
- Block out undercuts and position wax spacers (one –sheet thickness of base plate wax)
- Apply tin foil substitute to cast and wax, mix acrylic resin tray material, and adapt it to the c t.
- Construct handles (either metal or resin). Contour borders, remove sharp areas, and disinfect trays



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Partial Denture
FIRST STAGE
lecture four
Basic anatomy & landmark of
denture & mouth

Preparation BY
Baeda hasoon salman

A- Upper arch

1- Palatine process of maxilla: It forms the anterior three quarter of the hard palate.

2- Horizontal plain of the palatine bone: it form the posterior quarter of the hard palate.

3- The incisive papilla : Is a pad of fibrous connective tissue overlying the incisive foramen , lying in the midline of the palate just behind the crust of (R A R) in between where located through which passes the nasopalatine nerve & blood vessels . It provide landmark for replacement or artificial teeth

4- Zygomatic (molar) process of maxilla: Extending upward and outward and buccal aspect of the (RAR) on the first molar region.

5- Greater palatine foramen: Bilaterally located on the palatal side of the residual ridge in the molar area, pass through it palatine nerve & palatine artery.

6- Lesser palatine foramen: Slightly distally located to the greater palatine foramen, they are 2 or 3 in number

7- Maxillary median suture (or) median palatal suture:

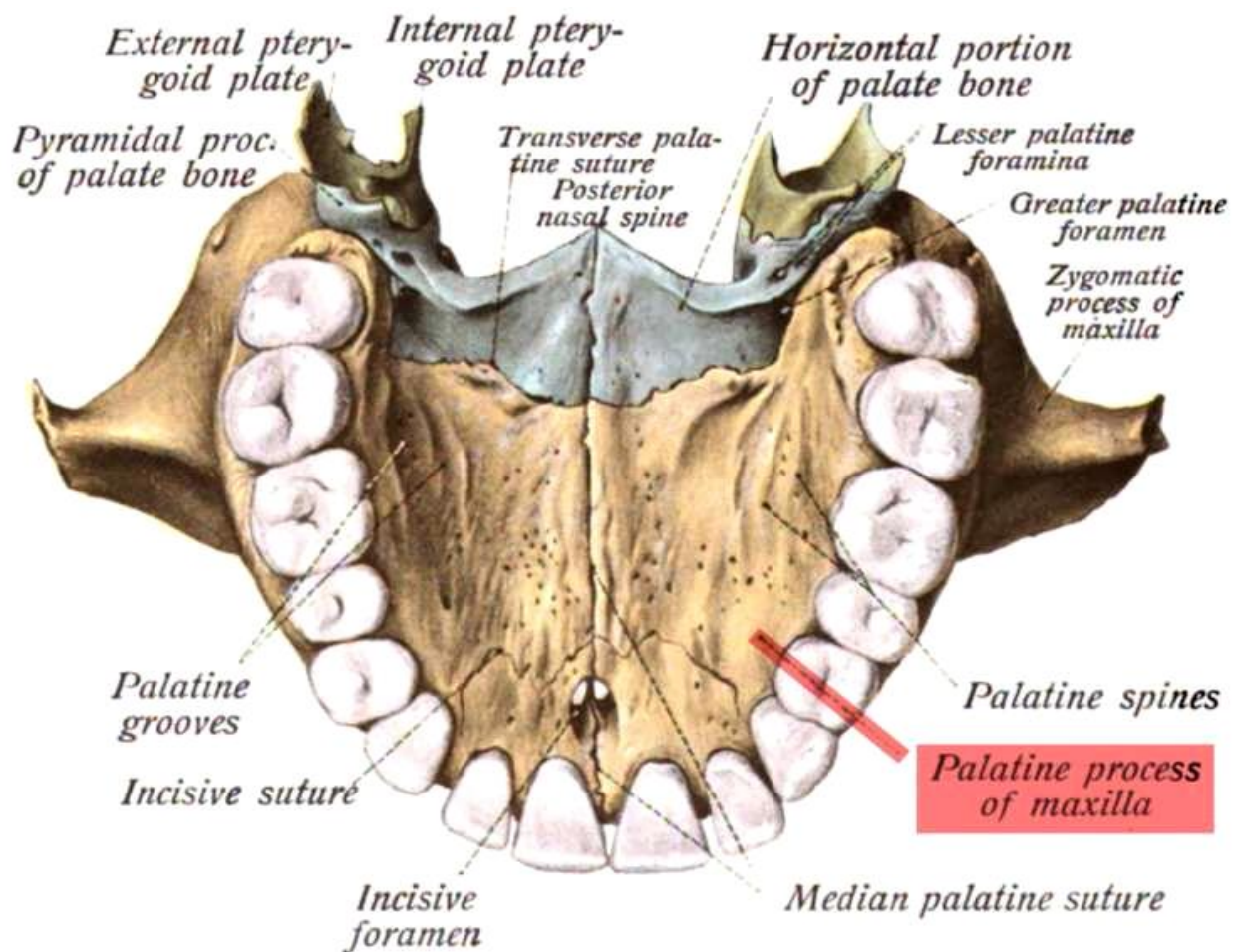
Anterio-posterior line of union of bone of the center of the palate. Overlying the median palatal suture is the median palatal raphe where the mucosa overlying this area is usually tightly attached. The bone overlying is very dense and often raised.

8- Residual alveolar ridge (R A R): The horse shoe shaped ridge or remaining portion after extraction of teeth overlying on the maxilla & palatine bone. It considered primary stress bearing area.

In the lower jaw it is over the mandibular bone.

In the upper composed of cancellous bone while in the lower spongy bone.

9- Cuspid eminence: It is elevation or projection located over the cuspid root. It usually remains following extraction or removal of the teeth & serve as a guide for positioning the artificial canine and the angle of the mouth.

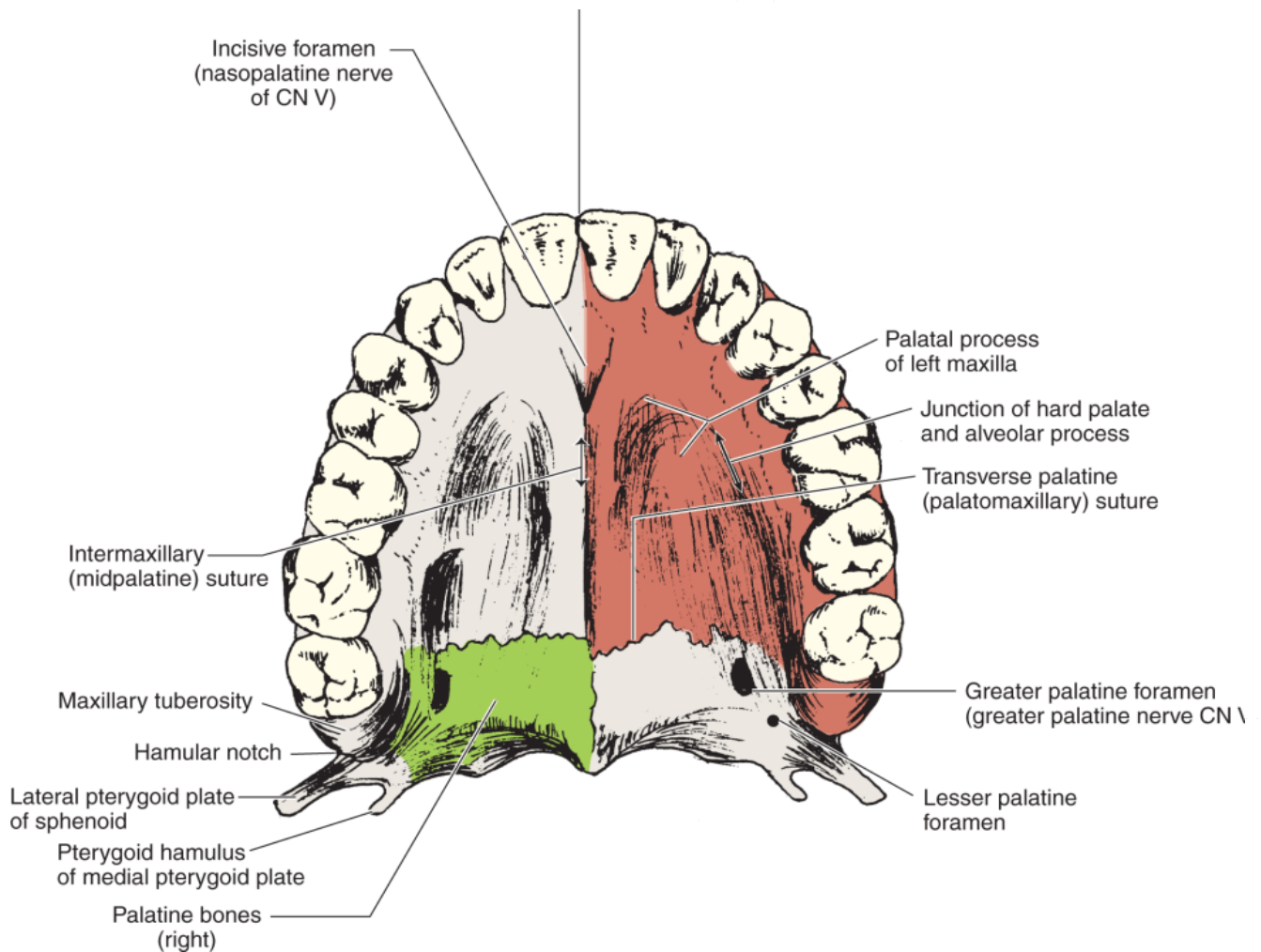


10-Maxillary tuberosity: It forms the termination of the residual ridge posterior extending distally from the area of the second molar to hamular notch.

11-Hamular process: Is the tip of internal pterygoid plate of the sphenoid bone just posterior to the maxillary tuberosity.

12-Hamular notch: A notch lying between the maxillary tuberosity and the center of the palate.

13-Torus palatinus: It is excessive hard bony enlargement or exostosis that form rounded elevation at the center of the vault of the palate. It usually interferes with denture constriction so surgical removal indicated.



13- Rugae area: Irregular shape of firm fibrous tissue forming the anterior portion of the midline of the palatal suture & the crust of the ridge, the anterior on the half of the palate form the fatty zone.



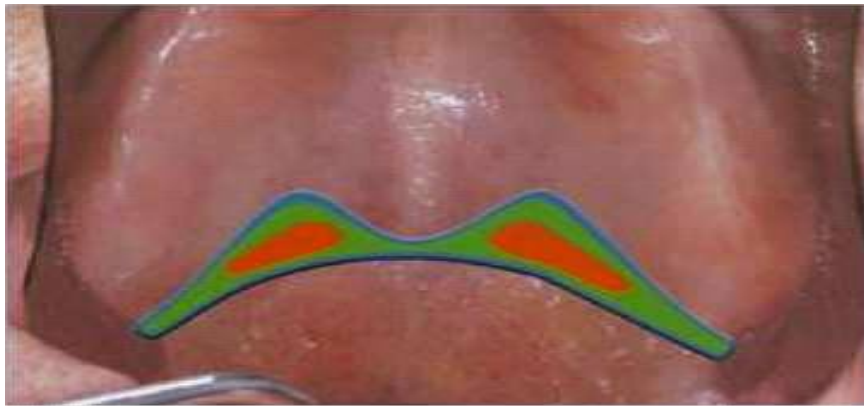
14-The fovea palatine : Too small pinpoint depression in the midline in the posterior part of the vault of the palate located usually on the soft palate. They are usually collection of mucus gland ducts forming an ideal guide for location of the posterior border of the upper denture.

15- Arbitrary line (or an area passing across the soft palate)

It is formed when the soft palate is in function and when movement beginning by asking the patient to say /ah/ thus determining posterior border of the upper denture.

16- Posterior palatal seal (post-dam) area:

This usually lies anterior to the vibrating line and can usually determine by palpation or changing the color of the soft tissue or both.

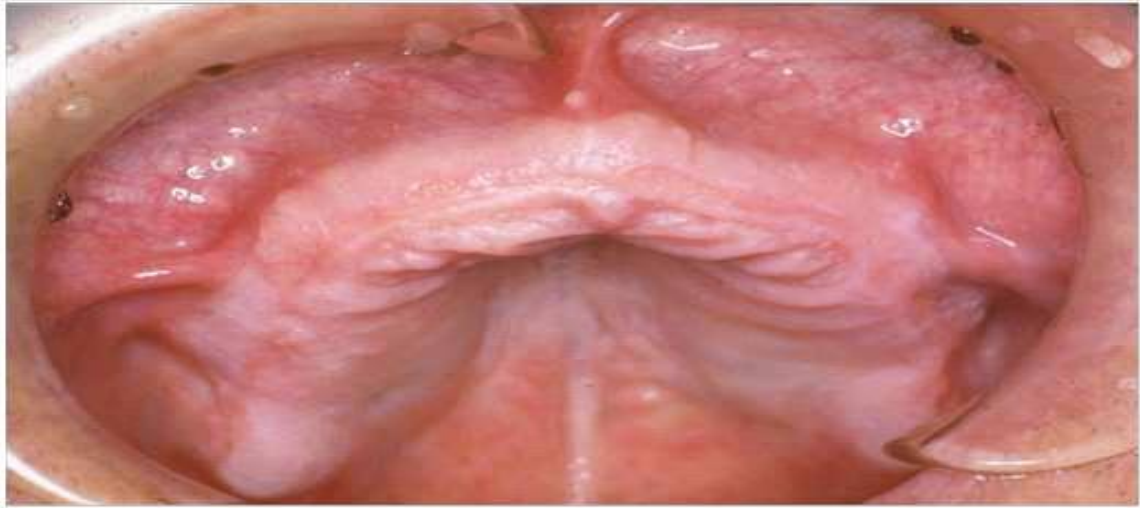


7- Buccal frenium: A fold of mucous membrane varying in size and position extending on buccal mucosal membrane reflection area towards the slop of the crest of the residual dge.

8-Vestibule: That portion of the oral cavity bounded on one side by teeth, gingiva & veolar ridge in the other side lips & check, it divided to:-

a- Labial vestibule: Extending from the buccal frenium to the other anteriorly called abial vestibular space).

b- Buccal vestibule: Space lies distal to the buccal frenium bounded laterally by cheek medially by residual ridge.



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Partial Denture

FIRST STAGE

lecture five

***Basic anatomy & landmark of
denture & mouth for lowewr arch***

Preparation BY
Baeda hasoon salman

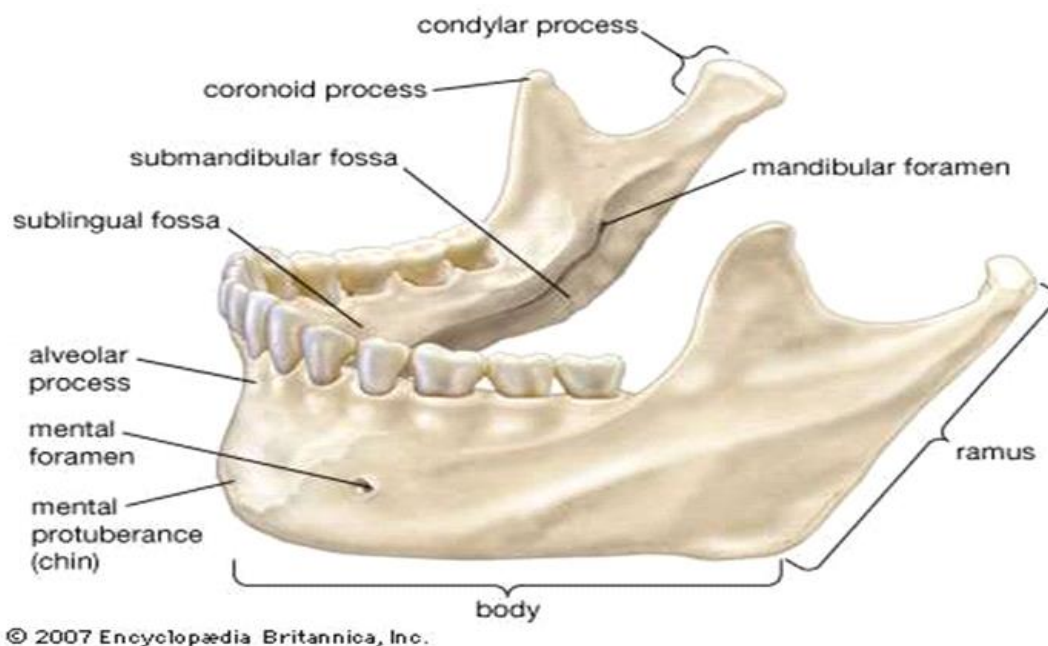
Anatomical landmark of mandibular

1- Body of the mandible: It is curved horizontal slope, horse shoe shaped portion.

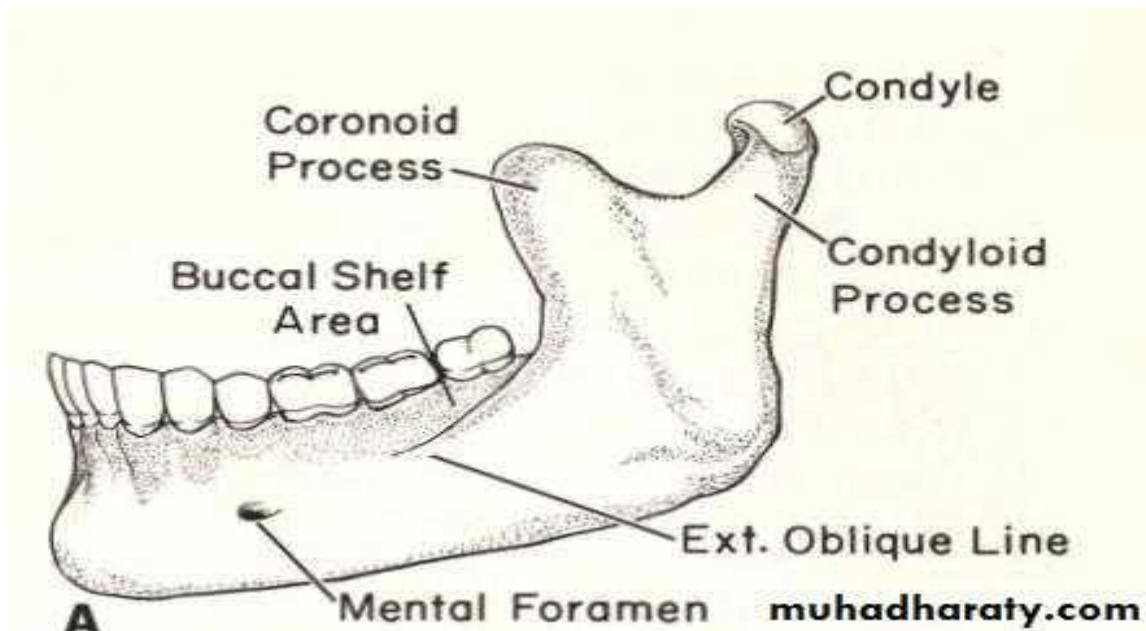
2- Rami: locating in each side of the mandible, 2 in number forming the vertical portion and join the body posteriorly at more or less of right angle each ramus terminate at its upper end in two processes:-

a) Coronoid process: The anterior process on which the tendon of temporalis muscle inserts & sometime it comes in close proximity to the lateral portion of the tuberosity where it is difficult to make the impress of tuberosity.

b) Condylar process: Distal process has got a neck & convex of long head which articulate with glenoid fossa at the base of the temporal bone.



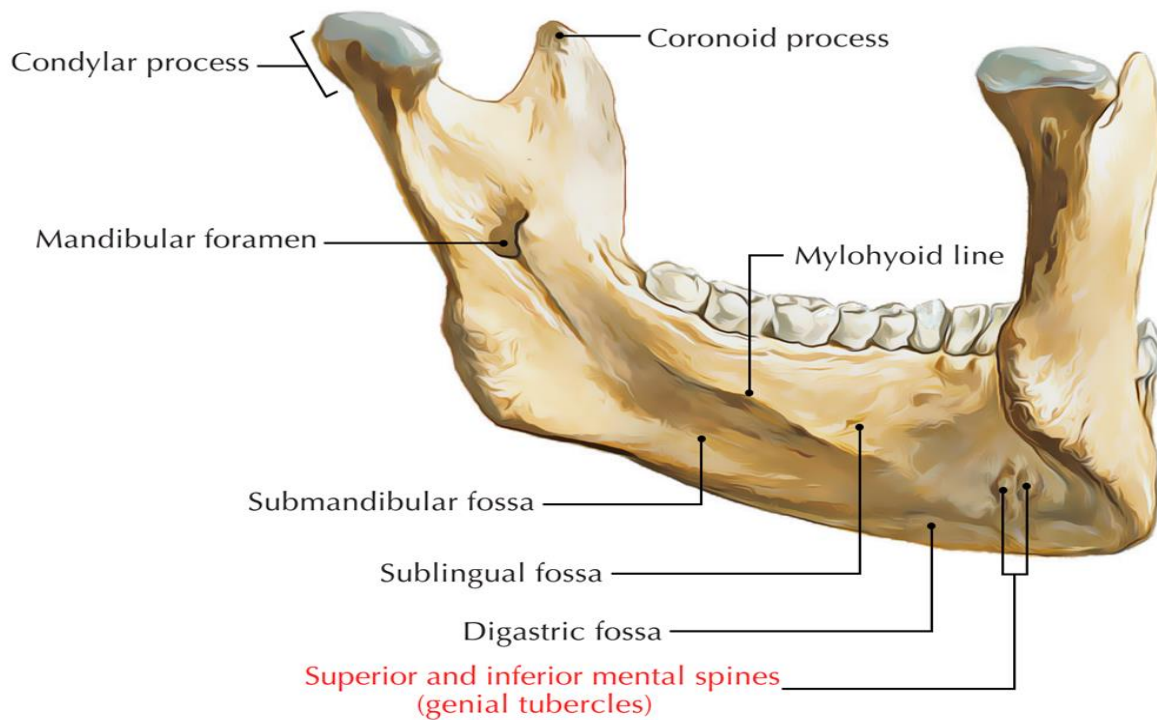
3- External oblique ridge: External downward & forward as a curved from the anterior border of ramus of mandible to the buccal surface of the bony mandible at its junction with alveolar ridge.



4- Mental foramen: It is found on the buccal aspect of the bony mandible in the region between 1st & 2nd premolar (bicuspid). With progressive extension resorption of the residual ridge this foramen will occupy more superior position to its original position & this will cause pain.

5- Mylohyoid ridge: Irregular ridge located on the lingual aspect of the bony mandible in the molar area running downward & forward extending from mental spines near the inferior border of the mandible to just below the 3rd molar (posteriorly) it is close to the ridge in the molar region than the premolar region.

6- Genial tubercle: Two in number, superior & inferior, located on the lingual aspect at the midline of the bony mandible, it gives an attachment to genioglossus muscle & inferior Genohyoid muscle. With contentious resorption these become high near the ridge.



7- Mandibular Torri: It occurs in (6-8%) in population in 80% of the cases they are bilateral in position. It is excessive hard bony exostosis forming an elevation on the lingual side.

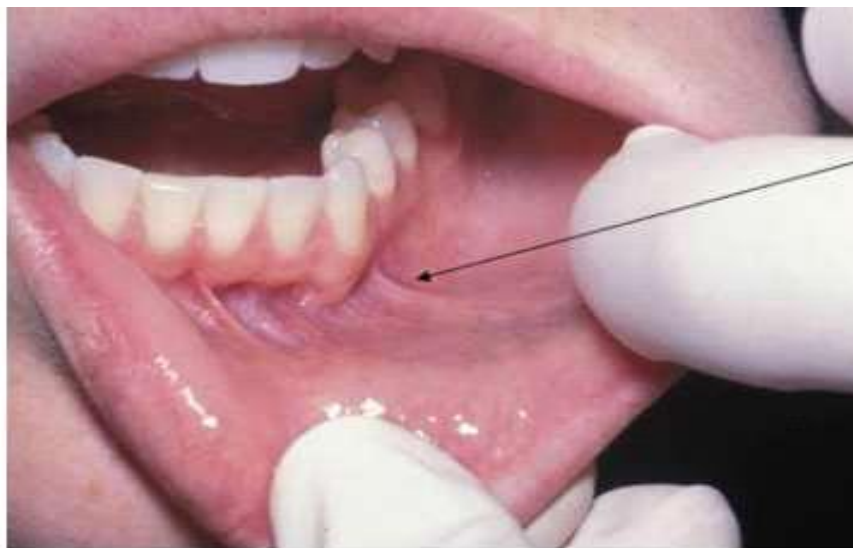


8- Frenum in the lower jaw:

a- Labial frenum : A fold of mucous membrane, single or multiple, may contain fibrous connective tissue where some fibers of mentalis muscle are present. It may become active during the mastication & speech to orbicularis muscle.



b- Buccal frenum: These are two in number either a fold or folds of mucous membrane U or V in shape. Extending toward the crest of the residual ridge from the buccal mucosal membrane reflecting distal to the canine in the antero- posterior direction.

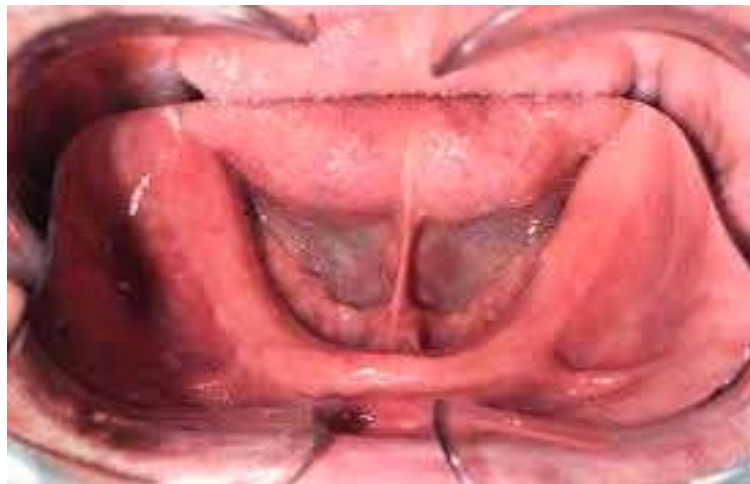


C- Lingual frenum: A fold of mucous membrane overlying the genioglossus muscle, often it is wide, active & forming the attachment of the tongue.



9- Labial vestibule: From the labial frenum to buccal frenum extending from the labial to buccal frenum.

10- Buccal vestibule: Extending from the buccal frenum posteriorly to the outer corner of the retromolar pad area and from the crest of the alveolar ridge to the cheek.



11- Retromolar pad area:

Frequently pear shaped, located on the alveolar process of the mandible behind the area of the last natural molar tooth; of particular concern in fitting full dentures.



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Partial Denture
FIRST STAGE
lecture six
Surveyor-definition-component part of
Surveyor

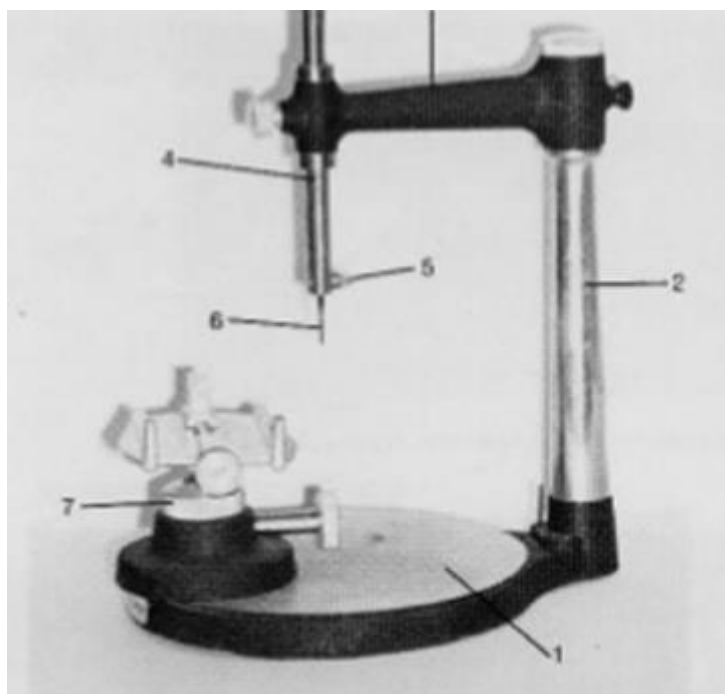
Preparation BY
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Surveying

A partial denture will not succeed unless it is designed and constructed in harmony with all the physiologic and mechanical problems present in the patient's mouth. Surveying and designing are important steps towards achieving a successful restoration.

SURVEY: "The procedure of locating or delineating the contour and position of the abutment teeth and associated structures before designing a partial denture"

Dental surveyor: It is an instrument used to determine the relative parallelism of two or more surfaces of the teeth or other parts of the cast of a dental arch.



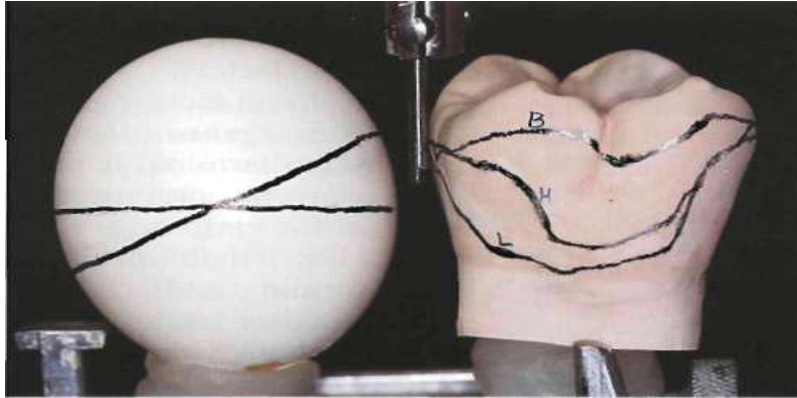
GUIDING PLANE: Two or more vertically parallel surfaces of abutment teeth so oriented to direct the path of placement/removal of a removable partial denture.

Path of insertion: It is that plane which denture follows from occlusal plan until rested on gingiva.

Path of removal:-It's that plane which denture follows from gingiva to reach the occlusal plan.

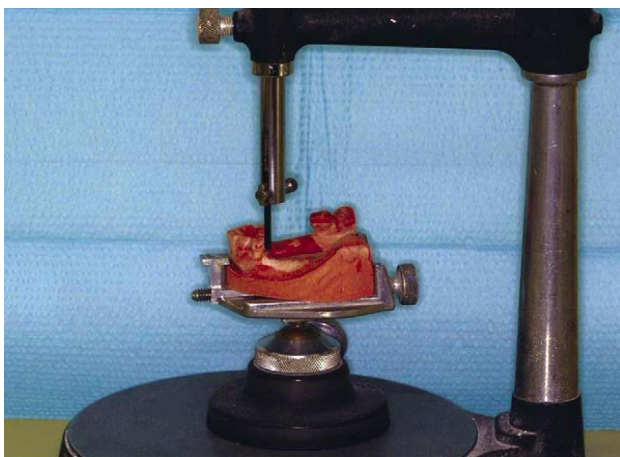
HEIGHT OF CONTOUR: A line encircling a tooth designating its greatest circumference at a selected position.

The survey line divides the tooth to suprabulge occlusally and infrabulge cervically. The infrabulge is the undercut. These undercuts are where the retentive tip of the retainer is placed to retain the prostheses from displacement.



Parts of the surveyor:

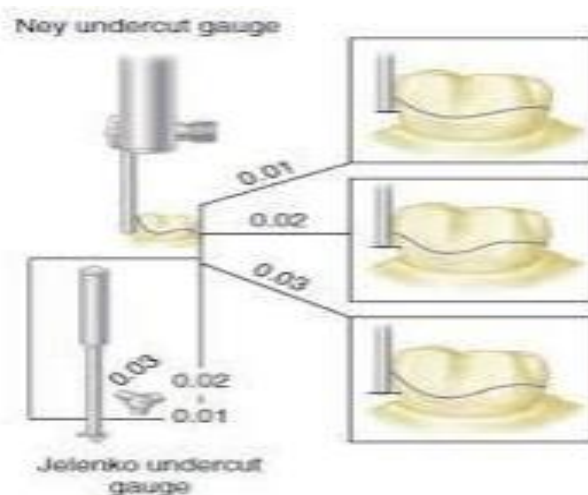
- 1- A level platform that is parallel to the bench top and on which the cast holder is moved.
- 2- A vertical column that supports the superstructure.
- 3- A horizontal arm that extends at a right angle from the.
- 4- A surveying arm that extends vertically from the horizontal arm. The surveying arm is capable of movement in a vertical direction.
- 5 -A surveying table: designed to hold a dental cast. The surveying table includes a ball-and socket joint, which permits special reorientation the cast (ie, tipping or tilting).



6.

6- Surveying tools that may be placed in the mandrel and used in various surveying applications. These surveying tools include:

- a) An analyzing rod, which is used to determine relative parallelism of surfaces on a dental cast.
- b) A carbon marker, which is used to mark the height of contour on one or more surfaces of a dental cast.
- c) Undercut gauges, which are used to identify the positions of desired undercuts on dent casts.
- d) A wax knife, which is used during blackout procedures and in the construction of surveyed restorations



OBJECTIVES OF SURVEYING

- 1- To determine the most desirable path of placement that will eliminate or minimize interference to placement and removal.
- 2- To identify proximal tooth surfaces those are made parallel to act as guiding planes during placement and removal.
- 3- To locate and measure areas of the teeth that may be used for retention.
- 4- To determine whether tooth and bony areas of interference will need to be eliminated surgically or by selecting a different path of placement.
- 5- To determine the most suitable path of placement that will permit locating retainers and artificial teeth to the best esthetic advantage
- 6- To delineate the height of contour on abutment teeth and to locate areas of undesirable tooth undercuts, to be avoided, eliminated, or blocked out.

Procedures for surveying: The following procedure is recommended for surveying the teeth for the diagnostic cast:

1-Position the diagnostic cast onto the surveyor table so the an occlusal plane is parallel to the base of the surveyor stand . (Use the middle of the retro molar pad as a substitute for occlusal plane when posterior teeth are missing).

2-Adjust the anterior –posterior tilt of the cast by placing the analyzing rod against the proximal tooth surfaces adjacent to the edentulous space. (Change the tilt of the surveyor table until maximum parallelism of the proximal surfaces has been attained).

3-Vary the lateral tilt of the cast (without altering the anterior –posterior tilt) until the recesses of the abutment teeth that are to receive the clasp tips are approximately equal.

4-Continue by the hard and soft tissue prominences and corresponding recesses that may interfere with insertion or removal of rigid portions of the metal framework or acrylic resin denture flanges.

5-Consider the aesthetic requirements, particularly if anterior replacement teeth are necessary.

6-After the orientation is established; mark the height of hard and soft tissue contours on the casts with carbon marker.

7- Tripod the diagnostic cast which allows one to replace the cast on the surveyor in the same position at any subsequent time.

8-Draw the formal design of the R.P.D. frame work on the diagnostic cast.

Undercut area: All area between survey line and gingival they are 2 types:

1-Desirable undercut: Usually present on buccal surface and lingual surface in which the retentive tip of retentive clasp is engaged.

2-Undesirable undercut area: Usually present on proximal surface and resist the insertion and removal of partial denture so should be block

Zero tilt: which means the upper surface of movable table is parallel to the base of surveyor.

When moved to the anterior direction called (anterior tilt)

-to distal direction (Distal tilt).

-to right direction (right tilt).

-to left direction (left tilt).

Requirement of blocking:

1- With the survey line.

2- Must be perpendicular to the horizontal plane.

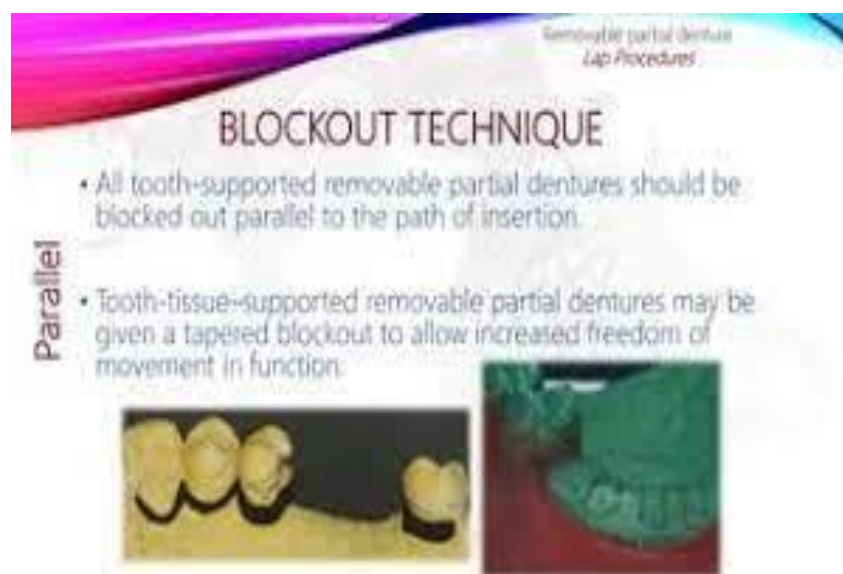
3- Must be smooth.

4- Must not fill the inter dental space

5- If we fill the inter dental space will create space between the finished partial denture and teeth lead for food impaction.

6- If we block above survey line also create space .

7- If we block below survey line in this case it's difficult for path of insertion and removing of partial denture.



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Najaf Technical Institute
Department of Prosthodontics Technologies**



Partial Denture

FIRST STAGE

lecture seven

Component part of partial denture

direct retainer

definition and function

Preparation BY
Baeda hasoon salman

Direct retainer

Direct retainer: The retention obtained in removable partial denture by the use of attachment or (direct retainer) or (clasp) that resists their removal from the abutment teeth.

The clasp may be classified into two types according to its origin.

A-Circumferential clasp: Which approaches the retentive undercut from an occlusal direction.

B-Bar clasp (roach clasp): Which approaches the retentive undercut from a cervical direction .it's used for anterior teeth.

Type A-Circumferential clasp:

- 1- Ring clasp
- 2- Half and half clasp.
- 3- Reverse action clasp.
- 4- Multiple clasp (butterfly clasp).



Type B-of bar clasp:

- 1-I clasp.
- 2-T clasp.
- 3- Ball clasp.

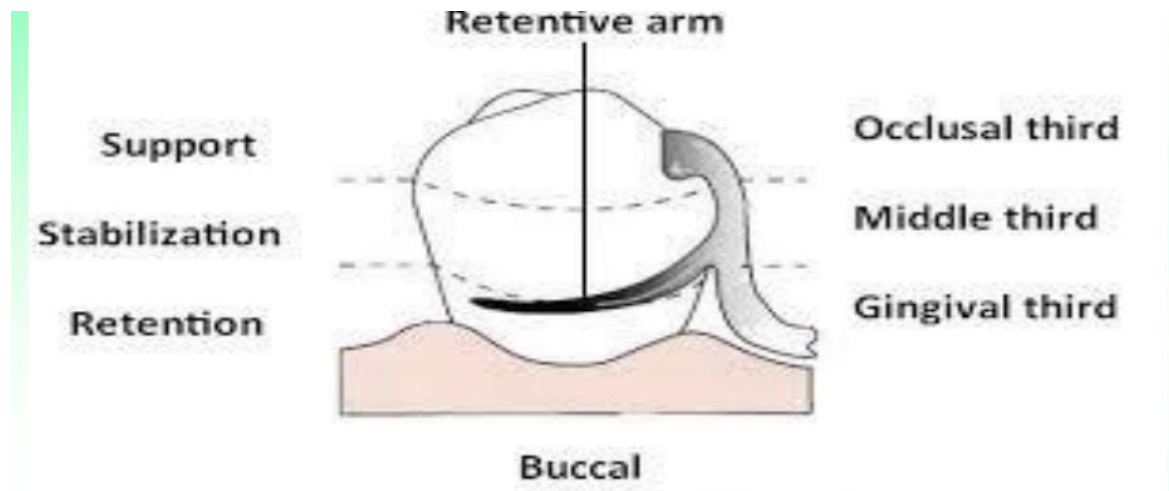
The diameter of stainless steel wire used in wire clasp:

Anterior teeth 0.8 mm or 0.7mm , Posterior teeth 0.9 mm or 1 mm

The component part of the clasp is:

- 1-Retentive arm.
- 2- Reciprocal arm.
- 3- Tag.

And between them, there is an occlusal rest. The two arms with occlusal rest joint with base of the partial denture by the minor connector.

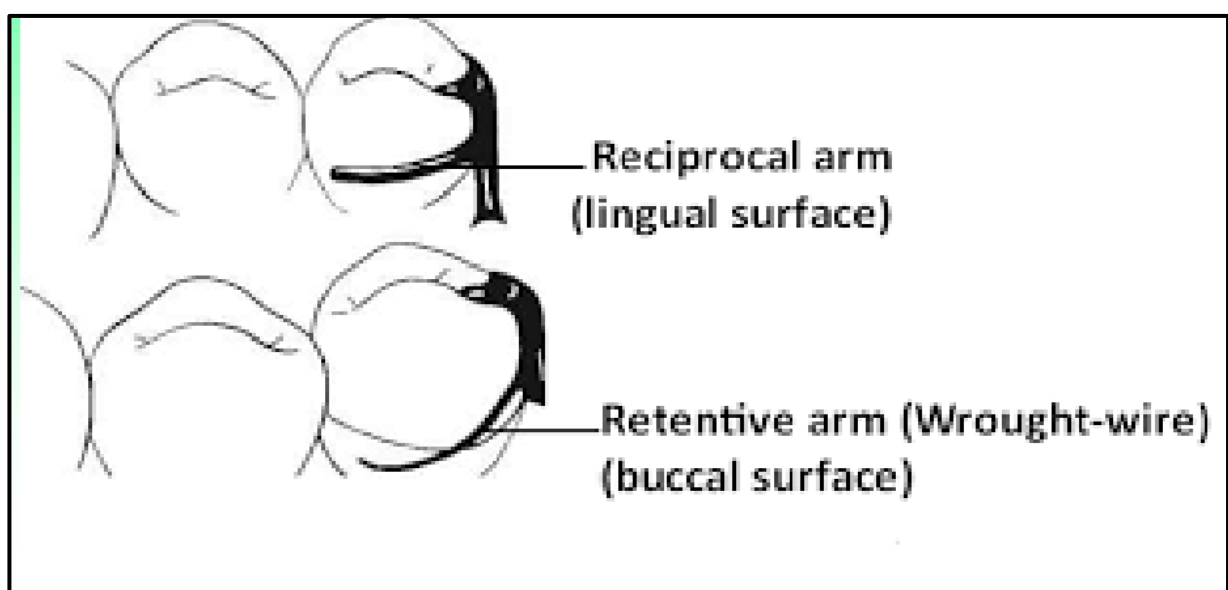


The function of retentive arm: Is to retain the partial denture in the patient mouth.

The function of the reciprocal arm: To prevent the lateral movement of the tooth of the patient and partial denture.

The component of the retentive arm is:

- 1-Retentive tip .at first 1/3
- 2- Bracing part.



1- The retentive tip of the retentive arm of the clasp is located at the undercut area (desirable undercut area), it must be.

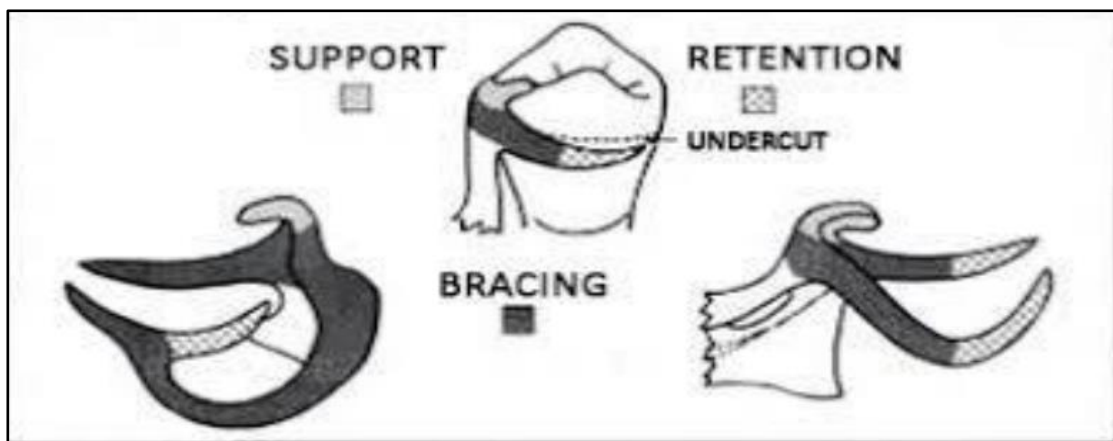
The requirement of retentive arm:

- 1-Must is below the survey line.
- 2- Parallel with gingival margin.
- 3-Away from the interdental papilla.
- 4- Intimate contact with the tooth surface.

2- ***Bracing:*** The resistance of partial denture to lateral movement during function, the bracing arm located between the survey line and occlusal surface.

Requirement of bracing part:

- 1-With the survey line or above it.
- 2- Below the occlusal surface.
- 3- Intermittent contact with the tooth surface.



Tag: It is the part that is embedded in the acrylic base and retains the clasp in acrylic.

The requirement of tag:

- 1-It should be not interment contact with the cast it must have 0.5-1 mm space between them.
- 2-Its end must be at a right angle (90) in order not to rotate in acrylic.

Minor connector: It's that part of the connector which joint major connector with the other part of the partial denture.

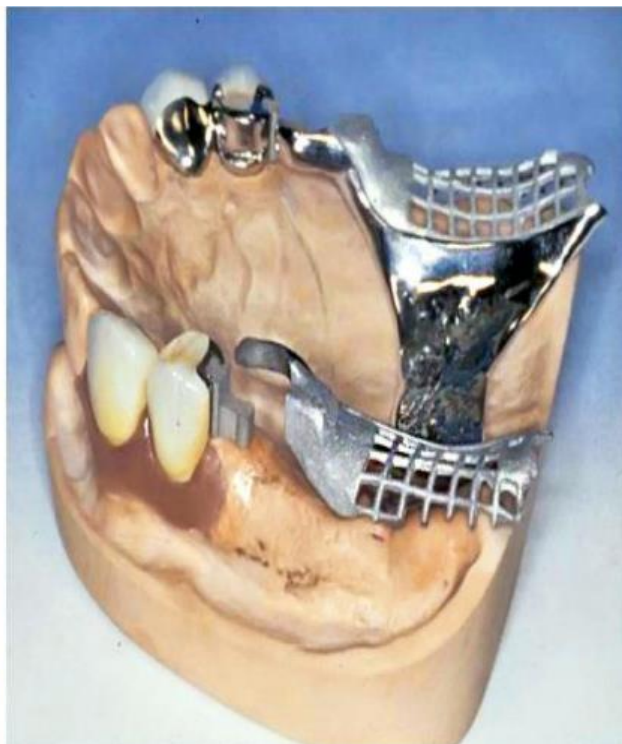
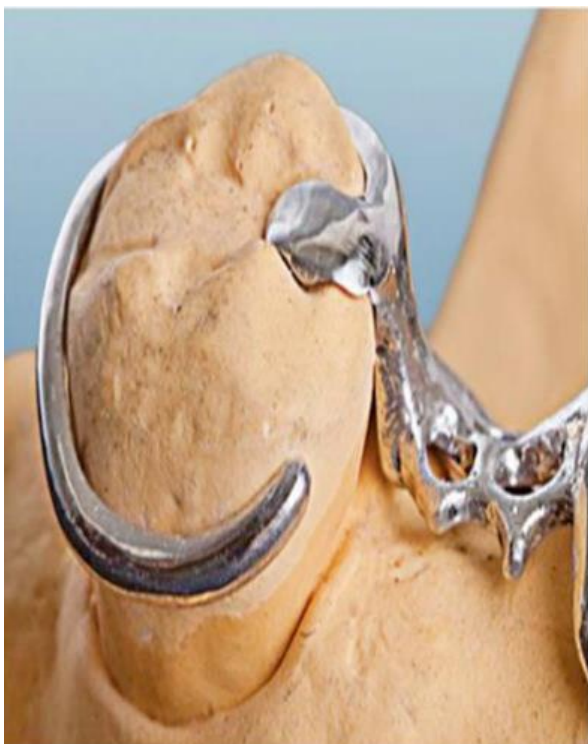
Retentive part: that part which is responsible for keeping the partial denture inpatient mouth .OR Those parts of a partial denture that resist the movement of partial denture away from soft tissue because of gravity, sticky food, or toque.

There are two types:

1-Direct retainer (clasp)

2-In direct retainer :- that part of partial denture which helps the direct retainer to resist the movement of partial denture away from the tissue they include:-

a- Occlusal rest, B-Minor connector, C-Post dam, d- Saddle area.



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Partial Denture

FIRST STAGE

lecture Eight

Component part of partial denture

Major connector

Maxillary & Mandibular

Major connector

Preparation BY
Baeda hasoon salman

Major connector

Major connector: It's that part of partial denture which is connecting the (left side of the arch to the right side).

1-Maxillary Major Connector.

2-Mandibular Major connector.



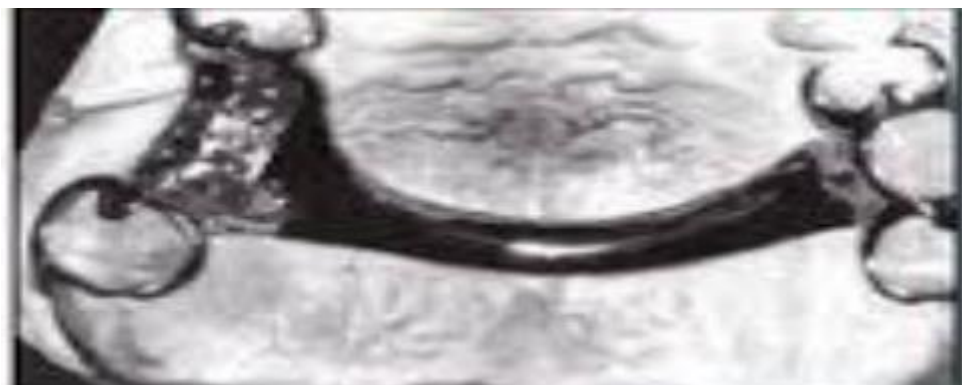
Maxillary Major Connector:

1-Single posterior palatal Bar: It is use in a tooth born unilateral or bilateral limited spaces for cross arch stabilization. The decision to use a single palatal bar instead of a strap should be based on the size of the denture-bearing areas.

Indication for :

A-Maxillary tooth born posteriorly partial denture.

b-Where there is unilateral (free end extension) .the bar should be wide non flexible with the central portion thicker than the edges, this provide strength.



2-Single anterior palatal Bar: Its U shaped or horse shoe shaped, it is the more desirable of maxillary major connector used.

Indication:

- Hard midline palatine suture.
- Prominent maxillary torus palatines.
- When several anterior teeth to be replaced.

3-Palatal plate or strap: It is a wide palatal strap, it could be made wide to become thinner and helps in the distribution of the mastication forces over a wide area, and it is less objectionable by the patient



Indications:

Bilateral and unilateral edentulous spaces of short span in a toothsupported restoration (CL III & CLIII mod 1).

Contraindications:

1. Tooth- tissue supported removable partial denture (RPD).
2. Palatal torus.
3. Extremely long tooth supported edentulous space.

4- Combination anterior and posterior palatal bar:

Its composed of an anterior and posterior palatal bar The anterior component is a flat bar located as far as possible from the rugae area and tongue interference (6 mm away from gingival margins) while the posterior bar is a half oval in cross section located as far as possible

The advantages of this type:

a-Each portion made thinner and narrower than single bar.

B-It has strong as possible to avoid interference with the tongue .



5- Combination anterior and posterior palatal strap type major connector:-

It is a rigid palatal major connector.

The anterior and posterior palatal strap combination may be used in almost any maxillary partial denture design. forming a square or rectangular frame and open in center portion.



6- Full coverage plate

palatal plate are used to designate any thin, broad, contoured palatal coverage used as a maxillary major connector and covering one half or more of the hard palate . Posterior border at the junction of the hard and soft palates;

It covers a wide area of the palate so it contributes in the support and retention of the prosthesis, this coverage permit a wide distribution of the functional load with very little movements from the base during function thus reducing horizontal forces which are highly destructive specially to abutment .



Mandibular Major Connectors

Lingual bar :- Half-pear shaped with bulkiest portion inferiorly located. The superior order of a lingual bar connector should be tapered toward the gingival tissue superiorly with s greatest bulk at the inferior border. The superior border should be at located 3-4mm away om the gingival

margin & more if possible to prevent blood constriction.



Linguoplate :- Half-pear shaped , thin ,follow the contours of the teeth and the embrasures. Thin metal extending superiorly to contact cingula.

Apron extended interproximally to the height of contact points (closing interproximal spaces)



3-Lingual bar with continuous bar indirect retainer

Thin, narrow (3mm) metal strap located on cingula of anterior teeth, scalloped to follow interproximal embrasures with inferior and superior borders tapered to tooth surfaces. Lower part, Conventionally shaped and located same as lingual bar major connector.

Advantages:

- More rigid than lingual bar.
- Covers less tooth & tissue surface than lingual plate.

Disadvantages:

- Very complex design
- May be objectionable to patient because there are four edges exposed to the tip of the tongue.
- Potential food traps between two bars.



4 - Cingulum Bar (Continuous Bar) Thin, narrow (3 mm) metal bar located on cingula of anterior teeth, scalloped to follow interproximal embrasures with inferior and superior borders tapered to tooth surfaces



5- Labial bar :- Half-pear shaped with bulkiest portion inferiorly located on the labial and buccal aspects of the mandible. Superior border tapered to soft tissue. located at least 4 mm inferior to labial and buccal gingival margins and more if possible.

Indications:

- lingual inclinations of remaining mandibular premolar and incisor teeth cannot be corrected.
- severe lingual tori cannot be removed and prevent the use of a lingual bar or lingual plate major connector.
- severe and abrupt lingual tissue undercuts



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Partial Denture

FIRST STAGE

lecture Nine

Component part of partial denture

Minor conector

Preparation BY
Baeda hasoon salman

Minor connector

is that part of the RPD that serves as a connecting link between the major connector or base of a removable partial denture and the other components of the prosthesis such as the clasp assembly, indirect retainer, occlusal rest, or cingulum rest.

Functions:

- 1- Joining function.
- 2- Transfer functional stress to the abutment teeth.
- 3- Transfer the effect of the retainers, rests, and the stabilizing component throughout the prosthesis.
- 4- Ensure the stability of the denture against lateral forces during function.

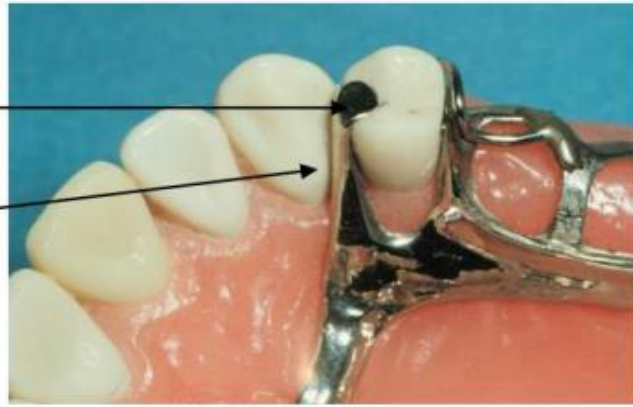


Forms, location and properties of the minor connector

- 1- Must have sufficient (but not objectionable) bulk to be rigid; otherwise the transfer of the functional stresses to the supporting teeth and the tissue will not be effective.
- 2- Minor connector contacting the axial surface of the abutment tooth should be located in an embrasure (where it will be less noticeable to the tongue) not on the convex surface.
- 3- It should follow the interdental embrasure, passing vertically from the major connector (since the vertical joint is the best to transfer the stress from one plane to another) so that gingival crossing is abrupt and covers as little of the gingival tissue as possible.

occlusal rest

Minor connector



Embrasure minor connector

- 4- All gingival crossing should be relieved on the master cast to prevent the impingement of the gingival tissue.
- 5- Embrasure minor connector should be thickest toward the lingual surface, tapering toward the contact area.
- 6- The deepest part of the interdental embrasure should be blocked to avoid interference during placement and removal, and to avoid any wedging effect on the contacted teeth.
- 7- The minor connector should be parallel to the long axis of the tooth.
- 8- When an artificial tooth will be placed against a proximal minor connector, the minor connector's greatest bulk should be toward the lingual aspect of the abutment tooth.
(to ensure sufficient bulk with least interference to the placement of the artificial tooth).
- 9- Denture framework portion by which acrylic resin denture bases attached is a minor connector. It should be designed so that it will be completely embedded within the denture base. Several forms are existing; retentive lattice, ladder, loops, beads, and posts. An open latticework or ladder type of design is preferable.

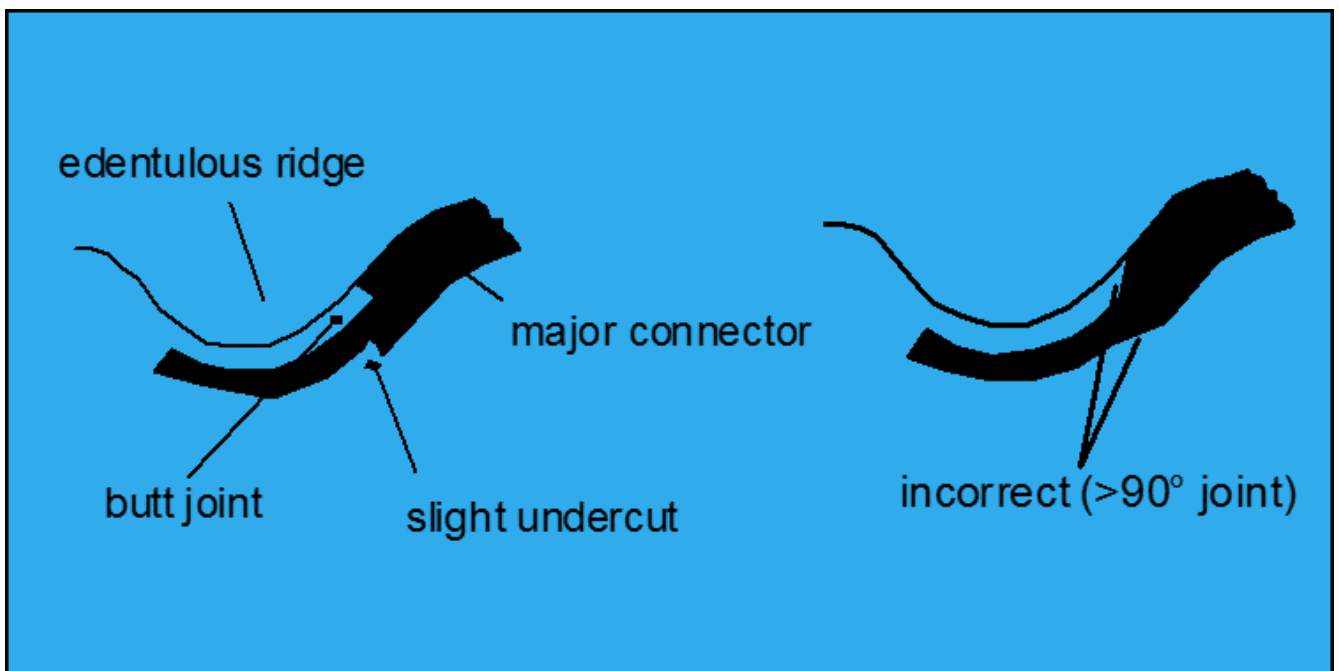


Ladder- type minor connector

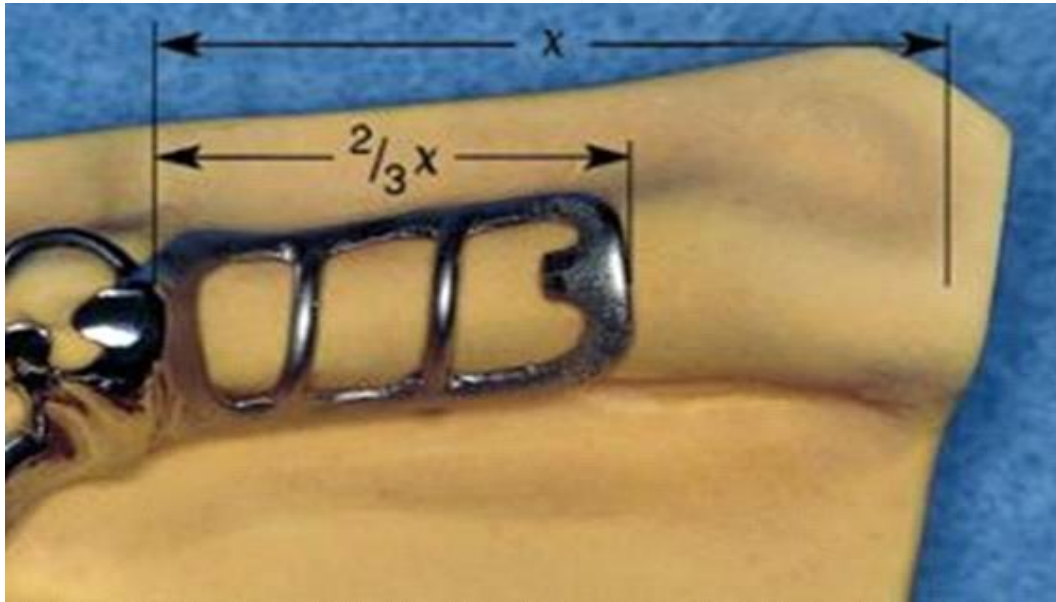


open latticework design

10- The junction of the mandibular minor connector with the major connector should be strong butt type joint but without bulk.



11- The minor connector for the mandibular distal extension base should extend posteriorly about two thirds the length of the edentulous ridge and have elements on both buccal and lingual surfaces. This extension provides added strength to the denture base and will also minimize distortion of the cured acrylic base due to inherent strains caused by processing.



types of Finishing lines

It's somewhat an undercut area at the junction of the major and minor connector in the ladder area that will form an angle not greater than 90 degrees, it's done to prevent chipping away of acrylic resin that supporting artificial teeth by forming a step.

1- vertical finishing lines

- It's the finishing line at the junction of the ladder area and major connector in free end extension cases (CLI and CLII) in mandibular arch only and in CLIV mandibular arch with labial bar major connector. It represents the area where the acrylic resin that supporting artificial teeth ending.

2. Horizontal finishing line

- It's the junction of the major connector and the ladder area and it extend horizontally forming an undercut area that supports acrylic resin that carrying artificial teeth. This type of finishing line is detected in all maxillary partial denture cases

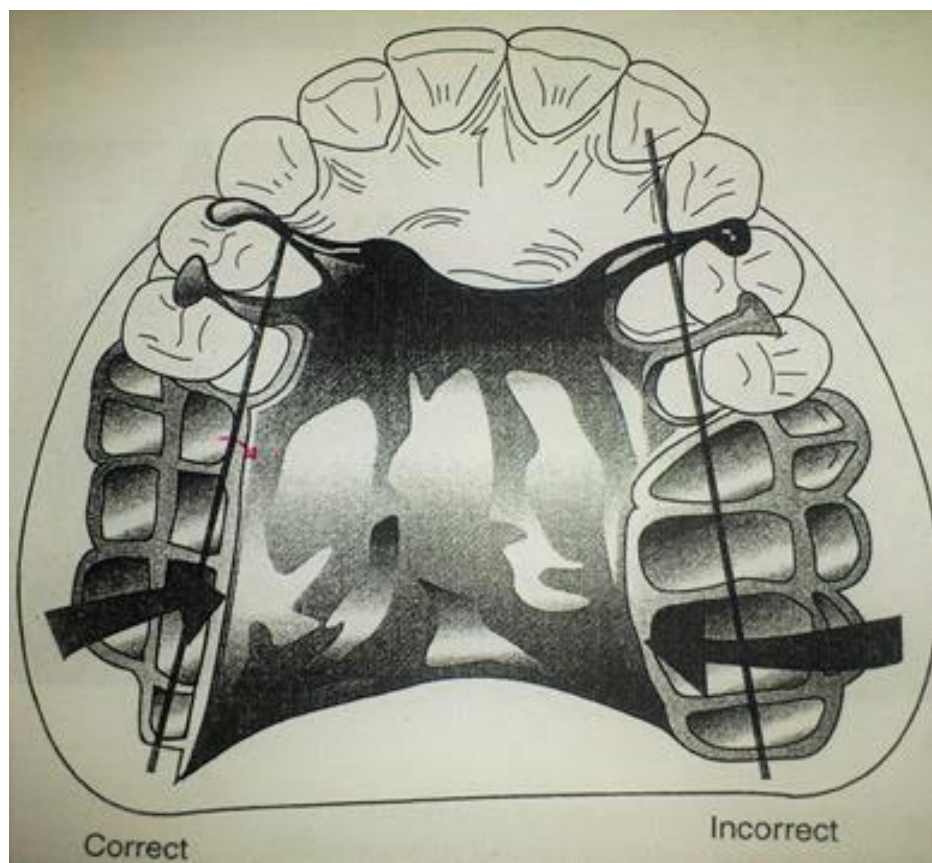
Functions

1- A finish line creates a definite limit to the plastic denture base. In this way the plastic ends in a bulk of the material. Thin areas of the plastic are weak and subjected to fracture.

2- Provide mechanical retention for the plastic denture base.

3- Provide smooth transition from the plastic base to the metal framework.

Much attention should be given to the location of the finishing line. If the finishing line for example is located too far medially, the natural contour of the palate will be altered by the thickness of the junction and the acrylic resin supporting the artificial teeth. On the other hand if the finishing line is located too far buccally, it will be most difficult to create the natural contour of the acrylic resin on the lingual surface of the artificial teeth.



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Partial Denture

FIRST STAGE

lecture Ten

Component part of partial denture

Indirect retainers

Preparation BY
Baeda hasoon salman

INDIRECT RETAINERS

An indirect retainer consists of a minor connector and a rest, and helps to stabilize the distal extension RPD, indirectly (compared to direct retention with clasps), when the patient eats sticky foods.

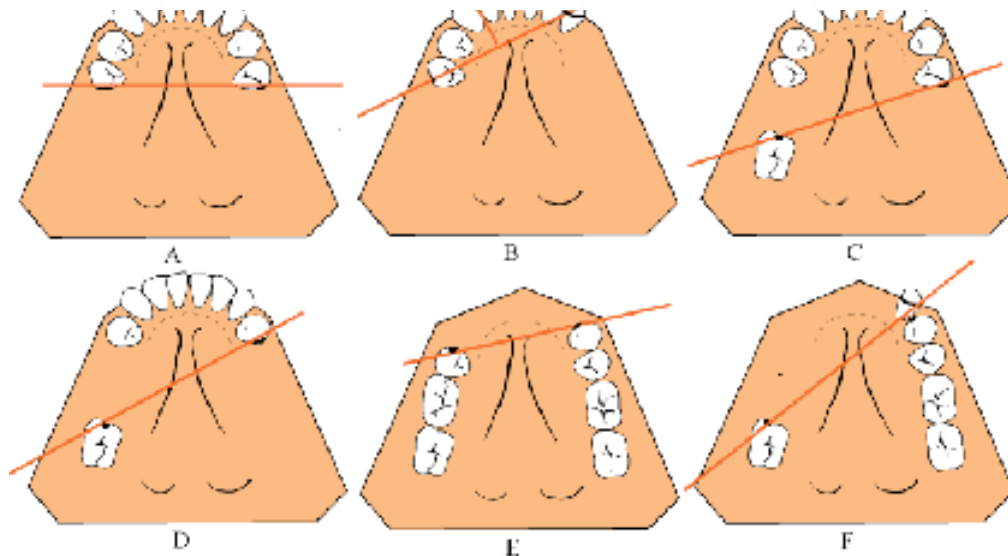
To provide acceptable support, the indirect retainers are placed in properly prepared rest seats with positive contact on the tooth, and also placed on a tooth that can provide the required support.



Indirect retainers should be placed as far as possible from the **fulcrum line** to prevent movement of the denture bases away from the tissues.

A fulcrum line: is an imaginary line around which an RPD will tend to rotate.

Fulcrum lines may be in the horizontal, frontal or vertical plane. Indirect retainers provide resistance to **rotational** movement of a distal extension base of RPD away from the denture bearing tissues around the retentive fulcrum line.



The retentive fulcrum line is an imaginary line connecting the retentive clasp tips of the abutment teeth adjacent to the distal extension. The indirect retainer is located on the opposite side of the retentive fulcrum line from the mucosa supported base.

LOCATION OF FULCRUM LINES

KENNEDY CLASS I: - the fulcrum line passes through the rest areas on the most posterior abutment on either side of the arch.

KENNEDY CLASS II: - the fulcrum line passes diagonally through the most posterior occlusal rests. If a modification area is present on that side, the additional abutment lying between the two principle abutments may be used for support of the indirect retainer if it is far enough from the fulcrum line

KENNEDY CLASS III: - the fulcrum line is non-existent.

A tooth supported RPD is totally supported by occlusal rests and has no rotation because of soft tissue movement.

KENNEDY CLASS IV :- the fulcrum line passes through the two most anterior rests adjacent to the edentulous space.

* Most frequently, indirect retainers are placed on canines or the mesial fossa of first premolars. Incisors are usually not strong enough to provide the support necessary for indirect retention; however, occasionally they provide the only option.



The factors influencing the effectiveness of an indirect retainer:

The principal occlusal rests on the primary abutment teeth must be reasonably held in their seats by the retentive arms of the direct retainers. If rests are held in their seats, rotation about an axis should occur, which activates the indirect retainers. If total displacement of the rests occurs, there would be no rotation about the fulcrum, and the indirect retainers would not be activated

2. Distance from the fulcrum line. The following three areas must be considered:

- a. Length of the distal extension base
- b. Location of the fulcrum line
- c. How far beyond the fulcrum line the indirect retainer is placed

3. Rigidity of the connectors supporting the indirect retainer. All connectors must be rigid if the indirect retainer is to function as intended

4. Effectiveness of the supporting tooth surface. The indirect retainer must be placed on a definite rest seat on which slippage or tooth movement will not occur. Tooth inclines and weak teeth should never be used to support indirect retainers.

Auxiliary functions of indirect retainers:

In addition to effectively activating the direct retainer to prevent movement of a distal extension base away from the tissue, an indirect retainer may serve the following auxiliary functions:

1. It tends to reduce anteroposterior-tilting leverages on the principal abutments. This is particularly important when an isolated tooth is being used as an abutment
2. Contact of its minor connector with axial tooth surfaces aids in stabilization against horizontal movement of the denture. Such tooth surfaces, when made parallel to the path of placement, may also act as auxiliary guiding planes.
3. Anterior teeth supporting indirect retainers are stabilized against lingual movement.
4. It may act as an auxiliary rest to support a portion of the major connector facilitating stress distribution. For example, a lingual bar may be supported against settling into the tissue by the indirect retainer acting as an auxiliary rest. One must be able to differentiate between an auxiliary rest placed for support for a major connector, one placed for indirect retention, and one serving a dual purpose.

Forms of indirect retainers

1. Auxiliary Occlusal Rest

The most commonly used indirect retainer is an auxiliary occlusal rest located on an occlusal surface and as far away from the distal extension base as possible.



2- Canine Rests

When the mesial marginal ridge of the first premolar is too close to the fulcrum line or when the teeth are overlapped so that the fulcrum line is not accessible, a rest may be used on the adjacent canine tooth. Such a rest may be made more effective by placing the minor connector in the embrasure anterior to the canine, either curving back onto a prepared lingual rest seat or extending to a esioincisal rest. The same types of canine rests as those previously outlined, which are the lingual or incisal rests, may be used.



3-Canine Extensions from Occlusal Rests

Occasionally a finger extension from a premolar rest is placed on the prepared lingual slope of the adjacent canine tooth. This extension is used to increase indirect retention by increasing the distance of a resisting element from the fulcrum line. Such an extensions, (also continuous bar and linguoplates) should never be used without terminal rests (rest and rest seat) because tooth movement occurs when they are placed on inclined planes alone.



4- Continuous Bars and Lingual plates

Technically, continuous bars and linguoplates are not indirect retainers because they rest on unprepared lingual inclines of anterior teeth. The indirect retainers are actually the terminal rests at either end in the form of auxiliary occlusal rests or canine rests. In Class I and Class II partial dentures, a continuous bar or linguoplate may extend the effectiveness of the indirect retainer if it is used with a terminal rest at each end.

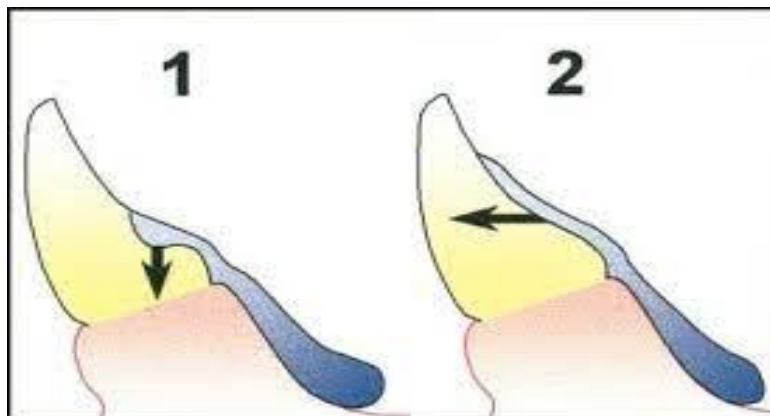


5- Reciprocal arm and retentive arm

They might act as an indirect retainer when it rests anterior to the fulcrum line in free end extension cases.

Note

- 1- When possible, the indirect retainer should rest on a surface at right angles to its potential path of movement.
- 2- If it rests on an inclined tooth surface, movement of the tooth might occur with resulting loss of support for the indirect retainer.



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***Partial Denture
FIRST STAGE
lecture Eleven
Articulator, Advantages of Articulator,
Classification of Articulato***

Preparation BY
Baeda hasoon salman

Articulator

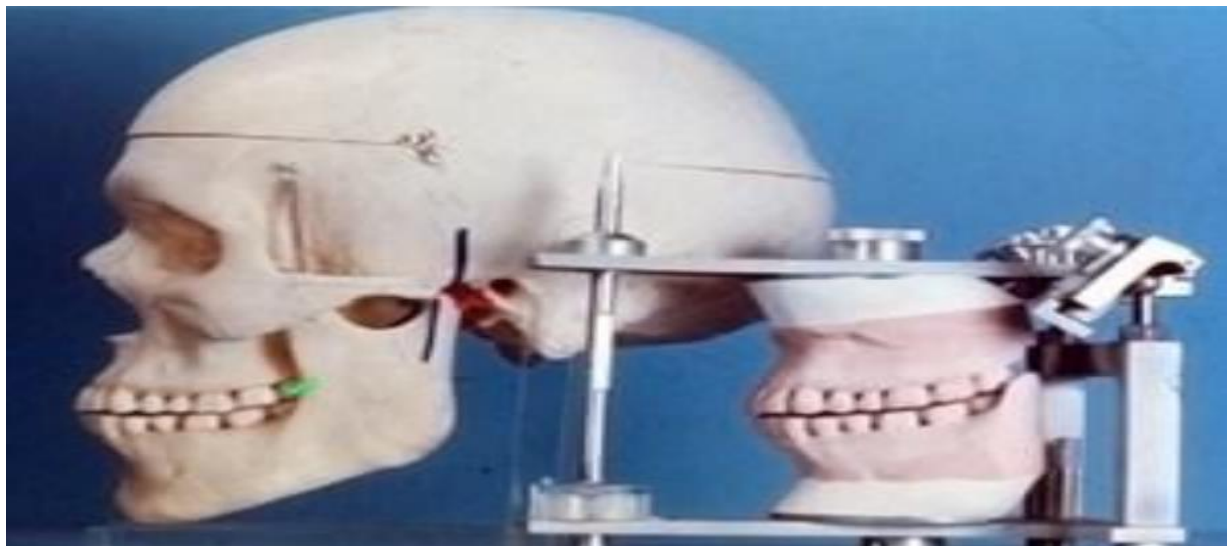
Articulator: It's a mechanical dental device simulate the upper and lower jaw and (T.M.J.) movements.

Advantages of articulator:

- 1-For better vision of properly mounted cast especially forms lingual side.
- 2-Less patients' time is wasted.
- 3-Patient cooperation is not needed.
- 4-No interference of patient saliva and tongue and cheek.

Classification:

- 1-Simple hinge articulator (open and close).
- 2-Semi adjustable articulator (simulate part of the condylar movement).
- 3-Full adjustable articulator (simulate all condylar movement).



Vertical Dimension: It mean the vertical distance between any two arbitrary selected points on above and one below the oral cavity(eig one on tip of nose and other on the chin)

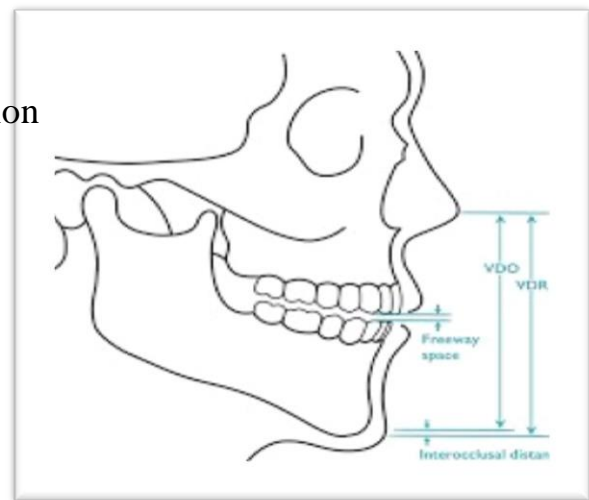
There are two vertical dimensions according to function of mandible:

1-Vertical dimension of occlusion: The vertical distance between 2 arbitrary selected points one above and one below the oral cavity when the posterior teeth in maximum intercuspation (cusp to fossa relationship).

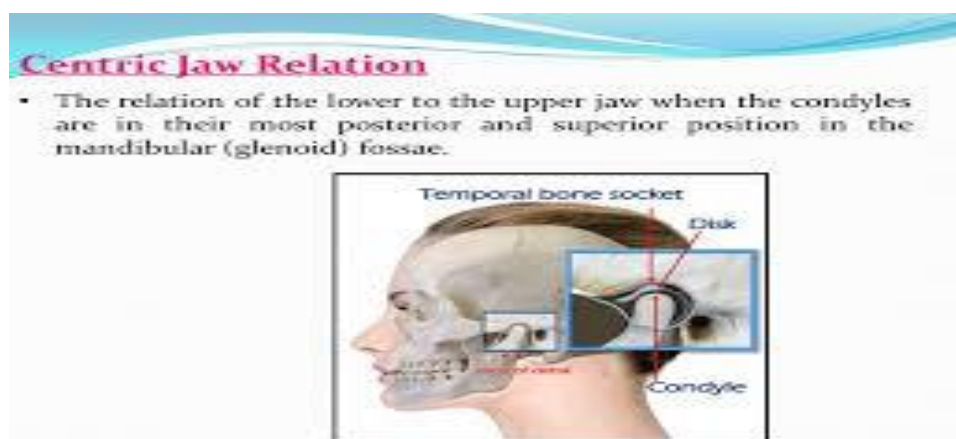
2-Vertical dimension at rest position: It means the vertical distance between two arbitrary selected points one above and one below the oral cavity when the muscles of mastication at physiological rest position

Freeway space: It is the difference between the vertical dimension at rest position, and vertical dimension at occlusion it ranges between (3-5mm).

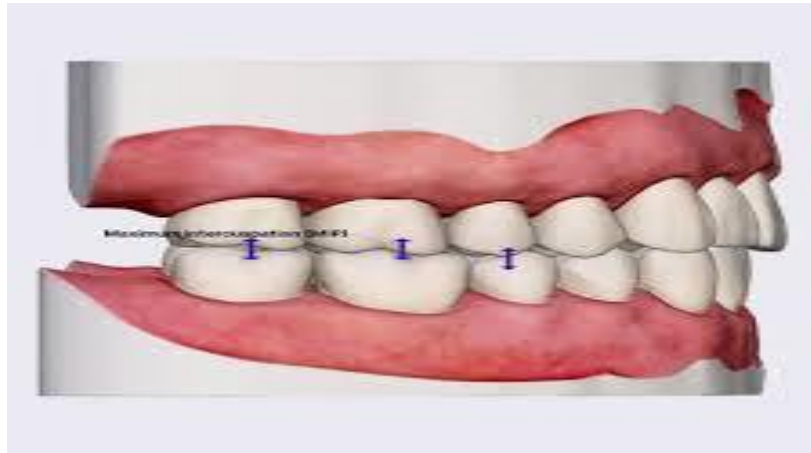
Freeway space = vertical dimension at rest position
--- vertical dimension at occlusion.



Centric Jaw relation: It is the anterior-posterior relationship between upper and lower jaw (maxillary and mandible bone) when the mandible is most regressive position glenoid fosse (bone to bone).



Centric occlusion: It is the relation between the occlusal surface of upper and lower teeth (cusp to fossa) teeth to teeth



Selection and arrangement of teeth in removable partial denture:

Material of artificial teeth is either acrylic or porcelain the selection of the teeth is very important in order to construct removable partial denture as near as possible to the natural look, upon completion of the articulator mounting and a thorough assessment of the occlusal requirements, the practitioner should be able to perform the proper arrangement of prosthetic teeth. While selecting the replacement teeth, carefully consider the esthetic and functional requirements of the patient, the structural requirements of the RPD and the materials to be used in prosthesis construction

The selection of the anterior teeth: If there are one or more of anterior natural teeth remaining, so the selection of the shape and color is depending on the shape and color of the remaining natural teeth. The most important thing in obtaining adequate aesthetics is to have the teeth balanced in the lower face and orifice so that there is the same amount of tooth displayed on the right side as on the left side.

The selection of the posterior teeth: You must determine the type of posterior teeth to use in the denture.

The following are some guidelines to assist you in the selection : Nonanatomic teeth: With monoplane, flat, occlusal –plane teeth, a simple hinge articulator is adequate. This articulator is not the most appropriate, but it will work for monoplane teeth with an accurate vertical dimension and centric relation record from the dentist.

Anatomic teeth: When cusped teeth or monoplane teeth with a ramp or compensating curve setup is requested, (vertical dimension, centric relation the face bow and protrusive guidance for the laboratory).

1-Shape: according to the shape of patients' face we have 3 main shape of human face either triangular ---- oval ---- or square.

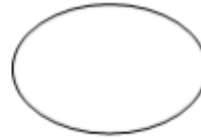
Triangular



Square



Oval



2-Size (mold): According to mesiodistal width of saddle small arch need small size teeth and this is mainly present when the patient is leady and if we use in this ease large size teeth so there will be loss of space leading to crowding of teeth which give ugly look and vice versa.

3-length according to lip: Ideal, when the person sitting in rest position the incisor third of central incisor, is only exposed under lip if we use short teeth so the patient appears as he has no teeth and if we use long teeth so the patient appears having to long teeth.

4-Colour: According to patient's skin color.

Dark patient =light teeth Light patient =dark teeth

5-Texture: Depended on the texture of patient skin.

6- Sex: ladies usually have whitest, bright, round, and short teeth while men usually have darker, brown, triangular, square, long teeth

7- Age: In young patients, we select light teeth while in the old patient we darker teeth to have a look of a smoker

Selection of posterior teeth:

1- **Size:** According to the mesiodistal width of the saddle.

2- **Height:** According to inter maxillary space or (inter occlusal space).

The sequence of teeth in partial denture: When we arrange the teeth in partial denture we should keep in mind the following:

1-Artificial teeth should be in some planes with natural teeth.

2-Occlusion: Artificial teeth with an occlusal plan in order to have a good occlusion and to avoid high spot or premature occlusion.

3-In neutral zone or zero zones (on the crest of the ridge).

Zero zones: That zone on the crest of the residual ridge in which all directions and that force from the lingual direction are equal to each other, this is making the denture more stable.

Grinding of artificial teeth during setting: when grinding is needed?

1-To reduce mesiodistal width.

2-To reduce gingival-occlusal length.

How grinding should be done?

1-Grinding should avoid:

A-Facial surface (because of esthetic)

B-occlusal surface (to keep anatomical landmark that helps in occlusion and mastication).

2-Grinding should be done for:

A-gingival surface.

B-Lingual surface.

C-lingo-mesial and lingo-distal

line angle grinding must be as less as possible just to fit the tooth on its position without interference with occlusion or ridge and also must be directed from facial to word lingual, if all grinding we do is not enough to set this size of the tooth then we select a smaller size.

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Najaf Technical Institute
Department of Prosthodontics Technologies**



Partial Denture
FIRST STAGE
lecture Twelve
Types of replacement teeth
(materials), The selection of
the anterior teeth &
selection of the posterior teeth

Preparation BY
Baeda hasoon salman

replacement teeth

Types of replacement teeth (materials):

- 1-Commercially available acrylic resin teeth (Ant. & Post.)
- 2- Commercially available porcelain teeth (Ant. & Post.)
- 3- Commercially available composite resin teeth (Ant. & Post.)
- 4- Metal replacement for posterior teeth (gold).



Porcelain teeth

Advantages:

- 1-Greater translucency and depth of color give a natural appearance.
- 2-harder than acrylic
- 3-resist wear
- 4-resist staining
- 5-they easily removed from the base of because there no chemical reaction between porcelain and acrylic denture base (benefit in rebasing).

Disadvantages:

- 1- Brittle
- 2- detachment of tooth from the denture base
- 3- difficult to fabricate and trim
- 4-cause wearing of opposing natural teeth.



Acrylic teeth

Advantages:

- 1- easy to adjust and trim.
- 2- Chemical bonding to denture base.
- 3- easy to fabricate.
- 4- lighter.



Disadvantages:

- 1- susceptible to abrasion.
- 2- Easily stained.
- 3- in rebasing (difficult to remove the teeth from the denture base).

Arrangement of anterior teeth

Position of teeth: important role is to set the teeth in place where they grew.

Anterior teeth

Incisive papilla:

- Aid in determining the midline
- Labial surfaces of the central incisors are usually 8-10mm in front of the papilla (distance increase with excessive bone loss).

Lip:

- The anterior teeth should be placed to support the lips to maintain the normal muscle tone.
- Placing them too far posteriorly allows the muscles to go unsupported and lips to sag.
- Placing them too far anteriorly stretches the muscles and results in a smaller looking mouth.
- The need for lip support from the teeth and denture flange varies depending upon the degree of ridge resorption.

Crest of the ridge:

- Upper anterior teeth anterior to the crest of the upper ridge.
- Lower anterior teeth over the crest of the lower ridge.



Over bite: the vertical distance between the incisal edges of maxillary and mandibular teeth(0.5mm)

- ***Over jet:*** the horizontal distance between the incisal edges of maxillary and mandibular teeth.(1-2mm)

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 & bisects the incisive papilla, this line is perpendicular to line 1.
- 3-The canine eminence line is recorded on the cast when it is present

Mandibular cast:

- 1-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 crest of the residual ridge from the canine point to the middle of retromolar pad, aides in the anterior-posterior position of the mandibular posterior teeth.
- 3-A line that bisects the vertical height of the retromolar pad aides in establishing the vertical position of the occlusal surfaces of the posterior teeth.

Techniques: Upper central incisor:

- Long axis shows slight mesial inclination
- The incisal edge is on the occlusal plane
- The neck of the tooth should be slightly depressed



Upper lateral incisor

- Long axis shows more mesial inclination
- The incisal edge is usually 0.5- 1 mm above the occlusal plane
- The neck of the tooth depressed more than that of central incisor

Upper canine

The canine tooth is an important tooth in any tooth arrangement because it forms the corner of dental arch

- Long axis perpendicular to the occlusal plane
- The cusp tip touches the occlusal plane
- The neck of tooth should be prominent (support the corner of the mouth)

Upper anterior teeth will generally follow the contour of the lower lip.

When making the f and v sound the anterior teeth will contact the mucosal part of the lower lip.

Lower central incisor

- Long axis shows slightly inclined mesially
- The incisal edge should form 1-2 mm horizontal and vertical overlap in respect with upper central incisor (above the occlusal plane)
- The neck of the tooth should be slightly depressed

Lower lateral incisor

- Long axis mesially inclined
- It placed as in central incisor



Lower canine:

- Long axis slightly inclined mesially
- The neck of tooth should be set prominent and the cusp tip 2mm above the occlusal plan

The anterior teeth should be arranged to provide:

- 1-proper lip support.
- 2-permit satisfactory phonetics.
- 3-pleasing aesthetics.

Waxing of removable partial denture

Waxing: Since the retention in partial denture is not depending on peripheral seal like the complete denture, so the borders are made in an arbitrary manner.

The anterior flange: should blend with soft tissue in order the eyes not observe the artificial look of a denture, the wax around the neck of the tooth should be smooth and on small groove should be left since they retain food and stains.



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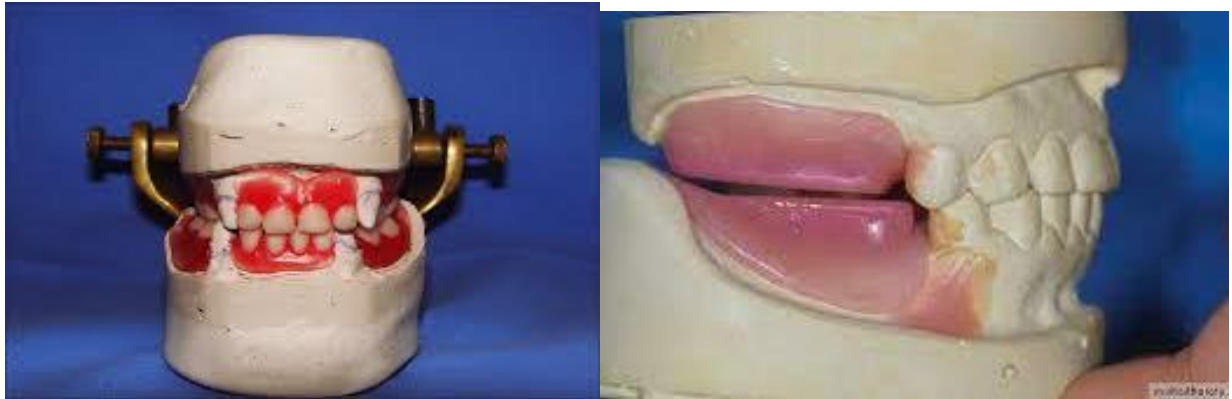
***Partial Denture
FIRST STAGE
lecture Thirteenth
Mounting of dental cast
waxing, flasking, Packing,
Curing, of partial denture***

Preparation BY
Baeda hasoon salman

Mounting of dental cast

At this stage, the practitioner must mount the dental casts preparation for arrangement of prosthetic teeth. Casts must accurately related to the opening and closing axis of the chosen articulator and one to one another.

A simple hinge or a nonadjustable articulator is frequently indicated in the treatment of patients with (CL III partially edentulous arches). A semi adjustable instrument is most often indicated for (CL I & CL II AND CL IV). A highly adjustable instrument is usually limited to use in patient needing extensive occlusal rehabilitation.



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The anterior flange: should blend with soft tissue in order the eyes not observe the artificial look of a denture, the wax around the neck of the tooth should be smooth and on small groove should be left since they retain food and stains.

Flasking: After waxing the denture in a place and sealed on the working cast with molten wax and the place it in the flask.

Flask: Is a metal sectional box used for holding the plaster mold of waxed up denture into which the acrylic resin packed.



Mold: Is a room of plaster appears in flask after wax elimination and filled with acrylic on the packing stage.

Component parts of flask:

- 1-Shallow section.
- 2-Deep section.
- 3-Upper lid.
- 4-The two flask are hold in clamp.



Procedure of flasking:

- 1-Put the working cast on a shallow section in a way that the periphery of waxed up denture at a level of the edge of the flask and about 1 c.m. away from metal all around.
- 2-Natural teeth are reduced in height and hooded to get a thick layer of plaster that will not crack under pressure.
- 3-The plaster must be smooth and the metal surface of flask cleaned
- 4- Separating medium like cold mold seal or tinfoil is adapted on plaster, wax,(not artificial teeth).
- 5-Put the second half of the flask and fill it with a thin mix of plaster that will cover the teeth and wax.
- 6-Place the upper lid of the flask and put it on a bench in a manner that the section of flask and lid parallel to bench and let it set.

Wax elimination: Place the flask in boiling water 100c for 5 mints, this lead to melting the wax, and the two halves of the flask can be gently separated. The residual wax should be flushed out with hot water; if some teeth are loose then they should be replaced and sometin cemented them, the surface of the two halves coated with separating medium (not the neck c the artificial teeth). To be ready for packing with acrylic resin.

Packing: Is the action of filling the mold with acrylic resin, we put the acrylic in the upper section and we should be sure to press the material well in areas around the teeth and anothe part of the denture

The Procedure:

We put separating medium at all surface of both halves of flask except the gingival surface of the teeth then mixing hot cure acrylic in a ratio of 3:1 P/L in a clean porcelain jar and cover it to prevent evaporation of monomer when the mix reaches dough stage a ball is rolled and placed in the deep section of the flask and closed the two halves of the flask and pressed to overfill the mold.

The procedure for flask closure: We should use a piece of wet cellophane paper and put it the section that holds the cast then close the two halves of the flask and press it slowly and increased the pressure very slowly to give the acrylic time to flow, then remove the flask from the press and open it carefully and remove the excess of acrylic material by a sharp knife and then close the flask without cellophane paper and the flask under bench press not be increased slowly to prevent fracture of the stone cast.

Curing: It is the polymerization of acrylic that means the conversion of monomer to polymer when the mixture is subjected to heat; this reaction takes place in the water path.

Processing procedure: After completely packing the flask with acrylic, we hold the flask by a clamp and closed it very well because we not closed very well it could have to pours denture. Then we put the clamp at the water path at room temperature.

The amount of heat must be controlled because the reaction is exothermic and this reaction because very rapid at temperature about 60-65 c .So when temperature of acrylic is high the temperature of water should be not increased more, the temperature of water path is automatically controlled, it is gradually increased untill65c, at this temperature is kept for 9 hours and then pass to 100 c for 1/2 hour, then the path is slowly cooled until morning this curing cycle will give every little amount of residual monomer and maximum strength of the material (denture base material).

There is another way of curing which is called (rapid cure) that is by: Gradual increase of water path temperature and hold the flask at 70 c for 1-1/2 hours and then increase the temperature to 100 c for 1/2 hour.

Deflasking: The flask is removed from water bath and placed on the bench until cool to room temperature. The cast and the plaster around it separate easily by saw that divide it to several pieces and remove them from denture easily.

Finishing and polishing:

- 1-Large stone bur to cut the excess of acrylic from border.
- 2-Acrylic bur to finish the border.
- 3-Sand paper to give smooth surface.
- 4-Use fisher bur to clean around the neck of the teeth.
- 5-Posterior region is trimmed to the post dam area.
- 6-Rotating large bristle black brush or cloths wheel put it in the lathe, (we apply the pumice and water to the denture and push the denture to the rotating brush.
- 7-Rotating small bristle black brush to smooth the small area around the teeth.