## Lec.1 Prosthodontics dr. makarem

 **Introduction**

**Prosthetic:** the art & science of supplying artificial replacement for missing parts of the human body.

**Prosthodontics(prosthetic dentistry):** is the dental specialty pertaining to the diagnosis, treatment planning, rehabilitation & maintenance of the oral function, comfort, appearance & health of patients with clinical conditions associated with missing or deficient teeth &/or maxillofacial tissues using biocompatible substitutes.

**Prosthesis:** an artificial replacement of an absent part of the human body or a therapeutic device to improve or alter function.

**Dentulous:** a condition in which natural teeth are present in the mouth.

**Edentulous:** without teeth, lacking of teeth.

**Edentulism:** the state of being edentulous, without teeth.

**Dental prosthesis:** an artificial replacement of one or more teeth (up to the entire dentition in either arch)& associated dental / alveolar structures. Can be divided into:

**a-Fixed dental prosthesis:** any dental prosthesis that is luted, screwed, or mechanically attached or otherwise securely retained to the natural teeth, tooth roots &/ or dental implant abutments that furnish the primary support for the dental prosthesis. This may include replacement of one to sixteen teeth in each dental arch.

**b-Removable dental prosthesis:** any dental prosthesis that replaces some or all teeth in a partially dentate arch (partial removable dental prosthesis) or dentate arch (complete removable dental prosthesis). It can be removed from the mouth & replaced at will. divided into:

**i-Removable partial denture prosthesis:** any prosthesis that replaces some teeth in a partially dentate arch. It can be removed from the mouth & replaced at will. Also called partial removable dental prosthesis.

**ii-Complete denture:** a removable dental prosthesis that replaces the entire dentition & associated structures of the maxillae or mandible, called a complete removable dental prosthesis.

**Objective of complete denture**

1-to restore function (mastication, speech, preservation of remaining structure).

2-aesthetic

3- Improve psychological state of the patient

**Steps of complete denture construction:**

1. first appointment:
* Clinical procedure: Primary impression is made with stock tray.
* Laboratory procedure: the impression poured with plaster to produce primary cast on which the special tray is constructed.
1. Second appointment:
* Clinical appointment: secondary or final impression are made
* Laboratory procedure: the final impression are poured then base plate and occlusal rim are constructed.
1. Third appointment
* Clinical procedure: vertical dimension is determined and centric relation is taken
* Laboratory procedure: the casts are mounted on articulator and tooth are arranged
1. Fourth appointments:
* Clinical procedure: trial stage) the dentist tries the denture and check for proper placement and arrangement of teeth , appearance and speech
* Laboratory procedure: flasking , packing, finishing and polishing
1. Fifth appointment:

The denture is delivered to the patient; it may require adjustment of the denture

**Complete dentures are composed of the following surfaces:**

1-basal or impression surface: the part of a denture that rests on the foundation tissue the oral structures available to support a denture &to which teeth are attached.

2-denture occlusal surface: teeth surface

3-polished surface: the portion of the surface of a denture that extends in an occlusal direction from the border of the denture & includes the palatal surface. It is the part of the denture base that is usually polished, & it includes the buccal& lingual surfaces of the teeth.

4-denture border: the margin of the denture base at the junction of the polished surface & the impression surface.

 5-denture flange: the part of the denture base that extends from the cervical ends of the teeth to the denture border.

**Anatomical landmarks**

Knowledge of oral anatomy will help the operator to provide enough landmarks to act as positive guides to the limit of the impression & denture extensions.

1. **Maxillary arch landmark:**
* **Limiting and peripheral**
1. labial frenum.
2. Buccal frenum.
3. Labial vestibule.
4. Buccal vestibule.
5. Hamular notch.
6. Vibrating line.
7. Fovea palatine.
* **Supporting structure**
1. Mucous membrane
2. Hard palate
3. Rugae area
4. Median palatine raphae
5. Residual alveolar ridge.
6. Incisive papilla.
7. Maxillary tuberosity.
8. Torus palatinus.

**a- Maxillary arch landmark:**

**1-Labial frenum:** it is a fold of mucous membrane extending from the mucosal lining of the upper lip to the labial surface of the residual ridge. The frenum may be single or multiple, narrow or broad. It contains no muscle fiber of significance, therefore, it can be surgically excised if it attaches too near the crest of the ridge. It inserts in a vertical direction, which create the maxillary labial notch in the impression or denture.

**2-Buccal frenum:** a fold or folds of mucous membrane varies in size & shape, it extends from the buccal mucous membrane reflection area toward the slope or crest of residual ridge. It contains no muscle fibers & its direction in an anteroposterior. It produces the maxillary buccal notch in the denture which must be broad enough because of the movement of frenum which is affected by some of the facial muscles as the orbicularis muscle pull it forward while buccinators muscle pull it backward.

**3-Labial vestibule:** extends on both sides of the labial frenum to the buccal frenum bounded externally by the upper lip & internally by the residual ridge. The reflection of the mucous membrane superiorly determines the height of the vestibule. It contains no muscle fibers. In the denture the area that fills this space is known as labial flange.

**4-Buccal vestibule:** is the space distal to the buccal frenum. It is bounded laterally by the cheek & medially by the residual ridge. The area of the denture which fills this space is known as buccal flange. The stability & the retention of the denture are greatly enhanced if the vestibular space is properly filled with the flange distally.

**5-Hamular notch:** it is a narrow cleft of loose connective tissue extending distally from the maxillary tuberosity to the pterygoidhamulus(approximately 2mm anteroposterior) (it considers as a boundary of the posterior border of the maxillary denture).

**6-Vibrating line:** it is an imaginary line drawn across the palate extended from one hamular notch to the other it is not well defined as a line, therefore, it is better to describe it as an area rather than a line the direction of the line varies according to the shape of the palate in the denture the posterior border of the denture is known as the posterior palatal seal area.

**7-Fovea palatinae:** these are two indentations on each side of the midline, formed by a coalescence of several mucous gland ducts (they act as a guide for the location of the vibrating line of posterior border of the denture. (As small raised dots).

**Supporting structure:**

1. Mucous membrane: thin layer of tissue lining the inside of the mouth and consists of stratified squamous epithelium termed oral epithelium and an underlying connective tissue termed lamina propria.

It divides into:

1. Masticatory mucosa: [keratinized](https://en.wikipedia.org/wiki/Keratin) [stratified squamous epithelium](https://en.wikipedia.org/wiki/Stratified_squamous_epithelium), found on the [dorsum](https://en.wikipedia.org/wiki/Dorsum_%28anatomy%29) of the [tongue](https://en.wikipedia.org/wiki/Tongue), [hard palate](https://en.wikipedia.org/wiki/Hard_palate) and attached [gingiva](https://en.wikipedia.org/wiki/Gingiva).
2. Lining mucosa: nonkeratinized [stratified squamous epithelium](https://en.wikipedia.org/wiki/Stratified_squamous_epithelium). lining of the [cheeks](https://en.wikipedia.org/wiki/Cheek) and floor of the mouth
3. Specialized mucosa: specifically in the regions of the [taste buds](https://en.wikipedia.org/wiki/Taste_bud)  on the dorsal surface of the tongue
4. palate

The palate extends from the roof of the mouth all the way back to the uvula:

Divided into

Hard palate: the hard palate is made up of the two- third of the palatal vault supported by bone (palatine processes of the maxilla and the horizontal plates of the palatine bones)

The horizontal portion of the hard palate lateral to mid line provides primary support area for denture

Soft palate: the soft palate is made up of the posterior one-third of the palatal vault that is not supported by bone. The soft palate is a muscular extension from the posterior edge of the hard palate and it is very movable, especially during speaking and swallowing.

**3-Rugae areas:** these are irregular ridges of fibrous tissue found in the anterior one third of the hard palate

The rugae aid in the formation of vocal sounds, also it is regarded as a secondary stress bearing area.(as small radiating grooves).

Aids in stability and retention of denture.

**4-Median palatal raphe:** it overlies the medial palatal suture extend from the incisive papilla to the distal end of the hard palate the mucosa over this area is usually tightly attached & thin the underlying bony union being very dense & often raised, the palatal tori are located here if present.(as an irregular groove)

**5-The residual alveolar ridge:** the bony process that remains after teeth have been lost is known as residual alveolar ridge, which is covered by mucous membrane. The residual ridge considered to be the primary stress bearing area the residual ridge will produce a groove in the impression or denture.

**6-Incisive papilla:** it is a pad of connective tissue lies between the two central incisors on the palatal side, overlying the incisive foramen of the nasopalatine duct where the nasopalatine nerve &vessels are raised. In an edentulous mouth, it may lie close to the crest of the residual ridge. Relief over the incisive papilla should be provided in denture to avoid any interference with blood supply & nerve pathway. (appear as a small round depression).

**7-Maxillary tuberosity:** is the area of the alveolar ridge that extends distally from the second molar to the hamular notch. In some patients it may be very large in size that not allow for proper placement of the denture, so surgical correction may be indicated.

**8-Torus palatinus:** it is a hard bony enlargement that occurs in the midline of the roof of the mouth (hard palate). It is found in 20% of the patients, surgical correction may be needed if the tori was very large & extended to the vibrating line.

**-Zygomatic process**: it is located opposite to the first molar region, hard area found in the mouth that have been edentulous for long time. Some dentures require relief over this area to prevent soreness of the underlying tissues.