

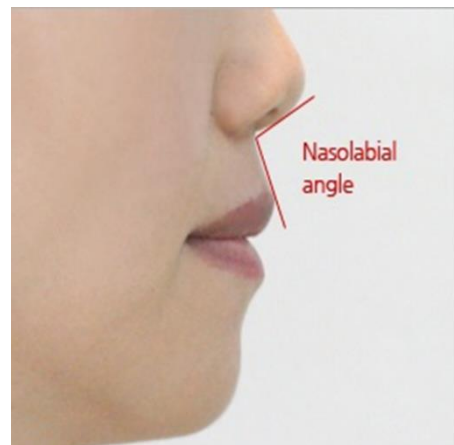
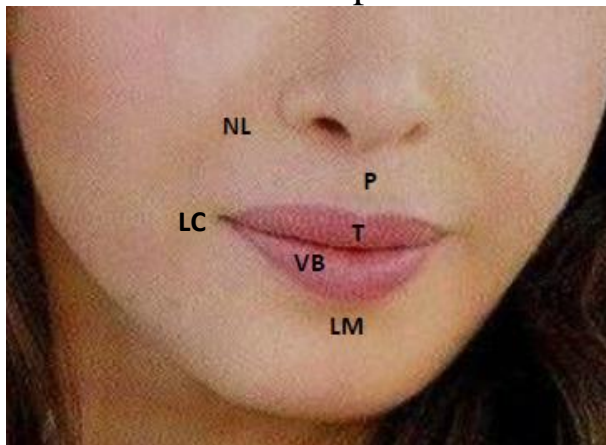
## ANATOMICAL LANDMARKS

A good knowledge about the extra and intra-oral landmarks for the maxillary and mandibular arch will help the clinician to carefully manage a patient and it will act as positive guides for complete denture construction.

### Extra-oral landmarks

The following extra-oral anatomical features should be noted:

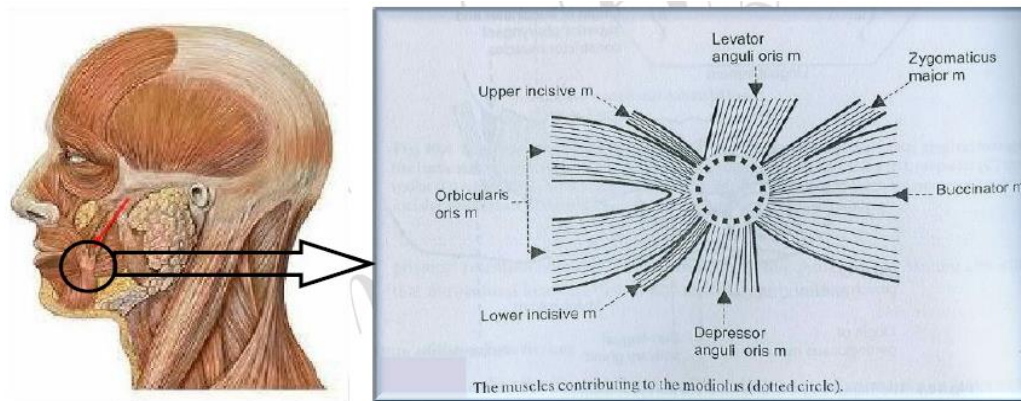
- 1. Philtrum:** is a midline shallow depression of the upper lip, which starts at the labial tubercle and ends at the nose.
- 2. Labial tubercle:** is a little swelling in the mid portion of the vermillion border of the upper lip.
- 3. Vermillion borders:** the lip is covered by the skin at its facial surface and the mucous membrane at its inner surface. The transitional area between the skin and the mucous membrane of the upper and lower lips is a pink or red zone of thinner epithelium, which is called the vermillion border.
- 4. Nasolabial groove:** is a furrow of variable depth that extends from the wing (ala) of nose to end at some distance from the corner of the mouth.
- 5. Labiomental groove:** is a sharp or deep groove that lies between the lower lip and the chin.



- 6. Nasolabial Angle:** is an angle between columella of nose and philtrum lip, normally, approximately 90° as viewed in profile.

**7. Angle of the mouth and Labial commissure:** is the lateral limit of the oral fissure. Labial commissure is a junction of upper and lower lips lateral to the angle of the mouth.

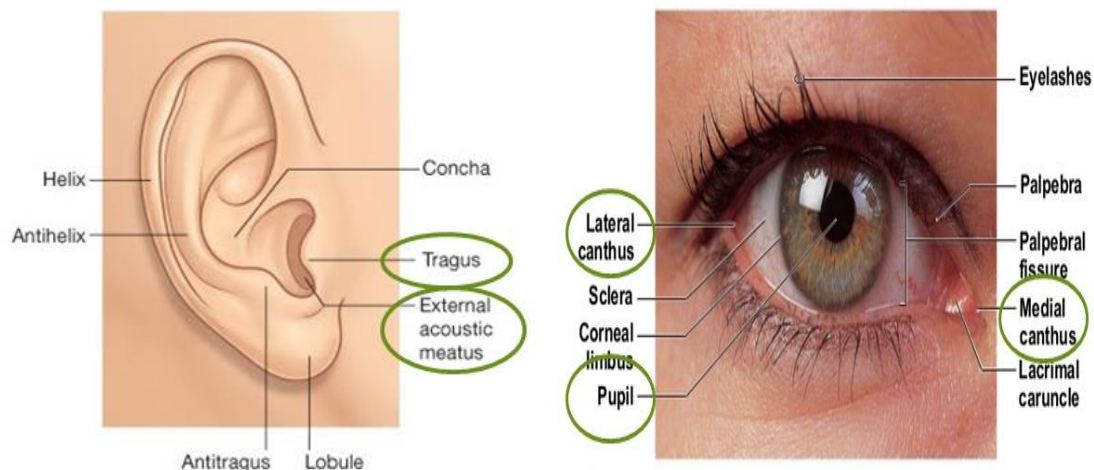
**8. Modiolus:** This muscular knot is at the angles of the mouth. Modiolus may lie laterally to the lower premolars so it will displace a lower denture if those teeth are set too far buccally.



**9. Ala of nose:** is the lateral surface of the external nose, cartilaginous in nature, and form a rounded eminence around the nostril. Ala of nose carries special importance in complete denture fabrication since it is part of what we call Camper's line which will be discussed later.

**10. Landmarks of ear:** the importance of ear landmarks comes from its approximation to tempromandibular joint and include: Tragus and external acoustic meatus.

**11. Landmark of eye:** the importance landmarks of the eye include: Pupil, medial canthus and lateral canthus.



## Intra-oral landmarks

The intra-oral anatomical landmarks divided into:

### **1. Maxillary arch anatomical landmarks: This is divided into:**

- a. Limiting structures
- b. Supporting structures
- c. Relief areas

#### A. Limiting structures:

**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 at the median line. The frenum may be single or multiple; narrow or broad. It contains no muscle fibers, but it is moved with muscles of lip, and inserts in a vertical direction, which creates the maxillary labial notch in the impression or denture.

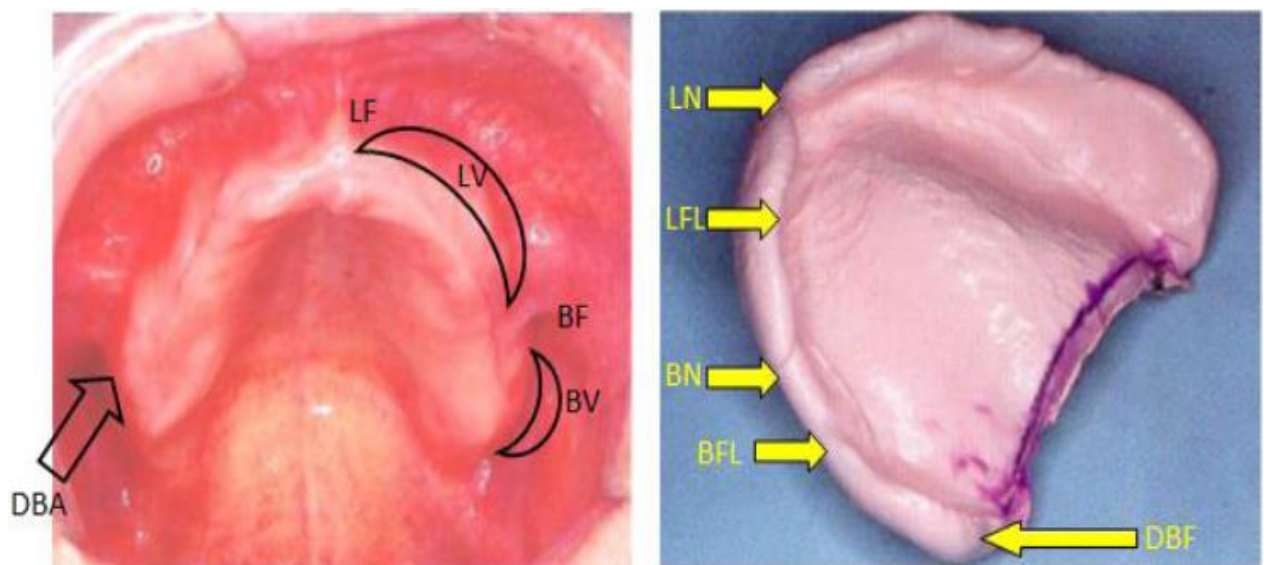


**2. Labial Sulcus (Labial vestibule):** It is a space extends on both sides of the labial frenum to the buccal frenum bounded externally by the upper lip and internally by the residual ridge. The reflection of the mucous membrane superiorly determines the height of the vestibule. In the denture, the area that fills this space is known as labial flange. It is very important to record adequate depth/width of vestibule, flange overextension causes instability/soreness and proper contouring gives optimal esthetics.

**3. Buccal frenum:** A fold or folds of mucous membrane varies in size and shape and extends from the buccal mucous membrane reflection area toward the slope or crest of residual ridge. It contains no muscle fibers and its direction is anteroposterior. It produces the maxillary buccal notch in the denture which must be broad enough to accommodate the movement of frenum which is affected by some of the facial muscles as the orbicularis oris muscle pull it forward while buccinator muscle pull it backward.

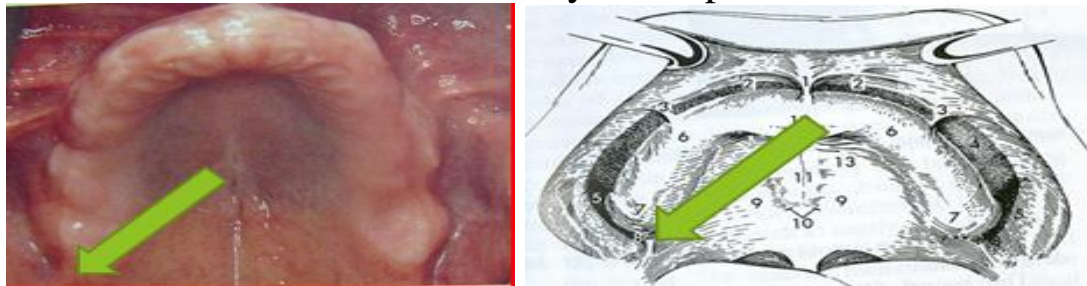
**4. Buccal Sulcus (Buccal vestibule):** It is the space distal to the buccal frenum to the hamular notch. It is bounded laterally by the cheek and medially by the residual ridge. The area of the denture which fills this space is known as buccal flange. The stability and retention of the denture are greatly enhanced if the vestibule is properly filled with the flange distally, so recording adequate depth/width is very important and improper extension causes instability/soreness. Its size related to the contraction of buccinators muscle, position of mandible and the amount of bone loss from maxilla.

\* The distal end of the buccal vestibule is called (*distobuccal area*) or (*coronomaxillary space*). It is influenced by coronoid process of mandible.





**5. Hamular notch (pterygo-maxillary notch):** It is a narrow cleft of loose connective tissue between distal surface of tuberosity and the hamular process of the medial pterygoid plate. The width is approximately (**2 mm**) anteroposteriorly. It uses as a boundary of the posterior border of the maxillary denture. It houses the disto-lateral termination of the denture and aids in achieving posterior palatal seal. The overextension of the denture base beyond the pterygo-maxillary notch may cause soreness, and underextension may cause poor retention.



**6. Posterior palatal seal area:** The soft tissue area beyond the junction of the hard and soft palates on which pressure within physiological limits, can be applied by a complete denture to aid in its retention. The imaginary line across the posterior part of the palatal seal area marking the division between the movable and immovable tissues of the soft palate called **Vibrating line (AH-line)**.

It extends from one hamular notch to the other about (**2 mm**) in front of the fovea palatina. This can be identified when the movable tissues are functioning; when the individual says series of short "AH" sounds. It is not well defined as a line, therefore it is better to describe it as an area rather than a line. In the denture, the posterior border of the denture that lies over vibrating line is known as (**post dam**) to form posterior seal.

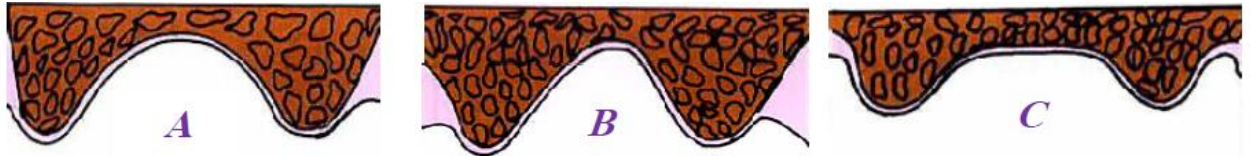


## B. Supporting structures:

Support is the resistance to the displacement towards the basal tissue or underlying structures and it divided into:

I. Primary stress bearing areas or supporting area:

**1- Palatal shelf area:** The horizontal portion of the hard palate lateral to the midline (**Palatine vault**).



**A: U-shape:** Ideal for both retention and stability.

**B: V-shape:** Retention is less.

**C: Flat shape:** Reduced resistance to lateral and rotatory forces.

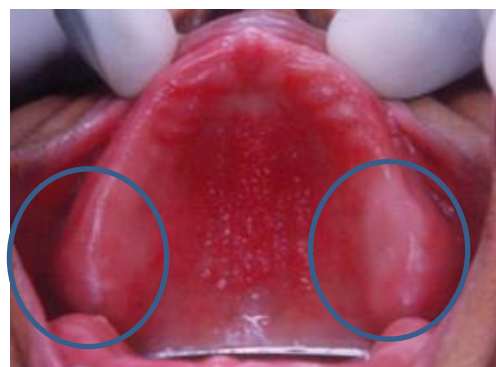
## 2- Slopes of residual alveolar ridge.

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

II. Secondary stress bearing areas or supporting area:

**1. Maxillary tuberosity:** It is the area of the alveolar ridge that extends distal to the maxillary third molar to the hamular notch. In some patients it may be very large in size (fibrous or bony) that not allow for proper placement of the denture, so surgical correction may be indicated.

**2. Rugae area:** These are raised areas of dense connective tissue radiating from the median suture in the anterior third of the palate; figure (2-14). The folds of the mucosa play an important role in speech; also it is regarded as a secondary stress bearing area. It should not be distorted in the impression.

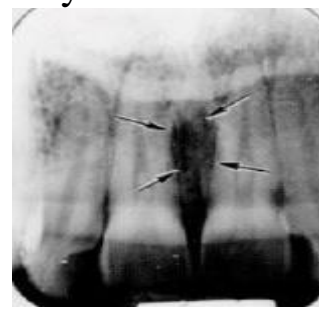


### C. Relief areas:

**1. Incisive papilla:** It is a pad of fibrous connective tissue lies between the two central incisors on the palatal side; it overlies the incisive foramen of the nasopalatine duct where the nasopalatine nerve and vessels arises. 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 and nerve pathway which causes burning sensation and pain. It aids in determination of the location of artificial central incisors. The Location of the incisive papilla gives proper estimation to the amount of alveolar bone loss.

**2. Canine eminence (Cuspid eminence):** It is a round bony elevation in the corner of the mouth it represents the location of the root of the canine, which is helpful to be used as a guide for selection and arrangement of maxillary anterior teeth.

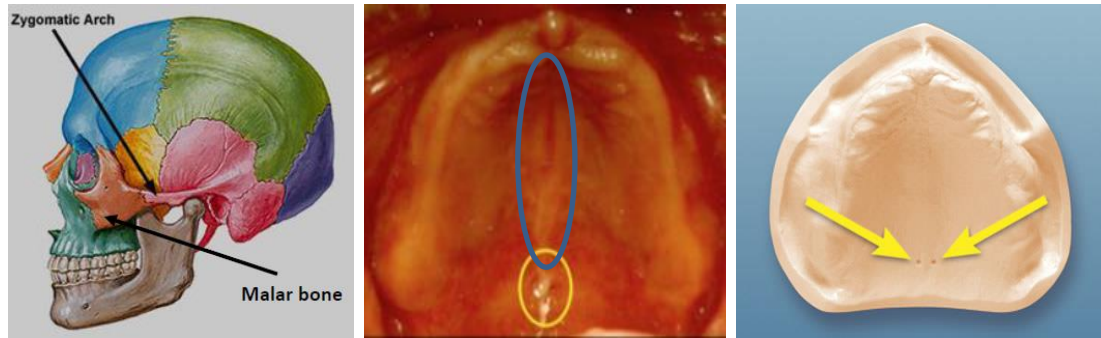


**3. Zygomatic process (Malar bone):** It is located opposite to the first molar region, hard area found in the mouth that has been edentulous for long time. Some dentures require relief over this area to prevent soreness of the underlying tissue.

**4. 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 aiding in locating of the vibrating line and posterior border of the denture.

**5. Midpalatine raphe:** It overlies the medial palatal suture, extended from the incisive papilla to the distal end of the hard palate. The mucosa over this area is usually tightly attached, thin and non-resilient; the underlying bony union being very dense and often raised, the palatal tori are located here if present. Relieve adequately to avoid trauma from denture base.





**6. 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 population, relief done if it is small and surgical correction may be needed if the tori are very large and extends to the vibrating line. The female: male ratio is **2:1**.

