



Second Stage

2. lecture

Anatomical landmarks of the maxillary and mandibular arches

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- The anatomy of the edentulous ridge in the maxilla and mandible is very important for the design of a complete denture. The consistency of the mucosa and the architecture of the underlying bone is different in various parts of the edentulous ridge. Hence, some parts of the ridge can withstand more force than other areas. A thorough knowledge of these landmarks is essential even prior to impression making.

A. Maxillary arch landmarks

Limiting Structures

- Labial frenum
- Labial vestibule
- Buccal frenum
- Buccal vestibule
- Hamular notch
- Posterior palatal seal area (vibrating line).
- fovea palatina.

Supporting Structures

- A. Primary stress-bearing areas:
 - Hard palate.
 - The postero-lateral slopes of the residual alveolar ridge
- B. Secondary stress-bearing areas:
 - Rugae
 - Maxillary tuberosity.

Relief Areas

- Incisive papilla
- Cuspid eminence
- Mid-palatine raphe
- Zygomatic process
- Torus palatinus

Limiting Structures

They determine and confine the extent of the denture.

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 maybe **single or multiple, narrow or broad.**

2. Buccal frenum:-

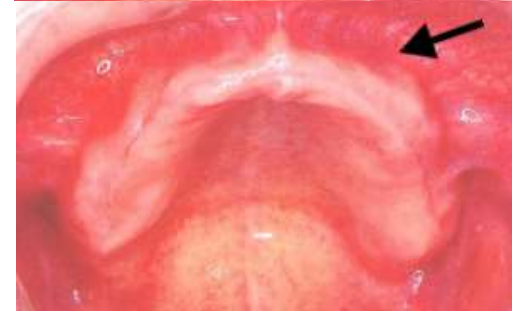
A fold or folds of mucous membrane, varies in **size** and **shape** and extends from the buccal mucous membrane reflection area toward the slope or crest of residual ridge. It contains no muscle fibers, and its direction is anteroposterior.

3. Labial vestibule:-

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.

4. Buccal vestibule:-

Is the space distal to the buccal frenum. It is bounded laterally by the cheek and medially by the residual ridge. The area of the denture that fill this space is known as buccal flange.



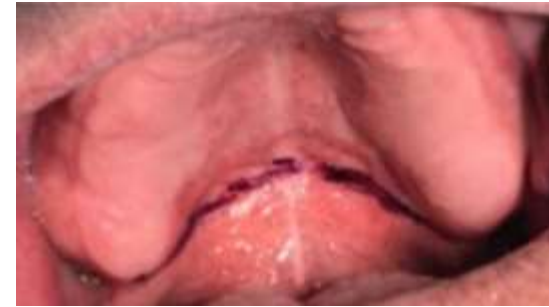
5. Hamular notch:-

It is a narrow cleft of loose connective tissue extending distally from the maxillary tuberosity to the pterygoid hamulus. (It is used as a boundary of the posterior border of the maxillary denture).



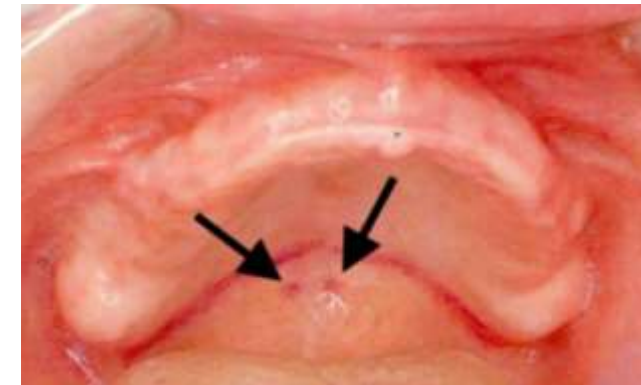
6. Vibrating line:-

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 Palatine:-

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.



Supporting Structures

These areas are the load-bearing areas. They show minimal ridge resorption even under constant load. The denture should be designed such that most of the load is concentrated on these areas. It can be Primary stress bearing areas or supporting area represented by the horizontal portion of the hard palate lateral to the midline and Slopes of residual alveolar ridge and a Secondary stress bearing area or supporting areas represented by Rugae area and Maxillary Tuberosity.

1. The residual alveolar ridge:-

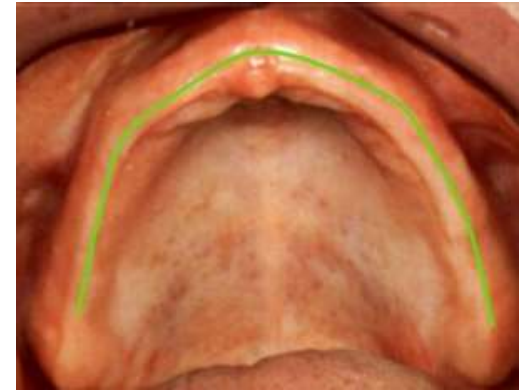
The bony process that remains after teeth have been lost is known as residual alveolar ridge, which is covered by mucous membrane. The residual ridge is considered the primary stress bearing area.

2. 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.

3. Rugae areas:-

These are raised areas of dense connective tissue radiating from the median suture in the anterior one third of the palate. The rugae aid in the formation of vocal sounds, also it is regarded as a secondary stress bearing area.



Relief Areas

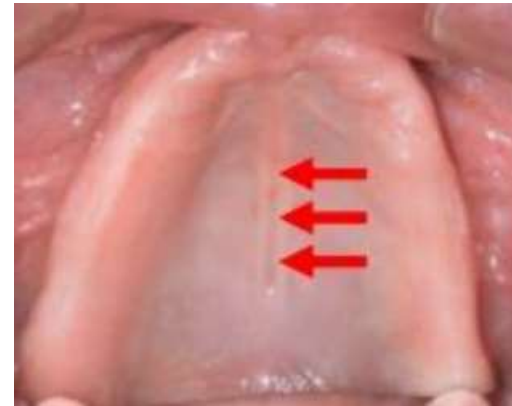
These areas resorb under constant load or contain fragile structures within. The denture should be designed such that the masticatory load is not concentrated over these areas.

1. Incisive papilla:-

It is pads of connective tissue lies between the two central incisors on palatal side, overlying the incisive foramen of the nasopalatine duct where the nasopalatine nerve and blood vessels are arisen. 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.

2. 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 and thin, the underlying bony union being very dense and often raised, the palatal tori are located here if present.



3. Canine eminence (cuspid eminence):-

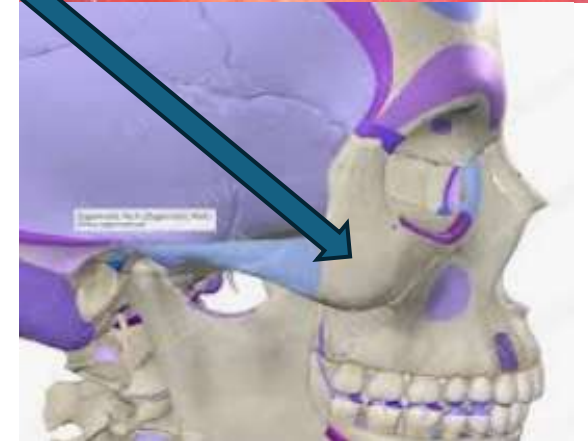
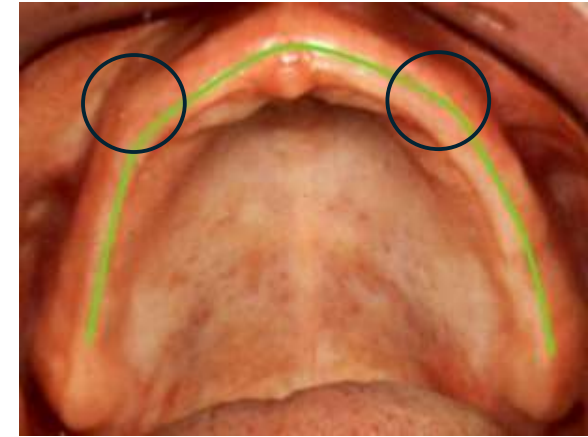
It is a round elevation in the corner of the mouth it represent the location of the root of the canine, which is helpful to be used as a guide for arrangement of maxillary anterior teeth.

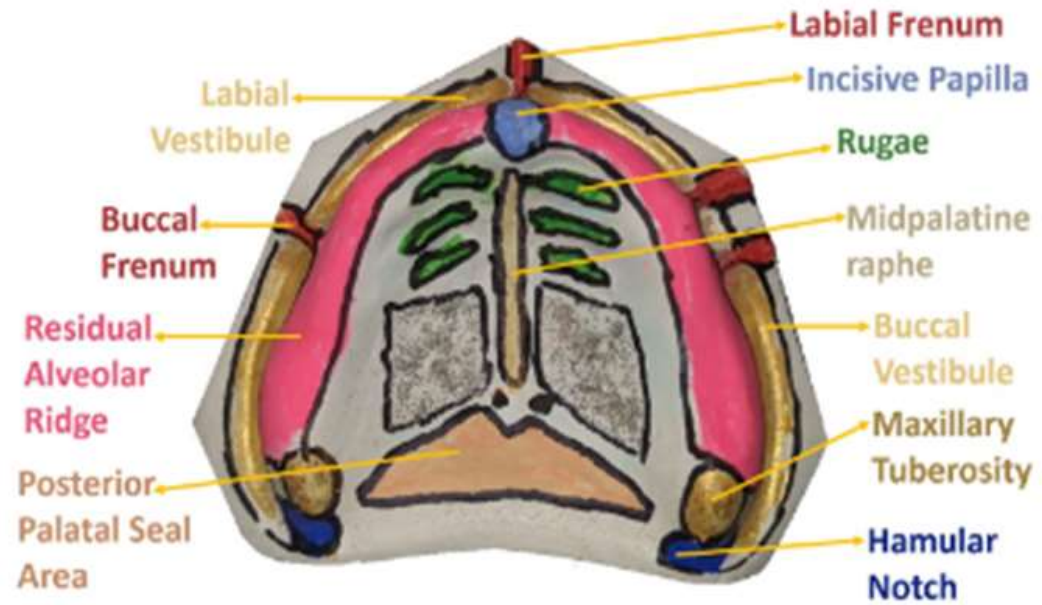
4. Zygomatic process:-

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.

5. Torus palatinus:-

A hard bony enlargement 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 where very large and extended to the vibrating line.





1. Labial frenum
2. Labial vestibule
3. Buccal frenum
4. Buccal vestibule
5. Distobuccal sulcus
6. Alveolar ridge
7. Tuberosity
8. Hamular notch
9. Hard palate (flat portions)
10. Fovea palatani
11. Mid palatine suture
12. Incisive papillae
13. Rugae

