Intra Oral Anatomical Landmarks

It is never less than mandatory for dentists to have a proper knowledge and understanding of the intra oral terrain to successfully undertake the process of providing a responsible prosthodontics service to their patients.

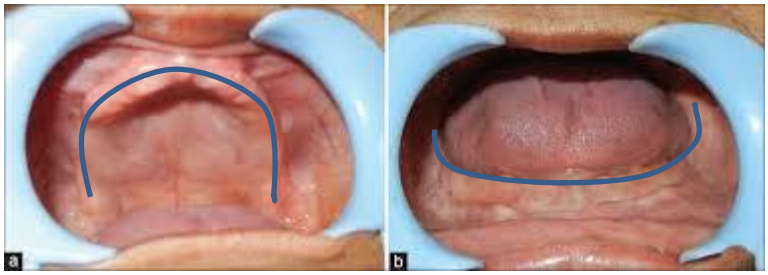
The intra-oral anatomical landmarks divided into:

A. Maxillary arch anatomical landmarks:

1. Residual alveolar ridge:

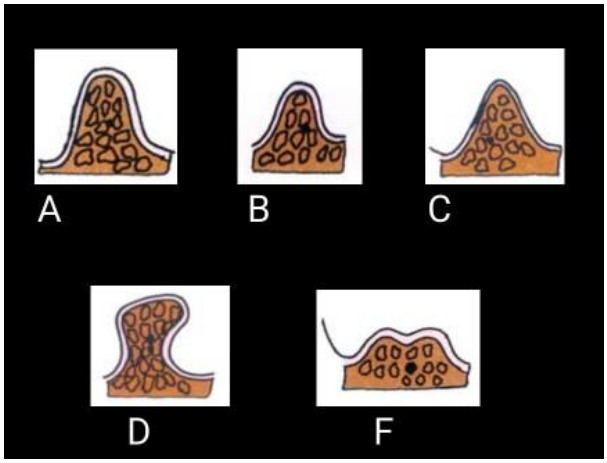
The bony process that remain after teeth have been lost is called Residual alveolar ridge, which is covered by mucous membrane.

The Residual alveolar ridge considered to be as a primary stress bearing area. Moreover, it will produce the ridge fossa or groove in the impression or denture.



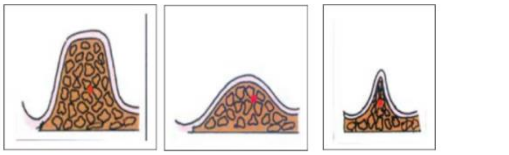
Types of Residual alveolar ridge:

a. Rounded
b. U shaped
c. V Shape
d. Undercut ridge contour
f. Inverted shape ridge contour



Alternatively, expressed as:

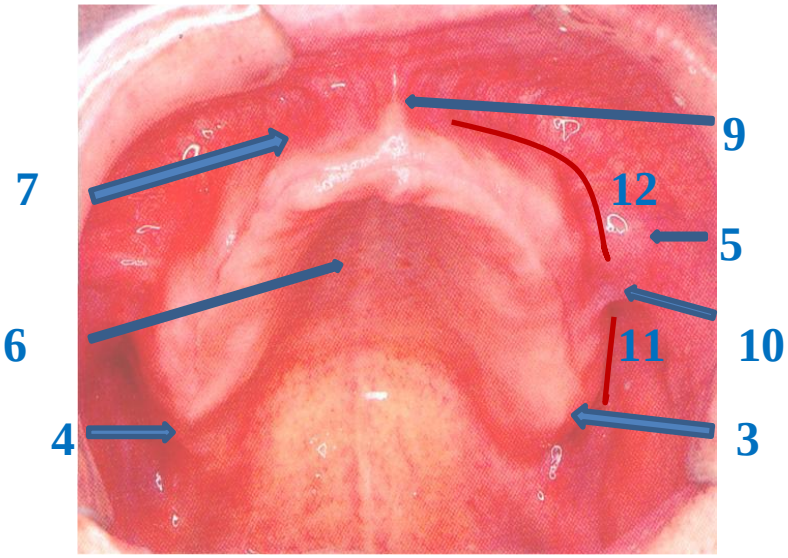
a. High
b. Flat
c. V shaped

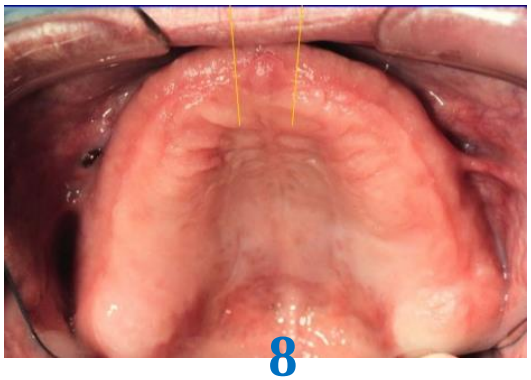


2. The incisive papilla :

is a pad of fibrous connective tissue overlying the incisive foramen , lying in the midline of the palate just behind the crust of residual alveolar ridge in between where located through which passes the nasopalatine nerve & blood vessels . It provide landmark for replacement or artificial teeth

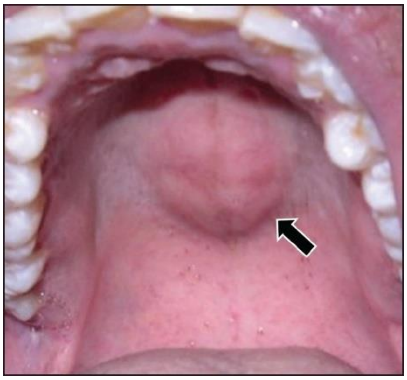
3. **Maxillary tuberosity**: it forms the termination of the residual ridge posterior extending distally from the area of the second molar to hamular notch.
4. **Hamular notch:** a notch lying between the maxillary tuberosity and the center of the vault of palate.
5. **Zygomatic (molar) process of maxilla:** extending upward, outward, and buccal aspect of the residual alveolar ridge on the first molar region.
6. **Maxillary median suture (or) median palatal suture (raphae):** Anterio-posterior line of union of bone of the center of the vault of palate. Overlying the median palatal suture is the median palatal raphe where the mucosa overlying this area is tightly attached. The bone overlying is very dense and often raised.
7. **Cuspid (canine) 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.
8. **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.
9. **Labial Frenum:** it appear as a fold of mucous membrane extending form the mucous membrane limiting the lips towards the crust of the residual ridge (labial surface). It does not contain fiber muscle.
10. **Buccal Frenum:** a fold of mucous membrane varying in size and position extending from buccal mucosal membrane reflection area towards the slop of the crest of the residual ridge.



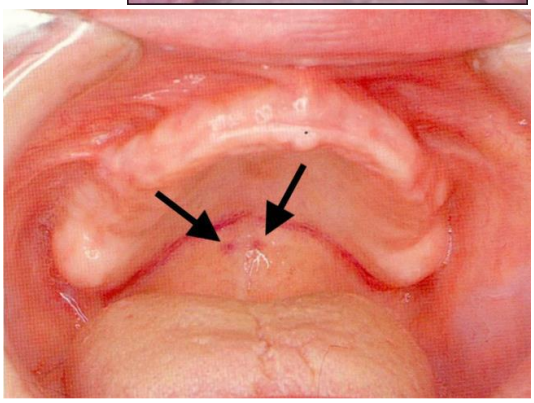


11. **Buccal vestibule:** Is the space distal to the buccal frenum. Bounded laterally by the cheek and medially by the residual alveolar ridge. The area of the denture, which will fill this space, is known as buccal flange. The stability and retention of a denture are better enhanced if the vestibule space properly filled with the flange distally.
12. **Labial vestibule:** It extends on both sides of the labial frenum to the buccal frenum, bounded by the upper lip and residual alveolar 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.

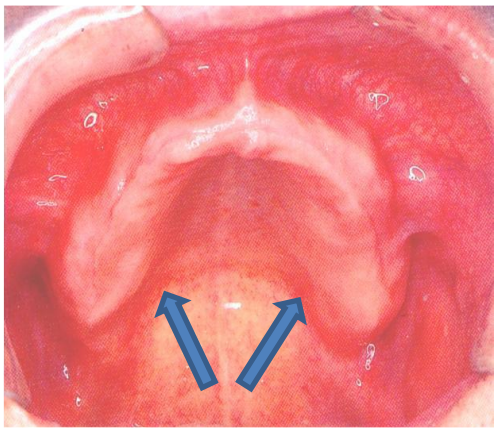
13. **Tours palatinus:** it is excessive hard bony enlargement or exostosis that form rounded elevation at the center of the vault of the palate. It usually interfere with denture constriction so surgical removal indicated.



14. **The fovea palatine:** two small pinpoint depressions close to 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. **Vibrating line:** 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 known as posterior palatal seal area.



16. **Hard palate:** is a thin horizontal bony plate of the skull, located in the roof of the mouth. It is formed by the palatine process of the maxilla and horizontal plate of palatine bone.

17. **Soft palate:** The **soft palate** (also known as the **velum** or **muscular palate**) is, the soft tissue constituting the back of the roof of the mouth. The soft palate is distinguished from the hard palate at the front of the mouth in that it does not contain bone.

The five muscles of the soft palate play important roles in swallowing and breathing.The muscles are:

Tensor veli palatini, which is involved in swallowing
Palatoglossus, involved in swallowing
Palatopharyngeus, involved in breathing
Levator veli palatini, involved in swallowing
Musculus uvulae, which moves the uvula

Anatomy of the upper arch as infrastructure of a denture:

Limiting Structures
• Labial frenum
• Labial vestibule
• Buccal frenum
• Buccal vestibule
• Hamular notch
• Posterior palatal seal area.

Supporting Structures
Primary stress-bearing areas:
• Hard palate.
• The postero-lateral slopes of the residual alveolar ridge

Secondary stress-bearing areas:
• Rugae
• Maxillary tuberosity, alveolar tubercle.

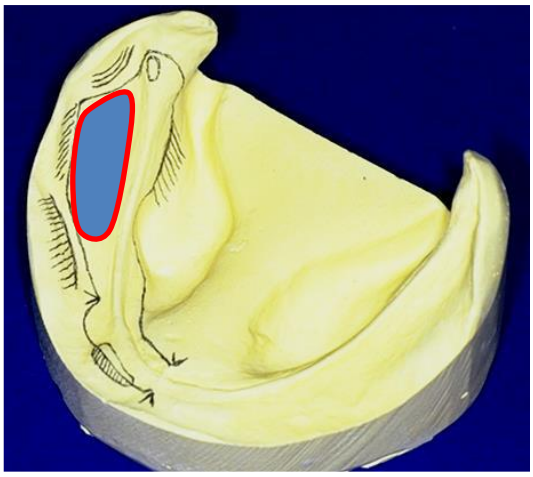
Relief Areas
• Incisive papilla
• Cuspid eminence
• Mid-palatine raphe
• Fovea palatinae.

Mandibular Intra Oral Anatomical Landmarks

1. Residual alveolar ridge:

The bony process that remains after loss of teeth is known as the residual alveolar ridge bone. The size and shape of the ridge varies from one person to another. The bone of crest of lower residual ridge being made of spongy bone therefore may not be favorable as a primary stress bearing area for the lower denture. It won't provide stability or support to the denture.

2. Buccal Shelf Area:

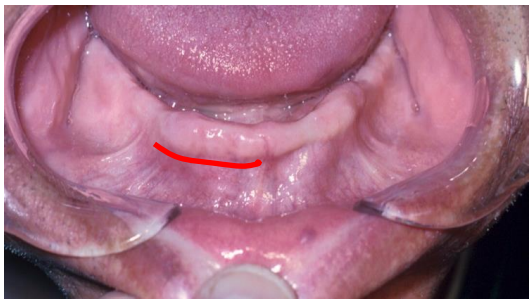


The area bounded medially by the crest of residual ridge, laterally by the external oblique line, anteriorly by the buccal frenum and distally by the retromolar pad. It is covered by compact bone therefore; it serves as a primary stress bearing area for the lower denture. Because it is perpendicular to the vertical masticatory force it provides support to the denture.

3. Labial Frenum:

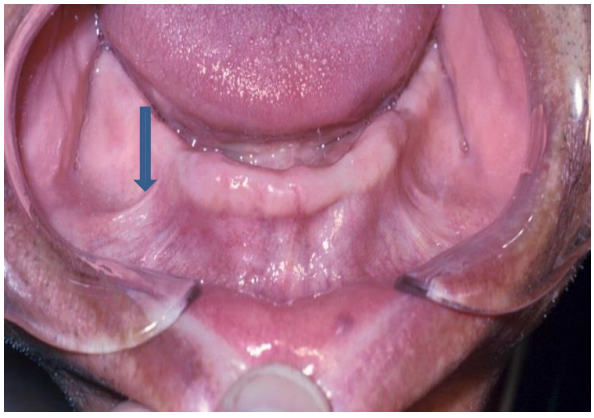
It is a fold of mucous membrane not so pronounced as the maxillary labial frenum. It may be single or multiple, fine or broad but it may contain fibrous band attached to the orbicularis oris muscle and therefore it may be active in mastication. Proper fit around it maintains seal without soreness.

4. Labial vestibule:



it extends from the labial frenum to the buccal frenum, limited inferiorly by the mucous membrane reflection internally by the residual ridge and labially by the lower lip.

5. Buccal Frenum:



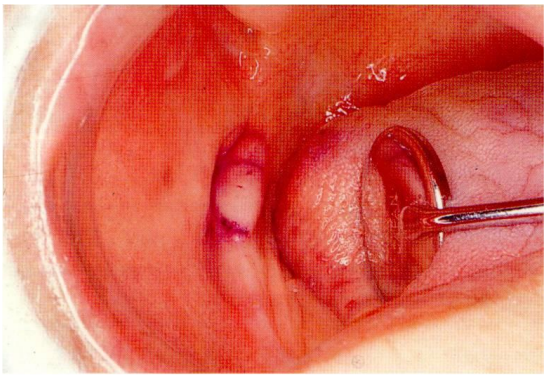
A fold of mucous membrane extended from the buccal mucous membrane reflection area toward the slopes of residual ridge. It may be single or multiple broad U-shaped or narrow V-shaped, it must have enough space in the denture as it may be activated in function by the muscles. Adequate relief for muscle activity to get a proper denture seal.

6. Buccal vestibule:

It extends from the buccal frenum to the distal end of the arch; it is bounded externally by the cheek and internally by the residual ridge.

7. Retromolar Pad:

It is pear shaped area at the distal end of residual ridge. Histologically, it contains thin non-keratinized epithelium, loose areolar connective tissue, glandular tissue, fibers of buccinator, superior constrictor muscles, pterygomandibular raphe and temporalis tendon. This pad must be covered by the denture to perfect the seal of the denture. The retromolar papilla is small pear shaped papilla just anterior to the retromolar pad, it is dense fibrous connective tissue.



8. Lingual Frenum:

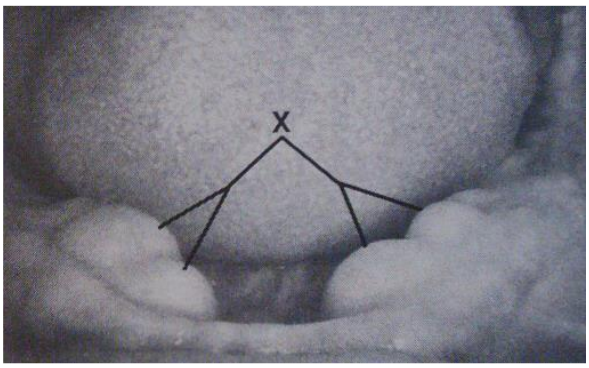
It is a fold of mucous membrane can be observed when the tongue is elevated, overlies the genioglossus muscle, extending along the floor of the mouth to the under surface of the tongue. It will produce the lingual notch in the denture. This frenum is activated when the tongue is moved therefore it must be molded well in the impression to prevent displacement of the denture or ulceration of the tissue.

9. Alveolo-lingual Sulcus:

Extending from the lingual frenum to the retromylohyiod curtain and bounded externally by the residual ridge and internally by the tongue. The lingual flange of the denture fills that space. It is divided to:

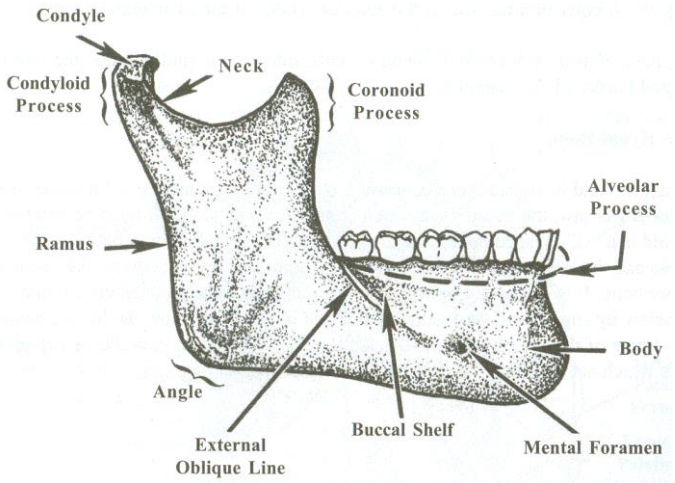
A. **Anterior portion:** spanning from the lingual frenum to the premylohyoid fossa.
B. **Middle region:** It is extended from the premylohyoid fossa to the distal end of the mylohyoid ridge, here the mylohyoid muscle is important in determining the contour of the lingual flange.
C. **Most posterior region:** Is the retromylohyoid space or fossa, it is extends from the end of mylohyoid ridge to retromylohyoid curtain, the lingual flange of the denture should extends laterally and fill the retromylohyoid fossa.

10. Torus Mandibularis:



These are bony exostosis composed of dense cortical bone covered by this mucous membrane found on the lingual surface of the mandible at premolar area and about 80% are bilateral. It has to be relieved or surgically corrected.

11. Mental Foramen:

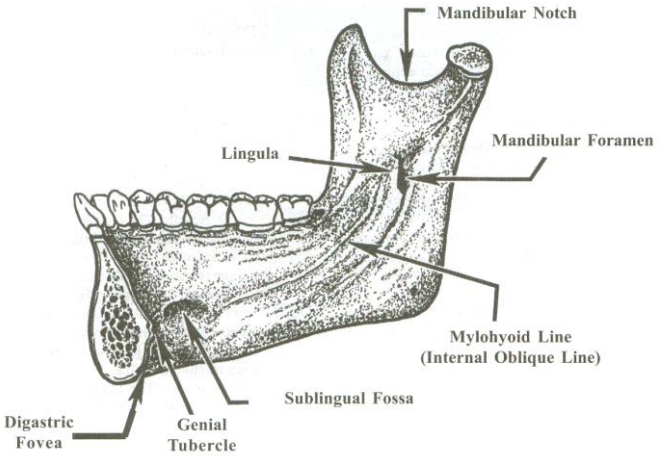


It is located on the external surface of the mandible between the 1st and 2nd premolar area. In case of sever resorption of residual ridge, the denture should be relieved over the foramen to prevent pressure being applied on the mental nerves and blood vessels.

12. External Oblique Ridge (line):

An elevation of dense bone extending from just above the mental foramen superiorly and distally to be continuous with the anterior border of the ramus. In some patient this ridge becomes a guide for the termination of the buccal flange of the denture.

13. Genial tubercles:



These are pair of bony structures found anteriorly on the lingual side of the mandible. Prominent in resorbed ridge and adequate relief should be provided or surgical correction may be needed.

14. Mylohyoid Ridge:

It is an irregular bony crest on the lingual surface of the mandible. This ridge is near the inferior border of the mandible in the incisor region but becomes higher posteriorly until it terminates near the 3rd molar area; it is the area where the mylohyoid muscle arises to the floor of the mouth. The border of the lingual flange may extend below the mylohyoid line if it slopes toward the tongue.

a. Supporting structures:

1. Residual alveolar ridge.

2. Buccal shelf area.

b. Limiting structures:

1. Labial Frenum
2. Labial vestibule
3. Buccal frenum
4. Buccal vestibule
5. Lingual frenum
6. Retromolar pad

7. Alveololingual sulcus

8. Mental foramen
9. Genial tubercles
10. Torus Mandibularis
11. External oblique line
12. Mylohyoid ridge

c. Relief Areas:

1. Mental Foramen.
2. Torus mandibularis.
3. Genial tubercles.
4. Mylohyoid ridge.