

# *ANATOMICAL LANDMARKS OF MAXILLA*

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- ❖ Cross-section anatomy of Maxilla
- ❖ Related anatomic structures-Muscles of soft palate
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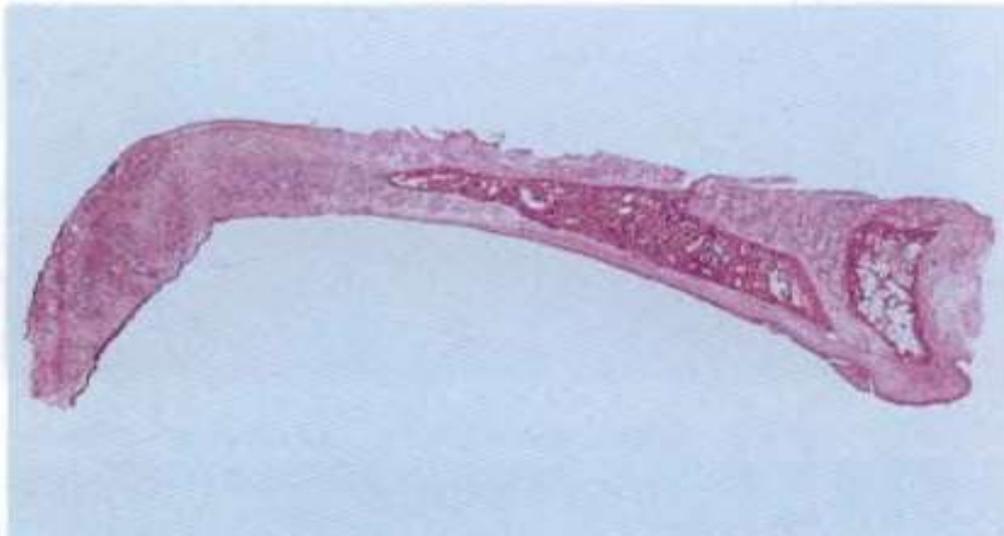


# *INTRODUCTION*

# CROSS-SECTIONAL ANATOMY OF THE MAXILLAE:

- ❑ Over crest of the ridge → moderate amount of fibrous connective tissue.
- ❑ Over median suture of maxillary bones. → increase depth of glandular tissue .  
-decreasing amount of submucosal tissue.

Saggital view

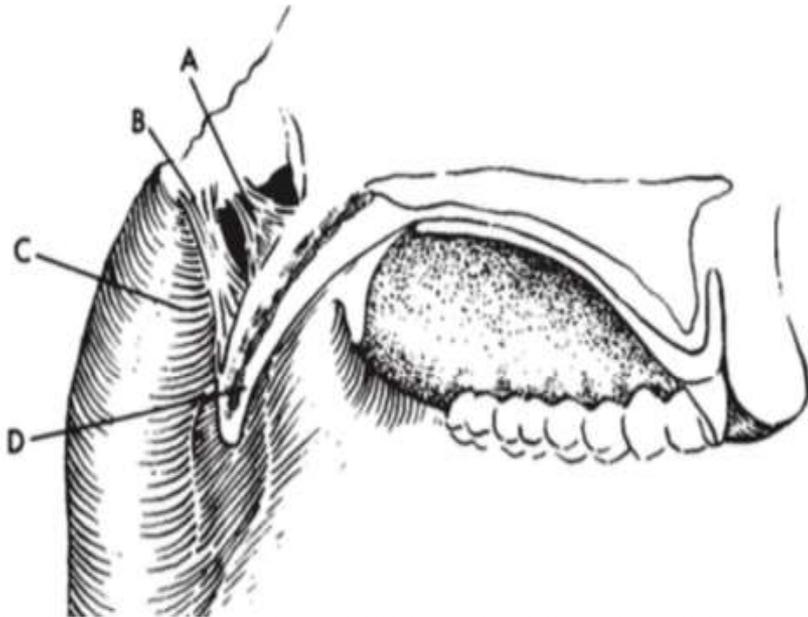


# RELATED ANATOMIC STRUCTURES:

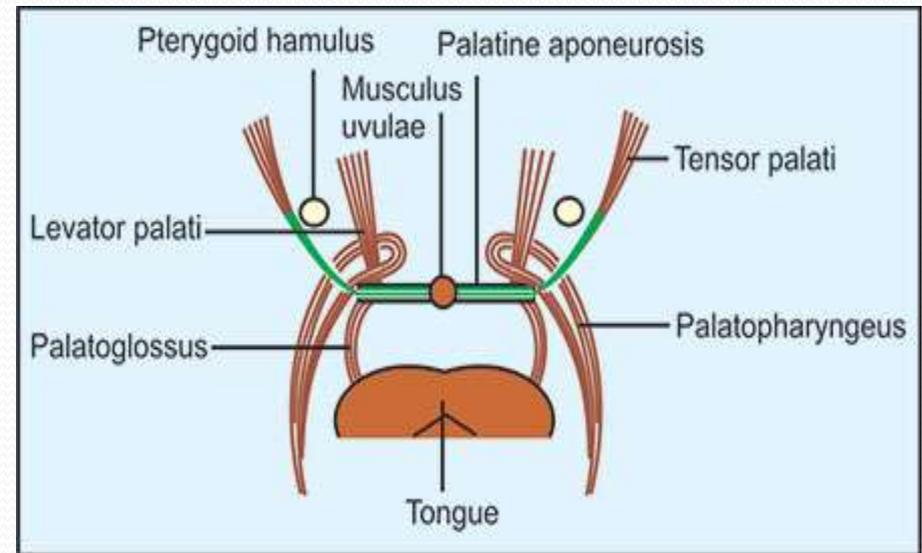
## ❖ MUSCLES OF THE SOFT PALATE:

- ❑ The wall of the soft palate is principally formed by pharyngopalatinus muscle.

### SAGGITAL VIEW



### ANTERIOR VIEW



# Anatomical landmarks

## Limiting Structures-

Labial vestibule

Buccal vestibule

Posterior palatal seal area



Labial frenum

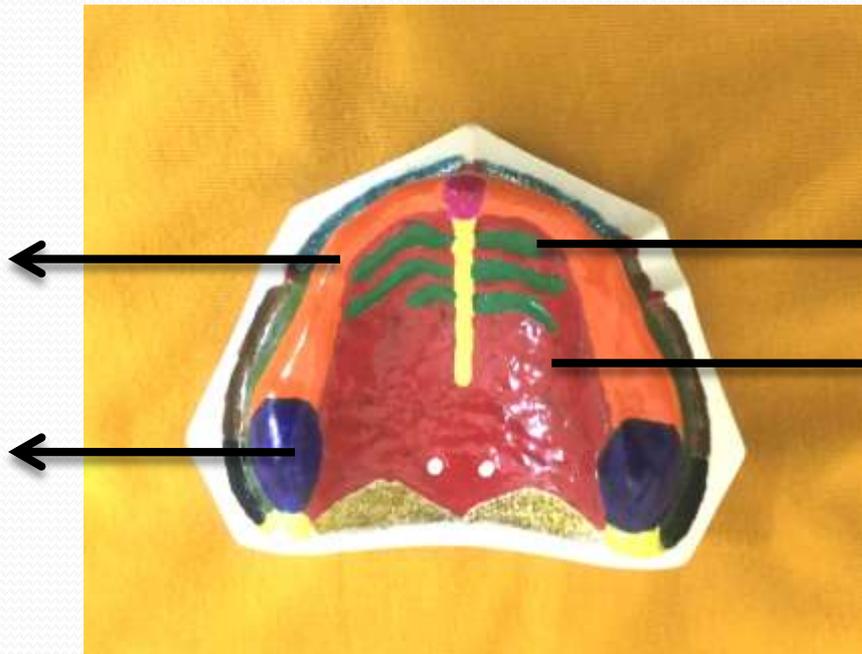
Buccal frenum

Hamular notch

# Supporting Structures -

Residual  
alveolar ridge

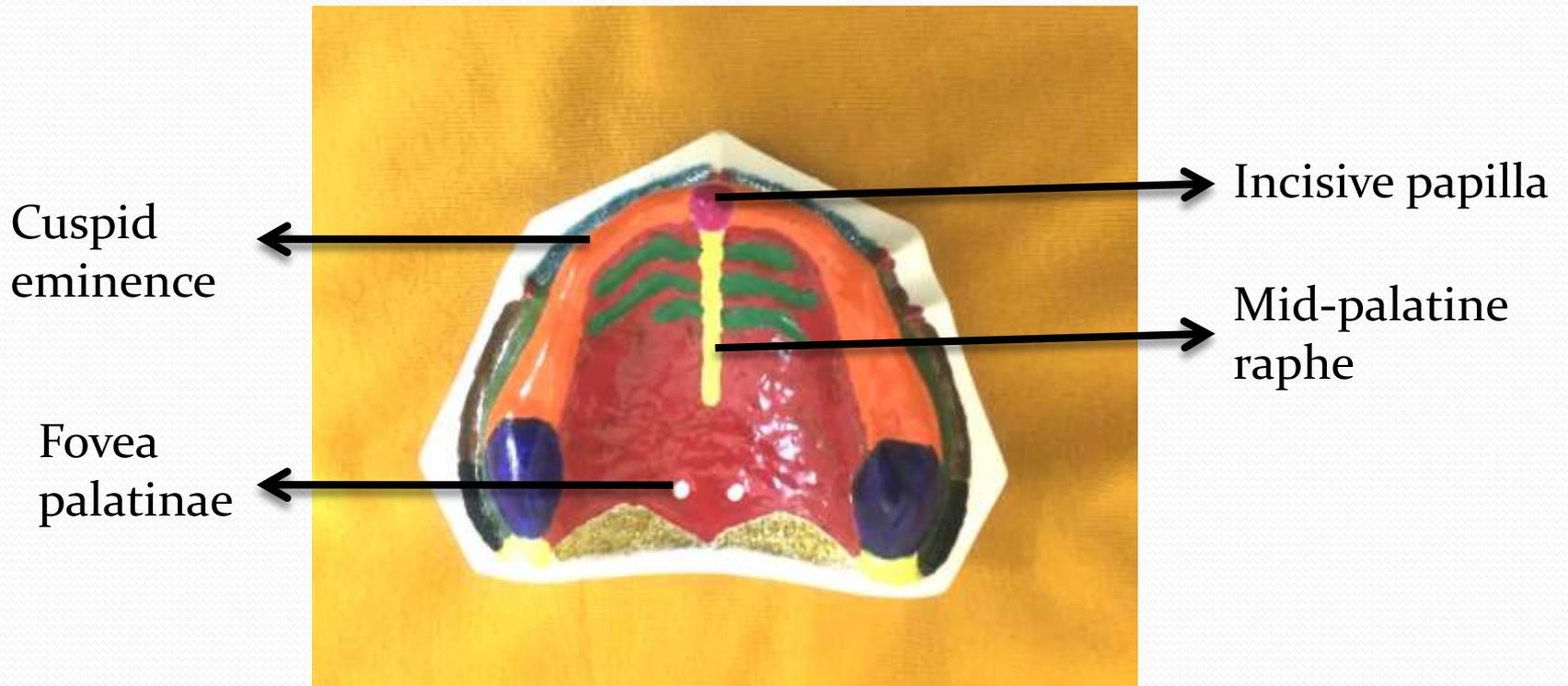
Maxillary  
tuberosity

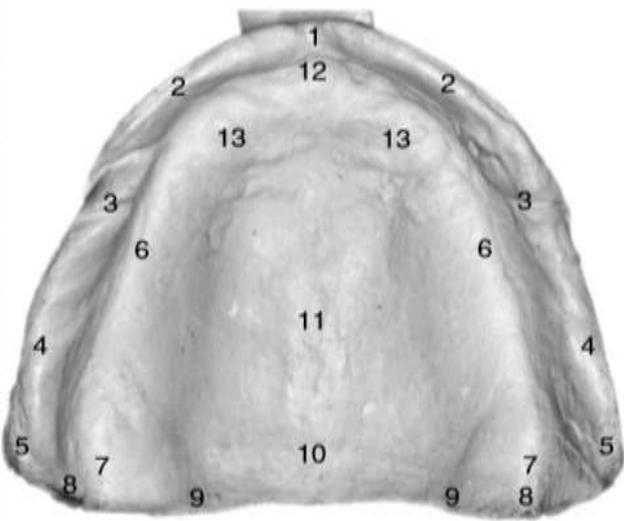


Rugae

Hardpalate

# Relief Areas-



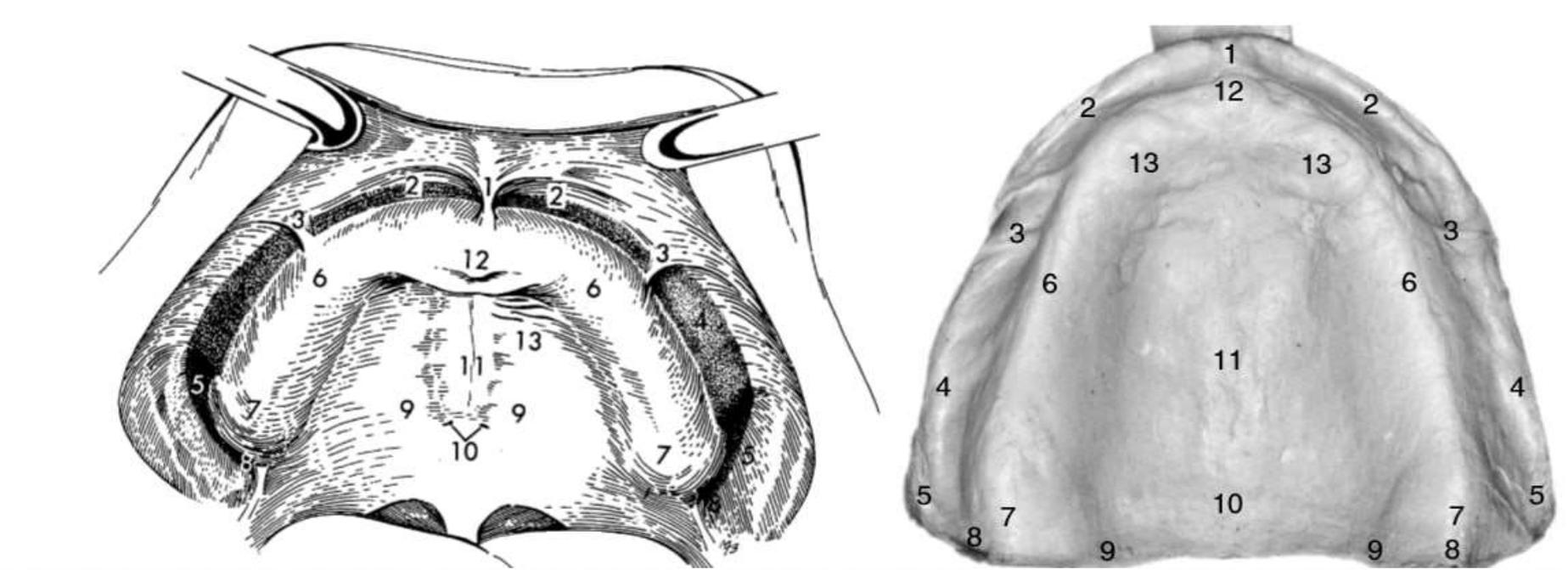


	Anatomic landmarks	Denture landmarks
1)	Labial frenum	Labial notch
2)	Labial vestibule	Labial flange
3)	Buccal frenum	Buccal notch
4)	Buccal vestibule	Buccal flange
5)	Coronoid bulge	Coronoid contour
6)	Residual alveolar ridge	Alveolar groove
7)	Maxillary tuberosity	Maxillary tubercular fossa
8)	Hamular notch	Pterygomaxillary seal
9)	Posterior palatal seal region	Posterior palatal seal
10)	Fovea palatinae	Fovea palatinae
11)	Median palatine raphe	Median palatine groove
12)	Incisive papilla	Incisive fossa
13)	Rugae region	Rugae

# MACROSCOPIC ANATOMY OF LIMITING STRUCTURES:

- ❑ The functional anatomy of mouth determines extent of basal surface of dentures.
- ❑ The denture base should include the maximum surface possible within limits of health ,function of tissues it covers and contacts.
- ❑ In labial vestibular space-
  - 1)impression must supply sufficient support.
  - 2)labial flange of impression have sufficient height.
  - 3)no interference of labial flange.

- ❑ To follow basic principle of impression making-
  - a. extend impression to cover maximum area possible.
  - b. knowledge of functional anatomy of basal seat.



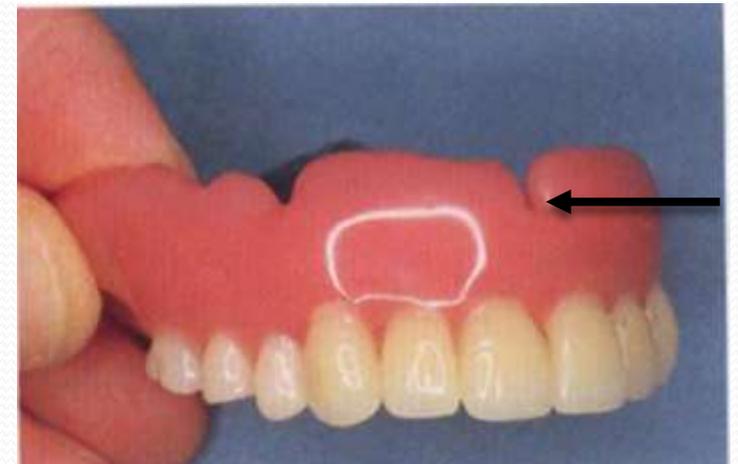
# LABIAL FRENUM :

- ❑ This band of tissue starts superiorly in fan shape and converges as it descends to its terminal attachment to labial side of ridge.
- ❑ No muscle fibers.



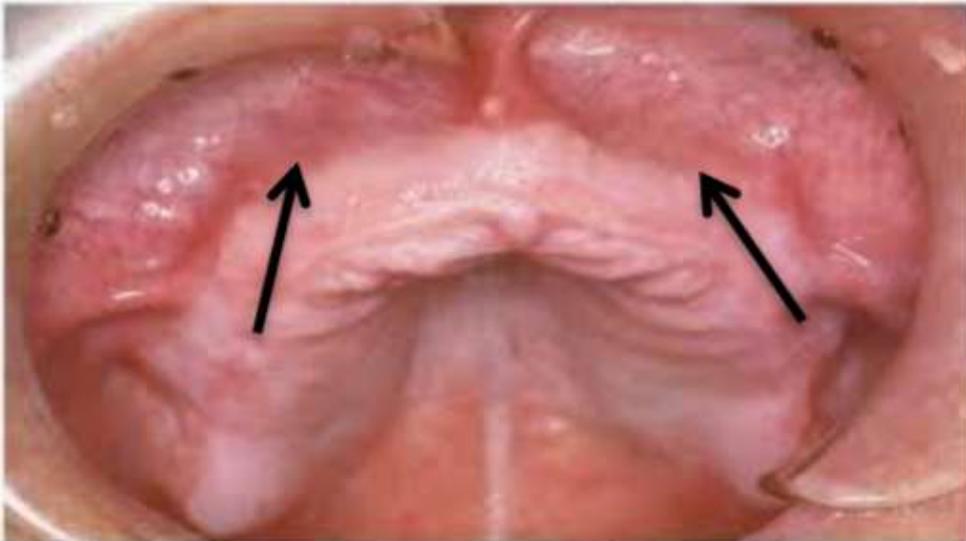
## CLINICAL CONSIDERATION:

- ❑ A V-shaped notch is recorded.
- ❑ Labial notch-narrow and deep.

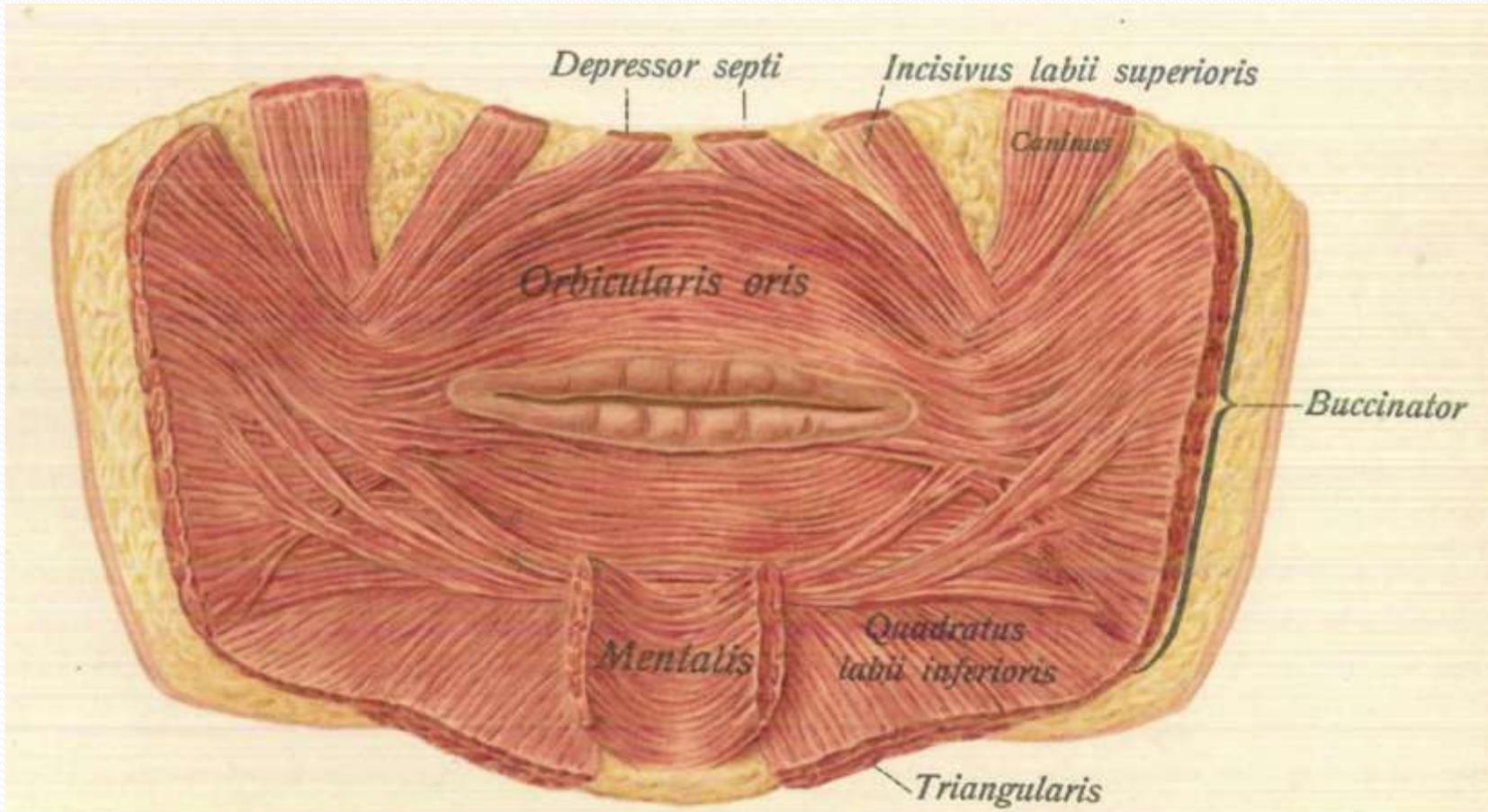


## LABIAL VESTIBULE:

- ❑ It runs from buccal frenum on one side to other on labial side of the ridge.
- ❑ *Orbicularis oris*-main muscle.



# ORBICULARIS ORIS



# CLINICAL CONSIDERATION:

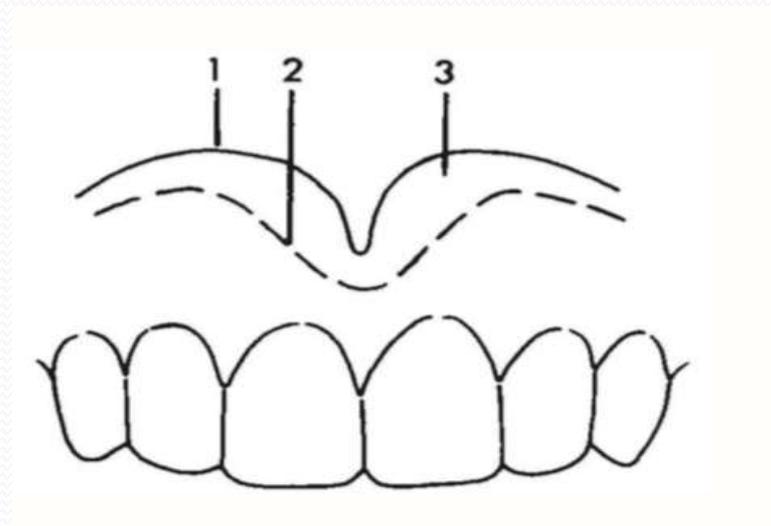
□ **Facial seal** –provided by lips and cheeks.

## Maxillary labial flange:

1-correct contour of labial flange

2-incorrect contour of denture border

3-tissue that should have been covered

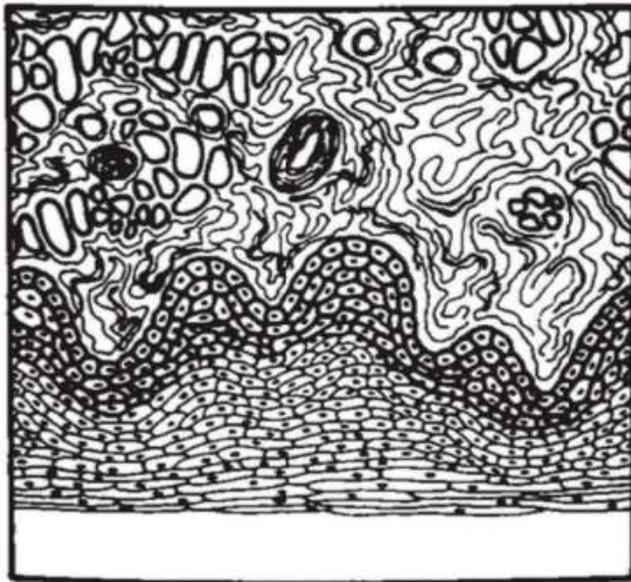


Boucher's ,prosthodontic treatment for edentulous patients.9<sup>th</sup> edition

# MICROSCOPIC ANATOMY OF THE VESTIBULAR SPACE :

❑ Mucous membrane lining vestibular space –thin epithelium non keratinized.

submucosa layer –thick and contains large amount of loose areolar tissue and elastic fibers.



Adipose tissue

Elastic fibers

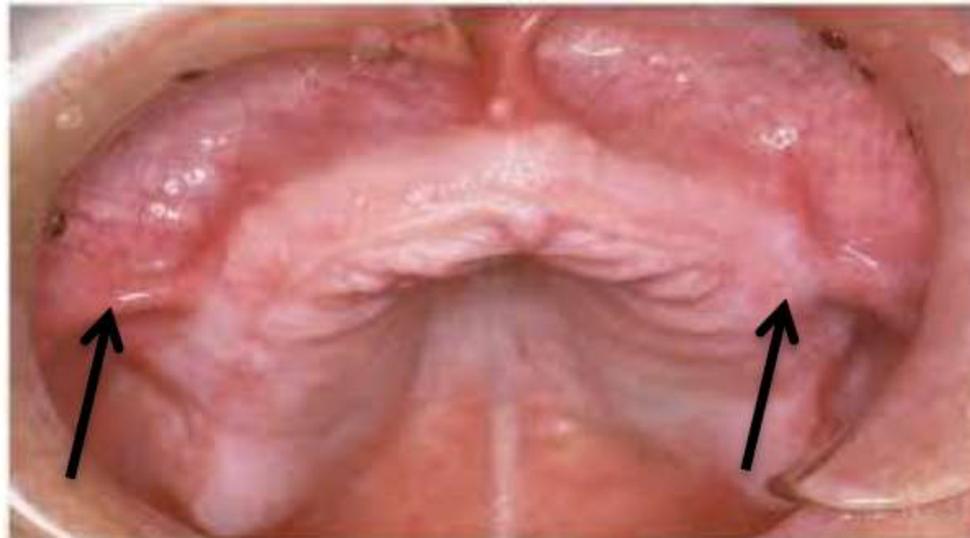
Submucosa

Mucosa

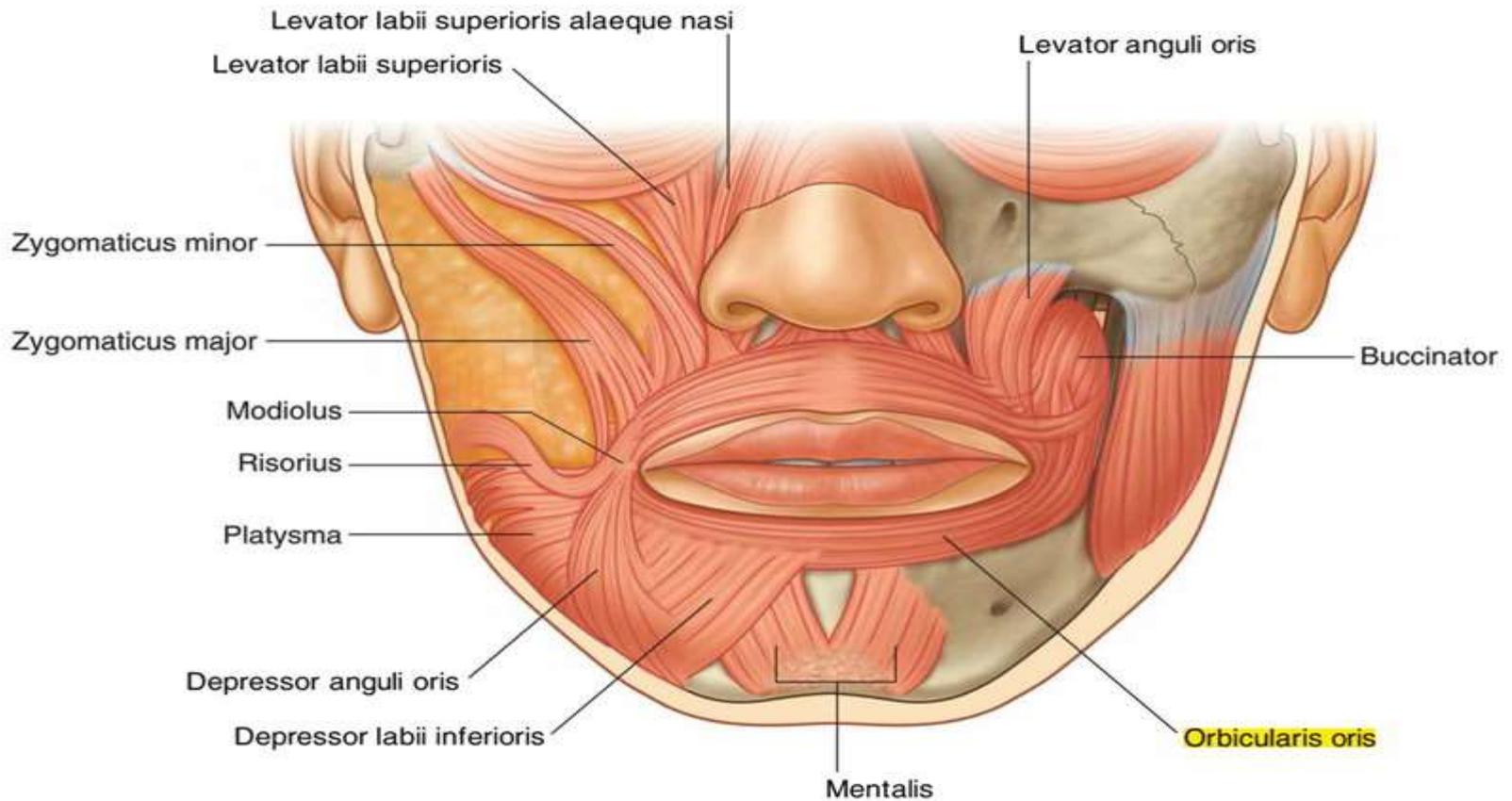
Boucher's ,prosthodontic treatment for edentulous patients.9<sup>th</sup> edition

# BUCCAL FRENUM:

- ❑ Separates labial and buccal vestibule.
- ❑ Muscles:
  - *Levator anguli oris* -beneath frenum.
  - *Orbicularis oris* - pulls frenum in forward direction.
  - *Buccinator* - pulls frenum in backward direction.



# MUSCLES RELATED TO BUCCAL FRENUM



## CLINICAL CONSIDERATION:

- ❑ It needs wider and shallower clearance on buccal flange of denture.



Buccal notch

# BUCCAL VESTIBULE:

- ❑ Extends from buccal frenum to hamular notch.
- ❑ Size of buccal vestibule varies with:
  - Contraction of buccinator
  - Position of the mandible
  - Amount of bone loss in maxilla.

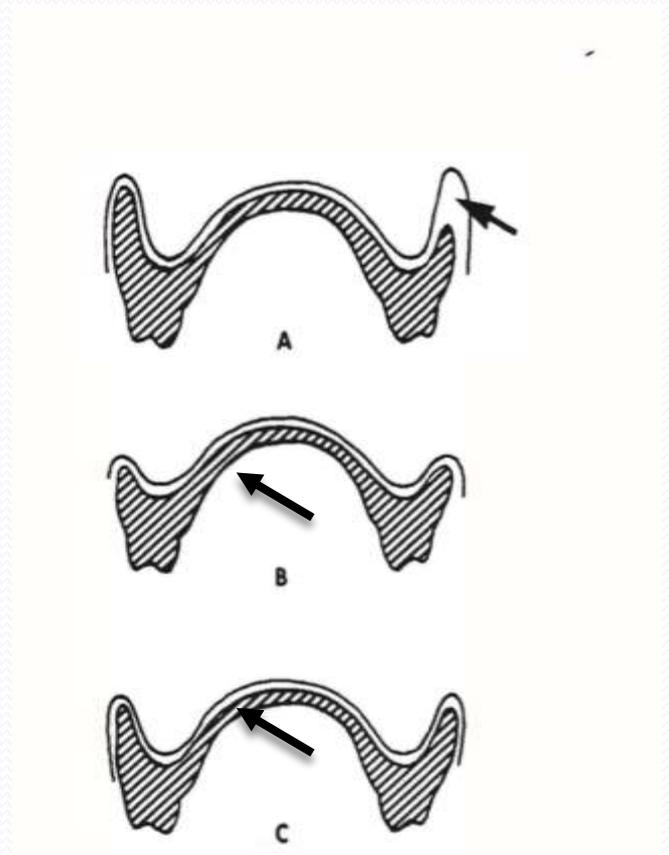


## Buccal vestibule:-

A-high buccal vestibule

B-low buccal vestibule

C-medium height of buccal vestibule



Boucher's ,prosthodontic treatment for edentulous patients.9<sup>th</sup> edition

## CLINICAL CONSIDERATION:

- ❑ Ramus and coronoid process of mandible, masseter → modify size of vestibule during mouth opening.
- ❑ The distal end of buccal flange of the denture → no interference to the coronoid process during mouth opening.

## HAMULAR NOTCH:

- Situated between maxillary tuberosity and hamulus of medial pterygoid.

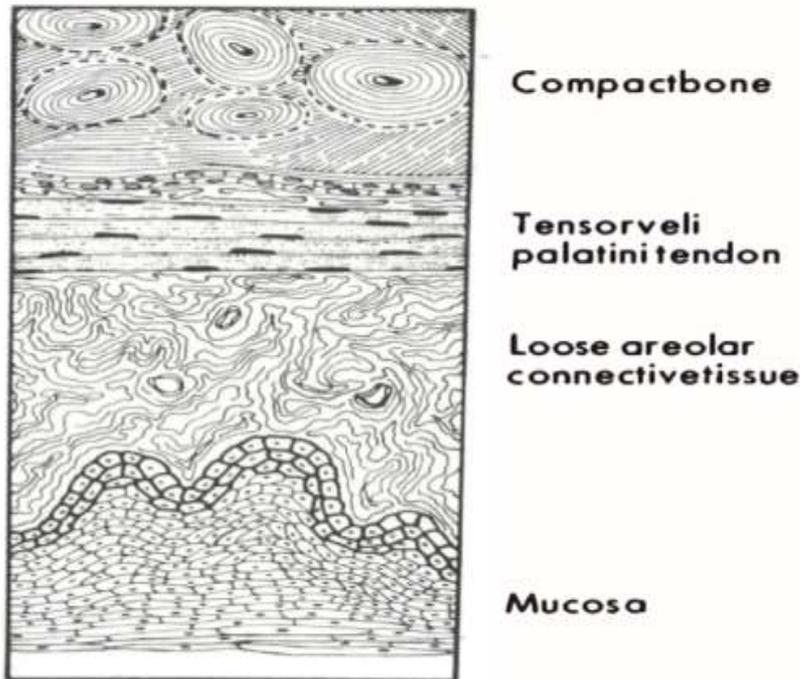


## CLINICAL CONSIDERATION:

- ❑ Denture border → hamular notch.
- ❑ Border located anteriorly near tuberosity → no retentive property.
- ❑ Denture border beyond hamular notch → dislodgement of denture.

# MICROSCOPIC ANATOMY

- ❑ In region of hamular notch the submucosa is thick and made up of loose or areolar tissue.



# POSTERIOR PALATAL SEAL AREA (POSTDAM):

- Defined as –the soft tissues at or along junction of the hard and soft palates on which pressure within physiological limits of the tissues can be applied by a denture to aid in retention of the denture.

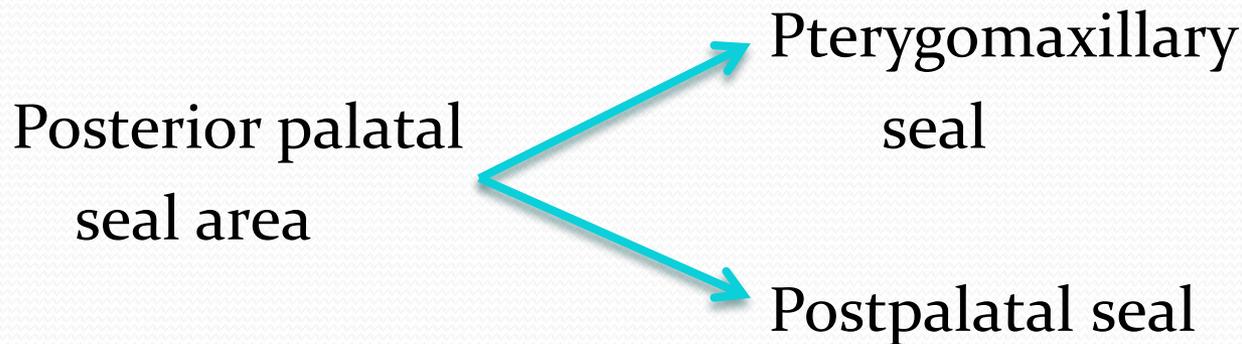


## CLINICAL CONSIDERATION:

- Distal end of denture  $\longrightarrow$  <sup>7</sup>at least 1-2mm beyond vibrating line.
- Posterior palatal seal  $\longrightarrow$  seal maxillary denture.

## FUNCTIONS:

- i. Aids in retention by constant contact with soft palate.
- ii. Reduces the tendency of gag reflex.
- iii. Prevents food accumulation .
- iv. Compensates for polymerization shrinkage.

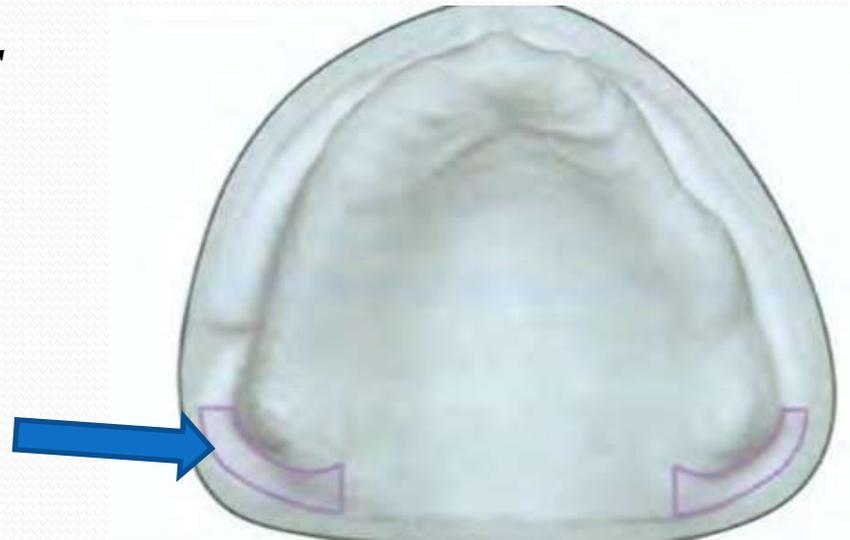


## PTERYGOMAXILLARY SEAL:

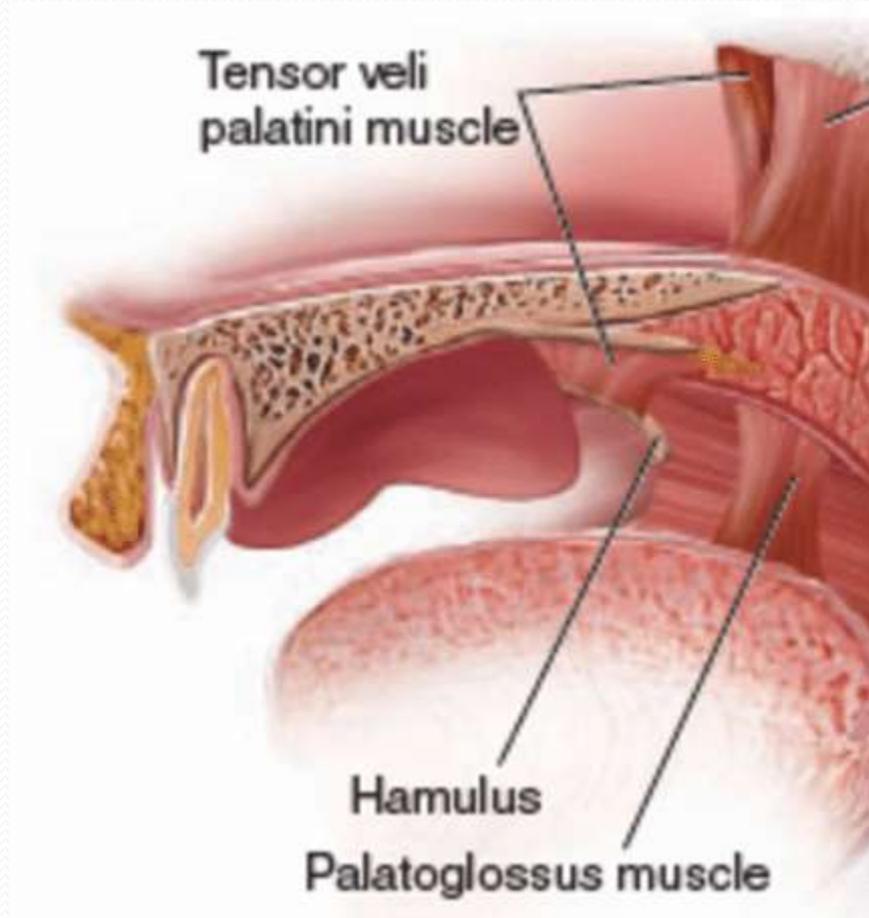
- ❑ It extends across hamular notch and extends 3 to 4 mm anterolaterally to end in mucogingival junction on posterior part of maxillary ridge.
- ❑ Muscle- *Tensor veli palatini*.

### CLINICAL CONSIDERATIONS:

- ❑ The posterior extent of the denture in this region should be in hamular notch.



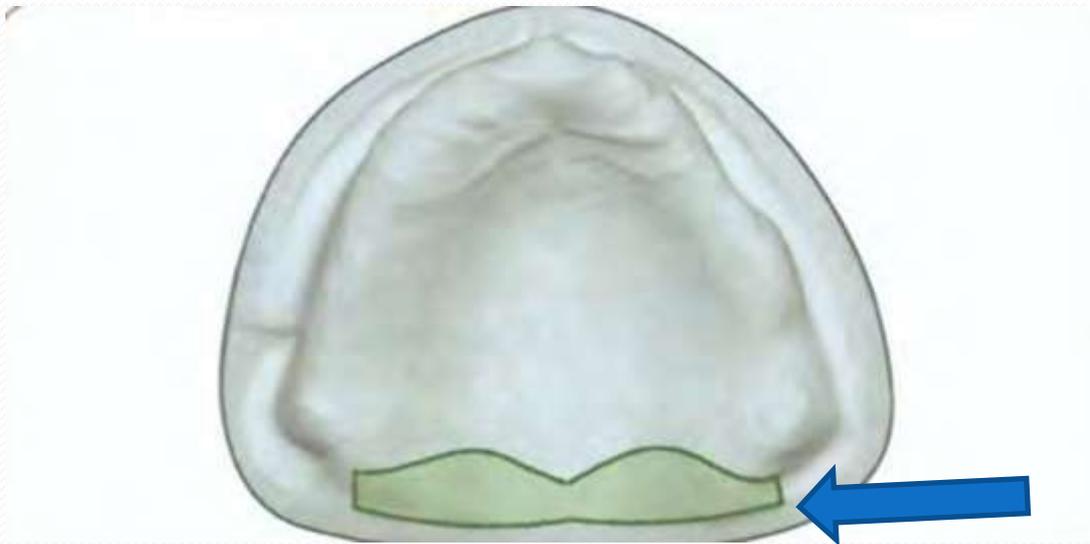
# TENSOR VELI PALATINI



## POST PALATAL SEAL:

- ❑ It extends between two maxillary tuberosities.
- ❑ If palatine torus is present → removed.

In thick ropy saliva cases, fovea palatine should be removed.

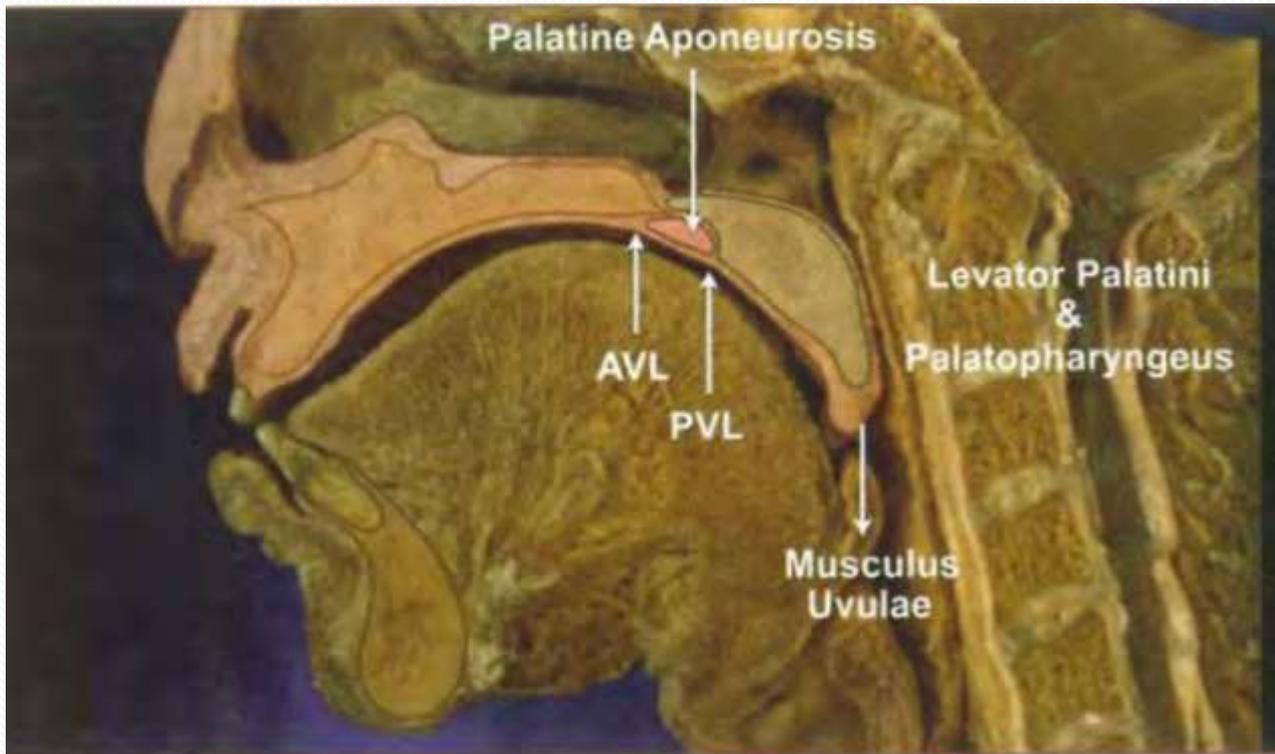


## CLINICAL CONSIDERATION:

- ❑ The denture can extend 1-2 mm across the fovea palatina.
- ❑ If a mid-palatine fissure is present, then the posterior palatal seal should extend in to it to obtain a good peripheral seal.

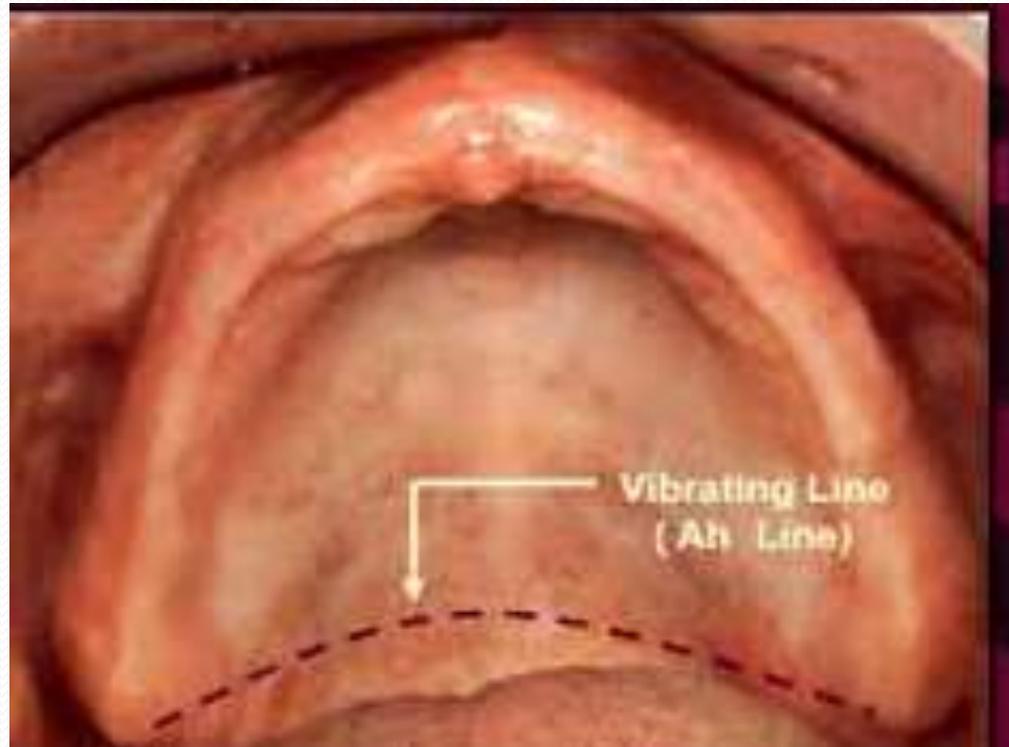
## VIBRATING LINE:

- ❑ It is an imaginary line drawn across palate that marks the beginning of motion in soft palate, when individual says “AH”.
- ❑ Extends from one hamular notch to other.



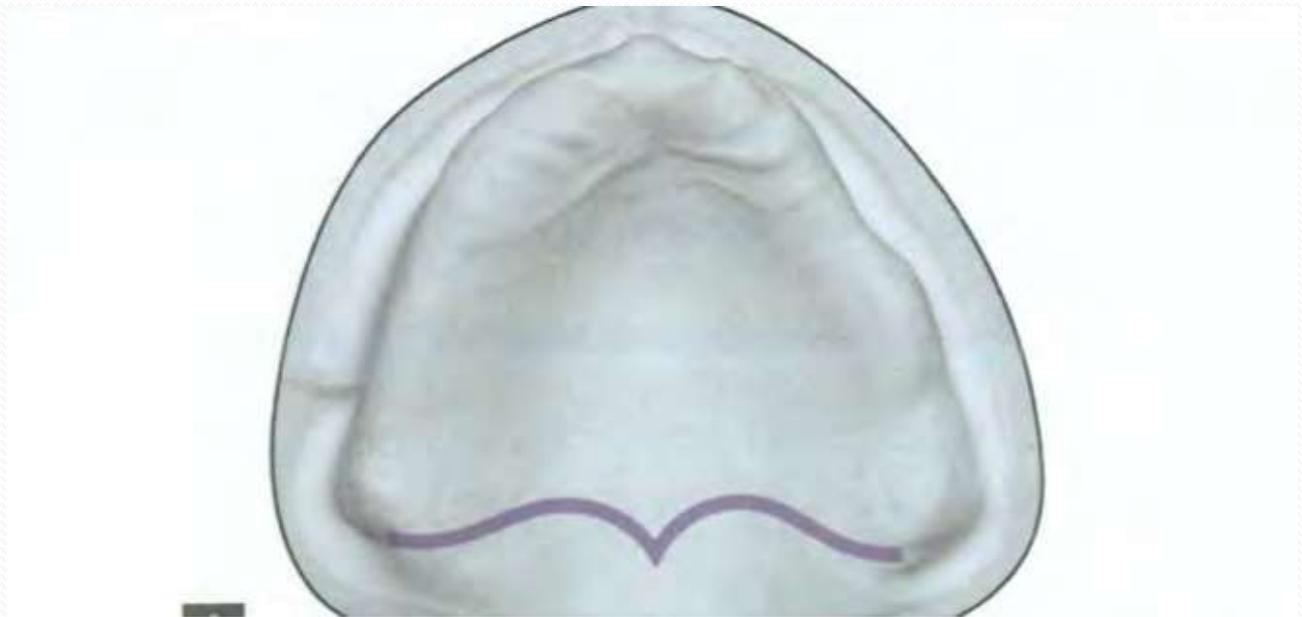
## CLINICAL CONSIDERATION:

- ❑ Distal end of the denture cover tuberosities and extends into hamular notches. It should end 1-2mm posterior to vibrating line.



## Anterior vibrating line:

- ❑ Imaginary line between immovable tissues over hard palate and slightly movable tissues of soft palate.
- ❑ Recording – “VALSALVA” maneuver.
  - By asking patient to say “AH” in short vigorous bursts.



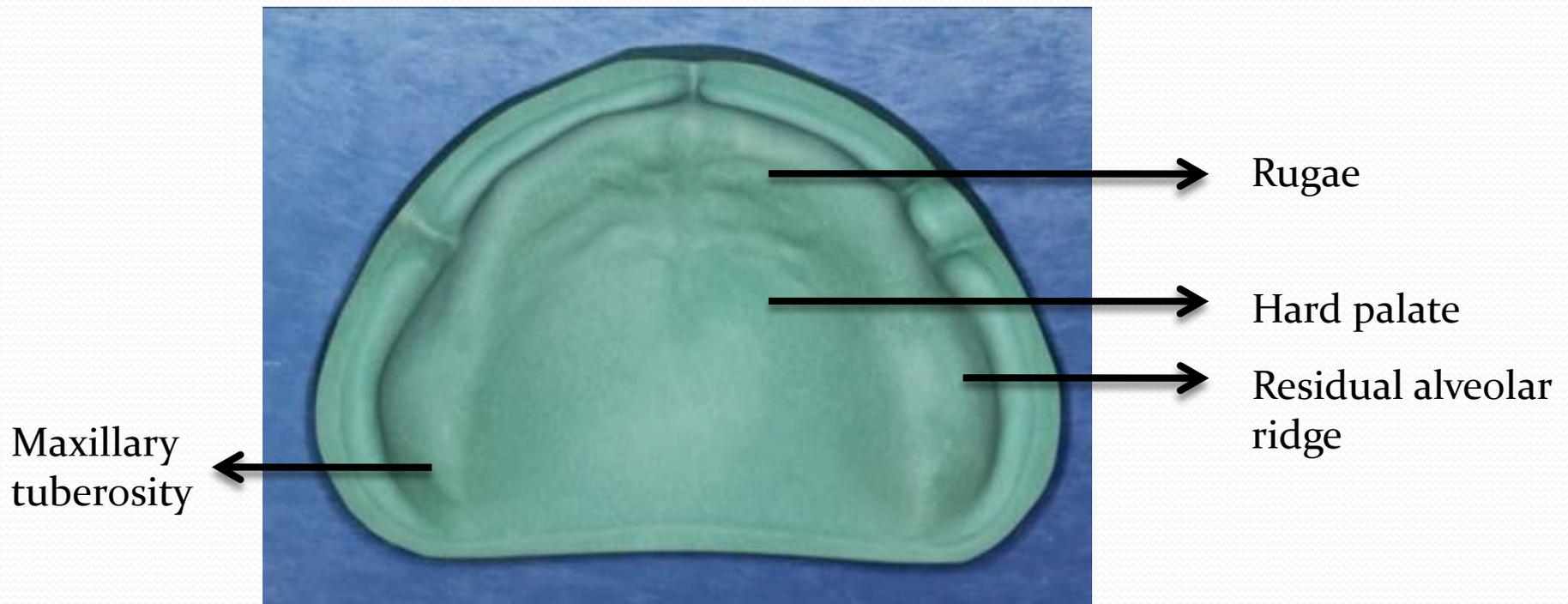
## Posterior vibrating line:

- ❑ It is an imaginary line located at the junction of soft palate which shows limited movement and soft palate shows marked movement.
- ❑ Recording-  
Asking patient to say “AH” in short non-vigorous fashion.



# SUPPORTING STRUCTURES:

- ❑ These are load-bearing areas.
- ❑ Minimal ridge resorption → under constant load.

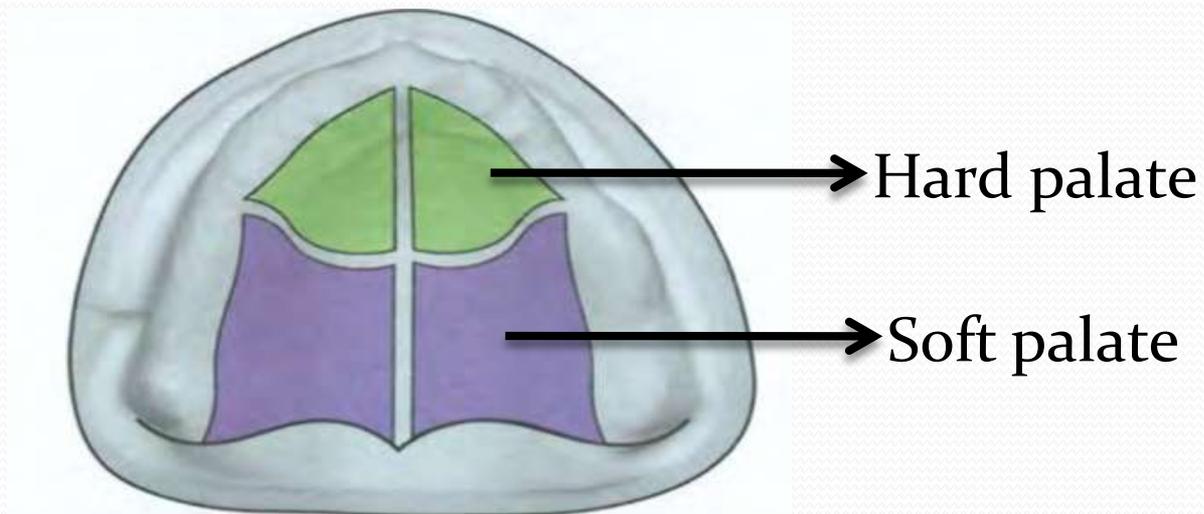


# MACROSCOPIC ANATOMY OF SUPPORTING STRUCTURES:

- ❑ The foundation for dentures is called basal seat area, made up of bone covered by mucous membrane – MUCOSA.  
SUBMUCOSA.
- ❑ Submucosa are the vessels that carry blood supply to basal seat and the nerves that innervate it.
- ❑ Each type of tissue has its own characteristic ability to resist external force.  
Example: Fibrous connective tissue – external forces are applied.  
Glandular tissues – external forces are not applied.

## HARD PALATE:

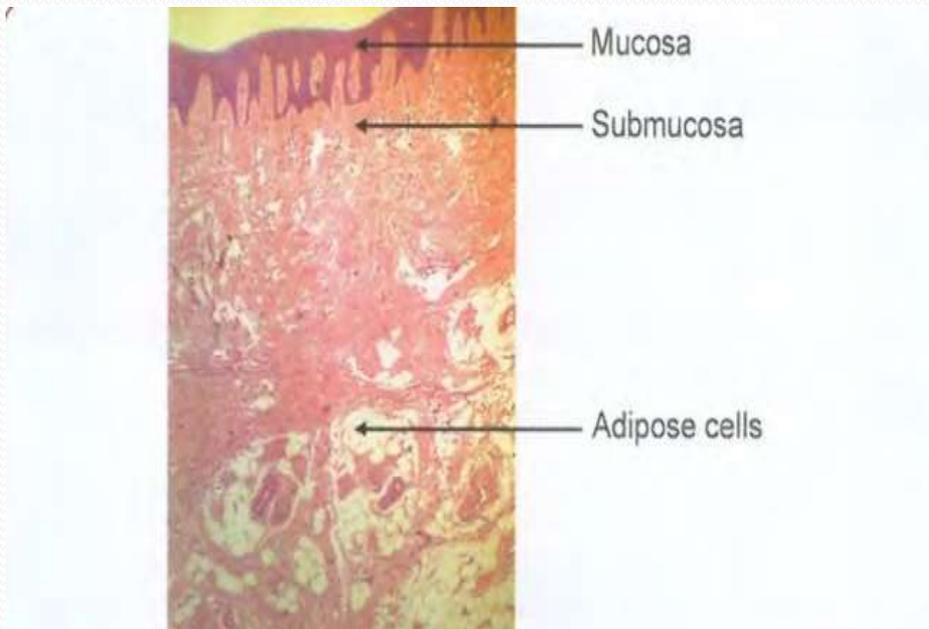
- ❑ Anterior region- by the palatine shelves ,meet at the center to form the median suture.
- ❑ Horizontal plate - posterior part of the palate.
- ❑ Horizontal portion of hardpalate lateral to midline-*Primary support area.*
- ❑ Rugae -*secondary support area.*



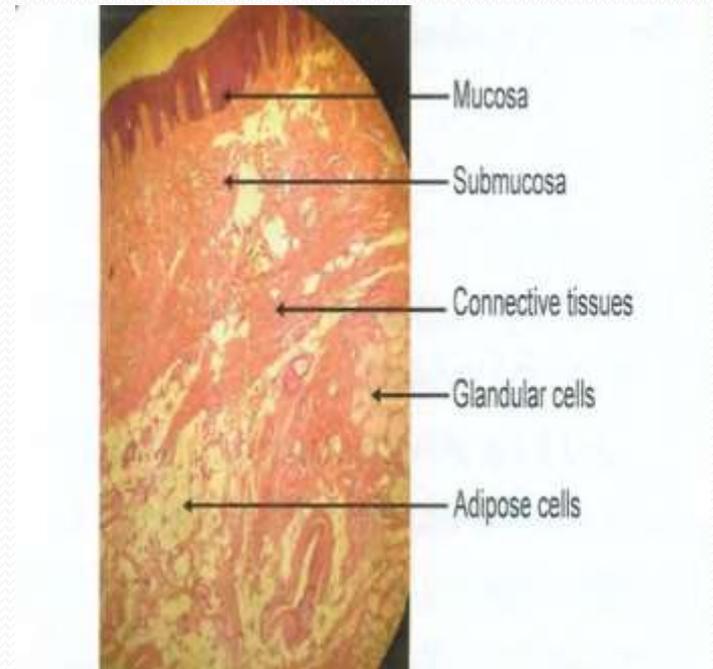
# MICROSCOPIC ANATOMY

- Anterolaterally, submucosa contains adipose tissue  
Posterolaterally it contains glandular tissue.

## ANTEROLATERAL



## POSTEROLATERAL

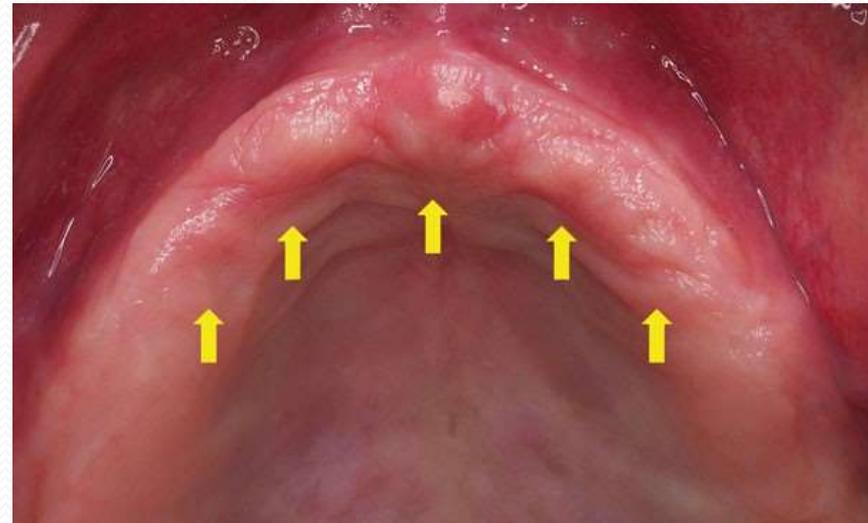


## RESIDUAL RIDGE:

- ❑ Defined as – portion of the alveolar ridge and its soft tissue covering which remains following removal of teeth.
- ❑ The crest of the ridge → secondary stress bearing areas.

### CLINICAL CONSIDERATION:

- ❑ The submucosa over the ridge has adequate resiliency to support the denture.



# MICROSCOPIC ANATOMY:

- ❑ Mucous membrane of crest-firmly attaches to periosteum of bone by connective tissue.
- ❑ Outer surface of crest of residual ridge-compact.
- ❑ Mucous membrane of slope-nonkeratinized or slightly keratinized. Submucosa-loose connective tissue and elastic fibers.



**Bone**

**Periosteum**

**Submucosa**

# RESIDUAL RIDGE RESORPTION:

❑ Residual ridge resorption is defined as “it is pathological /physiological change which produce severe alteration in complete denture treatments.

❑ Types :Flat

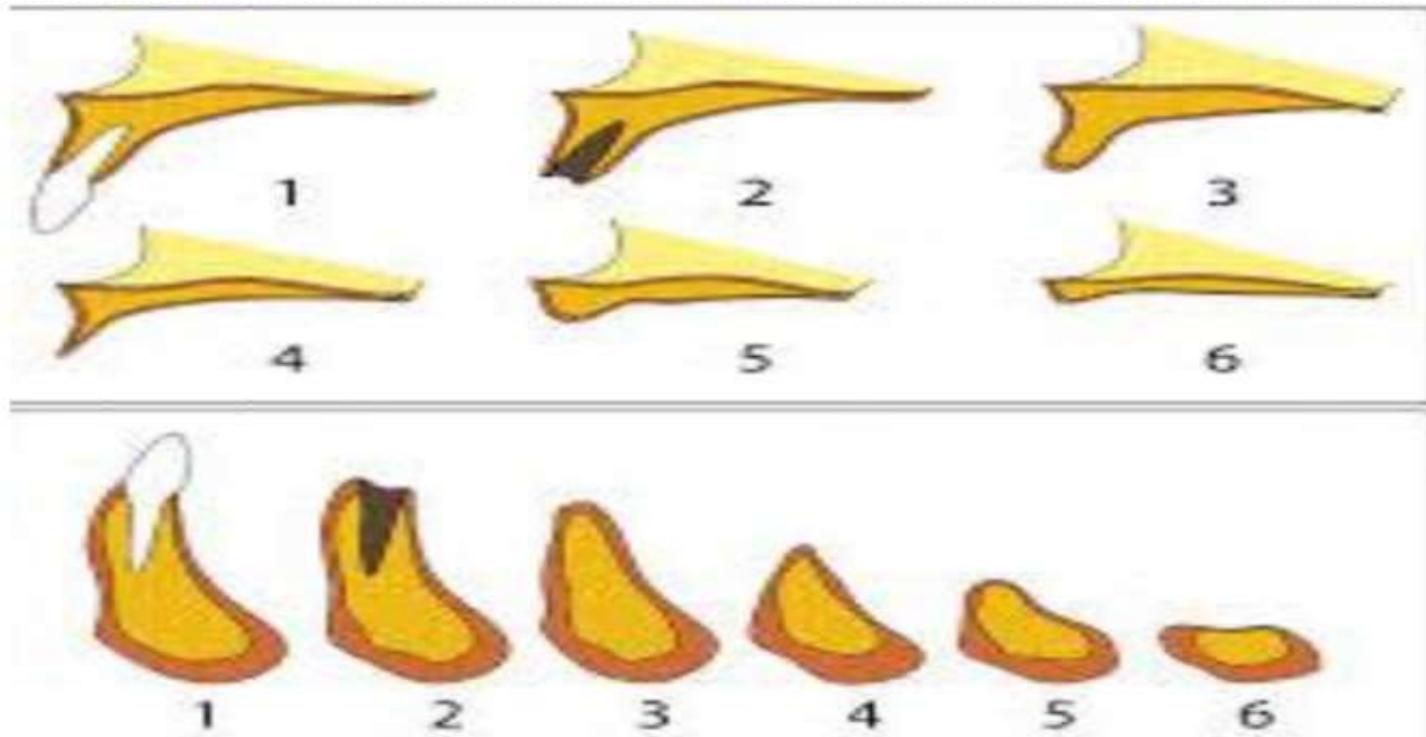
Rounded

V-shape

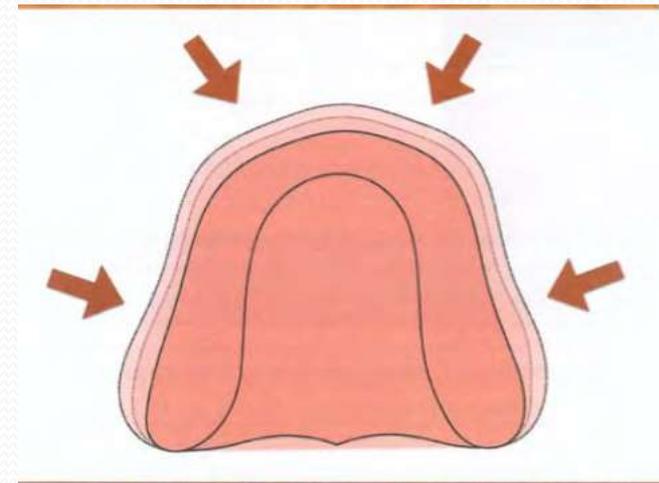
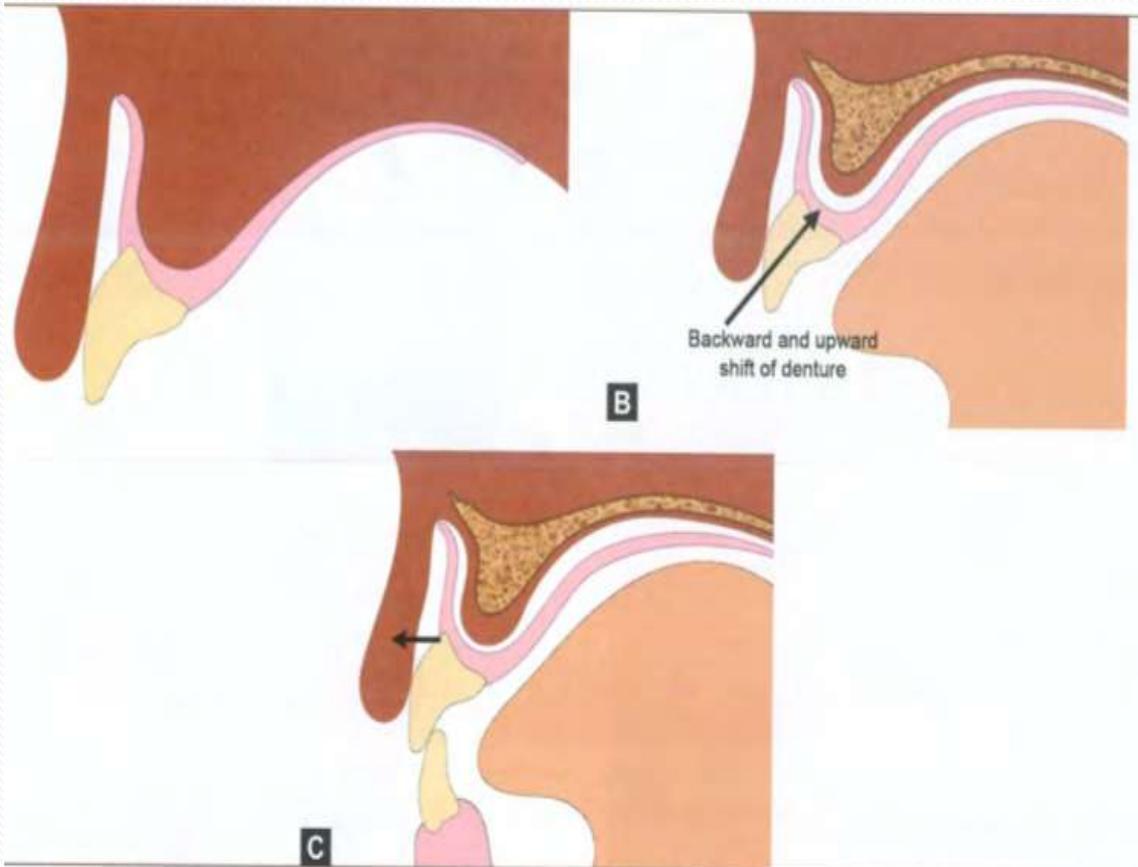
U-shape



❑ Six orders of Residual Ridge Resorption (Atwood's classification)



# CHANGES IN MAXILLA



CENTRIPETAL ACTION

First year after extraction-2-3mm in maxilla

Annual rate of reduction -four times less than in mandible

## RUGAE:

- ❑ Mucosal folds located in the anterior region of the palatal mucosa.
- ❑ It can resist forward movement of the denture.

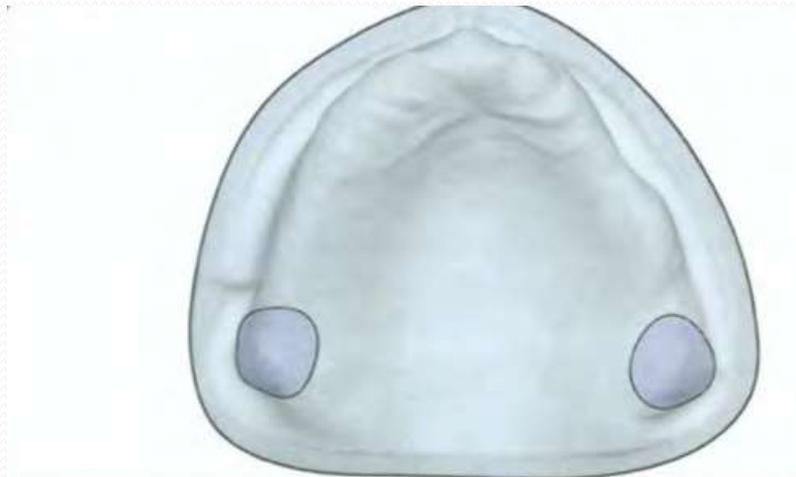
## CLINICAL CONSIDERATIONS:

- ❑ During impression, pressure is not applied in rugae area.



# MAXILLARY TUBEROSITY:

- ❑ It is a bulbous extension of residual ridge in second and third molar region.
- ❑ Posterior part of the ridge and tuberosity-support.
- ❑ A rough prominence formed behind the position of the last tooth  
-ALVEOLAR TUBERCLE.

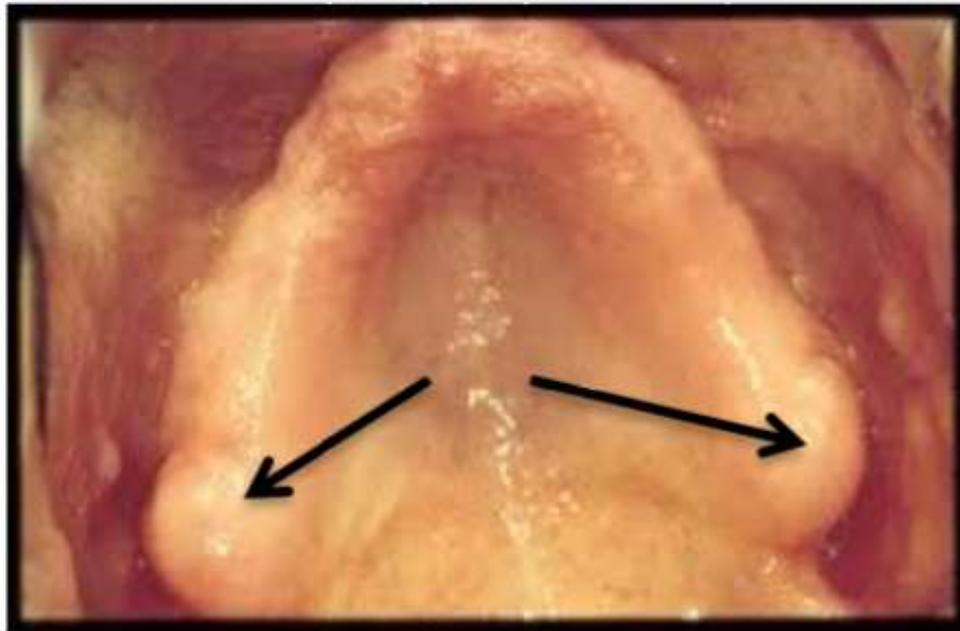


## CLINICAL CONSIDERATION:

- Denture base cover tuberosity and fill hamular notch



resist horizontal and torquing forces move denture base.

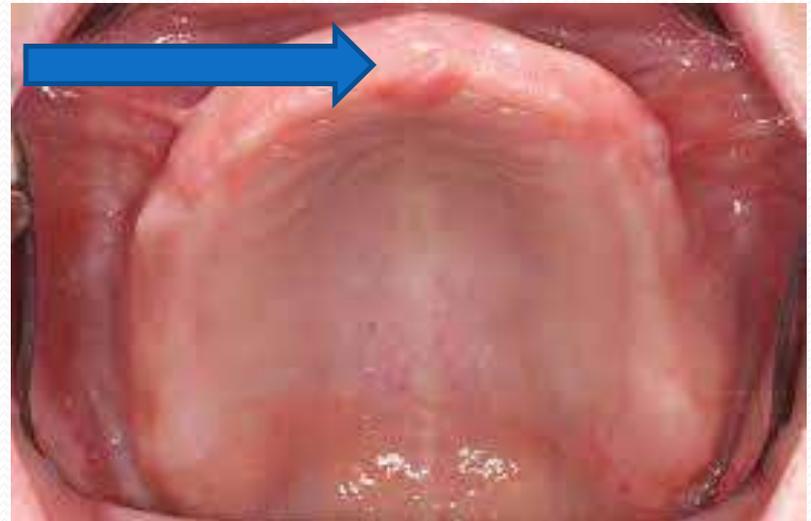


## RELIEF AREAS:

- ❑ These areas resorb under constant load or contain fragile structures within.

## INCISIVE PAPILLA:

- ❑ It covers incisive foramen.
- ❑ It is situated behind and between central incisors .
- ❑ It is the exit point of nasopalatine nerves.



## CLINICAL CONSIDERATION:

- ❑ If this area is not relieved, denture compresses the vessels and nerves.



# MICROSCOPIC ANATOMY:



**Compact bone**

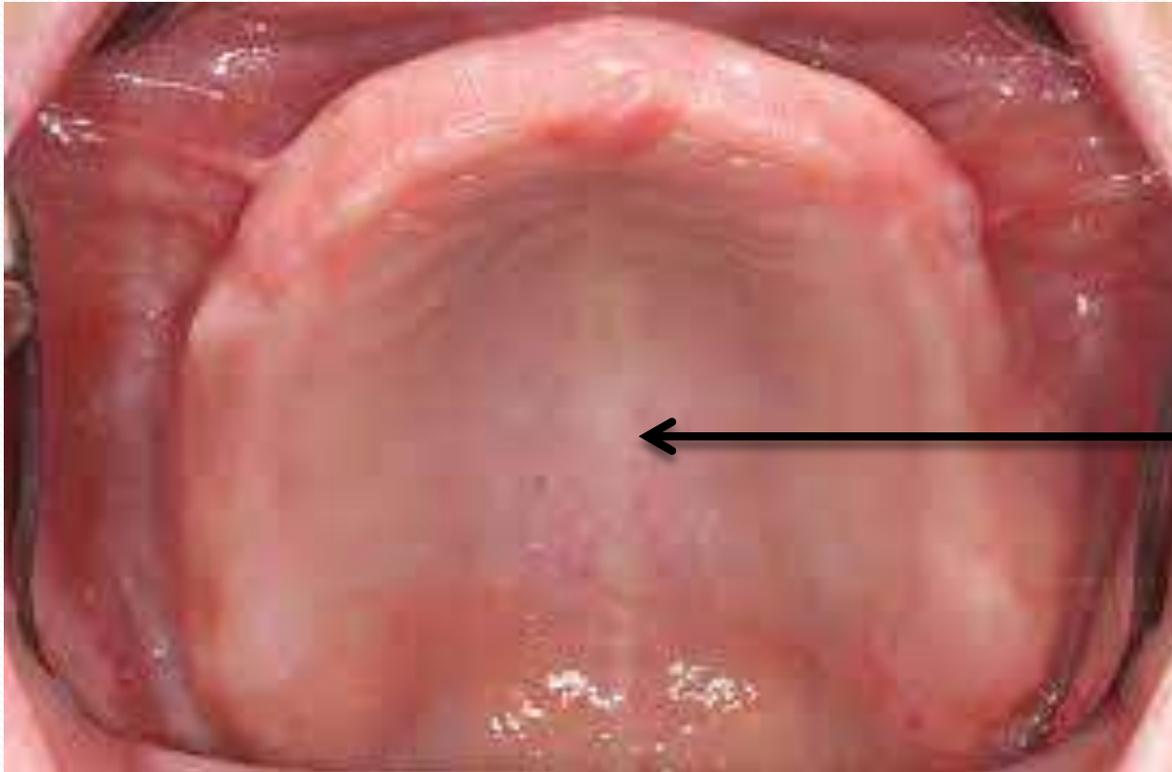
**Nasopalatine  
vessel and nerve**

**Submucosa**

**Mucosa**

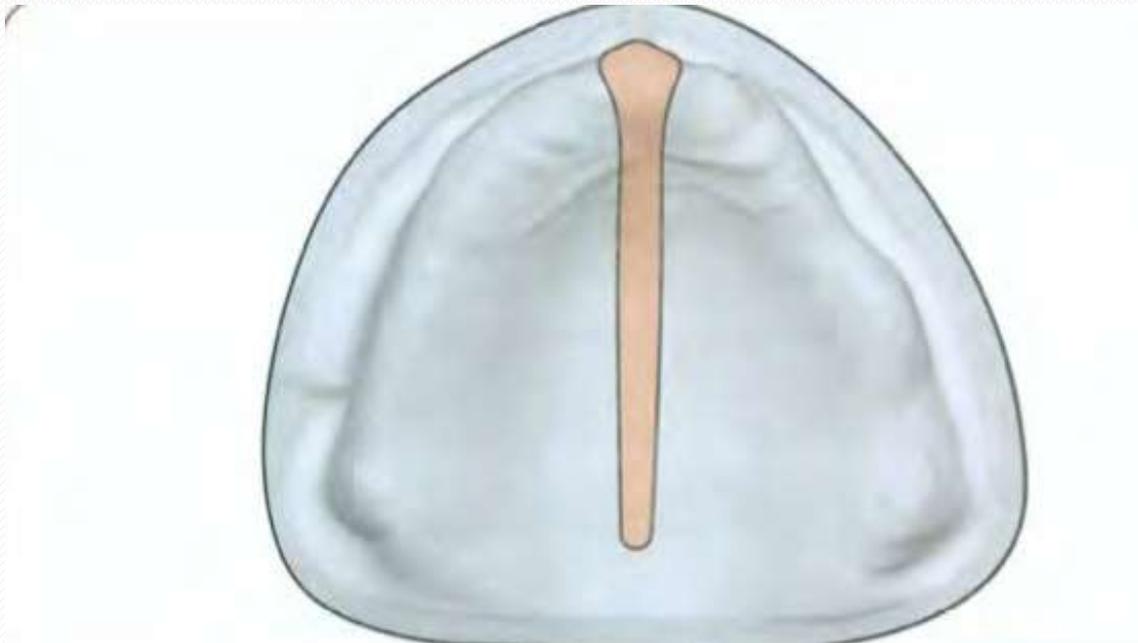
## MID-PALATINE RAPHE:

- ❑ This area is covered by thin submucosa.
- ❑ This area is most sensitive part of the palate to pressure.



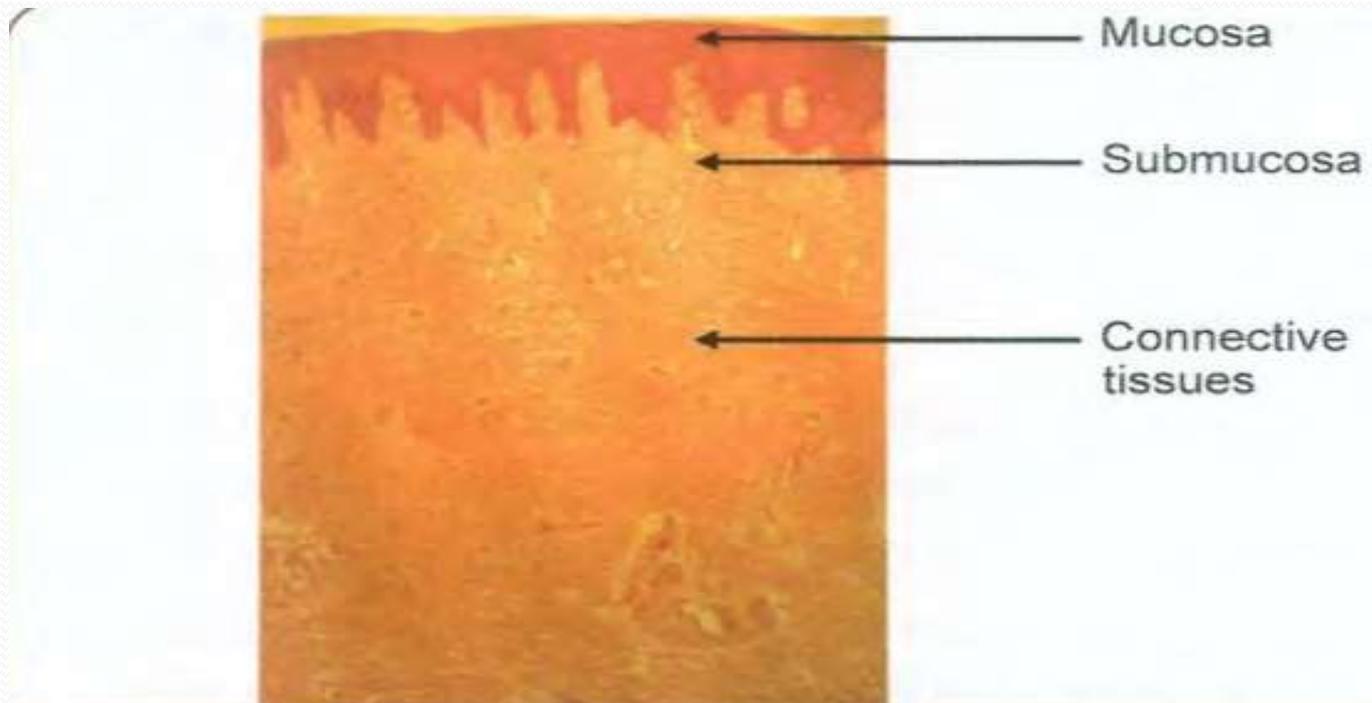
## CLINICAL CONSIDERATION:

- Pressure in this area → soreness over mid palatine raphe region.



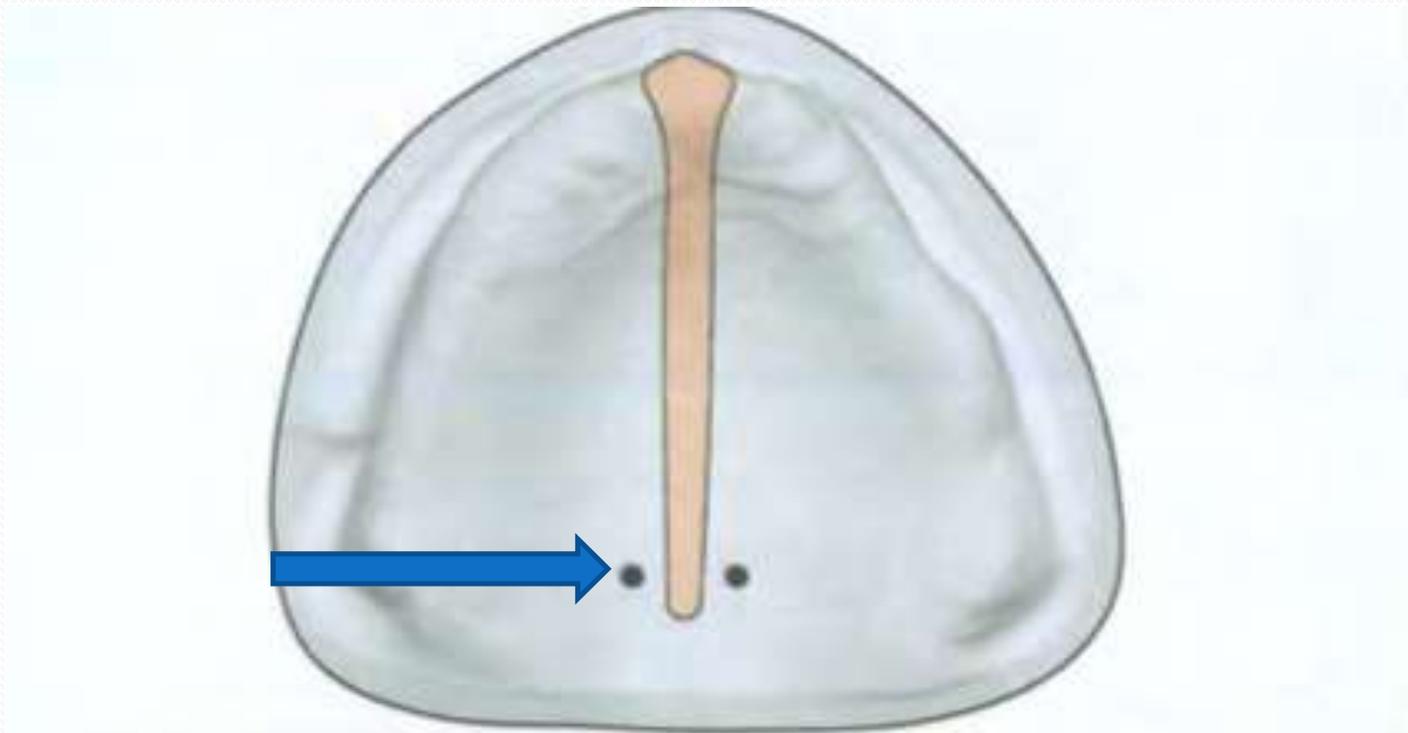
# MICROSCOPIC ANATOMY:

- ❑ The submucous in region of median palatal suture is extremely thin.
- ❑ Mucosal layer in contact with underlying bone.



## FOVEA PALATINAE:

- ❑ Fovea formed by coalescence of ducts of several mucous glands.
- ❑ This acts as arbitrary guide to locate posterior border of the denture.



## CLINICAL CONSIDERATION:

- ❑ Position of fovea palatina influence position of posterior border of the denture.
- ❑ Denture can extend 1-2mm beyond fovea palatina.

## CUSPID EMINENCE:

- ❑ It is a bony elevation on residual alveolar ridge formed after extraction of the canine.
- ❑ It is located between canine and first premolar region.



## TORUS PALATINUS:

- A hard bony enlargement that occurs in midline of the mouth.



# ZYGOMATIC PROCESS:

- Relief at this area → Aid retention and soreness of underlying tissues.



## **REFERENCES:**

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# CONCLUSION

A photograph of a weathered wooden wall, possibly a barn or shed. The wall is made of vertical wooden planks, many of which are aged and discolored. Two windows are boarded up with wooden planks. In the center of the wall, there is a horizontal wooden plank with the words "THANK YOU." painted on it in a bright, bold, sans-serif font. The bottom of the image shows a dark, out-of-focus foreground, likely a road or path.

THANK YOU.