Posterior Vibrating Line & It's Significance

You're biting my fingers!
The anatomy of edentulous ridge in the maxilla and mandible is very important for the design of COMPLETE DENTURE.
Anatomical Landmarks In Maxilla

Limiting Structures: Labial frenum, labial vestibule, buccal frenum, buccal vestibule, hamular notch, POSTERIOR PALATAL SEAL AREA.

Supporting Areas: hard palate, postero lateral slopes of the residual alveolar ridge, rugae, maxillary tuberosity

Relief Areas: Incisive papilla, cupid eminence, mid-palatine raphe, fovea palatina
POSTERIOR PALATAL SEAL

Definition:

“Soft tissue at or along the junction of hard and soft palates on which pressure within the physiological limits of the tissue can be applied by a denture to aid in retention of the denture”
Significance Of PPS

Prevents air passage between the tissues and denture base.

Serves Primarily in denture retention by making contact with anterior portion of soft palate.

Reduces patients awareness about the area hence decrease gag reflex.

Prevents food accumulation between posterior border of denture and the soft palate.

Compensates for polymerization shrinkage of denture base resin.
PPS can be divided into 2 regions based upon anatomical landmarks, namely:

- PTERYGOMAXILLARY SEAL
- POST PALATAL SEAL
**Pterygomaxillary Seal:**

Band of loose connective tissue lying between the pterygoid hamulus of sphenoid bone and distal portion of maxillary tuberosity.

Extends through pterygomaxillary notch (hamular) continues 3-4mm antero laterally to end in the muco gingival junction on the posterior part of the maxillary ridge.
“POSTERIOR EXTENT OF DENTURE IN THIS REGION SHOULD END IN THE HAMULAR NOTCH & NOT EXTEND OVER THE HAMULAR PROCESS AS THIS CAN LEAD TO SEVERE PAIN DURING DENTURE WEAR”
Post Palatal Seal:

This part of the posterior palatal seal that extends between two maxillary tuberosities.
An Impression With Correctly Placed PPS

Posterior border of the denture should not be placed over mid-palatine raphe or posterior nasal spine. Tori should be removed IF they interfere with the posterior palatal seal.

If a mid palatine fissure is present, then the posterior palatal seal should extend in to it to obtain a good peripheral seal.
The position of *fovea palatine* also influences the position of posterior border of the denture. Denture can extend 1-2mm across it.

In patients with thick saliva, the fovea palatine should be left uncovered or else thick saliva flowing between the tissue and the denture can increase the hydrostatic pressure and displace the denture.
**Vibrating Line**

**Definition:**

“The imaginary line across the posterior part of the palate marking the division between the moveable and immovable tissues of the soft palate which can be identified when the movable tissues are moving.”
Its an imaginary line drawn across the palate that marks the beginning of motion in the soft palate, when the individual says “ah”. Extends from one hamular notch to the other. It passes about 2mm in front of the fovea palatina. This line should lie on the soft palate. Distal end of the denture must cover the tuberosities and extend into hamular notches. It should end 1-2mm posterior to the vibrating line.
Anterior Vibrating Line:

“Its an imaginary line lying at the junction between the immovable tissues over the hard palate and slightly movable tissues of the soft palate”
The anterior vibrating line is cupid bow shaped due to projection of posterior nasal spine. It can be located by asking the patient to perform the “valsalva” maneuver.
Posterior Vibrating Line:

“Its an imaginary line at the junction of the aponeurosis of tensor veli palati muscles and muscular portion of soft palate”
This line is usually straight.

It's recorded by asking the patient to say "ah" in short but normal non-vigorous fashion.
Technique Of Recording PPS

Conventional Tech:

- Make wash impression pour in stone fabricate acrylic tray.
- Astringent mouth wash is used to prevent smudging of markings.
- Paleate the landmarks with T-burnisher or mouth mirror.
- Detect and mark ant & post vibrating lines with indelible pencil.
- Transfer the markings on tray.
- Transfer the tray markings on master cast and trim the tray border up to the post extent of denture.
Outline of the seal is a cupid bow shaped. 

Cast is scraped with kingsley scrapper is deepest area of the seal on either side of midline are scraped 1 to 1.5mm 

Area in the midline is scraped to 0.5 to 1mm as it cannot withstand compression forces and seal is tapered posteriorly. 

Tray is readapted on the scraped area and evaluated for retentive qualities. If un retentive, further scrapping is required.
Advantages:
The trial base has increased retention due to this technique. Hence, it’s easier to retain the trial base during jaw relation.
The patient can experience the retentive qualities of denture at an earlier stage.
The pt. has an idea of the posterior extent of the denture base.
Final adjustments during insertion are minimized.
Disadvantages:

- It’s not a physiological technique, hence it is technique sensitive.
- Excessive scrapping of the cast can frequently lead to tissue compression.
Fluid Wax Technique:

- This is done immediately after making the wash impression and before pouring the master cast.
  - Mark the landmarks – wash impression with ZnOE.
  - Waxes – lowa, adaptol wax, correcta wax, physiologic wax.
  - Apply melted wax on PPS area of impression cool it below mouth impression.
- Place in mouth under firm pressure for 5-6 min. If tissue contact occurs, it will exhibit glossy appearance.
**Advantages:**

- It’s a physiologic technique.
- Chances of over compression of tissue are less.
- Increases retention of the trial base and convenience in jaw relation.
- There is no need for scrapping the master cast arbitrarily.

**Disadvantages:**

- Handling of the material is very difficult.
- Increased chair side time during pt appointment.
Arbitrary Scrapping Of The Master Cast:

Ant. & post. Vibrating lines are visualized by examining the pt’s mouth and approximately marked on master cast.

The lab technician scraped 0.5 to 1mm of stone in posterior palatal seal area of the master cast and fabricates the denture.

This tech is inaccurate and not physiological and should be avoided.
Errors In Recording PPS:

Under extension:

This is the most common cause for poor pps. It may be produced due to one of the following reasons:

- When denture does not cover the fovea palatina, the tissue coverage is reduced and the post border of the denture is not in contact with the soft resilient tissue which will move along with the denture border during functional movements.

- The dentist may intentionally leave the posterior borders under extended in order to reduces the pt’s anxiety to gagging.

- Improper delineation of ant & post vibrating lines.

- Excessive trimming of the post border of the cast by technician.
Overextension:

Overextension of denture base can lead to ulceration of soft palate and painful deglutition.

In order to relieve these areas like hamular process, ulcers, etc, markings are made on them by indelible pencils and transferred to the denture.

These areas are trimmed and polished.
**Underpostdamming:**

This can occur due to improper head positioning and mouth positioning leading to the production of space between the denture base and tissues.

Inserting a wet denture into a pt’s mouth and inspecting the posterior border with the help of a mouth mirror can identify under damming. If air bubbles are seen to escape under the posterior border, it indicates damming.

To correct it, the master cast can be scrapped in post palatal area or fluid wax impression can be repeated with proper patient position.
Overpostdamming:

This commonly occur due to excessive scrapping of master cast. It occurs more commonly in the hamular notch region.

Mild overdamming in the hamular notch region can lead to tissue irritation of the mucosa and excessive postdamming produces downward displacement of the denture posteriorly.