Palate

- Lies within alveolar arches, b/w roof of mouth and floor of nasal cavity
- Arched antero-posteriorly and side to side
- Consist of two parts
  a) Hard Palate – Anterior 2/3rd
  b) Soft Palate – Posterior 1/3rd
Soft Palate

- Mucous covered (bilaminar fold) Fibro – musculo – glandular curtain
- hangs from Post. Margins of the hard palate
- extends backward and downward between the nasal and oral parts of the pharynx
Soft Palate

- Ant. 1/3\textsuperscript{rd} is fibrous
- Middle 1/3\textsuperscript{rd} is muscular
- Post. 1/3\textsuperscript{rd} is glandular

- Movements of soft palate help in
  Deglutition
  speech
  blowing air through mouth by closing pharyngeal isthmus
Soft palate

- When relaxed – Quadrilateral in shape & has
  - Two surfaces – Anterior(oral) & Post.
  - Four borders – Upper, Lower & Laterals
Palate - Surfaces

- **Anterior Surface**
  Concave, looks downward and forward, presents a median raphe, when palate is stretched it becomes inferior

- **Posterior surface**
  Convex, directed backward and upward and Forms ant. boundary of pharyngeal isthmus
Palate - borders

- **Upper border**
  Attached to post. Margins of the hard palate

- **Lateral borders**
  Continuous with the wall of pharynx

- **Lower border**
  Free & presents a conical projection in midline (Uvula)
Soft Palate

From base of uvula two mucous folds extend downward on each side passing anterior and posterior to tonsillar fossa (lodging palatine tonsils)

Anterior fold passes downward and forward to the side of the tongue (Palato-glossal arch)

Posterior fold extends downward and backward (Palato-pharyngeal arch)
Soft Palate - Composition

- Consists of bilaminar fold of mucous membrane (St.Sq.non ker.) except in upper part of post. Surface & contain
  1. Palatine aponeurosis
  2. Five pairs of palatine muscles
  3. Nerves and Vessels
  4. Palatine glands
Soft Palate - Structure

- **Palatine Aponeurosis**
  fibrous framework of soft palate where all palatal muscles are attached (expanded flattened tendon of insertion of tensor veli palatini muscles)

Aponeurosis is attached –
- In front – to post. Margin and under surface of hard palate up to palatine crest
- On each side – it is continuous with the tendon of tensor vali palatini
- In midline – aponeurosis split to enclose musculus uvulae
Soft Palate –
Palatine Muscles

Arranged in Five pairs
1. Levator Veli Palatini
2. Tensor Veli palatini
3. Musculus Uvulae
4. Palato-pharyngeus
5. Palato -glossus
Palatine muscles

Levator Veli palatini

Arise from
- Under surface of apex of petrous temporal
- From carotid sheath
- Medial cartilaginous part of Auditory tube

Insertion
Upper surface of Aponeurosis passing in b/w ant & post. fasciculi of palatopharyngeus
Soft Palate - Muscles

Tensor Veli Palatini – Triangular muscle

Origin
- Scaphoid fossa of medial pterygoid plate
- Lateral fibrous lamina of Auditory tube
- Spine of sphenoid

Insertion
Palatine Aponeurosis
Soft palate - Muscles

Musculus Uvulae

Origin

- Post nasal spine of hard palate passes backward and downward within tubular sheath of aponeurosis

Insertion

In submucous tissue of base of uvula
Nerve Supply

- All muscles of soft palate are supplied by cranial part of Accessory nerve through pharyngeal plexus except Tensor veli palatini which is supplied by the trunk of the mandibular nerve
Vessels and nerves

Arteries
• Greater palatine branch of maxillary artery
• Ascending palatine branch of facial artery
• Palatine branch of ascending pharyngeal artery

Veins
Drain in pharyngeal venous plexus via paratonsillar veins

L. Nodes
Drain in retropharyngeal and upper group of deep cervical LN
Applied Anatomy

• Diphtheria – paralysis of palatal muscles causing nasal voice, flattening of arches and regurgitation of food through nose when swallowing

• Cleft Palate
Tonsils

- **Palatine tonsils** – Almond shaped masses of lymphoid tissue
- **Situation** – Bilaterally in the lateral wall of oro-pharynx
- **Lateral component of waldeyer’s ring** (Pharyngeal tonsil-adenoids, Lingual tonsil, palatine tonsil, scattered pharyngeal lymphoid tissue) surrounding the beginning of GI and Respiratory tube
Tonsil

- **Situation** – Each lodged in triangular Tonsillar sinus

**Boundaries**
- **Front** – Palato-Glossal arch with muscle
- **Behind** – Palato-Pharyngeal arch with muscle
- **Apex** – by soft palate – where both arches meet
- **Base** – By dorsal surface of post. $1/3$rd of Tongue
Tonsil

Size
Large in children, diminished in adults
Due to frequent infection, exact size cannot be ascertained

Topography
Represented by an oval area about 1.25 cm in front and 1.25 cm above the angle of mandible
Tonsil

- Lateral wall of the Tonsillar bed formed from within outward by
  1. Pharyngo- basilar fascia
  2. Few fibres – palatopharyngeus muscle in upper and post. Part
  3. Sup. Constrictor muscle of pharynx in 2/3rd of posterosuperior part
  4. Styloglossus muscle accompanied by glossopharyngeal nerve in antero.inferior 1/3rd
Tonsil

- Each tonsil has
  - Two surfaces – Medial and lateral
  - Two borders – anterior and posterior
  - Two ends – upper and lower
Tonsils

- **Medial Surface**
  Freely bulges into the oro-pharynx
  Lined by st. sq. non kera. epithelium
  Amount of bulging of medial surface is not true index of size of gland
  Presents following features
  **Tonsillar pits** – small, 10–15 openings
  Each leads to a mucous tubule (Tonsillar cryps) which is surrounded by numerous lymphatic follicles
  **Intra tonsillar cleft (Supra tonsillar fossa)** – deep semilunar fissure in upper part of tonsil, present in 40 % - remanant of 2nd Pharyngeal pouch
Tonsil – Medial surface

- **Embryonic folds**
  1. *Plica tringularis* – extend backward as triangular fold from lower part of palatoglossal arch – replaced by lymphoid tissue after birth
  2. *Plica semilunaris* – arches backward from upper part of palatoglossal arch, also replaced by lymphoid tissue after birth
Tonsil – lateral surface (deep)

- Extends above, below and in front beyond the limits of tonsillar sinus
- Surface is covered by a fibrous capsule which is attached below to the side of the tongue
Tonsils – lateral surface

• Relations (from within outward)
  1. Loose areolar tissue containing paratonsillar veins
  2. Pharyngo-basilar fascia
  3. Superior constrictor muscles of pharynx
  4. Bucco-pharyngeal fascia containing pharyngeal plexus of nerves and vessels
5. **Arteries**

- Facial artery with its – ascending palatine and tonsillar branches
- Ascending pharyngeal artery
- Internal carotid artery – lies about 2.5 cm behind and lateral to tonsilar sinus and is separated by fibrofatty tissue

6. Styloglossus, stylopharyngeus and glossopharyngeal nerve

7. Post. Belly of diagastric and stylohyoid muscles

8. Medial pterygoid muscle and ramus of mandible
Tonsil Ends & Borders

Borders
- **Anterior border** – passes under cover of palato-glossal arch
- **Posterior border** – extends deep to the palato-pharyngeal arch

Ends
- **Upper end** – encroached the soft palate
- **Lower end** – continuous with the lingual tonsil and connected to the side of the tongue by a band of fibrous tissue called suspensory ligament of the tonsil
Tonsil

Factors keeping tonsils in position

- Suspensory ligament of tonsil – connecting it with tongue
- Attachments of palatopharyngeus and palatoglossus muscles to the fibrous capsules of the tonsils
- Perivascular stalks which keeps the tonsils in position
Tonsil - structure

• Mass of lymphoid tissue covered partially by the st. Sq. NK epithelium of the oro-pharynx
• Consist of numerous lymphatic follicles which surround the tonsillar crypts
• Each follicle represents a germinal centre composed of lymphoblasts from which the lymphocytes appear in the crypts and are washed out into saliva as salivary corpuscles
Tonsil - vessels

- Supplied by **four set of arteries**
  1. **Anterior tonsillar** – from dorsal lingual branch of lingual artery
  2. **Post. Tonsillar** – from ascending palatine br. of facial and ascending pharyngeal arteries
  3. **Superior tonsillar** – from greater palatine artery
  4. **Inferior tonsillar** – from facial artery (Principal artery) – reaches antero inferior part of tonsil after piercing the superior constrictor muscle and the fibrous capsule

   - Ligature of these arteries are important particularly inferior tonsillar is an imp step in the surgical removal of the tonsil
Tonsil

- Veins drain into the pharyngeal venous plexus via paratonsillar veins

Lymphatic drainage –
Into jugulo - diagastric lymph nodes
One LN situated below and behind the angle of mandible, in a triangular interval b/w post. Belly of diagastric and the junction of common facial and internal jugular veins (Principal LN of tonsil) primarily enlarged in infections of tonsil
Tonsil - Nerves

- Supplied by glossopharyngeal nerve and greater and lesser palatine branches from the pterygo-palatine ganglion – these convey both general and taste sensations
Tonsil – Applied Anatomy

- **Tonsillitis** – infection of tonsils
- **Referred pain** may extend to middle Ear – because both supplied by Glossopharyngeal nerve
- **Tonsillectomy** – surgical removal of tonsils
  - Complete removal assessed by noticing the fibrous capsule – whether intact or not
  - During removal damage to paratonsillar veins may cause excessive venous haemorrhage
  - Post tonsillectomy loss of taste sensation could be due to involvement of Glossopharyngeal nerve
Tongue
Dorsum
Tongue and Mouth
Horizontal Section - Superior View

Sectioned below angle of mandible
Roof of Mouth - Hard and Soft Palates
Anterior View