Oral Cavity
Tongue & Palate
Oral Cavity (Mouth)

- Extends from the lips to the oropharyngeal isthmus
  - The oropharyngeal isthmus:
    - Is the junction of mouth and pharynx.
    - Is bounded:
      - Above by the soft palate and the palatoglossal folds
      - Below by the dorsum of the tongue
  
- Subdivided into Vestibule & Oral cavity proper
Vestibule

- Slitlike space between the cheeks and the gums
- Communicates with the exterior through the oral fissure
- When the jaws are closed, communicates with the oral cavity proper behind the 3rd molar tooth on each side
- Superiorly and inferiorly limited by the reflection of mucous membrane from lips and cheek onto the gums
The lateral wall of the vestibule is formed by the cheek.
- The cheek is composed of Buccinator muscle, covered laterally by the skin & medially by the mucous membrane.
- A small papilla on the mucosa opposite the upper 2nd molar tooth marks the opening of the duct of the parotid gland.
It is the cavity within the alveolar margins of the maxillae and the mandible

- Its **Roof** is formed by the hard palate anteriorly and the soft palate posteriorly
- Its **Floor** is formed by the mylohyoid muscle. The anterior 2/3rd of the tongue lies on the floor.
Floor of the Mouth

- Covered with mucous membrane
- In the midline, a mucosal fold, the frenulum, connects the tongue to the floor of the mouth
- On each side of frenulum a small papilla has the opening of the duct of the submandibular gland
- A rounded ridge extending backward & laterally from the papilla is produced by the sublingual gland
Nerve Supply

- **Sensory**
  - **Roof**: by greater palatine and nasopalatine nerves (branches of maxillary nerve)
  - **Floor**: by lingual nerve (branch of mandibular nerve)
  - **Cheek**: by buccal nerve (branch of mandibular nerve)

- **Motor**
  - Muscle in the cheek (buccinator) and the lip (orbicularis oris) are supplied by the branches of the facial nerve
Tongue

- Mass of striated muscles covered with the mucous membrane
- Divided into right and left halves by a median septum
- Three parts:
  - Oral (anterior \( \frac{2}{3} \))
  - Pharyngeal (posterior \( \frac{1}{3} \))
  - Root (base)
- Two surfaces:
  - Dorsal
  - Ventral
Divided into anterior two third and posterior one third by a V-shaped sulcus terminalis.

The apex of the sulcus faces backward and is marked by a pit called the foramen cecum.

Foramen cecum, an embryological remnant, marks the site of the upper end of the thyroglossal duct.
Anterior two third: mucosa is rough, shows three types of papillae:
- Filliform
- Fungiform
- Vallate

Posterior one third: No papillae but shows nodular surface because of underlying lymphatic nodules, the lingual tonsils
- Smooth (no papillae)
- In the midline anteriorly, a mucosal fold, frenulum connects the tongue with the floor of the mouth
- Lateral to frenulum, deep lingual vein can be seen through the mucosa
- Lateral to lingual vein, a fold of mucosa forms the plica fimbriata
The tongue is composed of two types of muscles:

- Intrinsic
- Extrinsic
Intrinsic Muscles

- Confined to tongue
- No bony attachment
- Consist of:
  - Longitudinal fibers
  - Transverse fibers
  - Vertical fibers
- Function: Alter the shape of the tongue
Extrinsic Muscles

- Connect the tongue to the surrounding structures: the **soft palate** and the **bones** (mandible, hyoid bone, styloid process)
- Include:
  - Palatoglossus
  - Genioglossus
  - Hyoglossus
  - Styloglossus
- Function: Help in movements of the tongue
Movements

- **Protrusion**: Genioglossus on both sides acting together
- **Retraction**: Styloglossus and hyoglossus on both sides acting together
- **Depression**: Hyoglossus and genioglossus on both sides acting together
- **Elevation**: Styloglossus and palatoglossus on both sides acting together
Sensory Nerve Supply

- **Anterior ⅔:**
  - General sensations: Lingual nerve
  - Special sensations: chorda tympani

- **Posterior ⅓:**
  - General & special sensations: glossopharyngeal nerve

- **Base:**
  - General & special sensations: internal laryngeal nerve
**Intrinsic muscles:**
- Hypoglossal nerve

**Extrinsic muscles:**
- All supplied by the hypoglossal nerve, except the palatoglossus

**The palatoglossus supplied by the pharyngeal plexus**
Blood Supply

- **Arteries:**
  - Lingual artery
  - Tonsillar branch of facial artery
  - Ascending pharyngeal artery

- **Veins:**
  - Lingual vein, ultimately drains into the internal jugular vein

![Diagram of Blood Supply with anatomical markers](image.png)
Lymphatic Drainage

Tip:
- Submental nodes bilaterally & then deep cervical nodes

Anterior two thirds:
- Submandibular unilaterally & then deep cervical nodes

Posterior third:
- Deep cervical nodes (jugulodigastric mainly)
The tongue is the most important articulator for speech production. During speech, the tongue can make amazing range of movements.

The primary function of the tongue is to provide a mechanism for taste. Taste buds are located on different areas of the tongue, but are generally found around the edges. They are sensitive to four main tastes: Bitter, Sour, Salty & Sweet.
The tongue is needed for sucking, chewing, swallowing, eating, drinking, kissing, sweeping the mouth for food debris and other particles and for making funny faces (poking the tongue out, waggling it).

Trumpeters and horn & flute players have very well developed tongue muscles, and are able to perform rapid, controlled movements or articulations.
Clinical Notes

- Lacerations of the tongue
- Tongue-Tie (ankyloglossia) (due to large frenulum)
- Lesion of the hypoglossal nerve
  - The protruded tongue deviates toward the side of the lesion
  - Tongue is atrophied & wrinkled
‘If there is goodness in your heart, it will come to your tongue’.
Lies in the roof of the oral cavity

Has two parts:
- **Hard (bony)** palate anteriorly
- **Soft (muscular)** palate posteriorly
Hard Palate

- Lies in the roof of the oral cavity
- Forms the floor of the nasal cavity
- Formed by:
  - Palatine processes of maxillae in front
  - Horizontal plates of palatine bones behind
- Bounded by alveolar arches
Posteriorly, continuous with soft palate

Its undersurface covered by mucoperiosteum

Shows transverse ridges in the anterior parts
Soft Palate

- Attached to the posterior border of the hard palate
- Covered on its upper and lower surfaces by mucous membrane
- Composed of:
  - Muscle fibers
  - An aponeurosis
  - Lymphoid tissue
  - Glands
  - Blood vessels
  - Nerves
Fibrous sheath
Attached to posterior border of hard palate
Is expanded tendon of tensor velli palatini
Splits to enclose musculus uvulae
Gives origin & insertion to palatine muscles
Muscles

Tensor veli palatini
- **Origin**: spine of sphenoid; auditory tube
- **Insertion**: forms palatine aponeurosis
- **Action**: Tenses soft palate

Levator veli palatini
- **Origin**: petrous temporal bone, auditory tube, palatine aponeurosis
- **Insertion**: palatine aponeurosis
- **Action**: Raises soft palate

Musculus uvulae
- **Origin**: posterior border of hard palate
- **Insertion**: mucosa of uvula
- **Action**: Elevates uvula
Palatoglossus
- **Origin:** palatine aponeurosis
- **Insertion:** side of tongue
- **Action:** pulls root of tongue upward, narrowing oropharyngeal isthmus

Palatopharyngeus
- **Origin:** palatine aponeurosis
- **Insertion:** posterior border of thyroid cartilage
- **Action:** Elevates wall of the pharynx
Mostly by the maxillary nerve through its branches:
  - Greater palatine nerve
  - Lesser palatine nerve
  - Nasopalatine nerve

Glossopharyngeal nerve supplies the region of the soft palate
Motor Nerve Supply

- All the muscles, except **tensor veli palatini**, are supplied by the:
  - Pharyngeal plexus

- **Tensor veli palatini** supplied by the:
  - Nerve to medial pterygoid, a branch of the mandibular division of the trigeminal nerve
Blood Supply

- Branches of the maxillary artery
  - Greater palatine
  - Lesser palatine
  - Sphenopalatine

- Ascending palatine, branch of the facial artery

- Ascending pharyngeal, branch of the external carotid artery
Cleft palate:
- Unilateral
- Bilateral
- Median
Paralysis of the soft palate
- The pharyngeal isthmus can not be closed during swallowing and speech
LOVE NATURE

Thank You