Anatomy of Oral Cavity

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By the end of this lecture you should be able to:

1. Differentiate different parts of the oral cavity
2. Describe the blood and nerve supply of mucosa and muscles of palate and tongue
3. Identify the effect of nerve paralysis on those muscles and their related function
4. Summarise the lymphatic drainage of oral cavity
Parts of Oral Cavity

- Lip
- Buccal mucosa
- Hard palate
- Retromolar trigone
- Gingiva
- Oral tongue (Anterior 2/3)
- Floor of mouth
II. MOUTH PROPER

- Oral Cavity Proper
- Oral Vestibule
Floor of mouth

Each sublingual compartment contains submandibular gland and ducts, lingual and hypoglossal nerve and the sublingual vessels.
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
HARD PALATE

- COVERED BY MUCOUS MEMBRANE AND FORMS A PARTITION BETWEEN THE ORAL AND THE NASAL CAVITY
- THE MUCOUS MEMBRANE AND THE PERIOSTEUM CANNOT BE SEPARATED (MUCOPERIOSTEUM)
SOFT PALATE

- MOVABLE PORTION AND IS ATTACHED TO THE HARD PALATE
- PALATINE TONSIL IS ALSO CALLED “ISTHMUS OF FAUCES” OR THE TONSILLAR SINUS
Muscles of Palate

- Raises the uvula
- Brings soft palate in contact with posterior pharyngeal wall, preventing food from going upward into the nasopharynx
- Tenses the soft palate
- Raises the tongue
Sensory Nerve Supply

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 are supplied by the:
  - Pharyngeal plexus

- Except tensor veli palatine that is supplied by:
  - 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
The Tongue
Intrinsic tongue muscles

- Inferior Longitudinal: moves tip up & down
- Superior Longitudinal: moves tip up & down
- Transverse: narrows & lengthens tongue
- Vertical: flattens & depresses tongue
Extrinsic tongue muscles

- **Styloglossus**: Pulls tongue up & back
- **Palatoglossus**: Pulls tongue back
Coronal section of tongue

- **Genioglossus**: Prevents tongue from falling back
- **Hyoglossus**: Depresses 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
# Nerve Supply of Tongue

<table>
<thead>
<tr>
<th></th>
<th>Anterior 2/3</th>
<th>Posterior 1/3</th>
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</thead>
<tbody>
<tr>
<td><strong>Sensory</strong></td>
<td>Lingual</td>
<td>Glossopharyngeal</td>
</tr>
<tr>
<td><strong>Motor</strong></td>
<td><strong>Hypoglossal</strong>*</td>
<td></td>
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<tr>
<td><strong>Taste</strong></td>
<td>Chorda tympani</td>
<td>Glossopharyngeal</td>
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*** except palatoglossus which is supplied by pharyngeal plexus
Nerve Supply of Tongue

- Superior Laryngeal
- Glossopharyngeal
- Lingual
- Chorda tympani
Papillae in tongue

- Circumvallate Papillae
- Foliate Papillae
- Fungiform Papillae
- Filiform Papillae
Papillae in tongue

**Fungiform**: at tip & sides of tongue

**Circumvallate**: just in front of terminal sulcus

**Foliate**: at posterior lateral margins of tongue

**Filiform**: centre of tongue, have no taste buds
Tongue Map?

- Sweet = Sucrose
- Salty = NaCl
- Sour = HCl
- Bitter = Quinine
- Umami = Glutamate
Taste Pathway

Facial nerve (VII)

Trigeminal ganglion

Chorda tympani nerve

Glossopharyngeal nerve (IX)

Vagus nerve (X)

Superior laryngeal nerve

To brain

Brain stem

Solitary tract nucleus
Blood Supply

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

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

- **Tip:**
  - **Submental nodes** bilaterally & then deep cervical nodes
- **Anterior two third:**
  - **Submandibular** unilaterally & then deep cervical nodes
- **Posterior third:**
  - **Deep cervical nodes** (jugulodigastric mainly)
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
Thank You