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17/MHS01/158

1. Anatomy of the tongue and its applied anatomy.

The tongue is a muscular organ in the mouth. It facilitates perception of the gustatory stimuli as well as playing roles in mastication and deglutition. It is also an integral component of the speech pathway as it helps with articulation.

The prefix gloss- and suffix –glossus are commonly used to refer to the tongue. Therefore, **glossopharyngeus** refers to the muscle arosing from the tongue and inserting in the pharynx. Similarly, **hyoglossus** is a muscle originating from hyoid bone and inserting in the tongue. The tongue develop at the end of the 4th week

**Epithelium**

**Anterior 2/3:**

* 2 lingual swellings and tuberculum impar (first branchial arch)
* Supplied by **lingual nerve** and **chorda tympani(pre-trematic) nerve.**

**Posterior 1/3:**

* Upper half of hypobranchial eminence (third arch)
* Supplied by **glossopharyngeal nerve**

The muscles are from the occipital myotomes and coonective tissue from mesenchyme

**Parts and surfacases**

It has 2 parts

1. Oral part(ant. 2/3)
2. Pharyngeal part(post. 1/3)

It is divided into: Apex, Body, Root

It has 2 sufaces- Ventral and Dorsal

2 lateral border

**Relations**

* Apex: related to lower incisors
* Body: floor of oral cavity
* Root: attached to mandible and hyoid bone
* Lateral borders: related to gum and tooth of inferior alveolar process
* Superior: hard and soft palates

**Ventral surface**

1. Lingual frenulum: rums vertically from the floor of the mouth to the tongue undersuface( limits tongue movement)
2. Deep lingual veins: found on either side of frenulum
3. Plica fimbriata: mucosal folds. Found on either side of deep lingual vein.
4. Sulcus terminalis: a v-shaped sulcus that separates the oral and pharyngeal surfaces
5. Foramen cecum: a small depression at the apex of the sulcus terminalis
6. Thyroglossal duct: if persist connects the foramen cecum with the thyroid gland in the neck.
7. Papillae: tiny finger like projections at the anterior 2/3
8. Lymphatic aggregations: found at posterior 1/3

**Papillae**

There are 4 types

1. Filiform

* Small cone-shaped with one or multiple ends.
* Has no taste bud
* Act as an abrasive coating( cleaning and grasping action)

1. Fungiform

* Mushroom shaped
* Present at tip and margins of tongue
* Have taste buds
* Response to sweet and sour taste

1. Foliate

* Has many taste buds
* Present at side, near sulcus terminalis

1. circumvallate

* large cylindrical
* forms v-shape row in front of sulcus terminalis

**Tongue Muscles**

* Extrinsic muscles
* Intrinsic muscles

**Extrinsic muscles**

Alters the position of the tongue

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **origin** | **Insertion** | **action** | **innervation** |
| Genioglossus  (safety muscles of the tongue) | Superior genial tubercle(mandible) above geniohyid origin | Fan shaped fibers insert into mucosa membrane of tongue  Lowest fibers passing down to hyoid body | Protrusion  Bilaterally- central part depression  Unilaterally- diverges to the opposite side | Hypoglossal nerve |
| hyoglossus | Body and greater horn of hyoid bone | Inferior part of lateral tongue | Depress and retracts tongue | Hypoglossal nerve |
| styloglossus | Anterolateral aspect of styloid process, stylomandibular ligaments | Blends with inferior longitudinal muscles, blends with hypoglossus muscles(oblique part) | Retracts and elevates lateral aspects of tongue | Hypoglossal nerve |
| Palatoglossus | Palatine aponeurosis of soft palate | Lateral margins of tongue, blends with intrinsic muscles of tongue | Elevates roof of tongue, constricts isthmus of fauces | Hypoglossal nerve |
| Chondroglossus  (part of hyoglossus separated from it by genioglossus) | Medial side and base of lesser cornua of hyoid | Intrinsic muscles between hyoglossus and genioglossus |  |  |

**Intrinsic muscles**

Alters tongue shape

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **origin** | **insertion** | **action** | **Innervation** |
| Superior longitudinal muscle | Submucous fibrous layer below the dorsum of the tongue and lingual septum | Extends to the lingual margin | Turns the apex and side of tongue upward to make dorsum concave | Hypoglossal nerve |
| Inferior longitudinal | Root of tongue and body of hyoid bone | Apex of tongue | Curls the tip inferiorly and shortens tongue | Hypoglossal nerve |
| Transverse muscles | Median fibrous septum | Fibrous tissue at the margin of tongue | Marrows and elongates tongue | Hypoglossal nerve |
| Vertical muscles | Dorsal surface of tongue borders | Ventral surface of tongue birder | Flattens and broadens the tongue | Hypoglossal nerve |

**Arterial supply**

1. Lingual artery

A branch external carotid artery

1. Dorsal lingual artery (post part)
2. Deep lingual artery (ant art)
3. Sublingual artery

**Venous drainage**

1. Dorsal lingual vein
2. Deep lingual vein

**Applied anatomy**

1. Thrush: a yeast grows over mouth and tongue surface.
2. Oral cancer
3. Macroglossia: big tongue. Can have congenital, inflammatory, traumatic, cancerous causes
4. Canker sore: small painful cancers on tongue or mouth. It is not contagious
5. Ankyloglossia(tongue-tie)
6. Double tongue

b. PARANASAL SINUSES

they are air cavities that help circulate air that is breathed in and out of respiratory system. There are four different type:

1. Maxillary sinuses

The largest of all the sinuses. Have thin walls which are often penetrated by the long roots of the posterior maxillary teeth.

Superior border- bony orbit

Inferior border- maxillary alveolar bone and tooth roots

Medial border- nasal cavity

Lateral and anterior borders- cheekbones

Posteriorly is the presence of two spaces called **pterygopalatine fossa**  and the **infratemporal fossa**

Lymphatics- submandibular lymph nodes

Blood supply: ant. Superior alveolar artery, middle superior artery, post. Superior alveolar artery.

Nerves- same names as arteries

1. Frontal sinuses

Anterior- forehead and supercilliary arches

Posteriorly- ant. Cranial fossa

Inferiorly- bony orbit, nasal cavity, ant. Ethmoidal sinuses

Medially- the sinuses face each other, separated by midline

Lymphatic- ethmoidal infundibulum, submandibular lymph node

Innervation- opthalmic nerve

Blood supply: anterior ethmoidal, supraorbital, supratrochlear arteries

1. Sphenoidal sinuses

Most posterior sinus. Large and irregular.

Laterally- a cavernous sinus, carotid artery and cranial nerves III. IV, V1, V2, VI

Blood supply- posterior ethmoidal artery, posterior lateral nasal branches

Innervation- posterior ethmoidal nerve and orbital branch of the pterygopalatine ganglion.

1. Ethmoidal sinuses

Superior- anterior cranial fossa and frontal bone

Laterally- orbit

Medially- nasal cavity

They have a complex cavity

Lymphatics- submandibular lymph node ( ant and middle sinuses), retropharyngeal lymph nodes (post sinus)

Blood supply- ant and post ethmoidal arteries

Innervation- ant and post ethmoidal nerves, posterior lateral superior and inferior nasal nerves