17/MHS01/101

**GROSS ANATOMY OF THE TONGUE**

The tongue is a muscular organ found in the oral cavity. It has various functions such as mastication, deglutition, oral cleansing, taste & speech.

PARTS OF THE TONGUE

 -the apex

 -the root

 -the body, divided into:

 •the dorsal

 •the inferior/ventral surface

 -the base.

LINGUAL PAPILLAE

Four different types of papillae are located on the hamster tongue: filiform, fungiform, foliate, and vallate. Filiform papillae are abundant, conical in shape with the vertex pointed caudally, and are located on the rostral, dorsal, and lateral surfaces of the tongue. The dorsal surfaces of fungiform papillae have a single taste bud. Fungiform papillae are found on the dorsal rostral surface of the tongue. A single vallate papilla is located on the dorsal midline of the tongue. Multiple taste buds are found in the epithelial depressions on either side of the vallate papilla. Foliate papillae are found on the lateral caudal surface with taste buds arranged in longitudinal rows in the epithelium of the inter papillary clefts

MUSCULATURE OF THE TONGUE

The tongue has 8 muscles, divided into two groups:

-the intrinsic muscles

-the extrinsic muscles

**Intrinsic Muscles**

The intrinsic muscles only attach to other structures in the tongue. There are four paired intrinsic muscles of the tongue and they are named by the direction in which they travel: the superior longitudinal, inferior longitudinal, transverse and vertical muscles of the tongue. These muscles affect the shape and size of the tongue – for example, in tongue rolling – and have a role in facilitating speech, eating and swallowing.

Motor innervation for the intrinsic muscles of the tongue is via the hypoglossal nerve (CNXII).

**Extrinsic Muscles**

The extrinsic muscles are as follows:

Genioglossus

Attachments: Arises from the mandibular symphsis. Inserts into the body of the hyoid bone and the entire length of the tongue.

Function: Inferior fibers protrude the tongue, middle fibres depress the tongue, and superior fibres draw the tip back and down

Innervation: Motor innervation via the hypoglossal nerve (CNXII).

Hyoglossus

-Attachments: Arises from the hyoid bone and inserts into the side of the tongue

-Function: Depresses and retracts the tongue

-Innervation: Motor innervation via the hypoglossal nerve (CNXII).

Styloglossus

-Attachments: Originates at the styloid process of the temporal bone and inserts into the side of the tongue

-Function: Retracts and elevates the tongue

-Innervation: Motor innervation via the hypoglossal nerve (CNXII).

Palatoglossus

-Attachments: Arises from the palatine aponeurosis and inserts broadly across the tongue

-Function: Elevates the posterior aspect of the tongue

-Innervation: Motor innervation via the vagus nerve (CNX).

ARTERIAL SUPPLY

-Dorsal lingual artery supplies the posterior part

-Deep lingual artery supplies the anterior part

-Sublingual artery supplies the sublingual gland and the floor of the mouth.

VENOUS DRAINAGE

-Dorsal lingual vein drains the dorsum and sides of the tongue

- Deep lingual vein drains the tip of the tongue and joins the sublingual vein

All the veins terminate and drain into the I internal jugular vein.

INNERVATION

In the anterior 2/3, general sensation is supplied by the trigeminal nerve (CNV). Specifically the lingual nerve, a branch of the mandibular nerve (CN V3).

On the other hand, taste in the anterior 2/3 is supplied from the facial nerve (CNVII). In the petrous part of the temporal bone, the facial nerve gives off three branches, one of which is chorda tympani. This travels through the middle ear, and continues on to the tongue.

The posterior 1/3 of the tongue is slightly easier. Both touch and taste are supplied by the glossopharyngeal nerve (CNIX).

Vasculature

The lingual artery (branch of the external carotid) does most of the supply, but there is a branch from the facial artery, called the tonsillar artery, which can provide some collateral circulation. Drainage is by the lingual vein.

LYMPHATIC DRAINAGE

The lymphatic drainage of the tongue is as follows:

Anterior two thirds – initially into the submental and submandibular nodes, which empty into the deep cervical lymph nodes

Posterior third – directly into the deep cervical lymph nodes

CLINICAL ANATOMY

1. Aglossia : Absence of the tongue – failure of formation of lingual swellings
2. Hemiglossia : Failure of formation of one side of lingual swellings
3. Bifid tongue : Incomplete formation of two lingual swelling
4. Double tongue : Formation of double pair of lingual swellings
5. Macroglossia
6. Microglossia
7. Carcinoma of the tongue.

 **AIR SINUSES**

This is also termed paranasal sinuses.

The paranasal sinuses are air-filled spaces located within the bones of the skull and facial bones. They are centered on the nasal cavity and have various functions, including lightening the weight of the head, humidifying and heating inhaled air, increasing the resonance of speech, and serving as a crumple zone to protect vital structures in the event of facial trauma. Four sets of paired sinuses are recognized: maxillary, frontal, sphenoidal and ethmoidal.

Frontal Sinuses: These are the most superior in location, found under the forehead. The frontal sinuses are variable in size, but always triangular-shaped. They drain into the nasal cavity via the frontonasal duct, which opens out at the hiatus semilunaris on the lateral wall.

Sphenoid Sinuses: The sphenoid sinuses also lie relatively superiorly, at the level of the spheno-ethmodial recess. They are found more posteriorly, and are related superiorly and laterally to the cranial cavity. The sphenoid sinuses drain out onto the roof of the nasal cavity. The relationships of this sinus are of clinical importance – the pituitary gland can be surgically accessed via passing through the nasal roof, into the sphenoid sinus and through the sphenoid bone.

Ethmoidal Sinuses: There are three ethmoidal sinuses; anterior, middle and posterior. They empty into the nasal cavity at different places:

Anterior – Hiatus semilunaris

Middle – Ethmoid bulla

Posterior – Superior meatus

Maxillary Sinuses: The largest of the sinuses. It is located laterally and slightly inferiorly to the nasal cavities. It drains into the nasal cavity at the hiatus semilunaris, underneath the frontal sinus opening. This is a potential pathway for spread of infection – fluid draining from the frontal sinus can enter the maxillary sinus.