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DEPARTMENT: MBBS

COURSE: GROSS ANATOMY OF HEAD AND NECK

 ASSIGNMENT

1. Discuss the Anatomy of the tongue and comment on its applied anatomy.

The tongue is a muscular organ in the mouth of the vertebrae that manipulates food for mastication and is used in the act of swallowing. Another major function is the enabling of speech in humans. The tongues upper surface (dorsum) is covered by taste buds housed in numerous lingual papillae.

The tongue consists of a buccal and a pharyngeal portion separated by a V-shaped groove on its dorsal surface, the sulcus terminalis. At the apex of this groove is a shallow depression, the foramen caecum, marking the embryological origin of the thyroid. Immediately in front of this sulcus lie a row of large vallate papillae.

The under aspect of the tongue bears the median frenulum linguae: the mucosa is thin on this surface and the lingual veins can be seen on either side of the frenulum. The lingual nerve and artery are medial to the vein but not visible. More laterally can be seen a fringed fold of mucous membrane termed the plica fimbriata. On either side of the base the frenulum can be seen the orifice the submandibular duct on its papillae.

STRUCTURE: The thick stratified squamous mucosa of the dorsum of the tongue bears papillae over the anterior two-thirds back as far as the sulcus terminalis. These papillae (particularly the vallate) bear the taste buds. The posterior one-third has no papillae but carries numerous lymphoid nodules which, with the palatine tonsils and adenoids, make up the lymphoid ring of Waldeyer.

Small glands are scattered throughout the submucosa of the dorsum; these are predominantly serous anteriorly and mucous posterioly. The tongue is divided by a median vertical fibrous septum, as indicated on the dorsum by a shallow groove. On each side of this septum are the intrinsic and extrinsic muscles of the tongue. The intrinsic muscles are disposed in vertical, longitudinal and transverse bundles; they alter the shape of the tongue.

The extrinsic muscles move the tongue as a whole. They pass to the tongue from the symphysis of the mandible, the hyoid, styloid process and the soft palate. The extrinsic muscles are; the genioglossus, hypoglossus, stylogossus and palatoglossus. The function of the individual extrinsic muscles can be deduced from their relative positions. Genioglossus protrudes the tongue, styloglossus retracts it and hypoglossus depresses it. Palatoglossus is a palatal muscle and helps to narrow the oropharynx in swallowing.

BLOOD SUPPLY: blood is supplied from the lingual branch of the external carotid artery. There is a little cross circulation across the median raphe, which is therefore a relatively avascular plane.

NERVE SUPPLY: The anterior two-thirds of the tongue receive its sensory supply from the lingual branch of V which also transmits the gustatory fibres of the chorda tympani (VII).

Common sensation and taste to the posterior one-third, including the vallate papillae, are derived from IX. A few fibres of the superior laryngeal nerves(X) carry sensory fibres from the posterior part of the tongue.

All the muscles of the tongue except palatoglossus are supplied by XII; palatoglossus, a muscle of the soft palate, is innervated by the pharyngeal branch of X.

LYMPHATIC DRAINAGE: The drainage zones of the mucosa of the tongue can be grouped into three:

1. The tip drains into the submental nodes.
2. The anterior two-thirds drains to the submental and submandibular nodes and hence to the lower nodes of the deep cervical chain along the carotid sheath.
3. The posterior one-third drains to the upper nodes of the deep cervical chain.

There is a rich anastomosis across the midline between the lymphatics of the posterior one-third of the tongue so that a tumour on one side readily metastasizes to contralateral nodes. In contrast, there is little cross communication in the anterior two-thirds, where growths more than 0.5 from the midline do not metastasize to the opposite side of the neck till late in the disease.

APPLIED ANATOMY:

1. Ankyloglossia (tongue tie): the tongue is tied to the floor of the mouth by a very short and thickened frenulum and this affects speech, eating and swallowing. The tongue is prone to several pathologies including glossitis and other inflammations such as geographic tongue and median rhomboid glossitis , burning mouth syndrome, etc
2. Thrush (candidiasis): candida albicans grows over the surface of the mouth and tongue. Thrush can occur in almost anyone, but it occurs more often in people taking steroids or with suppressed immune systems, the very young and the elderly.
3. Macroglossia (big tongue): this can be broken down into various categories based on the cause. These include congenital, inflammatory, traumatic, cancerous and metabolic causes. Thyroid disease, lymphangiomas and congenital abnormalities are among some of the causes of an enlarged tongue.
4. Burning mouth/burning tongue syndrome: a relatively common problem. The tongue feels burned or scaled or strange tastes or sensations develop. Apparently harmless, burning mouth syndrome may be caused by a mild nerve problem.
5. Oral leukoplakia: White patches appear on the tongue that can’t be scraped off. Leuloplakia may be benign, or it can progress to oral cancer.
6. Write an essay on air sinuses.

Nasal sinuses are group of four paired air filled spaces that surround the nasal cavity. They are air containing sacs lined by ciliated epithelium and communicating with the nasal cavity through the narrow and therefore easily occluded channels. The maxillary antrum and sphenoid sinuses are present in a rudimentary state at birth, the rest become evident at about 8th year, but all are fully formed only in adolescence.

1. The frontal sinuses: the frontal sinuses are contained in the frontal bone. They vary greatly in size and one or both are occasionally absent. In section, each is roughly triangular, its anterior wall forming the prominence of the forehead, its posterosuperior wall lying adjacent to the frontal lobe of the brain, and its floor adjoining against the ethmoid cells, the roof of the nasal fossa and the orbit.

The frontal sinuses are separated from each other by a median bony septum, and each in turn is further broken up by a number of incomplete septa. Each sinus drains into the anterior part of the middle nasal meatus via the infundibulum into the hiatus seminularis.

1. The maxillary sinus (antrum of Highmore): this is a pyramidal shaped sinus occupying the cavity of the maxilla. Its medial wall form part of the lateral face of the nasal cavity and bear on it the inferior conchae. Above these conchae is the opening, or ostium, of the maxillary sinus into the middle meatus in the hiatus semilunaris. This opening, unfortunately, is inefficiently placed as an adequate drainage point.

The infraorbital nerve lies in a groove which buldges down into the roof of the sinus, while its floor bears t6he impressions of the upper premolar and molar roots. These roots are separated only by a thin layer of bone which may, in fact, be deficient so that uncovered dental roots project into the sinus. Note that the floor of the sinus, therefore, corresponds to the level of the alveolus and not to the floor of the nasal cavity.

1. The ethmoid sinuses: they are made up of a group of 8-10 air cells within the lateral mass of the ethmoid and lie between the side walls of the upper nasal cavity and the orbits. Superiorly, they lie on each side of the cribiform plate and are related above to the frontal lobes of the brain. These cells drain into the superior and middle meatus.
2. The sphenoid sinuses: these lie on either side of the midline, within the body of the sphenoid. They vary a good deal in size and may extend laterally into the basal part of the occipital bone. Each sinus drains into the nasal cavity above the superior concha( the sphenoethmoidal recess

