Unit 22: Oral Cavity and Larynx

Dissection Instruction:

In the nasopharynx observe the torus tubarius, the opening of the auditory tube, and the salpingopharyngeal fold which contains the muscle of the same name (Plates 33, 60; 8.32A). Observe the soft palate and uvula and follow the palatopharyngeal and palatoglossal arches and observe if there is a palatine tonsil present. One side of the pharynx, remove the mucosa revealing the muscles (Plates 60, 61, 63; 8.32C, D&E). After removing the mucosa, clean and observe the levator veli palatini muscle as it enters the soft palate from the auditory tube. It lies in the floor of the tube. (Plates 60, 61; 8.32C&D) Note that the palatopharyngeal fold with its palatopharyngeus muscle is split into two portions by the levator veli palatini muscle. (Plate 63; 8.29B) With a probe, locate the medial pterygoid plate and its hamulus. Lateral to the auditory tube, dissect the tensor veli palatini muscle which is immediately lateral to the medial pterygoid plate and parallel to it (Plates 64: 8.32, Table 8.7 and figures-pp. 766 & 767). Follow the muscle as it becomes tendinous and hooks around the hamulus and enters into the soft palate. (Plates 60, 61, 64; 7.57D, 8.32C, Table and figures-p. 674)

Explore the oral cavity (Plates 47; 7.53, 8.30). The part of the mouth cavity between the alveolar processes and the cheek and lips is the vestibule. The mouth cavity proper is internal to the alveolar processes and teeth. The principal structure in the mouth is the tongue (Plates 54-59; 7.53, 8.30). The tongue is divided into two parts, the anterior two-thirds and the posterior one-third, also called the dorsal surface. The circumvallate papillae, the sulcus limitans and the foramen cecum lie at the dividing line between the two parts. Compare the surface of the two parts. The anterior part is covered with papillae while the posterior or dorsal surface contains the lingual tonsil. The inferior surface of the tongue has fimbriated folds and a mid-line frenulum. Between them, the deep lingual vein can usually be seen in a living person. The frenulum leads to the floor of the mouth and anteriorly to just behind the incisor teeth. Lateral to the frenulum on the floor of the mouth are the sublingual folds which contain the openings of the sublingual glands. The ducts of the submandibular glands open on each side of the frenulum of the tongue in a papilla near the incisor teeth. Attempt to maintain the mucous membrane on the floor of the mouth intact for this entire dissection.

Review the suprathyroid muscles and the submandibular or digastric triangle (Plates 25, 49; 8.11, 8.12, 8.15). Locate the mental foramen on one side and cut through the mandible just anterior to it. Carefully detach the mylohyoid muscle from the mylohyoid line of the mandible and reflect it downward. This should expose the sublingual gland, submandibular duct, lingual nerve, submandibular ganglion, hypoglossal nerve and the muscles of the tongue (Plates 49, 55, 56, 57; 7.78, 8.12, 8.13). Clean these items and identify the hyoglossus, genioglossus, geniohyoid and styloglossus muscles. Note the relationship of the lingual nerve and duct of the submandibular gland. The lingual nerve passes inferiorly lateral to the duct, turns under it, then ascends into the tongue (Plates 55, 57; 8.13, 8.14). The lingual and hypoglossal nerves communicate with each other.

Locate the stylopharyngeus muscle and the glossopharyngeal nerve on its surface (Plates 65, 67; 8.54, 8.55). Follow the nerve into the posterior third of the tongue after locating the nerve to the stylopharyngeus muscle. Follow the course of the lingual artery from the external carotid into the tongue by passing deep to the hyoglossus muscle. Cut the hyoglossus muscle through its middle if necessary to see the artery well. Anterior to the hyoglossus, locate the deep and sublingual branches of the lingual artery (Plates 55; 8.13A & B, 8.14). The dorsal branches are hidden by the hyoglossus muscle. The lingual vein usually passes superficial to the hyoglossus muscle, but the vein may be duplicated with branches going on each side of the muscle.
Lymphatics from the tongue go to submental, submandibular and superior deep cervical lymph nodes. There may be some crossing over the mid-line of

Review the location of the larynx in respect to the tongue, hyoid bone, pharynx and trachea (Plates 59, 62, 63, 8.16, 8.29 A&B, 8.32A). Identify again the median and lateral glossoepiglottic folds, valleculae (Plates 60, 62; 8.29A) and piriform recesses.

Note the entrance to the larynx (Plates 59, 62, 63; 8.29 A & B, 8.37A). It is bounded anteriorly and superiorly by the epiglottis, laterally by the aryepiglottic folds, and posteriorly by the interarytenoid notch. Inside the entrance is the vestibule, which extends inferiorly to the false or vestibular folds. The false and true vocal folds are separated by the entrance to the ventricles. Note that the true vocal folds are more medially placed than the false vocal folds (Plates 75; 8.36, 8.38C). The space between the true vocal folds is called the rima glottidis. The term glottis includes the true vocal folds and the rima glottidis.

Clean the mucosa from the posterior aspect of the larynx to expose the posterior cricoarytenoid and arytenoideus muscles (Plates 74; Table 8.8 and pictures-pp. 784 & 785). The posterior cricoarytenoid arises from the lamina of the cricoid cartilage and inserts on the muscular process of the arytenoid cartilage. It abducts the vocal folds. The arytenoideus muscle is an unpaired muscle extending from one arytenoid cartilage to the other. It consists of transverse and oblique parts. The oblique part appears to continue into the aryepiglottic fold, where it is called the aryepiglottic muscle. The arytenoideus muscle draws the arytenoid cartilages closer together. Turn to the front of the larynx and study the cricothyroid muscle (Plates 74, 75; Table 8.8 and pictures-pp. 784 & 785). This muscle draws the anterior portions of the two cartilages towards each other, but draws the angle of the thyroid cartilage away from the arytenoid cartilages. This lengthens the true vocal folds. From the front, cut through the thyroid cartilage 5mm lateral to the mid-line and remove the lamina and cricothyroid muscle on one side (Plates 74; figures-p. 785). Note that the inferior cornu of the thyroid lamina articulates with the cricoid cartilage through a synovial joint. Movement between the thyroid and cricoid cartilages occurs at this joint. Removal of the thyroid lamina will expose the lateral cricoarytenoid and thyroarytenoid muscles. The lateral cricoarytenoid muscle arises from the cricoid cartilage adjacent to the cricothyroid muscle, but inserts on the muscular process of the arytenoid cartilage. It adducts the true vocal folds. The thyroarytenoid muscle draws the angle of the thyroid cartilage closer to the arytenoid cartilage, thus shortening the true vocal folds. Its inferior and medial fibers are called the vocalis muscle. It inserts on the vocal process of the arytenoid cartilage and on the true vocal ligament along its length, thus it can put tension on specific parts of the true vocal ligament. Carefully identify the sheets of connective tissue internal to the thyroarytenoid and cricoarytenoid muscles. The connective tissue sheet extending from the aryepiglottic fold to the vestibular fold is made up primarily of collagen and is called the quadrangular membrane. Its lower free margin lies in the false vocal fold and is called the vestibular ligament. From the upper border of the cricoid cartilage to the true vocal fold is the conus elasticus (cricovocal membrane). Its upper free margin is the vocal ligament and is attached anteriorly to the angle of the thyroid cartilage by the anterior commissural ligament and posteriorly to the vocal process of the arytenoid cartilage. Its position is changed by rotation of the arytenoid cartilage through a vertical axis (Plates 75; 8.37D, 8.38C, Table 8.8 and pictures-p. 785).

Locate the internal branch of the superior laryngeal nerve and superior laryngeal vessels as they pass through the thyrohyoid membrane (Plates 76; 8.38A). The superior laryngeal vessels occasionally enter the larynx through a foramen in the thyroid cartilage. Follow the neurovascular bundle inferiorly until it meets the recurrent (inferior) laryngeal nerve and inferior laryngeal vessels. The internal branch of the superior laryngeal nerve is sensory to the mucous membrane above the true vocal folds. It has no motor fibers. The recurrent laryngeal nerve is a mixed nerve. It is sensory from the
true vocal folds inferiorly and is motor to all of the intrinsic muscles of the larynx except the cricothyroid muscle.

Review the **thyroid gland** (*Plates 70-72; 8.16-8.21*). Attempt to locate the **parathyroid glands** on the posterior surface of the thyroid gland and note the relationship of the thyroid gland, trachea and esophagus to the recurrent laryngeal nerve (*Plates 71, 72; 8.17C, 8.21*).

**Be sure to identify all of the following in this unit:**

- torus tubarius
- auditory tube
- salpingopharyngeal fold and muscle
- palatoglossal fold and muscle
- levator veli palatini muscle
- tensor veli palatini muscle
- oral cavity
- vestibule
- tongue
- sulcus limitans
- foramen cecum
- frenulum
- sublingual folds
- papilla of submandibular duct
- geniohyoid muscle
- genioglossus muscle
- hyoglossus muscle
- styloglossus muscle
- intrinsic muscle of tongue
- hypoglossal nerve
- submandibular duct
- lingual nerve
- glossopharyngeal nerve
- larynx
- aryepiglottic folds
- arytenoideus muscle
- piriform recess
- lateral cricoarytenoid muscle
- thyroarytenoid muscle
- quadrangular membrane
- epiglottis
- conus elasticus
- thyroid cartilage
- cricoid cartilage
- arytenoid cartilage
- vestibule
- posterior cricoarytenoid muscle
- glottis
- true vocal folds
- false vocal folds
- vocal ligament
- vestibular ligament

superior laryngeal vessels
superior laryngeal nerve
thyrohyoid membrane
recurrent laryngeal nerve
inferior laryngeal vessels
thyroid gland
parathyroid gland

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