

## PHARYNX parts 1 and 2

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I. **PHARYNX** - a fibromuscular tube which forms a common, superior end of both respiratory and digestive system; continuous inferiorly with trachea and esophagus, anteriorly with oral and nasal cavities.

A. Layers - similar to GI tract with inner circular and outer longitudinal muscle layers; in pharynx layers are skeletal (not smooth) muscle; also, outer fascial layer = Buccopharyngeal fascia = part of Pretracheal fascia of neck.

B. Location - Extends from base of skull superiorly to level of cricoid cartilage inferiorly; posterior to nasal cavity, oral cavity, and larynx; anterior to vertebrae C1 to C6; medial to carotid sheath and cranial nerves IX-XII.

C. Circular muscles of pharynx - overlap each other somewhat; Function; constrict pharynx during swallowing to propel food inferiorly into esophagus and aid in closing off nasal from oral pharynx by contacting soft palate; All constrictors insert to Pharyngeal raphe which is a median fibrous band on posterior aspect of pharynx.

### Circular Muscles of Pharynx

MUSCLE	ORIGIN	INSERTION	ACTION	NERVE
Superior Constrictor	<b>Pterygomandibular raphe</b> - CT band continuous anteriorly with buccinator muscle	<b>Pharyngeal raphe</b>	Constrict pharynx	X
Middle Constrictor	<b>Hyoid bone</b>	<b>Pharyngeal raphe</b>	Constrict pharynx	X
Inferior Constrictor	<b>Thyroid and cricoid cartilages</b>	<b>Pharyngeal raphe</b>	Constrict pharynx	X

D. Gaps between constrictor muscles - allow vessels, nerves, and muscles to pass into the interior of the pharynx.

1. Gap between superior constrictor and base of skull - passage of **Auditory Tube** into pharynx and **Levator Veli Palatini (= Levator palati)** muscle.

2. Gap between superior and middle constrictors: passage of **Stylopharyngeus muscle** and **Glossopharyngeal nerve (CN IX)**.

3. Gap between middle and inferior constrictor muscles: for passage of **Internal Laryngeal nerve (branch of Vagus)** and **Superior Laryngeal artery** (branch of

Superior Thyroid Artery).

E. Longitudinal muscles of pharynx - three muscles which fuse with circular muscles when they insert; Palatopharyngeus and Salpingopharyngeus muscles are located internally and are considered with Nasal Cavity..

#### Longitudinal Muscles of Pharynx

MUSCLE	ORIGIN	INSERTION	ACTION	NERVE
Stylopharyngeus	Temporal bone - styloid process	Thyroid cartilage	Raises pharynx and pulls wall laterally	IX

F. Divisions of pharynx - location relative to nasal and oral cavities and larynx.

1. Nasopharynx – located above (superior) to soft palate, posterior to nasal cavity;

a. Contents - 1) **Pharyngeal tonsil** (lymphoid tissue in submucosa of roof and posterior wall of nasopharynx); 2) **Opening of Auditory Tube**

**Clinical Note: Adenoids is an enlargement of the Pharyngeal tonsil that is common in children;** enlarged Pharyngeal tonsils can **interfere with breathing** and gives characteristic **nasal voice**.

2. Oropharynx - upper boundary soft palate, lower boundary epiglottis; located posterior to palatoglossal arch

**Important Anatomical Note: Palatoglossal arch** is mucosal fold covering Palatoglossus muscle; forms **boundary between oral cavity and oropharynx**.

a. Contents - 1) **Palatine tonsils**; 2) **Glossoepiglottic folds** - folds of mucosa from posterior tongue to epiglottis; there is one Medial Glossoepiglottic fold and two Lateral folds

**Clinical Note: Valleculae** (L. for little ditches) are two depressions of mucous membrane between Medial and Lateral Glossoepiglottic folds; **food or foreign objects can lodge in valleculae**

3. Laryngopharynx – upper boundary is epiglottis, lower boundary is cricoid cartilage.

a. Contents - 1) **Piriform recess** - deep trench in mucous membrane in anterolateral wall of laryngopharynx, lateral to laryngeal inlet.

**Clinical Note: Foreign bodies or food (ex. popcorn) can lodge in valleculae or piriform recesses;** patient's cannot localize object and can complain that 'something is stuck in my throat' because sensory innervation of pharynx is **Visceral Sensory (imprecise localization)**.

Clinical Note: **Retropharyngeal abscess** – Retropharyngeal space is potential space between "prevertebral" and "pretracheal" layers; **infection** can spread from head (as in tonsillitis) and neck via retropharyngeal space into mediastinum (middle compartment of thorax, contains heart); George Washington may have died from this.

#### G. Innervation -

1. Motor - **Branchiomotor (SVE)** - all muscles of pharynx are innervated by the **Pharyngeal branch of Vagus (X)** except **Stylopharyngeus** which is innervated by the **Glossopharyngeal nerve (IX)**;

2. Sensory - **Visceral Sensory (GVA)** - **Nasopharynx** is mostly innervated by **Facial** nerve (VII); **Oropharynx** by **Glossopharyngeal (IX)** and **Laryngopharynx** by **Vagus (X)**.

H. Blood supply and lymphatics - Arteries from Ascending Pharyngeal, Facial, Maxillary and Lingual arteries; Veins drain to pharyngeal plexus which drains to Internal Jugular; Lymphatics to Deep Cervical nodes.