PHARYNX-III

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Lesson Plan

- Muscles of Pharynx.
- Constrictor muscles.
- Applied aspects.
- Gaps in pharyngeal wall.
- Longitudinal muscles.
- Nerve supply of pharynx.
- Pharyngeal Plexus of nerves.
- Arterial supply of pharynx.
- Venous and Lymphatic drainage of pharynx.
Muscles of Pharynx
Constrictor Muscles

- Constrictor muscles form the bulk of muscle layer.

**Origin**
- From the margins of posterior openings of nasal, oral, and laryngeal cavities.

**Insertion**
- Into the median fibrous raphe on the posterior aspect of pharynx.
- Inferior constrictor overlaps the middle constrictor.
- Middle constrictor overlaps the superior constrictor.
Superior Constrictor

**Origin**
- Pterygoid hamulus.
- Pterygomandibular raphe.
- Medial surface of mandible at upper end of mylohyoid line.
- Side of posterior part of tongue.

**Insertion**
- Pharyngeal tubercle.
- Pharyngeal raphe.

**Nerve supply**
- Pharyngeal branch of Vagus nerve (carrying fibers of cranial root of accessory nerve).

**Action**
- Helps in deglutition.
Middle Constrictor

**Origin**
- Lower part of Stylohyoid ligament.
- Lesser cornu of hyoid bone.
- Upper border of greater cornu of hyoid bone.

**Insertion**
- Pharyngeal raphe.

**Nerve supply**
- Pharyngeal branch of Vagus nerve (carrying fibers of cranial root of accessory nerve).

**Action**
- Helps in deglutition.
Inferior Constrictor

- It has 2 parts:
  - Thyropharyngeus.
  - Cricopharyngeus.

**Thyropharyngeus**

**Origin**

- Oblique line on lamina of thyroid cartilage
- Tendinous band between thyroid tubercle and cricoid cartilage

**Insertion**

- Pharyngeal raphe.

**Nerve supply**

- Pharyngeal plexus.
- External laryngeal nerve [b/o Superior Laryngeal Nerve].

**Action**

- Helps in deglutition.
Inferior Constrictor contd...

Cricopharyngeus-

**Origin**-
- Cricoid cartilage.

**Insertion**-
- Pharyngeal raphe.

**Nerve supply**-
- Recurrent laryngeal nerve (b/o Vagus nerve).

**Action**-
- Helps in deglutition.
Applied Aspects

Killian’s Dehiscence-
- Potential gap posteriorly between Thyropharyngeus and Cricopharyngeus.

Pharyngeal Pouch (Zenker’s Diverticulum)-
- A diverticulum which is formed by bulging of mucosa and submucosa of pharynx through the Killian’s dehiscence.

Reason: *Neuromuscular incoordination* between Thyropharyngeus and Cricopharyngeus as both are supplied by different nerves.
- Thyropharyngeus has oblique fibers and is propulsive in nature.
- Cricopharyngeus has transverse fibers and is sphincteric in nature.
- If Cricopharyngeus fails to relax when Thyropharyngeus is contracting, bolus of food is pushed backwards and tends to produce a diverticulum.
Gaps in Pharyngeal Wall in Relation to Constrictor Muscles

4 gaps:

- 1 above superior constrictor.
- 1 between superior and middle constrictor.
- 1 between middle and inferior constrictor.
- 1 below inferior constrictor.
Gap Between the Base of Skull and Upper border of Superior Constrictor

- This gap is known as **Sinus of Morgagni**.

**Structures passing:**

- Auditory tube.
- Levator Palati Muscle.
- Ascending Palatine Artery.
- Palatine branch of Ascending Pharyngeal Artery.
Gap Between the Superior Constrictor and Upper border of Middle Constrictor

- Structures passing:
  - Stylopharyngeus Muscle.
  - Glossopharyngeal Nerve.
Gap Between the Middle Constrictor and Upper border of Inferior Constrictor

- Structures passing:
  - Superior Laryngeal vessels.
  - Internal Laryngeal Nerve.
Gap Below the Lower border of Inferior Constrictor

- **Structures passing:**
  - Inferior Laryngeal vessels.
  - Recurrent Laryngeal Nerve.
Longitudinal Muscles

**STYLOPHARYNGEUS**

**Origin**
- Medial surface of base of Styloid process.

**Insertion**
- Posterior border of lamina of Thyroid cartilage.

**Nerve Supply**
- Glossopharyngeal Nerve.
**Origin** - by 2 fasciculi:
- *Anterior fasciculus.*
- *Posterior fasciculus.*

**Anterior fasciculus** - from posterior border of hard palate
**Posterior fasciculus** - from upper surface of palatine aponeurosis.

- These fasciculi are separated by Levator Palati muscle.

**Insertion** -
- Pharyngeal raphe.
- Posterior border of lamina of Thyroid cartilage.

**Nerve Supply** -
- Cranial root of Accessory Nerve via pharyngeal plexus.
Passavant’s Ridge

• It is a ridge raised by fibres of Palatopharyngeus & Superior Constrictor in the posterior pharyngeal wall underneath the mucosa.
• Some fibres of Palatopharyngeus sweep horizontally backwards and join the upper fibres of Superior Constrictor.
• These fibres encircle the posterior and lateral wall of Nasopharyngeal Isthmus.
• This ‘U’ shaped muscle loop is known as Palatopharyngeal Sphincter.
• During deglutition and speech, soft palate comes in contact with Passavant’s ridge to close the nasopharyngeal isthmus.
Palato-pharyngeus (ant. fasciculus)
Salpingo-palatine fold
Salpingo-pharyngeal fold
Levator veli palatine
Palato-pharyngeal sphincter in Passavant’s ridge
Palato-pharyngeus (Post. fasciculus)
Palato-pharyngeal arch
Musculus uvulae within palatine aponeurosis
Palato-glossal arch
Salpingopharyngeus

**Origin**
- Lower aspect of cartilaginous part of auditory tube.

**Insertion**
- Posterior border of lamina of Thyroid cartilage.

**Nerve Supply**
- Cranial root of Accessory Nerve via pharyngeal plexus.
Actions of Longitudinal Muscles

- Elevate the Larynx and shorten the pharynx during deglutition.

- Palatopharyngeal sphincter closes the pharyngeal isthmus during deglutition and speech.
Nerve Supply of Pharynx

**Motor**

- All the muscles of pharynx are supplied by cranial root of Accessory Nerve except **Stylopharyngeus**.

- **Stylopharyngeus** is supplied by Glossopharyngeal nerve.

**Sensory**

- **Nasopharynx** - by pharyngeal branch of Pterygopalatine ganglion [carrying fibres from maxillary nerve (V2)].

- **Oropharynx** - by Glossopharyngeal nerve [IX].

- **Laryngopharynx** - by Internal Laryngeal nerve [branch of Superior Laryngeal Nerve].
Pharyngeal Plexus of Nerves

**Location**
- Posterolateral aspect of pharynx over the middle constrictor.

**Formation**
- Pharyngeal branch of Vagus [carrying fibres from cranial root of Accessory Nerve].
- Pharyngeal branch of Glossopharyngeal.
- Pharyngeal branch of Superior Cervical Sympathetic Ganglion.
Arterial Supply of Pharynx

- Following three arteries supply the pharynx:
  - External Carotid Artery [Ascending Pharyngeal & Lingual branches].
  - Facial Artery [Ascending Palatine & Tonsillar branches].
  - Maxillary Artery [Greater Palatine & Pharyngeal branches].
Venous & Lymphatic Drainage of Pharynx

Venous Drainage-
- Into Pharyngeal Venous Plexus.
- Pharyngeal Venous Plexus drains into Internal Jugular Vein.

Lymphatic Drainage-
- Upper and Lower deep cervical lymph nodes.
- Retropharyngeal lymph nodes.