

The Pharynx: Where Do We Go From There? Managing Esophageal Dysphagia

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SWALLOWING DEFINED from Different Perspectives:

- **Speech-Language Pathologist:** Swallowing is a complex patterned response having both voluntary and reflexive neural representation with voluntary control originating from the lower portion of the motor strip of the cortex, and reflexive movement mediated at the brainstem with sensory representation in the nucleus solitarius and motor representation in the nucleus ambiguus.
- **Physician:** Deglutition is a process involving the movement of food from the mouth to the stomach by way of the esophagus.
- **Patient:** Swallowing is what I do when I eat or drink or take medicine. It goes into my mouth and then to my stomach.

STAGES OF SWALLOWING:

- Anticipatory/preparatory Phase
 - Appetite
 - Mood
 - Food preparation/presentation
 - Environment
- Oral Preparatory Phase
 - Material maintained via anterior seal of lips
 - Saliva mixes with food during rotary chewing
 - Buccal support prepares for bolus formation and movement
- Oral Phase
 - Velum elevates to close nasopharynx
 - Bolus is shaped and positioned by the tongue
 - Tongue force propels bolus into pharynx
- Pharyngeal Phase
 - Velum elevates to contact posterior pharyngeal wall
 - Hyolaryngeal complex elevates
 - Epiglottis inverts to cover the glottis
 - Vocal folds adduct
 - Pharyngeal constrictor muscles contract from superior to inferior direction
 - Pharyngoesophageal segment opens to allow passage of bolus into esophagus

ESOPHAGEAL PHASE:

- Sensory receptors detect the bolus as it reaches the esophageal lumen which stretches to accept the material. Smooth muscle contractions propel the bolus downward in concurrence with gravity via peristaltic movement in a proximal (superior) to distal (inferior) direction.
- The lower esophageal sphincter relaxes so that the bolus can enter the stomach.
- Esophageal transit takes approximately 8 to 20 seconds normally requiring 2 peristaltic waves to clear the esophagus.
- The bolus enters the stomach and the swallowing process has finished.

Anatomical Markers of the Esophagus

1. Pharyngoesophageal Segment (PES) more often referred to as Upper Esophageal Sphincter (UES). Contains both skeletal and smooth muscle fibers.
2. Killian's dehiscence is a triangular area in the wall of the pharynx lying between the thyropharyngeal and inferior pharyngeal constrictor muscles representing a weak area where pharyngoesophageal diverticula more likely to occur.
3. Cervical esophagus begins at the level of cervical spine C-6 and extends to the sternal notch.
4. Thoracic esophagus goes from the thoracic inlet to the gastroesophageal junction or lower esophageal sphincter.
5. Proximal esophagus, referring to the superior portion of the esophagus and distal esophagus referring to inferior portion. No clearly defined boundaries.
6. Aortic arch which is not part of the esophagus but can be viewed in the oblique plane during modified barium swallow studies and can contribute to diagnostics.
7. Angle of Hiss.

MECHANICS OF SWALLOWING (brief review)

Cranial Nerves:

- Trigeminal	V	Motor and Sensory
- Facial	VII	Motor and Sensory
- Glossopharyngeal	IX	Motor and Sensory
- Spinal Access	XI	Motor
- Hypoglossal	XII	Motor

- **VAGUS** **CN X**

Motor:

- Mucosa of valleculae
- Sensation to pharynx and larynx
- Sensation to the trachea
- Sensation to abdominal viscera

Sensory:

- Base of tongue
- Upper and lower pharynx
- Middle and inferior constrictors
- Peristalsis
- Diaphragm
- Esophageal/intestinal contractions

Muscles of Swallowing:

- Orbicularis Oris
- Buccinator
- Masseter
- Temporomandibular
- Palatoglossus
- Transverse
- Digastric
- Stylohyoid
- Stylopharyngeus
- Hyoglossus
- Palatini
- Glossopharyngeal
- Pharyngeal Constrictors
- Cricopharyngeus
- Suprahyoid
- Mylohyoid
- Genioglossus
- Inferior and Superior Longitudinal

DISEASES and CONDITIONS AFFECTING THE ESOPHAGUS:

- Gastroesophageal Reflux Disease (GERD)
- Rings/Webs
- Achalasia
- Cricopharyngeal Spasm
- Scleroderma
- Achalasia
- Hiatal Hernia
- ALS
- Cancer
- Myositis
- Stricture
- Eosinophilic Esophagitis
- Diabetes Mellitus
- Iatrogenic
- Zollinger-Ellison syndrome
- Alcoholism (esophageal varices)
- Zenker's Diverticulum
- Schatzki's Ring
- Barrett's Esophagus
- Depression
- Age

DIAGNOSTICS from Speech-Language Pathologist's Perspective

- Consider referral source: Pulmonologist, GI, General Medicine, Self
- History and Physical
- Subjective reports of the patient
- Clinical Swallow Evaluation
- Modified Barium Swallow Study
 - Anterior-posterior
 - Oblique

DIAGNOSTICS from a Physician's Perspective

- Esophagram
- Esophagogastroduodenoscopy (EGD)
- Manometry and pH probe
- Upper Gastrointestinal Series (UGI)
- CXR (r/o microaspiration as cause for RLL findings)
- MBS

TREATMENT/CASE STUDIES

? Evidence-based?

Dysphagia Management and the Gut-Brain Connection

Successes and Others

WRITING TREATMENT GOALS

