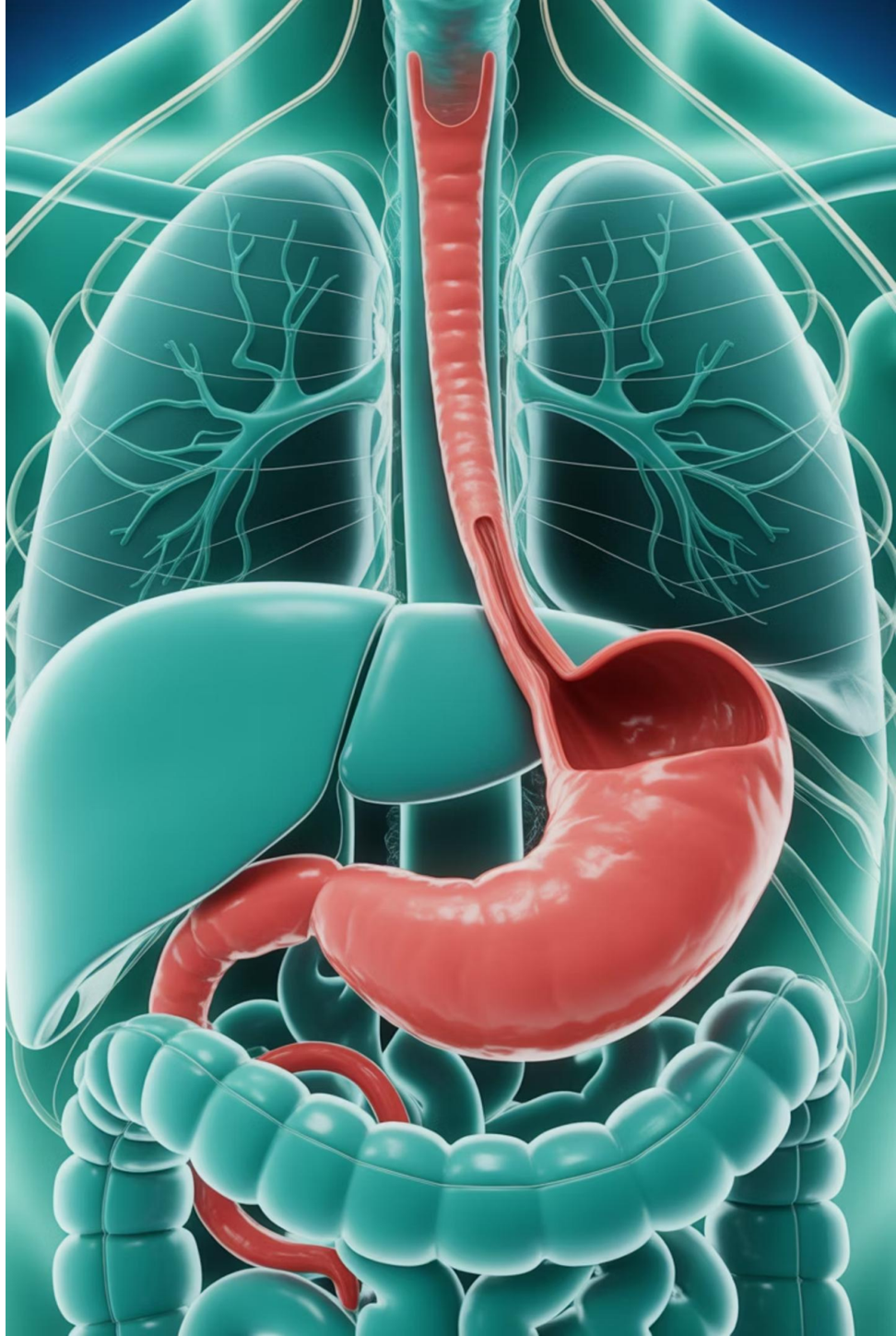
Oesophagus



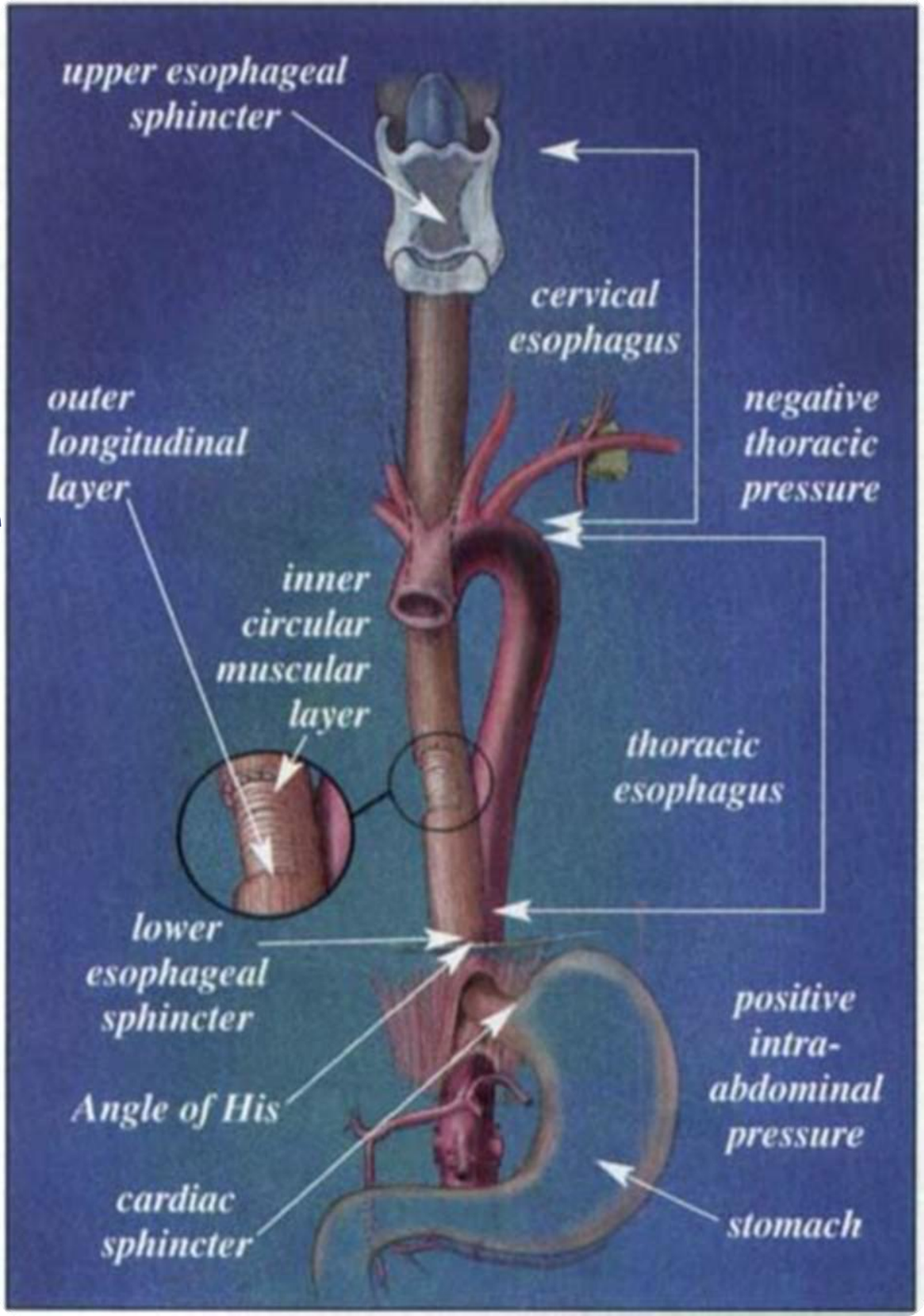
Definition

The oesophagus is a muscular tube that connects the throat (pharynx) to the stomach.

Its primary function is to transport food and liquids from the mouth to the stomach for digestion

Anatomy and Structure

The oesophagus is located in the chest, behind the windpipe (trachea) and heart, and in front of the spine. It is approximately 25 cm (10 inches) long in adults.
Its walls are composed of several layers, which are crucial for its function



Four Layers of the Oesophageal Wall

1. Mucosa

The inner lining, made of a tough, stratified squamous epithelium that can withstand the abrasion of passing food.

2. Submucosa

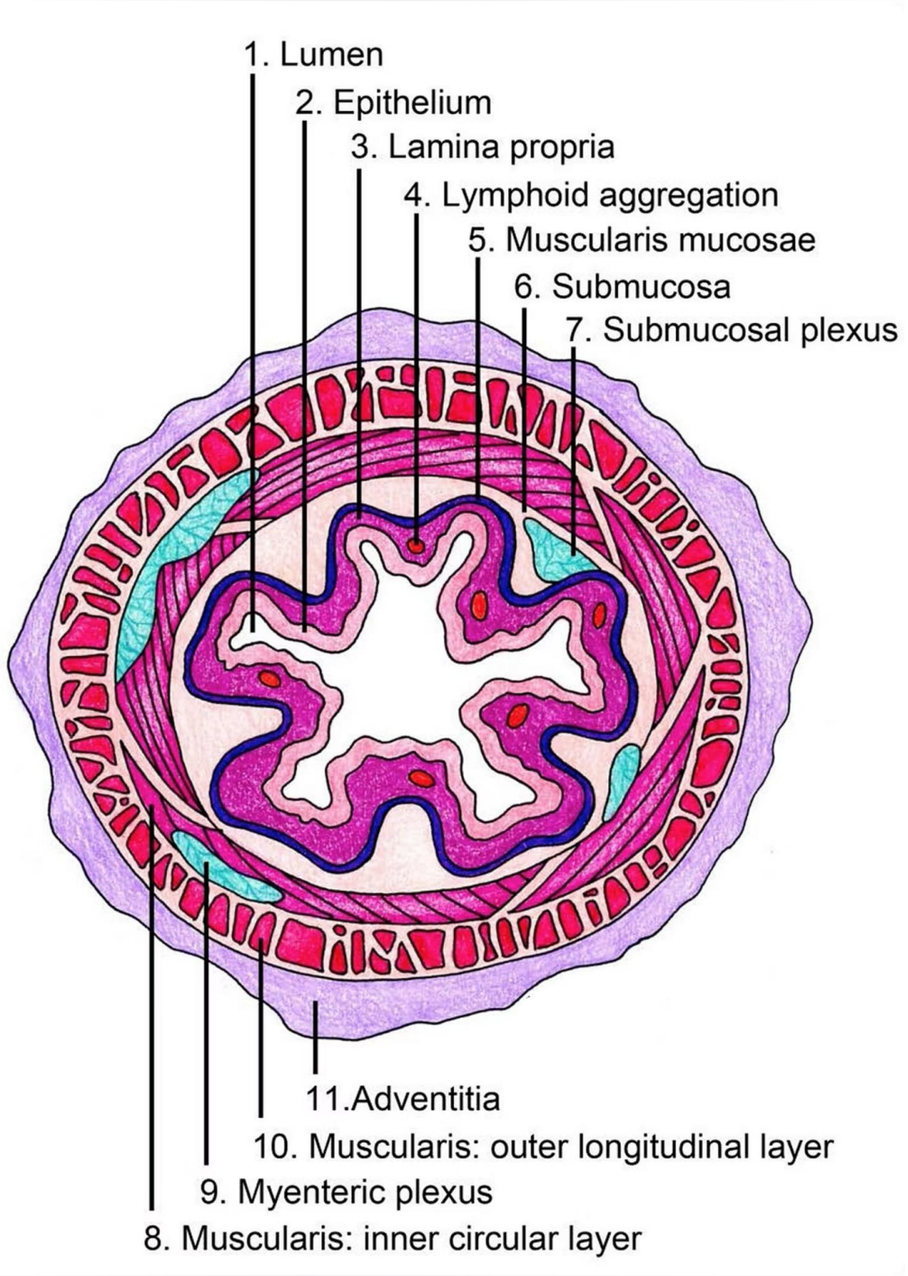
Contains glands that secrete mucus to lubricate the tube, making it easier for the food bolus to pass.

3. Muscularis Externa

This is the key muscle layer responsible for peristalsis. It has two sub-layers: Inner Circular Layer and Outer Longitudinal Layer

4. Adventitia

The outer layer of connective tissue that anchors the oesophagus to surrounding structures.



Muscle Composition

Upper Third

In the upper third, this muscle is skeletal (voluntary)

Lower Two-Thirds

In the lower two-thirds, it is smooth (involuntary)

The Two Main Sphincters

The oesophagus has two main sphincters, which are rings of muscle that act as valves:

Upper Oesophageal Sphincter (UES)

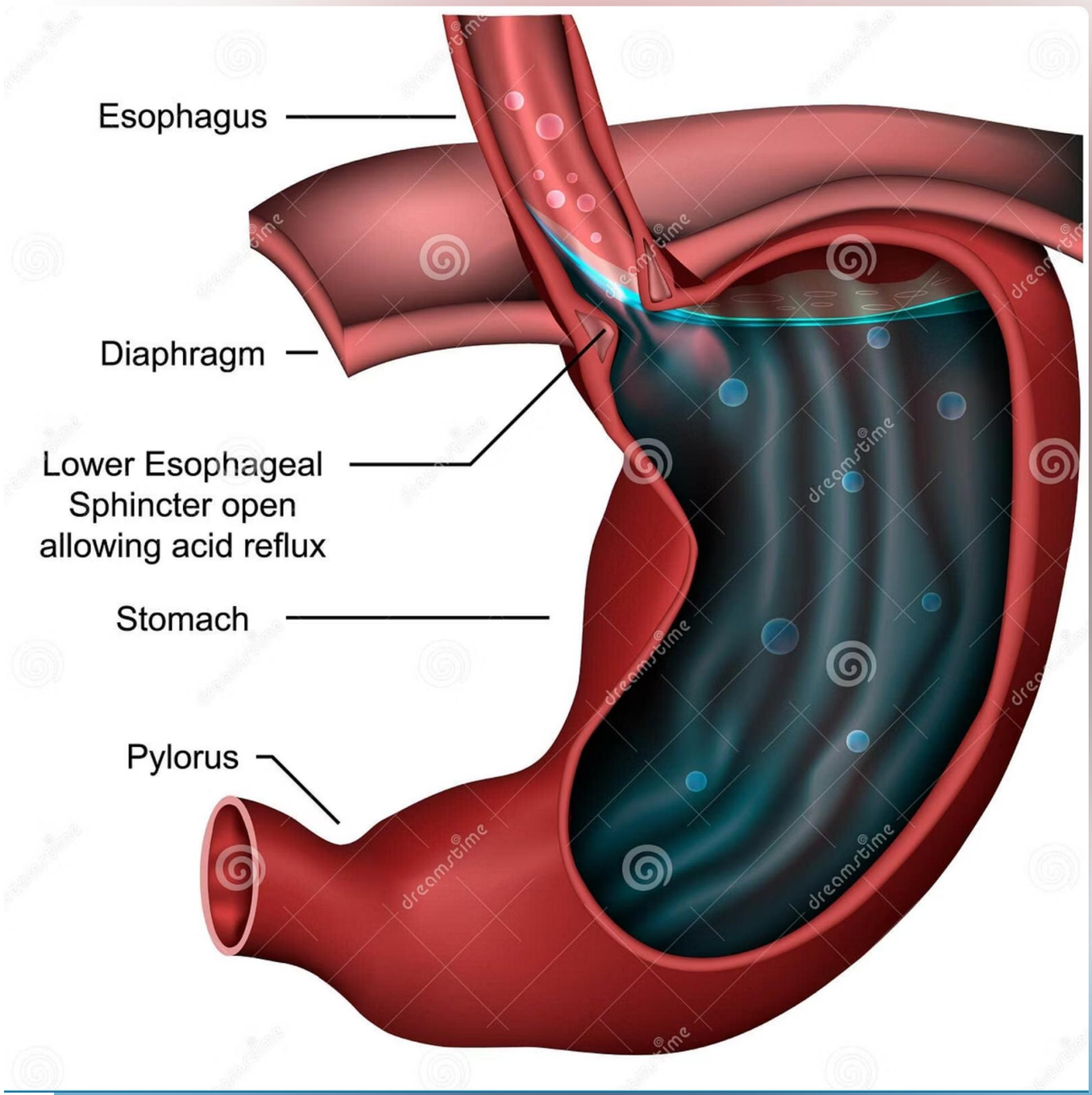
Located at the top, where the pharynx meets the oesophagus. It opens to allow food and liquid to enter and remains closed the rest of the time to prevent air from entering the digestive tract during breathing.

Lower Oesophageal Sphincter (LES)

Located at the bottom, where the oesophagus meets the stomach. It opens to allow food into the stomach and then closes to prevent stomach acid and contents from flowing back up (reflux).

Sphincters act as valves

These rings of muscle control the flow of food and prevent unwanted reflux or aspiration during breathing.



Function: Swallowing (Deglutition)

The oesophagus's main job is to move food and liquid efficiently from the mouth to the stomach through a process called peristalsis. There are 3 phases in swallowing act:

01

Voluntary Phase

You consciously chew and form a ball of food called abolus. You then push it to the back of your mouth and into the pharynx.

02

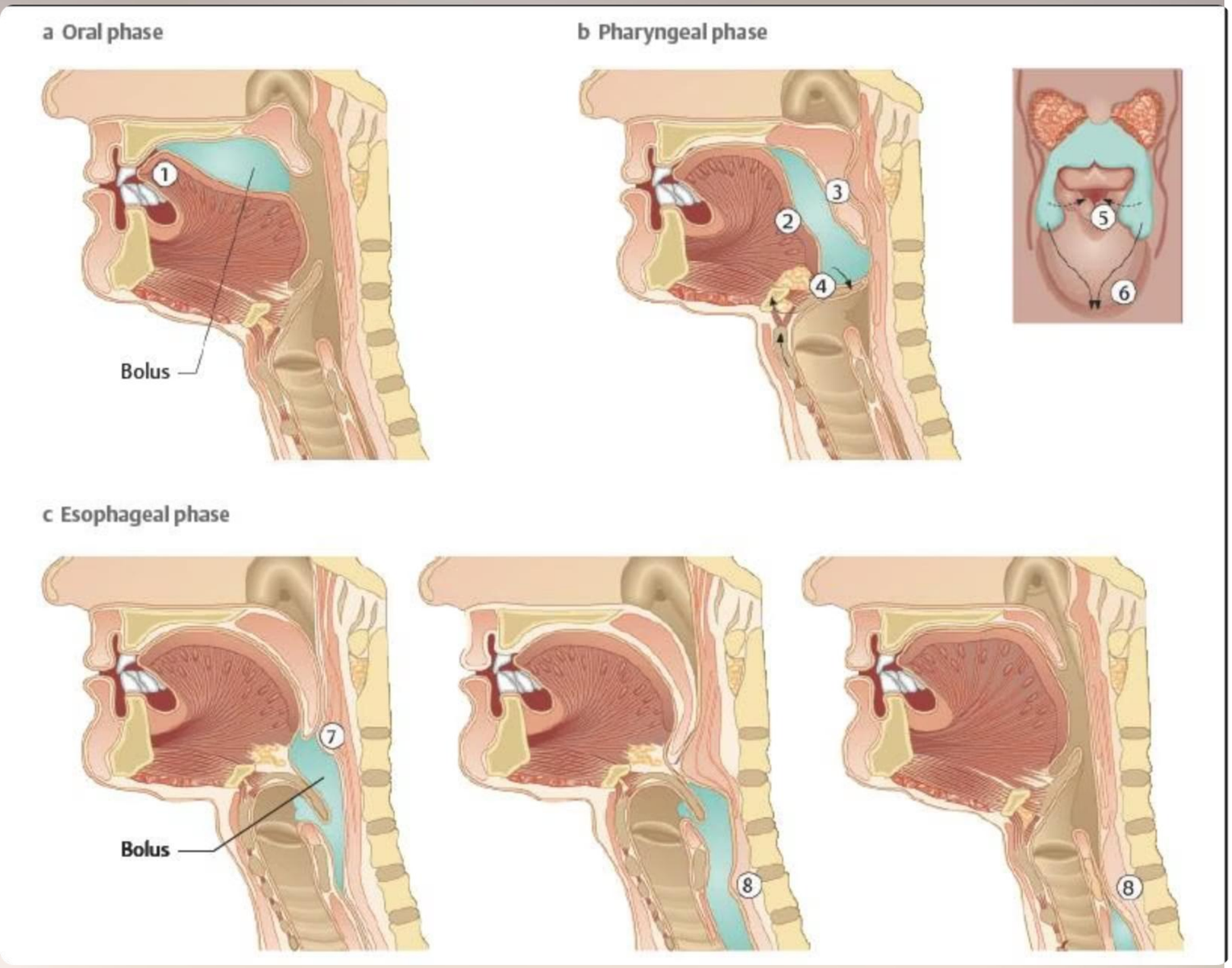
Pharyngeal Phase

This triggers an involuntary reflex. The soft palate rises to close off the nasal passage, and the epiglottis folds down to cover the trachea, preventing food from "going down the wrong pipe." The UES relaxes and opens.

03

Oesophageal Phase

The bolus enters the oesophagus. The UES closes. A coordinated wave of muscular contraction (peristalsis) begins behind the bolus, pushing it downward. The LES relaxes just before the bolus arrives, allowing it to pass into the stomach.



The Swallowing Process

This entire process takes only a few seconds for solid food and is even faster for liquids

Common Conditions and Disorders

Several medical conditions can affect the oesophagus:

Major Oesophageal Disorders

Gastroesophageal Reflux Disease (GERD)

A condition where the LES is weak or relaxes inappropriately, allowing stomach acid to flow back into the oesophagus, causing heartburn and inflammation.

Dysphagia

The medical term for difficulty swallowing. It can be caused by neurological issues, muscular problems, or physical obstructions like tumours.

Esophagitis

Inflammation of the oesophageal lining, often due to GERD, infections, or certain medications.

Barrett's Oesophagus

A complication of long-term GERD where the lining of the oesophagus changes to resemble the intestinal lining. It is a risk factor for oesophageal cancer.

Esophageal Cancer

A serious form of cancer, often linked to long-term smoking, heavy alcohol use, and Barrett's oesophagus

Risk Factors for Esophageal Cancer

- **Tobacco use**

  This includes smoking and using smokeless tobacco.

- **Obesity**

  Being overweight or having obesity may cause inflammation in your esophagus that could become cancer.

- **Alcohol use**

  Chronic and/or heavy use of alcohol increases the risk of esophageal cancer.

- **Barrett's esophagus and chronic acid reflux**

  Barrett's esophagus is a change in the cells at the lower end of your esophagus that occurs from chronic untreated acid reflux. Even without Barrett's esophagus, people with long-term heartburn have a higher risk of esophageal cancer.

Additional Risk Factors

→ Human papillomavirus (HPV)

HPV is a common virus that can cause tissue changes in your vocal cords and mouth and on your hands, feet and genitals.

→ Other disorders

Esophageal cancer is linked to some rare and/or inherited conditions. One is achalasia, an uncommon disease that makes it hard for you to swallow. Another disorder is tylosis, a rare, inherited disorder in which excess skin grows on the palms of your hands and the soles of your feet.

→ History of cancer

People who've had cancer of the neck or head have a greater risk for esophageal cancer.

→ Occupational exposure to certain chemicals

People exposed to dry cleaning solvents over a long time are at higher risk of developing esophageal cancer.

Diagnostic TestsHow to diagnose esophageal cancer?

Barium swallow

Healthcare providers look at your esophagus through a series of X-rays. It's called a barium swallow because people drink a liquid with barium. Barium makes it easier for healthcare providers to see your esophagus on the X-ray.

Computed tomography scan

This test helps healthcare providers determine if tumors have spread to your chest and abdomen (belly).

Esophagogastro duodenoscopy (EGD)

Healthcare providers use a thin flexible tube called an endoscope to look at the inside of your esophagus.

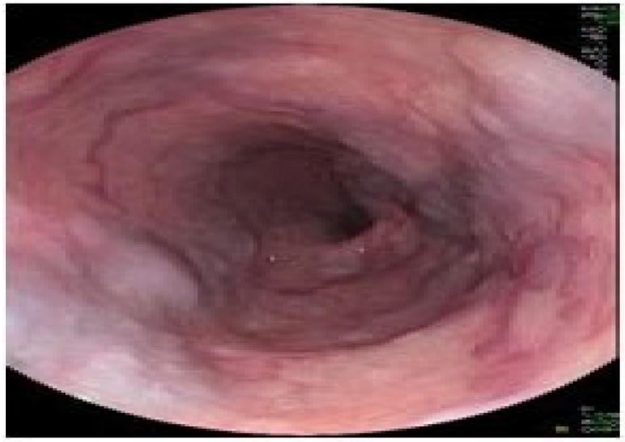
Advanced Diagnostic Procedures

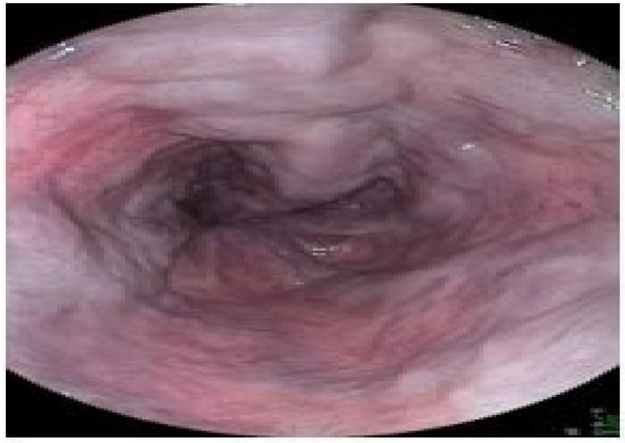
Esophageal endoscopic ultrasound

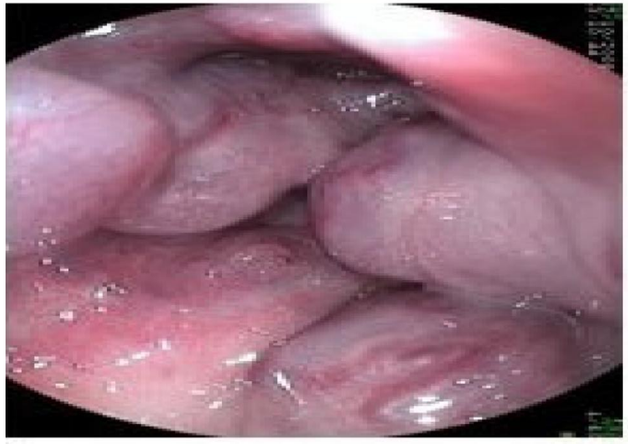
Sound waves create images of the inside of your esophagus. Healthcare providers may do this test as part of an EGD.

Biopsy

During the EGD, healthcare providers may remove a small piece of tissue to examine under a microscope to see if there are any cancer cells.







Additional Oesophageal Conditions

Achalasia

A rare disorder where the LES fails to relax properly, and peristalsis is lost, making it difficult for food to enter the stomach.

Esophageal Varices

Abnormally enlarged veins in the lower oesophagus, often occurring in people with severe liver disease. They can rupture and cause life-threatening bleeding