Digestive System: Mouth-Esophagus

Chapter 14

Goals for this class
- Be able to label a diagram of the anatomy of the mouth, pharynx and esophagus.
- Be able to describe the function of each anatomical structure within the mouth, pharynx and esophagus.
- Be able to describe the overall process of ingesting and swallowing food.

Alimentary canal
- Also known as the Gastrointestinal (GI) tract
  - Continuous tube that is open at both ends
  - Composed of the mouth, pharynx, esophagus, stomach, small intestine, and large intestine
  - Food within the GI tract is technically outside of the body

Functions of GI Tract
- Six Processes of the GI Tract
  1. Ingestion- Mouth/ Oral Cavity
  2. Propulsion- Muscles along esophagus, stomach, and intestines
  3. Mechanical digestion- Chewing in the mouth/ churning in stomach/ segmentation in small intestine
  4. Chemical digestion- Mouth, stomach and small intestine
  5. Absorption- Most absorption is in small intestine
  6. Defecation- Large intestine and anus

Mouth
- Food enters GI tract through the mouth
- Mouth- (oral cavity) a mucous membrane lined cavity
- Begins breakdown of food
  - Physical- mastication (chewing)
  - Chemical- Saliva uses enzymes (salivary amylase) to break down food

Anatomy of the mouth

<table>
<thead>
<tr>
<th>Structure</th>
<th>Location/ Function</th>
</tr>
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<tbody>
<tr>
<td>Lips (labia)</td>
<td>Protect anterior opening of mouth</td>
</tr>
<tr>
<td>Cheeks</td>
<td>Form lateral walls of mouth</td>
</tr>
<tr>
<td>Hard palate</td>
<td>Roof towards the front of mouth</td>
</tr>
<tr>
<td>Soft palate</td>
<td>Roof towards the back of mouth</td>
</tr>
<tr>
<td>Uvula</td>
<td>Closes off nasal passage way for swallowing</td>
</tr>
<tr>
<td>Vestibule</td>
<td>Space between lips/cheeks and teeth/gums</td>
</tr>
<tr>
<td>Oral cavity proper</td>
<td>Area contained by the teeth</td>
</tr>
<tr>
<td>Tongue</td>
<td>Covers the floor of the mouth. Attached to hyoid bone and styloid process of skull</td>
</tr>
<tr>
<td>Frenulum</td>
<td>Mucous membrane that anchors tongue to the floor of the mouth</td>
</tr>
</tbody>
</table>
Immune tissue

- At the posterior end of the oral cavity are paired masses of lymphatic tissue (tonsils)
  - palatine tonsils: cover the posterior end of oral cavity
  - lingual tonsils: cover the base of the tongue
- Help to defend body from illness/ become inflamed

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<td>posterior to oral cavity</td>
</tr>
<tr>
<td>nasopharynx</td>
<td>part of respiratory passageway</td>
</tr>
<tr>
<td>laryngopharynx</td>
<td>continues to esophagus; larynx - voice box</td>
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Walls are made up of two alternating muscular layers allowing for peristalsis (propulsion of food)

Pharynx: Subdivisions

- Only function of Pharynx and Esophagus is to transport material from mouth to stomach
- No digestive function
- Move food by Peristalsis (alternating muscles contractions and relaxations)

Diagram of mouth

Diagram of Pharynx

Diagram of Pharynx

Diagram of Pharynx

Pharynx: Subdivisions

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Function of Pharynx and Esophagus

- Runs from pharynx through the diaphragm to the stomach
- 25 cm long
- Composed of smooth muscle

Function of Pharynx and Esophagus

- Only function of Pharynx and Esophagus is to transport material from mouth to stomach
- No digestive function
- Move food by Peristalsis (alternating muscles contractions and relaxations)
Process of swallowing

- Deglutition (swallowing)—two phases:
  - Buccal phase: bolus of food enters pharynx
  - Pharyngeal-esophageal phase: transports food through controlled by parasympathetic (involuntary) nerves
- Mouth blocked off by tongue and uvula blocks nasal cavity
- Larynx rises and epiglottis blocks off respiratory (trachea)
- At the end of the esophagus food presses against the cardioesophageal sphincter and food enters the stomach

Structure of Alimentary Canal

- From esophagus to large intestine the walls contain the same 4 layers (tunics):
  1. Mucosa (innermost): epithelium, connective tissue, thin muscle layer
  2. Submucosa: soft CT, has blood vessels, nerves and lymph
  3. Muscularis externa: muscle (circular/longitudinal)
  4. Serosa: layer of serous producing cells (visceral peritoneum). Held to parietal peritoneum by the mesentery

Key Questions

- What is the main function of the mouth in digestion?
- If the mouth did not produce saliva, how would this affect digestion?
- What comes after the mouth in the digestive tract? What is its function?