



GI Physiology: Control & Motility

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Outline

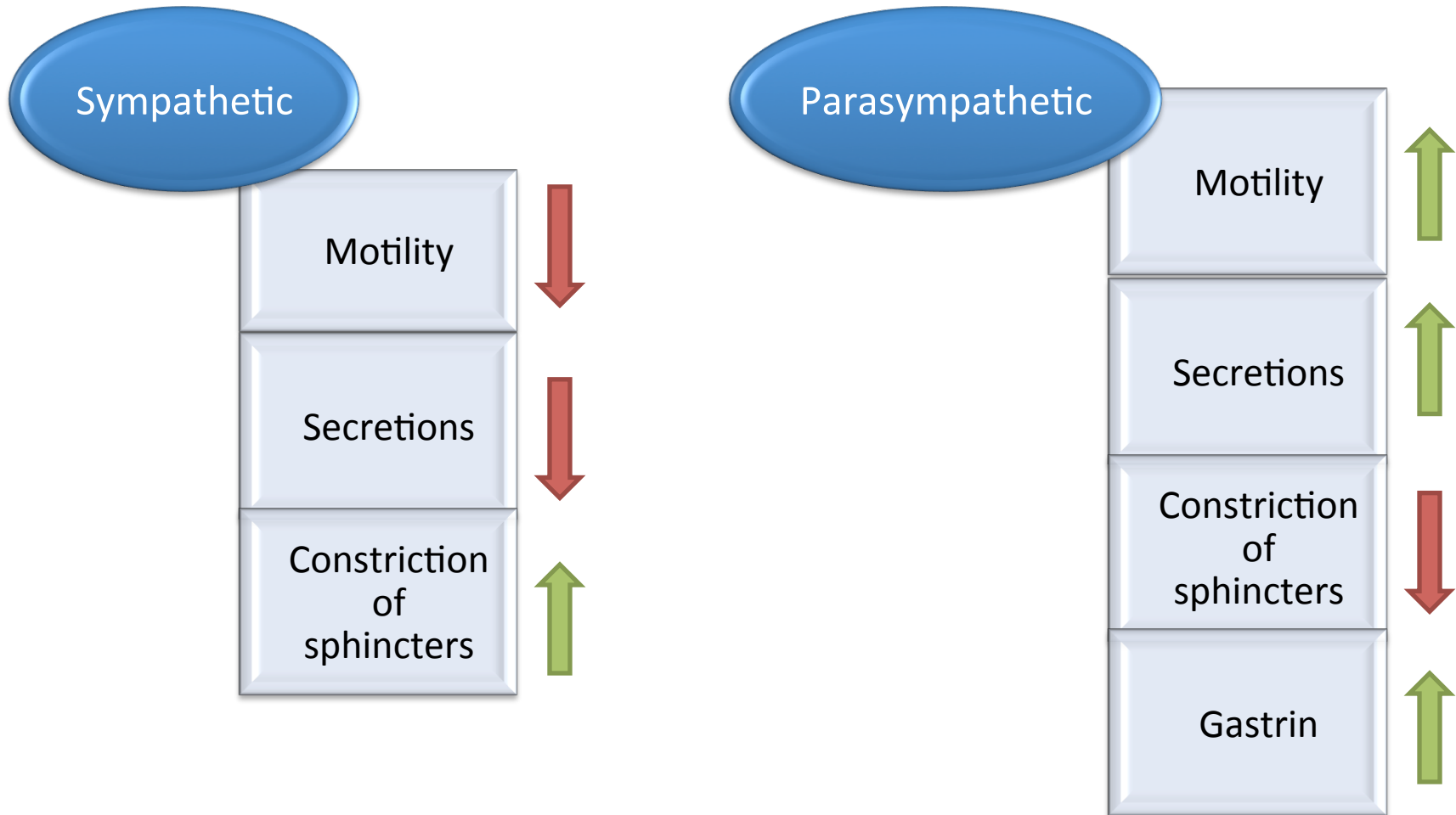
- Neural control
- Endocrine control
- Motility:
 1. Esophagus
 2. Stomach
 3. Small & large intestine
- Defecation
- Migrating Myoelectric Complex (MMC)

Electrical Activity of GI Smooth Muscles



- Slow wave or basic electric rhythm (BER):
 1. Depolarization
 2. Repolarization
 3. Done by interstitial cells of cajal
- Intrinsic system:
 1. Meissner's plexus
 2. Auerbach's plexus

Neuronal Control





Hormonal Control

Hormone	Source	Stimulus	Motility & Secretions	Pancreas & Gallbladder
Secretin	S cells (duodenum)	Acid	Inhibits	Pancreatics (HCO_3^-)
CCK	I cells (duodenum)	Fat & AA	Inhibits	<ol style="list-style-type: none">1. Pancreatic secretion2. Gallbladder contraction
Gastrin	G cells (Stomach)	<ol style="list-style-type: none">1. Stomach distension2. GRP3. Proteins	Stimulates	
GIP	K cells (duodenum)	Fat, CHO, AA	Inhibits	Insulin

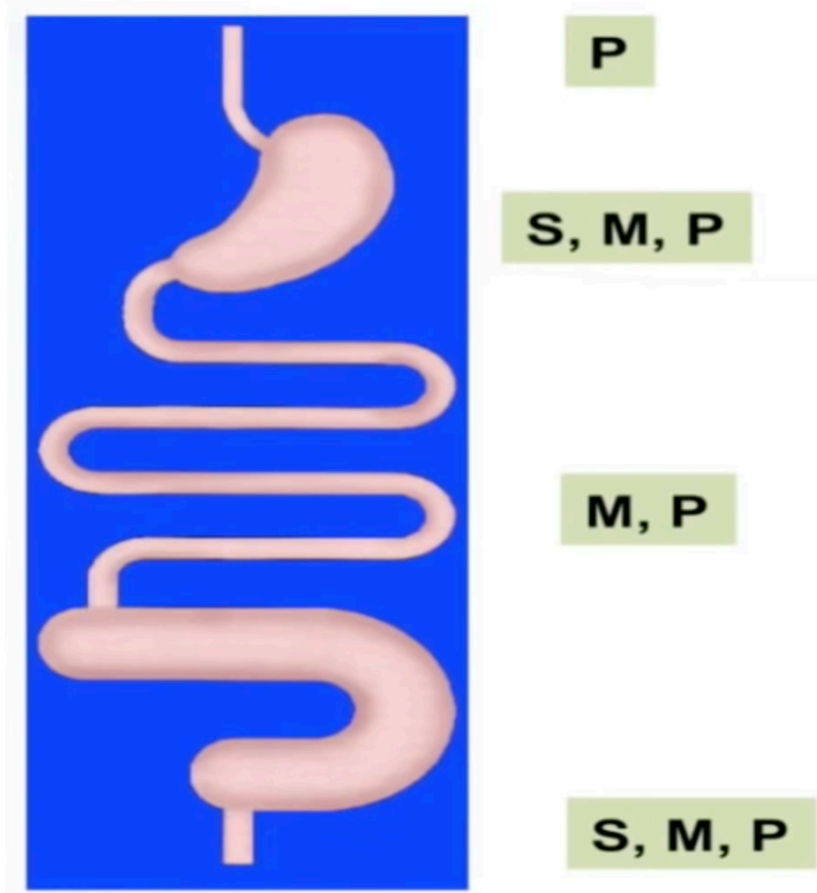
GIT Functional Motility

Peristaltic or
propulsive

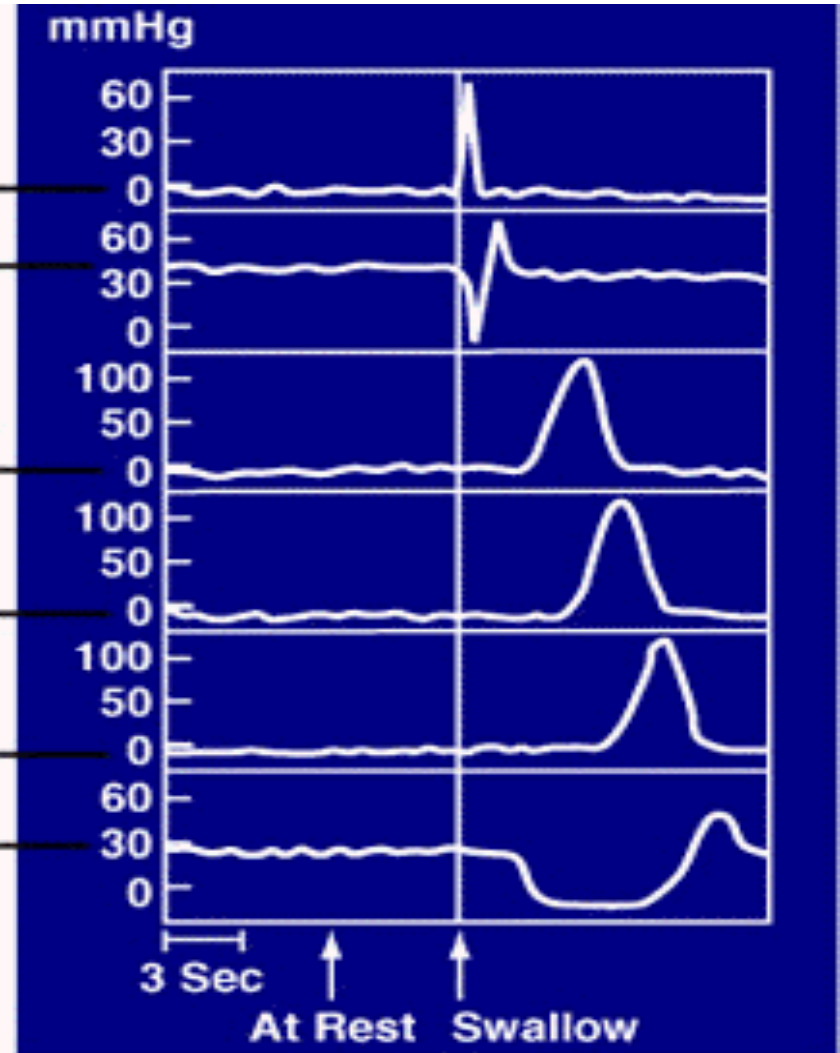
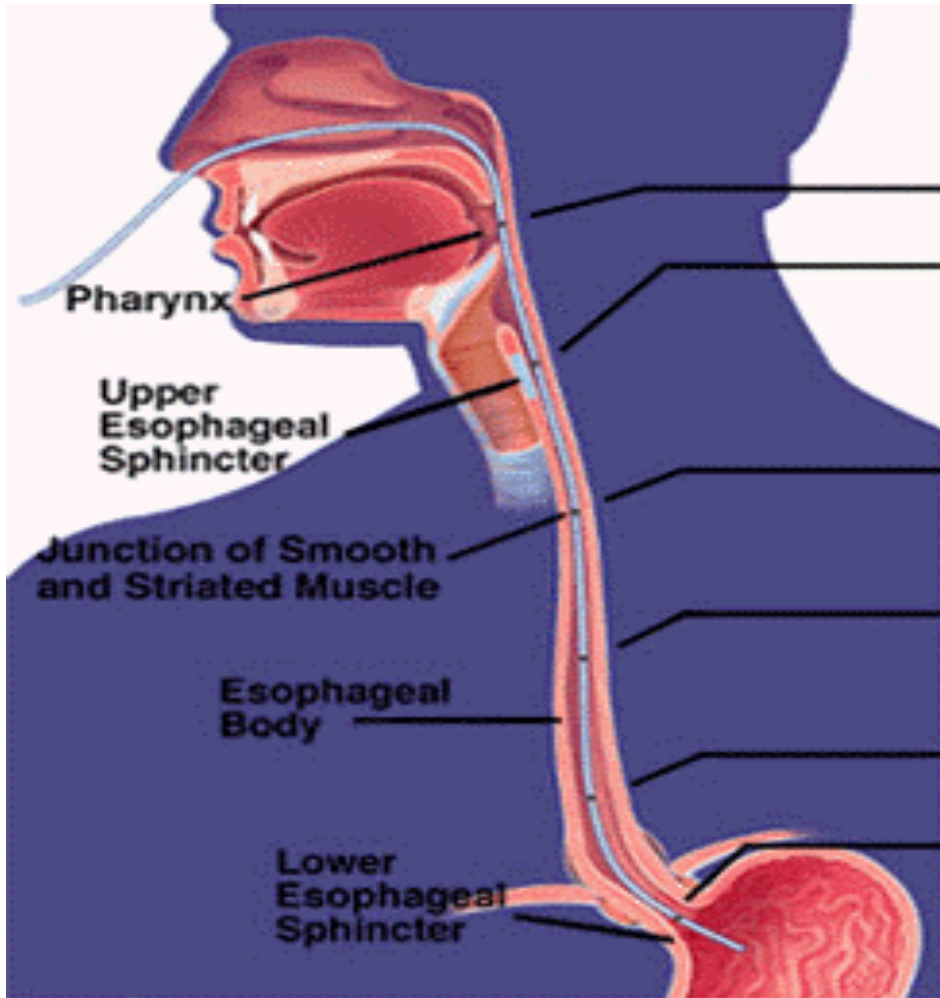
Segmentation
or mixing

Storage

Which functional movement is/are important in *each GIT region*?



Esophagus

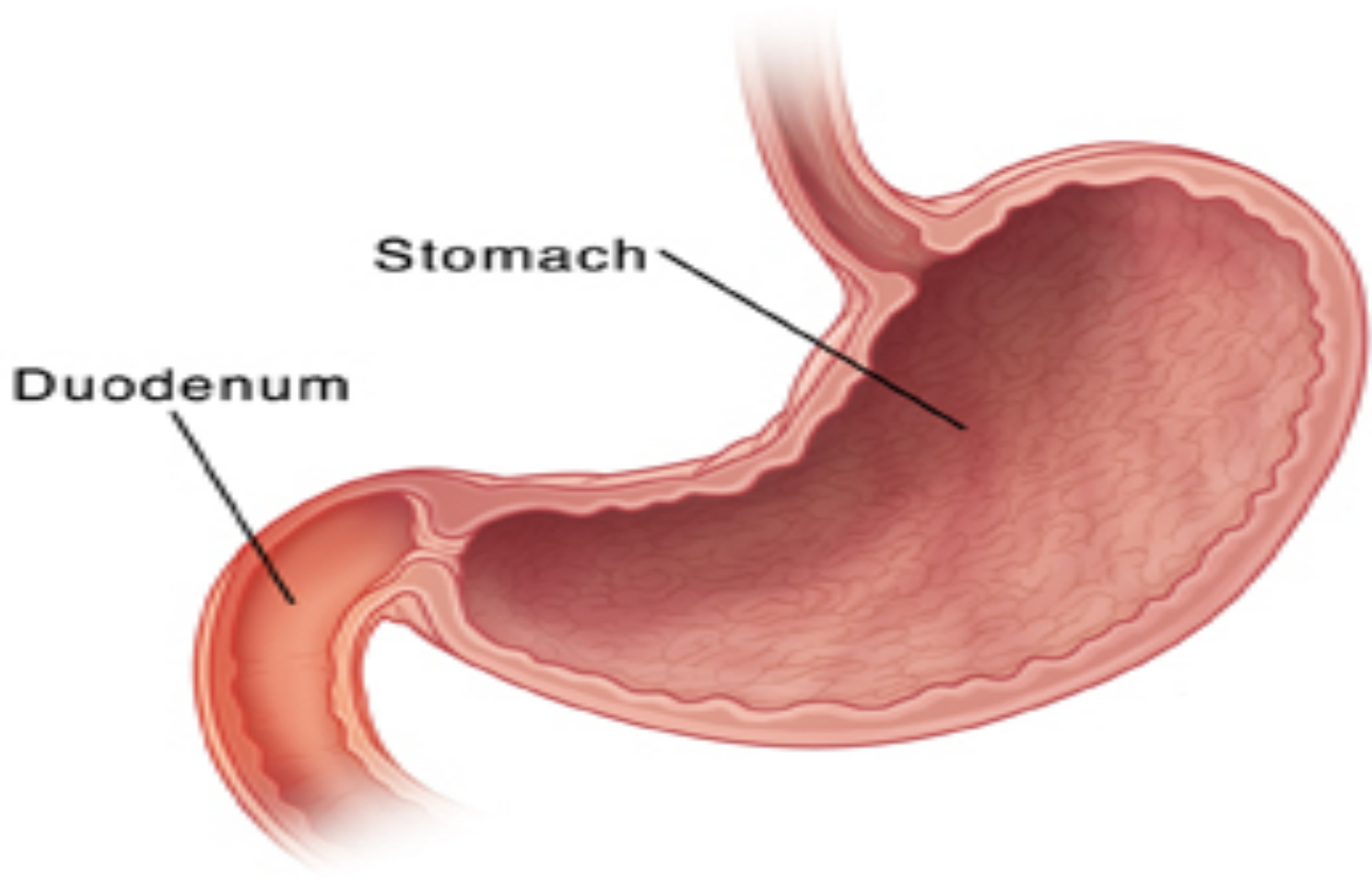




Pathologies

- Achalasia
- Reflux esophagitis
- Diffuse esophageal spasm
- Swallowing difficulties

Stomach

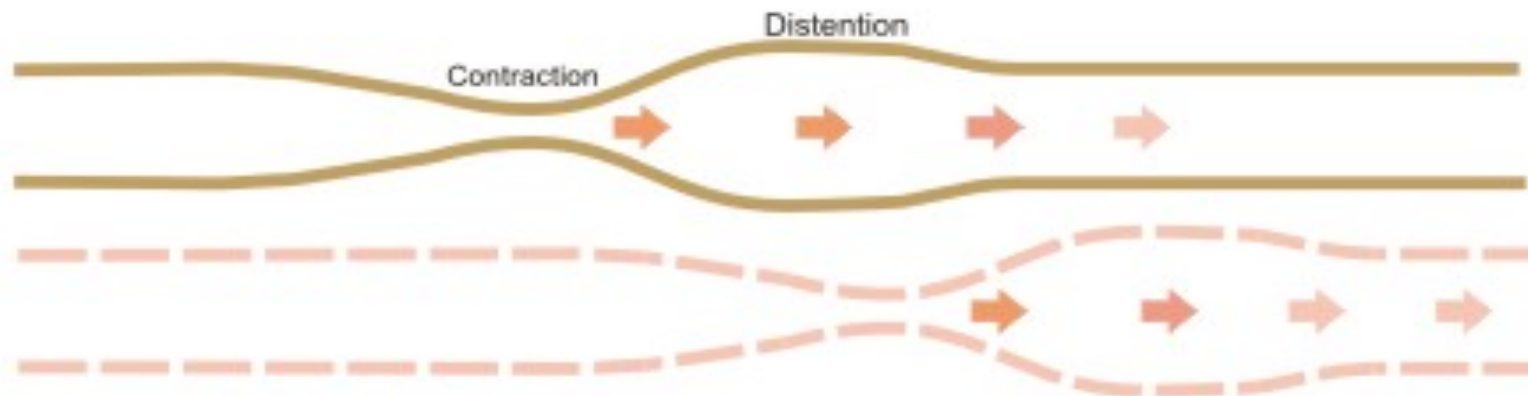


Small Intestine

Segmentation Contraction



Peristaltic Wave



Colon

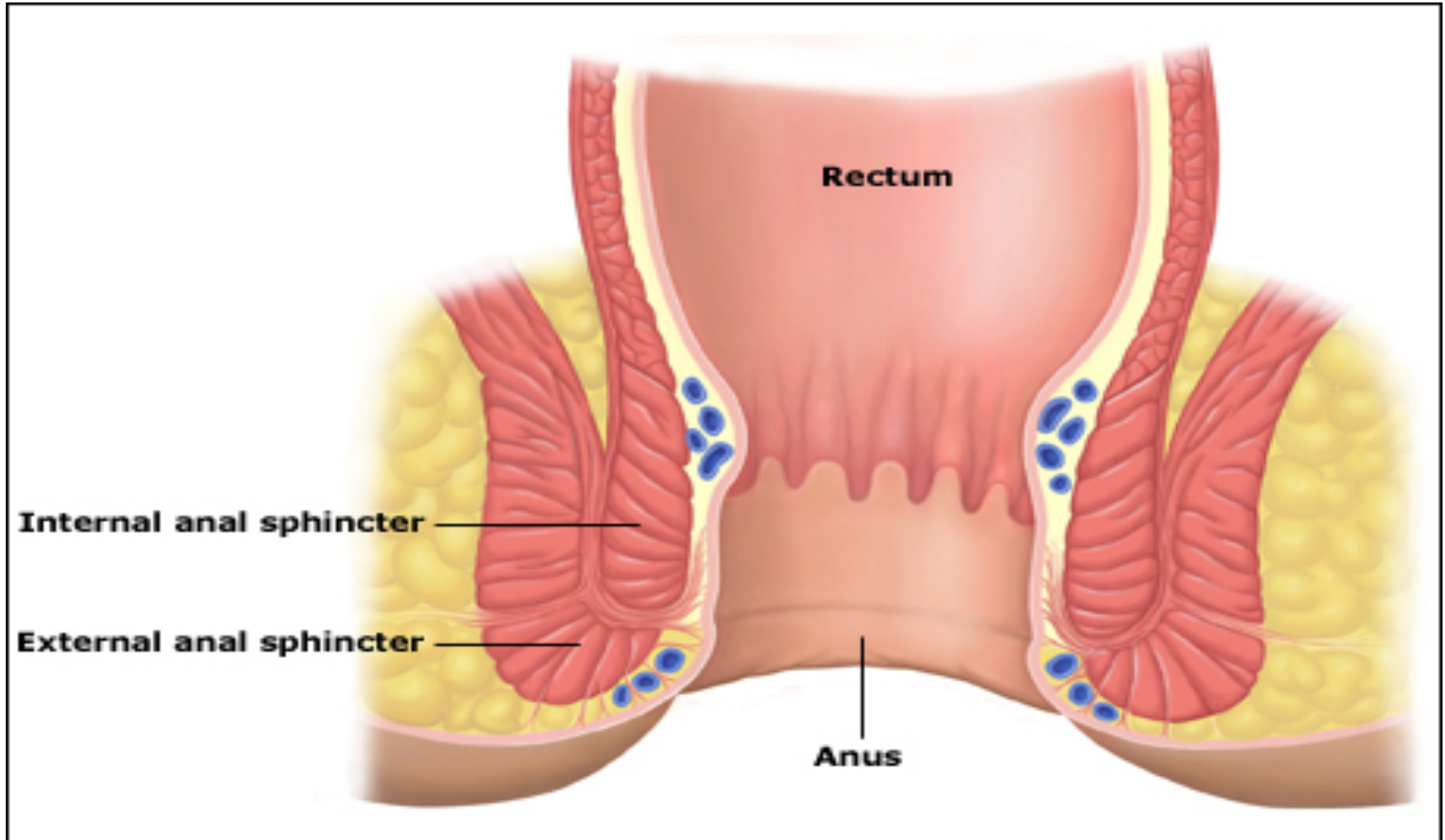


Segmentation Contraction



Mass Movements

Defecation



Migrating Myoelectric Complex (MMC)



- Initiated during fasting
- Cleaning system
- Repeats every 90-120 minutes during fasting
- Correlated with high levels of motilin (small intestine hormone)
- Prevents backflow of bacteria from colon into the ileum



For any questions or comments
please contact us at:

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