WHAT IS GASTROINTESTINAL TRACT ?

- It begins at the mouth and ends at the anus
- The digestive tract includes

1. Esophagus
2. Stomach
3. Small intestine
4. Colon or large intestine

What is GIT motility ?

- GI motily is defined by movements of the digestive system .
- Gut motility is the term to the stretching and contraction of the muscles in GIT .
- The synchronized contraction of these muscles is called **paristalsis .**
- These movements enable food to progress along the digestive tract while ,at same time ensuring absorption of imp nutrients .
- The large ,hollow organs of digestive system contain muscle that enables their walls to move .
- These movements propel food and liquid and can mix the contents wth each other

GIT MOTILITY IN MOUTH AND ESOPHAGUS

- The swallowing that occurs in mouth and upper part of esophagus divided into 3 phases

1. **Voluntary phase –**A bolus of food is formed in mouth and pushed by the tongue against the hard palate ,forcing towards into oropharynx
2. **Pharangeal phase-** is a reflex that is initiated when bolus of food stimulates tactile receptor in oropharynx .

- 3 pharangeal constrictor muscles then contract in succession ,forcing the food through pharynx ,at the same time upper esophageal spincter relaxes and food is pushed into eosophagus .

- 3. **Esophageal phase –** this phase takes about 8 sec and moves to stomach .
- Muscular contraction called paristalis .
- The circular esophageal muscles ahead of the bolus of food relaxes ,allowing the digestive tract to expand .
- A wave of strong contractions of circular muscles occurs
- The bolus is propelled through esophagus .
- The lower esophageal spincter in esophagus relaxes at the paristalatic wave approach the stomach
- Enteric plexus control peristalsis.

GIT MOTILITY IN STOMACH

- Two types of movement occur in stomach

1. Peristalsis
2. Segmentation (mixing)

- PERISTALSIS.- it is the wave of contraction nd relaxation in smooth muscles of alimentary canal .it will move from oral cavity to rectum.

Basic circular muscle layer in certain place contracts and creates a contractile ring . Which is further shifted in aboral direction . Thus is slowly pushes chyme ahead .Distention of the intestine is often an impulse for formation of contractile ring – for initiation of preistalsis

- Larger quantity of the cyme causes distention and thereby stimulates ENS . This triggers the contraction of circular muscles segment .
- Peristalsis is also triggered by certain chemical stimuli or strong parasympathetic activation . It also occurs automatically at certain intervals .
- Chyme movements are also there ,because relax tubes bring less resistance to moving chyme .and it s due to receptive relaxtion of tube .
- This ehole process is controlled by **Aurebach ‘s plexus** and is called **peristaltic reflex .**

- Propulsion movements can be experimentally cause also in oral direction but disappers after few millimeters . So therfore the peristalstis movement are unidirectional .
- MIXING MOVEMENTS – it ensures constant mixing of chyme .so that entire volume of nutritionally imp conponents is exposed to enzymes and came in contact wth the lining of intestine to ne absorbed .
- SEGMENTATION- it is well understood mixing movement . We can imagine it as repeated contractions of circular smooth muscle .contracted regions differ after each segmentation cycle .

- Thus is the chyme segmented – formatiom of separated portions of chyme . Onr half is combined with the portion of previous one .
- Number of portion gradually inc and volume dec .
- GIT MOTILITY IN SMALL INTESTINE
- it takes about 5 hours to move through small intestine
- Small intestine undergo segmental contraction and peristaltis waves
- Paristatlic movements occur from variable distances to cause the chyme to move along small intestine

- The ileocecal sphincter (between the ileum and cecum-beginning of the large intestine) remains contracted most of the time.
- When the cecum is full, increased constriction of the sphincter prevents chyme from entering.

GIT MOTILITY IN LARGE INTESTION

- It takes about 18-24 hours of material to pass through the large intestine .
- The large intestine undergoes mass movements (strong peristaltic contractions in the circular muscles in large parts of the transverse and descending colon) about 3 or 4 times each day.
- Each mass movement extends over 20 cm of the colon and moves the colon contents a considerable distance toward the anus
- Mass movements are stimulated by irritation or distention of the colon, local reflexes in the enteric plexus, and intense parasympathetic stimulation
- Mass movement is responsible for the sudden distension of the rectum that triggers defecation

- The circular muscles contract simultaneously with the teniae coli (3 bands of smooth muscle from the longitudinal muscle of the colon) of the colon wall to cause constriction and shortening of the colon. This results in the formation of haustra.
- Haustra are pouches formed in the colon wall along its length, giving the colon a puckered appearance.
- Local reflexes regulate haustra formation.
- T he thought or smell of food, distention of the stomach, and the movement of chyme into the duodenum can stimulate the gastrocolic and duodenocolic reflexes (local relexes that can stimulate mass movements in the stomach and duodenum, respectively)

- The defecation reflex removes undigested feces from the body
- It is a spinal reflex triggered by distension of the rectum
- The smooth muscle of the internal anal sphincter relaxes
- Peristaltic contractions in the rectum push material toward the anus
- At the same time, the external anal sphincter is consciously relaxed if the situation is appropriate
- Defecation can be added by conscious abdominal contractions and foced expiratory movements against a closed glottis (Valsalva maneuver)
- Stress can increase intestinal motility and cause psychosomatic diarrhea or constipation

REGULATION OF GIT MOTILITY

- GIT motility is regulated in 3 ways .

1. Reflexes that originate outside the digestive system (called long reflexes)
2. Reflexes that originate inside the digestive system (called the enteric nervous system or short reflexes)
3. Gastrointestinal (GI) Peptides

- GI peptides excite or inhibit motility and can cause
- altered peristaltic activity
- contraction of the gallbladder for bile release
- regulated gastric emptying to maximize digestion and absorption

- Secretin

- a hormone secreted by endocrine cells in the small intestine
- It inhibits gastric emptying

Motilin

- Is a hormone secreted by endocrine cells in the small intestine
- It stimulates migrating motor complex

Glucagon-Like Peptide I

- Is a hormone secreted by endocrine cells in the small intestine
- It slows gastric emptying