

Gastroduodenal motor activity

Gastroduodenal motor activity

The motility of the gastrointestinal tract is modulated by its intrinsic nervous system. Critical in this process is the migrating motor complex (MMC). In the fasting state, and after food has cleared, there is a period of quiescence in the small bowel lasting in the region of 40 minutes (phase I). There follows a series of waves of electrical and motor activity, also lasting about 40 minutes, propagated from the fundus of the stomach in a caudal direction at a rate of about three per minute (phase II). These pass as far as the pylorus, but not beyond. Duodenal slow waves are generated in the duodenum at a rate of about 10 per minute, which potentiate into the small bowel. The amplitude of these contractions increases to a maximum in phase III, which lasts for about 10 minutes. This 90-minute cycle of activity is then repeated. From the duodenum, the MMC moves distally at 5–10 cm/min, reaching the terminal ileum after 1.5 hours. Following a meal, the stomach exhibits receptive relaxation, which allows the proximal stomach to act as a reservoir. Most of the peristaltic activity is found in the distal stomach (the antral mill) and the proximal stomach demonstrates only tonic activity. The pylorus, which is most commonly open, contracts with the peristaltic wave and allows only a few millilitres of chyme to pass into the duodenum at a time. The antral contraction against the closed pylorus is important in the milling activity of the stomach. Although the duodenum is capable of generating 10 waves per minute, after a meal it only contracts after an antral wave reaches the pylorus. Coordination of the motility of the antrum, pylorus and duodenum means that only small quantities of food reach the small bowel at a time. This control of gastric emptying can be abolished after gastric surgery, leading to significant symptoms (discussed in Sequelae of peptic ulcer surgery).

Revision #1

Created 2025-12-31 15:24:59 UTC by Omar Ayman

Updated 2025-12-31 15:24:59 UTC by Omar Ayman