

Multiple elementary processes of artificial gastric digestive system.

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Introduction

The stomach is a large digestive organ in the human body that stores, mixes, reduces chylous particles, and breaks down ingested nutrients. Using 3D digital technology, this study created a new artificial gastric digestive system (AGDS) with a human stomach form and structure. Two sets of symmetrical rollers and one set of rollers moving in the opposite direction were utilised to replicate stomach peristalsis, with a pH-stat workstation controlling the pH.

Gastroparesis

In the absence of mechanical blockage, Gastroparesis (Gp) is a chronic condition characterised by a delayed gastric emptying. Although this ailment has been recorded in the literature since the mid-1900s, clinical and scientific interest in this disease, which has the potential to have a significant influence on quality of life, has just lately resurfaced. The goal of this review is to look at the pathophysiology, diagnostic, and therapeutic aspects of Gp based on the latest research. MEDLINE and EMBASE were used to conduct a complete internet search for Gp. Gp is caused by anomalies in stomach motor function caused by neuromuscular disorders. Evidence suggests that patients with idiopathic and diabetic Gp have less nitrergic inhibitory neurons and Cajal interstitial cells [1].

Finally, therapy options are linked to the severity of Gp in terms of clinical manifestations. Dietary changes and prokinetic medicines are usually sufficient in mild and moderate Gp. The only medicine licenced by the Food and Drug Administration for Gp is metoclopramide. Other prokinetics and antiemetics, both ancient and novel, can be considered. Tricyclic antidepressants and cannabinoids have been considered as second-line treatments. In severe circumstances, the regular nutritional strategy may be impaired, necessitating the use of artificial nourishment. Alternative techniques (endoscopic, electric stimulation, or surgery) are available for drug-resistant Gp patients [1].

Impact of gastroparesis by nutrition

This guideline contains advice for evaluating and managing gastroparesis patients. In clinical practise, gastroparesis is diagnosed by recognising clinical signs and documenting delayed gastric emptying. Nausea, vomiting, early satiety, postprandial fullness, bloating, and upper abdominal pain are all symptoms of gastroparesis. Assessment and correction of nutritional status, relief of symptoms, improvement of stomach emptying, and, in diabetics, glycemic control are all

important aspects of gastroparesis management. Oral dietary adjustments should be used to regulate the patient's nutritional status. If oral intake is insufficient, enteral nourishment through a jejunostomy tube should be considered. When hydration and nutritional status cannot be maintained, parenteral nourishment is rarely necessary. Prokinetic and antiemetic therapies are used in medical treatment [2].

Antiemetics haven't been studied specifically for gastroparesis, however they may help with nausea and vomiting. Unapproved drugs or off-label indications for symptom relief include domperidone, erythromycin (mainly for a short period of time), and centrally acting antidepressants used as symptom modulators. According to open-label trials, GES may improve symptoms such as weekly vomiting frequency and the requirement for nutritional supplementation. Venting gastrostomy or feeding jejunostomy are second-line options; randomised controlled trials found that intrapyloric botulinum toxin injection was ineffective [2].

Management of gastroparesis

The difficulty in distinguishing gastroparesis from other illnesses, such as functional dyspepsia, is due to the overlap of upper gastrointestinal symptoms. As a result, a verified diagnosis of gastroparesis necessitates the use of an appropriate test, such as gastric scintigraphy or breath testing, to measure delayed stomach emptying. Gastroparesis has a variety of causes, including idiopathic, diabetic, iatrogenic, post-surgical, and post-viral. Correcting fluid, electrolyte, and nutritional deficits; diagnosing and treating the cause of delayed stomach emptying (for example, diabetes mellitus); and suppressing or eliminating symptoms with pharmacological drugs as first-line therapies are all part of the care of gastroparesis. Several innovative pharmacologic agents and strategies are now in development and show promise in helping gastroparesis patients receive personalised treatment [3].

Gastroparesis complications

Nausea, vomiting, epigastric discomfort, and early satiety are common indications and symptoms of gastroparesis, resulting in insufficient food intake and a significant risk of malnutrition. There is a lack of research on nutritional recommendations for gastroparesis, thus existing methods are based on extrapolated evidence. Some approaches include the modification of food composition, food consistency, and food volume in the context of delayed gastric emptying. Stepwise nutritional therapies, such as liquid meals, oral nutrition supplements, enteral

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nutrition, and parenteral nutrition, may be used if the patient is unable to ingest enough calories through a solid food diet. The role, logic, and current evidence of several nutritional therapies in the therapy of gastroparesis are discussed in this review [4].

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