



Toward an Improved Treatment for Gastroparesis

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Article: Minimally invasive gastric electrical stimulation using a newly developed wireless gastrostimulator: a pilot animal study
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Gastroparesis is defined as delay in gastric emptying in the absence of mechanical obstruction of the gastric outlet.¹ It deteriorates patients' quality of life and nutritional status, resulting in mortality in severe cases. Accordingly, long standing diabetes was considered as typical cause of gastroparesis, however, only one-third of gastroparesis patients are developed from diabetic background and only less than 5% patients from diabetes population develop gastroparesis.² Main etiology of gastroparesis still remains idiopathic.³

Delivery of gastric contents from the stomach into the small bowel is the final result of sophisticated secretory events and coordinated neuromuscular stimulation in the antrum, pylorus, and duodenum.⁴ In addition to loss of vagal innervation, recent molecular investigations suggest that gastroparesis occurs from loss of function of interstitial cells of Cajal due to macrophage mediated immune response.⁵ The pathophysiologic background provides refinement and development of new techniques for studying the different aspects of gastric function is required to provide better understanding of the clinical symptoms and develop novel therapies.⁶

Gastric electrical stimulation provides electrical pulse to facilitate the symptoms of gastroparesis.⁷ It is clinically proven with safety and feasibility in animal models and clinical trials. The limitation of this method is that it requires surgical implantation and post-operative morbidities such as pain, infection and so forth. In their

recent scientific achievement, Kim et al⁸ introduced a minimally invasive gastric stimulation method with a newly developed wireless stimulator. In this study, the gastric electrical stimulation device was inserted into the alimentary tract by endoscopic procedures in pigs, and the gastric myoelectrical activity was recorded during the study. This system showed effective electrical stimulation with safe and feasible approach.

The progress made over the last decade has resulted in better understanding and promising roadmap for managing gastroparesis. However, hurdles still exist in expanding the betterment of treatment and diagnosis. For specific target treatment, future investigations will have to investigate the complex mechanisms steering the digestion process in all aspects. A combination of molecular and physiological approach may facilitate the treatment for gastroparesis, thus future strategies will hopefully lead to better prevention, treatment, and patient care with greater precision.

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