

## Devices for the Treatment of Obesity: Will Understanding the Physiology of Satiety Unravel New Targets for Intervention?

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### Abstract

The rise in the prevalence of obesity in the last few decades and its growing impact on health has driven the scientific community to investigate the physiological basis of energy homeostasis and mechanisms of satiety, and seek targets for intervention against this burgeoning epidemic. Recent findings highlight the role of gut-derived, hormonal signals in the regulation of satiety. These hormones act together with the dense and intricate enteric nervous system to coordinate and regulate gastrointestinal satiety signals, motility, and digestive processes. Bariatric surgical approaches attempt to take advantage of these mechanisms to facilitate early satiety and weight loss. Some of these procedures, by altering the anatomical structure of the upper gastrointestinal tract, also modify the hormonal response to food. Similarly, devices such as volume-occupying elements and nerve stimulators attempt to alter the gastrointestinal milieu in a manner that will ultimately lead to long-term weight loss. Novel surgical, endoscopic, and device-oriented methodologies seem to be promising approaches to treat obesity, yet further research is needed to appreciate their long-term effect.

*J Diabetes Sci Technol* 2008;2(3):501-508

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**Abbreviations:** (CCK) cholecystokinin, (CNS) central nervous system, (GI) gastrointestinal, (GLP-1) glucagon-like peptide-1, (IGLE) intraganglionic laminar ending, (IMA) intramuscular array, (IVA) intravillous arbor, (NOTES) natural orifice transluminal endoscopic surgery, (PYY3-36) peptide YY3-36

**Keywords:** bariatric surgery, device, gut hormones, obesity, visceral nerves

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