

Novel Endoscopic and Surgical Techniques for Treatment of Morbid Obesity

A Glimpse into the Future



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KEYWORDS

- Endoluminal bariatric techniques • Metabolic surgery
- Revisional bariatric procedures • Weight regain

KEY POINTS

- New technologies involving minimally invasive endoscopic and laparoscopic procedures give patients and providers more options for treating obesity and metabolic disease.
- Primary procedures performed endoscopically include intragastric balloons, endoluminal sleeve barrier devices, sutured gastropasty, and gastric aspiration devices.
- Novel laparoscopic surgical procedures include a modification of the duodenal switch procedure, gastric plication, and gastric electrical stimulation.
- Revisional procedures based on endoscopic platforms address mechanical aspects of existing anatomy, and use new technologies including suturing and plicating devices, and injection therapy.
- Many of these new technologies show early promise with minimally invasive approaches. Safety, efficacy, and long-term durability will determine the role that such techniques will serve in the treatment of obesity and metabolic disease.

INTRODUCTION

Obesity and weight-related comorbid diseases affect significant numbers of patients worldwide. Increasingly, data show excellent short- and longer-term outcomes for most patients undergoing bariatric surgery. The current and most accurate perspective on obesity is that of a chronic disease. Bariatric and metabolic surgery, although durable and highly effective as a treatment for obesity and its associated comorbid diseases, has potential shortcomings, including side effects, complications, and

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failures. Just as the first metabolic surgeries were performed via laparotomy, and have largely been supplanted by minimally invasive laparoscopic techniques, new and innovative technologies are rapidly advancing this field. The current pace of technologic advances in the health industry supports optimism that the future of surgery, and metabolic surgery specifically, will be even less invasive, while allowing patients access to a more diverse breadth of therapeutic options.

This trend to less-invasive procedures, with different therapeutic targets, efficacy profiles, and complication risks, has the potential to benefit more patients across a spectrum of obesity and comorbid diseases. Evaluation of metrics is important. Similar to the successes of laparoscopy including decreased length of stay, decreased postoperative recovery time, and quicker return to work, these advances may also produce newer outcomes including reversibility, incisionless advantages for endoluminal procedures, and improvements of cost and patient desirability. For patients with significant metabolic comorbid disease, the possibility of providing effective interventions with safer periprocedural outcomes seems ideal. Such effects have propelled many of the currently performed laparoscopic bariatric procedures.

This movement is at the center of novel laparoscopic procedures that target other mechanisms of the gastrointestinal tract and endoluminal procedures that may entirely circumvent any surgical procedure. Such techniques and technologies may be applied as primary bariatric procedures alongside well-established, currently performed laparoscopic surgeries, addressing similar or different patient populations. Additionally, evolving concepts of obesity as a chronic disease and recognizing that certain bariatric surgical procedures will impart complications, initial failures, or longer-term weight recidivism, indicate that there is opportunity to affect patient care and outcomes in this area.

With new strategies and technologies being introduced frequently, it is important to develop standards before offering them to patients. Each technique or improvement will invariably require new technical demands and likely have applications to different spectrums of patients. Thus, objective evaluation of new techniques through Institutional Review Board-mediated research, in addition to regimented training programs for physicians, is necessary to allow for proper evaluation of the safety and efficacy of these procedures and the technical performance of them. The American Society for Metabolic and Bariatric Surgery,¹ the Society of American Gastrointestinal and Endoscopic Surgeons,² and, more recently, the American Society for Gastrointestinal Endoscopy (ASGE)³ have written position statements focused on these new procedures. In this way, proper indications, expected outcomes, and, most importantly, safety standards and contraindications can be developed and maintained.

As with all aspects of metabolic surgery, these novel procedures must be incorporated into a comprehensive bariatric management program that includes medical, psychosocial, and procedural components. This multidisciplinary approach is essential to identify who might benefit most from a given procedure. To maximize the effectiveness of an intervention, it must be the best option for the patient, taking into account all components of goals for treatment of obesity and weight-related comorbid diseases. This multidimensional approach allows for the best intervention to be selected for an individual patient, weighing the anticipated risks against expected benefits, incorporating medical therapy along with endoluminal and surgical procedures.

This article discusses novel endoscopic and surgical approaches to weight loss and treatment of weight related comorbid diseases. Additionally, new and cutting edge modifications to existing procedures are described. Unless otherwise stated, the

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