



Laparoscopic hernia repair and fundoplication with endoscopic sleeve gastropasty for complex hernia and GERD management in morbid obesity

Tarek Sawas, MD, MPH,¹ Neil B. Marya, MD,¹ Andrew C. Storm, MD,¹ Shanda H. Blackmon, MD, MPH,² Barham K. Abu Dayyeh, MD, MPH¹

Symptomatic hiatal hernia (HH) and gastroesophageal reflux disease (GERD) pose a unique medical and surgical challenge in the context of morbid obesity. On one hand, morbid obesity is a strong risk factor for GERD and HH^{1,2} as a result of increased intra-abdominal pressure and ineffective lower esophageal sphincter.³ On the other hand, management of HH and GERD in morbid obesity is challenging because of the high risk of hernia recurrence after conventional surgical repair.⁴ Therefore, an optimal solution for HH and GERD in morbid obesity is one that would provide durable hernia repair and weight loss.

Roux-en-Y gastric bypass (RYGB) has emerged as the treatment of choice for these patients.⁵ However, despite favorable reflux outcomes, RYGB carries a substantially higher risk for adverse events,⁶ and significantly alters the GI anatomy, necessitating long-term micronutrient replacement. In addition, morbid obesity is inherently associated with a suboptimal postoperative course, making minimally invasive and anatomy-sparing approaches more desirable.⁷ In this video ([Video 1](#), available online at www.VideoGIE.org), we describe a novel hybrid laparoscopic hernia repair with partial fundoplication and endoscopic sleeve gastropasty.

A 53-year-old woman with Crohn's disease, morbid obesity (body mass index [BMI] 48 kg/m²), chronic GERD for 20 years not optimally managed with proton pump inhibitors, and large paraesophageal HH presented with severe epigastric pain, nausea, and vomiting. CT of the abdomen revealed an incarcerated paraesophageal hernia ([Fig. 1](#)). Although RYGB was initially considered, there was a concern that her Crohn's disease might interfere with wound healing and result in adverse events, such as dehiscence, anastomosis leakage, and consequential surgical adverse events. Thus, we decided to perform a novel hybrid laparoscopic hernia repair with surgical Toupet fundoplication combined with endoscopic sleeve gastropasty (ESG) to promote weight loss and reduce the risk of hernia recurrence.

The patient underwent the concomitant fundoplication and ESG procedure under a single-anesthesia setting with a total procedural time of less than 120 minutes. The diaphragmatic hiatal defect was surgically repaired through a posterior approach, followed by the creation of a surgical

Toupet partial fundoplication. Subsequently, ESG was performed during the same surgical session. The overstitch device (Apollo Endosurgery, Austin, Tex, USA) was mounted on the double-channel therapeutic endoscope. ESG was created by imbricating the greater curvature of the stomach using a total of nine 2-0 proline endoscopic sutures in a U-shaped pattern to create a tubular gastric configuration that significantly reduced the volume and accommodation of the stomach, resulting in weight loss. The pneumoperitoneum was decompressed at the end of the surgical fundoplication. There was no additional difficulty encountered during the ESG from the pneumoperitoneum.

This novel hybrid procedural sequence not only offers an effective solution for treatment of HH and GERD in the context of obesity, it also makes ESG technically easier and more effective in inducing weight loss because the gastric fundus is already reduced by the surgical fundoplication.

At the 9-month follow-up visit, the patient's prior reflux symptoms were well controlled. She had lost 85 pounds and her BMI decreased from 48 to 32 (33% BMI reduction).

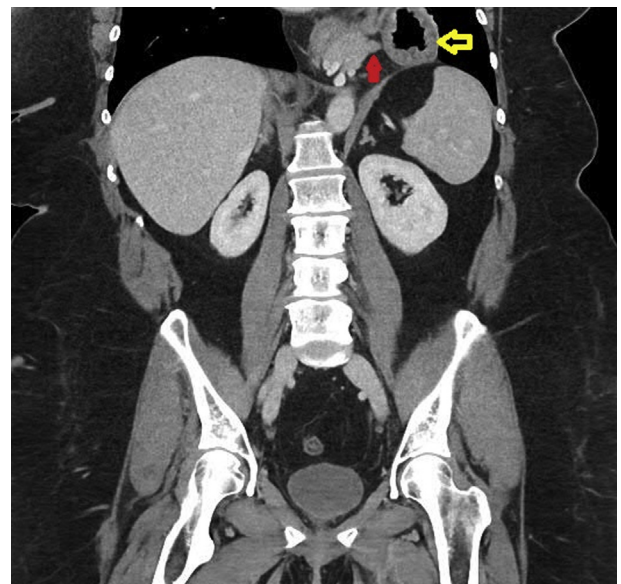


Figure 1. CT of the abdomen in coronal view shows a large esophageal hiatal hernia containing the stomach (yellow arrow) and a portion of pancreas (red arrow) and duodenum.

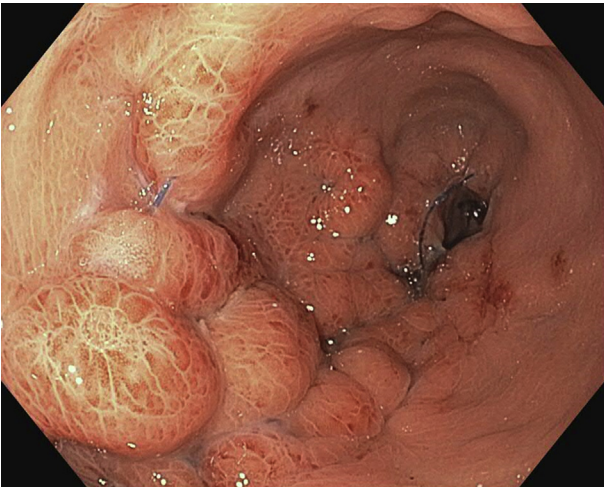


Figure 2. Upper endoscopy 1 month after the procedure shows desired sleeve effect.

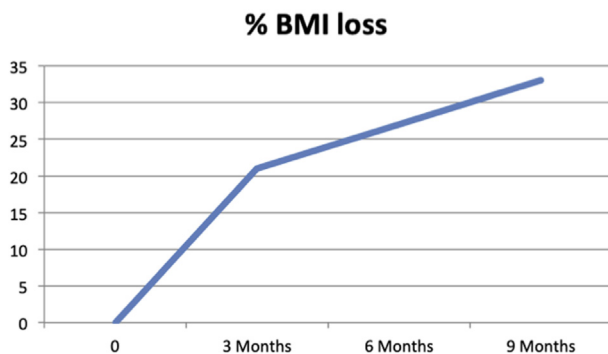


Figure 3. A line chart demonstrates the percentage of BMI reduction on the y-axis and the follow-up duration on the x-axis.

The degree of her weight loss was at least equal to that with RYGB (Figs. 2 and 3). She developed mild solid dysphagia after 1 month. Repeat upper endoscopy showed mild narrowing at the gastroesophageal junction, which was successfully dilated to 15 mm with a through-the-scope balloon dilator.

This novel hybrid fundoplication and ESG procedure offers a potentially successful option in the management of complex HH and GERD in the context of obesity, which until this case was limited by a significant rate of HH recurrence, given the lack of weight loss with standard surgical fundoplication, or need for invasive surgical options such as RYGB. This hybrid of surgical and endoscopic innovation provides another example of the transformative role of natural orifice

endoscopic surgery in providing anatomy-preserving and minimally invasive solutions for the benefit of patients.

DISCLOSURE

Dr Marya is a consultant for AnX Robotica. Dr Storm is a consultant for Apollo Endosurgery, GI Dynamics, and Endo-TAGSS and receives research support from Boston Scientific. Dr Abu Dayyeh is a consultant for Boston Scientific, Metamodix, DyaMx, Hemostasis, BFKW, USGI, and Endo-TAGSS; receives research support from Aspire, Boston Scientific, Carin diagnostics, GI Dynamics, Apollo Endosurgery, USGI, Medtronic, and Spatz; and is a speaker for Olympus, Medtronic, Johnson and Johnson, and Endogastric Solution. All other authors disclosed no financial relationships.

Abbreviations: BMI, body mass index; ESG, endoscopic sleeve gastropasty; HH, hiatal hernia; RYGB, Roux-en-Y gastric bypass.

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Division of Gastroenterology and Hepatology, Mayo Clinic, Rochester, Minnesota (1), Division of Thoracic Surgery, Department of Surgery, Mayo Clinic, Rochester, Minnesota (2).

If you would like to chat with an author of this article, you may contact Dr Abu Dayyeh at abudayyeh.barham@mayo.edu.

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