



Antireflux mucosectomy as an effective treatment for GERD after laparoscopic sleeve gastrectomy

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BACKGROUND

Bariatric surgery, such as gastric banding, Roux-en-Y gastric bypass, and laparoscopic sleeve gastrectomy (LSG), is widely recognized as an effective long-term weight-loss solution.¹⁻³ Because of its simplicity, LSG has become the most common bariatric procedure, constituting up to 60% of global and U.S. cases.^{4,5} Remarkably, although obesity is established as a factor associated with an elevated risk of GERD,⁶ LSG itself emerges as an independent risk factor for GERD.⁷⁻¹⁰ The documented increase in GERD prevalence spans a noteworthy range, varying from 2.1% to 34.9% in the literature.¹¹

Nissen fundoplication, an effective laparoscopic surgery, is used to treat GERD.¹² However, additional surgery can be invasive for patients, with a generally high level of difficulty. Antireflux mucosectomy (ARMS) and antireflux mucosal ablation (ARMA) have demonstrated effectiveness as endoscopic interventions for individuals with proton pump inhibitor (PPI)-refractory or PPI-dependent GERD.¹³⁻¹⁶ Subsequent meta-analyses have validated their clinical utility.¹⁷⁻¹⁹ This case demonstrates the initial success of ARMS in treating GERD after LSG in a patient with Hill grade IV and a hernia exceeding 3 cm, typically managed with surgical fundoplication.

CASE

A 51-year-old woman, who underwent LSG approximately 2 years ago with a body mass index of 41.4, was referred to our hospital because of the exacerbation of GERD symptoms after LSG. Despite receiving treatment with a potassium-

Abbreviations: ARMA, Antireflux mucosal ablation; ARMS, antireflux mucosectomy; EMR-C, EMR with a modified cap-fitted panendoscope; GERD-HRQL, Gastroesophageal Reflex Disease-Health-Related Quality of Life; LSG, laparoscopic sleeve gastrectomy; PPI, proton pump inhibitor.

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2468-4481

<https://doi.org/10.1016/j.vgie.2024.05.014>

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competitive acid blocker, she continued to experience acid reflux. A comprehensive diagnostic evaluation, including upper endoscopy, high-resolution esophageal manometry, and 24-hour pH-impedance monitoring, was conducted. The upper endoscopy revealed grade C erosive esophagitis according to the Los Angeles (LA) classification system,²⁰ with Hill grade IV and a hernia exceeding 3 cm (Fig. 1). Pathologic acid reflux was confirmed through the aforementioned examinations. Pretreatment symptomatic scores were Gastroesophageal Reflex Disease-Health-Related Quality of Life (GERD-HRQL)²¹ instrument score 26 out of 50 and F-scale²² 23 out of 48.

PROCEDURE

Mucosectomy

The mucosectomy procedure was performed with the patient under general anesthesia using the EMR with a modified cap-fitted panendoscope (EMR-C) technique by positioning the electro-surgical snare (SD-210L-25; Olympus, Tokyo, Japan) around the exterior of the distal attachment (MH-463; Olympus). A therapeutic endoscope (H290T; Olympus) was used and delivered to the mouth gently. Saline solution with indigo carmine was injected into the submucosa of the mucosal resection site. Proper amount of injection is essential to prevent perforation during EMR-C. After injection, while slightly aspirating the mucosa, the snare was opened and gently released from the attachment to grasp the targeted area. Then, electrical current was applied to perform mucosal resection. This procedure was repeated until approximately four-fifths of the mucosal circumference along the lesser curvature was achieved. The TriangleTipKnife J (Olympus) with a hood attachment^{23,24} was used for effective hemostasis (Video 1, available online at www.videogie.org). The duration of the operation, from submucosal injection to the conclusion of hemostasis, was 53 minutes (Fig. 2). All procedures were conducted with the patient under general anesthesia using the ERBE VIO 300D, Elektromedizin, Tübingen, Germany, with the following settings: EndoCutQ (effect 2, cut duration 1, and cut interval 6) and Spray Coag mode (effect 2, 50 W).

OUTCOME

No adverse events such as bleeding or perforation were encountered. The follow-up evaluation regarding symptoms

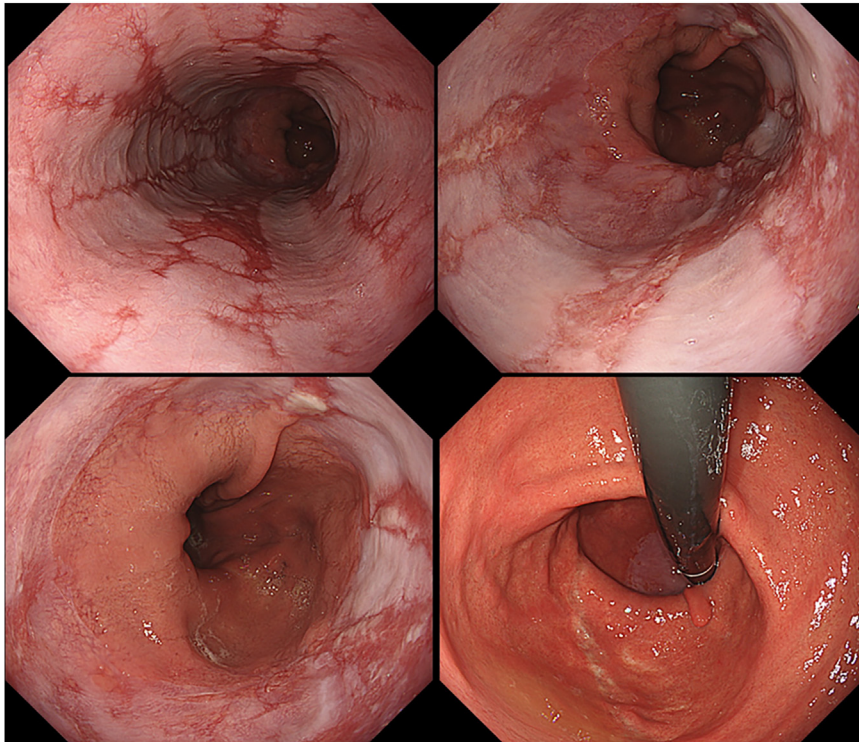


Figure 1. Upper endoscopy images before antireflux mucosectomy from a patient who had undergone laparoscopic sleeve gastrectomy, depicting grade C erosive esophagitis per the Los Angeles classification system.

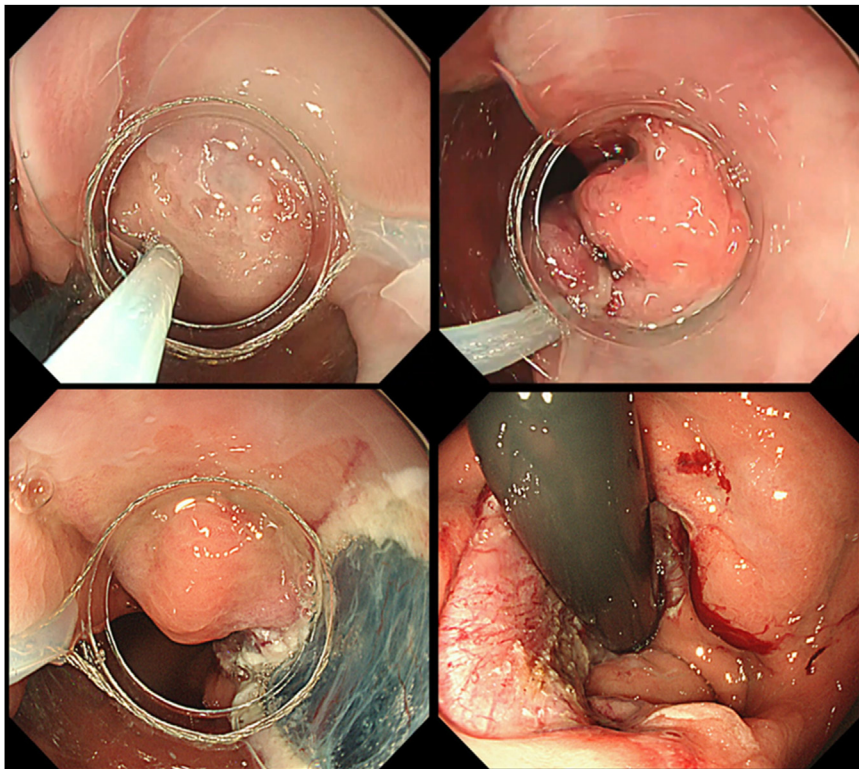


Figure 2. Antireflux mucosectomy performed using the EMR with a modified cap-fitted panendoscope technique. This process was repeated until approximately four-fifths of the mucosal circumference along the lesser curvature was achieved.

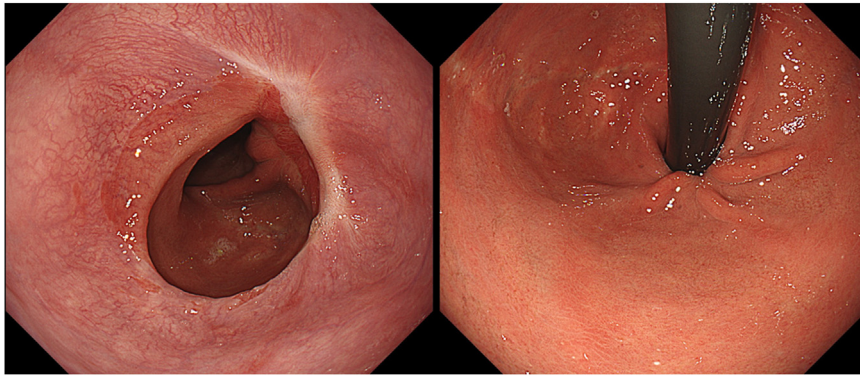


Figure 3. A follow-up endoscopy performed 2 months later demonstrated improvements in GERD, assessed as grade M, along with a reduction in the size of the hiatal esophageal hernia attributed to scarring of the wound.

and endoscopy was conducted 2 months after the procedure. The symptom scores demonstrated improvement, with the GERD-HRQL score decreasing from 26 to 18 and the F-scale score showing improvement from 23 to 21. GERD improvements were noted with LA grade M, along with a reduced hiatal hernia size. The flap valve also enhanced through shrinkage because of wound scarring (Fig. 3).

CONCLUSION

ARMS may serve as an effective treatment option not only for individuals with PPI-refractory or PPI-dependent GERD but also for patients with GERD who are expected to be difficult to treat, such as those who have undergone gastric surgery.

DISCLOSURE

Dr Inoue is an advisor of Olympus Corporation and Top Corporation. The other authors declare that they have no competing interests.

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