Gastric peroral endoscopic myotomy for refractory gastroparesis

Shaimaa Elkholy, MD, Mohamed EL-Sherbiny, MD, Mahmoud Wahba, MD, Kareem Essam, MD

Gastric peroral endoscopic myotomy (G-POEM) was first described by Khashab et al[1] in 2013. The idea of G-POEM is to relieve pyloric spasm, a major factor in the pathogenesis of gastroparesis.[2] G-POEM is a logical expansion of third-space endoscopy in which tunneling is used to cut the pyloric muscle, keeping an intact mucosa above. The technical success of G-POEM is nearly 100%; however, clinical success usually ranges from 74% to 87%.[3] Postsurgical gastroparesis has the most favorable outcomes.[4]

The gastroparesis cardinal symptom index (GCSI) is a clinical scoring system used to assess the clinical severity

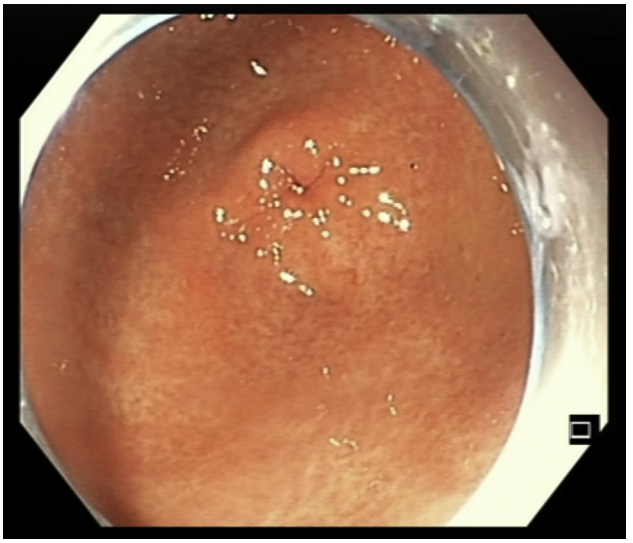

Figure 1. Spastic pyloric ring.

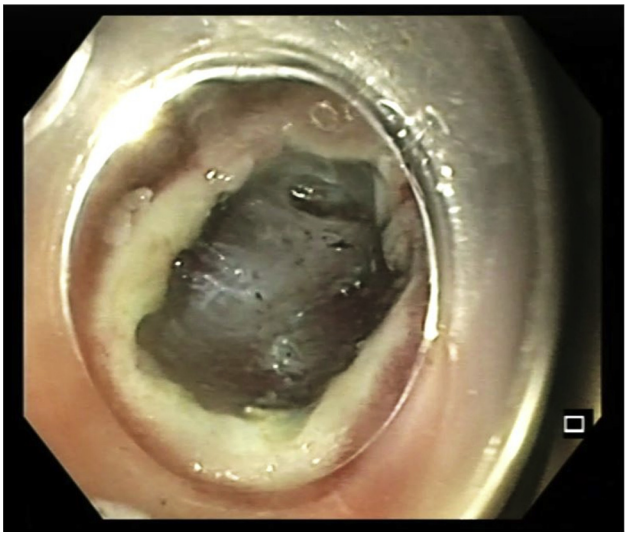

Figure 2. Opening of the tunnel.

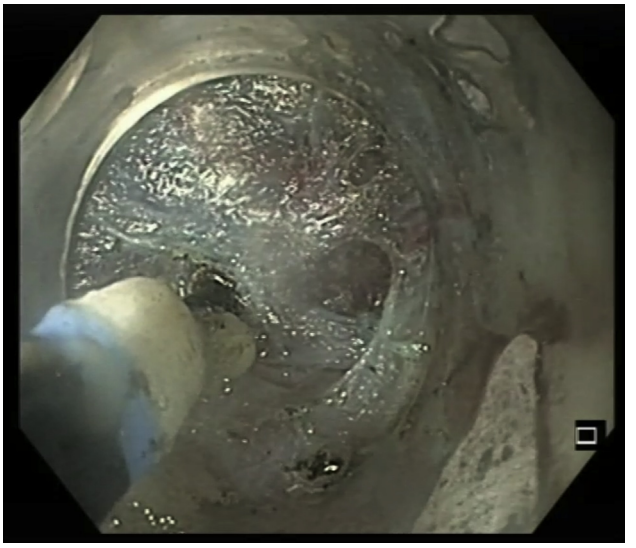

Figure 3. Dissection in the tunnel.

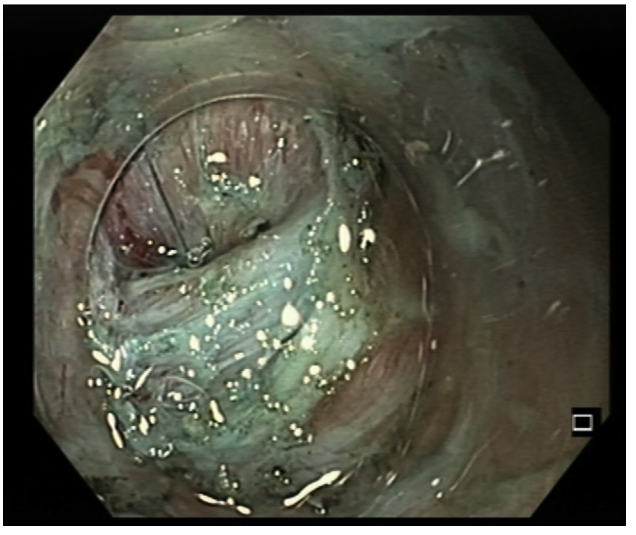

Figure 4. Pyloric ring appearing as a half-moon after dissection.

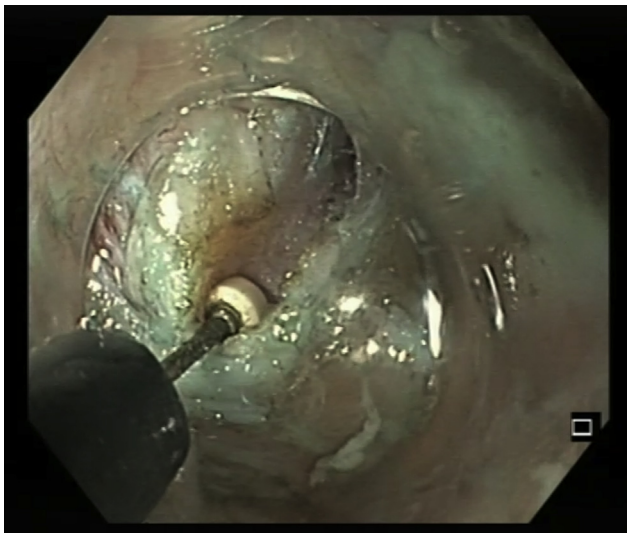

Figure 5. Cutting the pyloric ring using insulated tip knife.

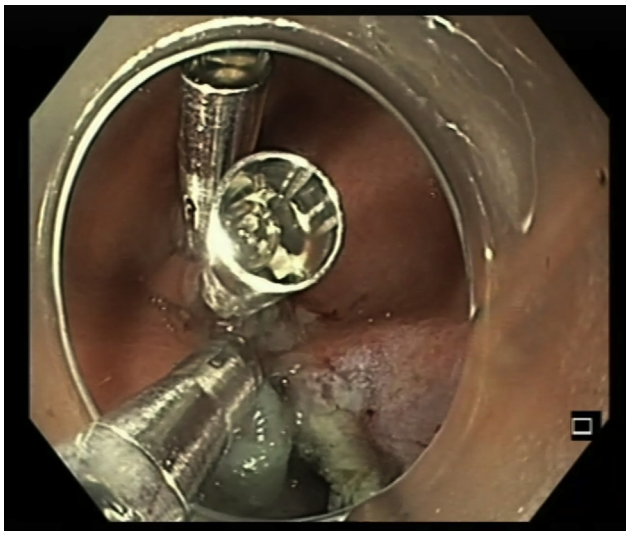

Figure 6. Final closure with clips.

of gastroparesis.[5] Gastric emptying scintigraphy (GES) is also used to measure the half emptying time and percentage of residual food after 4 hours. GCSI and GES are used not only for the diagnosis of gastroparesis but also for predicting response.[4]

Here, we present a 42-year-old man with a history of refractory reflux disease, for which fundoplication was done 2 years earlier. Two months after the operation, the patient started to develop nausea, fullness, and bloating. Prokinetics were prescribed but yielded limited response. The patient's condition progressed, and he started to develop frequent attacks of vomiting, early satiety, and loss of weight. His GCSI was 25, mean GES was 139.8 minutes (normal: up to 120 minutes), and retention percentage at 2 hours was 65.9% (normal: up to 60%).

After discussing the treatment options with the patient, G-POEM was chosen. The patient signed informed consent

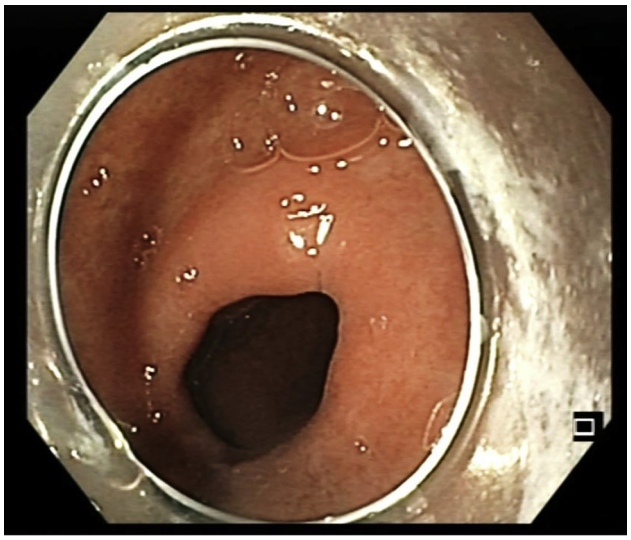

Figure 7. Pyloric ring widely opened.

before the procedure. He was placed in a supine position and was under general anesthesia with endotracheal intubation. Prophylactic antibiotics were given in the form of third-generation cephalosporins and metronidazole. A high-definition therapeutic gastroscope was used with an auxiliary water channel (GIF-1TH 190; Olympus, Tokyo, Japan).

A transparent cap (D-201-11802; Olympus) was fitted to the end of the endoscope to provide better visualization of the submucosa and to help in dissection. Carbon dioxide insufflation was used throughout the entire procedure. Endo Cut Q (effect 3, duration 3) and forced coagulation (50 W, effect 2) were the electrosurgical settings used (VIO-300D; Erbe, Tubingen, Germany). The solution used for injection was sterile 0.9% saline solution mixed with 1% methylene blue. Hybrid knife (T-type Erbe) was used. Hybrid knives help in cutting coagulation and injection. Coagulation forceps (FD-410 LR; Olympus) was used when large blood vessels or bleeding that could not be stopped with knife coagulation were encountered. An insulated-tip knife nano type (IT, KD-612L/U; Olympus) was used for myotomy.

As shown in the video (Video 1, available online at www.VideoGIE.org), a submucosal bleb was made 5 cm proximal to the spastic pylorus (Fig. 1). Opening of the tunnel was performed (Fig. 2), followed by submucosal dissection (Fig. 3) until reaching the pyloric ring (half-moon sign) (Fig. 4), followed by cutting of the pyloric ring using an IT knife with proximal extension of the myotomy (Fig. 5). Caution should be taken to avoid mucosal injury to prevent complete perforation. The tunnel opening was closed with hemoclips (Fig. 6). The pyloric ring was widely opened (Fig. 7). Detailed steps of G-POEM are shown in Figure 8. After 6 months of follow-up, the patient's condition markedly improved (GSCI = 3), and he started to gain weight.

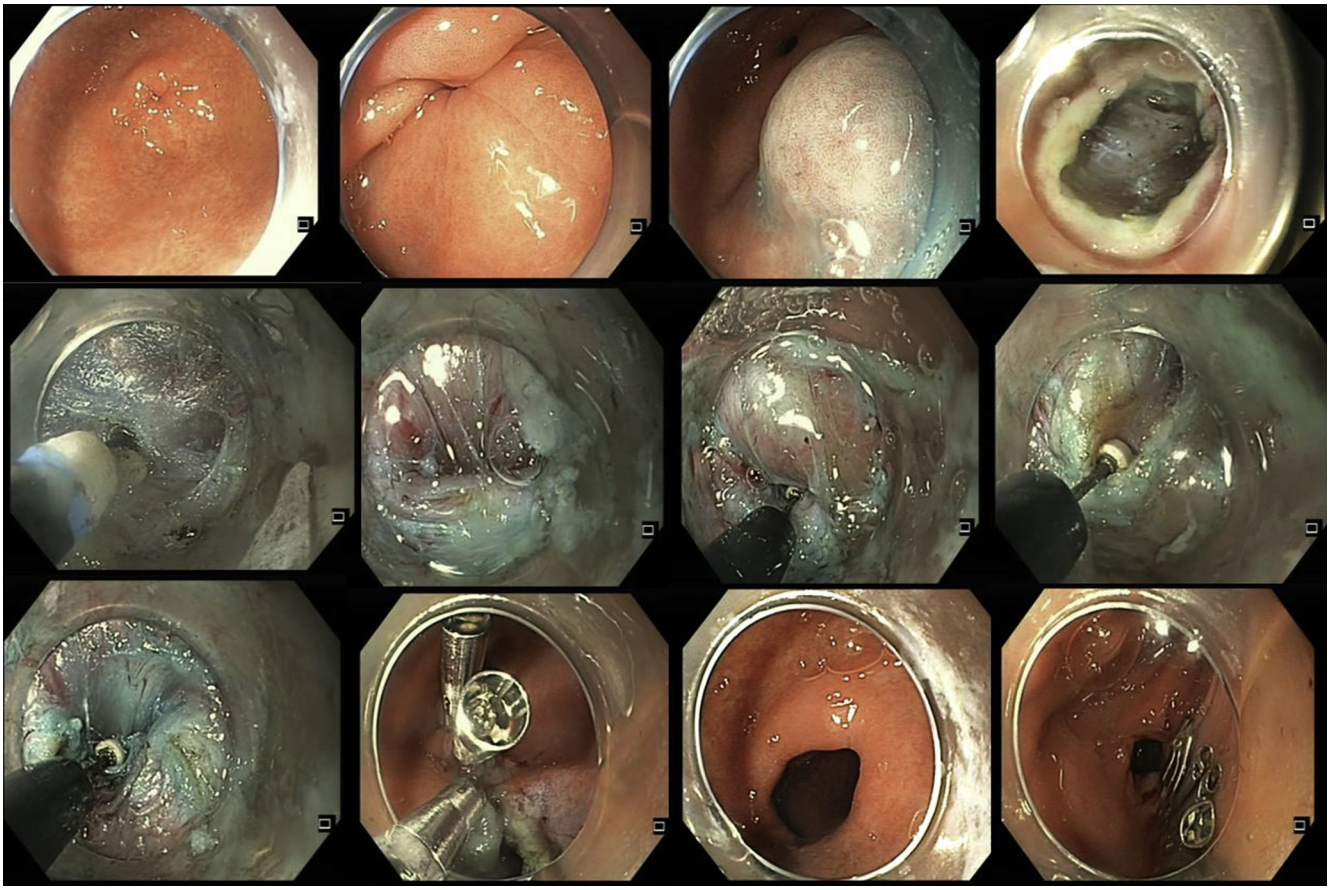

Figure 8. Steps of gastric peroral endoscopic myotomy.

DISCLOSURE

All authors disclose no financial relationships.

Abbreviations: GCSI, gastroparesis cardinal symptom index; GES, gastric emptying scintigraphy; G-POEM, gastric per oral endoscopic myotomy; IT knife, insulated-tip knife.

REFERENCES

1. Khashab MA, Stein E, Clarke JO, et al. Gastric peroral endoscopic myotomy for refractory gastroparesis: first human endoscopic pyloromyotomy (with video). Gastrointest Endosc 2013;78:764-8.
2. Liu N, Abell T. Gastroparesis updates on pathogenesis and management. Gut Liver 2017;11:579-89.
3. Aghaie Meybodi M, Qumseya BJ, Shakoor D, et al. Efficacy and feasibility of G-POEM in management of patients with refractory gastroparesis: a systematic review and meta-analysis. Endosc Int Open 2019;7:E322-9.
4. Xu J, Chen T, Elkholy S, et al. Gastric peroral endoscopic myotomy (G-POEM) as a treatment for refractory gastroparesis: long-term outcomes. Can J Gastroenterol Hepatol 2018;2018:6409698.
5. Dacha S, Mekaroonkamol P, Li L, et al. Outcomes and quality-of-life assessment after gastric per-oral endoscopic pyloromyotomy (with video). Gastrointest Endosc 2017;86:282-9.

Gastroenterology Division, Internal Medicine Department, Faculty of Medicine, Cairo University, Cairo, Egypt.

If you would like to chat with an author of this article, you may contact Dr Elkholy at shuma50082@gmail.com.

https://doi.org/10.1016/j.vgie.2020.05.037