



LETTER TO EDITOR

Gastric peroral endoscopic pyloromyotomy for refractory diabetic gastroparesis: First case report in Taiwan

To the editor,

Peroral endoscopic myotomy has been demonstrated as one of the safe and efficient options for the management of esophageal achalasia with favorable short-term perioperative outcomes and higher clinical success rate over 90%.^{1–4} This kind of promising technique, the third space endoscopy, could be adopted to other functional gastrointestinal disorders, including gastroparesis. Gastric peroral endoscopic pyloromyotomy (G-POEM) have been widely explored

in recent decade.⁵ To our knowledge, this is the first case report of G-POEM for refractory diabetic gastroparesis in Taiwan.

Between December 2017 and June 2018, two refractory diabetic gastroparesis patients were enrolled (Table 1). Gastric emptying scintigraphy (GES) revealed severe gastroparesis [case 1 with liquid meal, $T_{1/2}$ 1,065 (reference <23) minutes, percent of gastric emptying 5%; case 2 with oat meal, $T_{1/2}$ 219 (reference <85) minutes, percent of gastric emptying 14%]. They were on liquid diet for 48

Table 1 Demographic data and details of procedure and clinical response.

	Case 1	Case 2
Demographic data		
Age/Gender	26-year-old/Female	43-year-old/Female
BMI (kg/m ²)	20.8	24.8
DM type/HbA1c	Type 1/12.0%	Type 2/8.9%
DM complications	Retinopathy	Retinopathy and ESRD
Duration of GP	12 years	6 years
Number of hospitalizations in the year prior to G-POEM	Four times	Three times
GES method	Liquid meal	Oat meal
GES $T_{1/2}$ (reference) (minutes)	1,065 (<23)	219 (<85)
Percent of gastric emptying	5%	14%
Follow-up periods (days)	357	256
Procedural data		
Procedure time (minutes)	99	65
Hospital stay (days)	4	6
Technical success/Complications	Yes/No	Yes/No
Clinical success	Clinical improvement for 2 weeks	Yes
GCSI before/after G-POEM	45/36	20/4
GES $T_{1/2}$ /Percent of gastric emptying after G-POEM (reference) (minutes)	Not done	156 (<85)/31%

Abbreviations: DM, diabetic mellitus; GCSI, Gastroparesis Cardinal Symptom Index; GES, gastric emptying scintigraphy; GP, gastroparesis; G-POEM, gastric peroral endoscopic pyloromyotomy.

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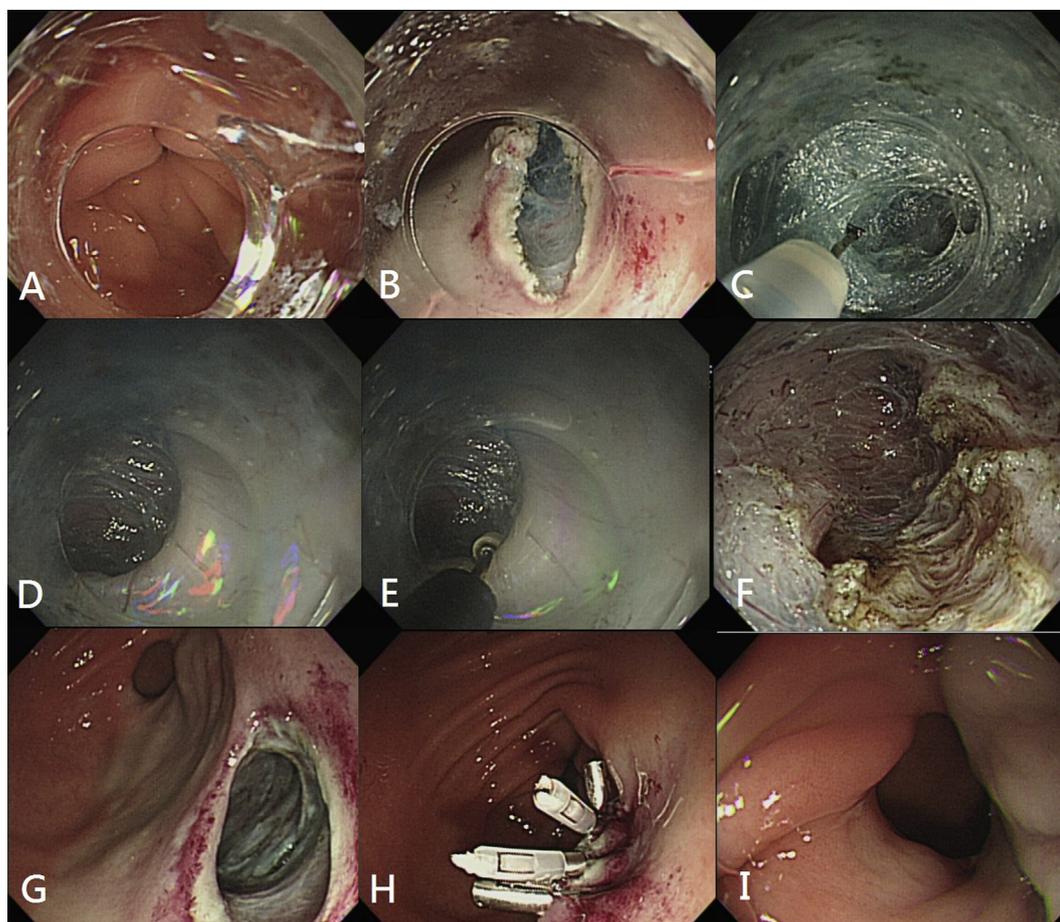


Figure 1 Procedures of G-POEM. **A)** Pyloric spasm before procedure. **B)** Mucostomy at posterior wall of antrum 4~5 cm distal to pyloric ring. **C)** Submucosal tunneling. **D)** Muscle band of pyloric ring. **E)&F)** Myotomy of inner circular and intermediate oblique muscular layers. **G)&H)** Closure of mucostomy after myotomy. **I)** Loosen pyloric ring after G-POEM.

hours and overnight fasting before G-POEM (Fig. 1). Prophylactic intravenous antibiotic and proton pump inhibitors were prescribed before procedure. During G-POEM, patients were positioned supine. A regular gastroscope with transparent cap attached to the tip and integrated with water jet function and carbon dioxide insufflation was used. Submucosal injection using normal saline solution mixed with indigo carmine dye at 5-cm proximal to the pyloric ring along the axis of the greater-posterior (4–6 o'clock approach) curvature of the antrum was performed. Mucostomy (ERBE VIO 300D Dry Cut 80W effect 3) longitudinally using Triangle Tip Knife J (KD-645L, Olympus, Tokyo, Japan) was done with length about 1.5~2 cm, followed by submucosal tunneling (ERBE VIO 300D Spray Coagulation 40W effect 2) until 0.5 cm distal to the pyloric ring which was recognized as well-defined whitish band of smooth muscle. After submucosal tunneling, myotomy using Insulated Tip Knife Nano (KD-612U, Olympus, Tokyo, Japan) was done by cutting (ERBE VIO 300D Dry Cut 80W effect 3) inner circular and oblique muscle bundles 2 cm proximal until 0.5 cm distal to the pyloric ring. The mucostomy entry was closed by endoclips. They started liquid diet on post-operative day 2 for 1 day then semiliquid diet afterward if no pneumoperitoneum and abdominal pain presented. Hospital stays of two patients were 4 and 6 days. Technical success rate

was 100% and clinical response rate was 50%. The total score of gastroparesis cardinal symptoms index before and one week after procedure for case 1 and 2 were score 45/20, and 36/4, respectively. Case 1 had improvement of symptoms for only 2 weeks then received surgical bypass gastrojejunostomy. GES 8 weeks later for case 2 showed decrement in $T_{1/2}$ from 219 to 156 minutes and emptying percentage from 14% to 31%. No procedure related complication or mortality was reported.

In conclusion, refractory gastroparesis which is a chronic illness without cure remains difficult-to-treat. G-POEM is a promising, efficient and safe endoscopic technique for management of refractory gastroparesis. However, confirmation of pyloric spasm related symptoms before G-POEM is crucial to predict response and long term outcome of this promising technique is awaited.

Conflict of interest

The authors declared no competing interests.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.asjsur.2019.01.019>.

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