Peroral endoscopic pyloromyotomy for delayed postoperative gastroparesis

Fig. 1 Endoscopic view of the tight pylorus in a patient with delayed gastroparesis following laryngopharyngectomy for laryngeal cancer.

Fig. 2 View of the pyloric ring and duodenal mucosa through the submucosal tunnel.

Fig. 3 Pyloromyotomy.

Fig. 4 Mucosal closure with endoclips.

Fig. 5 Open pylorus following pyloromyotomy.

Video 1

Endoscopic peroral pyloromyotomy step by step. After submucosal elevation, a mucosal incision is taken 5 to 7 cm proximal to the pylorus. A submucosal tunnel is created, and the pyloric ring is identified. The ring is divided vertically 3 cm, and the mucosal incision is closed with endoclips.

Functional gastric outlet obstruction, or gastroparesis, occurs in 20% to 30% of patients following esophagogastric surgery and has significant morbidity [1]. Peroral endoscopic pyloromyotomy (POEP) has been reported in pigs [2] and recently in humans for the treatment of diabetic gastroparesis [3] or postoperative gastroparesis [4,5]. We report here two patients with delayed postoperative gastroparesis successfully treated by POEP.

Two male patients, 62 and 54 years of age, underwent esophagogastric surgery and laryngopharyngectomy with gastric pull-up for esophageal and laryngeal cancer, respectively. One patient at 18 months and the other at 24 months after surgery presented with recurrent postprandial vomiting and regurgitation that did not respond to prokinetic drugs. Endoscopy in each patient revealed a solid food residue after 12 hours of fasting and a tight pylorus that resisted passage of the endo-

scope (► **Fig. 1**). Barium studies showed delayed gastric emptying (>4 hours).

Both patients underwent POEP while under general anesthesia with endotracheal intubation. Submucosal elevation was achieved by injecting normal saline stained with indigo carmine. A 2-cm mucosal incision on the greater curvature 7 cm proximal to the pylorus was made with triangular tip and insulated-tip knives (Olympus, Tokyo, Japan). A submucosal tunnel toward the pylorus was created by using ENDO CUT I and SOFT COAG modes (ERBE Vio 200 D; ERBE Elektromedizin, Tübingen, Germany). The pyloric muscular ring was identified by the blue-stained duodenal mucosa and submucosa beyond it (► **Fig. 2**) and, using the insulated-tip knife applied in a distal-to-proximal direction to prevent inadvertent duodenal mucosal injury, its full thickness was divided (► **Fig. 3**). The myotomy was extended for 3 cm on the gastric side. The mucosal

incision was closed with endoclips (Ezee Clip; Olympus) (► **Fig. 4**). A patulous pylorus and easy passage of the endoscope confirmed adequacy of the procedure (► **Fig. 5**, ► **Video 1**).

After 24 hours of fasting, an oral diet was established after the transit of contrast across the pylorus had been confirmed on fluoroscopy. At 4-week follow-up, each patient reported no episodes of regurgitation and had gained weight. A repeat endoscopy showed an open, easily passable pylorus.

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