



Cardiac septal occluder for closure of persistent gastrogastic fistula

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A 53-year-old man with diabetes mellitus and a history of Roux-en-Y gastric bypass had a bile leak after a cholecystectomy in March 2020. He subsequently underwent EUS-directed transgastric ERCP (EDGE) with gastrogastic fistula creation with a lumen-apposing metal stent (LAMS) (AXIOS, Boston Scientific, Marlborough, Mass, USA) followed by placement of a 10F × 10-cm plastic biliary stent in March 2020.

In April 2020, the patient had a persistent bile leak, so two 10F × 10-cm stents were placed. After confirming resolution of bile leak, the patient underwent a repeat ERCP with successful removal of both biliary stents and LAMS in June 2020. During this time, a double-channel endoscope with an Endo Stitch system (OverStitch; Apollo Endosurgery, Austin, Tex, USA) was used to close the gastrogastic fistula site with 4 stitches in a running, full-thickness manner (Fig. 1).

The patient then presented with a 22-pound weight gain after the procedure in August 2020; subsequent small-bowel series demonstrated a persistent gastrogastic fistula. Repeat upper endoscopy confirmed the presence of the gastrogastic fistula, measuring 10 mm in diameter, which appeared compliant and dilated (Fig. 2). A straight fire argon plasma coagulation probe was used, and cautery was applied circumferentially to the fistula anastomosis at a flow of 1.0

L/min and energy of 50 W (Fig. 3). A ventricular cardiac septal occluder (CSO) (Amplatzer 7 mm × 14 mm, AGA Medical Group, Plymouth, Minn, USA) was then backloaded into a 10F biliary stent deployment system (Oasis, Cook Medical, Bloomington, Ind, USA) while being grasped by pediatric forceps. The distal flange was deployed in the gastric remnant surface, fully occluding the defect (Video 1, available online at www.VideoGIE.org).¹⁻⁹ This was performed under direct endoscopic guidance. The position of the CSO was confirmed on endoscopic view without any evidence of perforation or bleeding (Fig. 4).

After the procedure, the patient was placed on a liquid diet for 5 days, followed by soft foods for 5 days, and was advanced to a regular diet on day 10. He was placed on proton pump inhibitors for 6 weeks. The patient's weight stabilized, and he underwent a repeat upper GI series in December 2020 that confirmed complete closure of gastrogastic fistula after the CSO placement (Fig. 5). The placement of a CSO is permanent, allowing occlusion of the gastrogastic fistula via tissue growth over the occluder, and therefore is a durable method of defect closure. In March 2021, the patient underwent a repeat EGD, which showed that the CSO that had been previously placed appeared engrafted and embedded. There was no evidence of recurrent fistula (Fig. 6).

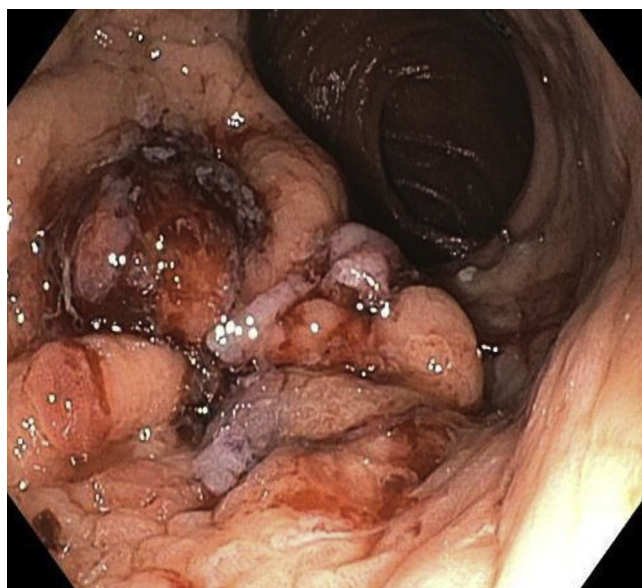


Figure 1. Closure of the initial gastrogastic fistula using the Apollo Endo Stich Suturing System in a full-thickness manner in June 2020.

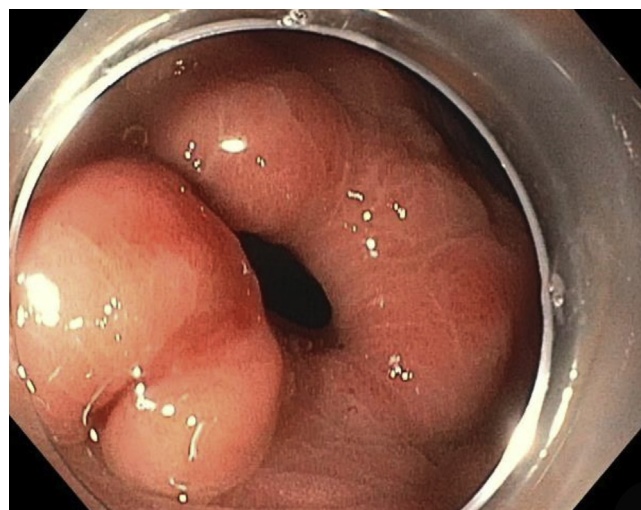


Figure 2. A persistent gastrogastic fistula seen in August 2020 that was seen 2 months after the initial attempted closure with the Apollo Endo Stich Suturing System.

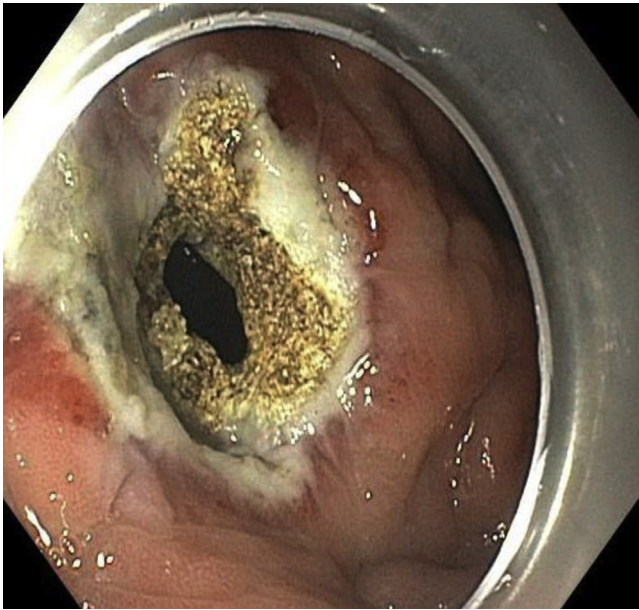


Figure 3. Initial circumferential cautery to the persistent gastrogastric fistula using a straight fire argon plasma coagulation (flow 1.0 L/min, energy 50 W).

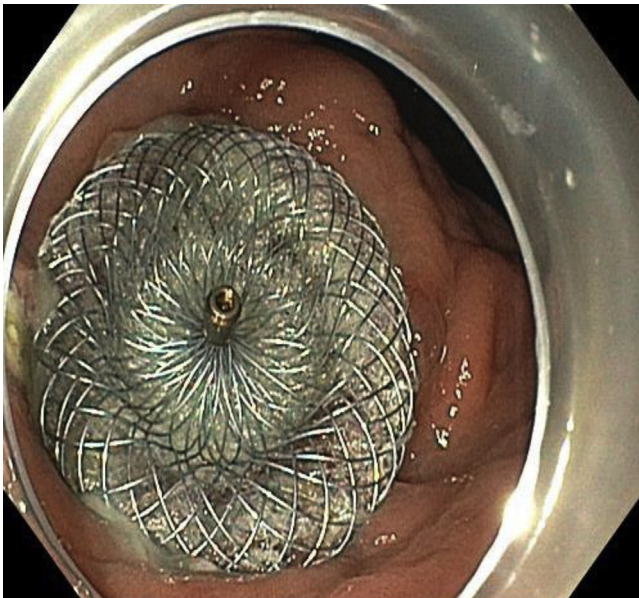


Figure 4. Successful deployment of the cardiac septal occluder Amplatzer through the persistent gastrogastric fistula.

In our patient, a gastrogastric fistula formed after the EDGE procedure. In a multicenter study, diabetes mellitus has been associated with persistent gastrogastric fistula after the EDGE procedure.⁹ In another multicenter study, longer LAMS dwell time (median 89 days) in a post-EDGE procedure was observed in patients with persistent gastrogastric fistula compared with those without persistent gastrogastric fistula (median 34 days).⁸ Our patient had both diabetes and longer LAMS dwell time, which likely contributed to persistent gastrogastric fistula.



Figure 5. Repeat upper GI series performed in December 2020 confirmed complete closure of the gastrogastric fistula after Amplatzer placement (*arrow*).

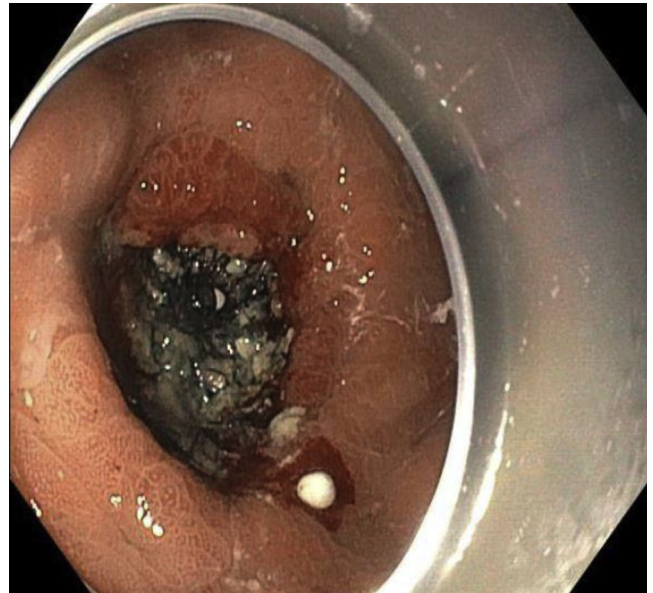


Figure 6. Repeat EGD performed in March 2021 showed the previously placed cardiac septal occluder was engrafted and embedded without signs of recurrent gastrogastric fistula.

In conclusion, gastrogastric fistula can become persistent after an EDGE procedure, resulting in unwanted weight gain in patients who have undergone Roux-en-Y gastric bypass. Diabetes and prolonged dwelling time of LAMS (median 89 days) are associated with the formation

of persistent gastrogastic fistula after an EDGE procedure. A CSO is an effective and safe way to close a gastrogastic fistula using a pediatric forceps and a 7F to 10F biliary catheter for deployment ([Video 1](#), available online at www.vgiejournal.org).

DISCLOSURE

All authors disclosed no financial relationships.

Abbreviations: CSO, cardiac septal occluder; EDGE, EUS-directed transgastric ERCP; LAMS, lumen-apposing metal stent.

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