

Treatment of refractory benign gastrointestinal strictures with fully covered metal stents



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Gastroenteral (GE) strictures can develop after surgical resection procedures that involve partial gastrectomy with or without duodenectomy and creation of GE anastomosis. Older age, postsurgical leakage, fistula formation, bleeding, infection, and ischemia at the anastomosis are possible etiologies for GE strictures.^{1,2} Because of the distal location and longer length, GE strictures are unique and cannot be managed with techniques similar to those for esophageal or colorectal strictures.³

Endoscopic balloon dilation is the only endoscopic modality described for such strictures, but it carries a significant risk of perforation, especially with the requirement for multiple dilations.¹ Unlike esophageal or colorectal anastomotic strictures, over-the-wire fully covered self-expanding metal stents (FCSEMSs) are not an option because the stent sheath is not long enough to reach the GE stricture. Through-the-scope stents are not good candidates either because there is a high risk of stent migration (up to 36.3%) owing to the narrow diameter.⁴ The largest diameter through-the-scope FCSEMSs available in the United States is 18 mm, which is not wide enough to prevent migration. Lumen-apposing metal stents are also not feasible because such strictures are frequently >2 cm long, and lumen-apposing metal stents are specific to the endoscopic ultrasound platform.⁵

Short of surgical redo of the anastomosis, management of GE strictures is limited. We have successfully treated such strictures with an out-of-the-box approach by using the largest diameter FCSEMS, 23 mm with 28-mm flares on each end. The 28-mm exaggerated flare is key to prevent stent migration. To overcome the technical limitation of the stent system being too short to reach the GE anastomosis, the stent is deployed outside the patient's body and then reconstrained in the working channel of a therapeutic upper endoscope (Fig. 1A and B). The stent is then carefully deployed under fluoroscopic guidance to optimally position the stent, half in the gastric body and half in the small bowel. To further secure the stent and prevent migration, a bear-claw or over-the-scope-clip system (Ovesco Endoscopy, Tübingen, Germany) is used.

Our case features a 52-year-old woman with a diagnosis of duodenal adenocarcinoma who underwent resection with choledochojejunostomy, pancreaticojejunostomy, and gastroenterostomy. The patient developed gastric outlet obstruction (GOO), and endoscopic evaluation showed a severely angulated stenosis that involved the gastric outlet and the mouth of the efferent limb (Fig. 2A). Multiple endoscopic balloon dilations did not resolve the stricture. We placed a 23-mm × 10.5-cm fully covered metal stent in a fashion as described (Fig. 2B).

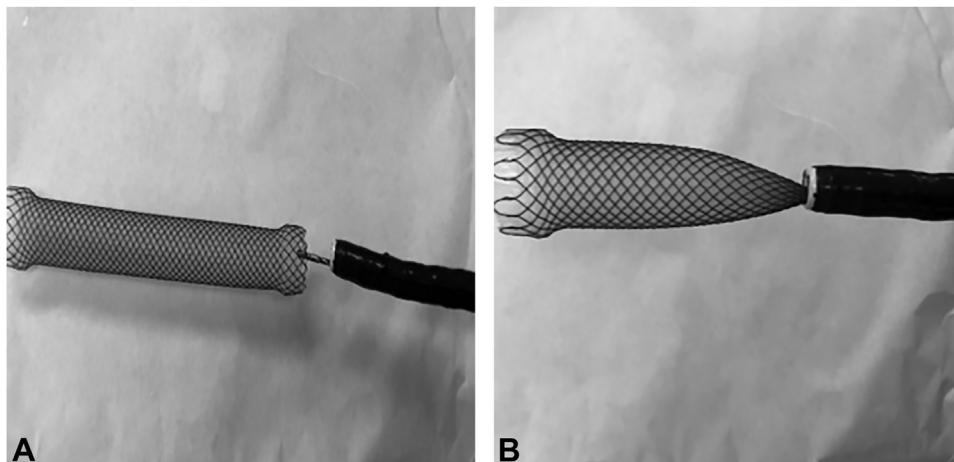


Figure 1. A, Fully covered metal stent deployed ex vivo. B, Stent being reconstrained into the working channel of the endoscope.

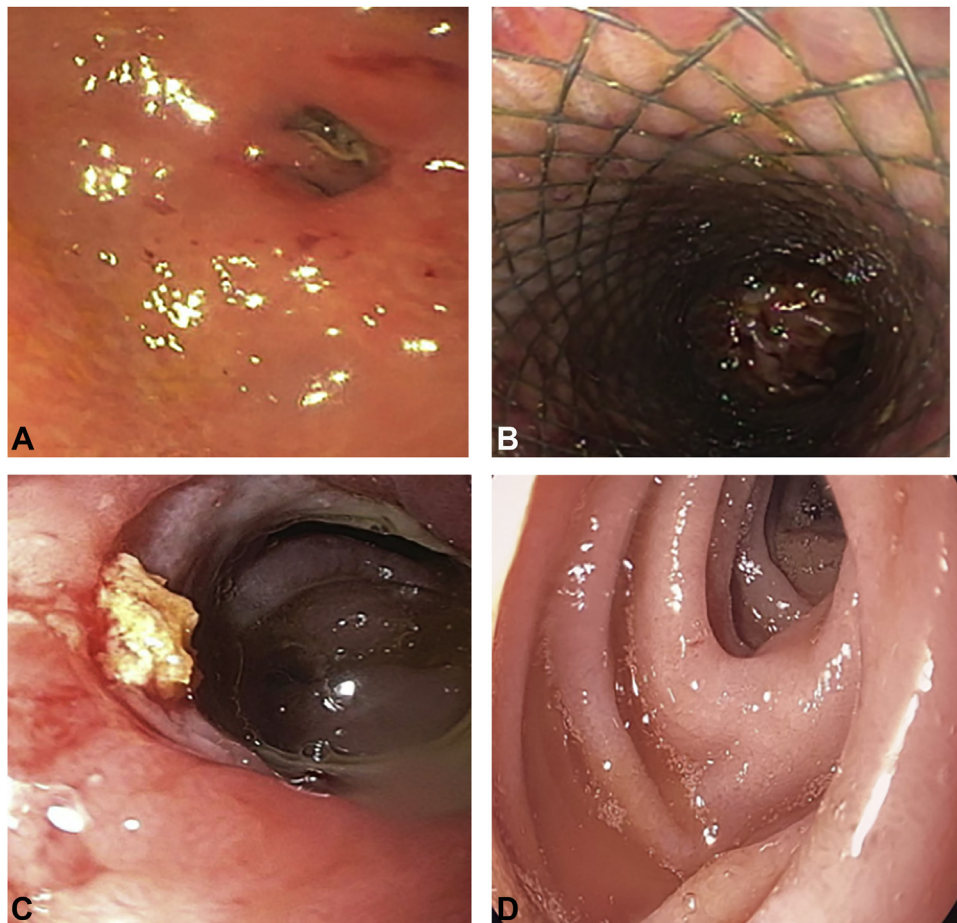


Figure 2. **A**, Long, narrowed stricture at gastroenteral junction. **B**, Deployed fully covered metal stent. **C**, Complete resolution of stricture at 1 month. **D**, No stricture at 6 months.

Vomiting and postprandial abdominal pain improved after stent placement, and she was discharged. A repeat upper endoscopy at 4 weeks revealed completely resolved gastrojejunostomy anastomotic stricture after the stent was removed (Fig. 2C). At the 6-month follow-up, the patient had no symptoms of GOO, was tolerating a regular diet, and had no evidence of stricture on endoscopy (Fig. 2D).

Therapeutic gastroenterologists are already familiar with FCSEMSs, and equipment is already available in many endoscopy units; this approach can be an out-of-the-box solution to a problem that has limited endoscopic options beyond balloon dilation, which frequently fails and carries a high risk of perforation. In addition to endoscopic clipping, including over-the-scope stent fix clips, using a bridal technique can also be helpful in preventing stent migration.⁶ In our experience, the 23-mm diameter and 10.5-cm length are key to long-lasting resolution of stricture and preventing migration. Management of these strictures with FCSEMSs may avoid surgical interventions in patients who have already undergone major surgery and are at high

risk for redo of anastomosis because of poor nutrition related to GOO and worsening of adhesions (Video 1, available online at www.giejournal.org).

DISCLOSURE

All authors disclosed no financial relationships.

Abbreviations: FCSEMSs, fully covered self-expanding metal stents; GE, gastroenteral; GOO, gastric outlet obstruction.

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