

Venting post-Whipple benign gastric outlet obstruction with temporary bilateral fully covered metal stents

Shayan Irani, MD, Adnan Alseidi, MD

Nausea and vomiting persisting more than 2 weeks after a pancreaticoduodenectomy (Whipple operation), besides prolonging hospitalization, can delay adjuvant therapy.^{1,2} This is usually managed with temporary feeding tubes and decompressive tubes (nasogastric/percutaneous endoscopic gastrostomy [PEG]).¹ However, inability to eat has a significant effect on the patient's quality of life. Dilations can be helpful once healing has occurred.³⁻⁵ We present 5 cases of post-Whipple benign obstruction ongoing for more than 2 weeks, treated with temporary placement of

bilateral fully covered self-expandable metal stents (FCSEMSs) (esophageal and/or biliary).

Patient 1: A 72-year-old woman with an extended Whipple operation and subtotal gastrectomy experienced a large dehiscence of the gastric suture line (Fig. 1), which evolved over the next 6 weeks to a severe gastric outlet obstruction (GOO) (Fig. 2). The dehiscence was allowed to close first before a self-expandable metal stent (SEMS) was placed, given the concern that bilateral stents would have space between them and might not provide a seal

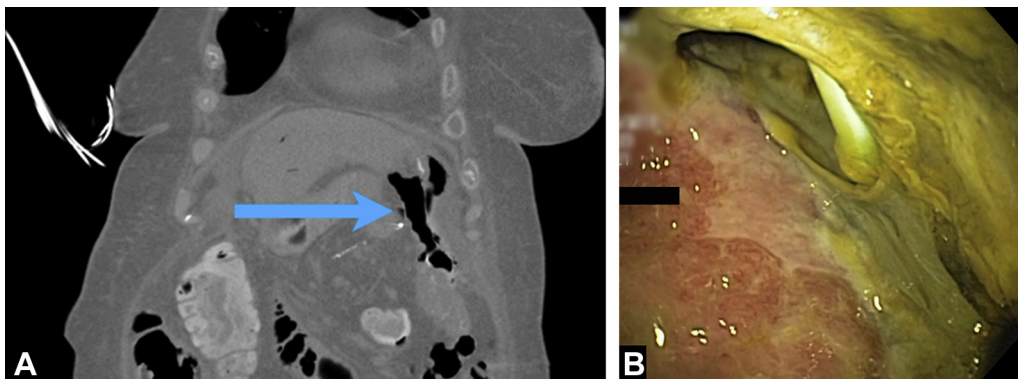


Figure 1. In patient 1, (A) CT scan demonstrating dehiscence of gastric suture line (*blue arrow*). B, Confirmed endoscopically.

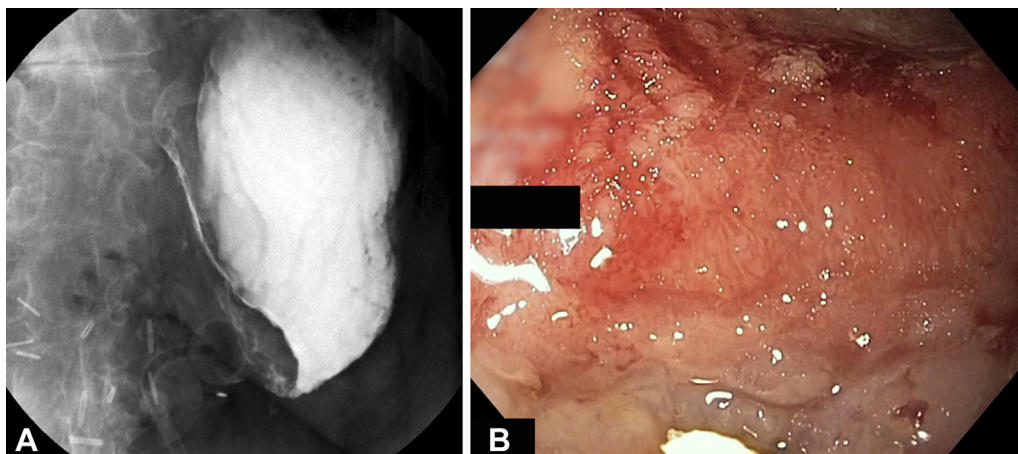


Figure 2. In patient 1, development of severe gastric outlet obstruction 6 weeks later (A) on upper GI series and (B) confirmed endoscopically.

Written transcript of the video audio is available online at www.VideoGIE.org.

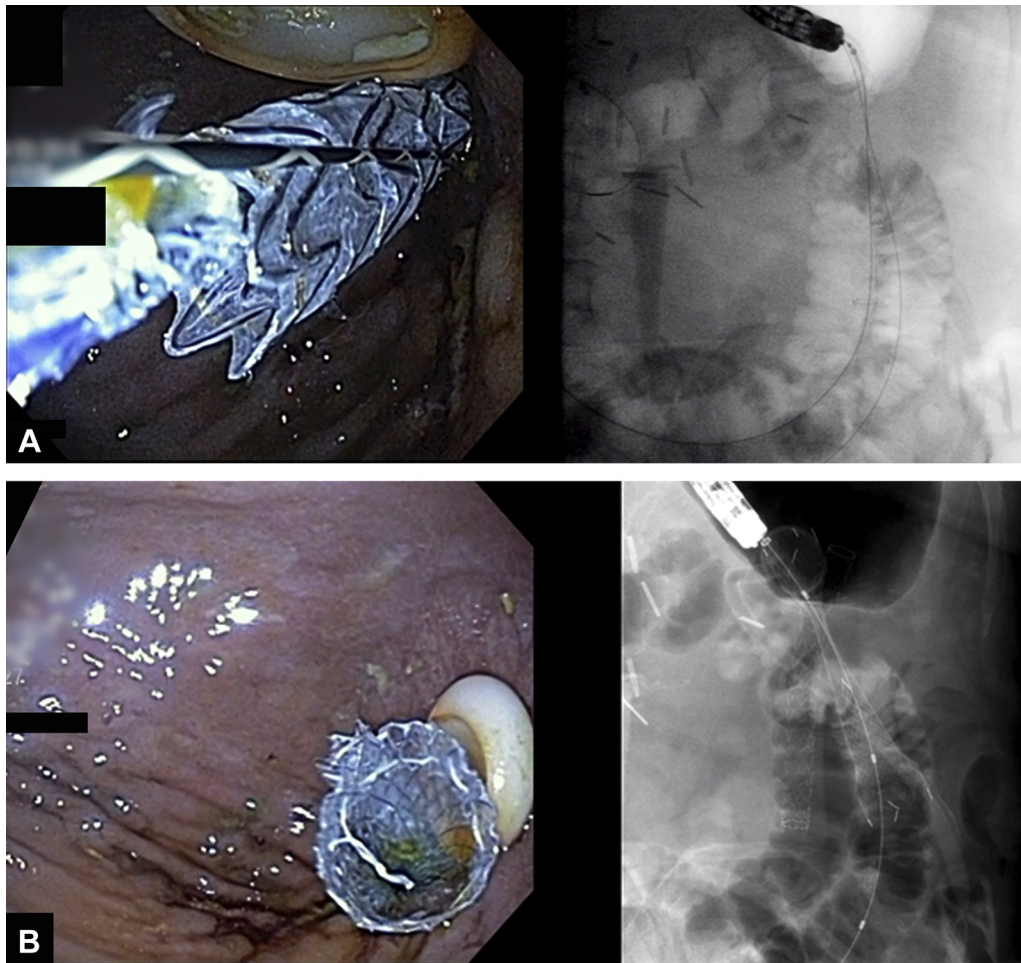


Figure 3. In patient 1, (A) placement of a biliary fully covered self-expandable metal stent into the afferent limb, followed by (B) an 18-mm esophageal fully covered self-expandable metal stent into the efferent limb.

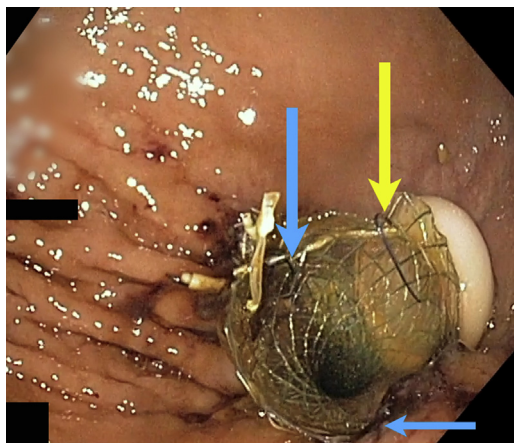


Figure 4. In patient 1, stents stitched to gastric wall (*small blue arrow*), each other (*large blue arrow*), and externally to an existing percutaneously placed gastrostomy tube (*yellow arrow*).

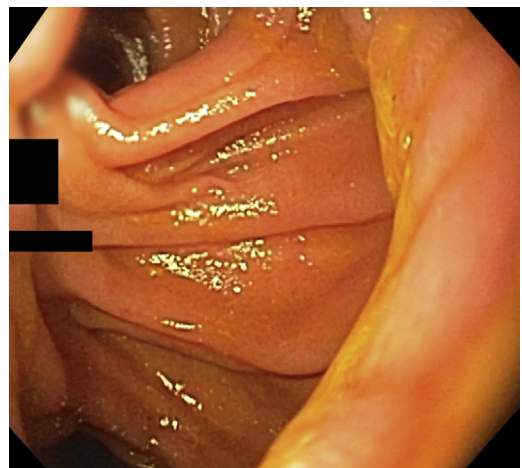


Figure 5. In patient 1, 9 weeks later stents are easily removed, demonstrating patent afferent and efferent limbs.

to close the leak. Furthermore, the dehiscence occurred from extensive arterial resection (ischemia) and needed to heal before stent placement. The GOO was then treated

with placement of a biliary FCSEMS into the afferent limb and an esophageal FCSEMS into the efferent limb (Fig. 3). To prevent proximal/gastric migration, the

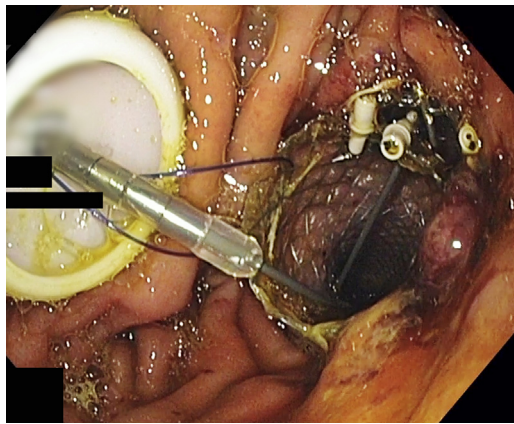


Figure 6. In patient 2, bilateral 18-mm esophageal fully covered self-expandable metal stents to treat a benign gastric outlet obstruction 18 days after a Whipple operation for pancreatic adenocarcinoma.

SEMSs were stitched to the gastric wall. To prevent distal/jejunal migration, the SEMSs were stitched to each other and, by a separate suture, to a gastrostomy tube (Fig. 4). The patient was able to start an oral diet within 2 days, and 9 weeks later the stents were easily removed, demonstrating now-patent afferent and efferent limbs (Fig. 5).

Patient 2: A 72-year-old woman underwent a Whipple operation for pancreatic cancer. Despite 18 days of nasogastric decompression and nasojejunal feeds, her nausea and vomiting persisted. An upper GI series confirmed

GOO. Bilateral esophageal FCSEMSs were secured as described above (Fig. 6). An oral diet was resumed within 3 days, and the stents were removed in 6 weeks.

Five patients (3 female, 2 male) with a median age of 72 years (range, 70–81 years) underwent placement of bilateral FCSEMSs to treat benign GOO after Whipple operations from June 2014 to July 2016, under general anesthesia (given the risk of aspiration from GOO). The median days after surgery when the stents were placed was 23 days (range, 14-60 days). Most commonly, an 18-mm esophageal FCSEMS was used; however, in 1 patient with a very tight stricture, a 10-mm biliary stent was placed in the afferent limb. Technical and clinical success was 100%. The patients resumed solid food by a median of 3 days. The median stent dwell time was 40 days (range, 30-76 days). Two patients experienced asymptomatic proximal stent migration, which was found at endoscopy being performed to remove the stents (sutures were intact on the stents but were broken through the gastric wall). No distal migrations were seen (Table 1). The median procedure time was 80 minutes. There were no adverse events and no recurrent obstructions during a median follow-up time of 56 weeks (Table 2).

Temporary placement of bilateral FCSEMSs can help patients return to an oral diet quickly in the event of post-Whipple benign GOO. Stent migration can be prevented by suturing stents to the gastric wall to prevent proximal migration, to each other, and maybe to the gastrostomy tube to prevent distal migration. Although the

TABLE 1. Preprocedural and procedural data of patients undergoing placement of bilateral fully covered self-expandable metal stents (FCSEMSs) for gastric outlet obstruction after Whipple operation (n=5)

Patient	Duration between Whipple and SEMS (days)	Fully covered SEMS used	Stent dwell time (days)	Migration
1	60	10 mm × 10 cm biliary, 18 mm × 6 cm esophageal	64	No
2	16	18 mm × 6 cm esophageal, 18 mm × 6 cm esophageal	40	No
3	23	23 mm × 10 cm esophageal, 23 mm × 10 cm esophageal	30	Proximally (stomach)
4	12	18 mm × 6 cm esophageal, 18 mm × 10 cm esophageal	76	No
5	28	18 mm × 6 cm esophageal, 18 mm × 10 cm esophageal	40	Proximally (stomach)
Median	23		40	

TABLE 2. Results in patients undergoing placement of bilateral fully covered self-expandable metal stents (FCSEMSs) for gastric outlet obstruction after Whipple operation (n=5)

Patient	Technical success	Resumption of solid food (days after SEMS)	Adverse events	Recurrent obstruction	Follow-up (weeks)
1	Yes	2	None	None	4
2	Yes	3	None	None	56
3	Yes	2	None	None	70
4	Yes	3	None	None	38
5	Yes	3	None	None	100
Median		3			56

suture to the gastrostomy is the most reliable suture to prevent distal migration, the suture securing the 2 SEMSs to each other in a V configuration remained intact at endoscopy for removal in all cases, and as such may be sufficient to prevent downstream migration. Recurrence of obstruction seems to be uncommon. A prospective study comparing nasogastric plus nasojejunal tube versus metal stents would be useful.

DISCLOSURE

Dr Irani is a consultant for Boston Scientific and Gore Medical. The other author disclosed no financial relationships relevant to this publication.

Abbreviations: FCSEMS, fully covered self-expandable metal stent; GOO, gastric outlet obstruction; SEMS, self-expandable metal stent.

REFERENCES

1. Gerritsen A, Wennink RA, Busch OR, et al. Feeding patients with preoperative symptoms of gastric outlet obstruction after pancreatoduodenectomy: early oral or routine nasojejunal tube feeding? *Pancreatology* 2015;15:548-53.
2. Kwong WT, Fehmi SM, Lowy AM, et al. Enteral stenting for gastric outlet obstruction and afferent limb syndrome following pancreaticoduodenectomy. *Ann Gastroenterol* 2014;27:413-7.
3. Cherian PT, Cherian S, Singh P. Long-term follow-up of patients with gastric outlet obstruction related to peptic ulcer disease treated with endoscopic balloon dilatation and drug therapy. *Gastrointest Endosc* 2007;66:491-7.
4. Irani S, Kozarek RA. Gastrointestinal dilation and stent placement. In: Podolsky DK, Camilleri M, Fitz JG, et al, editors. *Yamada's textbook of gastroenterology*. Sixth ed. West Sussex, UK: John Wiley & Sons Ltd; 2016. p. 2612-26.
5. Kochhar R, Sethy PK, Nagi B, et al. Endoscopic balloon dilatation of benign gastric outlet obstruction. *J Gastroenterol Hepatol* 2004;19:418-22.

Digestive Disease Institute, Virginia Mason Medical Center, Seattle, Washington, USA.

Copyright © 2017 American Society for Gastrointestinal Endoscopy. Published by Elsevier Inc. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

<http://dx.doi.org/10.1016/j.vgie.2017.08.003>
