

IMAGE | ENDOSCOPY

# Novel Treatment of Malignant Gastric Outlet Obstruction With a Stent-Within-Stent Approach Secured With Apollo OverStitch™

Shawn Kaye, BS<sup>1</sup>, Katherine J. Kim, MHS<sup>1</sup>, Neha Chaurasia, BS<sup>2</sup>, Kenneth Chang, MD<sup>3</sup>, and Jason Samarasena, MD<sup>3</sup>

<sup>1</sup>School of Medicine, University of California, Irvine, Orange, CA

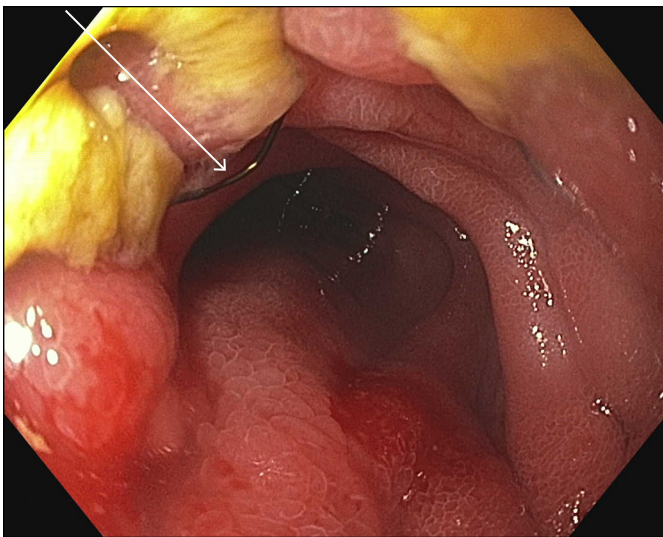
<sup>2</sup>Carnegie Mellon University, Pittsburgh, PA

<sup>3</sup>Division of Gastroenterology and Hepatology, Department of Medicine, University of California-Irvine, Orange, CA

## CASE REPORT

A 56-year-old male with metastatic unresectable cholangiocarcinoma presented to our clinic with worsening nausea and vomiting. Prior to presentation, the patient underwent placement of a palliative metal biliary stent and an uncovered self-expandable metal stents (UCSEMS) through the pylorus and duodenum for gastric outlet obstruction (GOO) from tumor burden. However, the patient subsequently developed a repeat duodenal obstruction from tissue ingrowth and had a second UCSEMS deployed within the first stent 6 months after the original stent placement.

At our evaluation, 4 months after the second stent placement, another stricture from further tissue ingrowth was noted (Figures 1 and 2). Gastrojejunostomy tube placement was offered to the patient, but he declined. The decision was made to place a third stent for symptom palliation. On endoscopy, a tight stricture was noted within the existing stents. Under endoscopic and fluoroscopic guidance, a wire was placed distally into the duodenum, and a Tae-Woong 100 x 18-mm fully covered



**Figure 1.** Endoscopic image of the duodenum before our intervention. The arrow shows the small visible portion of the original stents. The remainder of these stents are buried under tissue ingrowth.



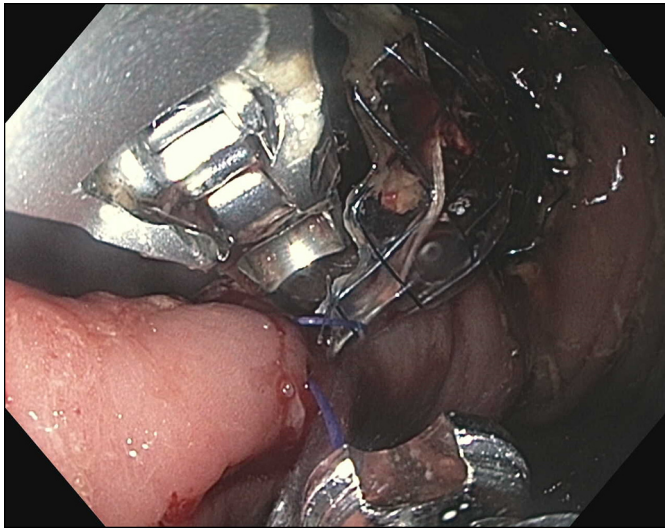
**Figure 2.** CT image of the abdomen showing occlusion of the original stents at the gastric outlet.

ACG Case Rep J 2016;3(4):e130. doi:10.14309/crj.2016.103. Published online: September 28, 2016.

Correspondence: Shawn Kaye, School of Medicine, University of California, Irvine, Orange, CA 92868 (skaye@uci.edu).



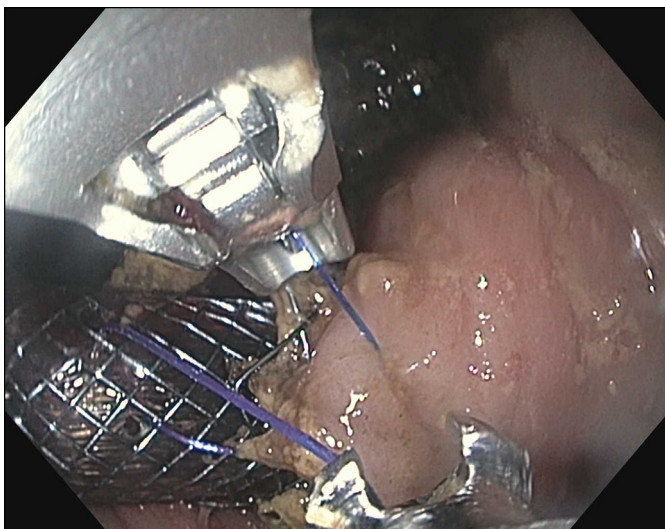
Copyright: © 2016 Kaye et al. This work is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License. To view a copy of this license, visit <http://creativecommons.org/licenses/by-nc-nd/4.0>.



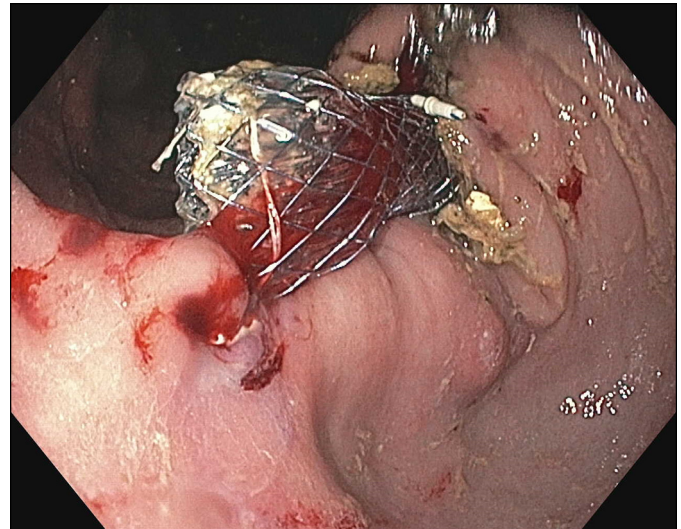
**Figure 3.** Endoscopic image of the proximal edge of the FCSEMS being sutured into antral gastric mucosa.

self-expandable metal stent (FCSEMS) was placed within the previous stents making sure not to overlap it with the intact biliary stent. Using Apollo OverStitch™, the proximal edge of the stent was sutured into the antral gastric mucosa, and the lateral side of the stent was sutured into the proximal edge of the original stents (Figures 3-5). The patient tolerated the procedure well, and his symptoms of nausea and reflux resolved. Follow-up at 6 months revealed continued relief of obstructive symptoms.

UCSEMS are commonly used for palliative treatment of malignant tumors resulting in GOO. Tumor ingrowth is a frequent complication leading to stent restenosis and treatment failure requiring the need for additional intervention.



**Figure 4.** Endoscopic image of the lateral side of the FCSEMS being sutured into the proximal edge of the original stenting.



**Figure 5.** Endoscopic image of the FCSEMS secured within preexisting stents with Apollo OverStitch™, resulting in decreased GOO symptoms.

Placement of a FCSEMS within an UCSEMS has been reported with successful alleviation of reobstruction caused by stent ingrowth.<sup>1</sup> While this technique can provide relief, it can be further complicated by migration of the fully covered stent.<sup>2</sup> Placement of clips at the proximal ends of secondary stents has been shown to decrease stent migration rates.<sup>3</sup> To our knowledge, no other stent-in-stent securing methods have been evaluated.

The Apollo OverStitch™ has been shown to be effective in a variety of clinical applications. A study described using the OverStitch™ for perforation closures, fistula/leak closures, endoscopic mucosal resection/submucosal dissection closures, bariatric and obesity surgery, and stent fixation.<sup>4</sup> Several studies have demonstrated endoscopic suturing to be an efficacious means to reduce stent migration rates.<sup>5,6</sup> Once the technique for using OverStitch™ is learned, using the device for stent-within-stent fixation or primary stent anchoring is one of its easiest applications, and stent-fixation is not overly time consuming. With the growing utilization of the Apollo OverStitch™ for a wide spectrum of interventions, novel use of the tool for stent fixation, particularly stent-within stent fixation, is promising.

## DISCLOSURES

Author contributions: S. Kaye, KJ Kim, and N. Chaurasia drafted the case report and edited the manuscript. K. Chang reviewed the manuscript. J. Samarasena reviewed the manuscript and is the article guarantor.

Financial disclosures: None to report.

Informed consent was obtained for this case report.

Received October 30, 2015; Accepted March 16, 2016

## REFERENCES

1. Adler DG, Baron TH. Endoscopic palliation of malignant gastric outlet obstruction using selfexpanding metal stents: Experience in 36 patients. *Am J Gastroenterol.* 2002;97(1):72-8.
2. Kim YW, Choi CW, Kang DH, et al. A double-layered (comvi) self-expandable metal stent for malignant gastroduodenal obstruction: A prospective multicenter study. *Dig Dis Sci.* 2011;56(7):2030-6.
3. Kim CG, Choi IJ, Lee JY, et al. Outcomes of second selfexpandable metallic stent insertion for malignant gastric outlet obstruction. *Surg Endosc.* 2014;28(1):281-8.
4. Stavropoulos SN, Modayil R, Friedel D. Current applications of endoscopic suturing. *World J Gastrointest Endosc.* 2015;7(8):777-89.
5. Sharaiha RZ, Kumta NA, Defilippis EM, et al. A large multicenter experience with endoscopic suturing for management of gastrointestinal defects and stent anchorage in 122 patients: A retrospective review. *J Clin Gastroenterol.* 2016;50(5):388-92.
6. Fujii LL, Bonin EA, Baron TH, Gostout CJ, Wong Kee Song LM. Utility of an endoscopic suturing system for prevention of covered luminal stent migration in the upper GI tract. *Gastrointest Endosc.* 2013;78(5):787-93.