



A technique for leaving long-term indwelling double-pigtail plastic stents after resolution of pancreatic fluid collections

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Symptomatic pancreatic fluid collections (PFCs) are commonly treated with EUS-guided transmural placement of a lumen-apposing metal stent (LAMS).¹⁻³ A subset of patients develop PFC recurrence after removal of a LAMS, particularly those with disconnected pancreatic duct (DPD).⁴ While percutaneous drainage and surgical approaches are suitable options for DPD, a step-up approach starting with minimally invasive endoscopic options is preferred.⁵ Several studies have shown that placement of long-term indwelling plastic stents (LTISs) after PFC resolution in patients with confirmed or suspected DPD may prevent the risk of PFC recurrence with few adverse events (eg, infection, bleeding, perforation, and stent-induced ulcer formation).^{4,6-9} However, exchanging a LAMS with 1 or 2 double-pigtail plastic stents (DPPSs) after PFC resolution can be technically challenging because of collapse of the cyst cavity.¹⁰ As a result, technical success of this approach has been suboptimal (approximately 70%).¹⁰⁻¹³ In the following cases, we describe a novel endoscopic method for LTIS placement after PFC resolution with a LAMS.

- Case 1 (Video 1, available online at www.videogie.org): 23-year-old man with gallstone necrotizing pancreatitis complicated by a recurrent 13- × 9-cm PFC after previously successful transmural drainage, raising concern for DPD
- Case 2 (Video 1): 46-year-old man with post-ERCP necrotizing pancreatitis complicated by a 10- × 12-cm PFC and suspected DPD
- Case 3 (Figs. 1-6): 28-year-old man with alcohol-induced pancreatitis complicated by a 4.2- × 4.3-cm PFC with suspected DPD

Abbreviations: DPD, disconnected pancreatic duct; DPPS, double-pigtail plastic stent; LAMS, lumen-apposing metal stent; LTIS, long-term indwelling plastic stent; PFC, pancreatic fluid collection.

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In all cases, initial transmural drainage was established with the use of a 15- × 10-mm LAMS. One to two co-axial 10F × 3-cm DPPS were placed within the LAMS at index endoscopic cystogastrostomy to increase drainage, prevent adverse events, and facilitate long-term transmural drainage after PFC resolution due to suspected DPD. All patients underwent repeat cross-sectional imaging within 1 to 3 weeks before LAMS removal, which confirmed the interval decrease in the size of the PFC in cases 1 and 2, and complete PFC resolution in case 3.

On a follow-up upper endoscopy with a therapeutic upper endoscope (Video 1), the cyst cavity was thoroughly examined to ensure PFC resolution, healthy cavity walls, and no evidence of necrotic material. Once a decision was made to leave LTIS, rat tooth forceps were used to grasp the proximal flange of the LAMS (Fig. 1). While holding the rat tooth firmly in the working channel of the scope, the LAMS was then carefully pulled out of the cystogastrostomy tract into the gastric lumen (Fig. 2). The LAMS was further pulled with the rat tooth forceps by applying scope tip manipulation using up/down, right/left angulation knobs and rotational body movements until the LAMS was entirely pulled around the external plastic pigtail(s) (Fig. 3). The direction of the knobs' movement and body orientation differed in each case based on the location of the LAMS.

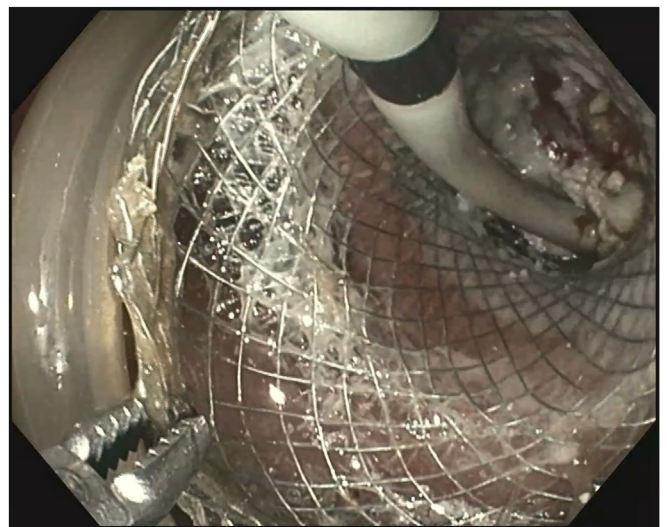


Figure 1. Removal of the lumen-apposing metal stent with rat tooth forceps around a previously placed double-pigtail plastic stent.



Figure 2. The lumen-apposing metal stent is completely pulled out of the cystogastrostomy tract.

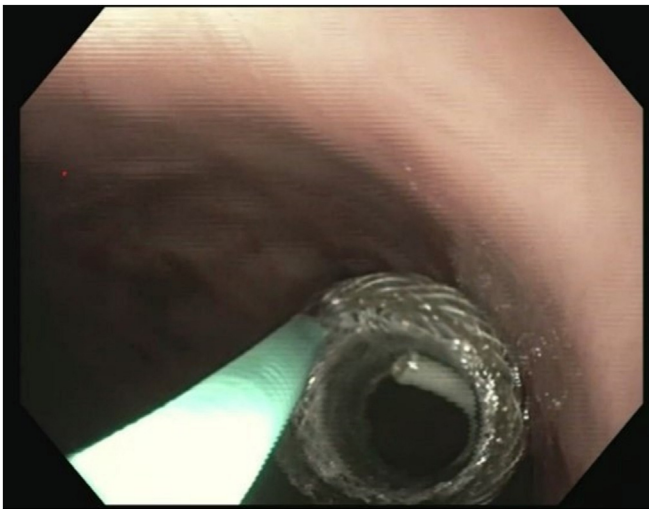


Figure 3. The lumen-apposing metal stent is entirely pulled around the external plastic pigtail(s) into the gastric lumen.

Once the LAMS was completely within the gastric lumen, it was removed (Fig. 4). Lastly, the cystogastrostomy site was inspected to confirm adequate positioning of the DPPS endoscopically (Fig. 5) and/or fluoroscopically (Fig. 6). The mean time spent applying this technique was 3.1 minutes (range, 1.7-6.5). There were no procedure adverse events or DPPS migration during this maneuver. Technical success was 100% in the cases recorded.

Placement of coaxial DPPS within a LAMS appears to reduce the risk of LAMS-related adverse events and stent occlusion.¹⁴ Initially placed coaxial DPPS can also serve as long-term stents by using the technique described in this report. To the best of our knowledge, this approach has not been previously reported in the literature and has the potential of increasing technical success when exchanging a LAMS for DPPS. In addition, this technique is simple and takes only 3 minutes, which may shorten



Figure 4. The lumen-apposing metal stent is removed from the patient.

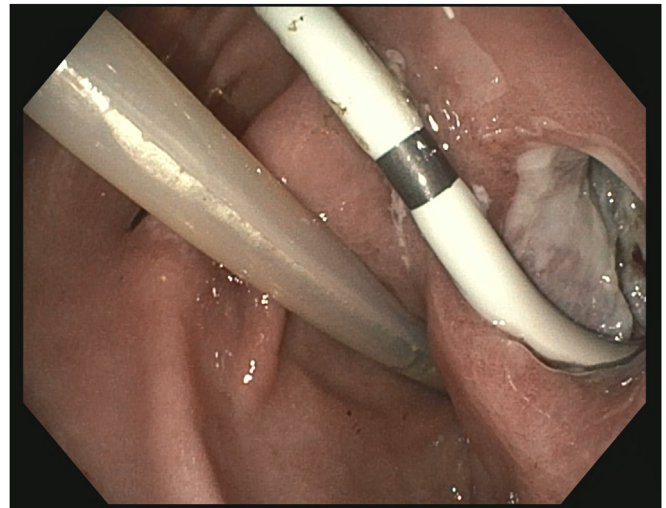


Figure 5. The cystogastrostomy site is inspected after removal of the lumen-apposing metal stent to confirm the position of the double-pigtail plastic stent(s).

the duration of the traditional approach of removing the LAMS and placing a new DPPS. Finally, this method may be more cost effective and environmentally friendly than the traditional approach for LTIS placement, as it avoids the costs of placing new plastic stents and discarding plastic material.

To conclude, the method described herein can be helpful and should be considered when a decision is made to leave an LTIS in place in clinical practice. Future studies are needed to evaluate the technical feasibility of this method with variable numbers and sizes of plastic stents.

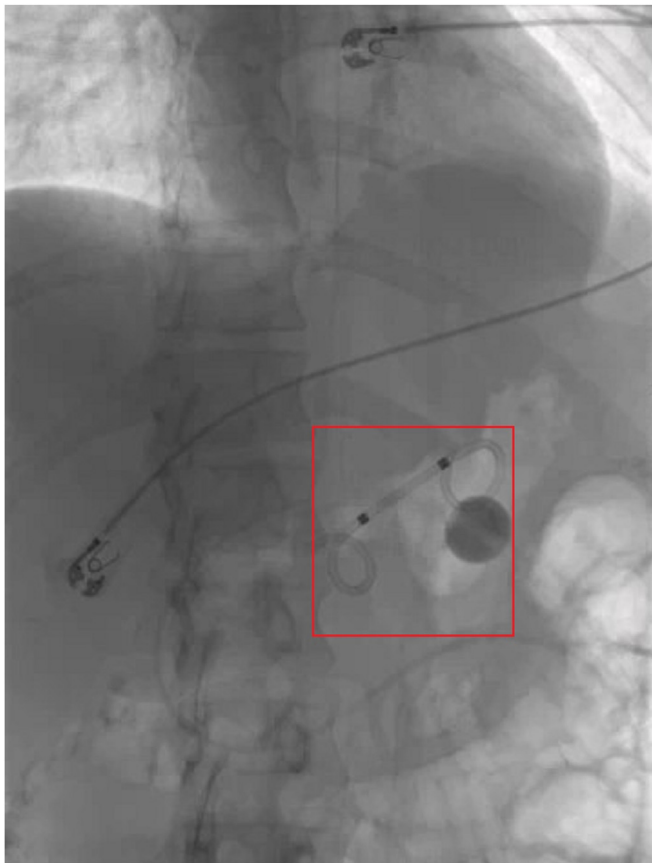


Figure 6. The position of the double-pigtail plastic stent(s) is confirmed on fluoroscopy images (*red square*) after removal of the lumen-apposing metal stent.

DISCLOSURE

Dr Machicado has served as a speaker for Mauna Kea Technologies, Paris, France. The other authors disclosed no financial relationships relevant to this publication.

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