Novel Uses of Lumen-Apposing Metal Stents

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KEYWORDS

• LAMS • Endoscopic gastrojejunostomy • Endoscopic

KEY POINTS

- The lumen apposing metal stent (LAMS) can be used in any scenario that would benefit from creation of an anastomosis, such as drainage, relief from gastric outlet obstruction, or creating a fistulous tract for further endoscopic intervention.
- These novel uses of the LAMS provide a minimally invasive alternative for various procedures for patients, forgoing the risk of surgery, which decreases hospital stay and improves quality of life.
- Common limitations of the LAMS include migration, intolerance of the stents, and inability to approximate the 2 desired apposed lumens.
- In the future, the creation of longer, as well as wider, stents may facilitate the use of the LAMS for a wider range of procedures.

INTRODUCTION

The lumen apposing metal stent (LAMS) has been well described for drainage of pancreatic fluid collections.[1] The unique dog bone, or yoyo, design maintains a stable anastomosis to allow for direct apposition of the 2 separate lumens. By creating a stable conduit using a fully covered stent, a LAMS decreases the risk of leakage of enteric contents. The large stent diameter gives an enhanced access point for drainage, decreasing the risk of obstruction with intestinal material. In addition, an endoscope can enter the bridged lumen through the stent to allow for endoscopic manipulation. Other well-described indications for LAMS include bile duct drainage for choledochoduodenostomy and endoscopic gallbladder drainage.[2,3] In addition to the tightly sealed apposition between the 2 surfaces, the fully covered design of the stent allows removal when the fistulous tract is no longer needed.

Disclosure: Dr M. Kahaleh receives grant support from Boston Scientific. Drs M. Saumoy and C. Yarber have no disclosures.

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Gastrointest Endoscopy Clin N Am 28 (2018) 197–205
https://doi.org/10.1016/j.giec.2017.11.007
giendo.theclinics.com

More recently, novel indications for the LAMS have been continuously developed by taking advantage of the stent shape. For example, in patients with altered anatomy such as Billroth II or Roux-en-Y gastric bypass, fistula creation can facilitate other therapeutic procedures. This is with creation of a jejunojejunostomy or gastrogastric fistula as part of the endoscopic ultrasound (EUS)-directed transgastric endoscopic retrograde cholangiopancreatography (ERCP) (EDGE). A LAMS can also be used to manage surgical complications, such as enlargement of a surgical anastomosis or drainage of a surgical collection, such as biloma. Additionally, endoscopic gastrojejunostomy (GJ) has been developed for management of gastric outlet obstruction (GOO). Finally, a LAMS can be used for drainage of any other parenteral abscess cavity. These novel indications for a LAMS further demonstrate that the applications for this stent are potentially limitless in situations that require the creation of a stable fistulous tract.

ALTERNATIVE DRAINAGE ACCESS

The use of LAMS for EUS-guided abscess drainage emerged as an alternative to other minimally invasive, percutaneous techniques. Traditionally, drainage of pancreatic fluid collections was performed transgastrically. However, creation of a fistula for drainage into an infected cavity can be performed in any part of the accessible intestinal tract. Previously, computed tomography–guided and ultrasound–guided drainage of abscesses have been the most clinically accepted methods for drainage. However, percutaneous catheters have limitations. For example, with percutaneous drainage, passing through other organs is often unavoidable. When the percutaneous drain is in place, patients complain of the morbidity associated with having an external drain, which can become dislodged and require additional procedures.[4,5] EUS-guided drainage does not have these limitations, and abscesses often lie in close proximity to the gastrointestinal (GI) tract. Therefore, endoscopically preformed drainage has become an exciting alternative.

Rodrigues-Pinto and Baron[6] demonstrated a novel use of a EUS-guided LAMS for drainage of an infected aortic aneurysmal sac after endovascular stent graft placement for thoracoabdominal aortic aneurysm. Given the location, the abscess was not accessible percutaneously. After deployment, the patient improved with resolution of the abscess after 48 hours. In addition to an alternative site for abscess drainage from the upper GI tract, Poincloux and colleagues[4] demonstrated the use of the LAMS for EUS-guided drainage of pelvic abscesses. Under fluoroscopic and EUS guidance, fistula was created between the colon or rectum and the cavity of the abscess. In their case series of 37 subjects, only 4 underwent drainage with a LAMS. Two subjects had successful EUS-guided drainage with a LAMS, whereas the other 2 subjects experienced complications. One subject had diverticulitis complicated by an abscess and, after undergoing a transcolonic LAMS procedure, the subject developed pain, sepsis, and subsequently required surgical exploration that revealed perforation of the infected diverticulum. That subject had multiple risk factors (long-term steroids and chronic inflammatory disease) that may have led to this complication. The second subject who underwent transrectal abscess drainage with a LAMS secondary to an abscess related to uterine cancer had recurrence of the abscess at 3 months. Though current small case series suggest that drainage of diverticular abscesses may have lower treatment success compared with other abscess causes, additional improvements in methods can further improve the clinical success rates.[7,8]

Despite these cases of a small number of subjects, EUS-guided drainage of thoracic or pelvic abscess can be a potential alternative to surgical and percutaneous