VIDEO CASE REPORT

EUS-guided enteroenterostomy for nonoperative management of afferent loop syndrome after Whipple resection

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Afferent limb syndrome is a relatively common adverse event after Whipple pancreatoduodenectomy, occurring in approximately 13% of cases.[1] It may result from disease recurrence, angulation in the creation of the afferent limb, or the development of postoperative adhesions. The use of lumen-apposing metal stents (LAMSs) to decompress an obstructed afferent limb has been described in a handful of case reports.

Relatively large case series examining the creation of an enteroenterostomy with LAMSs have demonstrated an excellent technical success rate of over 90%. The most frequent adverse event, stent migration, occurs in fewer than 5% of patients, and lumen separation occurs in <1%.[2] It is important to note, however, that there is no level 1 evidence to demonstrate comparable or superior outcomes to surgical bypass.

CASE REPORT

A 74-year-old man, with a background of Whipple resection for adenocarcinoma 10 months prior and recurrent cholangitis previously complicated by a liver abscess resulting from afferent limb obstruction, presented with severe cholangitis. He was febrile on admission, with right upper-quadrant tenderness on examination and deranged liver function. His blood cultures were positive for *Escherichia coli*.

A CT scan demonstrated intrahepatic duct dilatation (Fig. 1), a dilated small-bowel afferent limb, with the level of obstruction in the proximal afferent limb without clear evidence of malignant recurrence (Fig. 2).

At push enteroscopy, the anastomosis was seen, and the afferent limb was identified and examined. Distal to this, the point of obstruction was identified, and there was no evidence of malignant recurrence. Beyond this point, the afferent limb was dilated and contained a large amount of bilious fluid.

It was thought that the stricture was unlikely to have a prolonged benefit from dilatation because of the acute angulation, and endoluminal stent placement was avoided over a concern about benign tissue ingrowth, given that malignant recurrence had not been demonstrated. Therefore, a decision was made to proceed with EUS-guided enteroenterostomy with a diathermy-tipped 15-mm LAMS (Fig. 3).

Measurements were first taken to assess suitability for the procedure. Under EUS control, a 19-gauge needle was punctured through the afferent limb, and aspiration of bilious fluid confirmed luminal entry. Saline solution was injected to further distend the small bowel. A 0.035-inch guidewire was then advanced into the lumen.

Figure 1. CT view showing mildly dilated intrahepatic ducts secondary to obstruction of afferent limb.

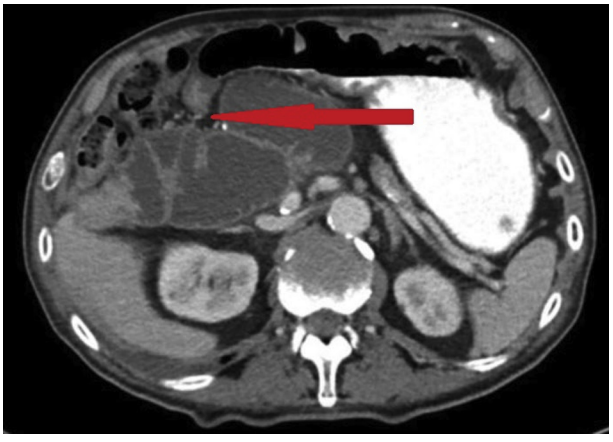

Figure 2. CT view showing dilated proximal afferent limb presenting with cholangitis. No overt recurrence of malignancy was identified on imaging.

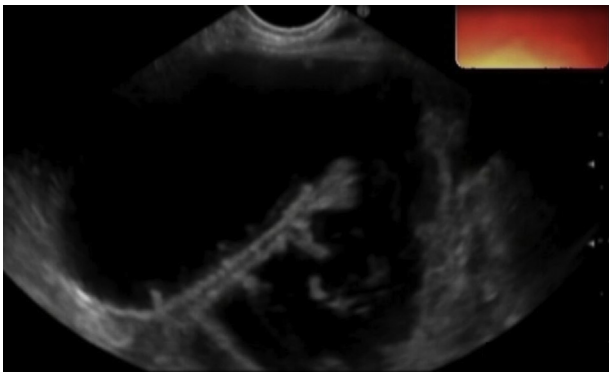

Figure 3. EUS view of the dilated afferent limb.

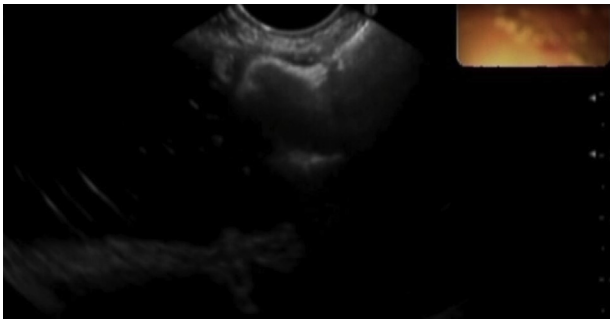

Figure 4. EUS view of the deployed distal phalange of the lumen-apposing metal stent. The stent catheter is retracted after deployment to create an oval shape on the EUS image, after which the proximal phalange is deployed.

After the lumen was tented with the catheter, diathermy was connected, and the lumen was punctured through. Under EUS control, the distal phalange was then deployed (Fig. 4). The stent catheter was then retracted with the aim of creating an oval shape. The stent was then deployed completely within the endoscope channel. To release the stent, the catheter was advanced, and the endoscope was retracted. The stent was then completely free from the endoscope channel.[3]

A large amount of bilious fluid could be seen draining through the stent. A 12- to 15-mm dilating balloon was then used to sequentially dilate the stent lumen. This allowed an ultrathin gastroscope to traverse the stent, and the pancreatojejunostomy was identified. A postprocedure CT demonstrated pneumobilia (Fig. 5) and also confirmed adequate stent position and patency (Fig. 6).

EUS-guided enteral access was first described over a decade ago in animal models with the use of 7F plastic stents in an attempt to establish a minimally invasive technique to manage malignant upper-GI obstruction.[4] However, because of a concern about lumen separation and peritoneal leakage, the technique was not widely adopted. More recently, LAMSs have been developed and

Figure 5. CT view after EUS-guided decompression of the afferent limb, demonstrating the presence of pneumobilia.

Figure 6. Postprocedural CT view demonstrating appropriate positioning and patency of the lumen-apposing metal stent.

have been used for a wide range of pancreatobiliary indications.[2]

CONCLUSION

EUS-guided placement of LAMSs potentially allows for a minimally invasive alternative to surgical bypass for upper-GI obstruction. Current evidence, although limited, supports the safety and efficacy of this intervention; however, higher-quality studies are needed to define optimal indications and refinement of the procedural technique (Video 1, available online at www.VideoGIE.org).

DISCLOSURE

All authors disclosed no financial relationships relevant to this publication.

Abbreviation: LAMS, lumen-apposing metal stent.

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