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Editorial

Endoscopic ultrasound-guided pancreatic drainage vs device-assisted endoscopic retrograde pancreatography in surgically altered anatomy: Friends rather than competitors

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Most papers on the endoscopic approach to biliopancreatic diseases in surgically altered anatomy are dedicated to biliary access. Pancreatic duct endotherapy has always been considered more challenging than the biliary one, especially in altered anatomy. In patients with previous pancreaticoduodenectomy, the pancreaticojejunal (PJ) anastomosis is located deep in the afferent limb beyond the hepaticojejunostomy, which makes endoscope insertion to the anastomosis site harder. Moreover, the pancreatic duct access is often complicated by complete obstruction of PJ anastomosis and/or surrounding inflammation due to pancreatitis. The Roux-en-Y gastric bypass (RYGB) reconstruction represents very specific challenges: exclusion of the remnant stomach and the duodenum from conventional endoscopic access, long intestinal limbs and a virgin papilla.[1] Indications for pancreatic access include PJ anastomosis stricture, intraductal stones due to obstruction or chronic pancreatitis, and pancreatic fistulas or complications due to pancreatitis.

With the development of double-balloon enteroscopy, the access to the biliopancreatic ducts came back within endoscopic reach, and made peroral endoscopic retrograde cholangiopancreatography (ERCP) feasible. The use of double-balloon enteroscopy to successfully perform ERCP (DB-ERP) in patients with RYGB was first described in 2007, after initial DB-ERCP success in patients with other types of surgically altered anatomy. Also other types of device-assisted enteroscopy were shown to be successful in performing ERCP in patients with RYGB: both single-balloon enteroscopy and spiral enteroscopy are equally effective for ERCP in patients with surgically altered anatomy, and RYGB in particular.[2]

The respective roles for surgical and percutaneous approaches are limited in pancreatic diseases compared to the biliary tract, in which these alternatives should be considered if appropriate. Since the first publication of endoscopic ultrasound (EUS)-guided access to the pancreatic duct (EUS-PD) in 2002,[3] EUS is now applied in a variety of indications in which conventional ERCP fails, but is still considered as the most complicated ductal access due to the fibrotic parenchyma, the small size in diameter and length of the main pancreatic duct (MPD), and the limited devices available for these procedures.[4,5] Indeed there are no specific needles, guidewires, dilatation tools and stents designed for this approach. Clinical outcomes of EUS-PD in patients with surgically altered anatomy have also been reported; a recent multicenter retrospective study described the effectiveness of EUS-PD not only as an alternative after failed device-assisted endoscope but also as a first-line interventional modality.[6] As all of the above described endoscopic techniques are challenging, they are usually performed in high-volume tertiary referral centers. Moreover, the choice of one technique over another often relies on local expertise instead of comparative studies. Due to the relatively low numbers of procedures performed annually, the broad spectrum of surgically altered anatomy and the complex nature of the endoscopic procedures, prospective head-to-head comparisons of these techniques are not available.[1,7] Recently, novel mechanical and electrocautery dilation devices and dedicated plastic stent for pancreatic duct drainage under EUS-guidance have been made available, making EUS-guided access easier to perform.[8]

In this issue of DEN, Kogure *et al.*[9] report on the clinical outcomes of combined device-assisted enteroscopy and EUS-guided interventions for the management of pancreatic diseases in 40 patients with altered anatomy. Along with salvage procedures including three DB-ERP and seven EUS-PD, the overall technical success rates of DB-ERP and EUS-PD were 70.7% (29/41) and 100% (9/9), respectively. Clinical success was achieved in 85.0% (34/40) by combination of DB-ERP and EUS-PD; successful drainage for PJ anastomosis stricture, complete removal of pancreatic duct stones, and resolution of fistula were achieved in 90.6%, 80.0%, and 71.4%, respectively. Adverse event rates were 12.2% (5/41; one perforation, and four pancreatitis) in DB-ERP and 55.6% (5/9; three pancreatic leakage, and two abdominal pain) in EUS-PD. These results confirm previous

reports showing higher success rates for EUS-guided drainage, and lower adverse event rates for device-assisted ERCP.[8] Indeed Chen *et al*. reported the superiority of EUS-guided pancreatic intervention over enteroscopy-assisted procedures; however, the technical success rate of enteroscopy-assisted treatment was surprisingly as low as 20% while the success rate of EUS-PD was over 90%.

The study has the usual limitations due to its retrospective design with the possible bias in inclusion and outcomes, the small sample size, the heterogeneity of pancreatic diseases and altered anatomies. There were few inclusions of patients with Roux-en-Y limbs (n = 3) and most had undergone gastrointestinal reconstruction after pancreaticoduodenectomy with Billroth-II, so that conclusions of the study may not be applicable to long-limb Roux-en-Y patients. A major interest of this article seems to be the combination of both techniques performed by experts in the same center. Rather than to oppose the two techniques performed by endoscopists of variable skills, the authors suggest achievement of higher success rates by a combination of the two approaches (>85%). This view should indeed prevail in pancreatic expert centers in which the expertise in both types of procedures should be maintained and developed.

The choice therefore depends on the postoperative reconstruction, on the local endoscope availability, and on endoscopic expertise. Due to the complexity of both techniques and the relatively low number of procedures, patients with altered anatomy are best referred to high-volume centers.[1] If expertise for both methods are available, as long as there are no objective comparative studies available, it seems wise to start with the least invasive and safest technique, which means that the transluminal approach should be considered as a first-line therapy, whereas the transmural approach remains a second-line therapy in patients with altered anatomy. In patients with a long-limb Roux-en-Y gastric bypass, a new minimally invasive and fully endoscopic approach using EUS directed transgastric ERP (EDGE)[10] might however be considered as a first-line therapy, especially when diagnostic procedures such as EUS and EUS-fine needle aspiration biopsy (FNAB) are planned (not feasible with device-assisted enteroscopy), or when repetitive endoscopic procedures are foreseen (stenting in chronic pancreatitis for example).

In conclusion, endoscopic treatment of pancreatic diseases in surgically altered anatomy can be highly successful by a combination of device-assisted ERP and EUS-guided interventions. These approaches should therefore not be considered as competitors, but rather as partners. Precise algorithms to choose for the first-line technique are still awaited. They will depend on technical improvements in specific devices to help getting access to the pancreatic duct and achieve optimal drainage, and on multicenter and randomized studies comparing outcomes between device-assisted enteroscopy-ERP, EUS-PD, and the more recent EDGE approaches, mainly in Roux-en-Y gastric bypass patients in whom access of the pancreatic duct remains the most challenging.

CONFLICT OF INTEREST

AUTHOR D.P IS a Deputy Editor-in-Chief of *Digestive Endoscopy*.

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