

Is a Guidewire a Magic Wand? Is a Knife the Final Weapon?

Biliary cannulation is the first, but sometimes the most difficult step in endoscopic retrograde cholangiopancreatography (ERCP). The ideal cannulation method needs both to be highly successful in a short period and to avoid post-ERCP pancreatitis (PEP). Various techniques have been reported for both initial and salvage attempts for difficult cannulation in ERCP, but wire-guided cannulation (WGC) is currently the standard method for biliary cannulation.

Several randomized controlled trials (RCTs) showed that WGC is more effective and safer than conventional contrast-guided cannulation (CGC).^[1,2] Al Hatlani *et al.* also reported safety and efficacy of WGC in a large cohort of pediatric ERCP.^[3] However, comparison between different biliary cannulation techniques is difficult because each endoscopist has his or her own preference and even an RCT can be biased by this preference. One of the problems in most RCTs of WGC is the involvement of only one or two endoscopists. On the contrary, our RCT, BIDMEN study, included multiple endoscopists in 15 Japanese centers. This study was conducted with a 2-by-2 factorial design evaluating both WGC versus CGC and a conventional catheter versus a sphincterotome,^[4] which revealed no significant differences in successful cannulation rate and the incidence of PEP. WGC is superior to CGC only in terms of time to cannulation and total procedure time. Therefore, we believe that there is no “one-size-fits-all” method for biliary cannulation and “guidewire is a magic wand” only for those endoscopists who are good at WGC.^[5-7]

In another article in this issue of the Journal, Kim *et al.* report a salvage technique for difficult biliary cannulation.^[8] They evaluated sequential biliary cannulation approach after guidewire (GW) placement in the pancreatic duct. Their approach is double guidewire technique (DGT), followed by transpancreatic precut sphincterotomy (TPS) with a conventional sphincterotome. In DGT, a second GW is used for biliary cannulation, whereas the first GW is left in the pancreatic duct, and this technique is widely used as a salvage technique prior to precutting. There are some kinds

of precutting techniques: Free hand, infundibulotomy, TPS, precut over the pancreatic stent, and so on. In their study, the success rate of biliary cannulation was acceptable (85%), but the incidence of PEP was high (over 20%).

PEP is still an unsolved problem in ERCP despite numerous studies to prevent or reduce PEP have been conducted, using pharmacological prophylaxis and pancreatic stent placement. The pathogenesis of PEP is various: Inadequate pancreatic drainage due to the trauma from cannulation or other interventions to the ampulla, or irritation by contrast injection or GW insertion into the pancreatic duct. Contrast injection to the pancreatic duct is a well-known risk factor of PEP, but our recent analysis showed that even a GW insertion alone can cause PEP, whereas PEP rate is quite low in cases with successful direct biliary cannulation.^[7] We conducted an RCT to evaluate DGT in cases with unexpected GW insertion into the pancreatic duct.^[9] In this study, we compared conversion to DGT with repeated WGC, and there were no significant differences in the success rate of biliary cannulation and the incidence of PEP. However, PEP rate was significantly lower in cases with direct biliary cannulation (4.5%) than that in DGT (20%) and repeated WGC (17%). Thus, this study confirmed that even a GW insertion without contrast injection can significantly increase the rate of PEP. The limitation of this study is that pancreatic stent placement was rarely performed even after DGT. A Japanese RCT by Ito *et al.* demonstrated that the use of pancreatic stent was associated with a low rate of PEP after DGT.^[10] Therefore, pancreatic stent placement should always be considered in cases with pancreatic GW insertion or contrast injection.

Needle–knife precut papillotomy (NK), which is a well-known salvage technique for difficult biliary cannulation, showed a lower incidence of PEP than DGT followed by TPS,^[8] but its success rate of biliary cannulation was also lower. NK can be technically demanding and only the experts can achieve biliary cannulation without serious complications. This is also true with TPS, and both NK and TPS cannot be the standard technique in many centers. Therefore, other easier and safer cannulation methods are still awaited to achieve biliary cannulation without complications.

Recently, endosonography (EUS)-guided biliary access after failed ERCP is increasingly reported: EUS-guided biliary drainage (EUS-BD) and EUS-guided rendezvous technique (EUS-RV). EUS-BD is mainly performed to relieve obstructive jaundice due to unresectable malignancies,

Access this article online	
Quick Response Code:	Website: www.saudijgastro.com
	PubMed ID: 25672231
	DOI: 10.4103/1319-3767.151209

whereas EUS-RV is basically a salvage technique for failed biliary cannulation. Initially, success rate can be low due to difficult GW manipulation through the biliary stricture or the ampulla,^[11] but Dhir *et al.* reported superiority of EUS-RV over precut technique.^[12] There are three approaches in EUS-RV according to the puncture site and scope position; transgastric, transduodenal long position and transduodenal short position, which should be selected according to the procedure purpose and patient's conditions.^[13,14] Although EUS-RV can be potentially the standard technique in cases with difficult cannulation, EUS-guided procedure needs both EUS and ERCP skills and devices and can be performed only in limited institutions now.

In summary, there is no one-and-only cannulation technique and salvage technique. Further, the best timing of conversion to the salvage technique should be evaluated in a prospective study because data are still lacking to establish the best strategy both in achieving biliary cannulation and in reducing PEP.

Hiroyuki Isayama, Yousuke Nakai, Kazuhiko Koike

Department of Gastroenterology, Graduate School of Medicine,
The University of Tokyo, Tokyo, Japan
E-mail: isayama-tky@umin.ac.jp

REFERENCES

- Lella F, Bagnolo F, Colombo E, Bonassi U. A simple way of avoiding post-ERCP pancreatitis. *Gastrointest Endosc* 2004;59:830-4.
- Artifon EL, Sakai P, Cunha JE, Halwan B, Ishioka S, Kumar A. Guidewire cannulation reduces risk of post-ERCP pancreatitis and facilitates bile duct cannulation. *Am J Gastroenterol* 2007;102:2147-53.
- Al Hatlani M, Kortan P, May G, Ling SC, Walters T, Avitzur Y. Wire Guided Cannulation vs. Conventional Contrast Guided Cannulation in Pediatric Endoscopic Retrograde Cholangiopancreatography (ERCP). *Saudi J Gastroenterol* 2015;21:25-9.
- Kawakami H, Maguchi H, Mukai T, Hayashi T, Sasaki T, Isayama H, *et al.* Japan Bile Duct Cannulation Study Group. A multicenter, prospective, randomized study of selective bile duct cannulation performed by multiple endoscopists: The BIDMEN study. *Gastrointest Endosc* 2012;75:362-72.
- Kawakami H, Isayama H, Kuwatani M, Eto K, Kudo T, Abe Y, *et al.* Wire-guided cannulation is not an ideal technique for preventing post-ERCP pancreatitis. *Gastrointest Endosc* 2012;76:223.
- Kobayashi G, Fujita N, Imaizumi K, Irisawa A, Suzuki M, Murakami A, *et al.* Wire-guided biliary cannulation technique does not reduce the risk of post-ERCP pancreatitis: Multicenter randomized controlled trial. *Dig Endosc* 2013;25:295-302.
- Nakai Y, Isayama H, Sasahira N, Kogure H, Sasaki T, Yamamoto N, *et al.* Risk Factors for Post-ERCP Pancreatitis in Wire-guided Cannulation for Therapeutic Biliary ERCP. *Gastrointest Endosc* 2015;81:119-26.
- Kim CW, Chang JH, Kim TH, Han SW. Sequential double-guidewire technique and transpancreatic precut sphincterotomy for difficult biliary cannulation. *Saudi J Gastroenterol* 2015;21:18-24.
- Sasahira N, Kawakami H, Isayama H, Uchino R, Nakai Y, Ito Y, *et al.* A multicenter randomized controlled trial of early double guidewire cannulation to facilitate selective bile duct cannulation: The EDUCATION study. 2015. [Epub ahead of print].
- Ito K, Fujita N, Noda Y, Kobayashi G, Obana T, Horaguchi J, *et al.* Can pancreatic duct stenting prevent post-ERCP pancreatitis in patients who undergo pancreatic duct guidewire placement for achieving selective biliary cannulation? A prospective randomized controlled trial. *J Gastroenterol* 2010;45:1183-91.
- Vila JJ, Pérez-Miranda M, Vazquez-Sequeiros E, Abadia MA, Pérez-Millán A, González-Huix F, *et al.* Initial experience with EUS-guided cholangiopancreatography for biliary and pancreatic duct drainage: A Spanish national survey. *Gastrointest Endosc* 2012;76:1133-41.
- Dhir V, Bhandari S, Bapat M, Maydeo A. Comparison of EUS-guided rendezvous and precut papillotomy techniques for biliary access (with videos). *Gastrointest Endosc* 2012;75:354-9.
- Kawakubo K, Isayama H, Sasahira N, Nakai Y, Kogure H, Hamada T, *et al.* Clinical utility of an endoscopic ultrasound-guided rendezvous technique via various approach routes. *Surg Endosc* 2013;27:3437-43.
- Isayama H, Nakai Y, Kawakubo K, Kawakami H, Itoi T, Yamamoto N, *et al.* The endoscopic ultrasonography-guided rendezvous technique for biliary cannulation: A technical review. *J Hepatobiliary Pancreat Sci* 2013;20:413-20.