Introduction

Endoscopic retrograde cholangiopancreatography (ERCP) is essential for the diagnosis and treatment of pancreatobiliary diseases but is invasive and may induce various complications, such as pancreatitis, cholangitis, hemorrhage and perforation. For successful and safe ERCP procedures first, initial selective cannulation without complications is essential. However, even in experts, selective biliary access may be incomplete in 5-10% of patients despite the various endoscopic techniques available to facilitate selective biliary access.1

For overcoming difficult cannulation, various technical tips are available and tried. In this section, we reviewed about various precut methods and wire-guided techniques for facilitating selective biliary access.

Precut sphincterotomy

Precut sphincterotomy is now an essential rescue free hand technique in instances of difficult biliary cannulation.

According to cutting direction, conventional needle knife sphincterotomy technique where the precut is made starting at the papillary orifice and extended incrementally upwards, and precut fistulotomy (infundibulotony) where the cut starts above the orifice and is extended upwards or downwards are used commonly. In unintentional pancreatic duct (PD) cannulation, transpancreatic septotomy or precut following guidance of previously inserted guidewire or pancreatic stent (PS) is also used commonly, although few data are available to aid in the selection of a procedure.2-11

Irrespective of the technique used, the initial success rates of precut sphincterotomy have previously been reported to be as high as 90% during the first attempt despite of failed or difficult primary cannulation, and secondary success rate of second attempts conducted 48-72 h later after edema and inflammation had subsided were over 95%. The overall complication rates after precut sphincterotomy have been reported to vary from 1.9% to 34%, compared to rates of 7-14% with conventional sphincterotomy. Post ERCP pancreatitis (PEP) is the most common and serious complication; the rates range from 2.1% to 14.9%, compared to the 1-10% associated with conventional sphincterotomy.2-9,12-19

Recent multicenter study and meta-analysis studies showed that early precut was an effective technique and
could significantly reduce the incidence of PEP.\textsuperscript{10,11,20} Therefore, early implementation of precut sphincterotomy can facilitate successful selective biliary cannulation as well as reducing the severity of PEP.\textsuperscript{21,22}

**Transpancreatic septotomy/sphincterotomy**

Transpancreatic septotomy is a technique involving cutting of the septum that separates the pancreatic duct from the bile duct, through the pancreatic orifice.\textsuperscript{23} The septum is located between the pancreatic duct and the common bile duct. Difficult bile duct cannulation may be related to duct blockage by the ampulla septum in cases where the guidewire repeatedly enters the pancreatic duct.\textsuperscript{24} Unlike a freehand technique such as use of a needle-knife, papillary transpancreatic septotomy in patients for whom cannulation is difficult, or who experience unintentional PD cannulation, can be performed using a papillotome, without exchange of devices, after guidewire introduction into the pancreatic duct; or indeed without a guidewire. When unintentional PD cannulation has occurred, the procedure is relatively easy. Wire-guided septotomy can be performed after introducing a soft guidewire into the PD, and sphincterotomy follows, maintaining the bile duct orientation at 11 o’clock. If the septum between the pancreatic and bile ducts is incised, the biliary and pancreatic orifices become separately visible.\textsuperscript{24-26} Overall technical success ranged from 85% to 97.5% with a lower incidence of complications reached 12%.\textsuperscript{6,23,26-28}

**Wire-guided cannulation (WGC)**

For the successful procedure, selective biliary or pancreatic cannulation without complications is essential. Conventional contrast-assisted cannulation technique which use contrast injection to access the bile duct was the first cannulation technique in the era of ERCP cannulae, and may be remain the most widely used initial cannulation method during ERCP. However, when the first attempts at contrast injection fail, a guidewire may be used as a crossover method to facilitate selective biliary access or as a primary selective cannulation technique to reduce complications caused by prolonged cannula manipulation or contrast injection into the pancreatic duct. Ideally, accessing the bile duct with the aid of a guidewire may reduce traumatic injury to the pancreatic duct and papilla, and avoid the buildup of hydrostatic pressure associated with contrast injection, thereby reducing development of ERCP-related pancreatitis.\textsuperscript{29-35}

The benefits of WGC reduced the frequencies of pancreatic injuries by preventing unintentional injection of contrast media into the main pancreatic duct or the papilla per se. The guidewire technique reduced the risk of pancreatitis by facilitating cannulation, by potentially limiting papillary trauma, and by reducing the need to conduct precut sphincterotomies. A systematic review and meta-analysis studies reported that WGC reduced the risk or severity of PEP compared with the conventional use of contrast guided cannulation. Also WGC is associated with a higher selective cannulation rate.\textsuperscript{29}

**Conclusions**

For decreasing the severity of PEP and increasing successful biliary access, precut techniques and WGC are useful techniques. However, WGC and precut fistulotomy should be compared using strict definitions of “difficult” cannulation, endoscopist experience, and racial or regional characteristics.
References