**Tips for Difficult ERCP Cannulation: Wires Crossed Technique.**

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**Introduction:**

It has been suggested that expert endoscopists are expected to perform ERCP at a 95-100% technical success level. One of the main complications of ERCP is post-ERCP pancreatitis (PEP), with rates ranging from 2% to 7%. Factors shown to increase the risk of PEP include younger age, female gender, sphincter of Oddi dysfunction, difficult cannulation and pancreatic duct (PD) contrast injection. Freeman and Guda, have written a beautiful overview of ERCP cannulation techniques that all gastroenterologists performing ERCP should be familiar with. Six of the advanced ERCP techniques described to facilitate difficult biliary cannulation are listed in Table 1. Also, there are countless ERCP accessories developed to facilitate cannulation, Table 2, but few controlled studies have showed individual proprietary superiority. Standard ERCP cannulas are typically 5F to 7F catheters, with a straight or tapered tip that can accept a 0.035-inch guidewire. The use of a triple-lumen cannula allows simultaneous injection of contrast and use of a preloaded guidewire. Some endoscopists prefer to use ultra-tapered (5F-4F-3F) tip catheters for cannulation of bile and pancreatic ducts, but these cannulas require the use of smaller-caliber guidewires. Aside from pre-curving cannula tips, it is difficult to vary the angle of approach to the papilla with or without pre-loaded guidewire. The standard sphincterotome can be variably bowed to give preferential upward angulation for biliary cannulation. This bowed sphincterotome technique has been shown to be superior to cannulation with standard ERCP catheters. Several steerable sphincterotomes have recently been introduced and are preferred by some. When these techniques are unsuccessful in providing biliary access, the other advanced ERCP technique listed in Table 1, are utilized according to local expertise, preference, and experience. We have chosen to review the double-guidewire technique (DGT), because of recent reports about safety and individual variations of this technique used to minimize complications.

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**Table 1.** Advanced ERCP techniques described to facilitate difficult biliary cannulation

1. Use of papillotome &/or guidewire cannulation  
2. Guidewire in pancreatic duct to aid biliary cannulation  
3. Needle-knife, precut sphincterotomy  
4. Needle-knife fistulotomy  
5. Needle-knife pre-cut sphincterotomy over a pancreatic stent  
6. Transpancreatic pre-cut sphincterotomy
The DGT was originally described by Dumonceau and modified by others. This technique consists of a combined wire maneuver, illustrated in the series of figures 1-8 and PowerPoint presentation. When common bile duct cannulation is difficult, the pancreatic duct is often repeatedly cannulated. The endoscopist should avoid repeated injections of contrast and over injection of contrast in the pancreatic duct, as both may increase the risk for post ERCP pancreatitis. Obtaining a still frame radiograph of the pancreatic duct is helpful anatomic reference when considering DGT, Figure 1. When pancreatic divisum is evident, the DGT should generally be avoided, since pancreatic duct injury from the pancreatic duct guidewire may be more likely.

The DGT, begins with exchanging a guidewire for the cannula in the pancreatic duct. The guidewire should be passed gently without resistance into a neutral, proximal to mid-pancreatic duct position and then the cannula removed, Figure 2. The wire in the pancreatic duct is then held in a “motionless” position with wire-exchange fastener or the smaller fingers of the endoscopist left hand grasping the guidewire against the handle of the ERCP scope. Then the ERCP assistant backloads a guidewire into a cannula or sphincterotome, which the endoscopist advances down the biopsy channel adjacent to the guidewire held in the pancreatic duct, Figure 3. The catheter or sphincterotome is gently engaged into the papillary OS and the pre-loaded guidewire probed into the bile duct under fluoroscopy. Usually the wire passes with minimal resistance into the biliary tree as guidewire held in the pancreatic duct blocks passage of the wire in pancreatic direction, Figure 4. The cannula is then advanced over the guidewire into the biliary tree and the guidewire removed. Usually, the cannula will fill with bile with gentle back suction on the biliary cannula, Figure 6. It is my convention to then confirm bile duct position by injection of contrast, Figure 7. Then the guidewire in the pancreatic duct is removed and remainder of the biliary examination conducted, Figure 8.

Discussion:

Like all endoscopic and surgical techniques, there are individual variations on any primary technique. Technical skill, experience and sound clinical judgment are probably the most important variable in the success of the DGT. However, there are ardent proponents of placing a pancreatic stent over the pancreatic duct guidewire before any attempts to cannulate the biliary tree are attempted. Although, the DGT appears to be simple, it should only be performed by experienced endoscopists with special training in advanced ERCP techniques.

**Table 2. ERCP Cannulation and Sphincterotomy Devices**

1. Catheters: standard, ball tip, radio-opaque tip, taper and ultra-taper tip (5F-4F-3F), steerable, multiple lumen.
2. Papillotomes: single or multiple lumen, pre-curved, steerable, Billroth II
4. Other Devices: needle-knife, endoscopic scissors, combination balloon-papillotome, etc
Figure 1: Injection of contrast into the Pancreatic Duct (PD).

Figure 2: Double Guidewire Technique (DGT). Endoscopic view of guidewire in the ampullary Os.

Figure 3: Double Guidewire Technique (DGT). ERCP cannula adjacent to guidewire. ERCP scope is then rotated slightly left to visualize the ampullary Os.

Figure 4: Double Guidewire Technique (DGT). With cannula gently engaged in the Os, 2nd guidewire is advanced through cannula into the CBD.

Figure 5: Double Guidewire Technique (DGT). Still fluoroscopy illustrating guidewire in PD, cannula in Os, and 2nd guidewire in CBD.

Figure 6: Double Guidewire Technique (DGT). Guidewire in PD, contrast injection into CBD. Endoscopic view of guidewire in PD, cannula in CBD filled with yellow bile.
References:


