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How to take advantage of a failed precut to achieve biliary cannulation in ERCP

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After nearly 50 years of therapeutic endoscopic retrograde cholangio-pancreatography (ERCP), deep cannulation of the desired duct, whether biliary or pancreatic, remains primarily an art (1). Most ERCP procedures are performed for biliary drainage.

Presently, standard cannulation is carried out with a sphincterotome loaded with a guidewire. Once the tip of the sphincterotome has entered the papillary orifice, the guidewire is gently pushed. Using fluoroscopy, whether the guidewire advances towards the common bile duct or main pancreatic (Wirsung's) duct is ascertained. From our interventional radiologist and hemodynamist colleagues we have learned it is the endoscopist who should preferably manipulate the guidewire. According to the study by Buxbaum et al. (2), ERCP outcomes improve when endoscopists themselves are in control of the guidewire. In that study the decrease observed in pancreatitis rates was associated with reduced trauma to the pancreas.

Today biliary endoscopists have lost their fear of the pancreas when the guidewire advances in that direction rather than towards the common bile duct. So-called "pancreatic techniques" for bile duct cannulation are based on the passage of the guidewire into the main pancreatic duct. Use of a double guidewire, pancreatic sphincterotomy, and insertion of a plastic stent in the pancreas (3) are techniques that may be used alone or combined with one another to achieve biliary cannulation. The general view is that a guidewire correctly inserted in the main pancreatic duct facilitates cannulation of the common bile duct. Currently, the pancreas is used with relative frequency as an aid for biliary cannulation. From a conceptual perspective one might think that endoscopists are now less skilled at direct common bile duct cannulation (4). However, results are likely similar to those achieved at the time when endoscopists, rather than push a guidewire,

acquired precised maneuvers for common bile duct cannulation. One must ensure that the guidewire is correctly placed inside the main pancreatic duct and has perforated no side branches. The best way to visualize a guidewire trajectory inside the pancreas is with the patient in the supine or prone position. Angled-tip guidewires may adapt better to the main pancreatic duct, and render common bile duct cannulation techniques safer.

When a guidewire fails to enter any ducts and biliary drainage is needed, recourse is usually had to cutting the papilla of Vater externally using a needle-knife sphincterotome. The technique was first described by Huibregtse in 1986 (5), and is usually referred to as precut. The procedure is much easier to describe than to perform. Following the insertion of a needle-knife sphincterotome in the papillary orifice, a superficial cut is made upwards along the intramural common bile duct or papillary protuberance. Then, upon pulling the cut edges apart, a bulging of the common bile duct usually shows up, which must be cut to gain access to its lumen. Two variants of the technique are to start the cut above the papillary orifice (fistulotomy) or cutting from the top down.

Before discussing the use of needle-knife precut in the study by Peñaloza-Ramírez et al. (6), which is included in the present issue of the *Revista Española de Enfermedades Digestivas*, we would like to consider a different type of precut. In conventional sphincterotomes the catheter's length down to the cutting wire varies. This is the so-called "nose" of a sphincterotome. In 1996 Binmoeller et al. (7) reported on a study where the so-named Soehendra precut had been used. In this model the catheter's length to the cutting wire is only 1 mm. Once introduced into the papillary orifice, when the common bile duct cannot be accessed, the papilla is cut to widen it and facilitate cannulation. The Soehendra precut type has not become widespread, but may be similarly performed when the sphincterotome's tip has entered the papillary orifice and the guidewire fails to enter either duct (8) (Fig. 1).

Peñaloza-Ramírez et al. (6) report a study where they managed to cannulate the common bile duct for 75.6 % of patients following a failed precut during the first ERCP. The second procedure was carried out three days later. Precuts were performed with the usual needle-knife sphincterotome. In 80 % of cases the cut was initiated at the papillary orifice, and in the remaining 20 % an infundibulotomy was conducted. Indications for biliary drainage included: choledocholithiasis (95 %), biliary leak (2.5 %), and pancreas head cancer (2.5 %). In 17 % of patients the papilla of Vater had an intra- or juxta-diverticular position. Precuts were performed by two endoscopists with over 15 years' experience, who had already conducted more than 1,500 ERCP procedures. Complications (acute pancreatitis or bleeding) developed in 7.5 % of patients.

Several lessons may be derived from the study by Peñaloza-Ramírez et al. (6). First comes accepting a failed ERCP. Usually, patients, their relatives, and the peers who referred them to us have high hopes for the minimally invasive drainage ERCP provides. A failed biliary cannulation may represent for the endoscopist frustration unlike any other arising from a failed technique, including, for instance, failure to reach the cecum during colonoscopy. One must accept the fact that a failed ERCP has some sort of negative psychological impact on the endoscopist (9).

In the study by Peñaloza-Ramírez et al. (6), the initial ERCP failed after a precut was made. Experience is needed to decide that a papilla cannot be cannulated with standard techniques (10). Needle-knife precut cannot make up for deficient ERCP training. It is common knowledge that externally cutting the papilla of Vater with a needle-knife sphincterotome is a technique associated with complications (11). Peñaloza-Ramírez et al. (6) also demonstrate that one must know when precut should be initiated and when terminated when biliary cannulation fails. It is better to fail an ERCP without rather than with complications.

The usual three complications of precut include bleeding, pancreatitis, and perforation. One knows when bleeding starts and very likely when it stops. Furthermore, endoscopic hemostasis techniques are effective to stop bleeding. However, pancreatitis and, above all, perforation behave like a wildfire, which is always associated with uncertain outcomes.

Post-ERCP acute pancreatitis may be tentatively prevented with proper intravenous hydration before, during, and after the procedure. In addition, 100-mg suppositories of indomethacin or diclofenac have proven overall beneficial with few associated risks (12).

In the initial description by Huibregtse (5), once the superficial cut of the papilla, and then of the bulging of the common bile duct, had been performed the common bile duct was directly cannulated with the needle-knife sphincterotome. Today, many endoscopists use a guidewire to ascertain that the open orifice is actually the common bile duct. A guidewire seems less traumatic than a sphincterotome. Angled-tip guidewires may offer some additional safety when compared to straight ones to avoid creating false tracts into the edges of the recent cut. Attempts at finding the common bile duct should be limited in number since severe complications after a failed precut usually result from insistently trying to achieve biliary cannulation. That the longer an ERCP procedure, the more likely will complications arise is also a well known fact (13).

By repeating a failed ERCP after three days the study by Peñaloza-Ramírez et al. (6) offers the patient requiring biliary drainage an adequate solution. It also allays the endoscopist's psychological burden after the previous failed attempt, and assuages the potential worries of the

patient's relatives and the physicians who referred the patient for ERCP.

Waiting for three days after a failed precut seems to allow a reasonable time for repeating an ERCP. Papillary inflammation abates and the odds of identifying the papillary orifice grow, thus facilitating cannulation (14).

ERCP training includes learning to make appropriate, effective decisions rapidly. Almost every papilla is different from the rest. If a guidewire properly enters the main pancreatic duct, it should probably be used to aid in common bile duct cannulation. If no duct is cannulated but the sphincterotome's tip is within the papillary orifice, a Soehendra-like precut may be performed (8) (Fig. 1). If none of the above applies, a needle-knife precut may be attempted. Experience dictates the timing for the succession of techniques needed for biliary cannulation, and for finishing the procedure. Importantly, although there is usually a narrow margin, it is preferable to fail an ERCP without rather than with complications.

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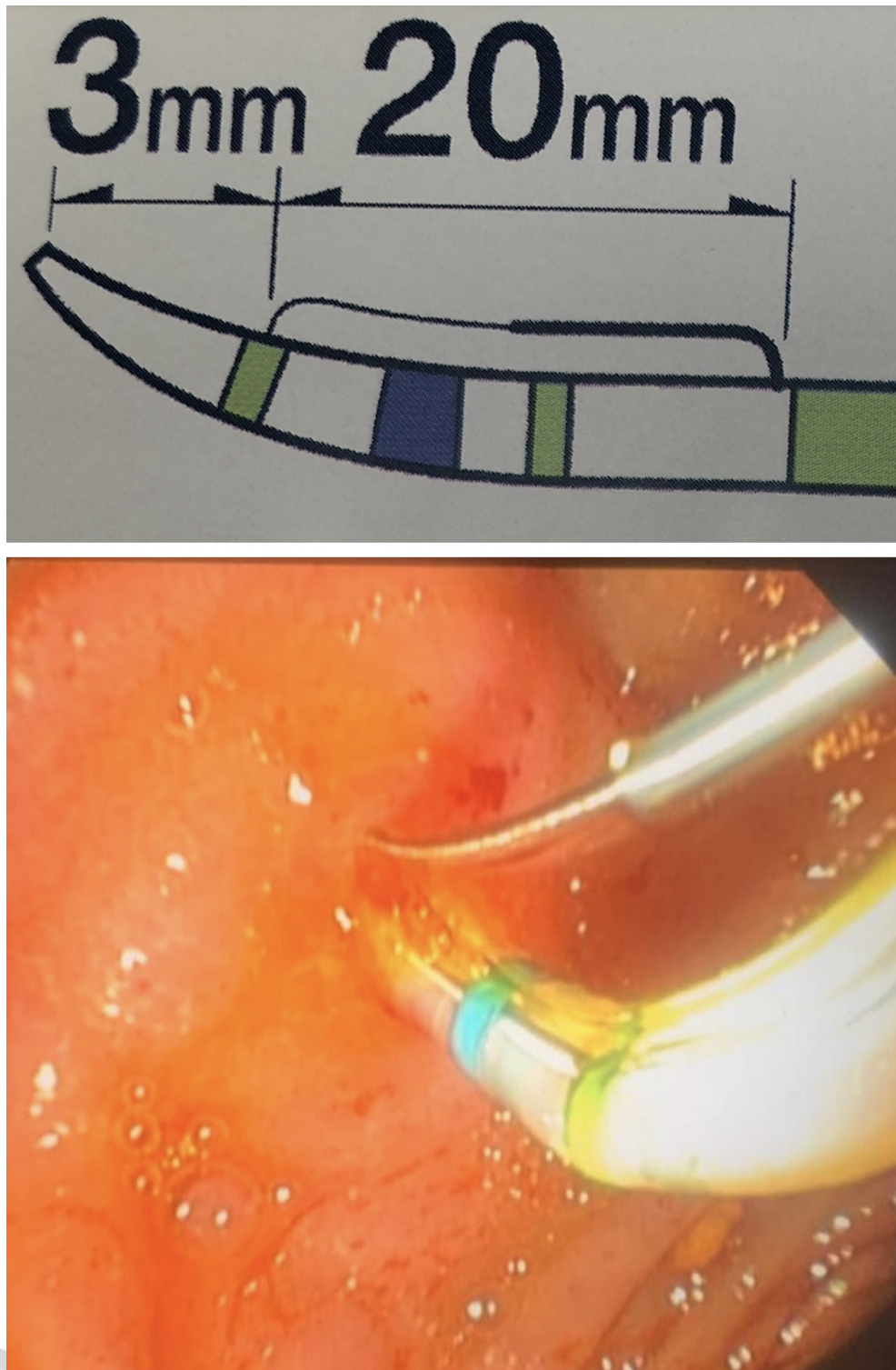


Fig. 1. The tip of the sphincterotome (CleverCut, Olympus®) has entered the papillary orifice but no duct has been cannulated. A precut may be performed using the small length of wire in contact with the papilla. Once the papillary orifice is open, achieving cannulation of the common bile duct or main pancreatic duct is usually easier.