Advanced Cannulation Technique and Precut

John Baillie, MB, ChB

KEYWORDS

- Cannulation • ERCP • Papillotome • Needle knife papillotomy
- Biliary access techniques

KEY POINTS

- It probably takes 1000 ERCPs to become skilled at cannulation, and several thousand more to become an expert.
- The expert ERCP endoscopist must be able to innovate and adapt his or her technique to deal with unexpected and unfamiliar anatomy.
- ERCP has evolved into an almost entirely therapeutic modality, increasing the technical difficulty and requiring skill with guide wires, catheters, stents, and so forth.
- The "pull" papillotome has become the primary tool for ERCP cannulation.
- Needle knife papillotomy (NKP) should be taught to all serious students of ERCP, and no longer regarded as a high-risk procedure for experts only.
- The epidemic of obesity in the United States and the resulting explosion of bariatric (weight loss) surgery has created a population of patients whose bile ducts are endoscopically inaccessible using standard duodenoscopes and catheters.

INTRODUCTION

For most ERCP endoscopists, the greatest hurdle to a successful procedure is deep cannulation of the bile duct. It is like a potential energy "hump." What separates expert ERCP endoscopists from lesser ones is their ability to reliably cannulate the bile duct with the minimum of trauma to the duodenal papilla. There is a long learning curve involved, such is the variability in papillary and local gastrointestinal (GI) anatomy. This article explores basic cannulation technique, then reviews a variety of instruments and techniques designed to increase the average endoscopist's success rate (**Boxes 1** and **2**). Many of these techniques require access to the pancreatic duct (PD) for placement of a guide wire and stenting. Other techniques use precutting or needle knife papillotomy (NKP), "free hand," or down on to a guide wire or stent. It is the author's opinion that any sufficiency skilled and experienced ERCP endoscopist can overcome the great majority of local anatomic difficulties to obtain deep cannulation. There are many variables to consider when addressing success rates for biliary

Carteret Medical Group, 300 Penny Lane, Morehead City, NC 28557, USA
E-mail address: jbaillie@ccgh.org

Gastrointest Endoscopy Clin N Am 22 (2012) 417–434
doi:10.1016/j.giec.2012.05.010 giendo.theclinics.com
1052-5157/12/$ – see front matter

Box 1
Accessories for ERCP

Catheters

- Standard
- Tapered
- Steerable
- Cremer

Guide wires

- Coated and uncoated (nitinol, hybrid, hydrophilic)

Papillotomes

- Standard ("pull"-type)
- Needle knife
- Shark-fin
- Steerable
- Billroth-II

cannulation, including the training and experience of the operator, the technique used (eg, with or without precut papillotomy), local anatomic issues (eg, diverticula), familiarity with adjunctive techniques, such as cannulation over a stent or a guide wire, and so forth. The secret to being a skilled ERCP endoscopist is mastering a variety of techniques for deep access to the duct of choice. Prominent papillas, small papillas, upside-down papillas (in post-Billroth II gastrectomy afferent limbs), papillas inside diverticula, and those at the end of long Roux-en Y limbs all require a plan of attack and techniques tailored to the situation. The early ERCP experts could do a lot with a few tools, but their modern successors have many more accessories and techniques at their disposal. Professional golfers are permitted up to 14 clubs in their bags, but they tend to favor certain ones. Similarly, expert ERCP endoscopists have a few favorite techniques that have proved reliable over time. The most frequently used ones are highlighted in this review.

As Freeman and Guda[1] have pointed out, defining and measuring success at cannulation is problematic. How successful can a cannulation be considered if it is

Box 2
Adjunctive techniques for biliary and PD access

Placement of stent or guide wire in the PD to facilitate biliary cannulation

Precut papillotomy

NKP: "free-hand," fistulotomy, over-a-stent (or a guide wire)

Trans-septal (transpancreatic) sphincterotomy (Goff procedure)

Endoscopic scissors

Endoscopic dissection (cotton tip)

Papillectomy/ampullectomy

Needle tip (Cremer) catheter

Endoscopic ultrasound (EUS)-guided