Precut papillotomy using needle knife fashioned from discarded standard papillotomes

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Aim: To evaluate the results of precut papillotomy using needle-knife papillotomes fashioned from discarded standard sphincterotomes. Methods: Case records of 50 patients undergoing precut papillotomy for access to either common bile duct or pancreatic duct during endoscopic retrograde cholangiopancreatography were reviewed. Precut was performed using needle-knife papillotomes fashioned from standard pull-type sphincterotomes that were discarded because of broken cutting wires. A diagnostic procedure was planned in all 50 patients (bile duct = 39, pancreatic duct = 9, both ducts = 2) and therapeutic procedure in 36 patients (bile duct = 31, pancreatic duct = 5). Results: Of the 47 patients who needed precut prior to diagnostic ERCP, 44 (93.6%) underwent successful cannulation of the duct of choice. Therapeutic procedures were planned in 36 patients; these were successful in 24 (67%); bile duct = 22, pancreatic duct = 2). The complications included cholangitis in 8 patients (16%) and pancreatitis in 2 (4%). None had bleeding or perforation. Conclusions: Precut needle-knife papillotomes fashioned from discarded standard sphincterotomes can be used effectively and can help in cost containment in endoscopic retrograde cholangiopancreatography. [Indian J Gastroenterol 2000;19:116-118]

Key words: Endoscope accessory, reuse

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Standard methods for cannulating the duct of choice — common bile duct or pancreatic duct — fail in about 5% of patients scheduled for endoscopic retrograde cholangiopancreatography (ERCP). Precut papillotomy (PP) using the needle knife is a common technique used to increase the rate of successful cannulation. However, the safety and routine use of this technique have been questioned. I fashioned needle-knife papillotomes from standard Erlangen-type sphincterotomes that had been discarded because of broken or exposed cutting wires at the distal end, and used them successfully for precut.

Methods
Case records of patients who underwent ERCP over a 38-month period from January 1996 were reviewed. Those in whom the papilla could not be reached (e.g., because of duodenal stenosis or papilla deep within a diverticulum) were excluded. Patients who had undergone precut papillotomy were analyzed. A video duodenoscope (ED 3400; Pentax, Japan) had been used for all procedures. All patients were observed in hospital for at least 24 hours after any therapeutic procedure including precut.

Needle-knife papillotomy was performed if cannulation with the standard cannula (Contour standard tip; Boston Scientific, Watertown, MA) failed or if a guidewire or cannula could not be passed into the opacified duct for a relevant therapeutic procedure. Taper-tip or wire-guided cannulae were seldom used. Cannulation was attempted immediately after the papillotomy; if this failed, either due to inability to opacify the duct of choice or due to submucosal injection, a repeat attempt was made 2 to 21 (median 14) days later depending on the urgency of the situation, availability of fluoroscopy equipment and patient's convenience.

Needle knife papillotomes
These were fashioned from old Erlangen-type sphincterotomes (KD 28 Q; Olympus Tokyo; PT 20; Wilson Cook, Winston-Salem, NC) which had been discarded because of broken cutting wires in the distal exposed portion. The outer sheath of the sphincterotome and the wire inside it were cut across, about 1-2 cm away from its distal tip, and the portion of wire that extended back halfway up the shaft was removed. The cut end of the shaft was then smoothed with a surgical blade and the sharp edges were removed. The wire was then moved in and out to assess the "play" of the "needle" tip at the distal end. The maximum length of the exposed wire was kept at 5-7 mm by cutting off excess length of wire or the sheath, as necessary (Fig).

Between procedures, the needle-knife papillotome was cleaned with soap and water, inspected for damage and then sterilized using 2% gluteraldehyde for 20 minutes. A papillotome fashioned this way could be used for 15-20 procedures. The electrocautery unit (UES-2: Olympus, Tokyo) was set at 0.5 and pure cutting current was used. Standard guidelines were followed for completing the precut.

Needle-knife papillotomy was considered successful if the duct of choice could be satisfactorily opacified so as to make a diagnosis. All patients with stones or strictures of the bile duct qualified for appropriate en-
Pre-cut papillotomy using refashioned needle-knife papillotome

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Fig: Standard papillotome with broken cutting wire (left), after cutting the distal end (center) and the fashioned precut papillotome ready for use (right)

doscopy. Patients with severe pain of chronic pancreatitis or pseudocysts communicating with the duct were considered for stent insertion as appropriate.6 Complications were defined as described previously.6

The procedure of precut papillotomy using the refashioned needle-knife papillotome as described in this study was approved for use retrospectively by the Ethical Committee of the institution. Patients were not specifically informed about the use of a refashioned accessory, but they provided written consent for the endoscopic procedure.

Results

Of the 386 patients who underwent ERCP during the study period, 50 (13%) aged 16 to 71 (mean 46.3) years; 31 men had needle-knife papillotomy. The clinical indications for ERCP in these 50 patients were: suspected or proven malignant biliary obstruction (26), biliary stones (8), chronic non-calcific pancreatitis (6), benign bile duct strictures (4; chronic pancreatitis 3, postoperative 1), pancreatic pseudocysts (2), post-cholecystectomy leak (2) and pancreatic ascites (1). One patient had a bile duct stricture and a pseudocyst due to chronic pancreatitis.

An initial diagnostic procedure was planned in all 50 patients. In three patients, diagnostic ERCP was completed without precut papillotomy; the rest (n = 47; bile duct = 38, pancreatic duct = 9) needed precut before cannulation. After papillotomy, adequate cannulation of the duct of choice could be achieved in 44 (93.6%) patients. The bile duct was successfully cannulated in 36 (94.7%) and the pancreatic duct in 8 (88.9%). Thirty-one (68.9%) patients underwent cannulation immediately after the precut, and the rest later.

Fourteen patients did not need a therapeutic procedure. Of the remaining 36 patients, 25 (69.4%) underwent the therapy of choice successfully. The success rate was higher for the bile duct (23 of 31; 74.2%) than for the pancreatic duct (2 of 5; 40%). Failure of therapeutic procedure was mainly due to inability to obtain deep cannulation despite opacification of the duct, or due to inability to place a guidewire in the desired part of the duct (e.g., across strictures, into pseudocysts).

Complications occurred in 10 patients (20%) — cholangitis in 8 (16%) and pancreatitis in 2 (4%). No patient had bleeding or perforation. Cholangitis occurred in all 8 patients with biliary obstruction in whom attempts at drainage failed. Two of these patients who had hilar biliary obstruction died because of failure to drain the biliary tree percutaneously or surgically. Of the two patients with pancreatitis, one had undergone a diagnostic ERCP and the other, a successful stone extraction from the common bile duct. Both episodes were mild and the patients recovered with conservative management.

Discussion

Precut papillotomy, though aggressive, is the most frequently used technique if cannulation fails during ERCP.7 The rate of successful cannulation after precut using needle-knife papillotome is reported to be between 65% and 100%.7,8 The lack of control over the extent of cutting during the procedure increases the risk of complications such as bleeding, perforation and pancreatitis. This has led to suggestions that the procedure be restricted to experienced endoscopists, and for specialized or therapeutic situations only.3,4,7,9,11

I have shown that needle-knife papillotomy can be performed safely using refashioned precut papillotomes. The high cost of endoscopic accessories is a major concern during therapeutic ERCP and reuse of single-use accessories is one way of bringing down cost.12,13,14 Refashioning needle-knife papillotomes from old and discarded standard sphincterotomes brings down the cost of therapeutic ERCP.

The rate of complications reported for precut papillotomy varies from 2.1% to 24.3%.4,7,9,10,11,12,14 Not all of these can be attributed to the procedure itself. The risk of infective complications increases in patients with biliary obstruction in whom drainage fails.4,14 While precut papillotomy cannot be excluded as a cause, I feel that cholangitis and death in my patients were related to failed biliary drainage procedures.

The retrospective nature of the present study is one of its limitations. Complications such as bleeding may sometimes be delayed.6,9 Our patients were followed up only for the period of hospitalization. Patients undergoing deroofing of the papilla for access to the pancreatic duct, and those undergoing precut for purely diagnostic purpose were few. Thus, further studies on larger numbers are needed before this technique can be
advocated for access to this duct and solely for diagnostic purpose.

The reasons for the varying frequency of complications in different series could be many. Differences in the definition of adverse events, expertise and case mix could explain some variability. Case volumes and undilated bile duct especially in the face of sphincter of Oddi dysfunction appear to increase the risk of complications of sphincterotomy.16,18,19 The present series did not have any patient suspected to have sphincter dysfunction or papillary stenosis.

Despite the low frequency of complications in this and some other reports, it would be prudent to explore less aggressive techniques such as taper-tip or over-the-wire cannulae before using precut.18,19,20,21 In fact, persistent attempts at cannulation may have a success rate comparable to the use of precut.22 Availability of endoscopic ultrasonography and magnetic resonance cholangiopancreatography should obviate the need for needle-knife papillotomy for diagnostic purposes.23,24

References

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