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What to do when endoscopic retrograde cholangio-pancreatography fails? Personal experience

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SUMMARY: **What to do when endoscopic retrograde cholangio-pancreatography fails? Personal experience.**

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Background. *Endoscopic retrograde cholangio pancreatography failure is a rare and some dramatic reality too for the management of bilio-pancreatic tract disorders and in these cases it needs to utilize others operative technique.*

Patients and methods. *Over a 6-year period, a total of 757 ERCPs were performed. In seventeen of these ERCPs the standard endoscopic technique failed and we employed alternative techniques such as interventional radiology or surgical management or double endoscopic approach.*

Results. *In all 17 failed ERCPs the alternative procedures allowed us to success in bilio-pancreatic disease.*

Conclusion. *ERCP is an operator-dependent procedure. Even in expert hands failure occurs in 3% to 10% of cases. ERCP failure doesn't be considerated a dramatic situation in the management of the bilio-pancreatic disease for a multidisciplinary team (endoscopist, surgeon and interventional radiologist) whose cooperation allows to success.*

RIASSUNTO: **Cosa fare quando fallisce la CPRE? Esperienza personale.**

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Introduzione. *Il fallimento della colangiopancreatografia retrograda per via endoscopica (CPRE) è una rara e a volte drammatica realtà, specie nel management dei disordini del tratto bilio-pancreatico che ne hanno reso necessaria l'esecuzione; in tali casi occorre utilizzare altre tecniche operative.*

Pazienti e metodi. *In un periodo di 6 anni, sono state eseguite 757 CPRE. In 17 di queste si è registrato il fallimento con tecnica endoscopica standard e si è pertanto proceduto a tecniche alternative come la radiologia interventistica o il management chirurgico o il doppio approccio endoscopico.*

Risultati. *Nelle 17 CPRE fallite la procedura alternativa utilizzata ha consentito di risolvere (o eseguire palliazione) la patologia biliopancreatica.*

Conclusioni. *La CPRE è una procedura operatore-dipendente. Anche in mani esperte, la percentuale di fallimento varia dal 3 al 10%. Tale fallimento non deve oggi essere considerato una situazione drammatica nella gestione delle patologie del tratto bilio-pancreatico grazie ad un approccio multidisciplinare (endoscopista, chirurgo, radiologo, interventista), determinante per raggiungere il successo.*

KEY WORDS: ERCP - Failure - Management.
CPRE - Fallimento - Gestione.

Introduction

Endoscopic retrograde cholangio-pancreatography (ERCP) allows to treat and solve pancreatico-biliary problems in the 90-97% of cases (1-4). Failures mainly depend on the anatomical anomalies, proximally or nearly the Vater's papilla, such as biliary or pancreatic duct cannulation is impossible. Two types of anatomical anomalies exist: local (papillary or peripapillary) and proximal (oesophageal-gastric-duodenal tract) (5). In these situations it is necessary to employ other techniques to treat the bilio-pancreatic disease, such as interventional radiology or surgical procedures.

The aim of this work is to show the rare causes of ERCP failure due to anatomical anomalies in our experience and what we did to solve these cases.

Patients and methods

From January 2000 to May 2006, 757 inpatient ERCP were performed (M:F=1:1.6, with an average age of 56.9 yrs): 492

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(64.9%) for benign disease and 265 (35.1%) for malignant disease. All the patients signed the informed consent to ERCP. We always utilized duodenoscope (TJF 145R, Olympus Optical Co., Ltd., Tokyo, Japan) or gastroscope in Billroth II patients (GIF 145, Olympus Optical Co., Ltd., Tokyo, Japan). All the patients were in conscious sedation (meperidine chloride 1 mg/kg iv and midazolam 0,5-1 mg/kg iv) under cardio-pulmonary monitoring (mean dose in 20 ml of NaCl 0.9% solution: 10 ml and 8 ml of midazolam and meperidine, respectively).

Results

The success rate of endoscopic sphincterotomy (ES) was of 97.8% (740/757): 698/740 (94.32%) at first attempt, 42/740 (5.68%) at the second attempt. There were only 17/757 (2.2 %) failures in our series.

Two deaths (0.26%), no directely correlatetd to the technique, were observed in patients over 80 years with severe cardiopulmonary and metabolic impairment. We report two cases (0.26 %) of severe post-ES bleeding that needed a surgical management, 1 case (0.1%) of acute hemobilia, 1 case of iatrogenic Mallory-Weiss syndrome after the extraction of a biliary stent treated endoscopically (hemoclips and sclerotherapy), 39 cases (5.15%) of bleeding after ES, treated endoscopically, 3 (0.3%) duodenal perforations surgically treated (with raphia), 13 (1.72%) cases of acute pancreatitis, 4 cases (0.4%) of acute cholangitis in oncological patients due to stent migration treated with stent substitution. Furthermore, we report 442 (58.38%) cases of asymptomatic transitory hyperamylasemia.

In 12/17 (70.58%) of ERCP failures, we successfully used the method of *rendez-vous*. Failure of ERCP was due to an iuxtapapillary diverticula preventing the visualization of the Vater's ampulla (Fig. 1a) in 8 patients (66.66%), an exophytic locally advanced papillary cancer preventing biliary cannulation in 3 patients (25%) and impossibility of the guide-wire to cross the biliary stricture in 1 patients (8.33%).

In 3/17 (17.64%) of ERCP failures we performed surgery. In two (66.66%) of these patients a severe malignant duodenal stricture prevented the passage of the endoscope and we performed a bilio-enteric (BEA) and gastro-enteric anastomosis (GEA). In the third patient (33.33%), with a multiple iuxtapapillary diverticula in whom the *rendez-vous* failed too, we performed a choledochotomy, biliary tree toilette and insertion of a T-tube.

In 1/17 (5.88%) case we utilized an interventional radiological approach. The patient, "no fit for surgery", presented a diffuse pancreatic cancer with stricture of the distal bile duct that made impossible the passage of the guide-wire; the *rendez-vous* technique failed too. We then employed a percutaneous transhepatic biliary drainage (PTBD).

In 1/17 (5.88%) patient with a voluminous paraesophageal hernia we used a double endoscopic approach. At first attempt ERCP was unsuccessfull because of extensive looping of the endoscope within the paraesophageal hernia (Fig. 1b). At the further attempt at ERCP, by an empiric approach we employed a gastroscope to reduce the hernia and restore the normal anatomical axis; immediately after we removed the gastroscope and with the duodenoscope we carried out the ERCP successfully.

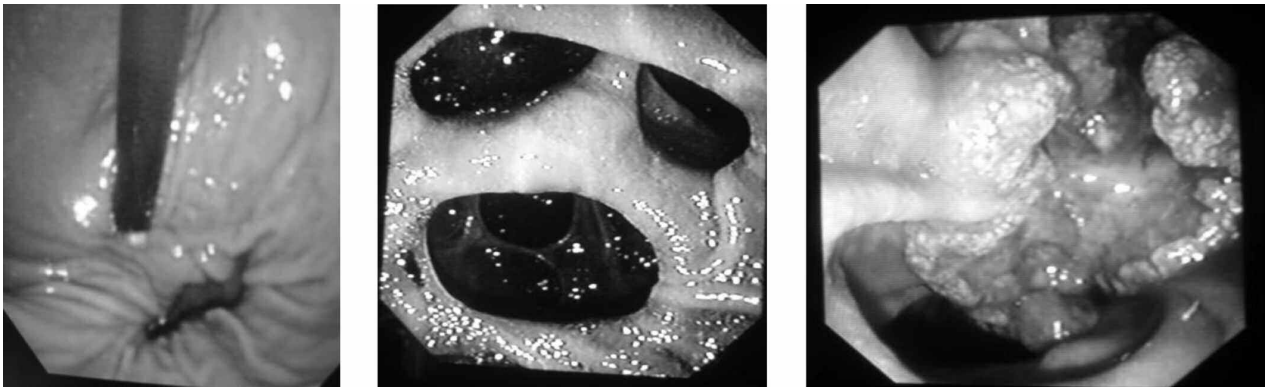
In 17/17 (100%) of ERCP failures, the alternative methods used for management of bilio-pancreatic disease were successful.

Discussion

ERCP has developed a prominent and often pivotal role in the management of bile duct stones, benign and malignant biliary obstruction, pancreatic neoplasia, acute pancreatitis from gallstones on from other cauises, chronic pancreatitis, bile duct injuries, pancreatic duct disruption, pancreatic pseudocysts, diseases of the major and minor papilla, sphincter of Oddi dysfunction, some hepatic diseases that impact the biliary tree, biliary and pancreatic bleeding, and various types of infection suspected to be of hepatic, biliary, or pancreatic origin (6). The success of ERCP is sometimes limited by anatomic variations that make cannulation of the target duct and therapeutic maneuvers difficult or impossible. ERCP failure is due to missed reaching and visualization of the papilla and the cannulation of the biliary tree. In these cases it is necessary to employ alternative procedures to solve the bilio-pancreatic disease. The choice of the treatment depends on the anatomic factors that cause the failure. We used to classified these factors in local (papillary and peripapillary) and proximal (esophagogastroduodense). The former includes papillary tumors (Fig. 1c), papillary stenosis, diverticula and stones lodged at the papilla. The latter includes esophageal, pyloric and duodenal stricture (benign or malignant), esophageal diverticula, the large "J-shapped" stomach and large sliding or paraesophageal hernias (5).

In our series the local anatomic anomalies that prevented the success of ERCP were peripapillary diverticula, papillary cancer and strictures of the distal bile duct.

In all the cases the first choice was the *rendezvous* technique. It combines the endoscopic technique with percutaneous cholangiography (7). It is used when endoscopic cannulation of the papilla is unsuccessful and surgery is indicated, but the risk associated with operation is high. Interventional radiology has provided im-



1a 1b 1c

Fig. 1 - ERCP: a) parahesophageal hernia; b) duodenal diverticula; c) papillary tumor.

portant advances in management of biliary tract diseases. Therapeutic techniques performed by percutaneous approach under ultrasonographic guidance permit to cross a guide-wire into the duodenum through the papilla. Success rate are high (99%) with biliary tract dilatation but lower (74%) in the absence of dilatation (1,8). In all but two cases of our serie it allows to solve the bilio-pancreatic disease. In a case of multiple iuxtapapillary diverticula we tried the *rendez-vous* technique but the guide-wire didn't proceed and so we preferred to operate the patient because the risk of complication (i.e., ES-bleeding and duodenal perforation). In the second case a severe tumoral stricture of the distal biliary duct prevented to cross the stricture with the guide-wire such as distal to proximal as proximal to distal during *rendezvous* technique, and we employed a PTBD because of the patient was no fit for surgery (7).

In our series the proximal anatomic variations that cause ERCP fail were duodenal strictures and paraesophageal hernia.

The former were surgically treated and, BEA and GEA were performed. The strictures represent a cause of ERCP failure. Strictures dilatation or stenting are the first attempt but if it fails surgical or radiological management are necessary. If the duodenal strictures is benign, we try with a pneumatic dilatation while in case of neoplastic one we prefer to operate the patient fit for surgery (GEA plus BEA) tacking any other opportunity for the patient. Furthermore, PTBD is the last choice. In the latter case we employed an empiric approach: a voluminous paraesophageal hernia prevented to reach the duodenum crossing the pylorus with a lateral-view duodenoscope, so we introduced a frontal-view gastroscope that allows to restore the normal intestinal axis; removed the gastroscope was taken out and we introduced the duodenoscope and successfully carried out the ERCP (5).

Conclusion

In our opinion ERCP failure should not be considered a insuspicious event in the management of biliopancreatic diseases (BPD) but only the first attempt. Several approaches exist to solve the BPD. It is necessary the existence of referral centers for the treatment of these disease where multidisciplinaru team work togheter (endoscopist, radiologist, surgeon and others). In our experience we failed 17 ERCP for anatomic variations; in all but one we ask the cooperation of others specialists as radiologist and surgeon. In a case we employed our experience and an empirical approach to reduce a voluminous paraesophageal hernia.

ERCP is an operator-dependent procedure. The success of ERCP is sometimes limited by anatomic variations that make biliary cannulation impossible. In these cases it is necessary to employ alternative procedures to solve the bilio-pancreatic disease.

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