

Double guidewire technique for ERCP in difficult bile cannulation

Experience with 121 cases



Ann. Ital. Chir., 2012 83: 391-393

Barbara Belverde, Stefano Frattaroli, Antonella Carbone, Giovanni Viceconte

Department of Surgery Sciences "R. Paolucci", "Sapienza" University of Rome, Rome, Italy

Double guidewire technique for ERCP in difficult bile cannulation. Experience with 121 cases

AIM: *The aim of this study is to report our experience using double guide-wire technique (DGT) for biliary cannulation.*
MATERIAL OF STUDY: *From 2007 to 2010, out of 1607 consecutive patients undergoing ERCP with the intent to cannulate the common bile duct (CBD) 1335 were considered suitable for this study. In 131 of these patients deep biliary cannulation with standard cannulation technique (SCT) failed. In these cases DGT was attempted.*

RESULTS: *DGT could be used in 121 patients with success rate of deep biliary cannulation in 117 (96.7%) with a 2.6% rate post ERCP pancreatitis.*

DISCUSSION: *Since difficulties in selective cannulation are sometimes encountered due to anatomical constraints or papillary spasm, pharmacologic aids and other non invasive methods such as papillotome cannulation or guidewire cannulation are used. DGT consented a high rate of successful selective biliary cannulation with a low rate of complications.*

CONCLUSION: *According to our experience we can concluded, that in expert hands, the double guidewire technique (DGT) can be considered useful and safe method in difficult biliary cannulation, reducing the need of more invasive technique such as precut papillotomy.*

KEY WORDS: Biliary cannulation, Common bile duct, Double, Guidewire.

Introduction

Endoscopic deep biliary cannulation during ERCP can fail even in experienced hands.

A variety of endoscopic maneuvers has been used to achieve selective cholangiography when standard cannulation technique (SCT) are unsuccessful^{1,2}.

In difficult cases some quite invasive methods such as needle-knife precut, fistulotomy or transpancreatic ampullary septotomy are usually employed.

The aim of this study is to report our experience using double guide-wire technique (DGT) for biliary cannulation.

Material of study

From 2007 to 2010, 1607 consecutive patients undergoing ERCP with the intent to cannulate the common bile duct (CBD) were considered eligible for recruitment. Exclusion criteria were the following: previous sphincterotomy or endoscopic papilla dilation, previous surgical biliary-intestinal operations, diagnosis or suspicion of pancreas divisum, pancreatic or biliary stent placement within 6 months before inclusion in this study, impossibility to reach the papilla of Vater due to gastroduodenal stenosis or previous surgery.

Pervenuto in Redazione Maggio 2011. Accettato per la pubblicazione Dicembre 2011

Correspondence to: D.ssa Antonella Carbone, MD, Department of Surgery Sciences "R. Paolucci" University of Rome, 00161 Rome, Italy (e-mail: anto-1982@libero.it)

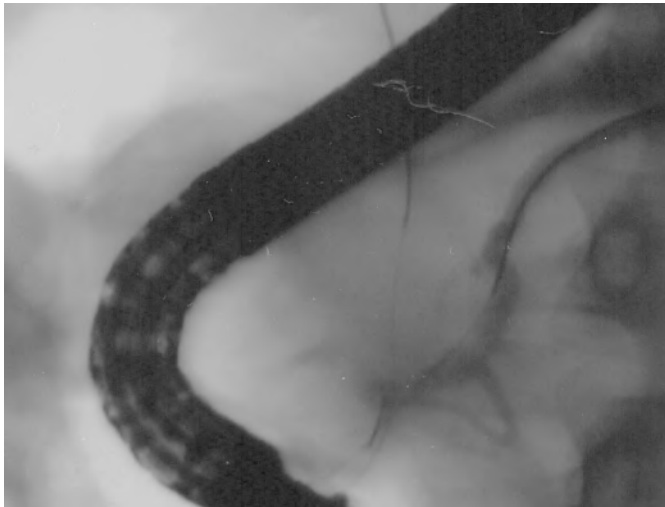


Fig. 1: Radiologic images showing the use of the DGT. Common bile duct cannulation with a guidewire preloaded in a sphincterotome after previous insertion of a guidewire in the PD.

On the basis of these exclusion criteria 1335 patients were included in this study.

In 131(9.8%) of these 1335 patients deep biliary cannulation with standard technique (SCT) failed.

In these cases DGT was attempted.

For standard biliary cannulation we usually employ a sphincterotome preloaded with a guidewire.

If SCT fail after attempting 10 minutes and the guidewire passes only into the main pancreatic duct we use DGT. DGT consists of a combined maneuver: first, a guidewire is inserted and left in the main pancreatic duct (PD); second, a sphincterotome preloaded with a guidewire is passed through the working channel alongside the guidewire. The tip of the device is positioned in the papilla, bending over the pancreatic wire, to attempt cannulation of the CBD (Fig. 1).

Results

Out of 131 patients, in 10 (7.6%) DGT could not be used: in 4 because it was impossible to cannulate the papilla and in 6 because we could not introduce a guidewire deeply in the PD due to stricture and or tortuosity of PD.

In the remaining 121 cases deeply biliary cannulation, using double guidewire technique (DGT), was achieved in 117 (96.7%).

In the 10 cases in which DGT could not be employed and in 4 in which DGT was not successful we used other techniques such as need-knife precut, fistulotomy or transpancreatic septotomy obtaining biliary cannulation in 12 (85.7%) cases out of 14; in the remaining 2 cases combined endoscopic-radiological rendez vous technique was employed.

The success rate, cannulation time calculated after insertion of the guidewire in PD, findings and complications observed in patients in whom DGT was applied are shown in Table I.

Discussion

Selective biliary cannulation is mandatory for therapeutic ERCP in patients with biliary diseases. Since difficulties in selective cannulation are sometimes encountered due to anatomical constraints or papillary spasm, pharmacologic aids and other non invasive methods such as papillotome cannulation or guidewire cannulation are used.

In case of failure more invasive techniques are employed such as need-knife precut, fistulotomy or transpancreatic ampullary septotomy, in which a pancreatic sphincterotomy is performed after pancreatic cannulation, cutting toward the bile duct ¹⁻³.

Dumonceau et al ⁴ first reported the use of a previous insertion of a guidewire in the PD (P-GW) for selective biliary cannulation in a patient with surgically altered anatomy.

Gotoh et al ⁵ reported a second case of successful biliary cannulation with P-GW in a patient with a tortuous common channel.

The utility of DGT has been attributed to the capability of the pancreatic guidewire to straighten both the PD and CBD while at the same time occupying the PD, thus facilitating CBD cannulation and preventing repeated PD cannulation.

Maeda et al ⁶ carried out randomized controlled trial with 53 patients in whom conventional cannulation failed within 10 min, these patients being assigned to either DGT (N 27) or continuation of ordinary techniques (N 26). Successful biliary cannulation was achieved

TABLE I

Success rate	Cannulation time (in minutes)	Findings	Complications
117/121 (96.7%)	Median 5 Range (1-18)	Lithiasis 66 (56.4%) Neoplasia 35 (29.9%) Other 16 (13.7%)	Acute pancreatitis 3(2.6%) Mild 2 (1.7%) Moderate 1 (0.9%)

in 93% of the patients with PGW compared with 58% in the group of continuation of ordinary techniques (p=0.0085).

Ito et al.⁷ in 113 patients in whom cannulation of the bile duct failed with conventional technique the success rates of PGW for biliary cannulation was 73%.

In a multicentric randomized controlled trial on 97 patients, Tejada et al.⁸ concluded that the double guidewire technique (DGT) was not superior to standard cannulation technique (success rates of 47% and 56% respectively) and might be associated with a higher risk for post ERCP acute pancreatitis (17% and 8%, respectively).

Grönroos et al.⁹ applied DGT in 50 patients with a success rate of 66% (30/50) and a 2% rate of postERCP pancreatitis.

In our experience the DGT could not be applied in 10 (7.6%) patients on 131 because we did not succeed to introduce deeply a guidewire in PD.

In 121 patients in whom we used DGT, deeply CBD cannulation was achieved in 117 (96.7%) with a 2, 6 rate of postERCP pancreatitis.

In the remaining 4 (3.3%) patients other technique (as precut or fistulotomy) were used obtaining biliary cannulation in 3.

In our experience we observed a high rate (96.7%) of success in obtaining deeply biliary cannulation using DGT with a low rate (2.6%) of post ERCP acute pancreatitis.

Of course, our study presents two limitations: first it was not randomized or prospective study; second it was not compared with other methods such as precut sphincterotomy.

Conclusions

According to our experience we can conclude, that in expert hands, the double guidewire technique (DGT) can be considered useful and safe method in difficult biliary cannulation, reducing the need of more invasive technique. Further studies will be needed to confirm these results and to compare this method with other sophisticated techniques for obtaining selective access to the biliary duct.

Riassunto

OBIETTIVO: Lo scopo del nostro studio è quello di riportare la nostra esperienza usando la tecnica del doppio filoguida per la cannulazione biliare durante la CPRE.

MATERIALI DI STUDIO: Dal 2007 al 2010, dei 1607 pazienti sottoposti a CPRE con l'intento di incannulare il dotto biliare comune, 1135 sono stati considerati idonei per il nostro studio. In 131 di questi pazienti in cui non è stato possibile il cateterismo metodo della via biliare con la tecnica standard è stata impiegata la tecnica del doppio filo-guida.

RISULTATI: In 121 pazienti è stato possibile utilizzare questa tecnica con successo in 117 (96,7%) con un 2,6% di pancreatiti acute dopo CPRE.

CONCLUSIONE: In base alla nostra esperienza possiamo concludere che la tecnica del doppio filoguida può essere considerata un metodo utile e sicuro nei casi di cateterismo biliare difficile, riducendo la necessità di utilizzare tecniche più invasive come il precut.

References

1. Kasmin FE, Cohen D, Batra S, et al.: *Needle-knife sphincterotomy in a tertiary referral center: Efficacy and complications.* Gastrointest Endosc, 1996; 44:48-53.
2. Freeman ML, Guda NM: *ERCP cannulation: A review of reported techniques.* Gastrointest Endosc, 2005; 61:112-25.
3. Catalano M, Fazel A, Quadri A, et al.: *Endoscopic transpancreatic ampullary septotomy for inaccessible obstructed bile ducts: Comparison with standard pre-cut sphincterotomy.* Gastrointest Endosc, 2002; 55: AB174.
4. Dumoncau JM, Deviere J, Cremer M: *A new method of achieving deep cannulation of the common bile duct during endoscopic retrograde cholangiopancreatography.* Endoscopy, 1998; 30(Suppl):S80.
5. Gotoh Y, Tamada K, Tomiyama T, Wada S, Ohashi A, Satoh Y, Higashizawa T, Miyata T, Ido K, Sugano K: *A new method for deep cannulation of the bile duct by straightening the pancreatic duct.* Gastrointest Endosc, 2001; 53:820-22.
6. Maeda S, Hayashi H, Hosokawa O, Dohden K, Hattori M, Morita, M, Kidani E, Ibe N, Tatsumi S: *Prospective randomized pilot trial of selective biliary cannulation using pancreatic guidewire placement.* Endoscopy, 2003; 35:721-24.
7. Ito K, Fujita N, Noda Y, Kobayashi G, Obana T, Horaguchi J, Takasawa O, Koshita S, Kanno Y: *Pancreatic guidewire placement for achieving selective biliary cannulation during endoscopic retrograde cholangiopancreatography.* World J Gastroenterol, 2008; 14:5595-600.
8. de Tejada AH, Calleja JL, Diaz G, Pertejo V, Espinel J, Cacho G, Jimenez J, Millan I, Garcia F, Abreu L, UDOGUIA-O4 Group: *Double-guidewire technique for difficult bile duct cannulation: A multicenter randomized, controlled trial.* Gastrointest Endosc, 2009; 70:700-09.
9. Grönroos JM: *Double-guidewire assisted biliary cannulation experiences from a single tertiary referral center.* Endosc, 2010; 67 (7):479 -85.

