

CASE REPORT

Successful biliary cannulation by the rendezvous technique via percutaneous transhepatic gallbladder drainage: A report of two cases

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Key Clinical Message

Reports of the rendezvous technique via percutaneous transhepatic gallbladder drainage are very rare because of difficulties with insertion of the guidewire from the gallbladder into the common bile duct. In particular, our report includes a case with distal common bile duct stricture. To our knowledge, such a case has never been previously reported.

KEYWORDS

biliary cannulation, distal common bile duct stricture, endoscopic retrograde cholangiopancreatography, percutaneous transhepatic gallbladder drainage, rendezvous technique

1 | INTRODUCTION

Endoscopic retrograde cholangiopancreatography (ERCP) plays a major role in the diagnosis and treatment of biliary tract diseases. However, even the most experienced endoscopists fail to cannulate the bile duct in 5% to 10% of cases.^{1,2} Generally, when biliary cannulation fails despite several endoscopic methods, percutaneous transhepatic biliary drainage (PTBD) is performed for biliary decompression and bridging before subsequent ERCP.^{3,4} However, PTBD may be impossible or fail in several cases including no intrahepatic biliary dilatation. Therefore, percutaneous transhepatic gallbladder drainage (PTGBD) is carried out prior to ERCP or following ERCP due to the concurrence of acute cholecystitis or failed biliary cannulation. However, there are no definitive endoscopic landmarks that are useful for successful biliary cannulation in these cases. We had two patients with failed

biliary cannulation, who were treated with PTGBD prior ERCP. Herein, we report two patients with successful biliary cannulation guided by insertion of a guidewire via PTGBD. In particular, our report includes a case with distal common bile duct (CBD) stricture. To our knowledge, such a case has never been previously reported.

2 | CASE REPORT

2.1 | Case 1

A 57-year-old man was admitted to our hospital because of chronic pancreatitis with acute exacerbation. He was a heavy drinker and had a past medical history of diabetes. We treated him conservatively with intravenous fluid. On day 7 of hospitalization, the patient complained of



FIGURE 1 Abdominal computed tomography scan shows distal common bile duct stricture (arrow) with gallbladder distension due to infiltration and pseudocyst of the pancreatic head

fever, chills, and right upper quadrant abdominal pain. Laboratory data showed the following results: amylase, 233 IU/L; lipase, 604 IU/L; total bilirubin, 1.24 mg/dL;

aspartate aminotransferase, 81 IU/L; alanine aminotransferase, 106 IU/L; alkaline phosphatase, 666 IU/L; γ -glutamyltransferase, 672 IU/L; C-reactive protein, 8.5 mg/dL; and CA19-9 11.59 U/mL. Abdominal computed tomography revealed distal CBD stricture with gallbladder distension due to the infiltration and pseudocyst of the pancreatic head (Figure 1). Therefore, he was diagnosed with acute obstructive cholangitis due to chronic pancreatitis. Because of the patient's general medical condition and the absence of dilation of the intrahepatic bile duct, a PTGBD was performed with 8.5-Fr pigtail catheter for bridging role before subsequent ERCP. Five days later, we attempted ERCP; however, we failed to cannulate the bile duct in spite of needle-knife precut sphincterotomy. Therefore, we used the PTGBD route for rendezvous technique, which entailed insertion of a guidewire (Jagwire angle tip, 0.035 in \times 450 cm; Boston Scientific, Natick, Mass) from the cystic duct to the duodenum through the catheter (Beacon tip catheter, 5-Fr, Cook Medical, USA) (Figure 2A,B). The inserted guidewire was caught with duodenoscope (JF-260 V; Olympus Optical Co., Ltd., Tokyo, Japan) using a snare catheter and was pulled out from the instrument channel (Figure 2C). An ERCP catheter was inserted along the withdrawn guidewire for selective biliary cannulation (Figure 2D), and sphincterotomy was performed with a papillotome.

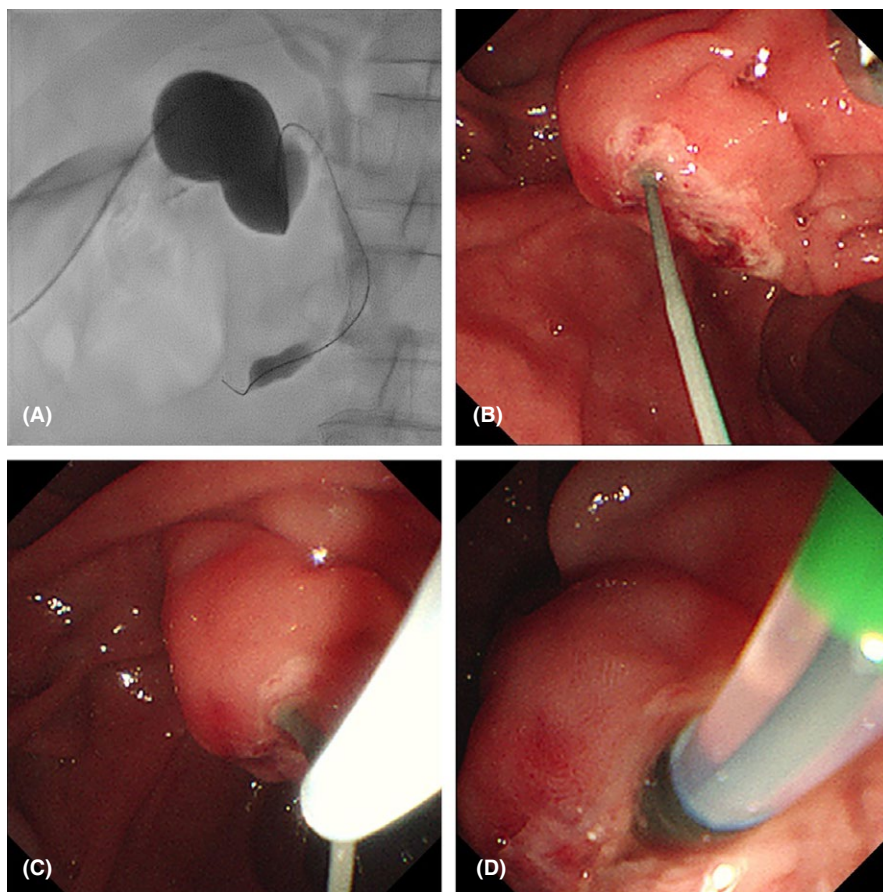


FIGURE 2 The rendezvous technique via percutaneous transhepatic gallbladder drainage tube. A, Fluoroscopic view shows successful insertion of a guidewire from the gallbladder into the duodenal second portion via PTGBD catheter. B, Percutaneous insertion of the guidewire in the second portion of the duodenum on duodenoscopic finding. C, The inserted guidewire was caught with snare catheter and withdrawn through the channel of a duodenoscope. D, An ERCP catheter was inserted along the withdrawn guidewire for selective biliary cannulation

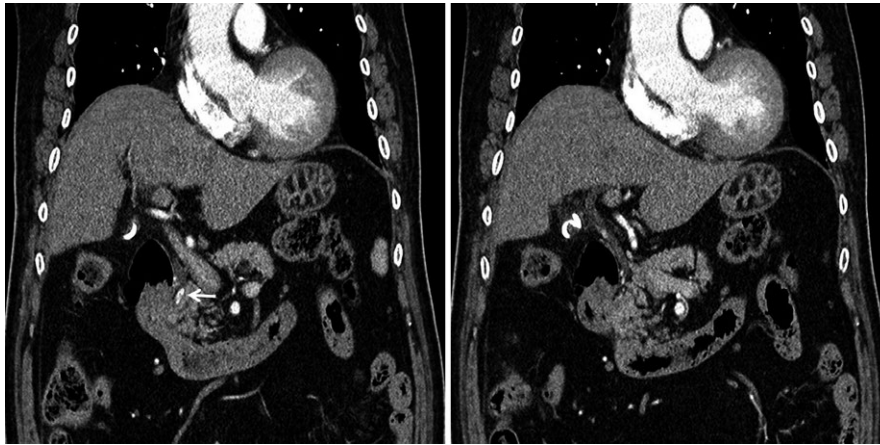


FIGURE 3 Abdominal computed tomography scan shows distal common bile duct stone (arrow) and periampullary diverticulum without dilatation of the intrahepatic duct and common bile duct

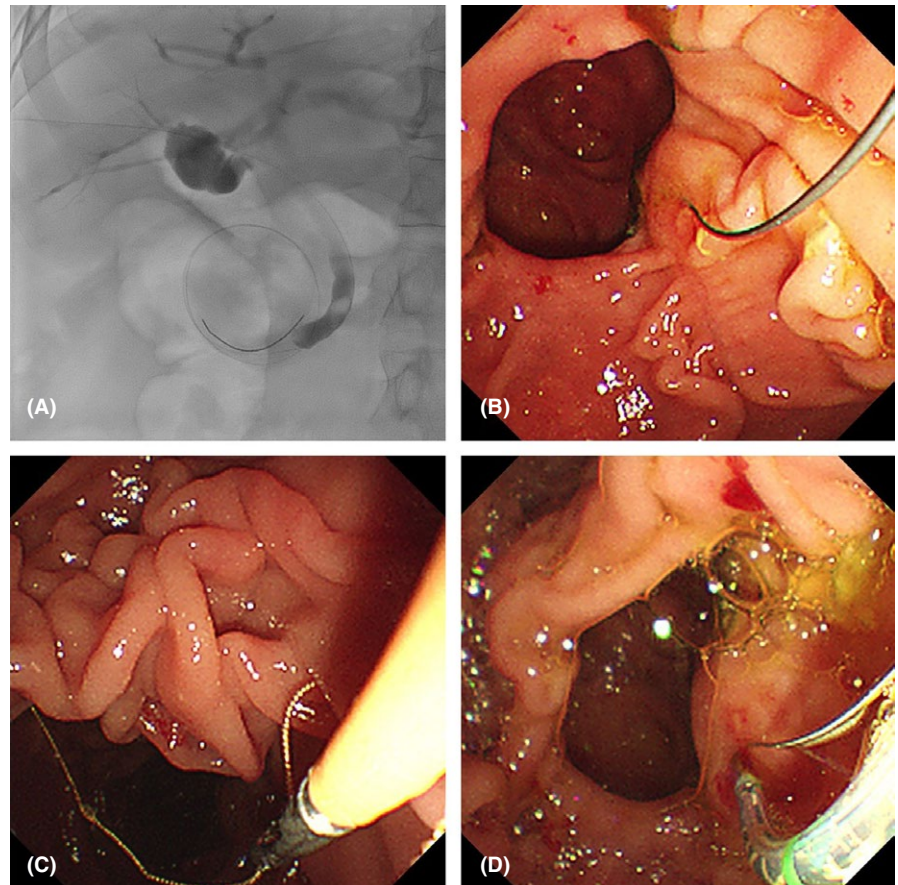


FIGURE 4 The rendezvous technique via percutaneous transhepatic gallbladder drainage tube. A, Fluoroscopic view shows successful insertion of a guidewire from the gallbladder into the duodenal second portion through PTGBD catheter. B, Percutaneous insertion of the guidewire in the second portion of the duodenum during duodenoscopy. C, The inserted guidewire was caught with alligator forceps and removed from the instrument channel. D, A papillotome was inserted along the withdrawn guidewire for selective biliary cannulation

Finally, endoscopic retrograde biliary drainage was successfully performed with a plastic stent (ST-2 Soehendra Tannenbaum stent, 10-Fr \times 7 cm; Wilson Cook, Winston-Salem, NC, USA) for biliary drainage and dilatation. PTGBD was removed immediately after the procedure, and he was discharged without any complications.

2.2 | Case 2

A 77-year-old man was admitted to our hospital because of CBD stone. He was diagnosed with gallbladder empyema 2 months ago and underwent PTGBD instead of cholecystectomy due to the general medical condition. A tubogram

TABLE 1 Summary of cases with successful biliary cannulation by the rendezvous technique via PTGBD

Authors	Sex/Age	Cause of biliary obstruction	Timing of PTGBD	Treatment	Complications	Timing of PTGBD removal after procedure
Present case	M/57	Distal CBD stricture	Before ERCP	ERBD insertion	None	Immediately
Present case	M/77	CBD stone	Before ERCP	Stone removal	None	Immediately
Matsubayashi et al ⁷	M/81	CBD stone	Before ERCP	Stone removal	None	Not described
Okuno et al ⁸	M/84	CBD stone	After ERCP	Stone removal ^a	None	Not described
Okuno et al ⁸	M/71	CBD stone	Before ERCP	Stone removal	Pancreatitis (mild)	19 d after
Okuno et al ⁸	M/66	CBD stone	After ERCP	Stone removal	None	8 d after
Okuno et al ⁸	M/66	CBD stone	Before ERCP	Stone removal	None	15 d after
Okuno et al ⁸	M/66	CBD stone	After ERCP	Stone removal	None	6 d after
Okuno et al ⁸	M/68	CBD stone	After ERCP	Stone removal	None	Not described
Sumada et al ⁹	F/97	CBD stone	After ERCP	Stone removal	None	Not described

CBD, common bile duct; ERBD, endoscopic retrograde biliary drainage; ERCP, endoscopic retrograde cholangiopancreatography; PTGBD, percutaneous transhepatic gallbladder drainage.

^aStone removal failed because of scope dislocation during the balloon sweep for stone removal.

via PTGBD was performed after recovery for gallbladder empyema, which revealed a CBD stone. The physical examination at admission was unremarkable, and initial laboratory data were within normal limits. Abdominal computed tomography revealed a distal CBD stone without dilatation of the intrahepatic duct and CBD (Figure 3). We attempted ERCP but failed with selective biliary cannulation due to the intradiverticular papilla. Therefore, we immediately performed the rendezvous technique via PTGBD and inserted a guidewire (Jagwire angle tip, 0.035 in ×450 cm; Boston Scientific, Natick, Mass) successfully from the gallbladder to the duodenum through the catheter (Beacon tip catheter, 5-Fr, Cook Medical, USA) (Figure 4A,B). The inserted guidewire was caught with an alligator forceps (Figure 4C) and was withdrawn through the channel of a duodenoscope (JF-260 V; Olympus Optical Co., Ltd., Tokyo, Japan) (Figure 4C). A papillotome was inserted along the withdrawn guidewire, and sphincterotomy was performed (Figure 4D). Finally, the stone was successfully removed with a basket. After the procedure, PTGBD was discontinued and the patient was discharged without any complications.

3 | DISCUSSION

Selective biliary cannulation is an essential step in ERCP for biliary tract diseases. Biliary cannulation has been reported to fail in 5% to 10% of cases despite the availability of various endoscopic techniques including double-guidewire technique, transpancreatic sphincterotomy, and needle-knife precut sphincterotomy.^{1,2,5} The rendezvous technique may be considered in these cases, and PTBD followed by a combined rendezvous technique is often used.^{3,4,6} However, PTBD may be impossible or unsuccessful for patients without dilation of the intrahepatic duct, warranting PTGBD as an alternative bridging procedure in such cases.

The rendezvous process via PTGBD entails initial insertion of a guidewire from the gallbladder into the second portion of the duodenum using a PTGBD catheter and then withdrawal of the guidewire through the channel of a duodenoscope using endoscopic attachments such as basket or snare catheter, and a biopsy forceps. Finally, selective biliary cannulation is conducted with ERCP catheter or papillotome along the guidewire.³

The rendezvous technique via PTGBD is more difficult than PTBD. The route to the cystic duct is not straight but is spiral, and the angle between the cystic duct and CBD is acute. Therefore, reports of PTGBD are very rare because of difficulties with insertion of the guidewire from the gallbladder into the CBD.⁷⁻⁹ In particular, our cases include a case with distal CBD stricture, and it was a more difficult case and has never been previously reported (Table 1). To overcome this difficulty,

we attempted to reposition the PTGBD catheter as close to the cystic duct as possible and ensure a straight line to the cystic duct as much as possible through the guidewire and catheter. The catheter was inserted along the guidewire into the CBD and located as close to the distal CBD stricture, and the guidewire was then manipulated antegradely for passing the papilla and duodenum with coordinated movement of the catheter. As a result, the guidewire was successfully inserted into the CBD and duodenum via PTGBD without any complications in our cases.

In particular, in our cases, this rendezvous technique was performed immediately after the failure of biliary cannulation with endoscopic techniques because all of our patients underwent PTGBD for bridging before subsequent ERCP due to the patient's general condition. We confirmed in advance the patency of the cystic duct through a tubogram before the procedure. In addition, our patients were free from acute cholecystitis at the time of the procedure. Any acute cholecystitis would have shown a wall thickening in the cystic duct due to inflammation resulting in relatively difficult passage of the guidewire through the cystic duct. Therefore, we recommend the delayed rendezvous process after improvement of inflammation in the case with acute cholecystitis.

The rendezvous technique involving insertion of a guidewire via PTGBD has limitations such as the need for two sessions for endoscopic procedure, difficulty grasping the guidewire with endoscopic attachment, kinking of the guidewire, and long procedure time.^{3,4,6} In addition, an experienced interventional radiologist and an endoscopist are needed. Above all, this rendezvous technique may be impossible in case of obstruction of the cystic duct due to gallstone, mass, or inflammation. Endoscopic ultrasonography-guided rendezvous technique is often performed to overcome difficult biliary cannulation.¹⁰ However, this procedure can only be performed in a highly experienced center equipped with exclusive devices and experts.

In conclusion, we successfully performed the rendezvous technique via PTGBD in two patients with difficult biliary cannulation. In our case, even though this technique was performed immediately after the failure of selective biliary cannulation in the patient with distal CBD stricture, no complications were detected. Therefore, we believe that the rendezvous technique via PTGBD may be considered in patients with failed selective biliary cannulation, including distal CBD stricture.

CONFLICT OF INTEREST

Authors declare lack of any conflict of interests related to this study.

AUTHOR CONTRIBUTION

All authors contributed to the manuscript.

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