

New cannulation method for pancreatic duct cannulation-bile duct guidewire-indwelling method

Yuji Sakai, Takeshi Ishihara, Toshio Tsuyuguchi, Katsunobu Tawada, Masayoshi Saito, Jo Kurosawa, Ryo Tamura, Seiko Togo, Rintaro Mikata, Motohisa Tada, Osamu Yokosuka

Yuji Sakai, Takeshi Ishihara, Toshio Tsuyuguchi, Katsunobu Tawada, Masayoshi Saito, Jo Kurosawa, Ryo Tamura, Seiko Togo, Rintaro Mikata, Motohisa Tada, Osamu Yokosuka, Department of Medicine and Clinical Oncology, Graduate School of Medicine, Chiba University, Chiba, 260-8670, Japan
Author contributions: Sakai Y, Ishihara T and Tsuyuguchi T were responsible for manuscript preparation; Sakai Y wrote the paper and performed endoscopic treatment; Tawada K, Saito M, Kurosawa J, Tamura R, Togo S, Mikata R and Tada M were responsible for data collection; Yokosuka O reviewed this manuscript.

Correspondence to: Yuji Sakai, MD, Department of Medicine and Clinical Oncology, Graduate School of Medicine, Chiba University, Inohana 1-8-1, Chuou-ku, Chiba, 260-8670, Japan. sakai4754@yahoo.co.jp
Telephone: +81-43-2262083 Fax: +81-43-2262088
Received: January 17, 2011 Revised: October 2, 2011
Accepted: October 9, 2011
Published online: November 16, 2011

Abstract

The patient was a 58-year-old male with symptomatic alcoholic chronic pancreatitis. Since a 10 mm calculus was observed in the pancreatic body and abdominal pain occurred due to congestion of pancreatic juice, endoscopic retrograde cholangiopancreatography was conducted for assessment of the pancreatic duct and treatment of pancreatic calculus. Pancreatogram was slightly and insufficiently obtained by injecting the contrast media *via* the common channel of the duodenal main papilla. We tried to cannulate selectively into the pancreatic duct for a clear image. However, the selective cannulation of the pancreatic duct was difficult because of instability of the papilla. On the other hand, selective cannulation of the bile duct was relatively easily achieved. Therefore, after the imaging of the bile duct, a guidewire was retained in the bile duct to immobilize the duodenal papilla and cannulation of the pancreatic duct was attempted. As a result, selective

pancreatic duct cannulation became possible. It is considered that the bile duct guidewire-indwelling method may serve as one of the useful techniques for cases whose selective pancreatic duct cannulation is difficult ("selective pancreatic duct difficult cannulation case").

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Key words: Endoscopic retrograde cholangiopancreatography; Bile duct guidewire-indwelling method; Selective pancreatic duct cannulation; Endoscopic pancreatic sphincterotomy; Pancreatic duct guidewire-indwelling method

Peer reviewer: Fauze Maluf-Filho, MD, Hospital das Clínicas, São Paulo University School of Medicine, 488 Olegario Mariano, São Paulo, SP 01402000, Brazil

Sakai Y, Ishihara T, Tsuyuguchi T, Tawada K, Saito M, Kurosawa J, Tamura R, Togo S, Mikata R, Tada M, Yokosuka O. New cannulation method for pancreatic duct cannulation-bile duct guidewire-indwelling method. *World J Gastrointest Endosc* 2011; 3(11): 231-234 Available from: URL: <http://www.wjgnet.com/1948-5190/full/v3/i11/231.htm> DOI: <http://dx.doi.org/10.4253/wjge.v3.i11.231>

INTRODUCTION

Endoscopic retrograde cholangiopancreatography (ERCP) is a technique that plays an important role in the diagnosis and treatment of cholangio-pancreatic diseases. Including the drainage, the approach to the bile duct rather than the pancreatic duct becomes necessary in many cases when ERCP is performed. To this end, various approaches are available for selective pancreatic duct difficult cannulation cases. These approaches, or methods, include the guidewire method^[1], two-devices-in-one-channel method^[2], flexible tip method^[3], pre-cut papillotomy^[1,4-14], wire-guid-

ed cannulation^[15,16], pancreatic duct guidewire-indwelling method (P-GW)^[1,17-20], *etc.* From the empirical viewpoint, the endoscopic approach to the pancreatic duct is easier and causes less difficulty in cannulation in comparison with that to the bile duct. Furthermore, since pancreatography is a risk factor for pancreatitis, cases of the pancreatic duct approach are limited. Accordingly, hardly any reports have been made on the approach to selective pancreatic duct difficult cannulation cases. In this regard, we found that the bile duct guidewire-indwelling method was useful in a selective pancreatic duct difficult cannulation case. The case is reported in the following.

CASE REPORT

The patient was a 58-year-old male with alcoholic chronic pancreatitis. Since a 10 mm calculus was detected in the pancreatic body and abdominal pain occurred frequently due to congestion of pancreatic juice, ERCP was conducted for assessment of the pancreatic duct and for treatment of pancreatic calculus. The procedures were carried out using side-viewing duodenoscopes (JF260V: Olympus Co., Tokyo, Japan). A catheter PR-104Q was used for cannulation (Olympus Co.). Two guidewires were employed in the procedure (Jagwire: Microvasive, Boston Scientific Co., Natick, MA, Revo Wave: Olympus Co.). After the start, the pancreatic duct was imaged to some extent from the common duct but the image was not clear enough and the catheter was dislodged from the papillary region due to the strong mobility of the duodenal papilla (Figure 1). The second attempt at pancreatography was not successful. However, despite the strong mobility of the duodenal papilla, imaging of the bile duct was possible. Therefore, after the imaging of the bile duct, a guidewire was retained in the bile duct to immobilize the papilla and cannulation of the pancreatic duct was attempted. As a result, selective pancreatic duct cannulation became possible (Figures 2A, 2B and 3). Subsequently, the guidewire was inserted up to the pancreatic tail (Figure 4) and endoscopic pancreatic sphincterotomy (EPST), a technique to provide separate openings for the pancreatic duct and the bile duct, was performed so as to conduct an Extracorporeal Shock Wave Lithotripter later on to remove pancreatic calculus. It is reported that EPST and difficult cannulation cases constitute a risk factor of post-ERCP pancreatitis because they induce edema in the papilla that leads to the stasis of pancreatic juice^[21]. Accordingly, the procedure was completed by retaining a 5 Fr. Three centimeters unilateral-flapped pancreatic duct stent (Geenen, Pancreatic Stent: Wilson-Cook Medical Inc., Winston-Salem, NC)^[22,23] that might prevent pancreatitis by securing the outlet for the congestion of pancreatic juice. Although post-operative hyperamylasemia was observed, no problematic incidental disease occurred. No substantial problem with the pancreatic duct stent occurred and the X-ray that was taken the next day confirmed the spontaneous dislodgement.

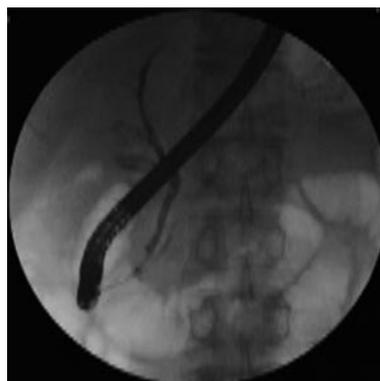


Figure 1 Pancreatic calculus is observed in the pancreatic body. Although the pancreatic duct was imaged to some extent by endoscopic retrograde cholangiopancreatography, the catheter was dislodged due to the strong mobility of the duodenal papilla, after which only the bile duct was imaged.

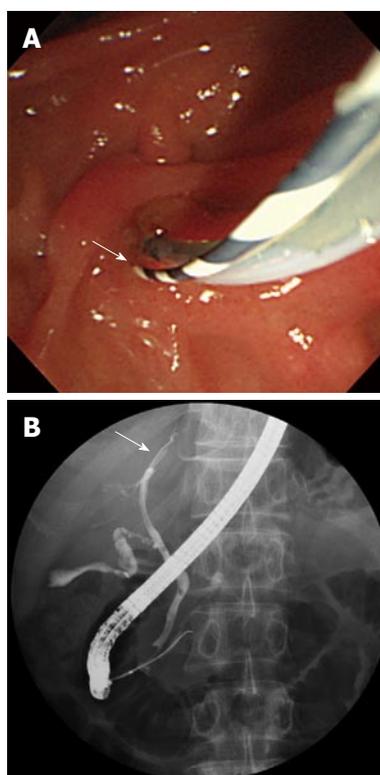


Figure 2 A guidewire in the bile duct and catheter. Because the papilla was very mobile, a guidewire was retained in the bile duct and the catheter is pressed to the duodenal papilla while the pancreatic duct direction is probed with the guidewire inserted into the catheter. Arrows indicate bile duct guidewire-indwelling. A: Endoscopic image of duodenal papilla; B: X-ray image.

DISCUSSION

Thanks to the recent progress of imaging diagnosis, including magnetic resonance cholangiopancreatography and endoscopic ultrasound in regard to cholangio-pancreatic diseases^[24-27], other imaging methods are employed as much as possible in many cases and ERCP, with a risk of inducing serious incidental diseases, is used only when the diagnosis is still difficult or when treatment becomes necessary^[27]. However, ERCP is still an essential technique



Figure 3 The guidewire went ahead in the direction of pancreatic duct.



Figure 4 The guidewire was retained across the calculus to the pancreatic tail.

for the diagnosis and treatment of cholangio-pancreatic diseases. The use of various methods has been reported in selective bile duct difficult cannulation cases. On the other hand, the endoscopic approach to the pancreatic duct is easier from the anatomical viewpoint and causes less difficulty in cannulation in comparison with that to the bile duct. Furthermore, since pancreatography is a risk factor of pancreatitis^[21], cases of the pancreatic duct approach are limited. Accordingly, hardly any report has been made on the approach to selective pancreatic duct difficult cannulation cases. However, sometimes there are cases such as ours that require selective pancreatic duct cannulation. Since the selective pancreatic duct cannulation was difficult by the usual catheterization in our case, we made use of the pancreatic duct guidewire-indwelling method, applicable to selective bile duct difficult cannulation cases, and retained the guidewire in the bile duct for selective pancreatic duct cannulation. P-GW for selective biliary cannulation in a patient with surgically altered anatomy was first reported by Dumonceau *et al.*^[7]. Gotoh *et al.*^[18] reported a second case of successful biliary cannulation with P-GW in a patient with a tortuous common channel. The method which was subsequently employed by Maeda *et al.*^[19] and Ito *et al.*^[20] in a substantial number of cases is reported to increase the bile duct cannulation rate in selective bile duct difficult cannulation cases by reducing, linearizing and fixing the sphincter muscle of

papilla, and is useful in cases with parapapillary diverticulum, deviated papilla and with strong papillary mobility, and those with a tortuous and long papillary sphincter muscle. Although pancreatic duct cannulation was necessary, our case demonstrated strong papillary mobility. The imaging of the pancreatic duct was difficult because the ordinary catheter was easily dislodged from the papilla. However, since imaging of the bile duct was possible, the papilla could be firmly fixed by retaining a guidewire in the bile duct, thereby making selective pancreatic duct cannulation possible. It may be difficult to investigate this method in a large number of cases because selective pancreatic duct cannulation is required infrequently. As in the case of the pancreatic duct guidewire-indwelling method, the bile duct guidewire-indwelling method is considered useful for those who require selective pancreatic duct cannulation, cases with parapapillary diverticulum, with deviated papilla and papillary mobility, and for those with a tortuous and long papillary sphincter muscle. We plan to perform the bile duct guidewire-indwelling method and to re-investigate the procedure after accumulating corresponding cases in the future.

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S- Editor Zhang SJ L- Editor Roemmele A E- Editor Zheng XM