



Modified double-guidewire technique using a unique double-lumen sphincterotome for difficult biliary cannulation

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ERCP is widely accepted as the standard therapeutic procedure for different pancreatobiliary disorders. Selective biliary cannulation remains difficult in 5% to 10% of cases, even in the hands of experienced operators.¹ Although several techniques have been proposed as

alternatives for persistent conventional biliary cannulation in difficult cases such as precut sphincterotomy and needle-knife precut, the double-guidewire technique (DGT) is still considered a promising salvage approach in such cases.²⁻⁵ Nevertheless, with the interference of the

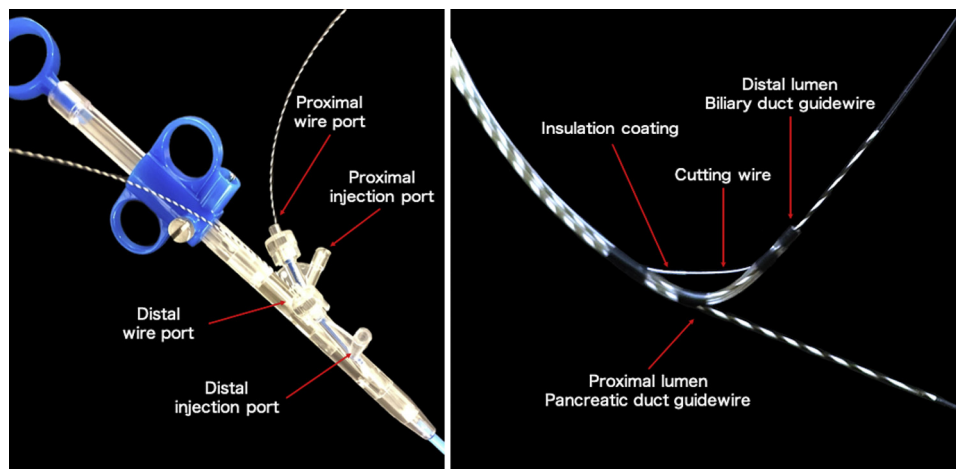


Figure 1. The MagicTome (PIOLAX, Tokyo, Japan) is a novel sphincterotome. It is a double-lumen sphincterotome with independent ports for the pancreatic duct guidewire and bile duct guidewire, both measuring 0.025 inches in diameter. The proximal portion of cutting wire is insulated to avoid mucosal injury during sphincterotomy.



Figure 2. The MagicTome facilitates biliary cannulation by using a double-guidewire technique. **A,** The MagicTome was advanced to the papilla over the pancreatic guidewire. **B,** The distal lumen can be finely adjusted to the biliary axis by swinging up the catheter tip.

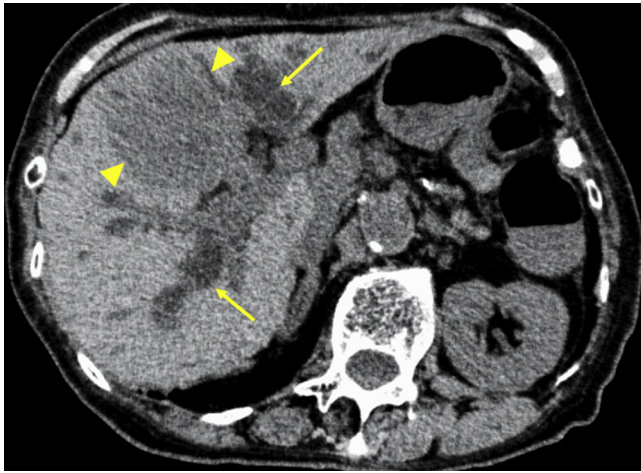


Figure 3. Abdominal CT revealed dilated bilateral intrahepatic bile ducts (yellow arrow) owing to cholangiocellular carcinoma (yellow arrowhead).

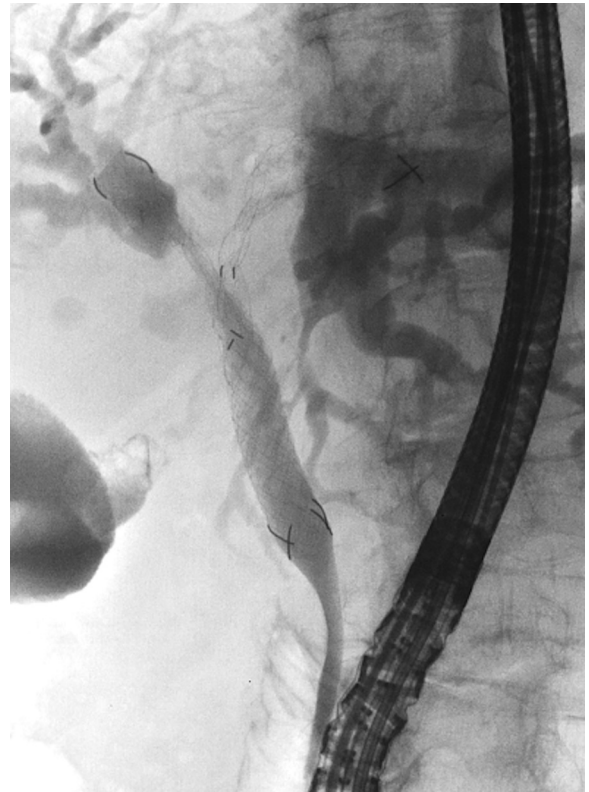


Figure 5. The bilateral metal stents were deployed for malignant hilar biliary obstruction by using the stent-in-stent technique.

pancreatic duct guidewire (P-GW) against cannulation devices, this technique sometimes becomes challenging and encounters difficulty in aligning the axis of the device with the biliary direction.

Because sphincterotome is widely preferred as the initial biliary cannulation device in many centers, we tried here to present an easy maneuver for DGT using a dedicated DGT sphincterotome (MagicTome, PIOLAX, Tokyo, Japan). The

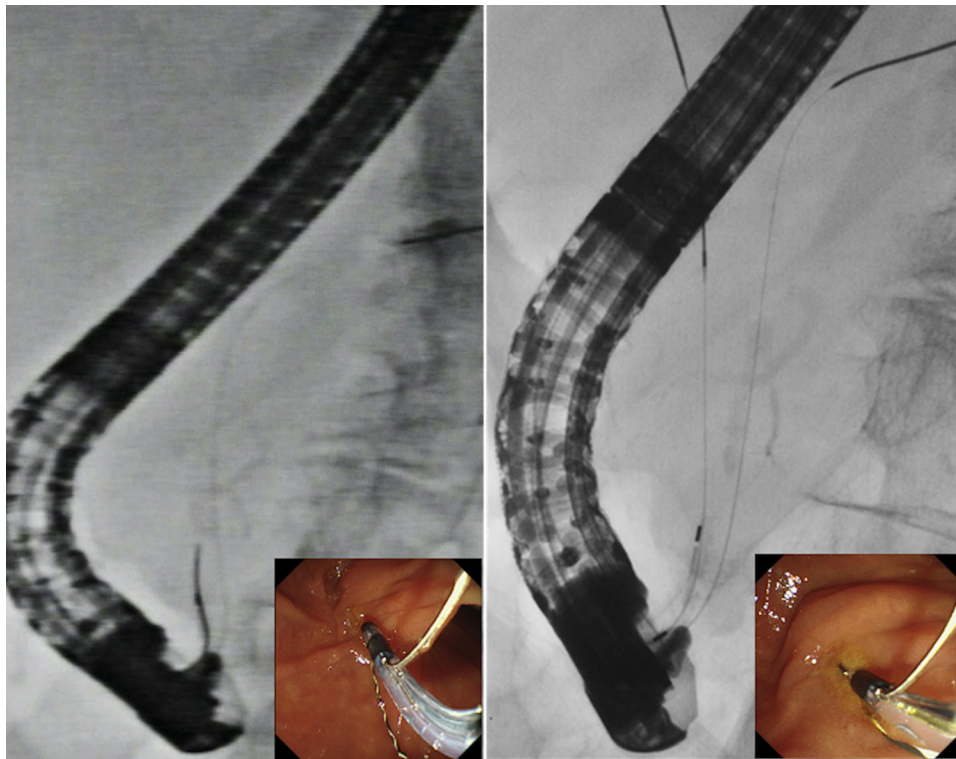


Figure 4. The MagicTome was advanced by railroading the pancreatic duct guidewire through the proximal lumen. **A,** The distal lumen was easily positioned in line with the biliary orifice; thereafter, biliary cannulation was attempted with the double-guidewire technique. **B,** Biliary cannulation was achieved by swinging up the catheter tip to align with the biliary axis.



Figure 6. MRCP revealed distal biliary obstruction (*yellow arrowhead*) owing to pancreatic cancer.

device is a double-lumen sphincterotome with independent ports for the P-GW and bile duct guidewire, both measuring 0.025 inches in diameter (Figs. 1 and 2). Compared with the conventional sphincterotome, MagicTome affords benefits in facilitating the DGT in problematic cases. This sphincterotome is designed so that the distal lumen is aligned with the bile duct by passing the P-GW through the proximal lumen. This design not only avoids the impedance of the P-GW against cannulation devices, it also uses it as a tool to fix the papilla, allowing the sphincterotome's distal tip to navigate freely along the

biliary axis, allowing easier cannulation of bile duct. Additionally, the device permits simultaneous injection of contrast, allowing mapping of the biliary tract and subsequent safe guidewire advancement. Herein, we present 2 successful cases using MagicTome for difficult biliary cannulation.

CASE 1

An 80-year-old man presented with jaundice. Abdominal CT revealed dilated bilateral intrahepatic ducts owing to cholangiocellular carcinoma (Fig. 3). The duodenoscope (TJF-260V; Olympus Medical Systems, Tokyo, Japan) was inserted into the second duodenum, and ERCP was performed using a conventional ERCP catheter; however, selective cannulation failed after several attempts. Hence, a guidewire was placed into the pancreatic duct. Subsequently, the MagicTome was advanced by railroading the P-GW through the proximal lumen. Afterward, the distal lumen was easily positioned toward the biliary orifice, and biliary cannulation was attempted by DGT. Bringing the catheter tip up to align with the biliary axis led to successful selective biliary cannulation (Fig. 4). Sphincterotomy was then performed using MagicTome after removal of the P-GW. Finally, bilateral metal stents were deployed for malignant hilar biliary obstruction using the stent-in-stent technique (Fig. 5).

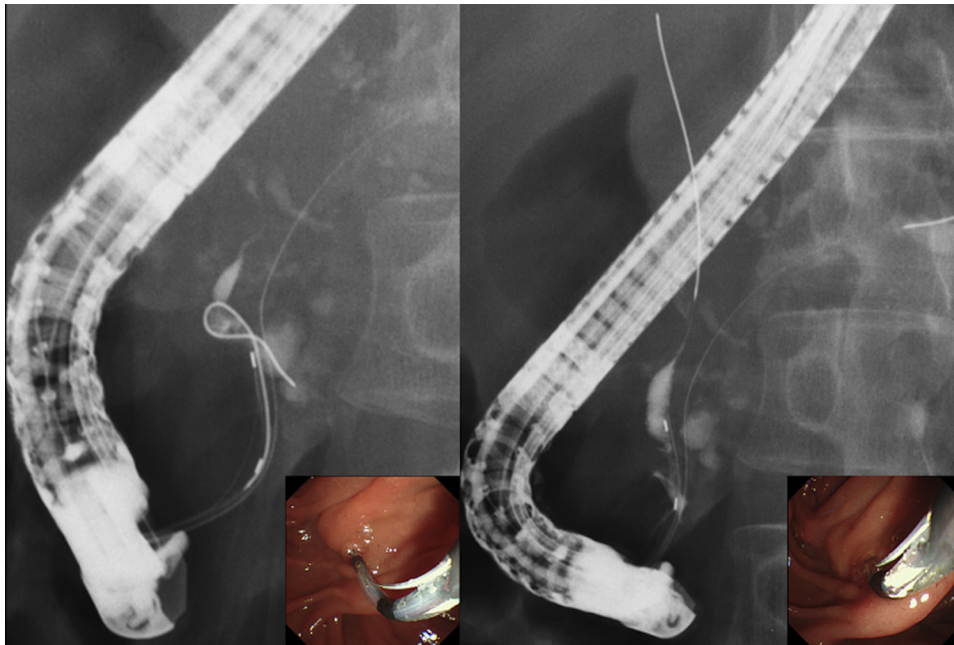


Figure 7. After injection of a contrast medium, the guidewire could be safely advanced while confirming the biliary direction. Selective biliary cannulation was successfully achieved.

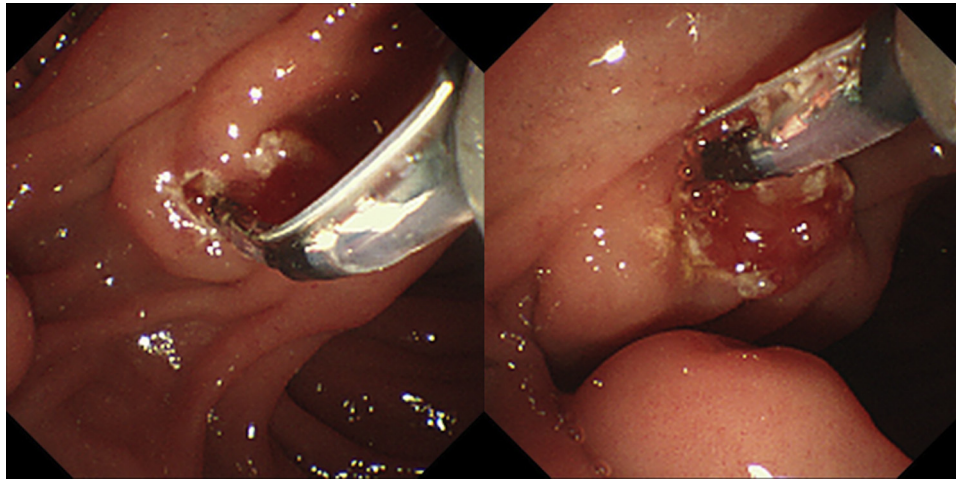


Figure 8. Sphincterotomy was performed by using MagicTome.

CASE 2

A 50-year-old man with a recent diagnosis of pancreatic cancer presented with jaundice. MRCP revealed distal biliary obstruction (Fig. 6). We inserted a duodenoscope (TJF-260V; Olympus Medical Systems) into the second



Figure 9. A 7F plastic stent was placed for distal biliary obstruction.

duodenum and then performed ERCP targeting biliary drainage by using a conventional ERCP catheter, but biliary cannulation was unsuccessful; only the guidewire was placed into the pancreatic duct. Subsequently, the DGT technique was attempted; however, it was challenging to align the catheter with the biliary axis because of interference with the P-GW. Therefore, we tried to perform biliary cannulation using the MagicTome following the procedure already described. We successfully achieved selective biliary cannulation after confirming the biliary direction by injecting contrast (Fig. 7). Sphincterotomy was then performed using the MagicTome (Fig. 8). Finally, a 7F plastic stent was placed for distal biliary obstruction (Fig. 9). There were no procedure-related adverse events such as post-ERCP pancreatitis in either case.

This novel sphincterotomy with its advantages over the conventional ERCP catheter and sphincterotomy facilitated the DGT with an easier approach for difficult biliary cannulation. Therefore, this sphincterotomy can be used as an initial biliary cannulation device (Video 1, available online at www.VideoGIE.org).

DISCLOSURE

All authors disclosed no financial relationships.

Abbreviations: DGT, double-guidewire technique; P-GW, pancreatic duct guidewire.

ACKNOWLEDGMENT

The authors wish to thank Dr Yoshifumi Arisaka and Yoshihiro Okabe for their involvement in the development of MagicTome.

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<https://doi.org/10.1016/j.vgie.2020.11.009>

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