

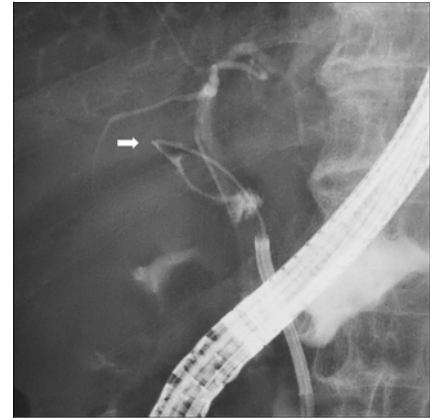
Novel technique for intraductal cholangioscopy-assisted biliary drainage with over-the-wire microcatheter manipulation



► **Fig. 1** Case 1: Endoscopic retrograde cholangiography shows complete obstruction with no flow of contrast into the left intrahepatic bile duct in a patient with hilar cholangiocarcinoma.



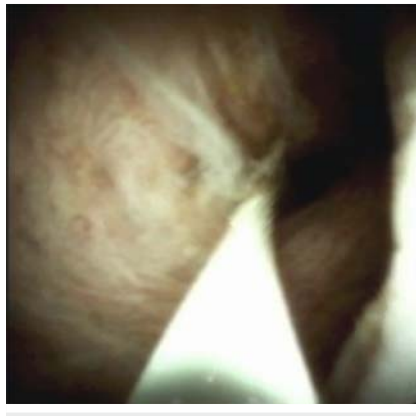
► **Fig. 3** Case 2: Endoscopic retrograde cholangiography does not show the orifice of the cystic duct, preventing transcystic guidewire advancement under fluoroscopic imaging in a patient with acute cholecystitis.



► **Fig. 5** Cholangiography on contrast pressure injection via the over-the-wire microcatheter (arrow) shows the extra-cavity from the cystic duct, indicating guidewire penetration into the peritoneal cavity.



► **Fig. 2** A 3-Fr over-the-wire microcatheter (arrow) introduced via intraductal cholangioscopy allowed injection of contrast into the target bile duct.

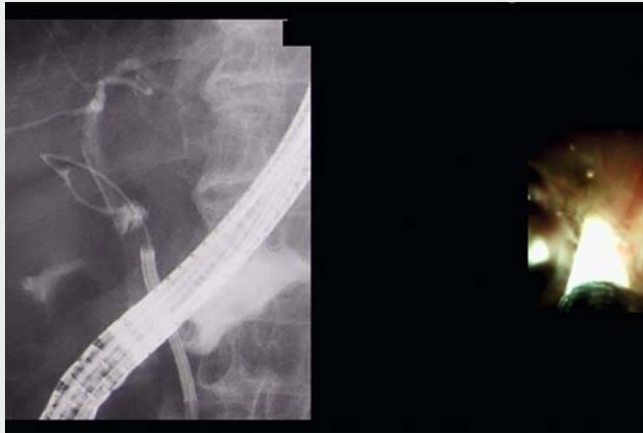


► **Fig. 4** Direct cholangioscopy reveals the orifice of the cystic duct and allows insertion of the guidewire with the over-the-wire microcatheter.

Cholangioscopy-assisted guidewire placement is reported to be a useful method for endoscopic biliary drainage that is made difficult by complex strictures and obstructions [1–5]. However, the guidewire sometimes becomes misdirected because of the lack of contrast-filled images. With the aim of improving safety and certainty, we present two practical cases that employ a novel technique

using an over-the-wire microcatheter through digital intraductal cholangioscopy (IDC) (SpyGlass DS; Boston Scientific, Natick, Massachusetts, USA). Case 1 involved a 72-year-old woman with hilar cholangiocarcinoma who underwent endoscopic biliary drainage for segmental cholangitis. The cholangiogram showed complete obstruction of the left hepatic duct (► **Fig. 1**). Although

direct visualization with IDC allowed advancing the 0.025-inch guidewire over the obstructing tumor in the left hepatic duct, the guidewire lost the pathway to the left intrahepatic bile duct. The 3-Fr outer sheath of a basket catheter (Micro-Catch; MTW Endoskopie, Düsseldorf, Germany), which can be inserted into the SpyGlass DS, was introduced as a microcatheter in order to inject contrast medium and assist guidewire manipulation. The contrast-filled image of the left intrahepatic bile duct allowed successful negotiation (► **Fig. 2**), followed by replacement of the endoscopic nasobiliary drainage tube (► **Video 1**). Case 2 involved a 79-year-old man with acute cholecystitis. The cholangiogram showed complete obstruction of the cystic duct (► **Fig. 3**), which prevented guidewire advancement under fluoroscopic imaging. The orifice of the cystic duct was visualized using the SpyGlass DS, then the guidewire with a 3-Fr endoscopic nasobiliary drainage tube (Daimon-PTCD set, Hanao Medical, Saitama, Japan), another microcatheter that may be used through the SpyGlass DS, was advanced into the



Video 1 Novel technique with over-the-wire microcatheter manipulation for SpyGlass DS-assisted selective biliary drainage.

cystic duct (► **Fig. 4**). At one point when the guidewire was advanced in an unknown direction, contrast injection through the microcatheter showed clearly that the guidewire had penetrated the peritoneal cavity (► **Fig. 5**). The microcatheter also assisted with maneuvering of the guidewire to correct its course, resulting in successful access to the gallbladder, completed by insertion of a plastic stent (► **Video 1**).

Cholangioscopic operation with a microcatheter offers advantages both for obtaining selective contrast-filled images and for delicate manipulation of the guidewire as performed in selective angiographic examinations.

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Competing interests

None

The authors

Michihiro Yoshida, Akihisa Kato, Kazuki Hayashi, Itaru Naitoh, Katsuyuki Miyabe, Yasuki Hori, Go Asano

Department of Gastroenterology and Metabolism, Nagoya City University Graduate School of Medical Sciences, Nagoya, Japan

Corresponding author

Kazuki Hayashi, MD

Department of Gastroenterology and Metabolism, Nagoya City University Graduate School of Medical Sciences, 1 Kawasumi, Mizuho-cho, Mizuho-ku Nagoya 467-8601, Japan
Fax: +81-52-852-0952
khayashi@med.nagoya-cu.ac.jp

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