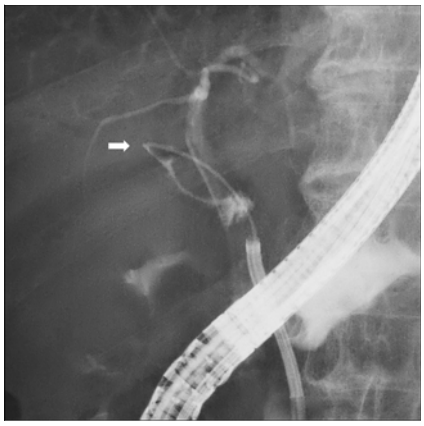
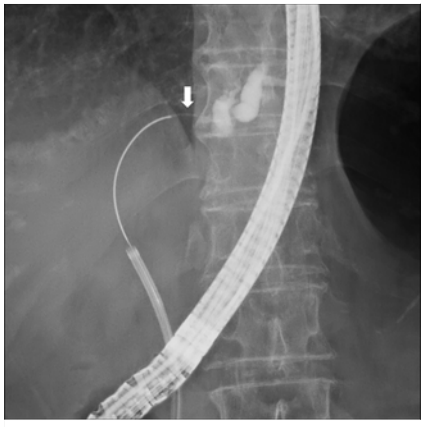
Novel technique for intraductal cholangioscopy-assisted biliary drainage with over-the-wire microcatheter manipulation

▶ **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.

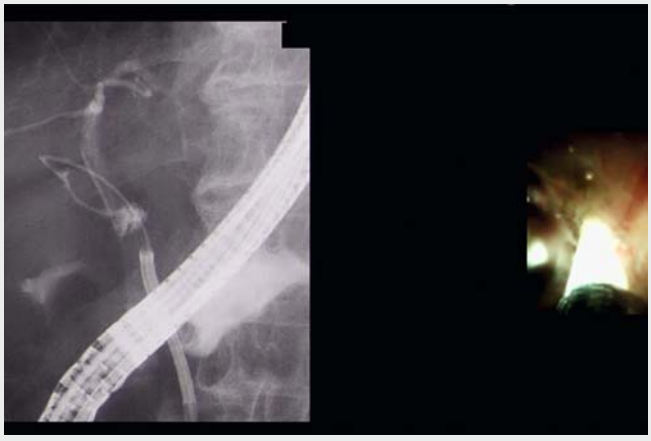


▶ **Fig. 2** A 3-Fr over-the-wire microcatheter (arrow) introduced via intraductal cholangioscopy allowed injection of contrast into the target bile duct.

▶ **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 (MicroCatch; 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, Hanaco 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

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