

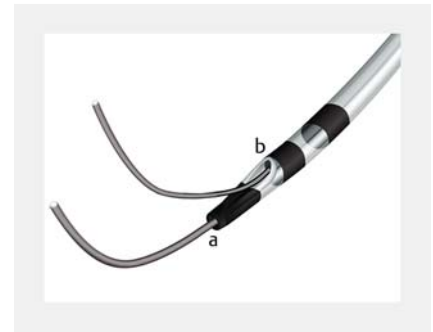
A novel biliary cannulation method for difficult cannulation cases using a unique, uneven, double-lumen cannula (Uneven method)

The utility of pancreatic duct guidewire (P-GW) placement techniques, including the contrast-medium method and the contrast-free wire-guided cannulation method (i.e. the “double-guidewire method” [D-GW]), has been reported for selective biliary cannulation in patients in whom performing cannulation of the bile duct is difficult [1–5]. However, P-GW placement often disturbs the approach to the bile orifice. Moreover, it is sometimes difficult to insert the catheter or guidewire in the direction of the bile duct, which delays biliary cannulation.

Herein, we report a novel biliary cannulation method using a unique, uneven, double-lumen cannula (UDLC; PIOLAX, Tokyo, Japan). The UDLC is a double-lumen catheter, with lumens measuring 0.025 and 0.035 inches in diameter, respectively. The orifice of each lumen is uneven, thereby forming a channel at the tip of the UDLC (► Fig. 1). With such characteristics in mind, we applied the UDLC to develop a new method of selec-

tive biliary cannulation for difficult cannulation cases (UDLC method). We describe a case wherein the UDLC was successfully employed without complications (► Video 1).

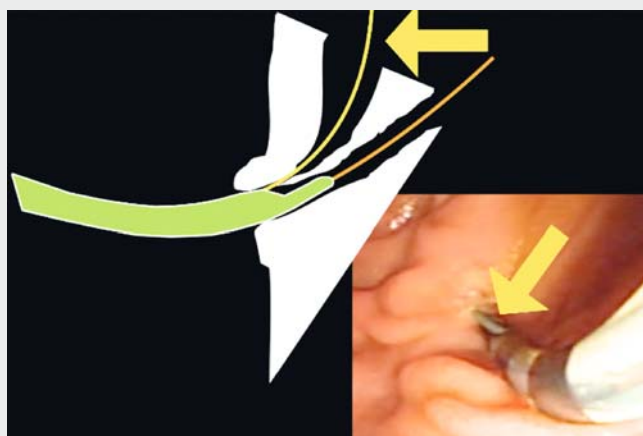
A 75-year-old man presented with pancreatic cancer and was admitted to our hospital for treatment of obstructive cholangitis. It was difficult to perform biliary cannulation as we could insert only the P-GW. Initially, the UDLC was used to intubate the papilla through the P-GW via the distal lumen. This straightened the pancreatic duct and the common channel, thereby effectively stabilizing the papilla (► Fig. 2). Next, we performed biliary cannulation via the proximal lumen, as is done in the D-GW method (► Fig. 3). By using this method, we were able to avoid the time delay in adjusting the catheter axis to comply with the bile duct direction, as required in the P-GW method. Thus, we easily initiated the biliary cannulation approach. Ultimately, we succeeded in performing selective biliary cannulation (► Fig. 4).



► **Fig. 1** The uneven double-lumen cannula (UDLC; PIOLAX, Tokyo, Japan) is a double-lumen catheter, with lumens of 0.025 (distal, **a**) and 0.035 (proximal, **b**) inches in diameter. The orifice of each lumen is uneven, thereby creating a channel within the tip.

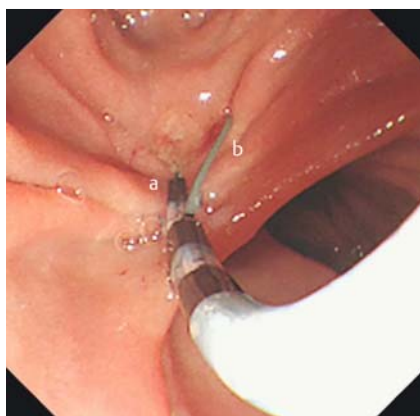


► **Fig. 2** A schematic of the uneven double-lumen cannula (UDLC) method. Initially, the UDLC **a** is intubated to the papilla through the pancreatic guidewire (P-GW) **b** using the distal lumen. This straightens the pancreatic duct and the common channel, thereby more effectively stabilizing the papilla compared with the use of the P-GW alone. Next, biliary cannulation using the proximal lumen is performed in a manner that is similar to the double-guidewire technique **c**.

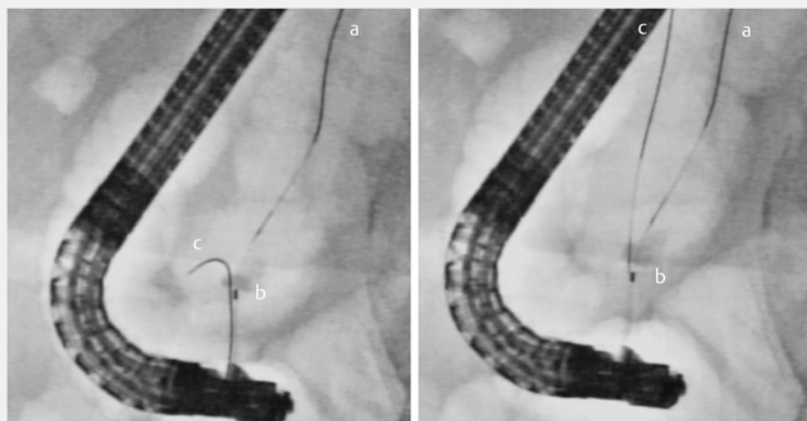


► **Video 1** The uneven double-lumen cannula (UDLC) method is used for cases of difficult cannulation. The papilla is intubated using the UDLC, then biliary cannulation via the proximal lumen is quickly performed.





► **Fig. 3** The tip of the uneven double-lumen cannula **a** is intubated to the papilla through the pancreatic guidewire. The guidewire from the proximal lumen **b** is seen.



► **Fig. 4** The uneven double-lumen cannula (UDLC) is intubated to the papilla through the pancreatic guidewire **a**. The fluoroscopic marker of the UDLC **b** is seen. The guidewire from the proximal lumen **c** is used for biliary cannulation, as is done in the double-guidewire method.

In summary, we report a new cannulation method using a UDLC to safely and effectively perform selective biliary cannulation in patients in whom biliary cannulation is otherwise difficult.

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Competing interests

None

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