

# Gastrointestinal Intervention

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## Case Report

### Combined use of a two-channel endoscope and a flexible tip catheter for difficult biliary cannulation



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## ABSTRACT

A 69-year-old woman with jaundice was referred to our hospital. After a final diagnosis of pancreatic cancer with liver metastasis, we performed transpapillary biliary drainage with a covered self-expandable metal stent (SEMS). Three months later, we also placed an uncovered duodenal stent for duodenal stricture in a side-to-end fashion. Another month later, for biliary SEMS obstruction, we attempted a transpapillary approach. A duodenoscope was advanced and a guidewire was passed through the mesh of the duodenal stent into the bile duct with a flexible tip catheter, but the catheter was not. Thus, we exchanged the duodenoscope for a forward-viewing two-channel endoscope and used the left working channel with a flexible tip catheter. By adjusting the axis, we finally succeeded biliary cannulation and accomplished balloon cleaning for recanalization of the SEMS. This is the first case with successful biliary cannulation by combined use of a two-channel endoscope and a flexible tip catheter.

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Keywords: Bile duct obstruction; Catheters; Endoscopes

## Introduction

Biliary cannulation is occasionally difficult because of surgical altered anatomy or deformation of the duodenum. Patients with pancreatic cancer occasionally develop duodenal deformation or stricture which can prevent access to the major papilla and the bile duct. Since endoscopic ultrasonography-guided biliary drainage as a new efficacious method is still controversial in indication,<sup>1</sup> we have to attempt transpapillary biliary drainage with various tools and devices. In some patients with altered gastrointestinal anatomy, an anterior oblique-viewing endoscope was effective for biliary cannulation,<sup>2,3</sup> while a novel multibending backward-oblique viewing duodenoscope<sup>4</sup> was efficacious for difficult biliary cannulation in previous reports.

## Case Report

A 69-year-old woman with jaundice was referred to our hospital. After a final diagnosis of pancreatic cancer with liver metastasis, we performed transpapillary biliary drainage with a covered self-expandable metal stent (SEMS) (10 × 60 mm, WallFlex<sup>TM</sup>; Boston

Scientific, Natick, MA, USA). Three months later, we also placed an uncovered duodenal stent (22 × 100 mm, Niti-S<sup>TM</sup>; Taewoong Medical, Gimpo, Korea) for duodenal stricture in a side-to-end fashion. Another month later, as the patient developed cholangitis due to biliary SEMS obstruction, we attempted a transpapillary approach. A duodenoscope was advanced and a 0.025 inch guidewire (Pathcourse<sup>TM</sup>; Boston Scientific) was passed through the mesh of the duodenal stent into the bile duct with a flexible tip catheter (Swing Tip catheter<sup>TM</sup>; Olympus Medical Systems, Tokyo, Japan), but the catheter was not (Fig. 1). As an ERCP catheter was also not passed through the mesh due to a gap between the axes of a scope channel and the bile duct even after exchanging the 0.025-inch for a stiff 0.035-inch guidewire (Jagwire<sup>TM</sup> ST Stiff; Boston Scientific), we exchanged the duodenoscope for a forward-viewing two-channel endoscope and used the left working channel with a flexible tip catheter. By adjusting the axis, we finally succeeded biliary cannulation (Fig. 2) and accomplished balloon cleaning for recanalization of the SEMS (Fig. 3).

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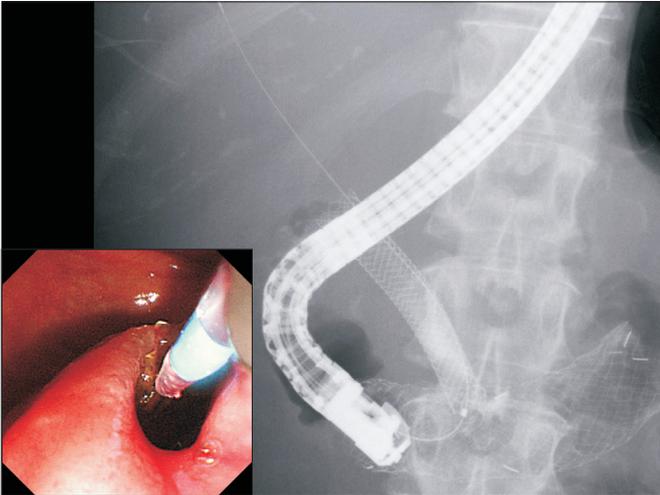
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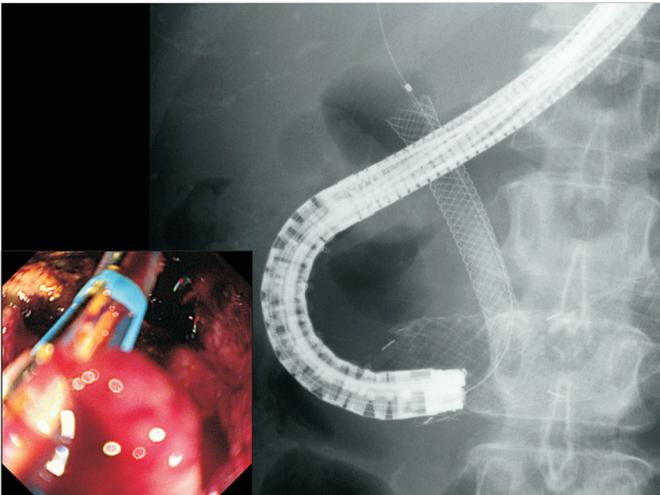
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**Fig. 1.** Endoscopic (inset) and radiological images showing a 0.025 guidewire insertion to the bile duct, but not a flexible tip catheter.

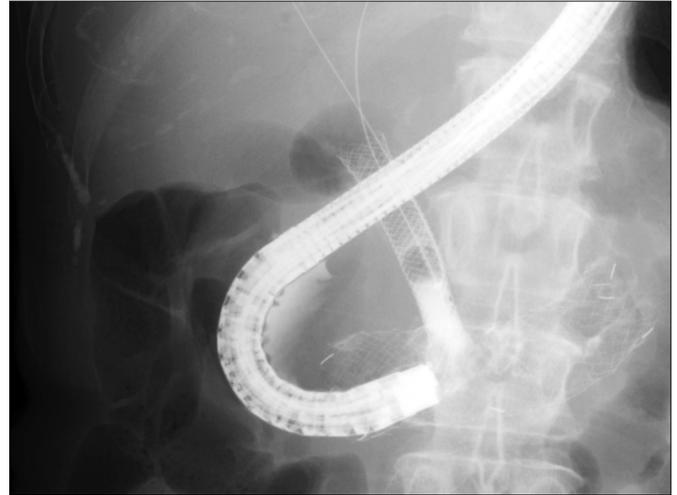


**Fig. 2.** Endoscopic (inset) and radiological images showing a 0.035 guidewire and a flexible tip catheter insertion to the bile duct.

## Discussion

There have been some reports regarding devices for difficult biliary cannulation, for example, an anterior oblique-viewing endoscope,<sup>2,3</sup> multibending backward-oblique viewing duodenoscope and flexible tip (steerable) catheter.<sup>4-6</sup> This is the first case with successful biliary cannulation by combined use of a two-channel endoscope and flexible tip catheter.

A two-channel endoscope has advantages as compared with a normal duodenoscope. One is that an endoscopist can select a left or right channel according to a location of the major papilla and another is that pushability of a catheter can be improved when



**Fig. 3.** Radiological image during recanalization of the biliary self-expandable metal stent by a balloon catheter.

the axis of the scope channel is similar to that of the bile duct as our case. Such characteristics can be available in some cases with anatomical deformation. Meanwhile, a flexible tip (steerable) catheter enables fine adjustment of the axes. There have been two reports in which failed biliary cannulation by a standard cannula was overcome by a flexible catheter or the success rate of biliary cannulation by a steerable catheter was better than that by a standard cannula (84% vs 75%).<sup>5,6</sup> Thus, the combined use of a two-channel endoscope and a flexible tip catheter can be a powerful method for difficult biliary cannulation, especially in cases with duodenal deformation.

## Conflicts of Interest

No potential conflict of interest relevant to this article was reported.

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