Cannulation of an intradiverticular papilla using a novel slim colonoscope with a short-bending section
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OVERVIEW

Periampullary diverticulum is a common anatomical alteration around the papilla (6%-31% of native papillae). Its prevalence increases with age, with reported rates as high as 65% in older people.1 Reaching the common bile duct during an ERCP may be challenging in the case of periampullary diverticulum as demonstrated by the lower cannulation rate than that observed in patients without a diverticulum.2,3 Also, it should be noted that, according to the Li-Tanaka classification, patients with the papilla located entirely in the diverticulum (type I) exhibited the highest difficult cannulation rate (23.1%), but type II and IV patients had the highest cannulation success rates (99.4% in type II and 99.3% in type IV).4

Several techniques for biliary cannulation in the case of periampullary diverticulum have been reported. These include the cap-assisted method, the 2-devices-in-1-channel method, balloon dilatation of a narrow-necked diverticulum, reverse guidewire to anchor the papilla, endoclip-assisted biliary cannulation, pancreatic duct stent placement followed by precut biliary sphincterotomy, and percutaneous or EUS-guided rendezvous techniques.2

Recently, a new slim pediatric colonoscope (PCF-H190TL/I; Olympus Europe; Hamburg, Germany) has been released. A shorter bending section combined with a higher up-down and left-right angulation range compared to a therapeutic gastroscope provides better handling in the intestine and offers easier lesion approachability. This scope also has therapeutic capabilities because its 3.2-mm channel allows the passage of several devices, such as a 9F (3.0-mm) biliary stent. Its use for difficult biliary cannulation has never been reported.

CASE REPORT

Here we describe the case of an 87-year-old man with distal cholangiocarcinoma who underwent ERCP with a novel short-bending section colonoscope for a difficult intradiverticular papilla. The patient presented at the emergency department with jaundice, upper abdominal pain, and weight loss.

His laboratory tests showed a total bilirubin value of 9.7 mg/dL (normal range [N]: 0.2-1.3), direct bilirubin of 7.6 mg/dL (N: 0.1-0.5), and an increase in aspartate aminotransferase of 362 IU/L (N: 5-40), alanine aminotransferase of 401 IU/L (N: 10-65), alkaline phosphatase of 766 IU/L (N: 30-120), and γ-glutamyl transferase of 2006 IU/L (N: 10-80), carbohydrate antigen 19-9 (S-CA-19-9) 66.5 IU/L (N: 39).

Figure 1. The magnetic resonance cholangiography showed an abrupt narrowing of the terminal common bile duct.

Figure 2. The papilla located inside the diverticulum.
The magnetic resonance cholangiography showed an abrupt narrowing of the terminal common bile duct (Fig. 1; Video 1, available online at www.giejournal.org).

An ERCP for biliary drainage was performed with the traditional side-view duodenoscope, which showed a large diverticulum with the papilla placed inside it (type I, according to the Li-Tanaka classification, Fig. 2). The papilla located inside the diverticulum had an extremely angulated position that made traditional guidewire cannulation impossible (Fig. 3A and B).

Figure 3. A. The papilla inside the diverticulum had an extremely angulated position. B. Fluoroscopy image with the traditional side-view duodenoscope.

Figure 4. A. Pancreatic cannulation with the novel slim colonoscope. B. Fluoroscopy image of pancreatic cannulation with the novel slim colonoscope.

Figure 5. A. Biliary cannulation (double-guidewire technique). B. Fluoroscopy image of pancreatic cannulation. C. Fluoroscopy image of biliary cannulation.
We switched to a novel pediatric colonoscope with a short-bending section (PCF-H190TL/I; Olympus Europe). The high angulation range of this scope, combined with a transparent cap, provided a better approach to the papilla (Fig. 4A and B). We obtained pancreatic cannulation, and then, using the double-guidewire technique, biliary cannulation (Fig. 5A-C). Cholangiography confirmed a short neoplastic prepapillary stricture, and fluoroscopy demonstrated the high flexibility of the bending section of the scope (Fig. 6). After performing biliary sphincterotomy (Fig. 7), we placed a 5F plastic stent in the Wirsung duct for postcannulation prophylaxis of post-ERCP pancreatitis (Fig. 8). The 3.2-mm channel diameter of the scope

Figure 6. Fluoroscopy image of the short neoplastic prepapillary stricture. Note the high flexibility of the bending section of the scope.

Figure 7. Biliary sphincterotomy.

Figure 8. Placing of 5F plastic stent in the Wirsung duct for prophylaxis of post-ERCP pancreatitis.

Figure 9. Release of the partially covered 9F 10- × 40-mm self-expandable metal stent.

Figure 10. The stent was deployed in a transpapillary fashion.
allowed passage of a partially covered 9F 10- × 40-mm self-expandable metal stent (WallFlex; Boston Scientific; Marlborough, Mass) (Fig. 9), which was deployed in a transpapillary fashion with immediate biliary drainage (Figs. 10, 11, and 12; Video 2, available online at www.giejournal.org). Figure 13 shows the stent at the end of the procedure. There were no adverse events either during or after the procedure. The patient’s clinical and biochemical status improved after the procedure, and he was discharged 3 days later.

DISCUSSION

In the absence of comparative studies among the different techniques of biliary cannulation in the case of periampullary diverticulum, European Society of Gastrointestinal Endoscopy guidelines do not propose a conclusive algorithm but instead suggest that the choice should take into account the 3.2-mm instrument channel.

The use of a gastroscope with a transparent cap has been described in the case of periampullary diverticulum to gain access to the biliary duct through the papillary orifice or after fistulotomy. Also, a forward-viewing endoscope can help identify a papilla that could not be located at first by a duodenoscope.

However, the flexibility of these scopes must face the smaller caliber of the instrument channel. On the other hand, therapeutic scopes have larger channels but reduced maneuverability because of their limited angulation.

This novel slim colonoscope combines an excellent angulation range and a 3.2-mm instrument channel that allows the performance of most ERCP procedures, such as the deployment of 9F biliary metal stents.

This case illustrates how this slim colonoscope provides access to difficult anatomical sites, offering high maneuverability even for advanced operative techniques and overcoming the lack of an elevator. In the case of type I periampullary diverticulum, it can be used with the transparent cap as a modified cap-assisted method. This strategy may be considered early in the algorithm of difficult biliary cannulation because it is a relatively easier method compared to other more time-consuming techniques.

DISCLOSURE

All authors disclosed no financial relationships.

Abbreviation: N, normal range.
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