Balloon enteroscopy-assisted biliary drainage using a diathermic dilator followed by placement of a novel ultra-slim metallic stent

Endoscopic management of malignant biliary stricture after hepaticojejunostomy is challenging. Although balloon enteroscopy-assisted endoscopic retrograde cholangiopancreatography (ERCP) has been developed, dedicated devices are still insufficient. We present a case of successful enteroscopic dilation using a wire-guided diathermic dilator [1–5], and placement of a novel, ultra-slim, uncovered, self-expandable, metallic stent (USEMS) for the treatment of a severe malignant stricture of the perihilar bile duct after hepaticojejunostomy.

A 52-year-old man with obstructive jaundice was referred to our department. He had undergone pancreaticoduodenectomy with hepaticojejunostomy for pancreatic head cancer 27 months earlier. He had received 6 months of chemotherapy for multiple liver metastases, but this treatment was suspended because of multiple liver abscesses, which developed 1 month before we saw him.

Computed tomography revealed intrahepatic bile duct dilation, perihilar biliary mass, and ascites. Double-balloon enteroscopy (EI-530B; Fujifilm Corp., Tokyo, Japan) was selected for biliary drainage. Double-balloon enteroscopy showed jejunal invasion of recurrent tumor involving the hepaticojejunal anastomosis (Fig. 1a, b). A tapered ERCP catheter and a 0.025-inch guidewire were passed through the stricture of the hepaticojejunal anastomosis (Fig. 1a, b). ERCP showed perihilar biliary stricture (Fig. 1b, Video 1), which could not be passed by the tapered ERCP catheter (Video 1).

The severe stricture was dilated successfully with a wire-guided diathermic dilator (Cysto-Gastro-Set, 6 Fr, length 180 cm; Endo-Flex, Voerde, Germany) (Fig. 2a, Video 1). Total dilation time was 3 seconds for the hepaticojejunal anastomosis and 13 seconds for the perihilar biliary stricture, respectively. A slim USEMS (Zilver 635, 6.0 Fr delivery system, 10 mm diameter, 200 cm long; Cook Japan, Tokyo, Japan) failed to pass the stricture. However, a novel ultra-slim USEMS (BileRush Selective, 5.7 Fr delivery system, 10 mm diameter, 185 cm long; Piolax Medical Devices, Kanagawa, Japan) was successfully deployed, followed by placement of an additional USEMS, in a stent-in-stent fashion, without any complications (Fig. 3, Fig. 4, Video 1).

In summary, using balloon enteroscopy, a wire-guided diathermic dilator and novel ultra-slim USEMS were useful in facilitating dilation and stenting for the treatment of severe malignant anastomotic and biliary strictures in a patient with altered anatomy.

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**Fig. 1** Endoscopic images. **a** Jejunal invasion. **b** Edematous mucosa around the hepaticojejunal anastomosis.

**Video 1**

Wire-guided diathermic dilation after failed dilation using a tapered endoscopic retrograde cholangiopancreatography catheter, and deployment of novel, ultra-slim, uncovered, self-expandable, metallic stents.
Competing interests

Dr. Kawakami has collaborated with Piolax Medical Devices on the development of the BileRush Selective, and is a consultant and gives lectures for the company.

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