Combined endoscopic drainage for afferent loop obstruction and bilioenteric anastomosis stricture in a patient after pancreatoduodenectomy

Tumor recurrence is a common cause of bilioenteric anastomosis stricture or afferent loop obstruction (ALO) in patients who have undergone pancreaticoduodenectomy. Endoscopic management in ALO included enteroscopy-assisted luminal stenting with a self-expanding metal stent or plastic stents and endoscopic ultrasound (EUS)-guided enteroenterostomy with a lumen-apposing metal stent [1, 2]. In addition, the bridge technique for drainage of the right liver across the left liver through hepaticogastrostomy (HGS) is feasible [3, 4]. We describe a case of concurrent ALO and bilioenteric anastomosis stricture in a patient who received the above two endoscopic treatments.

A 55-year-old man was admitted to our hospital with abdominal pain and progressive jaundice. He had undergone a pancreaticoduodenectomy 10 years prior because of distal cholangiocarcinoma. Abdominal computed tomography showed dilated intrahepatic bile ducts and locally dilated intestinal ducts near the bilioenteric anastomosis. Abdominal ultrasound showed bilioenteric anastomosis stricture and afferent loop obstruction.

**Fig. 1** a Abdominal computed tomography (CT) showing liver neoplasms (asterisks) and dilated intrahepatic bile ducts. b CT showing afferent loop dilatation near the bilioenteric anastomosis. c Fluoroscopic image showing the guidewire attempting to enter the obstructed afferent loop with the assistance of the sphincterotome. d The guidewire passed through sharp bends (triangles) and the stricture (arrow) of the afferent loop. e A self-made 7-Fr plastic stent 70 cm in length was inserted into the dilated afferent loop. f Endoscopy showing the properly placed plastic stent.
the bilioenteric anastomosis (▶ Fig. 1 a–b). We diagnosed ALO, which indirectly caused obstructive jaundice. The patient underwent a gastroscopy; however, due to severe intestinal twisting, the gastroscopy could not reach the site of the afferent loop obstruction. Under fluoroscopy, we attempted to apply a sphincterotome with a guidewire into the obstructed bowel successfully (▶ Fig. 1 c–d). A 7-Fr plastic stent 73 cm in length (modified nasobiliary tube) was placed to ensure passage through the sharp bends and stricture of the afferent loop (▶ Fig. 1 e–f, ▶ Video 1). The patient’s abdominal pain resolved but jaundice continued to worsen (direct bilirubin up to 357.4 μmol/L) after the operation. Subsequently the patient received endoscopic ultrasound-guided hepaticogastrostomy (EUS-HGS) for biliary drainage. We found that the bilioenteric anastomosis was narrow and the guidewire could not pass through. We then bridged a 7-Fr double-pigtail plastic stent 15 cm in length (Zimmon; Wilson-Cook Medical Inc., Limerick, Ireland) to the right intrahepatic bile duct to achieve simultaneous drainage of the right and left intrahepatic bile duct (▶ Fig. 2, ). The patient was discharged as his bilirubin decreased to 284.7 μmol/L 10 days later.

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Conflict of Interest

The authors declare that they have no conflict of interest.

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▶ Fig. 2 a Endoscopic ultrasound (EUS) image shows the left intrahepatic bile duct (segment 2) was punctured using a 19G fine-needle aspiration needle. b Fluoroscopic image showing a guidewire entered from the left intrahepatic bile duct to the right intrahepatic bile duct, and a plastic stent was placed in the dilated afferent loop (black triangle). c A 7-Fr double-pigtail plastic stent 15 cm in length was inserted into the left and right hepatic ducts (yellow triangles). d Side holes were added on the plastic stent. e Endoscopy shows the plastic stent placed to drain bile. f CT showing improved intrahepatic bile duct obstruction and afferent loop dilatation.

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