Article published online: 2022-08-25

Management of afferent loop obstruction using multiple single-pigtail plastic stents in a patient with recurrent metastatic pancreatic cancer

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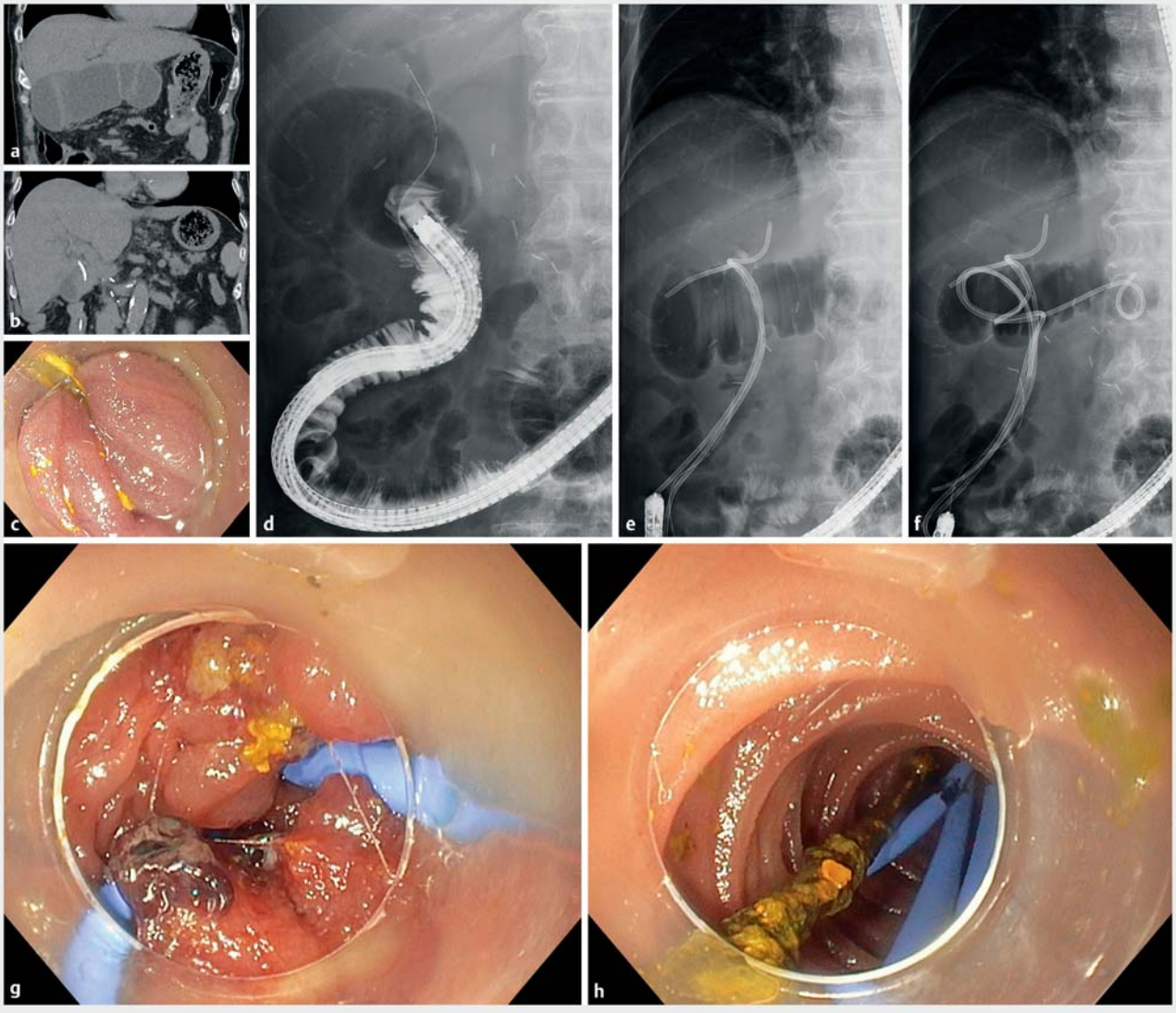
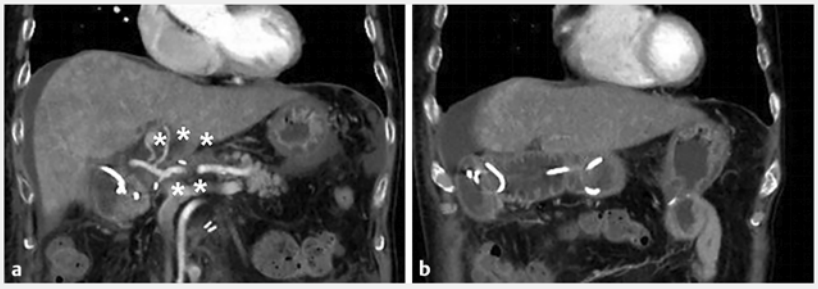
Malignant afferent loop obstruction (mALO) is defined as duodenal or jejunal mechanical obstruction at the proximal anastomosis site of a gastrojejunostomy associated with locoregional tumor recurrence. As the general condition of patients with tumor recurrence is poor, accurate and rapid diagnosis and minimally invasive treatment are required [1].

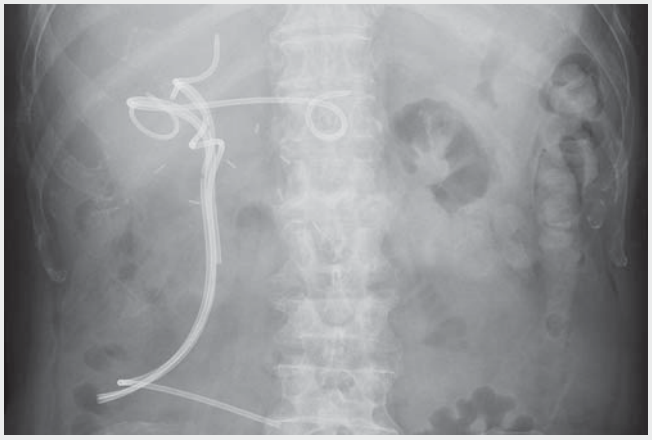
A 76-year-old man presenting with abdominal pain and vomiting was admitted to our hospital. He had undergone a pancreaticoduodenectomy with Child's reconstruction for pancreatic cancer 19 months previously. Abdominal computed tomography (CT) revealed mALO (▶ **Fig. 1 a**), multiple irregular wall thickening near the bile duct–jejunal anasto-



▶ **Fig. 1** Images show afferent loop dilatation with findings suggestive of recurrence of pancreatic cancer. **a, b** Abdominal computed tomography shows afferent loop dilatation and irregular wall thickening near the bile duct–jejunal anastomosis. **c, d** Small-bowel endoscopy and fluoroscopy show multiple stenoses due to direct tumor invasion. **e** Single-pigtail plastic stents (SPPSs) are inserted into the left and right hepatic ducts. **f** An SPPS is inserted into the dilated jejunum near the bile duct–jejunal anastomosis. **g, h** Endoscopy shows SPPSs placed to drain individual stenoses.



▶ **Fig. 2** Computed tomography 3 days after the endoscopic procedure: **a** confirmation of the locoregional recurrence of pancreatic cancer (asterisks); **b** evidence of improved afferent loop dilatation.



Video 1 Management of afferent loop obstruction using multiple single-pigtail plastic stents in a patient with recurrent metastatic pancreatic cancer.

mosis (▶ **Fig. 1 b**), and locoregional recurrence of pancreatic cancer. As available endoscopic devices were limited for long small-bowel endoscopy (SBE), with 200 cm effective endoscopic length, and to connect multiple obstructive lesions into the normal jejunum individually, we performed the drainage procedure using multiple self-made single-pigtail plastic stents (SPPSs). To prepare the SPPSs, 7.5-Fr Flexima endoscopic nasobiliary drainage (ENBD) tubes (Boston Scientific, USA) were cut into straight parts of 15 and 30 cm, and side holes were added. The remaining ENBD tube was used as a pusher catheter. SBE confirmed multiple stenoses due to direct tumor invasion (▶ **Fig. 1 c, d**). SPPSs were inserted first into the left and right hepatic ducts (▶ **Fig. 1 e**), then into the dilated deep small intestine near the jejunopancreatic anastomosis site (▶ **Fig. 1 f**), and finally into the dilated jejunum near the bile duct–jejunal anastomosis. A total of four SPPSs were placed to drain individual stenoses (▶ **Fig. 1 g, h**). CT 3 days later showed that the mALO had improved (▶ **Fig. 2 a, b**). The patient received peaceful end-of-life care without symptoms of mALO thereafter (▶ **Video 1**).

Our procedure shows that the insertion of multiple SPPSs using long SBE can effectively resolve mALO with complex and multiple stenoses in inoperable patients.

Endoscopy_UCTN_Code_TTT_1AP_2AD

Competing interests

The authors declare that they have no conflict of interest.

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Endoscopy 2022; 54: E1041–E1042
DOI 10.1055/a-1907-4589
ISSN 0013-726X
published online 25.8.2022

Georg Thieme Verlag KG, Rüdigerstraße 14, 70469 Stuttgart, Germany