

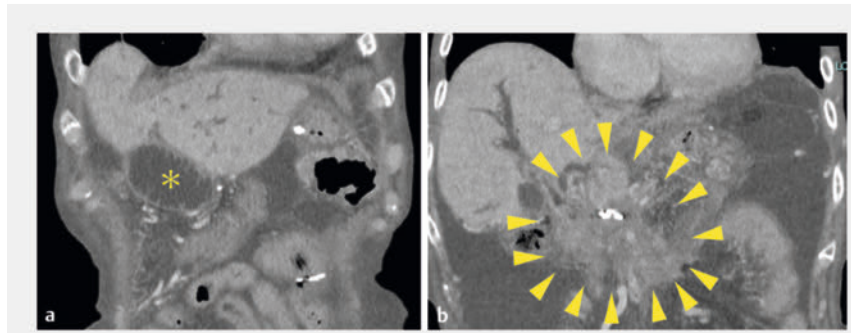
## Endoscopic ultrasound-guided antegrade treatment with uncovered self-expanding metal stent for malignant afferent loop syndrome-complicated cholangitis after biliary reconstruction

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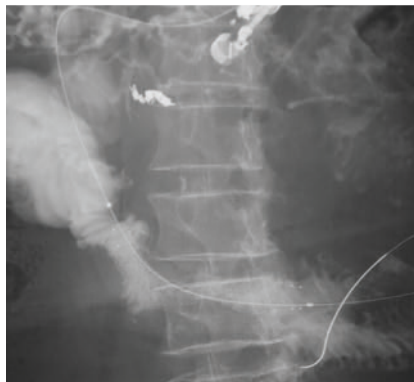
Malignant afferent loop syndrome often causes cholangitis and jaundice [1,2], necessitating treatment. Endoscopic treatment is minimally invasive and utilizes a natural orifice, proving advantageous surgical or percutaneous management. Endoscopic ultrasound (EUS)-guided gastrojejunostomy (EUS-GJ) [3,4] is efficacious; however, severe adverse events are a concern. Therefore, treatment using physiological orifices is desirable. Herein, we report the first case of successful uncovered self-expanding metal stent (USEMS) placement with EUS-guided antegrade treatment using a physiological orifice for malignant afferent loop syndrome after biliary reconstruction for cholangiocarcinoma.

A 76-year-old woman who had undergone chemotherapy for peritoneal dissemination recurrence after biliary reconstruction and total pancreatectomy for distal cholangiocarcinoma and main pancreatic duct-type intraductal papillary mucinous neoplasm was admitted to our hospital for cholangitis. Contrast-enhanced computed tomography revealed afferent loop dilation; however, we suspected choledochojejunostomy-associated stenosis due to peritoneal dissemination (► Fig. 1) and planned EUS-guided hepaticogastrostomy (EUS-HGS) (► Video 1).

First, B3 puncture was performed using a 22-gauge needle and a 0.018-inch guidewire followed by double-lumen catheter insertion (Uneven Double Lumen Cannula; Piolax Medical, Kanagawa, Japan). Contrast injection revealed bilateral hepatic ductal dilation; however, no stenosis was observed at the choledochojejunostomy. Thereafter, the guidewire and catheter were advanced into the jejunum; contrast injection revealed stenosis of the afferent loop. We diagnosed cholangitis complicated by malignant afferent loop syndrome due to peritoneal dissemination and cholangiocarcinoma



► **Fig. 1** a Contrast-enhanced computed tomography on admission showed dilatation of afferent loop (yellow asterisk). b Peritoneal dissemination near choledochojejunostomy.



► **Fig. 2** Successful uncovered self-expanding metal stent placement with ultrasound-guided antegrade endoscopic treatment for malignant afferent loop syndrome after biliary reconstruction for cholangiocarcinoma.

recurrence. A guidewire was advanced across the stenosis, AND a 10-mm USEMS (YABUSAME Neo; Kaneka Co., Tokyo, Japan) was successfully placed in the afferent loop stenosis (► Fig. 2). After the USEMS placement, the contrast injection passed satisfactorily, and no adverse events were observed.

This method involves treatment through a physiological orifice, which raises fewer concerns about adverse events than those associated with EUS-GJ and is more physiological than EUS-HGS. Further-



► **Video 1** Successful endoscopic ultrasound-guided antegrade treatment using uncovered self-expanding metal stent for malignant afferent loop syndrome-complicated cholangitis due to tumor recurrence after biliary reconstruction.

more, it permits approaching the intestinal tract, which cannot be visualized using EUS. This technique may be a novel treatment strategy for malignant afferent loop syndrome.

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## Conflict of Interest

The authors declare that they have no conflict of interest.

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