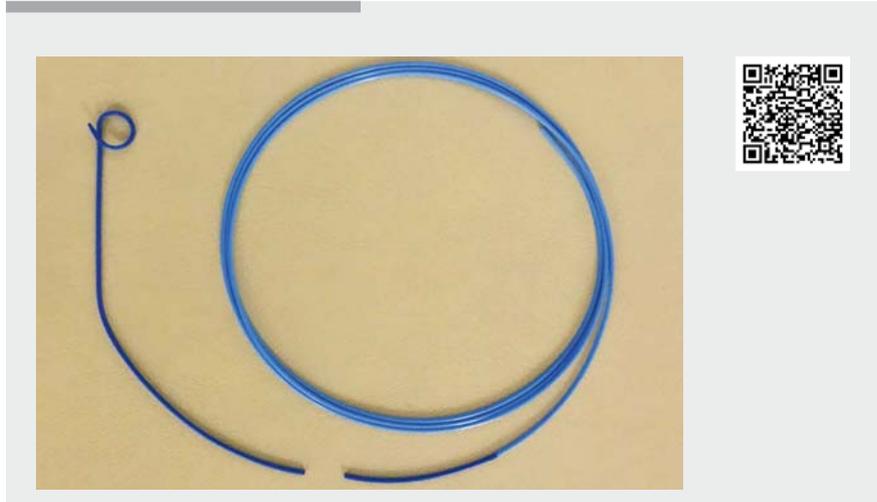


## Novel concept using a plastic stent for endoscopic ultrasound-guided hepaticogastrostomy adjusting the length according to the patient's anatomy

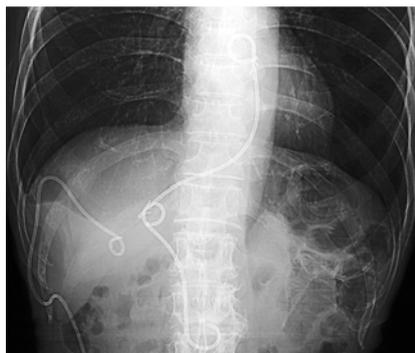
Recently, the usefulness of plastic stents for creation of an endoscopic ultrasound-guided hepaticogastrostomy (EUS-HGS) was reported [1–3]. Re-intervention using a plastic stent is easy owing to the ability to remove it, which may be difficult with a metal stent [4,5]. However, as there are few different types of plastic stent dedicated to creation of an EUS-HGS, in some patients it may be difficult to insert the plastic stent in a proper position.

A 72-year-old man who underwent subtotal gastrectomy with Roux-en-Y anastomosis presented with obstructive jaundice due to recurrence of gastric cancer; he therefore underwent EUS-HGS. In this case, it was difficult to secure a puncture route because of the postoperative anastomosis, so puncture was attempted from the esophagus. After antegrade stenting had been performed, an 8-Fr single-pigtail plastic stent was placed with its proximal tip in the esophagus. The length of plastic stent was not sufficient to move the tip to the stomach (► Fig. 1). Because biliary esophagitis occurred (► Fig. 2), re-intervention was performed.

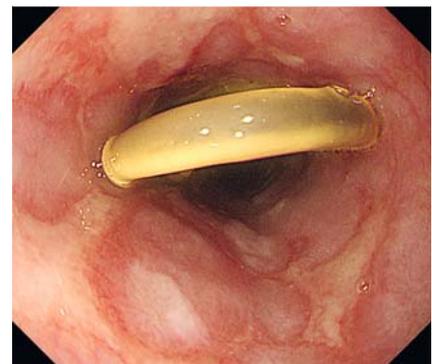
After guidewire placement through the fistula and removal of the plastic stent, the required length to place the tip in the stomach, as measured from the fluoroscopic image, was 25 cm (► Fig. 3). In order to prepare a plastic stent of sufficient length, a 7.5-Fr endoscopic nasobiliary drainage (ENBD) tube (Boston Scientific, USA) was cut to 25 cm and side holes were added (► Fig. 4). With the remaining ENBD tube being used as a pusher catheter, the long plastic stent was released into the esophagus. The tip was then guided into the stomach with grasping forceps and was successfully placed as planned (► Fig. 5). Subsequently, the patient's jaundice and esophagitis both improved.



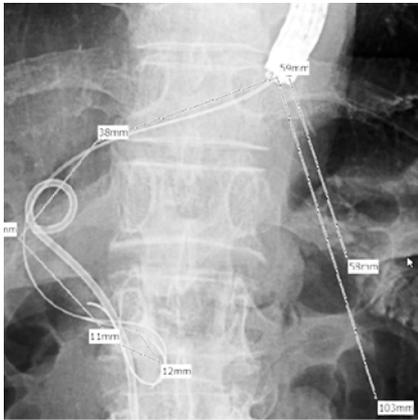
► **Video 1** Video showing re-intervention for endoscopic ultrasound-guided hepaticogastrostomy (EUS-HGS) using a plastic stent. The required length to place the tip in the stomach, as measured from the fluoroscopic image, was 25 cm. A 7.5-Fr endoscopic nasobiliary drainage (ENBD) tube was cut to 25 cm and side holes were added to create a plastic stent of sufficient length. The long plastic stent was then successfully placed using the remaining ENBD tube as a pusher catheter. This novel concept of adjusting the length of a plastic stent according to the patient's anatomy so that it can be positioned properly may be a useful option in EUS-HGS.



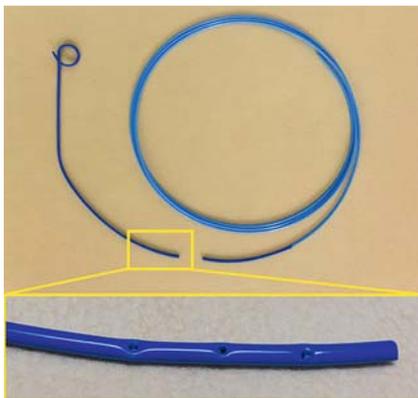
► **Fig. 1** Radiographic image during endoscopic ultrasound-guided hepaticogastrostomy showing an 8-Fr single-pigtail plastic stent placed with the proximal tip in the esophagus after antegrade stenting had been performed with puncture from the esophagus as a puncture route was difficult to secure because of the postoperative anastomosis. The length of plastic stent was not sufficient to move the tip to the stomach.



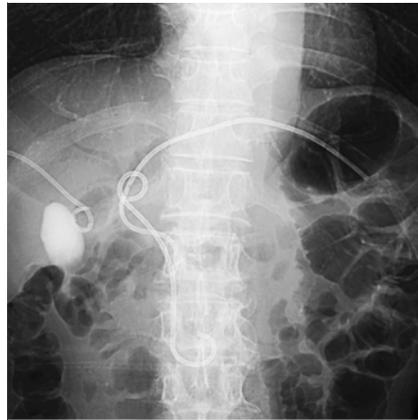
► **Fig. 2** Endoscopic image showing the tip of plastic stent in the esophagus, which had caused biliary esophagitis that required re-intervention.



► **Fig. 3** Fluoroscopic image showing that the required length to place the tip in the stomach was measured as being 25 cm.



► **Fig. 4** A 7.5-Fr endoscopic nasobiliary drainage tube was cut to 25 cm and side holes were added in order to create a plastic stent of sufficient length.



► **Fig. 5** Radiographic image showing the long plastic stent, which was initially released into the esophagus using the remaining nasobiliary drainage tube as a pusher catheter and then guided into the stomach with grasping forceps, successfully positioned as planned.

### Competing interests

None

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This novel concept of adjusting the length of a plastic stent according to the patient's anatomy so that it can be positioned properly may be a useful option in EUS-HGS (► **Video 1**). We consider that one of the reasons for selecting a plastic stent for EUS-HGS is because this method would not be possible with a metal stent.

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