

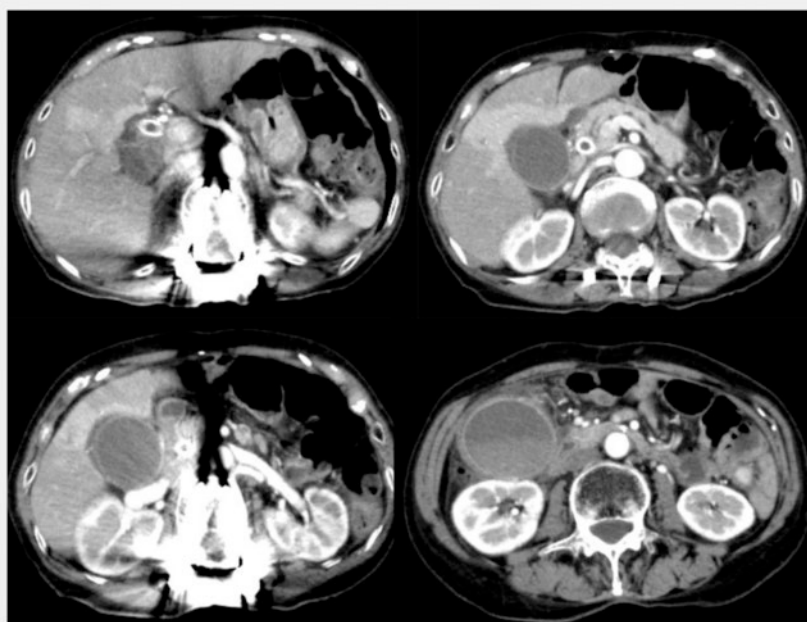
## Endoscopic ultrasound-guided gallbladder drainage using a forward-viewing echoendoscope after Billroth II gastrectomy

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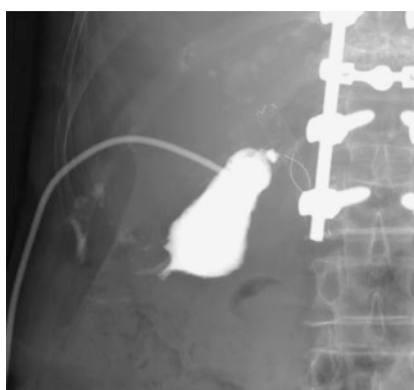
Endoscopic ultrasound-guided gallbladder drainage (EUS-GBD) is effective for treating cholecystitis [1,2]; however, its application is challenging in patients with surgically altered anatomy [3]. In such patients, the forward-viewing echoendoscope (FV-EUS) is useful [4]. Here, we report a case of a patient who underwent EUS-GBD using FV-EUS after Billroth II gastrectomy.

An 88-year-old woman with acute cholecystitis secondary to placement of a covered metal stent was admitted to our hospital (► **Fig. 1**). The patient had previously undergone Billroth II gastrectomy for a duodenal ulcer. Initially, she underwent percutaneous transhepatic gallbladder drainage (PTGBD) (► **Fig. 2**), followed by EUS-GBD using FV-EUS, which was conducted for the conversion to internal drainage (► **Video 1**).

Before EUS-GBD, a gastroscope (GIF-Q260; Olympus, Tokyo, Japan) was inserted into the afferent loop, and a 0.035-inch guidewire (Boston Scientific Corporation, Marlborough, Massachusetts, USA) was placed. Subsequently, the FV-EUS (TGF-UC260J; Olympus) was advanced to the blind end along the guidewire. In the second part of the duodenum, the gallbladder was observed using ultrasonography after saline injection through the PTGBD. The gallbladder body was punctured with a 19-gauge needle (EZ shot 3; Olympus), and a 0.025-inch guidewire (VisiGlide2; Olympus) was inserted to a sufficient length. The punctured tract was dilated using a 7 Fr mechanical dilator (ES Dilator; Zeon Medical, Tokyo, Japan). A second guidewire was placed using an uneven double-lumen catheter (PIOLAX Inc., Kanagawa, Japan). Finally, a double-pigtail plastic stent (7 Fr and 7 cm; Zimmon Biliary Stent, Wilson Cook Medical, Winston-Salem, North Carolina, USA) was successfully placed in the gallbladder (► **Fig. 3**). With the contrast medium flowing smoothly through the pigtail



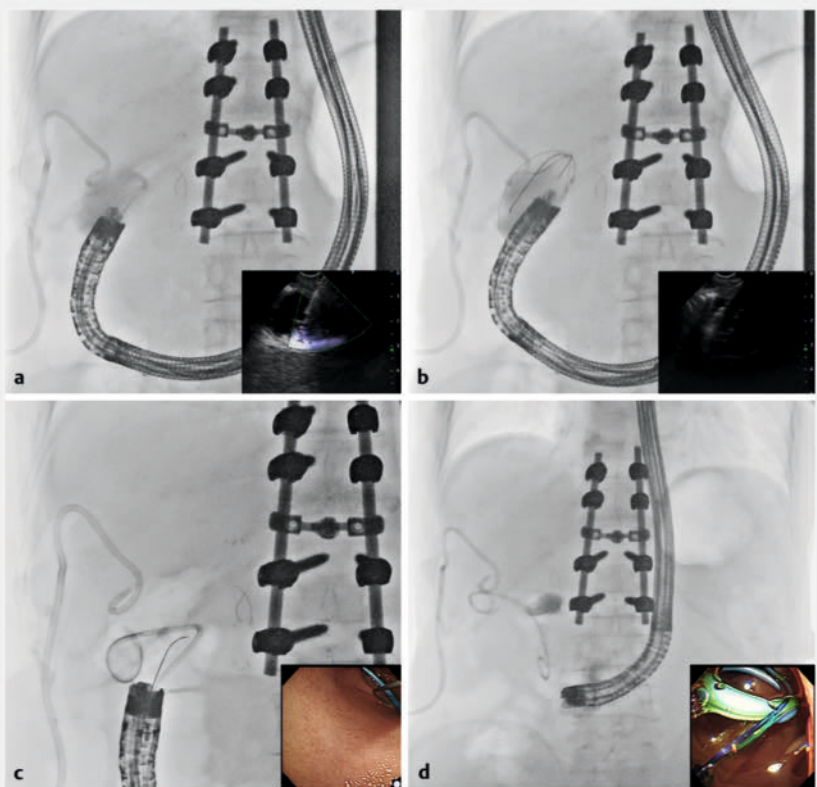
► **Fig. 1** Contrast-enhanced computed tomography performed at the onset of cholecystitis revealed gallbladder swelling. A covered metal stent was placed in the common bile duct.



► **Fig. 2** Contrast medium was injected from the percutaneous transhepatic gallbladder drainage; however, the cystic duct was obstructed by the covered metal stent.



► **Video 1** Endoscopic ultrasound-guided gallbladder drainage with forward-viewing echoendoscopy was effective in a patient who had undergone Billroth II gastrectomy.



► **Fig. 3** Endoscopic ultrasound-guided gallbladder drainage. **a** The gallbladder body was punctured with a 19-gauge needle. **b** A 0.025-inch guidewire was inserted to a sufficient length. **c,d** A double-pigtail plastic stent was placed.

stent, the PTGBD was removed 6 days after EUS-GBD.

To the best of our knowledge, this is the first report of EUS-GBD using FV-EUS in a patient with surgically altered anatomy. This procedure holds promise in maintaining quality of life in patients with malignant diseases.

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### Conflict of Interest

The authors declare that they have no conflict of interest.

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