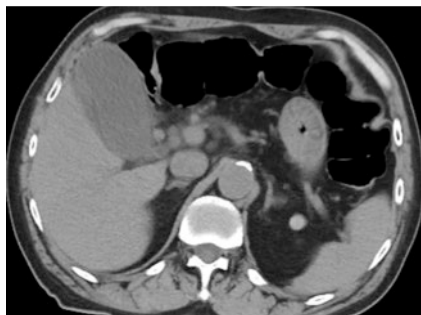


EUS-guided gallbladder drainage using a bicolored double-pigtail plastic stent facilitates appropriate stent positioning ▶

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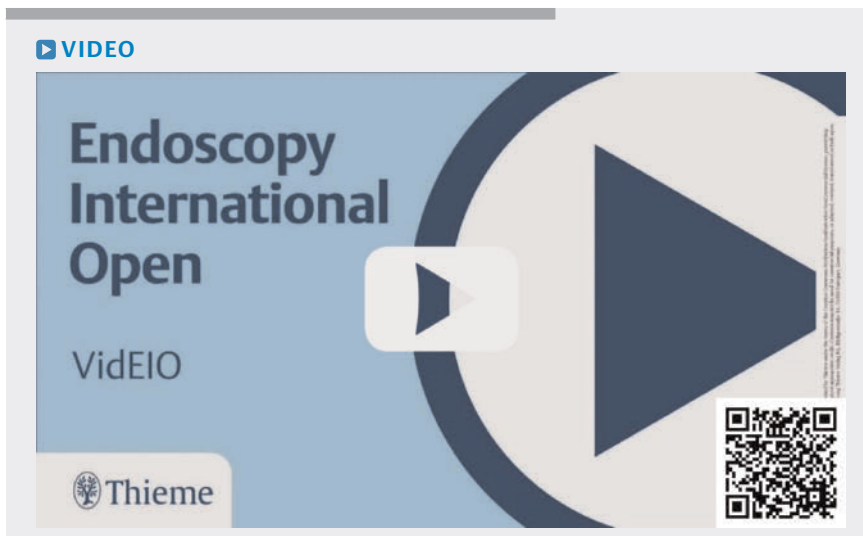


▶ **Fig. 1** Acute cholecystitis on abdominal computed tomography. Computed tomography reveals a swollen gallbladder with surrounding effusion.

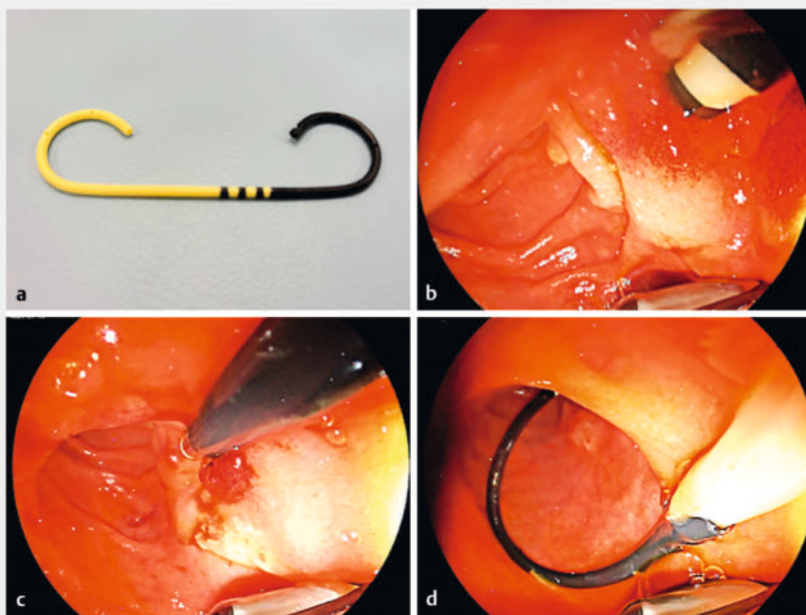
The Tokyo Guideline 18 states that drainage, including percutaneous, transpapillary, or transmural approaches, should be considered for fragile patients with moderate acute cholecystitis [1,2]. With transmural endoscopic ultrasound-guided gallbladder drainage (EUS-GBD), cutting-edge electrocautery-enhanced lumen-apposing metal stents (LAMSS) are key devices in certain regions [3]. However, a double-pigtail plastic stent (DPPS) is still used in areas where LAMSS are inapplicable [4]. Previous unicolored DPPSs had a positioning marker; however, physicians hesitate to move the stent in either direction if this marker is not in the endoscopic view. Recently, a bicolored DPPS has emerged to facilitate appropriate stent positioning in the endoscopic view.

An 80-year-old woman with mild right-sided hemiparesis caused by previous cerebral infarction was admitted with grade II acute cholecystitis (▶ **Fig. 1**). Her American Society of Anesthesiologists physical status and adjusted Charlson Comorbidity Index scores were 3 and 6, respectively [2]. Therefore, urgent surgery was avoided and the patient underwent EUS-GBD (▶ **Video 1**) after a multidisciplinary discussion.

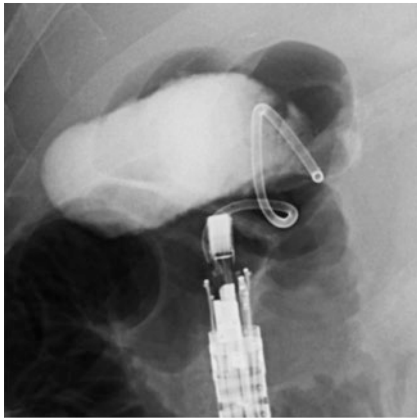
Endoscopic ultrasound-guided transduodenal gallbladder puncture using a 19-



▶ **Video 1** EUS-guided gallbladder drainage using a bicolored double-pigtail plastic stent facilitates appropriate stent positioning



▶ **Fig. 2** Endoscopic view of a bicolored double-pigtail plastic stent adjusted to its appropriate position. **a** This bicolored double-pigtail plastic stent features a yellow-colored section in the front, a black-colored section in the back, and demarcation stripes. The yellow area in the endoscopic view notifies the physician to push the stent more, and the black area cautions that the stent must be pulled back. The demarcation area means an excellent stent position. **b** The demarcation area in the endoscopic view means the stent positioning is appropriate. No need to adjust the stent position. **c,d** The final stent deployment maintains the correct positioning.



► **Fig. 3** Deployed bicolored double-pigtail plastic stent during transduodenal endoscopic ultrasound-guided gallbladder drainage. The stent is placed appropriately from the duodenal bulb to the gallbladder neck.

gauge lancet-shaped needle was followed by 0.025-inch guidewire placement and fistula dilation using an electrocautery-enhanced dilator. Next, we advanced a bicolored DPPS made of polyethylene and nylon comprising an inner sheath (Piglet, 7F, 4 cm; Olympus Medical, Tokyo, Japan) under endoscopic visualization of a yellow-to-black demarcation (► **Fig. 2**). Finally, we deployed the DPPS (► **Fig. 3**) after aspiration/irrigation of the infected bile without complications [5].

DPPSs are equipped with multi-side holes on both pigtailed ends. When these holes are positioned at the anastomosis site, peritoneal bile leakage potentially develops. With the novel bicolored DPPS, the physician never makes a wrong decision regarding stent maneuvers, such as pushing, pulling back, or maintaining position, even if a stent is placed sagittally in the fluoroscopic image.

Conflict of Interest

The authors declare that they have no conflict of interest.

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