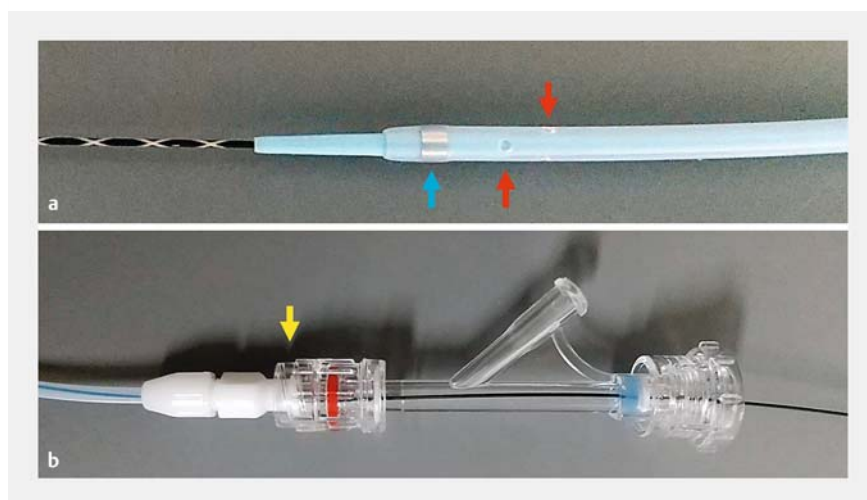
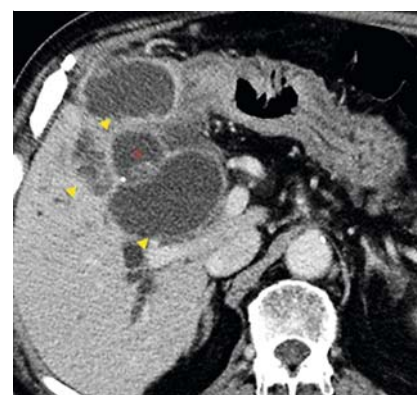


## Novel sheath-assisted endoscopic ultrasound-guided drainage for pericholecystic abscess

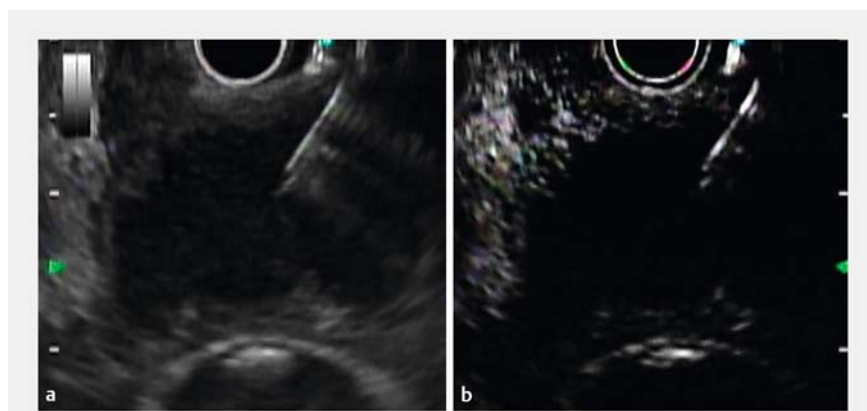
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► **Fig. 1** Images of a novel endoscopic sheath (UMIDAS sheath cannula). **a** An 8.5-Fr outer sheath has a radiopaque marker (blue arrow) and side holes (red arrow) near the tip. **b** A Y-connector, attached to the proximal end of the outer sheath (yellow arrow), allows contrast medium injection under guidewire loading.



► **Fig. 2** Computed tomography shows the multiple abscess (yellow arrowheads) around the gallbladder (red asterisk).

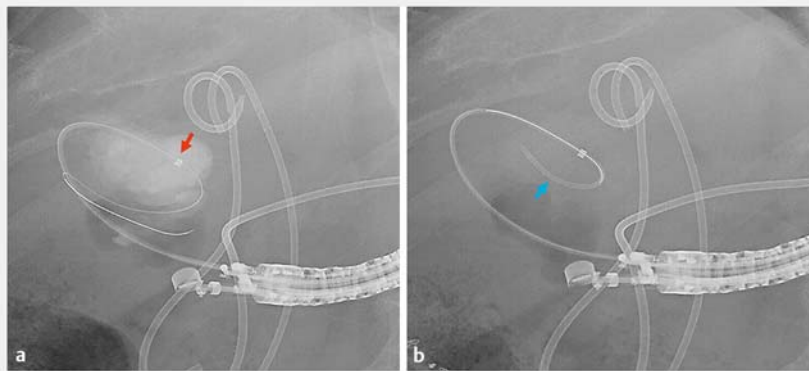


► **Fig. 3** Endoscopic ultrasonography shows the fluid space of the abscess, which was punctured using a 19-gauge needle. **a** B-mode view. **b** Contrast-enhanced view.

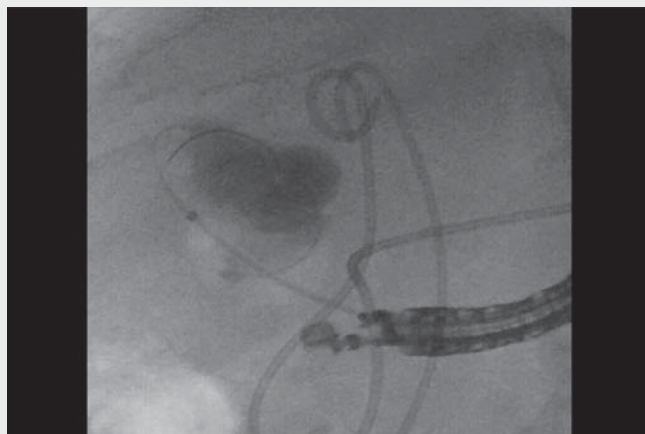
Recently, a newly designed endoscopic sheath (outer diameter, 8.5Fr; inner diameter, 6Fr; UMIDAS sheath cannula; UMIDAS Inc, Kanagawa, Japan) has become available in Japan (► **Fig. 1**). Here, we describe a novel sheath-assisted endoscopic ultrasound (EUS)-guided drainage procedure for a pericholecystic abscess.

A 90-year-old man was referred to our hospital because of multiple pericholecystic abscesses caused by acute cholecystitis (► **Fig. 2**). EUS-guided abscess drainage was performed; however, he had a persistent high fever due to residual abscess. Therefore, EUS-guided drainage was attempted. Using an echoendoscope, we visualized the ab-

scuss from the antrum of the stomach. Gel immersion was used to prevent double mucosal puncture [1], and the fluid space of the abscess – clearly visualized under contrast-enhanced harmonic EUS – was punctured using a 19-gauge needle (► **Fig. 3**). After aspirating yellowish white pus, a 0.025-inch guidewire was inserted in the abscess. After removing the needle, the fluid drained in the stomach through the needle track without leaking into the abdominal cavity, indicating adhesion between the gastric wall and abscess. The needle track was dilated using a 7-Fr spiral dilator (Tornus ES; Asahi Intecc Co., Aichi, Japan). Next, the novel endoscopic sheath (UMIDAS sheath cannula) was inserted within the abscess for irrigation and subsequent stent insertion. The inner catheter was removed, and the outer sheath and guidewire were left in place (► **Fig. 4 a**). Intra-abscess irrigation with sterile saline was performed through the side port of the outer sheath. Subsequently, a 30-cm long plastic stent, made by cutting a 5-Fr endoscopic nasobiliary drainage tube [2], was inserted through the outer sheath and placed from the abscess to the stomach (► **Fig. 4 b**, ► **Video 1**).



► **Fig. 4** Fluoroscopic images. **a** The outer sheath (red arrow) and the guidewire were left in the abscess. **b** A 5-Fr plastic stent (blue arrow) was inserted through the outer sheath.



► **Video 1** Endoscopic ultrasound-guided drainage for pericholecystic abscess. Intra-abscess irrigation and 5-Fr plastic stent placement through the novel endoscopic sheath.



This technique may be useful for EUS-guided abscess drainage. However, in cases without adhesion to the stomach, it should be performed with a covered metal stent to prevent fluid leakage into the abdominal cavity.

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### Competing interests

The authors declare that they have no conflict of interest.

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