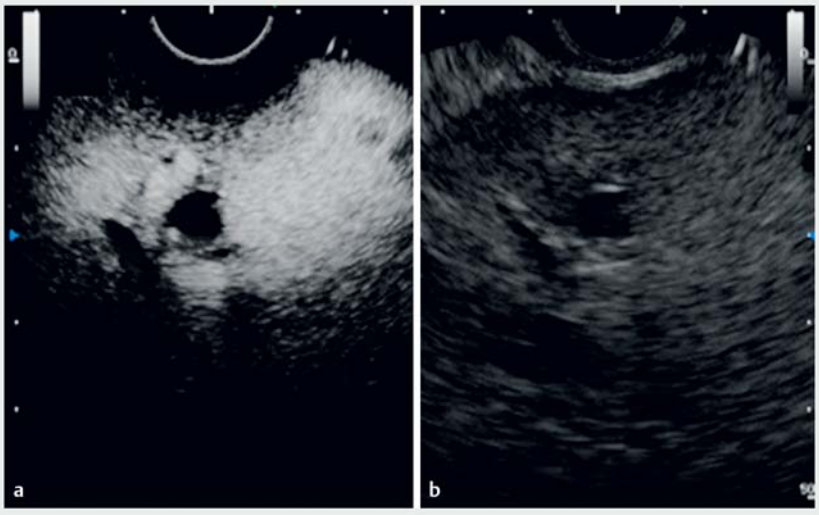
Article published online: 2023-03-09

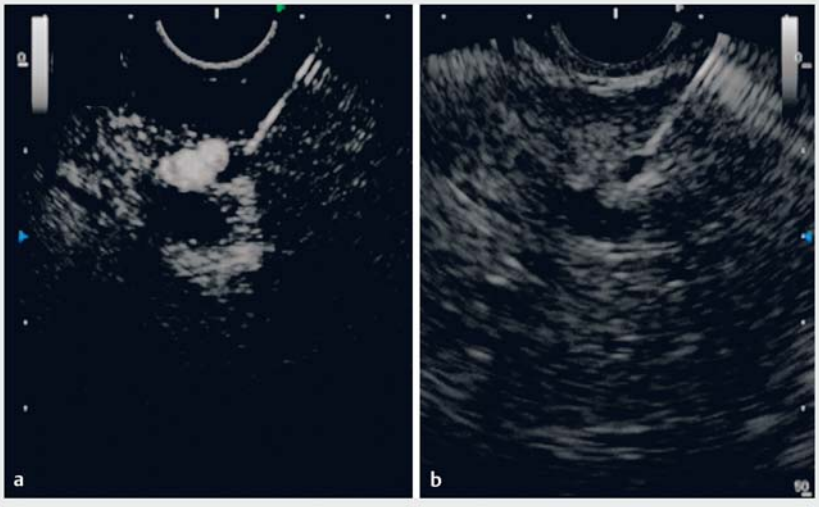
Contrast enhancement for undetectable intrahepatic bile duct to facilitate endoscopic ultrasound-guided hepaticogastrostomy

OPEN ACCESS

▶ **Fig. 1** The dilated intrahepatic bile duct was not visible on endoscopic ultrasonography.



▶ **Fig. 2** Contrast-enhanced endoscopic ultrasonography enabled clear identification of the dilated intrahepatic bile duct. **a** Extended pure harmonic mode. **b** B-mode.



▶ **Fig. 3** Puncture of the bile duct using a 19-gauge fine needle aspiration needle under endoscopic ultrasound guidance. **a** Extended pure harmonic mode. **b** B-mode.

Endoscopic ultrasound-guided hepaticogastrostomy (EUS-HGS) has utility as a salvage procedure when transpapillary biliary drainage is too difficult [1–3]. Contrast-enhanced endoscopic ultrasound (CE-EUS) allows evaluation of perfusion in real time during endoscopic ultrasound (EUS) and can be used to evaluate a range of tumor types [4, 5]. Herein, we demonstrate the use of CE-EUS to visualize the intrahepatic bile duct (IHBD) during EUS-HGS.

A 74-year-old woman diagnosed with pancreatic head cancer associated with biliary obstruction was referred for management of obstructive jaundice after failure of endoscopic retrograde cholangiography due to duodenal obstruction. EUS-HGS for biliary drainage was planned. A convex-type EUS scope (EG-580UT; Fujifilm, Tokyo, Japan) was inserted to evaluate the left lobe of the liver from the stomach. Although computed tomography (CT) had demonstrated dilatation of the IHBD, the IHBD could not be visualized on B-mode EUS (▶ **Fig. 1**). Careful evaluation revealed a portion of the dilated IHBD, but the IHBD was filled with echogenic bile juice with similar echogenicity to the adjacent liver parenchyma. As clear visualization of the IHBD was challenging with EUS, we decided to perform contrast-enhanced EUS-HGS (CE-EUS-HGS). An ultrasound contrast agent (Sonazoid; GE Healthcare Pharma, Tokyo, Japan) was intravenously administered and enabled clear visualization of the IHBD on the extended pure harmonic mode of EUS (▶ **Fig. 2**). The dilated IHBD was punctured using a 19-gauge needle (▶ **Fig. 3**). Proper puncture was confirmed by injection of contrast through the hepaticogastrostomy followed by insertion of a guidewire into the biliary system (▶ **Fig. 4**). The fistula

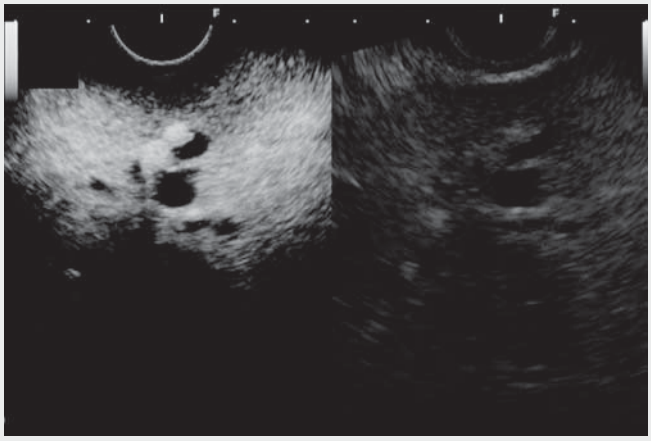
▶ **Fig. 4** Contrast injection confirmed appropriate puncture of the bile duct, and a guidewire was inserted into the biliary system.

▶ **Fig. 5** Hepaticogastrostomy: a plastic stent was deployed at the fistula.

was dilated with a 7-Fr bougie dilator. Finally, a 7-Fr dedicated plastic stent for HGS (TYPE IT; Gadelius, Tokyo, Japan) was deployed at the fistula (▶ **Fig. 5**). Obstructive jaundice resolved after the procedure without any adverse events (▶ **Video 1**).

In normal liver, the bile duct is the only structure that is not enhanced on CE-EUS. CE-EUS-HGS may have utility in the clear and accurate detection of the IHBD in cases where visualization of the IHBD on EUS is limited by the presence of concentrated bile juice.

Endoscopy_UCTN_Code_TTT_1AS_2AD



Video 1 Contrast-enhancement to identify otherwise undetectable dilated hepatic bile ducts, enabling endoscopic ultrasound-guided hepaticogastrostomy.

Competing interests

The authors declare that they have no conflict of interest.

The authors

Takuji Iwashita, Akihiko Senju, Ryuichi Tezuka, Shinya Uemura, Masahito Shimizu
First Department of Internal Medicine, Gifu University Hospital, Gifu, Japan

Corresponding author

Takuji Iwashita, MD, PhD
First Department of Internal Medicine, Gifu University Hospital, Gifu, 501-1194, Japan
Fax: +81-58-2306310
takuji@w7.dion.ne.jp

References

[1] van Wanrooij RLJ, Bronswijk M, Kunda R et al. Therapeutic endoscopic ultrasound: European Society of Gastrointestinal Endoscopy (ESGE) technical review. Endoscopy 2022; 54: 310–332
[2] Bang JY, Hawes R, Varadarajulu S. Endoscopic biliary drainage for malignant distal biliary obstruction: Which is better – endoscopic retrograde cholangiopancreatography or endoscopic ultrasound? Dig Endosc 2022; 34: 317–324
[3] Kongkam P, Orprayoon T, Boonmee C et al. ERCP plus endoscopic ultrasound-guided biliary drainage versus percutaneous transhepatic biliary drainage for malignant hilar biliary obstruction: A multicenter observational open-label study. Endoscopy 2021; 53: 55–62
[4] Iwasa Y, Iwashita T, Ichikawa H et al. Efficacy of contrast-enhanced harmonic endoscopic ultrasound for pancreatic solid tumors with a combination of qualitative and quantitative analyses: A prospective pilot study. Dig Dis Sci 2021; 67: 1056–1064
[5] Omoto S, Kitano M, Fukasawa M et al. Tissue harmonic versus contrast-enhanced harmonic endoscopic ultrasonography for the diagnosis of pancreatic tumors: Prospective multicenter study. Dig Endosc 2022; 34: 198–206

Bibliography

Endoscopy 2023; 55: E511–E512
DOI 10.1055/a-2032-3512
ISSN 0013-726X

Georg Thieme Verlag KG, Rüdigerstraße 14, 70469 Stuttgart, Germany