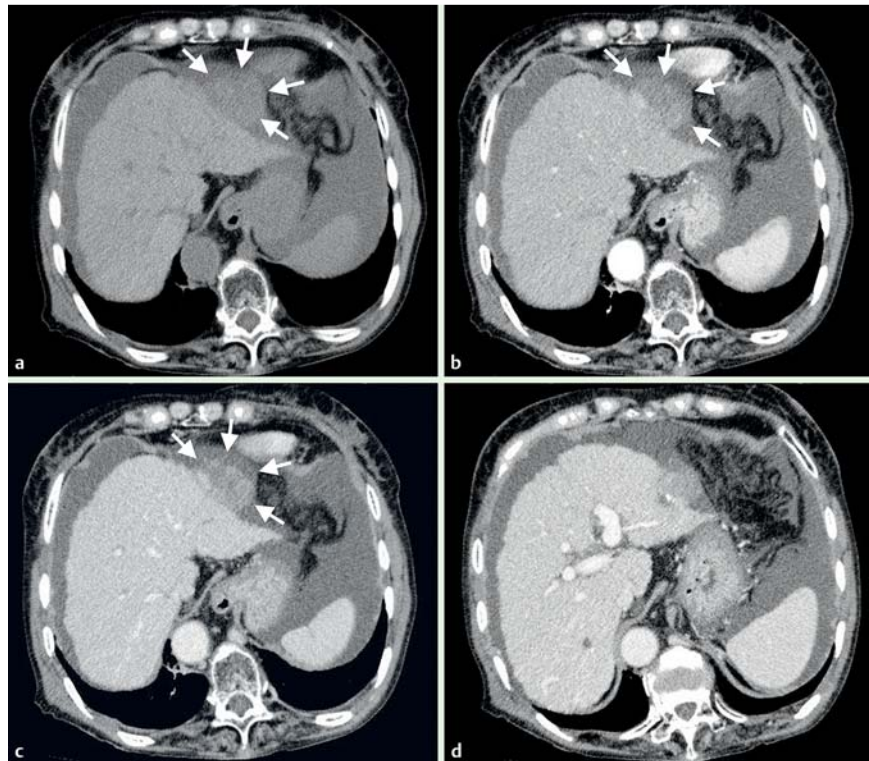


## Endoscopic ultrasonography-guided ethanol injection as a treatment for ruptured hepatocellular carcinoma in the left hepatic lobe



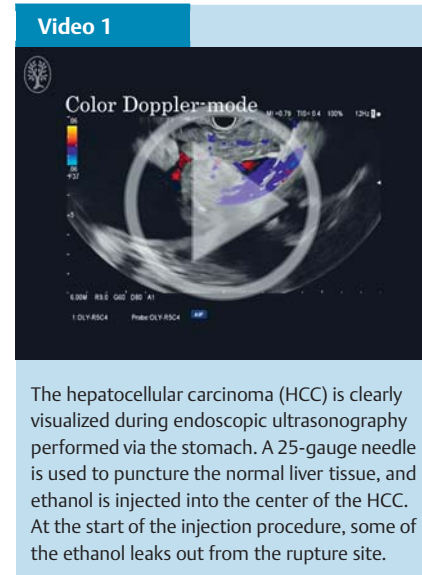
**Fig. 1** a–c Dynamic computed tomography initially shows locally recurrent hepatocellular carcinoma (white arrows) in liver segment S3 and hemorrhagic ascites in a 79-year-old woman experiencing epigastric pain while awaiting treatment: a plain; b arterial phase; c portal phase. d No portal vein thrombosis is detected.

Locally recurrent hepatocellular carcinoma (HCC) was diagnosed in a 79-year-old woman. The tumor measured 45 mm in diameter, was located in liver segment S3, and had been treated with radiofrequency ablation 3 years earlier. The patient was scheduled to receive treatment; however, she experienced epigastric pain during the waiting period.

Dynamic computed tomography showed hemorrhagic ascites (▶ Fig. 1); therefore, ruptured HCC was diagnosed and angiography was performed emergently. However, it was impossible to identify the tumor-feeding artery because of the meandering and stenotic nature of the proximal left hepatic artery. Therefore, we performed arterial embolization of the entire left hepatic lobe.

At 20 days after the procedure, abdominal bloating and anemia developed. Dynamic computed tomography was repeated, which showed that the hemorrhagic ascites had worsened and the HCC was still viable. Moreover, wide-ranging left portal vein thrombosis was detected (▶ Fig. 2). Therefore, we decided to perform local ablative therapy rather than re-embolization.

To avoid direct puncture of the HCC, which could have resulted in more severe hemorrhage, endoscopic ultrasound (EUS)-guided ethanol injection was chosen. We punctured the normal liver tissue from the stomach with a 25-gauge needle (Expect; Boston Scientific, Natick, Massachusetts, USA) and injected ethanol into the center of the HCC (▶ Fig. 3). At the start of the



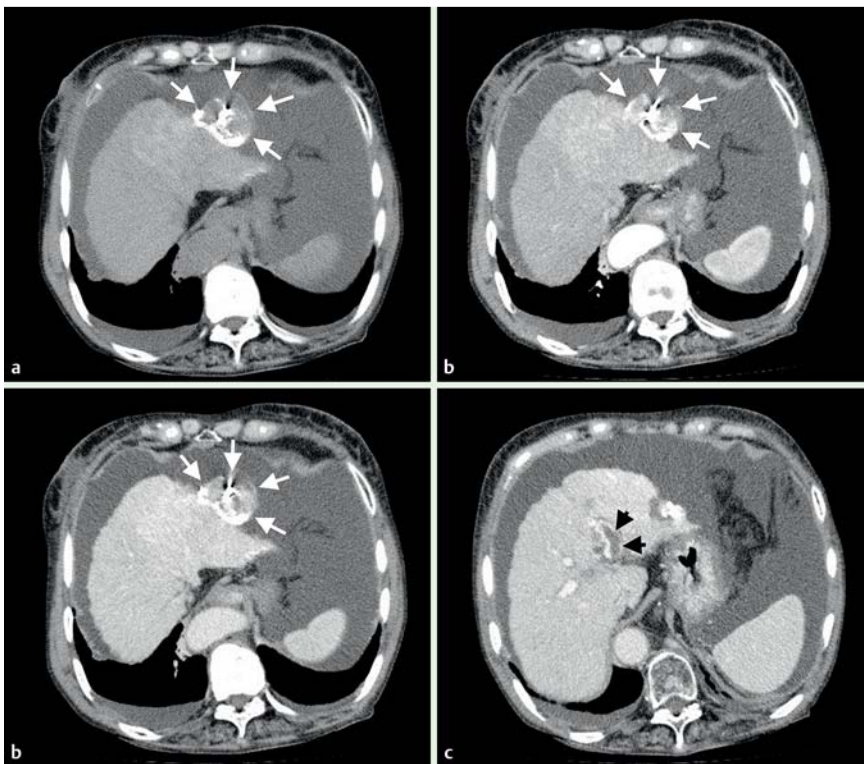
The hepatocellular carcinoma (HCC) is clearly visualized during endoscopic ultrasonography performed via the stomach. A 25-gauge needle is used to puncture the normal liver tissue, and ethanol is injected into the center of the HCC. At the start of the injection procedure, some of the ethanol leaks out from the rupture site.

injection procedure, some of the ethanol flowed out of the rupture site (▶ Video 1). The total amount of ethanol injected was 50 mL (spread over five injections). Follow-up computed tomography 4 weeks later showed necrosis of the HCC and significant resolution of the hemorrhagic ascites (▶ Fig. 4). No serious complications occurred.

In conclusion, EUS-guided ablative therapy has previously been used successfully as an elective treatment for HCC [1,2], and it could also be a useful treatment for ruptured HCC in the left hepatic lobe.

Endoscopy\_UCTN\_Code\_TTT\_1AS\_2AD

**Competing interests:** None



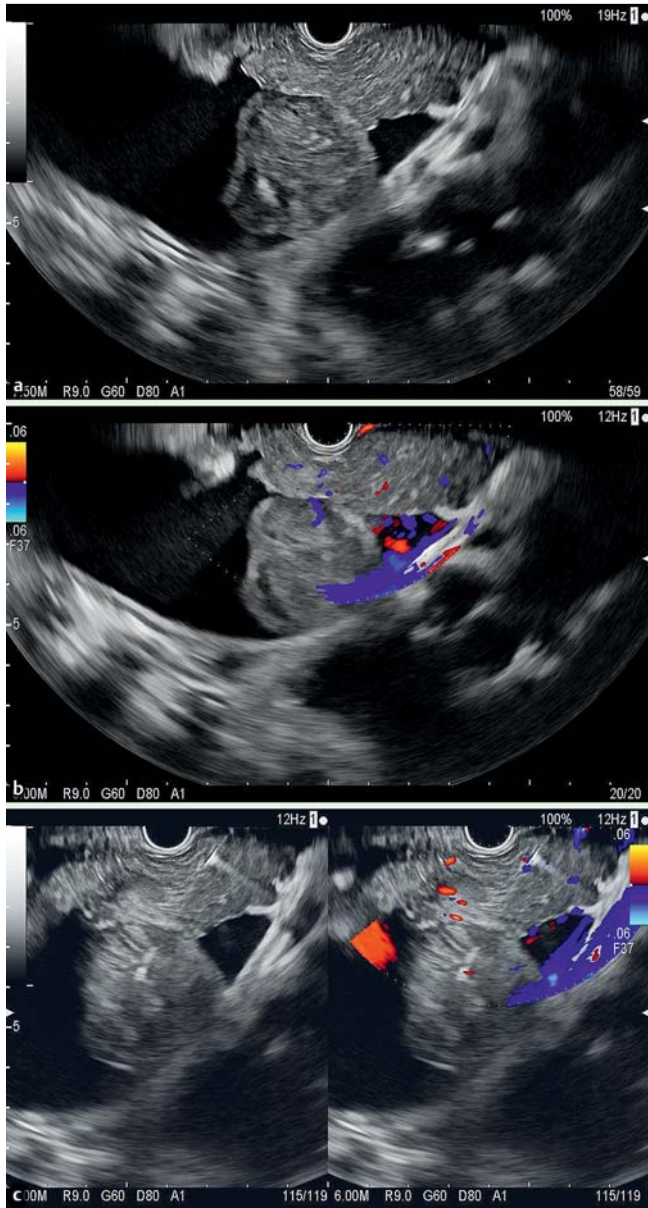
**Fig. 2** a – c Dynamic computed tomography after arterial embolization shows some Lipiodol accumulation in the hepatocellular carcinoma (white arrows); however, the tumor is still viable: **a** plain; **b** arterial phase; **c** portal phase. **d** Portal vein thrombosis (black arrows) has appeared.

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#### References

- 1 Nakaji S, Hirata N, Iwaki K et al. Endoscopic ultrasound (EUS)-guided ethanol injection for hepatocellular carcinoma difficult to treat with percutaneous local treatment. *Endoscopy* 2012; 44 (Suppl. 02) UCTN: E380
- 2 Di Matteo F, Grasso R, Pacella CM et al. EUS-guided Nd:YAG laser ablation of a hepatocellular carcinoma in the caudate lobe. *Gastrointest Endosc* 2011; 73: 632 – 636



**Fig. 3** Endoscopic ultrasound (EUS) findings. **a** The hepatocellular carcinoma is visualized clearly on EUS performed via the stomach. **b** Color Doppler ultrasound imaging shows the blood vessels feeding the tumor. **c** A 25-gauge needle is used to puncture the normal liver tissue.

### Bibliography

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**Fig. 4** **a – c** A follow-up dynamic computed tomographic scan obtained 4 weeks later shows complete necrosis of the hepatocellular carcinoma (white arrows) and significant resolution of the hemorrhagic ascites: **a** plain; **b** arterial phase; **c** portal phase.