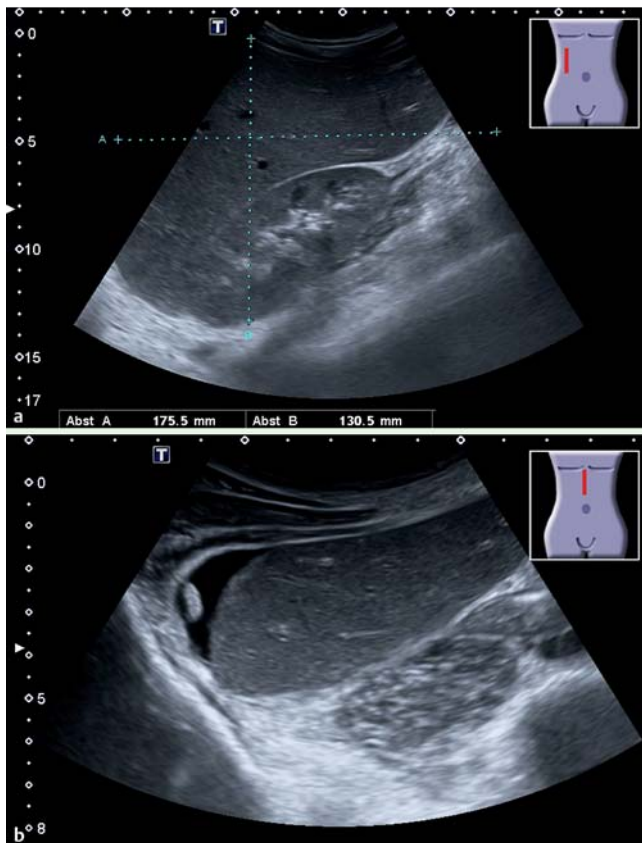
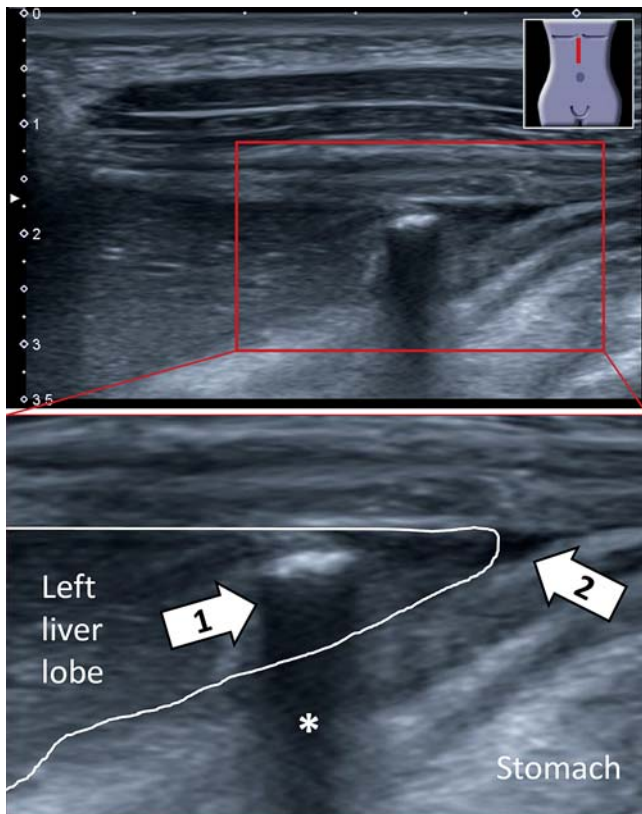


## Sonographic diagnosis of transhepatic placement of a percutaneous endoscopic gastrostomy (PEG) tube



**Fig. 1** Ultrasound of the liver reveals the following: **a** hepatomegaly (craniocaudal diameter in the mid-clavicular line of 176 mm); **b** moderate perihepatic ascites.



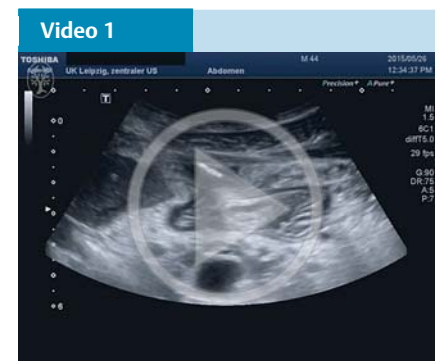
**Fig. 2** High resolution ultrasound of the upper abdomen (median line) reveals an echo-intense tubular structure (arrow 1) with dorsal signal attenuation (asterisk) extending from the abdominal wall into the stomach. The tube is perforating the edge of the left lobe of the liver. In addition, small amounts of free perihepatic fluid are detected (arrow 2).

A 44-year-old patient with cachexia and insufficient oral intake due to hypopharyngeal carcinoma underwent percutaneous endoscopic gastrostomy (PEG) placement with the pull technique, which is a common option for the treatment of dysphagia [1]. Transillumination and finger pressure revealed a safe puncture site at the anterior gastric wall, and the PEG tube was placed without complications at the time of the intervention. Initial tube feeding went properly, and the patient was discharged the next day.

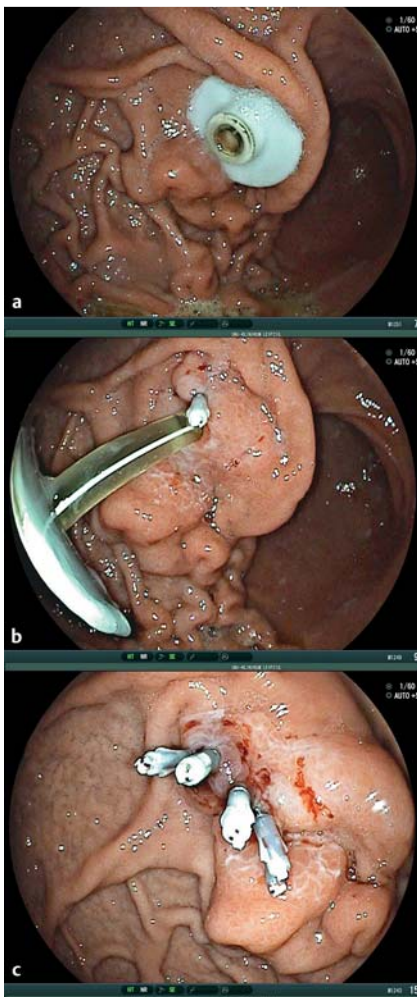
After 4 days, the patient was readmitted with progressive epigastric pain, which increased during tube feeding. An elevated C-reactive protein level (43 ng/mL) and leukocyte count ( $14.9 \times 10^9/L$ ) were observed, although the PEG site showed no signs of infection. Transabdominal ultrasound with a convex transducer revealed the presence of hepatomegaly and perihepatic ascites (Fig. 1), until then unsuspected, raising the suspicion of PEG tube penetration through the lateral left lobe of the liver. This was confirmed with the use of a high resolution linear array transducer (Fig. 2, Video 1).

The PEG tube was removed, and the gastric insertion site was occluded with metal clips to prevent gastric leakage (Fig. 3). Analgesic treatment and calculated antibiotic therapy were administered for 5 days. The markers of inflammation decreased in response to this therapy, and the initial symptoms disappeared. After 1 week, a new PEG tube was placed to the left of the initial site without any subsequent complications.

PEG is generally considered a safe procedure, and serious complications are rare [2–4]. However, this case underscores the risk for liver injury due to hepatomegaly not apparent on physical exami-



**Video 1** High resolution ultrasound of the upper abdomen (sweeping the transducer in the median line) demonstrates the perforation of the left lobe of the liver by the tube.



**Fig. 3** **a** Endoscopic inspection of the percutaneous endoscopic gastrostomy (PEG) bumper demonstrates the correct intragastric position. **b** Lifting the bumper from the gastric wall and marking the PEG tract with a clip. **c** After removal of the PEG tube, the tract is preventively closed with three additional clips.

nation. It also demonstrates the value of abdominal ultrasound as the initial diagnostic approach when a patient experiences abdominal pain after PEG placement. In such cases, sonographic assessment of the insertion site can detect PEG-related injury to the parenchyma, even at the liver margins, which may not be visible on computed tomography [4]. In patients with hepatomegaly, ultrasound guidance of PEG placement may prevent hepatic injury [4,5].

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**Competing interests:** None

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## Bibliography

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