

Acute iatrogenic gastric perforation during endoscopic ultrasound (EUS) for malignant biliary obstruction: intraoperative over-the-scope clip closure and EUS-guided biliary drainage with lumen-apposing metal stent

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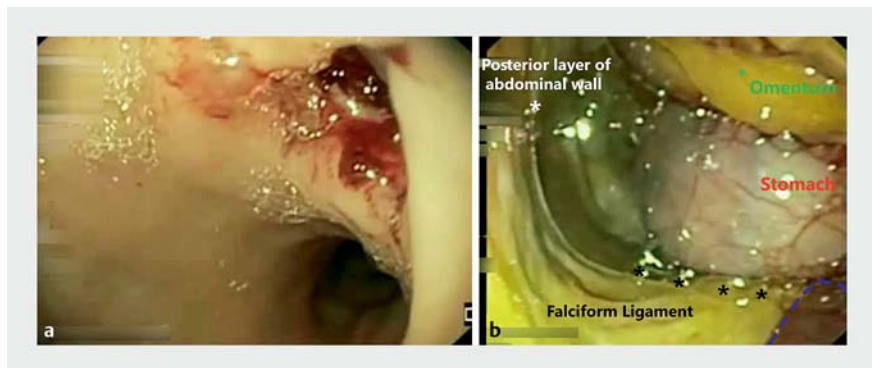
A 72-year-old woman presented with a 2-month history of jaundice and abdominal pain. A computed tomography scan revealed a large mass in the pancreatic head with dilated bile ducts. Endoscopic ultrasound (EUS)-guided fine-needle biopsy (FNB) and endoscopic retrograde cholangiopancreatography were scheduled for tissue acquisition and jaundice resolution.

The EUS was performed under general anesthesia using a linear echoendoscope (GF-UCT140; Olympus, Tokyo, Japan) with carbon dioxide insufflation. A neoplastic infiltration of the duodenal bulb (Mutignani type I [1]) was observed. However, during the advancing maneuvers of the echoendoscope toward the duodenum, we detected a full-thickness, round-shaped defect, of 14 mm in diameter, in the gastric lesser curvature, with direct access into the peritoneal cavity (► Fig. 1, ► Video 1).

A gastroscope preloaded with an over-the-scope (OTS) clip (14/6t) was immediately used to close the iatrogenic perforation, with margin apposition and subsequent restoration of intraluminal distension (► Fig. 2).

EUS-FNB of the pancreatic lesion was then performed and a duodenal uncovered self-expandable metal stent was deployed over-the-wire across the stricture. A trans-stent duodenoscopy was carefully performed and, under fluoroscopy, sphincterotomy was attempted multiple time without successful cannulation of the biliary ducts.

Finally, under EUS and radiologic guidance, an EUS-guided choledochoduodenostomy was performed using a 10 × 20 mm electrocautery-enhanced lumen-apposing metal stent (Hot Spaxus; Taewoong Medical, Gimpo-si, South Korea) (► Fig. 3).



► **Fig. 1** Iatrogenic gastric perforation occurred caused by traumatic mechanical traction at the rigid tip of the echoendoscope. **a** The full-thickness defect. **b** Peritoneal exploration. The blue dashed line encompasses the liver.



► **Video 1** Application of an over-the-scope clip for immediate full-thickness closure of an iatrogenic gastric perforation that occurred during diagnostic endoscopic ultrasound.

A broad-spectrum antibiotic was administered for 7 days and the patient was asymptomatic at the 3-month follow-up, with a progressive drop in bilirubin. Although rare, iatrogenic gastric perforation is a critical complication of EUS and may be fatal in elderly patients and those with neoplasia, especially if not recog-

nized rapidly [2]. Immediate diagnosis is crucial and, even if technically demanding, the intraprocedural application of minimally invasive endoscopic treatment is feasible and safe, reducing the necessity for urgent surgery and its complication-related morbidity and mortality. Moreover, the completion of the required



► **Fig. 2** Placement of an over-the-scope clip achieved a watertight closure of the defect and distension of the gastric lumen.

procedure should be always pursued in order to avoid delayed diagnosis and potential medicolegal issues.

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Competing interests

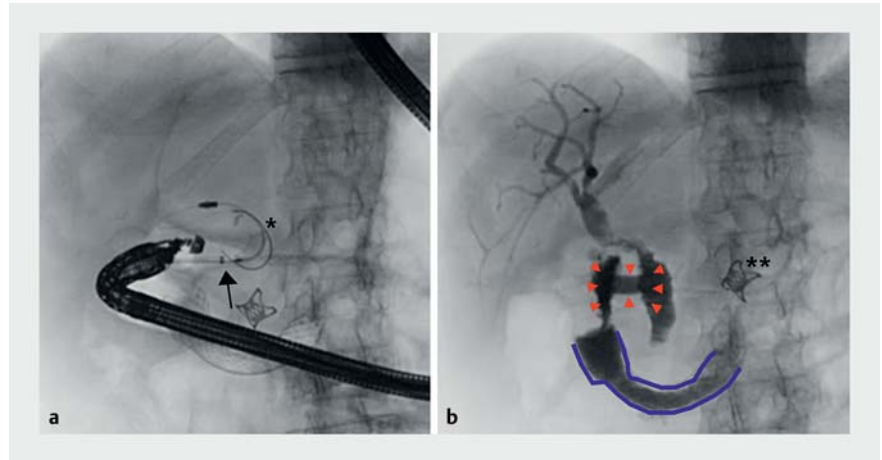
The authors declare that they have no conflict of interest.

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► **Fig. 3** Stent placement. **a** Endoscopic ultrasound-guided biliary drainage. Placement of the lumen-apposing metal stent (LAMS; Hot Spaxus; Taewoong Medical, Gimpo-si, South Korea) required the use of a guidewire (asterisk) to maintain direct biliary access during placement due to the difficult positioning and long length of the echoendoscope (arrow: LAMS electrocautery delivery system). **b** Final cholangiography confirmed no pathological leakage. Double asterisk, over-the scope clip; red arrowheads, LAMS; blue lines, duodenal stent).

References

- [1] Mutignani M, Tringali A, Shah SG et al. Combined endoscopic stent insertion in malignant biliary and duodenal obstruction. *Endoscopy* 2007; 39: 440–447
- [2] Paspatis GA, Arvanitakis M, Dumonceau JM et al. Diagnosis and management of iatrogenic endoscopic perforations: European Society of Gastrointestinal Endoscopy (ESGE) Position Statement – update 2020. *Endoscopy* 2020; 52: 792–810

Bibliography

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