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Continuation of common bile duct clearance with gallbladder stenting after duodenal perforation with subsequent treatment for tension pneumoperitoneum and pneumothorax

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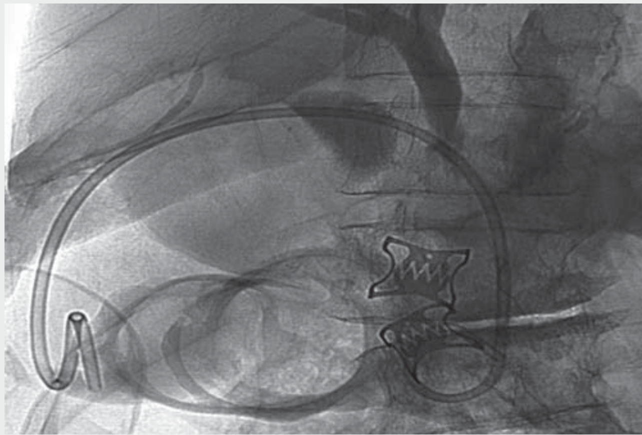
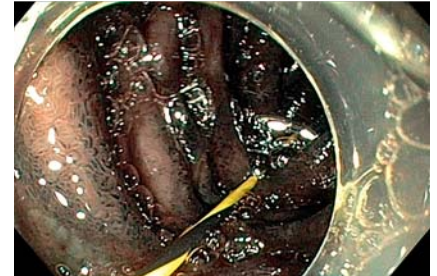
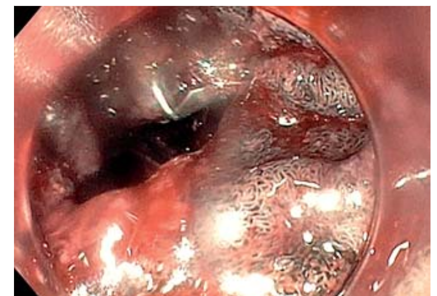


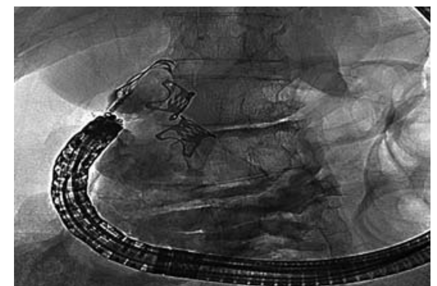
Video 1 Endoscopic retrograde cholangiopancreatography with gallbladder stenting completed after treatment of iatrogenic duodenal perforation, and subsequent management of tension pneumoperitoneum.



▶ Fig. 1 Guidewire insertion into the duodenal lumen to prevent accidental luminal closure during clipping of perforation.



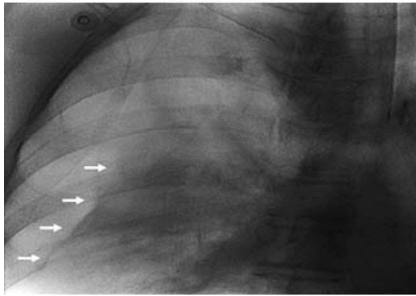
▶ Fig. 2 First over-the-scope clip deployment by mucosal suction over the lacerating tissue at the caudal area of the defect.



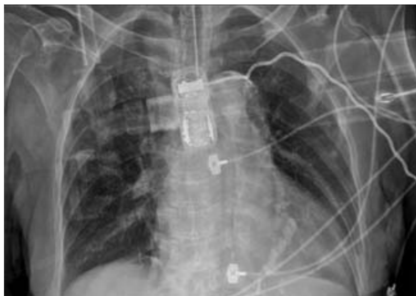
▶ Fig. 3 Contrast enterography revealed no contrast leakage into the peritoneum.

An 88-year-old woman underwent endoscopic retrograde cholangiopancreatography (ERCP) because of septic cholangitis with acute calculous cholecystitis. Unfortunately, incidental duodenal perforation (Stapfer classification type 1) [1] occurred during duodenoscope intubation by our trainee endoscopist. Gastroscopy with a transparent cap revealed a linear 4-cm defect with active oozing at the duodenal apex (▶ **Video 1**). Perforation closure was attempted with preceding guidewire insertion into the downstream duodenal lumen (▶ **Fig. 1**) to prevent accidental luminal closure [2]. The first traumatic type over-the-scope clip (OTSC, 12/6t; Ovesco) was deployed by suction on the lacerating tissue at the caudal side of the defect (▶ **Fig. 2**). However, the defect did not close completely; therefore, a second OTS clip was deployed using twin graspers to appose the edges of the defect. Contrast enterography revealed no intraperitoneal leakage (▶ **Fig. 3**). Immediately after closure, ERCP with stones removal and transpapillary gallbladder stenting with a double-pigtail plastic stent to prevent recurrent cholecystitis was successfully performed. At almost 40 minutes before completion of the procedure, the patient developed marked abdominal distension, hypotension, and desaturation. Tension pneumoperitoneum with right pneumothorax was confirmed by fluoroscopy (▶ **Fig. 4**). Emergency needle decompression was performed using an 18 G needle to release the tension pneumoperitoneum, and the patient was then intubated. Her abdomen gradually softened with an improvement in oxygen saturation. At 4 hours later, plain radiography showed no free air (▶ **Fig. 5**). The patient was extubated and resumed oral intake the following day.

Duodenal wall perforation can occur during ERCP, especially when performed by a less experienced endoscopist. ERCP can be completed safely if the patient is stable after early detection of the perforation with immediate endoscopic closure. The OTS clip is preferred for a defect larger than 1 cm, and more than one clip may be required if the defect is larger than 3 cm [3]. Tension pneumoperitoneum after endoscopy-related perforation is life-threatening, and early detec-



▶ **Fig. 4** Fluoroscopy showed right pneumothorax.



▶ **Fig. 5** Plain radiography 4 hours later showed no free air.

tion with emergency needle decompression is the key to saving the patient's life [4].

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Competing Interest

The authors declare that they have no conflict of interest.

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