Electrohydraulic lithotripsy for the treatment of stone impacted in a lumen-apposing metal stent in a patient with endoscopic cholecystoduodenostomy

An 89-year-old woman presented to our department having experienced acute cholecystitis a few weeks previously. Her comorbidities, chronic kidney disease, and congestive heart failure meant she was not a suitable candidate for surgery. She underwent EUS-guided gallbladder drainage, which was performed without complications. During this procedure, a 10-mm × 10-mm lumen-apposing metal stent (LAMS) (Hot Axios; Boston Scientific) was implanted for gallbladder drainage. A few days later, the patient complained of right-upper quadrant abdominal pain and fever, and a new acute cholecystitis episode was diagnosed.

Upper endoscopy with a therapeutic endoscope (GIF-1TH190; Olympus) was performed. The endoscope was introduced as far as the duodenum, where it became evident that the LAMS was obstructed by a biliary stone impacted in the stent lumen (Fig. 1; Video 1). Electrohydraulic lithotripsy (EHL) (1.9-Fr, 375-cm Biliary EHL Probe Autolith; Boston Scientific) was performed to fragment the obstructive biliary stone. The EHL probe was introduced through the endoscope, and fragmentation with the infusion of saline was started (Fig. 2). The gallbladder stone was broken into multiple fragments that were removed with a Dormia basket. During the procedure, which lasted about 60 min, purulent secretion was seen draining from the

▶ Fig. 1 Lumen-apposing metal stent (LAMS) obstructed by a biliary stone impacted in the stent lumen.

▶ Fig. 2 Fragmentation of biliary stone by means of electrohydraulic lithotripsy.

▶ Video 1 Biliary stone occluding a lumen-apposing metal stent treated with electrohydraulic lithotripsy in a patient who had previously undergone endoscopic ultrasound-guided cholecystoduodenostomy.

▶ Fig. 3 A 10-mm fistula in the gallbladder wall with fragmented stones in the cavity.

▶ Fig. 4 Placement of a plastic double-pigtail stent to prevent renewed occlusion.
gallbladder. The gallbladder wall showed a 10 mm-fistula with some fragmented stones within the cavity (▶ Fig. 3); these were removed with a Roth Net retriever. To prevent renewed LAMS occlusion, placement of a plastic double-pigtail stent was decided on (▶ Fig. 4). No complications were observed in the patient; she tolerated the procedure and was discharged home a few days later. EUS-guided gallbladder drainage in patients who are not candidates for surgery is a safe technique and has a low complication rate. In patients with large stones, recurrent cholecystitis, impaction, and LAMS obstruction can occur [1,2]. EHL and laser lithotripsy are two useful techniques that allow fragmentation of stones; EHL generates high-amplitude hydraulic pressure waves, while laser lithotripsy uses a laser beam with repetitive pulses of laser energy to create a mechanical shockwave [3,4]. EHL is a safe option to resolve LAMS occlusion in cholecystoduodenostomy.

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Competing interests

The authors declare that they have no conflict of interest.

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