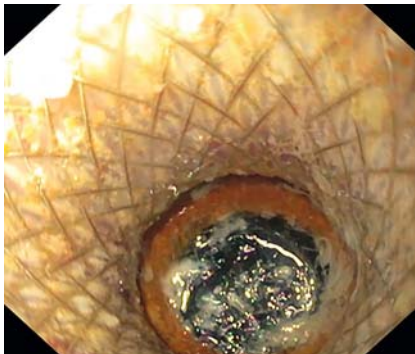
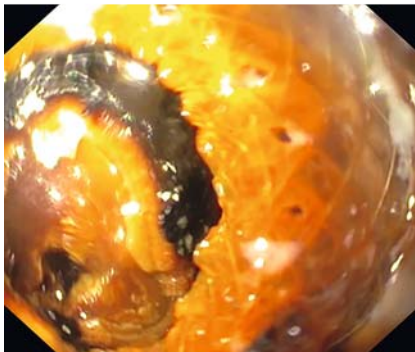


Electrohydraulic lithotripsy for the treatment of stone impacted in a lumen-apposing metal stent in a patient with endoscopic cholecystoduodenostomy



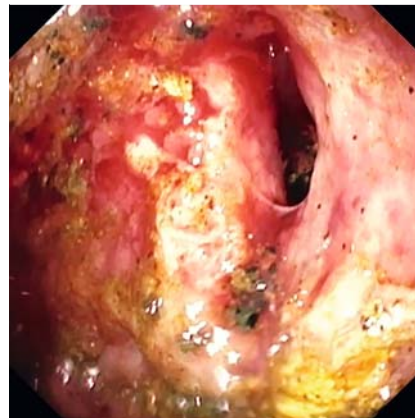
► **Fig. 1** Lumen-apposing metal stent (LAMS) obstructed by a biliary stone impacted in the stent lumen.



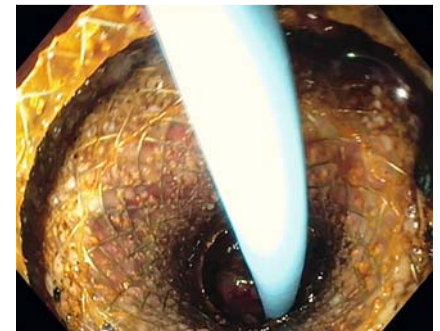
► **Fig. 2** Fragmentation of biliary stone by means of electrohydraulic lithotripsy.



► **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.

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

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.

The authors

Edson Guzmán-Calderón^{1,2,3}, **Belén Martínez-Moreno⁴**, **Juan A. Casellas⁴**, **José Ramón Aparicio⁴**

- 1 Gastroenterology Unit, Hospital Nacional Edgardo Rebagliati Martins, Lima, Peru
- 2 Universidad Peruana de Ciencias Aplicadas (UPC), Lima, Peru
- 3 Gastroenterology Unit, Angloamericana Clinic, Lima, Peru
- 4 Gastroenterology Unit, Hospital General Universitario de Alicante, Alicante, Spain

Corresponding author

Gerly Edson Guzmán-Calderon, MD
Av. Edgardo Rebagliati 490, Jesús María,
Lima, Peru
edson_guzman@hotmail.com

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