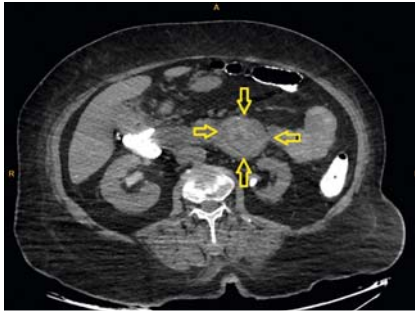
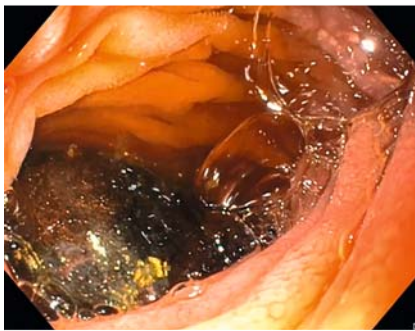


Endoscopic treatment of Bouveret syndrome with Holmium laser lithotripsy

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► **Fig. 1** Computed tomography image of the impacted gallstone (yellow arrows) at the intersection of the second and the third parts of the duodenum, which was causing gastric outlet obstruction.



► **Fig. 2** Endoscopic image of the impacted gallstone at the intersection of the second and the third parts of the duodenum.

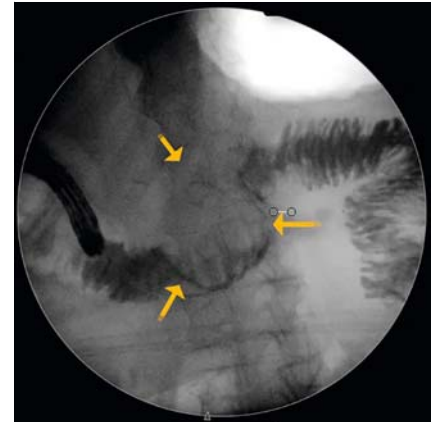
Gallstone ileus is a rare condition that is seen in about 0.5% of all cases of mechanical intestinal obstruction [1]. Furthermore, only 1%–3% of these patients have Bouveret syndrome, which is defined as the impaction of a large gallstone within the duodenum as a result of a cholecystoduodenal fistula [2]. Endoscopic baskets, mechanical lithotripsy, electrohydraulic lithotripsy, laser lithotripsy, and extracorporeal shockwave lithotripsy are the endoscopic treatment modalities used in Bouveret syndrome [3].

A 69-year-old woman attended the emergency department with severe nausea, vomiting, and abdominal pain, and an absence of flatulence and defecation. Abdominal computed tomography examination showed a cholecystoduodenal fistula and a 56×59-mm stone at the intersection of the second and third parts of the duodenum (► **Fig. 1**). Endoscopic evaluation was performed with a CF170Q endoscope (Olympus, Japan), and the orifice of the cholecystoduodenal fistula was observed at the apex of the duodenal bulb. In addition, a giant stone was seen at the intersection of the second and third parts of the duodenum (► **Fig. 2**). Enterographic examination obtained by the endoscopic administration of radiopaque contrast medium showed almost complete intestinal obstruction (► **Fig. 3**).

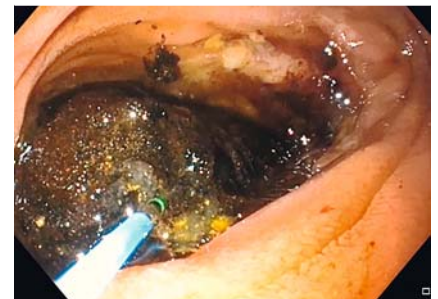
A LISA-Laser Sphinx Holmium laser fiber was subsequently inserted through the working channel of the endoscope, and the stone was pierced by administering 2 J of pulse energy and 30 W of power at the fiber tip, with a frequency of 15 Hz (► **Fig. 4**; ► **Video 1**). With the help of a Dormia basket, the stone fragments were pulled into the stomach, where they were again pierced either with laser or mechanical lithotripsy. After the lithotripsy procedure had been completed, the endoscope was passed to the distal segments of the obstructed area. No stone fragments large enough to cause obstruction in the stomach or duodenum were seen on the second-look endoscopy (► **Fig. 5**).

In conclusion, Bouveret syndrome is a rare and difficult-to-treat condition. Endoscopic approaches using laser lithotripsy allow effective and safe patient management and can avoid surgery-related morbidity.

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► **Fig. 3** Enterographic image following the endoscopic administration of radiopaque contrast medium showing the gallstone (yellow arrows) causing almost complete obstruction of the bowel.



► **Fig. 4** Endoscopic view showing the administration of a Holmium laser strike to the gallstone.

Funding

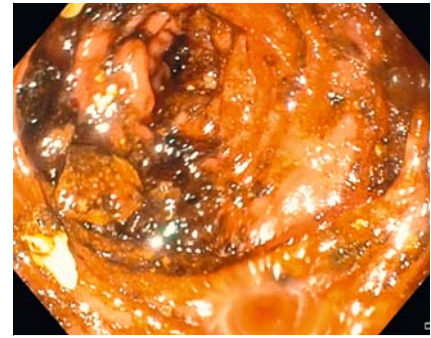
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Competing interests

Anadolu Mega Trading Limited Company (Olympus Turkey Distributor) paid the open access fee for the manuscript. The authors have no other financial or personal ties with the company.



▶ **Video 1** A patient with Bouveret syndrome is successfully treated with endoscopic laser lithotripsy.



▶ **Fig. 5** Image from the second-look endoscopy, which showed continuity of the intestinal lumen had been restored after the endoscopic laser lithotripsy procedure.

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