Laser lithotripsy with a standard endoscope through a hepaticoduodenostomy

Advanced techniques are often required for the removal of large biliary stones, impacted stones, and intrahepatic stones because traditional endoscopic retrograde cholangiopancreatography (ERCP) is insufficient for extraction [1,2].

A 59-year-old woman with a history of surgical hepaticoduodenostomy presented with cholangitis. Magnetic resonance cholangiopancreatography (MRCP) revealed a 5×2.5-cm intrahepatic biliary stone. A duodenoscope (TGF-Q180V; Olympus, Center Valley, Pennsylvania, USA) was advanced to the hepaticoduodenostomy anastomosis. Cholangiography revealed markedly dilated intrahepatic ducts with a large filling defect in the left intrahepatic duct. An impacted stone was visualized endoscopically.

Laser lithotripsy (VersaPulse 100W Holmium Laser; Lumenis, San Jose, California, USA) was performed with energy levels set at 800 to 1500 mJ and a frequency of 8 to 15 Hz (● Fig. 1). Several stone fragments were removed with an extraction balloon (Extractor Pro; Boston Scientific, Natick, Massachusetts, USA), but the extraction was incomplete because of a large impacted stone fragment. A double-pigtail plastic stent (Advantix, 10 cm×10 Fr; Boston Scientific) was deployed for drainage.

ERCP and laser lithotripsy with the same settings were performed 3 weeks later, but the extraction still remained incomplete because of a persistently impacted stone. The same double-plastic pigtail stent was again deployed.

ERCP was performed again 1 month later. Stone extraction was completed with a basket (Trapezoid RX; Boston Scientific) and a Roth Net (US Endoscopy, Mentor, Ohio, USA). Contrast injection confirmed the absence of filling defects, with prompt drainage of contrast following the injection (● Fig. 2, ● Video 1). No stent was placed. Carbon dioxide insufflation was used during all procedures.

At 6-month follow-up, the patient remains asymptomatic with normal liver function test values. In patients with large, impacted biliary stones, endoscopic management without the need for surgical intervention is efficacious and safe.

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Amy Tyberg¹, Kunal Karia¹, Amit Desai¹, Steven Zerbo¹, Dong Choon Kim², Reem Sharaiha¹, Michel Kahaleh¹

¹ Department of Gastroenterology & Hepatology, Weill Cornell Medical College, New York, New York, USA

² Soon Chung Hyang University School of Medicine, Digestive Disease Center, Department of Internal Medicine, Bucheon, Republic of Korea

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Corresponding author

Michel Kahaleh, MD

Department of Gastroenterology Hepatology
 Weill Cornell Medical College
 1305 York Avenue
 4th Floor
 New York, NY 10021
 USA
 Fax: +1-646-962-0110
 mkahaleh@gmail.com

Fig. 1 Laser fragmentation of a large stone with a forward-viewing endoscope in a 59-year-old woman presenting with cholangitis. The endoscope has been inserted through a hepaticoduodenostomy.

Fig. 2 Complete clearance of the biliary tree after stone extraction.

Video 1

Laser lithotripsy with a standard endoscope through a hepaticoduodenostomy.