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 1500mJ and a frequency of 8 to 15Hz (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, 10cm×10Fr; 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-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 (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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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.