Successful endoscopic treatment for Mirizzi syndrome type II under direct peroral cholangioscopy using an ultraslim upper endoscope

Surgery is standard management for patients with Mirizzi syndrome. In cases of Mirizzi syndrome type II, laparoscopic surgery is even more complicated because of the cholecystocholedochal fistula. Endoscopic treatment for Mirizzi syndrome is still controversial except to relieve a bile duct obstruction [1, 2]. This report describes a successful endoscopic treatment for Mirizzi syndrome type II with laser lithotripsy under direct peroral cholangioscopy (POC) using an ultraslim upper endoscope.

A 52-year-old woman presented with a 1-week history of epigastric pain and jaundice. Abdominal CT and magnetic resonance cholangiopancreatography showed diffuse bile duct dilation and stricture of the common hepatic duct with compression of a stone impacted in the cystic duct. Endoscopic retrograde cholangiopancreatography showed a large impacted stone at the level of the cystic duct (Fig. 1). Intraductal ultrasonography revealed disappearance of the ductal wall between the stone and the bile duct, suggesting the presence of a cholecystocholedochal fistula, indicating the presence of type II Mirizzi syndrome. Conventional stone extraction, including mechanical lithotripsy, was unsuccessful. Intraductal laser lithotripsy under direct endoscopic visualization using the FREDDY laser system (World of Medicine, Berlin, Germany) (120 mJ/pulse energy output and 10 Hz pulse rate) was successful (Video 1) [4]. An automated CO2 insufflation system (Colosense Pro-500; Mirae Medics, Seoul, Korea) was used during the procedure. Then, the fragmented stones were extracted using a basket and balloon after changing to a duodenoscope. Follow-up direct POC revealed no stone remnants and complete closure of the cholecystocholedochal fistula (Fig. 3). Subsequent abdominal CT showed the gallbladder to be contracted with no remnant of stone. Direct POC using an ultrasmall upper endoscope permits various intraductal endoscopic interventions through the 2.0-mm working channel. Developing accessories, such as an access balloon system and overtube, may be useful for endoscopic intraductal interventions under direct POC [5].
Competing interests: None

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**Bibliography**

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**Fig. 3** Bile duct clearance and closure of the fistula. a Fluoroscopic image showing clearance of the bile duct with no leakage through the fistula. b Cholangioscopic images showing cholecystocholedochal fistula at the cystic duct level (left) and complete closure of the fistula (right).