

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

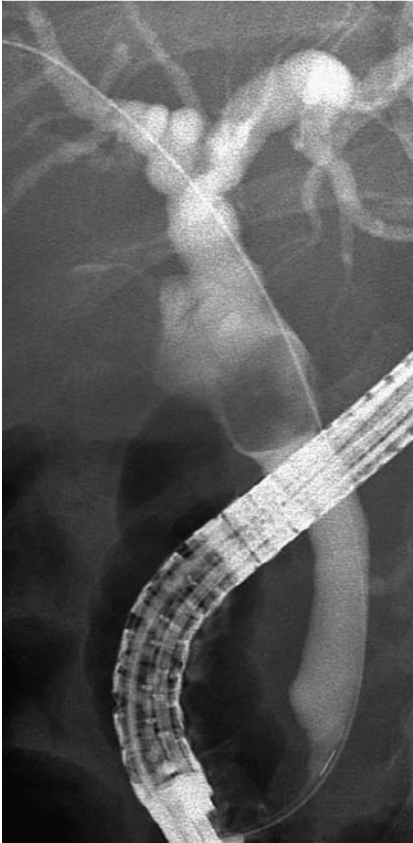


Fig. 1 Cholangiogram showing a large impacted stone at the level of the cystic duct.

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 im-

acted 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 peroral cholangioscopy (POC) using an ultraslim endoscope (GIF-XP260N, outer diameter 5.5 mm; Olympus, Tokyo, Japan) was performed. After a 0.025-inch guidewire (VisiGlide; Olympus) was placed into an intrahepatic duct, the slim endoscope was advanced into the bile duct over the anchored balloon catheter (MTW Endoskopie, Wesel, Germany) [3]. Intraductal stone fragmentation 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 (● **Fig. 2**, ● **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 ultraslim 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].

Video 1

Fluoroscopic view shows intraductal balloon-assisted direct peroral cholangioscopy using an ultraslim upper endoscope. Cholangioscopic view shows an impacted yellowish biliary stone. Laser lithotripsy was performed under cholangioscopic visual guidance. After intraductal lithotripsy and removal of fragmented stones, the cholangioscopic view shows a cleared bile duct and a cholecystocholedochal fistula.

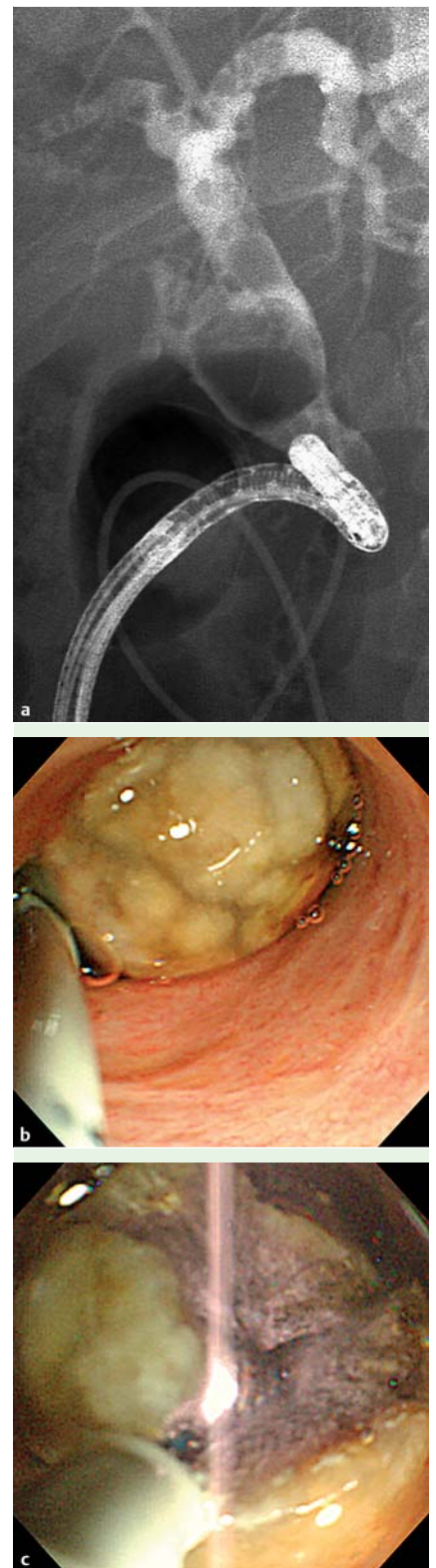
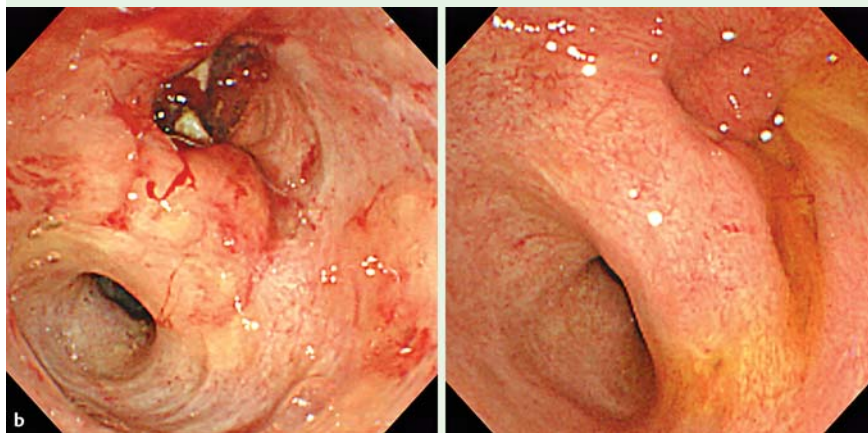


Fig. 2 Laser lithotripsy under direct peroral cholangioscopy (POC). **a** Fluoroscopic image showing laser lithotripsy under direct POC guidance. **b** Cholangioscopic image showing a large impacted stone. **c** Cholangioscopic image showing laser lithotripsy under direct POC guidance.



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).



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Competing interests: None

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