

Transluminal intrahepatic bile duct stone removal using coaxial basket catheter via the previously created EUS-guided hepaticogastrostomy tract (with videos)

Takeshi Ogura, Nobu Nishioka, Kazuhide Higuchi

2nd Department of Internal Medicine, Osaka Medical College, Osaka, Japan

Intrahepatic bile duct stone (IHBDS) removal is usually performed under contraindication of ERCP. However, if patients are complicated with contraindication of ERCP such as surgical anatomy or duodenal obstruction, this procedure may be challenging. As alternative method, EUS-guided transluminal biliary drainage has been developed.^[1-3] Recently, various techniques, such as antegrade stone removal, have been also reported under EUS guidance.^[4,5] However, antegrade stone removal has risk of complicating acute pancreatitis and technically difficult because push ability of devices may be limited due to the structure of biliary tract itself. If stone removal is attempted through the fistula, stone removal is also challenging due to the same reasons although risk of acute pancreatitis may not be absence. Herein, we described technical tips for IHBDS using novel basket catheter (COAXiS, Gadelius Medical Co. Ltd, Tokyo, Japan) [Figure 1] through EUS-guided hepaticogastrostomy (HGS).

An 82-year-old man underwent percutaneous transhepatic biliary drainage (PTBD) for

hepaticojejunostomy anastomotic stricture, which was complicated followed by extrahepatic bile duct resection for gallbladder stones 10 years ago. Frequent cholangitis due to IHBDS was observed [Figure 2]. He did not agree with undergoing PTBD; therefore, EUS-HGS using covered metal stent (10 mm × 10 cm, Niti-S Biliary Cover Stent, TaeWoong Medical, Seoul, Korea) was attempted [Video 1]. After 7 days, IHBDS

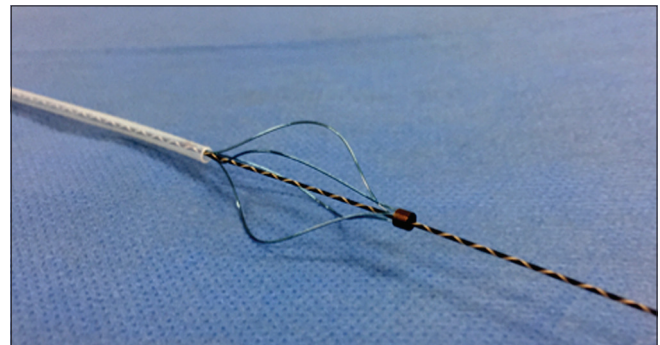


Figure 1. The novel basket catheter (COAXiS, Gadelius Medical Co. Ltd, Tokyo, Japan). Diameter of this catheter is 8 Fr, and site of basket is made from nitinol wire. In addition, this catheter is coaxial with the guidewire

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Address for correspondence

Dr. Takeshi Ogura, 2nd Department of Internal Medicine, Osaka Medical College, 2-7 Daigakuchou, Takatsukishi, Osaka 569-8686, Japan. E-mail: oguratakeshi0411@yahoo.co.jp

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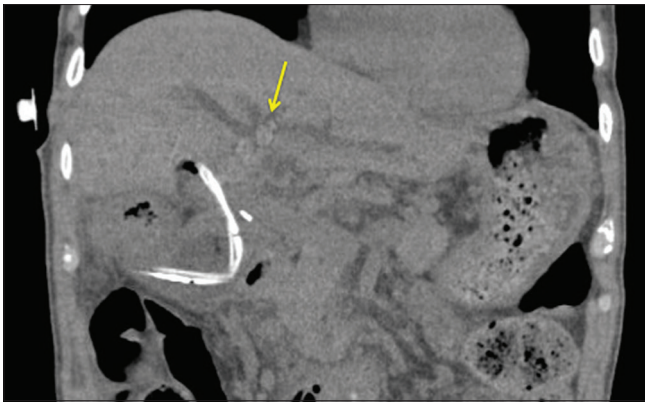


Figure 2. The intrahepatic bile duct stones are seen on computed tomography (arrow)



Figure 3. The intrahepatic bile duct stones are seen on cholangiography



Figure 4. Electrohydraulic lithotripsy is attempted under cholangioscopic guidance

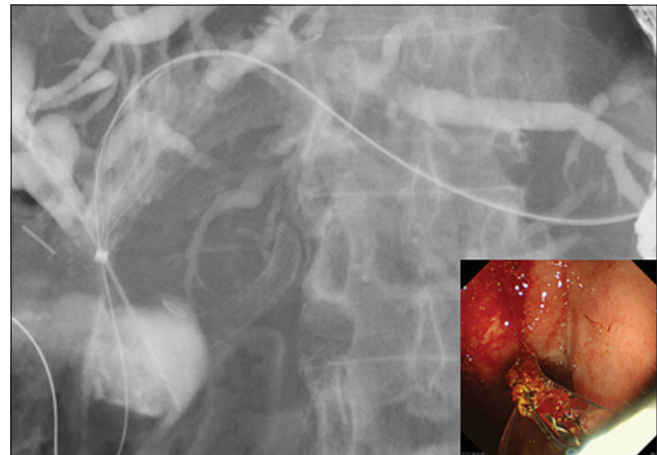


Figure 5. The intrahepatic bile duct stone removal is successfully performed through EUS-guided hepaticogastrostomy route

removal was attempted because the operability of devices was limited due to long covered metal stent. First, the contrast medium was injected, and IHBDS was seen [Figure 3]. Then, metal stent was removed. Because IHBDS was relatively large, therefore, stone fragmentation using electrohydraulic lithotripsy (EHL) under cholangioscopy (SpyGlass DS; SPY-DS, Boston Scientific, Japan) was attempted [Figure 4]. An electrohydraulic shock wave generator (Lithotron EL27, Walz Elektronik GmbH, Germany) was used to generate shock waves of increasing frequency, which were applied as a continuous sequence of discharges during EHL. A 2.4-Fr EHL probe was used, and EHL was performed under SPY-DS guidance. After IHBDS fragmentation was obtained, stone removal was performed using basket catheter. Because this basket was coaxial with the guidewire, we easily performed this procedure and successfully performed IHBDS removal [Figure 5 and Video 2]. Finally, plastic stent deployment was performed from the intrahepatic bile

duct to the stomach without any adverse events. Our technique using novel basket catheter may be useful for IHBDS stone removal through EUS-HGS.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient has given his consent for his images and other clinical information to be reported in the journal. The patient understands that his name and initial will not be published and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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