

A novel endoscopic retrograde cholangiopancreatography technique to reduce stone size in type IV Mirizzi syndrome: avoiding cholangiojejunostomy

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To the Editor: Mirizzi syndrome (MS) is a rare type of cholelithiasis with an incidence of 0.1% in all gallstone cases.^[1] Its clinical manifestations and imaging features can sometimes be difficult to distinguish from those of choledocholithiasis and biliary tumors. The traditional treatment for MS is usually surgery, including cholecystectomy, exploration of common bile duct plus T-tube drainage, and cholangiojejunostomy.^[2] There have even been reports of endoscopic therapies for MS in recent years, but it is technically difficult and non-feasible in cases where the stones get stuck in the Hartmann pouch.^[3] Here we report a case where the MS was downstaged via endoscopic modalities to avoid cholangiojejunostomy.

A 72-year-old male patient was diagnosed with cholecystolithiasis and obstructive jaundice. The clinical biochemistry results were as follows: total bilirubin (TBIL) was 139.6 $\mu\text{mol/L}$ (3.4–17.1 $\mu\text{mol/L}$), direct bilirubin (DBIL) was 81.0 $\mu\text{mol/L}$ (0–6.8 $\mu\text{mol/L}$), aspartate aminotransferase (AST) was 586 U/L (8–40 U/L), and alanine aminotransferase (ALT) was 765 U/L (5–40 U/L). Magnetic resonance cholangiopancreatography indicated type IV MS [Figure 1A and 1B]. Since the patient was much advanced in age hence making it challenging for him to tolerate choledochol-enteric anastomosis, we decided to perform endoscopic retrograde cholangiopancreatography (ERCP) to lift the biliary obstruction. The cholangiography showed a filling defect of 20 mm $\times$ 12 mm at the upper common bile duct [Figure 1C]. There was no contrast agent in the intrahepatic bile duct, but the gall bladder was filled with contrast agent corresponding with the diagnosis of MS. The stone was stuck making it impossible to be removed. We used SpyGlass-DS system (Boston Scientific Corp., Natick, MA, USA) to crush the part of the stone located in the common bile duct with the aid of lithotripsy and then extracted the stone fragments under direct view.

The section of the stone in the cystic duct could not be extracted, and we decided not to crush the remnant of the stone. The balloon occluded cholangiography showed that intrahepatic bile duct was filled with contrast agent and the previous filling defect in the common bile duct had disappeared [Figure 1D]. After we placed a plastic biliary stent, the symptoms of the patient were completely alleviated. Three days after the ERCP procedure, the biochemistry results of the patient were as follows: TBIL was 53.8 $\mu\text{mol/L}$, DBIL was 26.6 $\mu\text{mol/L}$, AST was 63 U/L, and ALT was 231 U/L. Laparoscopic cholecystectomy and exploration of common bile duct were performed, and a T-shaped drainage tube was placed four weeks later.

Type IV MS, due to remarkable impairment of the bile duct, in general leaves patients with no other option than to undergo cholangiojejunostomy. In this case, ERCP combined with SpyGlass-DS was used to extract the portion of stone found in the common bile duct through laser lithotripsy, restoring the patency of the common bile duct in the first place. After the liver function and overall condition of the patient improved, surgery can then be performed to cure the patient entirely. The previous ERCP combined with SpyGlass-DS procedure downstaged type IV MS to type II. The biliary mucosa was self-repaired after the stone had been removed. Thus, cholangiojejunostomy was avoided, preserving the integrity of the biliary tract. This approach was an attempt to treat type IV MS using laparoscopic therapies in combination with endoscopic therapies. Whether or not there would be any long-term complications such as biliary stricture or recurrence of stones is yet to be observed.

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Chinese Medical Journal 2021;134(8)

Received: 06-09-2020 Edited by: Yan-Jie Yin and Xiu-Yuan Hao

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Quick Response Code:



Website:

www.cmj.org

DOI:

10.1097/CM9.0000000000001370

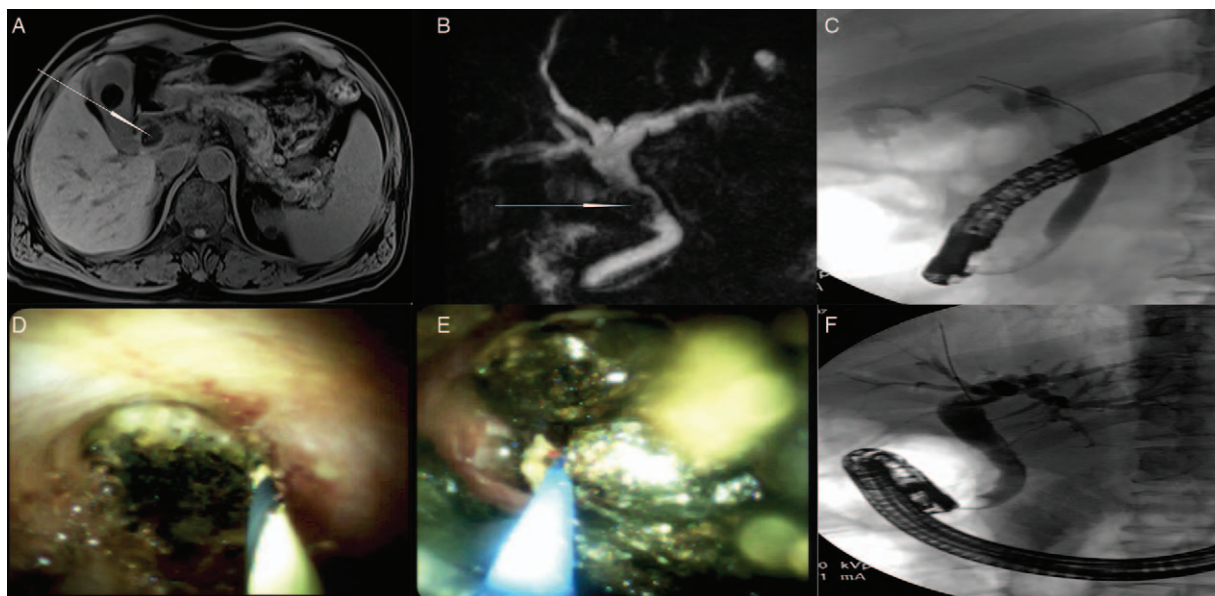


Figure 1: Imaging features before and after the endoscopic retrograde cholangiopancreatography. (A) T1-weighted axial image with fat suppression demonstrated a low signal intensity gallstone (white arrow) in the cystic duct. (B) Magnetic resonance cholangiopancreatography showed a low signal intensity gallstone (white arrow) impacted in the cystic duct and the common bile duct. (C) Intraoperative cholangiography showed a filling defect of 20 mm × 12 mm at the upper common bile duct, with contrast agent filling the gallbladder but not the intrahepatic bile duct. (D) Spyglass showed impacted cystic duct stone. (E) Laser lithotripsy under direct view of Spyglass. (F) Balloon occluded cholangiography showed that intrahepatic bile duct was filled with contrast agent and the previous filling defect had disappeared.

Acknowledgements

The authors would like to thank Pei-Lei Mu and Dr. Yan-Ni Ma from our medical center for giving us assistance during data collecting process.

Funding

This study was supported by the grant from Bethune Charitable Foundation (No. HZB-20181119-34).

Conflicts of interest

None.

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How to cite this article: Li TY, Chen ZX, Wang YD, Liu Y, Zhang JD, Yue P, Meng WB. A novel endoscopic retrograde cholangiopancreatography technique to reduce stone size in type IV Mirizzi syndrome: avoiding cholangiojejunostomy. *Chin Med J* 2021;134:1004–1005. doi: 10.1097/CM9.0000000000001370