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A novel peroral choledochoscope was used to remove a proximal displaced stent-stone complex

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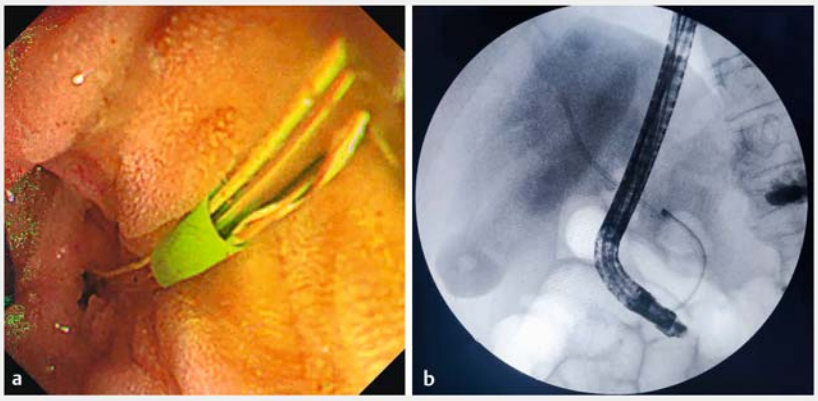
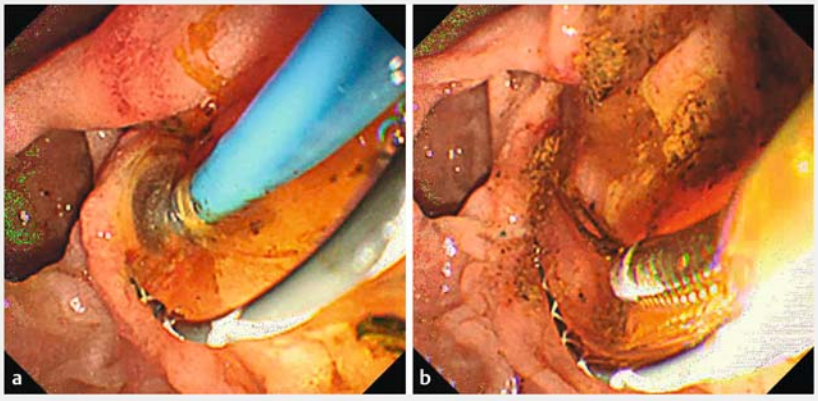
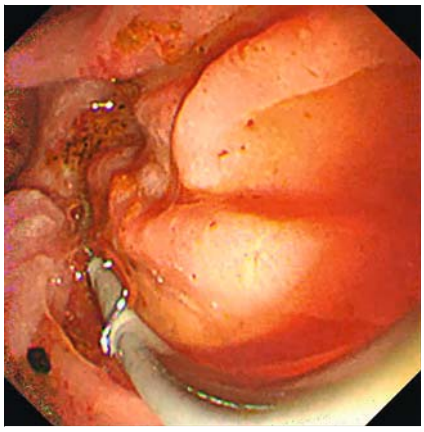


▶ **Fig. 1** **a** No stent was found in the duodenal papilla opening. **b** Radiography indicated that the stent was displaced into the common bile duct.



▶ **Fig. 2** **a, b** Attempts to remove the stent with a balloon and a net basket were unsuccessful.

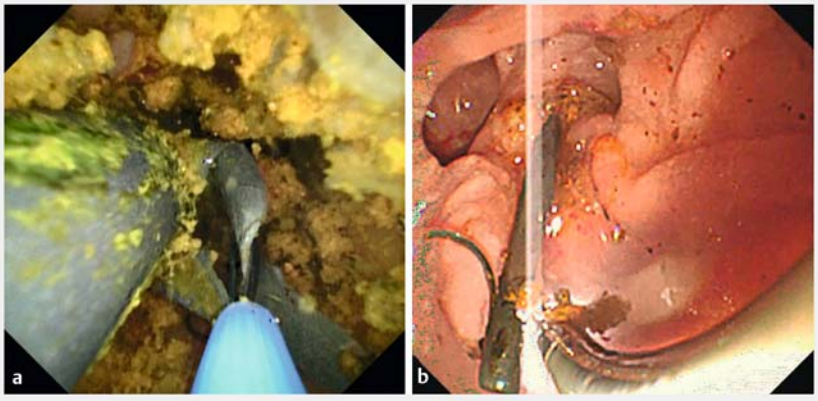


▶ **Fig. 3** The bile duct was explored by peroral choledochoscope.

Biliary stent implantation is an effective way to treat complex biliary calculi [1, 2]. Stent displacement and stent-stone complex formation are adverse events of long-term biliary stent retention. We demonstrate a case of the use of a retrieval basket to remove a proximal displaced stent-stone complex under direct vision assisted with a novel peroral choledochoscope (eyeMax Choledochoscope System Digital Controller; Micro-Tech, Nanjing, China).

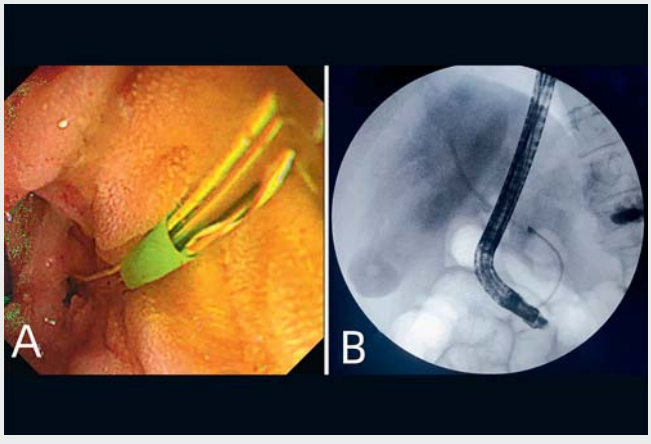
A 67-year-old man underwent endoscopic retrograde cholangiopancreatography (ERCP) for choledocholithiasis. Because of the large number of stones, it was difficult to remove them at one time, so the bile duct stent was inserted. The patient was readmitted 6 months later and ERCP was performed again. No stent was found at the duodenal papilla opening (▶ **Fig. 1 a**). Radiography indicated that the stent was detached into the bile duct (▶ **Fig. 1 b**). The stent was not removed successfully after the application of a balloon and basket (▶ **Fig. 2 a, b**). Subsequently, a peroral choledochoscope was used to perform bile duct exploration (▶ **Fig. 3**), and the stent was found to be surrounded by the stone to form a stent-stone complex. A four-wire retrieval basket was then applied to wrap the side of the stent under direct vision (▶ **Fig. 4 a**), and the stent was slowly pulled out of the duodenal papilla opening (▶ **Fig. 4 b**). The stent was removed with a snare (▶ **Fig. 5**, ▶ **Video 1**). The stones were removed and placed into the nasobiliary duct. The patient was discharged from the hospital 3 days after surgery.

Biliary stent displacement can lead to duodenal perforation and other serious adverse events that threaten life [3, 4]. Timely removal of the stent is critical. The formation of a stent-stone complex causes the stent to be difficult to grasp and move, which makes endoscopic removal of proximal displaced stent-stone complexes challenging. In our case, we used a new peroral choledochoscope with a wide operating channel to grasp the stent with a four-wire retrieval basket under direct vision. This made it easier to grasp and remove the displaced stent.



▶ **Fig. 4** **a** The four-wire retrieval basket was applied to grasp the side of the stent under direct vision. **b** The stent was pulled to the duodenal papilla opening.

▶ **Fig. 5** The stent was removed from the body.



▶ **Video 1** A novel peroral choledochoscope was used to remove the proximal displaced stent stone complex.

This technique has previously been reported for the treatment of cystic duct stones [5]. This is the first attempt to use this technique in the treatment of displaced biliary stents.

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Competing interests

The authors declare that they have no conflict of interest.

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References

[1] Horiuchi A, Nakayama Y, Kajiyama M et al. Biliary stenting in the management of large or multiple common bile duct stones. Gastrointest Endosc 2010; 71: 1200–1203.e2. doi:10.1016/j.gie.2009.12.055

[2] Ye X, Huai J, Sun X. Effectiveness and safety of biliary stenting in the management of difficult common bile duct stones in elderly patients. Turk J Gastroenterol 2016; 27: 30–36. doi:10.5152/tjg.2015.150305

[3] Jendresen MB, Svendsen LB. Proximal displacement of biliary stent with distal perforation and impaction in the pancreas. Endoscopy 2001; 33: 195. doi:10.1055/s-2001-11920

[4] Chittleborough TJ, Mgaieth S, Kirkby B et al. Remove the migrated stent: sigmoid colon perforation from migrated biliary stent. ANZ J Surg 2016; 86: 947–948. doi:10.1111/ans.12796

[5] Li Y, Zhang L, Hou S. Cystic duct stones in postcholecystectomy Mirizzi syndrome – A novel endoscopic treatment. Rev Esp Enferm Dig 2022; 114: 557–558. doi:10.17235/reed.2022.8802/2022

Bibliography

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