Endoscopic removal of foreign body from hepatic duct using wire guided forceps and basket

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Key words: removal, foreign body, bile duct, wire guided, endoscopy

Abbreviations: ERC, endoscopic retrograde cholangiography

Introduction

Successful removal proximally migrated stent and foreign body in the bile duct has been reported. However, removal of foreign body that migrated into the intrahepatic ducts, especially upstream of a long biliary stricture is difficult. Percutaneous or surgical intervention has been performed if endoscopic retrieval using standard equipment failed. The use of wire guided approach has not been reported in the removal of biliary foreign bodies.

Case report

A 70-year-old man underwent endoscopic retrograde cholangiography (ERC) and biliary stenting for a bile duct cancer

involving the intrahepatic ducts. (**Fig. 1A**). Due to excessive shaping of the guide wire tip for selective cannulation of the intrahepatic duct, the flexible tip of the guidewire (Jagwire™, 0.035 inch, angle-type, Boston Science, Natick, MA, U.S.A.) was detached and migrated into the intrahepatic duct (right anterior branch). Endoscopic removal of the guide wire tip was attempted using standard basket and rat-tooth forceps failed because of the long segment biliary stricture prevented proper positioning of the accessories (**Fig.1B**). Eventually, with a guide wire leading, the wire tip was successfully grasped using wire guided forceps (E634044, 2.2 mm channel, Olympus, Tokyo)(**Fig. 1C**) and then successfully removed using wire guided basket (FG-V436P, 4 wire, Olympus, Tokyo)(**Fig. 1D**). No further complication was recognized during and after the ERCP procedure.

Figure 1. Endoscopic retrograde cholangiography demonstrating a long segment stenosis at the common bile duct (A). Migrated fractured guidewire tip at right-anterior hepatic ducts not reachable by rat-tooth forceps (B). Grasping of guidewire tip using wire guided forceps (C) and removal using wire guided basket (D).

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Submitted: Aug/30/2011; Revised: Jan/03/2012; Accepted: Jan/18/2012
Previously published online: www.landesbioscience.com/journals/jig
DOI: 10.4161/jig.22205

Discussion

Foreign bodies in the bile duct are rare. Many of them are a result of migration of medical devices such as metallic clips after laparoscopic cholecystectomy^{1,2}, embolization coil¹, surgical silk suture³, fragmented plastic stent⁴ and fractured guidewire⁵. These materials sometimes cause biliary colic³ and bile duct obstruction¹ or predispose to biliary stone formation², hence they should be removed. Usually, the less-invasive endoscopic method is preferred to remove the foreign bodies^{1,3,4}. Percutaneous^{1,5} or surgical intervention may be necessary if endoscopy failed¹. For the endoscopic approach, long segment stricture or stenosis restricted the manipulation of the retrieval devices such as rat-tooth forceps, snare, basket and guidewire. We sometimes manually curved the forceps' shaft to help direct the forceps' towards the foreign body. This technique works in cases with a short length stricture, but failed in the current case (**Fig. 1A and 1B**).

The wire guided forceps and basket enabled us to correctly access the foreign body and successfully remove the broken wire tip despite the long-segment biliary stricture (**Fig. 1C and 1D**). Successful placement of the guide wire will facilitate this retrieval method. For small foreign bodies such as the fractured guide wire tip or metal clips, forceps retrieval is better but baskets are more useful for larger objects like migrated stent or stones. Selective cannulation of the intrahepatic ducts may be improved using a wire guided papillotome to adjust the direction of the guide wire

across the stricture/stenosis. The current report demonstrated the usefulness of the wire guide-type devices combined with standard equipment in retrieving biliary foreign bodies. As small object tends to get stuck in the branch duct making removal difficult, even with the help of the guide wire, careful manipulation is needed to avoid upstream displacement of the foreign object.

Acknowledgements

Authors are grateful to Mrs. Minako Nakagawa and Mayumi Suhara for their supports during endoscopic procedures.

Disclosures

The authors disclosed no financial relationships relevant to this article.

References

1. Chong VH, Chong CF. Biliary complication secondary to post-cholecystectomy clip migration: A review of 69 cases. *J Gastrointest Surg* 2010; 14:688-96.
2. Prochazka V, Krausova D, Kodousek R, Zamecnikova P. Foreign material as a cause of choledocholithiasis. *Endoscopy* 1999; 31:383-5.
3. Das K, Basu K, Ray S, Chatterjee S. Suture material in the common bile duct causing recurrent post-cholecystectomy pain. *Endoscopy* 2010; 42:E258.
4. Seong CK, Kim YJ, Chung JW, Kim SH, Han JK, Kim HB, et al. Tubular foreign body or stent: Safe retrieval or repositioning using the coaxial snare technique. *Korean J Radiol* 2002; 3:30-7.
5. Khong PL, John PR. Percutaneous retrieval of a fractured biliary guidewire from a reduced liver graft. *Pediatr Radiol* 1997; 27:253-4.