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CASE REPORT

Oldest biliary endoprosthesis *in situ*

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Abstract

The advantages of endoscopic retrograde cholangiopancreatography over open surgery have made it the predominant method of treating patients with choledocholithiasis. After sphincterotomy, however, 10%-15% of common bile duct stones cannot be removed with a basket or balloon. The methods for managing "irretrievable stones" include surgery, mechanical lithotripsy, intraductal or extracorporeal shock wave lithotripsy and biliary stenting. The case presented was a referred 82-year-old Caucasian woman with a 7-year-old plastic biliary endoprosthesis *in situ*. To the best of our knowledge the examined endoprosthesis is the oldest endoprosthesis *in situ* reported in the literature. Endoscopic biliary endoprosthesis placement remains a simple and safe procedure for patients with stones that are difficult to manage by conventional endoscopic methods and for patients who are unfit for surgery or who are high surgical risks. To date no consensus has been reached regarding how long a biliary prosthesis should remain *in situ*. Long-term biliary stenting may have a role in selected elderly patients if stones extraction has failed because the procedure may prevent stones impaction and cholangitis.

Key words: Common bile duct stones; Cholangitis; Biliary endoprosthesis; Endoscopic retrograde cholangiopancreatography; Endoscopic sphincterotomy

Core tip: Endoscopic extraction of biliary tract stones is safe and effective. When the procedure is not successful the placement of a plastic biliary endoprosthesis can be a solution. To date no consensus has been reached regarding how long the biliary prosthesis should remain *in situ*. This case report represents the oldest *in situ* plastic biliary endoprosthesis ever reported in the literature. Despite the fact that endoprostheses will inevitably occlude after 3 to 5 mo *in situ*, they may still prevent impaction of stones in the distal part of the common bile duct and ensure free flow of bile even if the endoprostheses are obstructed, calcified and have a bilious coat.

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INTRODUCTION

Nearly a third of patients with common bile duct (CBD) stones are at risk of developing recurrent cholangitis or pancreatitis[1]. These complications are associated with significant mortality in elderly or infirm patients. Therefore a prompt intervention to remove the stones (or at least establish an uninterrupted flow of bile) is required. Whit a success rate of over 90% endoscopic sphincterotomy and stones extraction comprise the treatment of choice for patients of all ages affected by choledocholithiasis. Large stones that cannot be extracted with the conventional endoscopic means present a greater challenge,

and a variety of surgical and non-surgical techniques are now available to remove these stones. Endoscopic insertion of biliary endoprosthesis has been proposed as an alternative for such high-risk patients and primarily in the case of failed stones extraction. Biliary stenting aims to prevent stone impaction by perpetuation of bile flow and helps to avoid subsequent life-threatening complications such as cholangitis and even cholangiosepsis[2].

CASE REPORT

An 82-year-old Caucasian woman complaining of symptoms characterised by itch and recurrent episodes of fever (maximum body temperature 38.5 ℃) for approximately 6 mo and treated using quinolone and cholestyramine respectively was referred to our unit. The patient underwent cholecystectomy for gallstones in 2000 and in 2005, at a non referral centre, the patient underwent endoscopic-retrograde-cholangiopancreatography (ERCP), which revealed dilatation and multiple stones of the CBD. After the sphincterotomy, because of the failure of stones extraction, a biliary endoprosthesis was implanted to avoid cholangitis. ERCP was not repeated and the endoprosthesis remained *in situ* until this admission. During hospitalisation at our unit, the patient underwent abdominal ultrasonography that revealed hyperechoic streaks along the CBD and a computed tomography abdominal scan that revealed moderate dilatation of the CBD and intrahepatic bile ducts with aerobilia. The routine blood parameters were all normal except for gamma glutamyl transferase (GGT) (101 U/L; normal value: 10-54 U/L). It was decided that another ERCP would be performed. The old double pigtail endoprosthesis was removed, the sphincterotomy was extended and the stones were extracted using a Dormia basket. The original prosthesis was obstructed, calcified and had a bilious coat (Figure 1). The post-operative course was complicated by the occurrence of fever (maximum body temperature 38.5 ℃), which cleared up after treatment with quinolone.

DISCUSSION

Choledocholithiasis is one of the most common gastrointestinal diseases encountered in clinical therapeutic endoscopy practice. Endoscopic sphincterotomy and stone extraction are widely performed as the primary treatment methods for patients with CBD stones, with an 80% to 90% success rate and a complication rate of less than 10%[3]. Approximately 10% to 15% of CBD stones are difficult to remove using conventional endoscopic sphincterotomy and balloon/basket extraction techniques, including mechanical lithotripsy. Multiple or large CBD stones (> 20 mm in diameter), the presence of periampullary diverticula, narrowing or stricture of the distal CBD, limited sphincterotomy caused by small papillae and no visible intramural course of the CBD in the duodenal wall all influence the probability of successful stone extraction[4]. In such cases, temporary biliary stenting is a safe and effective bridge therapy. This stenting

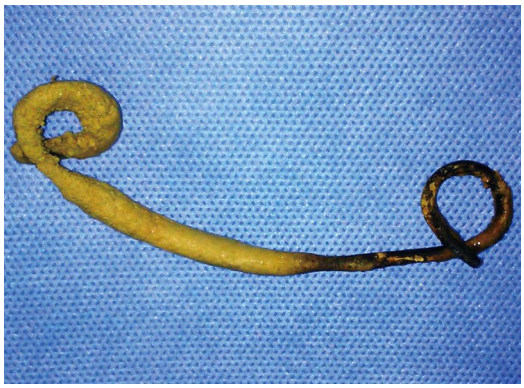

Figure 1 The oldest biliary endoprosthesis.

has several advantages, primarily the prevention of the incarceration of the stone at the ampulla of Vater and maintenance of biliary drainage. In addition, stenting can reduce the possibility of unnecessary surgery in patients exhibiting technical difficulties in stone removal[5-7]. Furthermore, friction between the stones and the prosthesis induces fragmentation, decreasing stone size, and thus facilitating removal[8]. To date, no consensus has been reached regarding how long the biliary prosthesis should remain *in situ*. Despite the fact that the endoprosthesis will inevitably occlude after 3 to 5 mo *in situ*, it is believed to work by splinting the stones or preventing impaction in the distal common bile duct or both, thus ensuring free flow of bile. The most serious drawback of a long-term indwelling biliary endoprosthesis is the risk of recurrent cholangitis, which is reported in 3.5% to 40% of patients. The median time to onset of cholangitis appears to be approximately 16 wk and occurs mainly in patients with an *in situ* gallbladder or in cases of prosthesis insertion without sphincterotomy[9-12]. Several previous studies have suggested that permanent biliary stenting may be a definitive therapy for endoscopically unextractable common duct stones in selected elderly patients who are poor surgical candidates. When biliary symptoms do recur, they can usually be treated conservatively with antibiotics, a prosthesis change, or both[2,13].

To the best of our knowledge, our case report represents the oldest *in situ* plastic biliary endoprosthesis ever reported in the literature. Other studies have reported stent survival up to 6 years[12,14]. These reports confirm that biliary endoprostheses may prevent impaction of stones in the distal part of the common bile duct and maintain biliary flow despite being obstructed, calcified and having a bilious coat. The stent may function as a wick around to drain the bile, rather than as a conduit for bile. The present case demonstrates that in high-risk patients, a regular endoprosthesis exchange might be delayed according to the patient's individual needs without fearing inevitable complications. However, further case-controlled studies are needed.

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