Migrated Endoclip and Stone Formation after Cholecystectomy: A Case Treated by Endoscopic Sphincterotomy

Takahiro Goshi¹, Seisuke Okamura¹, Hisashi Takeuchi¹, Tetsuo Kimura¹, Shinji Kitamura¹, Katsuyosi Tamaki¹, Koichi Okamoto¹, Masako Kaji¹, Naoki Muguruma¹, Toshiya Okahisa¹, Joji Shunto² and Testuji Takayama¹

Abstract

Endoclip migration into the common bile duct following laparoscopic cholecystectomy (LC) is an extremely rare complication. Migrated endoclip into the common bile duct can cause obstruction, serve as a nidus for stone formation, and cause cholangitis. We report a case of cholangitis due to a migrated endoclip and consequent choledocholithiasis 6 years after LC, which was successfully treated by endoscopic extraction.

Key words: endoclip migration, laparoscopic cholecystectomy, endoscopic sphincterotomy

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Introduction

Endoclip migration into the common bile duct following laparoscopic cholecystectomy (LC) is an extremely rare complication, and can occur from days to years after LC. We describe a case of cholangitis due to a migrated endoclip and consequent choledocholithiasis 6 years after LC, which was successfully treated by endoscopic extraction.

Case Report

A 68-year-old Japanese man presented with upper abdominal pain in February 2008. Physical examination revealed sclera icterus and right hypochondrial tenderness. Cholelithiasis was evident on abdominal ultrasound. Elevations of total bilirubin 5.8 mg/dL (normal 0.1-1.0 mg/dL), aspartate aminotransferase 135 U/L (normal 10-35 UL), alanine aminotransferase 158 U/L (normal 5-40 U/L), alkaline phosphatase 677 U/L (normal 100-340 U/L), gammaglutamyl transpeptidase 1,593 U/l (normal 0-60 U/L), and C-reactive protein 4.1 mg/L (normal<0.3 mg/L) were noted. Serum pancreatic amylase level was normal. He had undergone selective uncomplicated LC at our hospital 6 years previously, during which endoclips had been used to control the cystic artery and cystic duct.

Abdominal CT scan on admission showed two stones within a dilated common bile duct and an endoclip immediately adjacent to the bile duct (Fig. 1). He underwent an endoscopic retrograde cholangiopancreatography (ERCP) which demonstrated two stones in the dilated common bile duct as well as three endoclips within one of the stones (Fig. 2). Following an endoscopic sphincterotomy, the calculi were crushed with an endoscopic mechanical lithotripter. The crushed calculi and endoclips were then successfully extracted with a basket catheter (Fig. 3). The biliary tree was clear at the conclusion of the procedure. He made a rapid recovery, with resolution of his symptoms on day 1 post-ERCP and normalization of liver biochemistry one week later. Analysis of the extracted fragments of the stones showed evidence of bilirubin-calcium. There was no clinical or biochemical abnormality attributable to the biliary system.
Figure 1. Abdomen CT on admission showed two stones in the dilated common bile duct (a, b) and endoclip outside of bile duct (c).

Figure 2. ERCP demonstrated two stones in the dilated common bile duct, and the three endoclips were detected in one stone.

Figure 3. The endoclips were extracted by employing a basket catheter.

Figure 4. On CT, the endoclips and stone were seen in the cystic duct in 2004 (a), and the enlarged stone was revealed in 2007 (b).

during the 6-month follow-up after ERCP.

The present patient’s cholangitis was likely to have been due to a migrated endoclip with consequent choledocholithiasis. In our retrospective analysis, endoclips and stones were seen within the cystic duct stump on CT in 2004, and the stones appeared larger in 2007 (Fig. 4). The CT showed two stones within the common bile duct, but not in the cystic duct, suggesting migration of the calculi and endoclip into the common bile duct (Fig. 1).

Discussion

The first case of choledocholithiasis due to endoclip migration into the common bile duct after LC was reported in 1992 (1, 2), and there have also been case reports of other complications from migrated endoclips within the common
bile duct, including acute pancreatitis and benign structur-
ing (3)/stenosis of the common bile duct (4).

The etiology of endoclip migration into the common bile duct remains unclear. One possible explanation is that the cystic duct remained patent due to ineffective clipping resulting in biloma with bile leakage (1, 4, 5). An alternative explanation revolves around erosion of the endoclip into the biliary system from local inflammation around the clip (4, 6). In the present case, the endoclips were likely to have migrated into the cystic duct, followed by stone formation around the them. With time, the gradually enlarging stones and the associated endoclips migrated into the common bile duct. This predisposed to further stone formation within the common bile duct from congested flow of bile or spontaneous crush of the initial stone. Clip migration following LC could be potentially avoided by the use of absorbable clips or ultrasonic dissection without clipping (6, 7). However, these methods have not yet been routinely used probably due to the complication and high costs of their applications.

Some case reports of this complication described treatment with open surgery, while in the present patient the endoclip was successfully extracted endoscopically. This emphasizes the importance of early recognition of this complication and prompt attempt at endoscopic therapy (5), so as to minimize the incidence of an impacted endoclip that necessitates surgical therapy.

References