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A case of choledocholithiasis with an endoclip nidus, 6 months after laparoscopic cholecystectomy

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Abstract. A 69-year-old man developed obstructive jaundice 6 months after laparoscopic cholecystectomy. Endoscopic retrograde cholangiography suggested a common bile duct (CD) stone. A second operation was performed, and this revealed a CBD stone with an endoclip as a nidus. Since laparoscopic surgery has become a very common procedure, endoclips are used more frequently. Therefore, careful surveillance and strict follow-up are stressed to avoid CBD stone and various other complications caused by endoclips.

Key words: Laparoscopic cholecystectomy — Foreign body — Endoclip — Choledocholithiasis

Migration of hemoclips used for conventional cholecystectomy into the common bile duct (CBD) has been reported only rarely. However, laparoscopic cholecystectomy is now rapidly replacing conventional cholecystectomy to our knowledge, and some cases of an endoclip migration into the CBD after laparoscopic cholecystectomy have been documented after a shorter period of time than has been the case for conventional cholecystectomy.

Case report

The patient was a 69-year-old man with a 6-year history of gallbladder stones. He underwent initial laparoscopic cholecystectomy on February 25, 1993, when the cystic artery and its branch along the cystic duct were severed after double endoclipping. The cystic duct was exposed and severed after triple clipping on the proximal side. The gallbladder wall was ruptured during division from the liver bed, and bile contamination occurred during the operation. Finally, eight endoclips remained in the peritoneal cavity.

Six months later, the patient showed an increase of alkaline phosphatase and γ-glutamyl transferase levels, although there was no abdominal pain or fever. In September 1993, laboratory examination suggested obstructive jaundice, and he was admitted to our hospital for further examination.

Results of physical examination on this second admission were unremarkable except for icteric sclera. Abdominal computed tomography showed dilatation of the intrahepatic bile duct. Endoscopic retrograde cholangiography showed a radiolucent filling defect in the CBD, which was suspected to be a CBD stone (Fig. 1).

On October 8, 1993, a second operation was carried out as a result of diagnosis of CBD stone. At laparotomy, six endoclips were observed along the CBD; the CBD wall was thickened around the stone. Upon removal of the stone, it was found to contain an endoclip, and another endoclip was embedded in the CBD wall. The endoclips were removed from the CBD except for one in the liver bed. None of these seven endoclips was deformed.

Analysis of the stone removed during the first operation showed that it contained 52% calcium bicarbonate and 30% cholesterol. That removed during the second operation contained 78% cholesterol and 22% calcium bilirubinate.

Discussion

Some cases of foreign bodies acting as a nidus for CBD stones have been reported [2, 9, 10]. The most frequently encountered foreign bodies are postsurgical residuals such as suture materials and hemoclips [2]. Warker [13] first reported hemoclips acting as a nidus for stones in 1978. It is speculated that the pathophysiologic sequence of stone formation begins when a hemoclip erodes through the cystic or common bile duct wall and into the lumen of the bile duct, thus providing a nidus for nucleation and stone growth [7]. Inflammation around or within the biliary tract is suspected to induce hemoclip migration into the biliary tract, congestion of bile juice, and stone formation. We suspected that the inflammation was caused mainly by biloma due to injury of the CBD or gallbladder and incomplete closure of the cystic duct. In the present case, bile contamination during the first operation might have caused the inflammation around the biliary tract, and this in turn might have induced

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Fig. 1. Endoscopic retrograde cholangiography showed a radiolucent filling defect in the CBD.

migration of two endoclips, which were used to divide a branch of the cystic artery into the CBD.

Since laparoscopic surgery has now become very common, endoclips are used more frequently, especially for biliary surgery. As early reports predicted [5, 6], more cases of endoclips acting as a nidus for CBD stones and causing various other complications are now being reported [1, 3, 8, 11, 12]. The delay between laparoscopic cholecystectomy and the first symptom due to clip migration ranged from 11 days to 10 months [1, 8, 11, 12]. This is considerably shorter than the corresponding delay of several years after conventional cholecystectomy [5–6, 13]. The difference in delay may be caused by the higher frequency of bile injury after laparoscopic cholecystectomy in comparison with conventional cholecystectomy [4]. Careful surveillance and strict follow-up are therefore stressed to ensure the safety of laparoscopic cholecystectomy.

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