Case Report

Retained CBD Stone as a Cause of Cystic Bile Duct Leakage after Laparoscopic Cholecystectomy

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ABSTRACT

One case of cystic bile duct leakage was encountered in 1400 cases of laparoscopic cholecystectomy. Endoscopic retrograde cholangio-pancreatography (ERCP) showed an impacted stone in the lower end of the common bile duct. This small stone has passed through a wide cystic duct during manipulation at surgery. Selective operative cholangiography was recommended by the author in cases of small gall bladder stones in the presence of a wide, patent cystic duct. ERCP was recommended as the principle diagnostic as well as therapeutic tool in such cases.

KEYWORDS: bile leakage, cystic duct stump, gall bladder stones, laparoscopic cholecystectomy

INTRODUCTION

Small gall bladder stones exhibit a potential danger of migration from the gall bladder into the common bile duct (CBD) and initiating a series of unwanted complications. Many patients are encountered with transient jaundice as a result of the passage of small stones into the CBD either before surgery or following laparoscopic cholecystectomy. Although it is not common, some of these patients may present with a full-blown picture of biliary pancreatitis after surgery. The presence of multiple small gall bladder stones in association with patent and wide cystic bile duct increase the chances of such complications. In 1400 cases of laparoscopic cholecystectomy one case of cystic bile duct leakage was encountered as a result of a stone passing into the CBD and obstructing its lower end. This report stresses the importance of operative cholangiography in cases where multiple small stones in the gall bladder are encountered with patent and wide cystic duct during laparoscopic cholecystectomy[1,2]. Cystic bile duct leakage is being commonly reported in laparoscopic cholecystectomy[3,4]. The importance of ERCP as a principle therapeutic tool is demonstrated in this case.

CASE REPORT

Clinical presentation: A Fifty-year-old female presented with fat intolerance dyspepsia and episodes of biliary colic. The patient had no history of acute cholecystitis, jaundice or pancreatitis. Liver function tests (LFT) were within normal limits. Ultra sound (US) examination of the abdomen showed multiple gall bladder stones, no evidence of acute cholecystitis and normal caliber CBD, 4 mm in diameter. The patient was diagnosed as having symptomatic chronic calcular cholecystitis and she was subjected to laparoscopic cholecystectomy. Surgery was straightforward and there was no difficulty all through the operation. The cystic bile duct was 12 mm in diameter. The routine postoperative checkup of LFT in the first postoperative day showed elevation of the direct serum bilirubin to 26 mmol/l (normal level up to 21 mmol/l) and the alkaline phosphates to 220 units (normal level up to 120 units/l), the serum amylase was normal. The patient started to complain of mild pain in the right hypochondrium and the right lower part of the chest five days after surgery. There was no sign of jaundice or pancreatitis, and US examination of the abdomen showed dilatation of the CBD to 7.5 mm, bile collection in the gall bladder bed, above the right lobe of the liver, and fluid in the right pleural cavity. Sympathetic right pleural effusion was obvious in the chest X-ray.

Management: ERCP showed the dilated CBD with an impacted stone in its lower end. The contrast was seen trickling from the cystic bile duct stump. Endoscopic papillotomy was performed and the stone was safely retrieved by means of a Dormia basket. The bile collection was drained percatuneously using US guidance and the drainage tube was left in place and fixed to the skin. There was an output of 500 ml of bile coloured fluid immediately upon insertion of the drainage tube. In

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the following days the output was 500 ml, 420 ml, 200 ml, 120 ml, and 40 ml consecutively and then stopped. Three days after ERCP, the CBD was seen to be of normal caliber again by US, and the LFT returned to normal. The percutaneous drainage catheter was removed after one week when the bile collection had totally stopped. The regression of the sympathetic effusion was slow. Conservative management and chest physiotherapy had to be continued for three weeks before complete resolution of the pleural effusion. The patient was followed up as an outpatient on regular intervals for two years. She was asymptomatic, the LFT, chest X ray, and US of the abdomen were normal.

DISCUSSION

Biliary tree leaks are iatrogenic in origin in 95% of cases[5], and 77% out of these leaks originate from the cystic bile duct[6]. Cystic bile duct leakage was reported as a result of incomplete closure or insecure clipping of the cystic bile duct stump[7]. It may also be result of injury of the cystic duct proximal to the clip by dissection or by inadvertent thermal injury either directly or by the spread of heat through the clip[4,8]. Leakage of bile was reported to be the result of unnoticed division of accessory duct of Luscha[8,9]. We have encountered one case of cystic bile duct leakage among 1400 cases of laparoscopic cholecystectomy performed in our department. The first indication of the problem was the raised serum level of bilirubin. Routine checking of the LFT after surgery proved to be very sensitive in the detection of common bile duct stones[10]. ERCP in that case showed an impacted stone in the lower end of the CBD, and leaking of the contrast out of the stump in close proximity to the clip. There was no leakage of contrast proximal to the stump. The assumption was that the stone created backpressure dislodging the clip.

Although minimal collections may resolve spontaneously and pass unnoticed, major bile leaks can give rise to biliary ascites and require prompt drainage[11]. Abscess and fistula formation are other serious complications[12]. Biloma resulting from division of the accessory ducts of Luscha may attain a very large size and lead to gastric outlet obstruction[13], while small and more localized collections can lead to postoperative adhesions and scarring[11]. Patients usually present with fever and pain in the right hypochondrium 5-6 days after surgery[6]. Radionuclide research studies show that bile leaks occur in 31-44% of cases of laparoscopic cholecystectomy in the first 24 hours after surgery but they usually pass unnoticed[14,11]. Obstructive jaundice can result from obstruction of the CBD by the retained stone, and it may progress to the more serious complication of ascending acute cholangitis[15,16]. Intestinal bacteria, which normally reside in the biliary radicals, could flourish following stasis and can penetrate the cellular barrier as a result of the increased pressure in the biliary system. Such patients would show the manifestations of septicemia and a minority of them may present with shock and altered mentation[16]. The mainstay of the treatment is broad spectrum intravenous antibiotics followed by prompt decompression of CBD by means of ERCP. Biliary pancreatitis, which is usually mild can be the result of an impacted stone in the lower end of the CBD[15,16,17]. Removing the obstructing stone through ERCP should be the treatment of severe forms biliary pancreatitis[17].

Routine testing of the LFT in the first post-operative day, and US scanning of the abdomen have helped in the early detection and management of the resulting complications after surgery. ERCP and retrieval of the obstructing CBD stone were adequate for the treatment of cystic bile duct leakage in this case by reducing the pressure in the CBD. Operative cholangiography was not done. Operative cholangiography is advocated by some authors as a routine procedure in every case of laparoscopic cholecystectomy[18]. Routine operative cholangiography was not advocated by many other authors[19]. The cost effective management of CBD stones was studied comparing routine operative cholangiography and CBD exploration (whenever needed), routine preoperative ERCP, and operative cholangiography with postoperative ERCP[20,21]. The study favors selective cholangiography and laparoscopic CBD exploration as the most cost effective measures to avoid the complications of retained CBD stones. The increased morbidity and cost of routine ERCP and operative cholangiography are not justified. The importance of selective cholangiography in cases of multiple small stones with wide and patent cystic duct cannot be overemphasized in this context. This prophylactic measure helps to avoid missing cystic duct stones that can slip easily through the wide duct passage during the surgical manipulations and give rise to retained CBD stones.

Although radionuclide scanning was shown to be the most sensitive imaging technique to identify early bile leaks[22], yet ERCP remains the technique of choice for the confirmation of diagnosis[23]. ERCP is also used in the treatment of symptomatic cases[23]. Nasobiliary drainage is recommended by some authors for the treatment of bile leaks resulting from the divided accessory ducts of Luschka and from the cystic duct stump[8,24]. Papillotomy and stone retrieval were adequate measures in the current case as they reduced the

abnormally high pressure in the CBD and helped in the healing of the cystic duct stump.

CONCLUSION

Cystic bile duct stump leakage following laparoscopic cholecystectomy is being increasingly reported in the literature. Selective operative cholangiography, in cases of multiple small gall bladder stones that are associated with wide and patent cystic duct, is recommended as a prophylactic measure to guard against slipping of the stones into the CBD and the consequent complications. Routine testing of the LFT after laparoscopic cholecystectomy can help in early detection of these complications. Papillotomy and retrieval of the obstructing stones are adequate measures to relieve the obstruction in the CBD and result in complete healing of the cystic duct stump.

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