Role of Endoscopic Retrograde Cholangiopancreatography (ERCP) in Patients with Post Cholecystectomy Problems

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Abstract
Fifty two patients with post cholecystectomy problems were investigated by endoscopic retrograde cholangiopancreatography (ERCP). Fourteen (27%) patients showed abnormalities, which included residual or retained cholesterolithiasis (7), papillary stricture (1), pancreatic carcinoma (1), large cystic duct stump (1), chronic pancreatitis (2) and post-operative common hepatic duct stricture (2). A higher incidence of ERCP abnormalities was seen in patients presenting with jaundice and abdominal pain (11 of 13; 85%) as compared to those with only abdominal pain (5 of 39; 13%). Clinical features and biochemical tests were not diagnostic of any specific pancreaticobiliary disease. The results suggest that ERCP is a very useful investigation in the diagnosis of post cholecystectomy problems.

Introduction
Although a majority of patients with chronic cholecystitis and cholelithiasis recover completely after a cholecystectomy, a significant number (about 40%) continue to suffer from the same complaints or develop new symptoms. In some of these patients the complaints can be attributed to non-biliary causes. However, there remain about 5% of patients in whom no apparent cause is available and who require more detailed investigations. In all these cases endoscopic retrograde cholangiopancreatography (ERCP) is the most direct and versatile. Furthermore, with the introduction of sphincterotomy and techniques for stone extraction, ERCP can be used for definitive treatment of these patients. In the present study we have assessed the role of ERCP in post cholecystectomy patients presenting with undiagnosed abdominal pain and/or jaundice. The purpose of the study was to delineate the range of lesions responsible for post cholecystectomy symptoms and the value of ERCP as a diagnostic tool.

Material and Methods
Fifty two post cholecystectomy patients (36 females, 16 males; aged 19-65 years, mean 41.5) were included in the study. Symptoms occurred within one year of the operation in two (4%) patients, between one and three years in 34 (65%) and after three years in the remaining 16 (31%) patients. The most common symptoms were abdominal pain (epigastric, right hypochondrial or umbilical) without jaundice in 39 (75%) patients, jaundice with abdominal pain and fever was present in 4 (8%) patients and jaundice with abdominal pain but without fever in 9 (17%) patients.

ERCP was performed as an outdoor procedure. Hyoscine-N-butyl bromide (Buscopan) 10-40 mg was used as an IV bolus to suppress duodenal peristalsis. The entire procedure was carried out under fluoroscopy. A lateral viewing duodenoscope (Olympus JFtu) was introduced. The papilla of Vater was identified and cannulated using a polyethylene catheter with an outer diameter of 1.5 mm. In 48 patients both the pancreatic duct and the biliary tree were outlined simultaneously while in the remaining 4 the two ducts had to be cannulated separately. Once adequate filling with contrast material was achieved, appropriate skigrams were obtained in different positions, both with the endoscope in position and after withdrawal of the instrument.

Results
Abnormal ERCP appearances were seen in 14 (27%) patients. The most common abnormality was cholesterolithiasis, being present in 7 (13.4%) patients (Fig 1). Chronic pancreatitis and post operative common hepatic duct stricture were demonstrated in two patients each (Fig 2). The other abnormalities noted were carcinoma of the head of pancreas, large cystic duct stump (Fig 3) and papillary stenosis seen as a mild smooth narrowing of the lower end of the common bile duct (CBD) with dilatation proximal to it, in one patient each. Eleven (85%) of 13 patients with history of jaundice demonstrated an abnormality (retained CBD stone—7, common hepatic duct stricture—2, papillary stenosis and carcinoma head of pancreas—1 each). The two patients with normal ERCP appearances were subsequently diagnosed as having viral hepatitis although the initial diagnosis was obstructive jaundice. By contrast, 36 (73%) of 39 post cholecystectomy patients without jaundice or fever had normal ERCP appearances; two patients had changes of chronic pancreatitis and one had a large cystic duct stump. The difference in the incidence of abnormal ERCP findings between patients with and without jaundice was statistically significant ($x^2 = 24.32; p < 0.001$).

Liver function tests in non-icteric patients were normal or only minimally disturbed. In jaundiced patients serum bilirubin levels ranged from 2-11 mg/dl (mean $\pm$ SD 7.1 $\pm$ 3.6). SGPT and SGOT levels were 93-537.5 and 52-132.8 (45-122) KU respectively. Alkaline phosphatase levels ranged between 8-6 and 40 KAU (mean $\pm$ SD 22-8 $\pm$ 13.4).
Fig 1: Cholangiopancreatogram showing normal pancreatic duct with dilated common bile duct and intra hepatic radicles. A retained stone is seen at the lower end of the common bile duct (arrow).

Fig 2: Cholangiogram showing dilated common bile duct and intrahepatic radicles with an irregular narrowing of common hepatic duct, indicating a post-operative stricture.

Fig 3: Cholangiopancreatogram showing normal pancreatic duct, a moderately dilated common bile duct with a cystic duct stump (arrow).
Discussion

Patients presenting with symptoms after a cholecystectomy present a difficult problem in diagnosis and management. Several etiological factors have been implicated for the persistence or recurrence of symptoms. These include cystic duct remnant—a sequel of incomplete cholecystectomy, retained CBD stone and psychosomatic factors. Benign or malignant diseases of the pancreas may also produce identical symptoms. Because the contrast material is introduced directly into the biliary and pancreatic ducts, ERCP provides the most definitive results in the investigation of these patients. Laparotomy may fail to identify the underlying disorder even if the problem is surgically correctable. Cancellation of the CBD for the purpose of operative cholangiography in a patient who has previously undergone a cholecystectomy may be time consuming and difficult, as is intra-operative pancreatography to evaluate the pancreatic ductal system.

Various investigative techniques are available for preoperative assessment of these patients. Routine biochemical tests, such as serum bilirubin, SGOT, SGPT, alkaline phosphatase and amylase levels have only a limited value in diagnosing biliary and pancreatic disorders. Ultrasonography in the examination of the extrahepatic bile ducts yields a high incidence of false negative results. According to one study 50% of normal ultrasound examinations were subsequently found to show an abnormality at ERCP. Intravenous cholangiography (IVC) cannot be performed in jaundiced patients, and even in non-jaundiced individuals IVC does not provide any information about the pancreatic ductal system. Computerised tomography (CT) again is not very effective in visualization of the extrahepatic biliary tree and pancreatic ducts and moreover is extremely expensive. In contrast, ERCP provides excellent visualisation of both the pancreatic and biliary ducts and thus is the most suitable procedure.

In the present study abnormal findings at ERCP were observed in 14 of 52 (27%) patients. It should be noted that 11 of 13 (85%) patients having jaundice showed abnormal findings. Both the patients with jaundice and normal ERCP appearances were subsequently diagnosed as viral hepatitis; the liver function tests in these two patients initially gave equivocal results, which necessitated the ERCP.

Among patients without jaundice only 3 (8.5%) of 38 showed an abnormality, two of whom had chronic pancreatitis. It is generally believed that chronic pancreatitis is not related to gall bladder disease and it is possible that the findings noted in the present study were purely coincidental. However, other workers have also observed such an association, and according to one report 26% of pancreatograms showed abnormalities.

Finally, ERCP is also beneficial from the therapeutic viewpoint. With the advent of endoscopic sphincterotomy it is now possible to treat post cholecystectomy patients with retained stones and those with papillary stenosis by inserting the ampulla with the help of a sphincterotomy passed down the biopsy channel of the endoscope. It is concluded that ERCP is the investigation of choice in the diagnosis of post cholecystectomy problems and it should be performed routinely before any therapeutic measure is adopted.

References