serum CCK, however, is found in patients with chronic alcoholic pancreatitis and regarded as a consequence rather than the cause of the disease.

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Imaging of the common bile duct

EDITOR,—The finding by Hainsworth et al, that the combination of clinical history, liver function tests, and ultrasonography generated a negative predictive value of 91% in the age range 21–88 (unit A) (Gut 1994; 35: 991–5), implies that, in subgroups such as the elderly, characterised by a high degree of prior diagnostic workup and, hence, cholecdocho lithiasis,2 the negative predictive value of these diagnostic criteria might well be lower, because the negative predictive power is inversely correlated with the prevalence of the condition under diagnostic consideration.3 With increasing age, therefore, there should be greater justification for routine imaging of the common bile duct either by ERCP or by cystic duct cholangiography, in prospective candidates for laparoscopic cholecystectomy.

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EDITOR,—We have read with great interest the study by Hainsworth et al (Gut 1994; 35: 991–5) regarding the options for managing the common bile duct in patients undergoing laparoscopic cholecystectomy. However, there are several points that need further discussion.

Firstly, the criteria for selecting patients with high risk of common bile duct stones are vaguely described. There is no precise description of what they have considered a dilated or non-dilated common bile duct on cross-sectional scan, and dilated vessels in serum alkaline phosphatase or serum bilirubin, or both are poor indicators of common bile duct obstruction (as described by themselves). Liver function tests, however, should be considered to have a high specificity and predictive value, especially if y-glutamyltransferase and aminotransferases are also raised.1

Secondly, it is surprising that 12 patients who were found to have positive cholangiogram in unit A, but only four patients had common bile duct stones after ERCP. To assume that stones had passed spontaneously is rather speculative. Thus, eight of 12 patients should be considered to have had an unmissable exploration of the common bile duct. Moreover, we cannot find any explanation why ERCP was delayed up to 96 days after laparoscopic cholecystectomy.

Thirdly, we believe that the dilution of risk of a false-positive cholangiogram secondary to air bubbles in the common bile duct during laparoscopic cholecystectomy may be higher because the abdomen is insufflated with carbon dioxide and this gas could pass through the cystic duct during the insertion of the catheter.

Fourthly, Hainsworth et al state that ‘selective cholangiography misses a proportion of common bile duct stones’.1 Propective data of the randomised studies have not proved this, however,2,4 and suggest that cholangiography can be omitted in patients without indications of common bile duct disease.

Finally, we believe that prospective identification of patients with ‘now/lower risk of choledocholithiasis in which peroperative cholangiography is not indicated’2 should be carried out by means of a clinical history, liver function tests, and ultrasonography. This policy will result in a lower incidence of false-positive cholangiograms without increasing the risk of retained common bile duct stones.

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Reply

EDITOR,—We are glad that our paper has stimulated discussion and debate in this controversial field. Drs Mayol and Alvarez Fernandez-Represa seek clarification of the criteria used for categorising patients into ‘high’ and ‘low’ risk groups for bile duct stones. We relied on a combination of history, liver function tests, and bile duct diameter. In our paper, we set out individual features from a liver function test or pancreatitis, and showed their ability to predict the presence of duct stones.

The working definition of a dilated common bile duct used in the study was a diameter greater than 8 mm. While the probability of finding duct stones rises with increasing bile duct diameter,1 interpretation of bile duct diameter is not a precise science. Bile duct diameter increases with advancing age and, therefore, in older patients. We agree that very few studies, and the overall sensitivity for detecting bile duct stones with ultrasonography ranges from 25–55%.3,5 Liver function tests are a very imprecise and slow method of selecting patients with bile duct stones, which is the reason why most investigators have used a combination of factors to assign patients to ‘high’ and ‘low’ risk groups. We must take issue with our correspondents’2,3,4,6 failure to use our data, although this has been the case for many years.4,6 These authors do not cite any data on the sensitivity, specificity, and positive or negative predictive values of liver function tests in themselves. We await with interest full publication of the results from Mayol et al.

We were initially surprised too that, at the time of post-cholecystectomy ERCP, eight of 12 ducts had cleared. One of the eight had a mobile stone that was not picked up by the common bile duct. The stone was sufficiently small to be removed at ERCP but, postoperatively, the patient developed pain and clearly had the stone before ERCP was done. We believe that the other seven had stones in their bile ducts at the time of surgery for these reasons. Firstly, we used high quality C-arm image intensification, which is associated with a high detection rate in bile duct stones on unit A coheres with these data. Secondly, we do not perform routine peroperative cholangiography.5 Thirdly, spontaneous passage of duct stones is well reported in the context of acute pancreatitis and our paper suggests this is also true of patients undergoing laparoscopic cholecystectomy.5 Laparoscopic cholecystectomy may differ from conventional cholecystectomy in the degree of manipulation of the gall bladder before the cystic duct is ligated. It is certainly possible that these stones are not picked up during the procedure, only to subsequently pass spontaneously.

We know of no evidence that low pressure pneumoperitoneum encourages the formation of air bubbles in the biliary tree. First principles suggest that intra-abdominal pressure would equilibrate between the peritoneal cavity and bile duct lumen across the bile duct wall, in much the same way as...
atmospheric pressure does. In practice, bile usually flows out under obvious pressure when the cystic duct is incised. This phenomenon of a ‘silent’ bile duct stones is widely accepted, and may occur in up to 12% of patients, as referenced in our original paper. Drs Mayol and Alvarez Fernandez-Represa have fallen into a trap of assuming that lack of symptoms at follow up of only 2–12 months\(^8\) is equivalent to absence of retained stones. It is well recognised that bile duct stones may present many years after surgery.\(^7\) It may be true that stones which, by definition, are ‘silent’ will follow a benign course but only long-term follow up will prove this.

The commonest reason for failing to cannulate the cystic duct was a very narrow duct. Such ducts are clearly at low risk of conducting stones and, during early follow up, no sequelae have arisen.

We do not pretend to answer the question of whether peroperative cholangiography reduces morbidity and death rates in laparoscopic cholecystectomy. Our correspondents make assumptions about rates of false-positive peroperative cholangiography, which we have already discussed. Peroperative cholangiography is a procedure with an extremely small risk of complications and to suggest that diagnostic ERCP equates with ‘endoscopic bile duct exploration’ is quite misleading. Only patients with confirmed duct stones had endoscopic stone extraction with its attendant risks. In the papers cited by Mayol and Alvarez Fernandez-Represa, the only bile duct injury occurred in a patient who was not subjected to peroperative cholangiography and this was not recognised at the time of surgery.

Our paper compared two protocols for investigating and managing the common bile duct in patients undergoing laparoscopic cholecystectomy. As we concluded before, our data do not allow us to recommend one policy above the other. The controversy indeed seems to continue.

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