A diagnosis of dropped gallstones and abscess formation established on MRCP

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Gall bladder rupture with spillage of gallstones into the peritoneal cavity occurs in 25 to 30% of all routine laparoscopic cholecystectomies. These “dropped” gallstones are usually asymptomatic, but they can result in late abscess formation in approximately 0.3% of cases. We describe a case in which the diagnosis of dropped gallstones was established prospectively at magnetic resonance cholangiopancreatography (MRCP) performed to investigate persistent postoperative abdominal pain. Although the US and CT features of this condition have been previously described, this is to our knowledge the first case in the literature where the diagnosis was established primarily at MRCP.

Case report

A 53-year-old lady presented acutely to our hospital with increasingly severe right upper quadrant pain. She had undergone laparoscopic cholecystectomy for gallstones 1 year previously. At the time of operation, the gallbladder was found to be friable and there was spillage of gallstones into the peritoneal cavity. Most of the stones were retrieved and the woman made an uneventful recovery. However, she continued to complain of upper abdominal pain over the next few months. Outpatient US examination revealed a common bile duct measuring 7 mm but no other abnormalities. MRCP was performed to look for intraduct calculi, and showed a 7 cm × 4 cm cystic collection with filling defects, lying posterior to and indenting the right hepatic lobe (Fig. 1). The filling defects were thought to represent gallstones surrounded by an inflammatory process. No intraduct calculi were demonstrated. While awaiting an outpatient appointment, the woman again presented acutely with abdominal pain.

On admission, clinical examination revealed right upper quadrant and right renal angle tenderness with a positive Murphy’s sign. The woman was febrile with a temperature of 38 °C. Laboratory investigations showed a raised erythrocyte sedimentation rate and C reactive protein, of 110 and 179, respectively. Liver function tests were mildly deranged.

A repeat US confirmed a subphrenic collection containing gallstones, and CT demonstrated a thick-walled subphrenic abscess (Fig. 2). This was drained under CT guidance. A pigtail catheter was left in situ, and the woman was discharged 3 weeks later. She subsequently underwent laparotomy at which several calculi were retrieved from the subphrenic space.

Discussion

Laparoscopic cholecystectomy has largely replaced open cholecystectomy for the treatment of symptomatic cholelithiasis. Radiologists are familiar with the more common complications such as bile duct injury and biliary leaks. Abscess formation due to dropped gallstones, although more rare, must also be considered as a possible cause of persistent pain. It is important to identify the calculi, because drainage without removal of the calculi leads to recurrent abscess formation.

The mean duration from the time of gallstone spillage to the onset of symptoms is 2 years, although in some cases several years may elapse. The incidence of abscess formation is increased if the gallstones or bile were infected at the time of operation. Abscess formation is also more common
in men, the elderly, the obese and in cases with adhesions. The combination of a pneumoperitoneum and peritoneal irrigation disperses the calculi within the peritoneal cavity. Abscess formation can therefore occur anywhere, including the abdominal wall, trocar sites and the right pleural cavity.

In the largest reported series of cases of abscess formation secondary to dropped gallstones, only 40% were diagnosed prospectively on US or CT. This study describes the MRI appearances, but calculi within the abscesses were only identified retrospectively and mainly on the T1-weighted sequences.

MRCP uses T2-weighted sequences with fat saturation to maximize contrast between fluid and solid structures. This technique yields high-resolution images of the fluid-filled biliary tree, and can exquisitely demonstrate small intraduct calculi and other subtle biliary pathology without the need for more invasive tests. Other fluid-filled structures (such as abscesses) are equally well shown. Our protocol for MRCP includes sections of 8 mm through the entire liver, and it was this sequence that revealed the abscess in this case.

MRCP is increasingly being used to search for intraductal calculi in the evaluation of postcholecystectomy pain. It is likely that a small number of such cases will in fact be due to abscesses secondary to dropped gallstones, and that in some of these the abscess may be identified on MRCP. It is important that radiologists are aware of this potential late complication of laparoscopic cholecystectomy and the role MRCP can have in diagnosis.

References


Figure 1  T2-weighted axial image with fat saturation showing multiple gallstones (arrow) of low signal intensity within a fluid collection indenting the liver.