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□ Case Report □

Intraabdominal Abscess Formation by Inadvertently Spilled Gallstones during Laparoscopic Cholecystectomy

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복강경 담낭절제술 후 복강내 잔류담석에 의한 복강내 농양 형성

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Various complications following laparoscopic cholecystectomy have been reported. We describe a case of intra-abdominal abscess formation which was developed two months after the inadvertently spilling of gallstones laparoscopic cholecystectomy in a patient with acute cholelithiasis. The condition was initially found on computed tomography and the diagnosis was confirmed with ultrasound. Although this is a rare complication of laparoscopic cholecystectomy, the spilling of gallstones should be recognized as a potential source of intra-abdominal abscess formation even in a patient presenting months after laparoscopic cholecystectomy. We suggest that routine use of the specimen retrieval bag is highly recommended especially for beginners of laparoscopic cholecystectomy during their initial learning period. **(J Korean Surg Soc 2002;63:244-246)**

Key Words: Laparoscopic cholecystectomy, Abdominal abscess, Gallstones, Postoperative complications
중심 단어: 복강경 담낭절제술, 복강내 농양, 담석, 수술 후 합병증

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INTRODUCTION

Laparoscopic cholecystectomy has become a widely accepted and standard surgical technique for the cholelithiasis in a relatively short period of time. While manipulating the gallbladder, intraperitoneal spillage of gallstones may occur. As a result, intra-abdominal abscess formation may be followed due to those spilled stones. (*1,2*) Because those spilled gallstones are asymptomatic in most of patients, it is hard to find this late complication after laparoscopic cholecystectomy. (*1*) In addition, some other complications from those stones have been reported, such as abscesses, erosion of the bile ducts or abdominal wall, and adherence formation. (*2-4*) We report a case in which spilled gallstones induced the formation of inflammatory and infectious peritoneal masses two months after the laparoscopic cholecystectomy. A computed tomographic (CT) scan clearly located this abscess, and the presence of stones in the abscess was definitely established by sonography. After surgical removal of the abscess with the stones, the patient could recover from the disease.

CASE REPORT

A 45-year-old man was admitted with a 2-week history of right lower quadrant tenderness and soft tissue mass in the right lower quadrant of the abdomen, which was clinically suspected of a peritoneal abscess. On admission, the abdominal examination revealed a subtle, indurated 4-cm sized mass in the above region with mild muscle guarding on palpation. The patient has a medical history of severe liver cirrhosis and had a laparoscopic cholecystectomy two months ago. At the first admission, the patient showed typical characteristics of early stage of acute cholecystitis with multiple gallstones. The wall of the gall bladder was slightly edematous but not gangrenous. During the laparoscopic cholecystectomy, gall bladder wall was torn down during the dissection of the gall bladder from the inferior hepatic surface and some stones were spilled out of it. The

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nature of the stone was black pigmented one, so we irrigated the Morrison's pouch and perihepatic area, and removed visible intraperitoneal stones. And the gall bladder was retrieved through the epigastric port without using a specimen retrieval bag. At that time, none of the remained intraabdominal stone was found. He was discharged five days after the operation with an uneventful postoperative course.

The patient had had multiple low-grade fevers with intermittent spiking patterns before the second admission. In the present hospitalization, laboratory data were within normal limits except mild leukocytosis. We decided to do some radiologic studies to evaluate the painful areas. An abdominal CT scan was performed which showed two abscess formations with a little fluid collection containing calcified foci at the right lower quadrant of the abdomen (Fig. 1). The diagnosis of spilled gallstones was presumed. Abdominal ultrasonography demonstrated some fluid collection containing echodense particles. The patient had an exploratory laparotomy to retrieve the inadvertently spilled gallstones and to remove intraabdominal abscess. *Enterobacter cloacae* that showed sensitivity to antibiotics of ciprofloxacin and amikacin was found in the culture of the abscess fluid that was obtained during the exploratory laparotomy. Intraoperatively obtained specimens of the abscess revealed granulation tissue with acute and chronic inflammation and foreign-body reaction. The patient had an unremarkable hospital course afterwards. On the 10th postoperative day, the patient was discharged without significant complications.

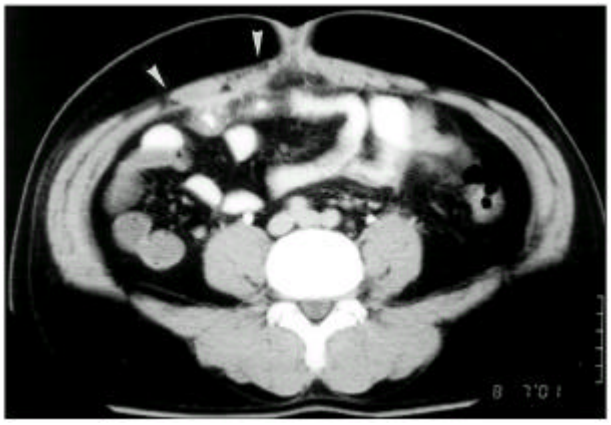

Fig. 1. Omental masses caused by spilled gallstones. CT scgallstones can of palpable intraabdominal mass (*between arrowheads*) involving the omentum and the adjacent abdominal wall was shown and two radiopaque ould be found in it.

DISCUSSION

Since the first laparoscopic cholecystectomy performed in France 1987, (*5,6*) this technique has rapidly gained widespread acceptance for the treatment of cholelithiasis. Until now, many articles have described the complications related to this technique, such as bile duct injuries, choledocholithiasis, cystic duct stump leak, bowel lacerations, and abscesses. Among them, intraperitoneally remained gallstones are the most frequently reported complication. (*1-4,7,8*)

Rupture of the gallbladder wall with stones spilling into the abdominal cavity is reported to complicate 25 30% of laparoscopic cholecystectomy. (*3*) It can happen when significant retraction of the gallbladder is required to obtain adequate exposure of the porta hepatis, or during extraction of the gallbladder through the umbilical incision at the end of the operation. Although every attempt is made to retrieve lost stones, estimates of the incidence of spilled gallstones during laparoscopic cholecystectomy range from 6 30% and may be higher in the beginners, but most of these cases are clinically insignificant. (*9-11*) However, there are published anecdotal reports of complications such as stones causing abscesses, surrounding fibrosis and adhesions, bile peritonitis (the stone eroded the hepatic duct), eroding through the abdominal wall and even though the diaphragm, which eventually caused cholelithoptysis. (*4*) Therefore infrequent intraabdominal abscess formation after laparoscopic cholecystectomy due to spilled stones may complicate postoperative course. This is more likely in the acute cholecystitis, where the spilled contents are already infected.

Experiments related to the evolution of implanted gallstones have been performed in the abdomens of small animals. (*1,2*) Evidence of acute and chronic inflammation in the first 2 to 3 weeks progressed to localized fibrous reactions, adhesions, and fatty necrosis after 1 month. However, some stones, remaining free in the peritoneal cavity, did not cause any reaction, and some stones might have resolved slightly during the first weeks.

In the present case, there is evidence of two biliary stones in the omentum and in the right lower quadrant of the abdomen. There is no evidence of biliary fistula; so the gallstones must have escaped

through the torn wall of the gall bladder during the previous cholecystectomy. The black pigment stones in the omentum had led to chronic inflammation and infection around the dropped stones.

When intraabdominal infection occurs, spilled stones must be removed to eradicate the possible source of reinfection. Percutaneous retrieval of spilled gallstones within abscesses has been reported. (*12*) Sonographic lithotripsy can be used to facilitate their extraction. In the previous reports of spilled gallstones with abscess formation after laparoscopic cholecystectomy, (*12-14*) the complication was clinically apparent in the postoperative period. Wilton et al. (*14*) described a case of recurrent liver abscess nine months after percutaneous drainage of a postoperative collection. The missed stone may have provided a nidus for subsequent infection, or subclinical infection may have existed for some time prior to detection.

Now that laparoscopic cholecystectomy is a more common procedure, this entity will be encountered more frequently as more and more beginners join that procedure. We think that ultrasound might play a major role in identifying the nonradio-opaque biliary stones in the intraabdominal abscess that otherwise exhibited aggressive behavior and had been mistaken for other disease when scanned only by CT. That kinds of imaging modalities may help identify the ultimate cause of infection in such cases, and this may be further corroborated by clinical history. And we strongly suggest the routine use of the specimen retrieval bag during the extraction of the gallbladder out from the peritoneal cavity and thorough irrigation followed by suction around the Morrison's pouch and perihepatic space to eliminate the possible spilled gallstones to prevent an abscess, especially in the beginners during their learning period. (*14*)

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