D uring laparoscopic cholecystectomy (LC) 3 years earlier for acute gangrenous cholecystitis, gallstones had spilled and all were thought to have been retrieved. The retained pigmented gallstone was not identified on the original CT scan or on the US image but was discovered deep-seated in the necrotic tissue during open debridement of the retroperitoneal abscess. On rereview of the CT scan, a 5-mm enhancing round artifact was noted (Figure 2).

Since the introduction of LC,1 queries have emerged concerning the full spectrum of associated complications with reported overall morbidity of 2% to 11%.3 Gallbladder perforation and spillage of gallstones into the peritoneal cavity are the most common complications during LC, with incidences ranging from 20% to 40%.5,6 Gallstones are retained 1% to 13% of the time, and complications develop in 0.08% to 2.9% of cases.5,8 The risk factors for complications secondary to spilled gallstones are acute cholecystitis with infected bile, pigment gallstones, multiple gallstones (>15), gallstone size (>1.5 cm), and age.5

The mechanism by which gallstones cause abscess formation is not completely understood. Bacterial contamination in pigment stones will more often cause abscesses than will cholesterol stones. One hypothesis is that bacteria, in addition to being a source of β-glucuronidase, make up a significant portion of gallstones and facilitate pigment gallstone formation. The gallstone matrix protects the bacteria from antimicrobial factors, which explains the increased incidence of late abscess in pigment gallstone gallbladder disease.9

Avoiding gallstone spillage is the best way to prevent abscess formation. It is helpful to decompress the gallbladder; gentle traction and proper dissection are also required. The use ofatraumatic graspers without teeth will decrease the incidence of tearing the gallbladder wall. When a tear is recognized, a suction cannula can be introduced into the gallbladder lumen through the tear for aspiration of the remaining contents. Control of the rent with a pretied suture ligature, hemoclip, or grasper should be considered. As many gallstones as possible should immediately be carefully removed by the use of laparoscopic forceps, an intra-abdominal retrieval bag, a 10-mm suction device, or a “shuttle” gallstone collector.10 The abdomen can be irrigated to dilute the spilled bile. In the case of acute or gangrenous cholecystitis, a drain should be considered.11 Perioperative antibiotic treatment in an attempt to sterilize the surrounding tissue is also recommended in the hope that the missed gallstones will cause adhesions rather than abscesses.12

Complications of gallstones can occur months or even years after LC. Computed tomography is considered the most valuable imaging tool because it is capable of depicting the extent of the inflammatory process and the presence of calcifications consistent with gallstones.13 Retrieval of lost gallstones, as well as drainage or irrigation of abscess cavities, is paramount. Options include interventional laparoscopic radiology and laparotomy. Abscess drainage without gallstone removal should be avoided because it will often result in ongoing clinical problems, such as recurrent abscess formation. Meticulous documentation of gallbladder rupture and gallstone spillage and retrieval should always be given in the operative report.

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Correspondence: Miral Amin, MD, General Surgery Residency Program, Division of General Surgery, St. Joseph Mercy Oakland, 44405 Woodward Ave, Pontiac, MI 48341 (drmiral80@yahoo.com).

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REFERENCES


Figure 2. After open debridement of the retroperitoneal abscess and discovery of the retained gallstone, a 5-mm enhancing round artifact (arrow) is noted on the computed tomographic scan.