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## Case Report

# Intra-abdominal abscess from dropped gallstone: A case report ☆☆☆

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## ABSTRACT

Dropped gallstones are a common complication during a laparoscopic cholecystectomy. The formation of an abdominal abscess related to the dropped gallstones is rare because the majority of these calculi do not cause complications. Ultrasound is a usually used first-line imaging modality to detect gallstones in the abscess. CT scan may be used to confirm the diagnosis of abscess and for topographic analysis. We report the case of a lady presented to the emergency department 2 months after laparoscopic cholecystectomy; for acute cholecystitis; with acute abdomen and fever. Laboratory values revealed an elevated white blood cell count (WBC) and C-reactive protein concentration (CRP). The diagnosis of intra-abdominal abscess was evoked by ultrasound and contrast-enhanced CT, and confirmed by laparoscopy. The purpose of this paper is to illustrate the importance of searching and recognizing dropped gallstone within collection, particularly in the context of previous laparoscopic cholecystectomy.

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## Introduction

Dropped gallstones are gallstones lost in the abdominal cavity during cholecystectomy, due to the perforation of the gallbladder during dissection and extraction [1]. Intra-abdominal abscess secondary to gallstones left in the cavity is a rare

and unrecognized complication, occurring in 2.9% of patients [2]. Ultrasound is the modality of choice in the detection of gallstones within intra-abdominal abscess cavity. CT scan permits to confirm the presence of intra-abdominal abscess and the realisation of topographic analysis [3]. In this paper, we report the case of a 54 year-old female admitted for development of an intra-abdominal abscess 2 months

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**Fig. 1 – Sagittal abdominal and pelvic computed tomography image with contrast shows supra bladder hypodense collection (\*), with peripheral enhancement (arrow).**

following laparoscopic cholecystectomy due to gallstones. The diagnosis was evoked on CT scan and confirmed by laparoscopy.

### Case report

A 54-year-old female with a past medical history for laparoscopic cholecystectomy, 2 months previously after an acute cholecystitis, consulted emergency department for acute abdomen. Physical examination revealed tenderness in the right-upper quadrant of the abdomen, in the subhepatic and hypogastric regions and temperature of 39°C. Laboratory tests showed elevated leukocyte count of 16,000 cells/UL, with a large amount of neutrophil. The patient underwent an abdominal and pelvic contrast enhanced CT, demonstrating a peripherally enhancing collection adjacent to the urinary bladder on the left, encompassed by fat infiltration (Figs. 1 and 2). Based on its topography, the diagnosis of infected urachal cyst was suspected. An abdominal ultrasound (US) was made, revealing a mobile hyperechoic stone casting posterior acoustic shadowing (Figs. 3A and B) within the abscess cavity. Considering these facts, the diagnosis of postoperative intra-abdominal abscess from dropped gallstones was done.

A surgery was performed and the abscess cavity was drained with retrieval of the gallstone (Fig. 4). Few days after, the patients's symptoms improved with no further complications.



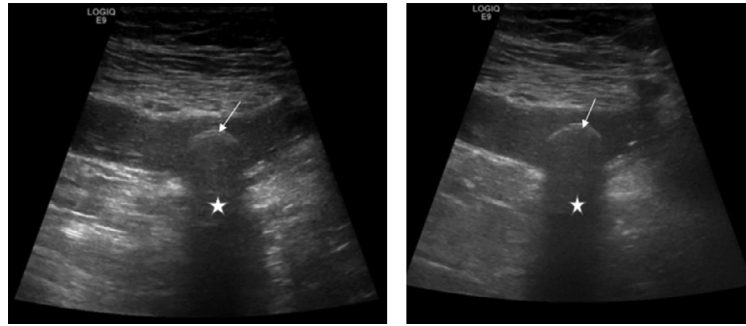
**Fig. 2 – Coronal abdominal and pelvic image with contrast, illustrates a supra bladder left hypodense collection (\*), with peripheral enhancement (arrow), associated to fat infiltration around (arrowhead).**

### Discussion

The use of laparoscopic surgery has caused an increased incidence of spillage of stones within the intraperitoneal space, with a reported incidence of 25%-30% [1]. The percentage of 7% often described seems more realistic [2].

Laparoscopic cholecystectomy can lead to gallstone spillage into the abdominal cavity, as a consequence of perforation of the gallbladder from laparoscopic instruments or during its separation from the liver bed [1,2]. Dropped gallstones could be found in the gallbladder fossa, subhepatic, retrohepatic, subphrenic, Morrison's pouch, paracolic, but also in the pelvis, retroperitoneal space, hernia sacs and in intrathoracic [4].

In our patient, the calculus was intraperitoneal, adjacent to the bladder on the left. This localization had not been previously described in the literature. In 0%, 5%-6% of cholecystectomies, dropped stones generate pseudotumoral inflammatory reaction, an abscess, a peritonitis or a bowel obstruction [1-2]. The majority of dropped stones are clinically silent until the occurrence of a complication; however, patients may present abdominal pain at variable times (from days to years after the first surgery), intensity and sites [5-6]. Intra-abdominal abscess may generate pain and abdominal tenderness, vomiting, chills and fever [5,7]. The diagnosis of complications of dropped gallstones could be overlooked, due to the vague and delayed presentation of symptoms, uncommon areas of abscess cavity and lack of recognition of stone spillage during prior cholecystectomy. For that, it is important for radiologists to be familiar with the imaging of this complication [1,8]. Plain abdominal X-ray illustrates low sensitivity, because radiolucent gallstones can be undetected [9]. On ultrasound,



**Fig. 3 – (A and B) Axial image of abdominal and pelvic ultrasound showing a hyperechoic stone within the collection (arrow) with posterior acoustic shadowing (\*).**



**Fig. 4 – Macroscopic image of the spilled gallstone measuring 2 cm.**

stones are presented as hyperechoic mobile foci with posterior acoustic shadowing. Ultrasound is more sensitive for large calculi > 1 cm, and for dropped stones embedded in enhancing inflammatory tissue, and within abscess cavities [1,5].

Only radiopaque calculi can be detected as high attenuation foreign body. MRI may be performed in the assessment of dropped gallstones extension; it can demonstrate calcified and radiolucent cholesterol calculi of low signal T1 and T2. CT and MRI have an essential role in the diagnosis of dropped stones complications (abscess, peritonitis, inflammatory reaction, and fistula), and determine the extension to intra or retroperitoneal spaces and into the thorax [8,10]. In our

patient, the calculus was radiolucent and not seen on CT within the abscess cavity. Based on the atypical localization of the abscess mimicking an infected urachal cyst, an ultrasonography was performed showing a gallstone in the abscess cavity as hyperechoic image with posterior acoustic shadowing, which allows evoking the diagnosis. The therapeutic management involves adjusted antibiotic therapy, drainage and stone extraction by means of percutaneous, open or laparoscopic procedure [6,9].

## Conclusion

Dropped gallstones are a complication of laparoscopic cholecystectomy. Abscess due to spilled gallstones is uncommon, because the majority of these calculi do not cause complications. Stones are usually found near the liver, in retro and subhepatic. They are easily radiologically detected, especially with ultrasound and MRI; however, radiologist should suspect spilled gallstones in any patient who has gone through a laparoscopic.

## Authors' contributions

All authors contributed equally to this work.

## Patient consent

Written informed patient consent for publication has been obtained

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