

The Dropped Stone

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Disclosures

- None

To Drop a Stone

- To lose 14 pounds of weight avoirdupois*
- An action taken to relieve great pressure in the abdomen**
- To drop a stone, usually from the gallbladder, into the peritoneal cavity during laparoscopic cholecystectomy

*System of weight and measures used in most English-speaking countries based on a pound containing 16 ounces

** Urban Dictionary: to have a bowel movement

Dropped Stones: Background

- >750,000 laparoscopic cholecystectomies (LC) done each year in U.S.
- Laparoscopy **pro**: smaller incisions, less pain, shorter recovery time
- Laparoscopy **con**: technically difficult, limited visualization and, therefore, more frequent bile duct injury and dropped stones
 - GB perforation: 10-40% of LC
 - Dropped stones: 2-40% of LC w/ complications in 1-3% annually.
Risk increases in acute cholecystitis and with male gender, adv age, obesity, and postop adhesions; >15 stones in GB; stone >1.5 cm
 - Unretrieved stones: 16-50%

Nayal L, et al. BrJ Radiol 2013

Ologun GO, et al. Cureus 2018

Kumar K, Hass CJ. Radiol Case Reports 2022

Patel N, et al. Emerg Radiol 2022

Dropped Stones: Background (cont'd)

Diagnosis is difficult because

- the presentation is often remote from the time of the LC
 - 1-180 mos (median: 36 mos)
- occurrence of stone spillage is not usually (70%) mentioned in the OR note
- standard imaging may not detect the dropped stone

Potential Complications of Dropped Stones

- Localized or systemic infection
 - conventional or opportunistic organisms
- Abscess (0.6-2.9%)
 - *abdomen*: hepatic, subhepatic, subphrenic, peritoneal, retroperitoneal, omental
 - *pelvis*: pouch of Douglas, ovary, urinary tract
 - *other*: skin, abdominal wall, chest, port-site
- Inflammation (non-granulomatous, granulomatous)
- Fibrosis, adhesions
- Ileus, obstruction
- Sinus tracks and fistulae (e.g., stones in urine, sputum)

Potential Complications of Dropped Stones

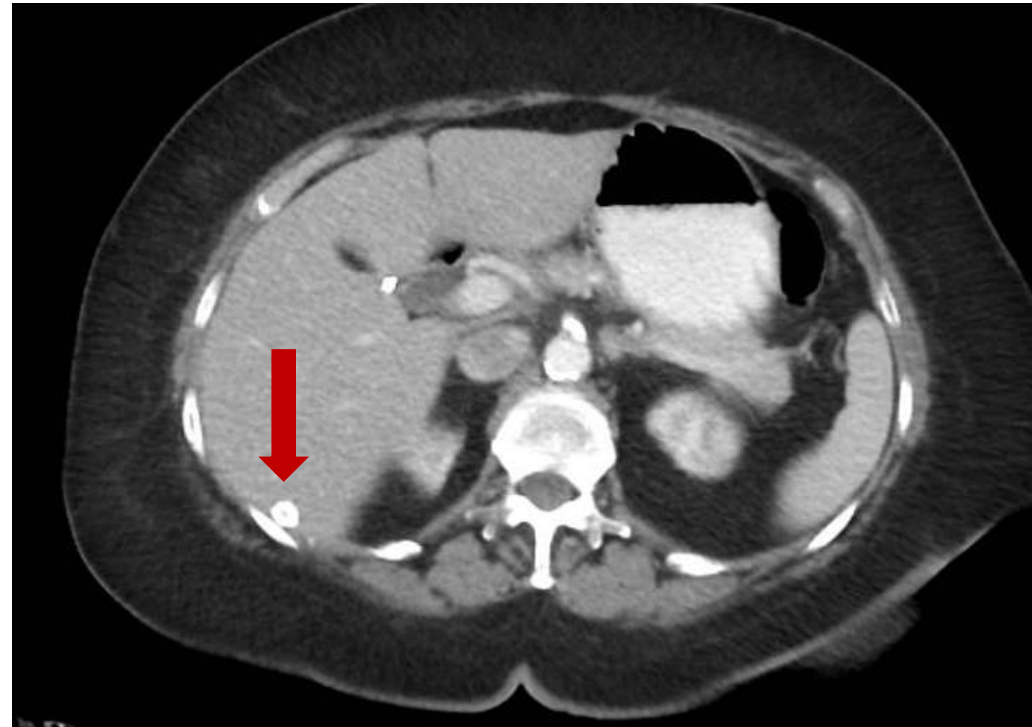
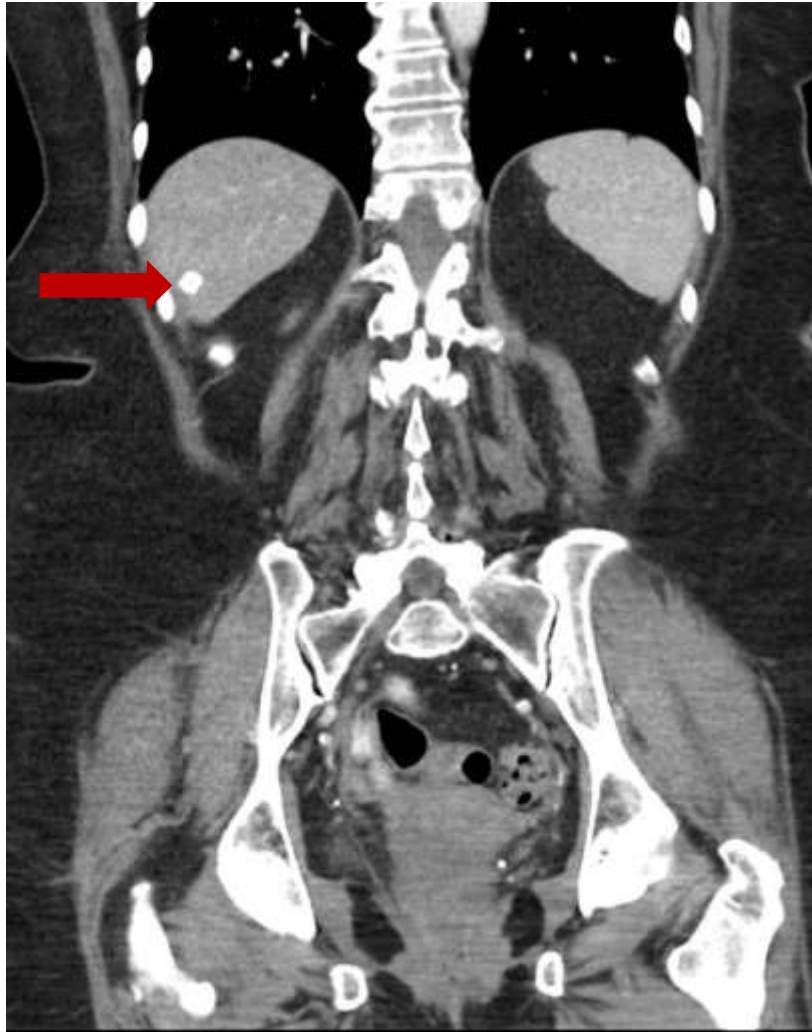
- Infectious/Septic
 - ❖ General: fever, sepsis
 - ❖ Thoracic:
 - pneumonia
 - empyema
 - pleural effusion, pleuritis
 - broncholithiasis
 - ❖ Abdominal wall abscess
 - port-site, umbilicus
 - ❖ Intra-abdominal abscess
 - hepatobiliary
 - subhepatic, subphrenic
 - retrohepatic, pelvic
 - paracolic, peritoneal
 - retroperitoneal
 - ❖ Other infections
 - gluteal, flank
- Intestinal
 - ileus
 - obstruction
 - incarcerated hernia
- Fistulae to
 - umbilicus
 - urinary bladder
 - skin
 - colovesical
 - colocutaneous
 - gluteolumbar
- Rare (Stone) Locations
 - pelvis
 - ovary
 - hernia sac
 - urinary bladder

Some of My Favorites

- Abdominal wall/port-site abscess/stones
- Broncholithiasis with stone expectoration
- Dyspareunia
- Erosion through the back
- Gluteal abscess
- Granulomatous peritonitis
- Implantation malignancy
- Recurrent bacteremia, sepsis
- Retroperitoneal actinomycosis
- Tubo-ovarian lithiasis

Case 1- seen at Montefiore Med Ctr Oct, 2024

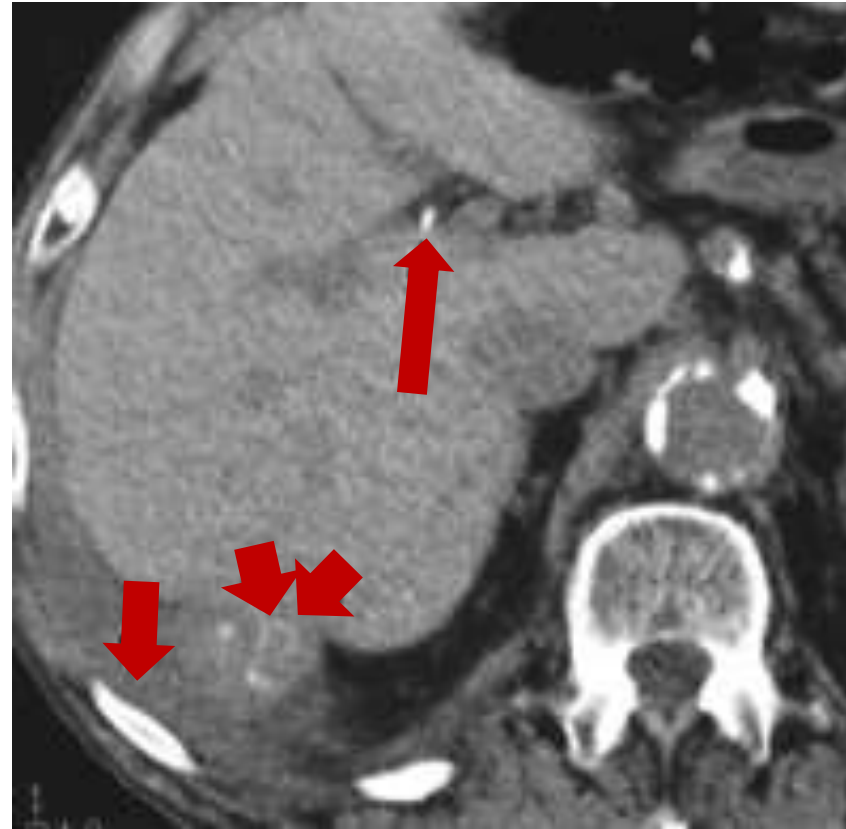
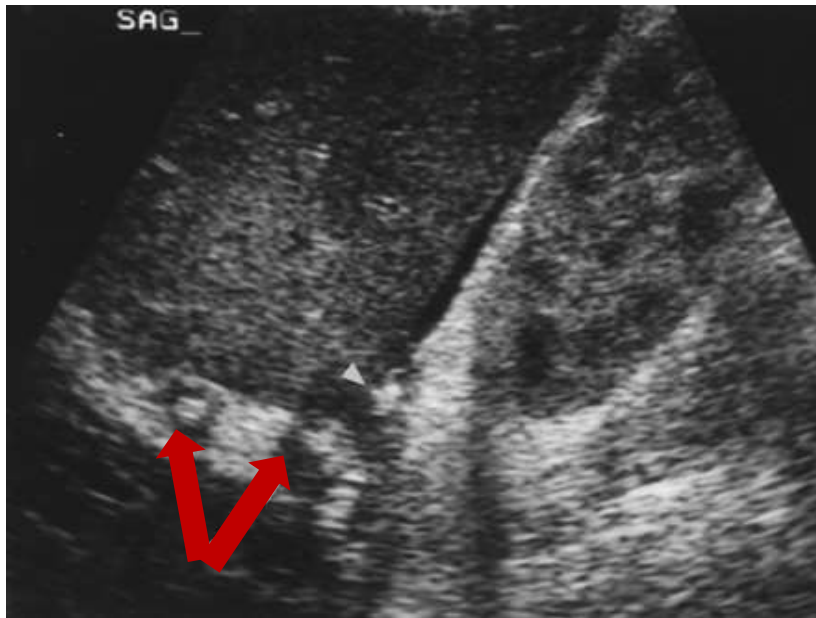
- ◆ 71 y.o. woman
- ◆ 3 wks of RUQ pain at costal margin, worsened by eating
- ◆ LC 17 yrs ago



- ◆ Calcified stone in the liver parenchyma

Case 2

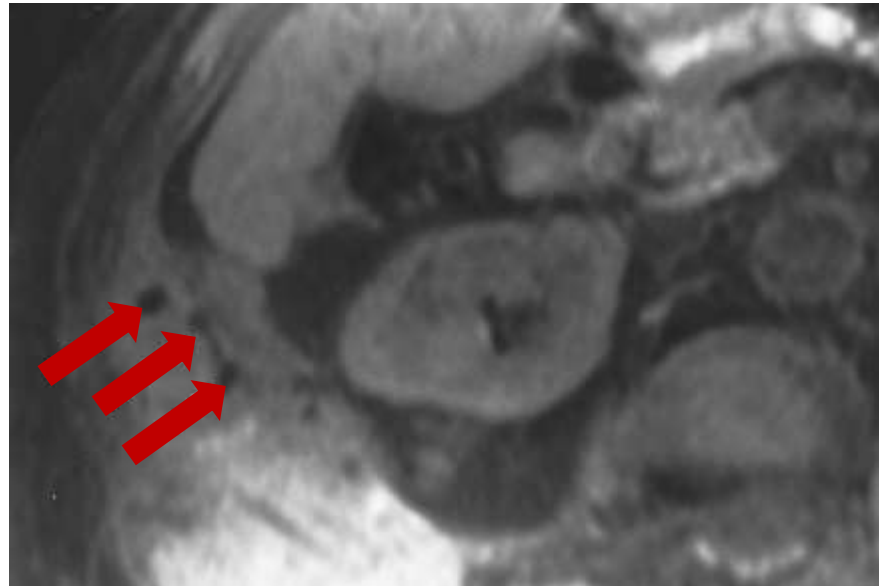
- ◆ 90 y.o. man
- ◆ Night sweats, dyspnea and leukocytosis
- ◆ LC 4 months previously



- ◆ Stones in a thickened diaphragm; pleural effusion

Case 3

- ◆ 85 y.o. man
- ◆ Right flank pain and mass
- ◆ LC 4 yrs ago



- ◆ T1-weighted MR image shows several low-signal intensity foci representing calculi (*arrows*) within a collection inferoposterior to right hepatic lobe

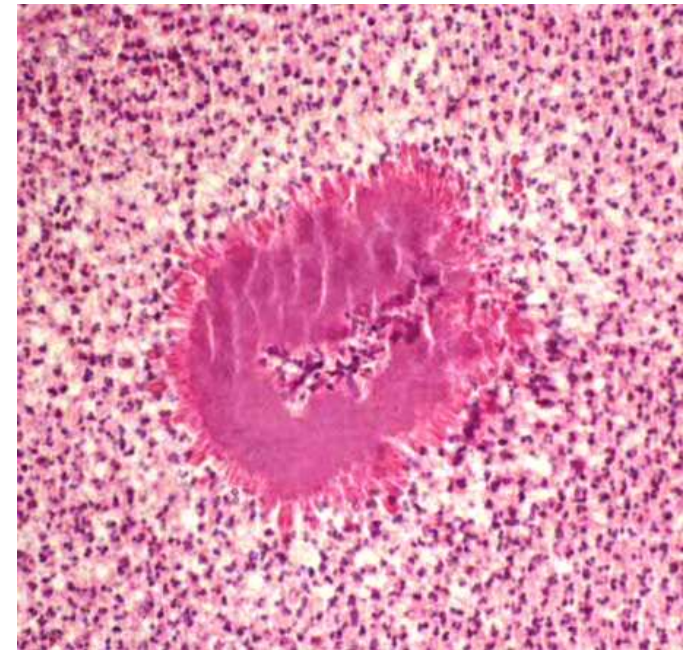
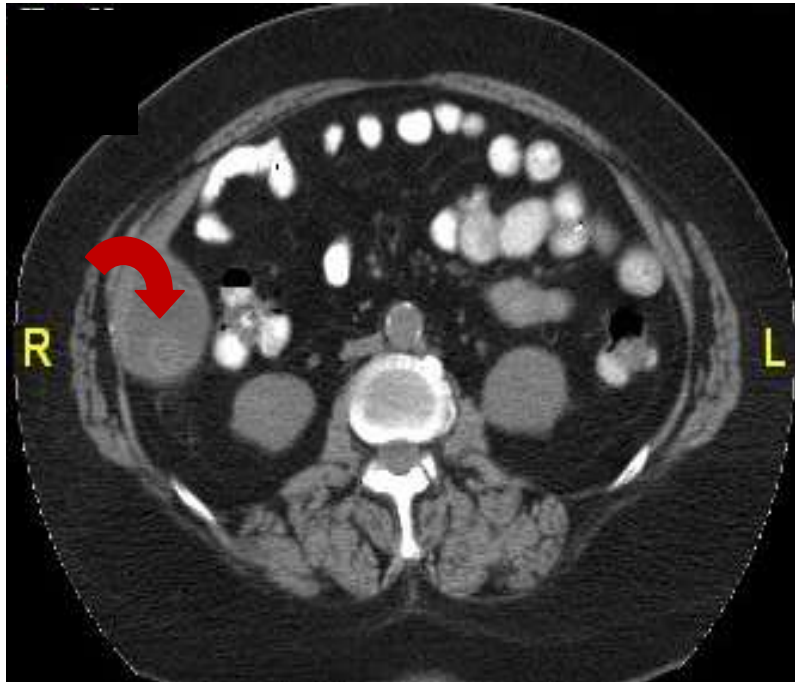
Case 4

- ◆ 66 y.o. woman
- ◆ Persistent subdiaphragmatic abscess
- ◆ 2 years after LC



Case 5

- ◆ 72 y.o. woman
- ◆ 3 wks of fever, nausea, anorexia and RUQ pain
- ◆ LC 11 yrs ago
- ◆ Subhepatic fluid collection monitored x 5 years w/o intervention

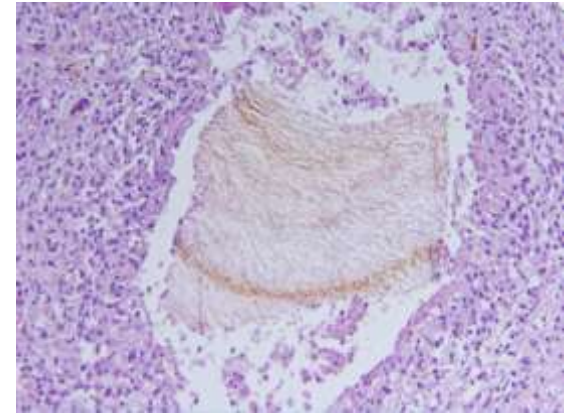
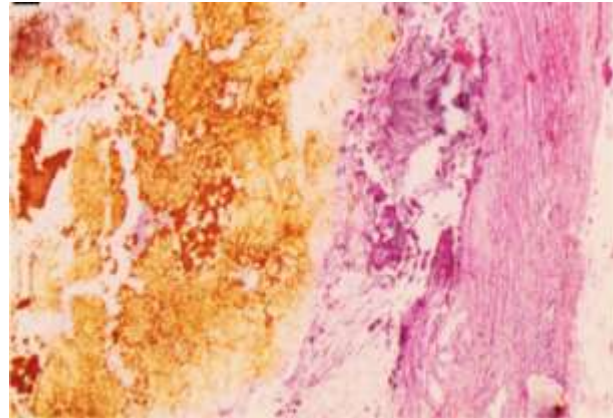


- ◆ PC drainage on culture: *Actinomyces israeli*
- ◆ Resolved with drainage and IV clindamycin

Dropped Stone Mimicking CA

- ◆ 54 y.o. woman s/p TAH/BSO for ovarian CA
- ◆ Firm nodule in omentum ?? metastasis
- ◆ LC 10 yrs ago

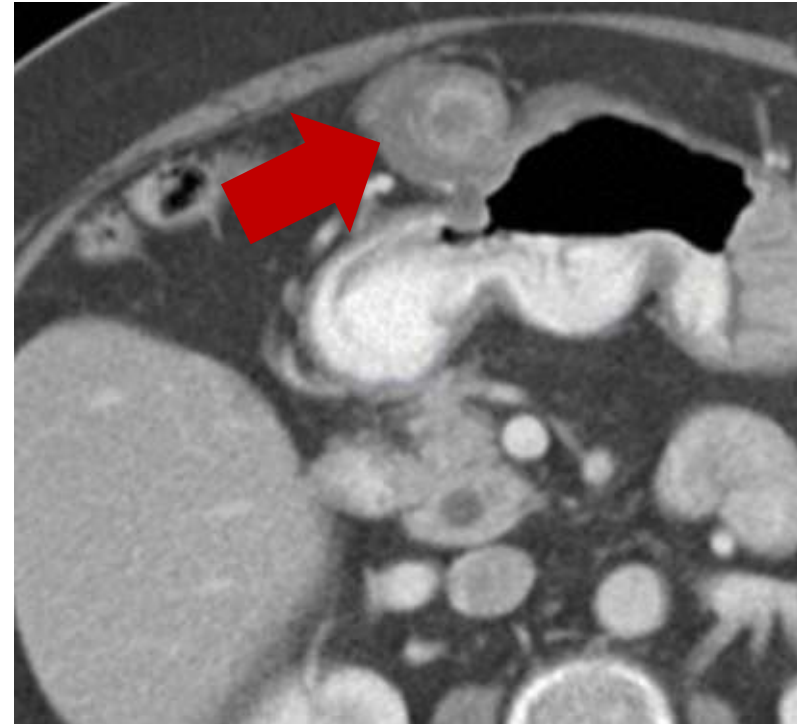
- ◆ 29 y.o. adm for elective C section
- ◆ Firm nodule in vesicouterine pouch ?? CA
- ◆ LC 3 yrs ago



Both cases revealed a fibrous wall enclosing a gallstone associated with a FBGR

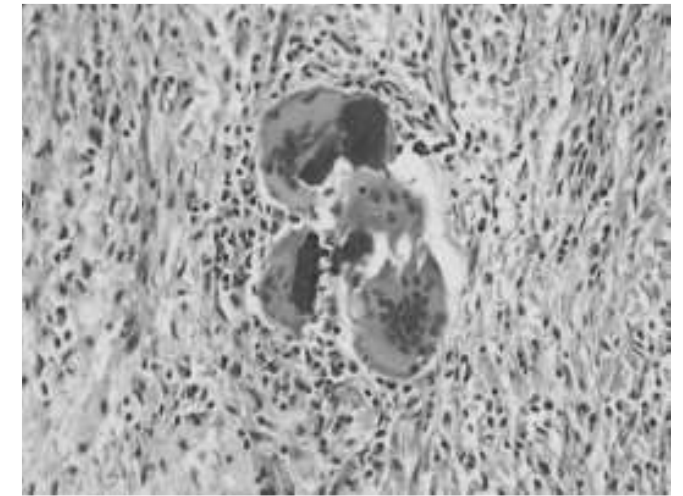
Case 6

- ◆ 44 y.o. woman
- ◆ Vague abd pain
- ◆ Remote hx of cholecystectomy



Case 7

- ◆ 75 y.o. woman
- ◆ Epigastric pain and poor appetite
- ◆ RUQ mass 2 years after LC;
CA-125: 823 (nl <35) units/mL



Dx: Xanthogranulomatous panniculitis

Potential Symptoms of Dropped Stones (a partial list)

- *Systemic*: fever, signs of sepsis
- *Abdominal*: pain, distention, bloating, a mass, vomiting, icterus
- *Pelvic*: pain, dyspareunia, hematuria, dysuria
- *Pulmonary*: hemoptysis, cough, chest pain
- *Cutaneous*: discharge, tenderness

Dropped Stones: Take-home Points

- Dropped stones occur in up to 40% of LC.
- Presentations are varied, may be non-biliary and may occur late (up to 20 yrs after LC).
- Think of a dropped stone in *every* patient with a history of LC in whom new sx's develop--esp when accompanied by fever or abdominal pain.
- If a stone is dropped and cannot be removed, good practice dictates the event be documented, the pt be informed, and it is documented that the patient was informed.
- Because complications of dropped stones are the exception rather than the rule, conversion to an open procedure in the event of unretrieved stones is not recommended.

Palabra y piedra suelta no tienen vuelta

A word and a stone once let go cannot be recalled

