

# RETAINED GALLSTONES: A PICTORIAL REVIEW OF THE UNCOMMON COMPLICATIONS POST CHOLECYSTECTOMY

Dr Kathryn Olsen, Dr Mahak Shah, Dr Halima  
Mohamud, Dr Deepak Pai

Princess of Wales Hospital, Grimsby



# BACKGROUND:

- A known complication of laparoscopic cholecystectomy includes retained gallstones (also known as spilled gallstones), with a reported incidence of 1–40% (1). These occur when one or more gallstone is spilled into the peritoneal cavity during surgery. (1)
- Retained calculi can remain asymptomatic, but complications can include fistulae, infection, abscess formation, peritonitis, infertility, bladder obstruction, bowel adhesions, bowel obstructions and death (2).
- Complications can occur years post cholecystectomy and may require further intervention such as surgery to remove the retained gall stones (1).

# RELEVANCE FOR RADIOLOGY:

- Diagnosis is normally via CT, MRI, or US. Although in some patients diagnosis is made via US-guided biopsy or laparoscopy. (2)
- The appearances of retained gallstones can widely differ on imaging, with some showing typical calcification whilst others may mimic peritoneal soft tissue nodules providing difficulty for the unsuspecting reporter.
- The most common area for retained gallstones is in the peri-hepatic area, but they can migrate to various areas of the peritoneal cavity, complicating interpretation (2).

# AIMS FOR THIS PICTORAL REVIEW:

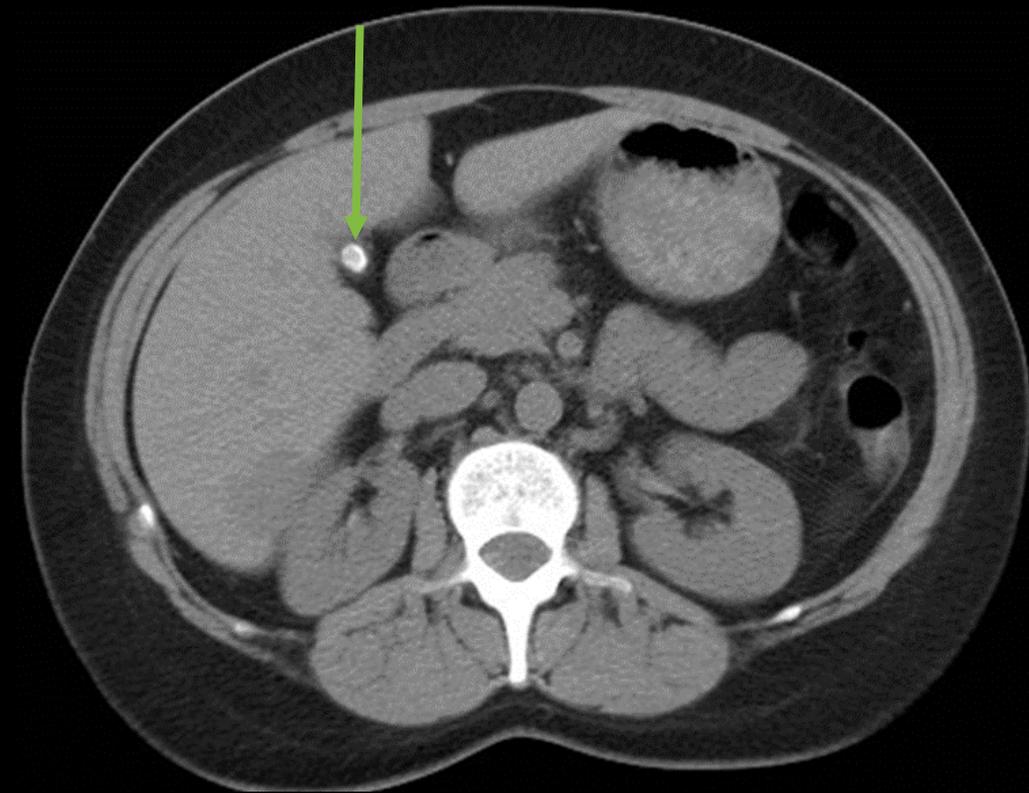
- The aim of this pictoral review is to increase knowledge and awareness amongst radiologists of the associated complications of retained gallstones.
- We present a pictoral review of retained gallstones and their associated complications. We include examples of chronic infection and recurrent abscesses. Additionally, we share examples of retained gallstones mimicking peritoneal nodules.

# APPEARANCE OF UNCOMPLICATED CALCIFIC RETAINED GALLSTONES



45 YEAR OLD WITH ABDOMINAL PAIN.  
CALCIFIC DENSITY NOTED IN THE RIGHT  
PARACOLIC GUTTER, WHICH WAS A RETAINED  
GALLSTONE. THIS WAS WITHIN THE  
GALLBLADDER PRIOR TO CHOLECYSTECTOMY.

Pre-operative CT  
showing gallstone within  
the gallbladder.

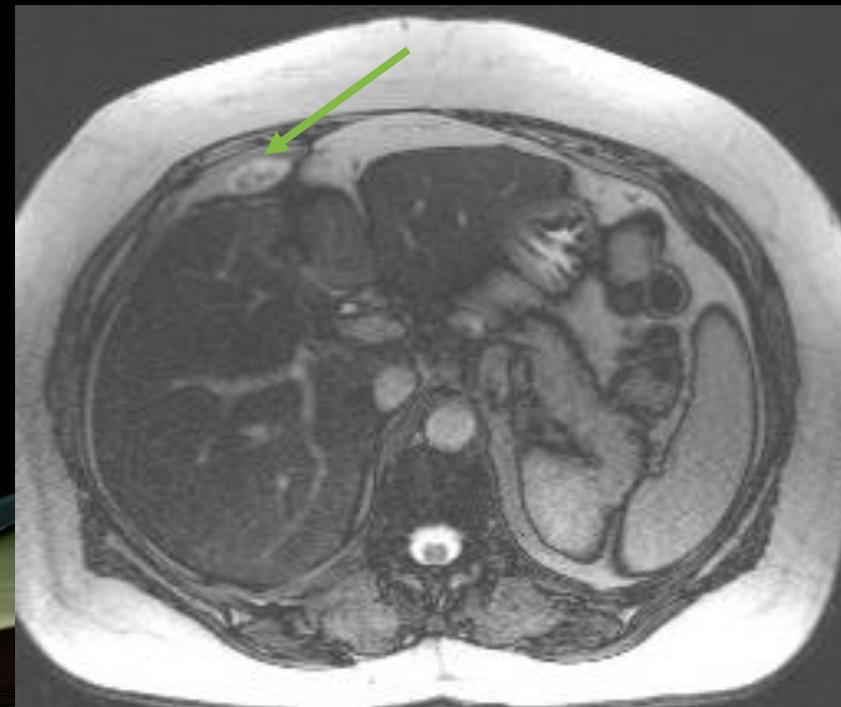


Post-operative scan showing right paracolic  
gutter calculi without complications.

# COLLECTIONS AND ABSCESSSES

67 YEAR OLD WITH RUQ PAIN.  
CHOLECYSTECTOMY 5 YEARS PRIOR.  
US SCAN SHOWED COLLECTION  
ANTERIOR TO THE LIVER WITH SMALL  
CALCULI WITHIN. MRI SHOWED  
SIMILAR FINDINGS, WHICH WERE NOT  
INITIALLY APPRECIATED.

Ultrasound showing  
collection with small calculi

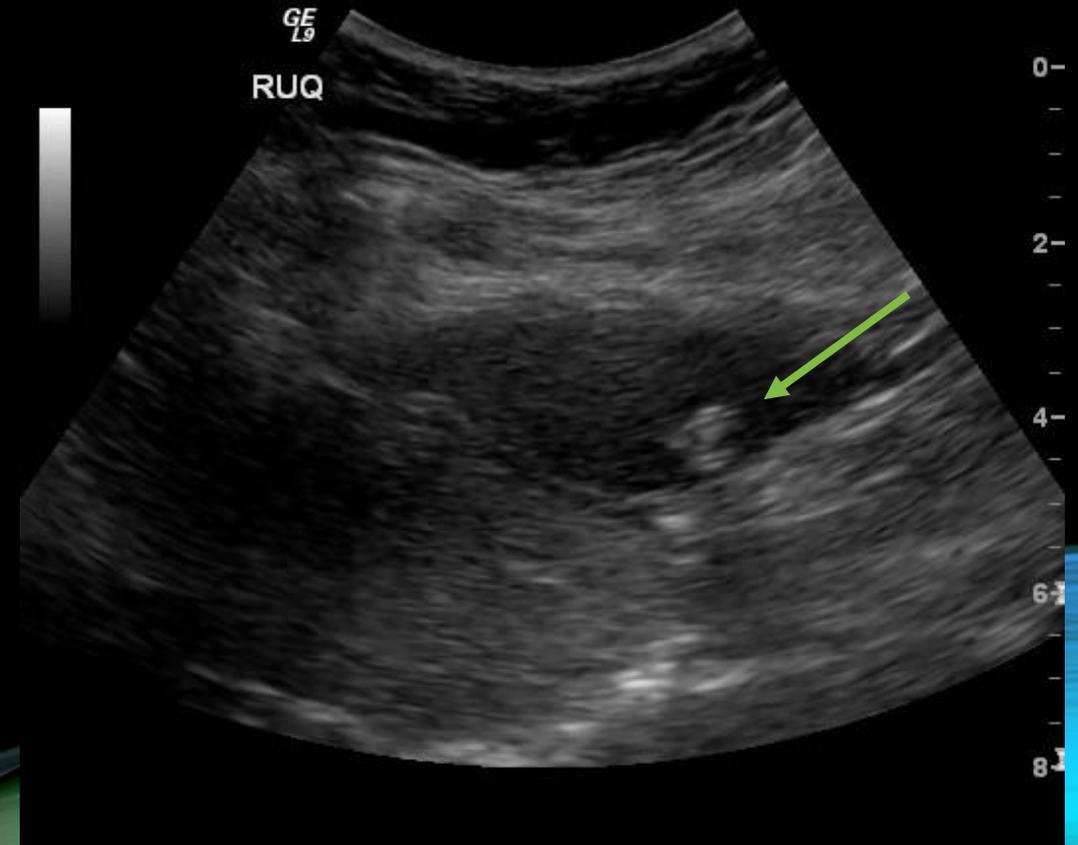


MRI showing  
collections  
with subtle  
appearance  
of calculi  
within

60 YEAR OLD WITH RUQ PAIN. CHOLECYSTECTOMY 6 YEARS PRIOR. CT DEMONSTRATED ANTERIOR ABDOMINAL WALL COLLECTION WITH SUBTLE SOLITARY CALCULUS. US SCAN CONFIRMED THE COLLECTION AND CALCULUS.

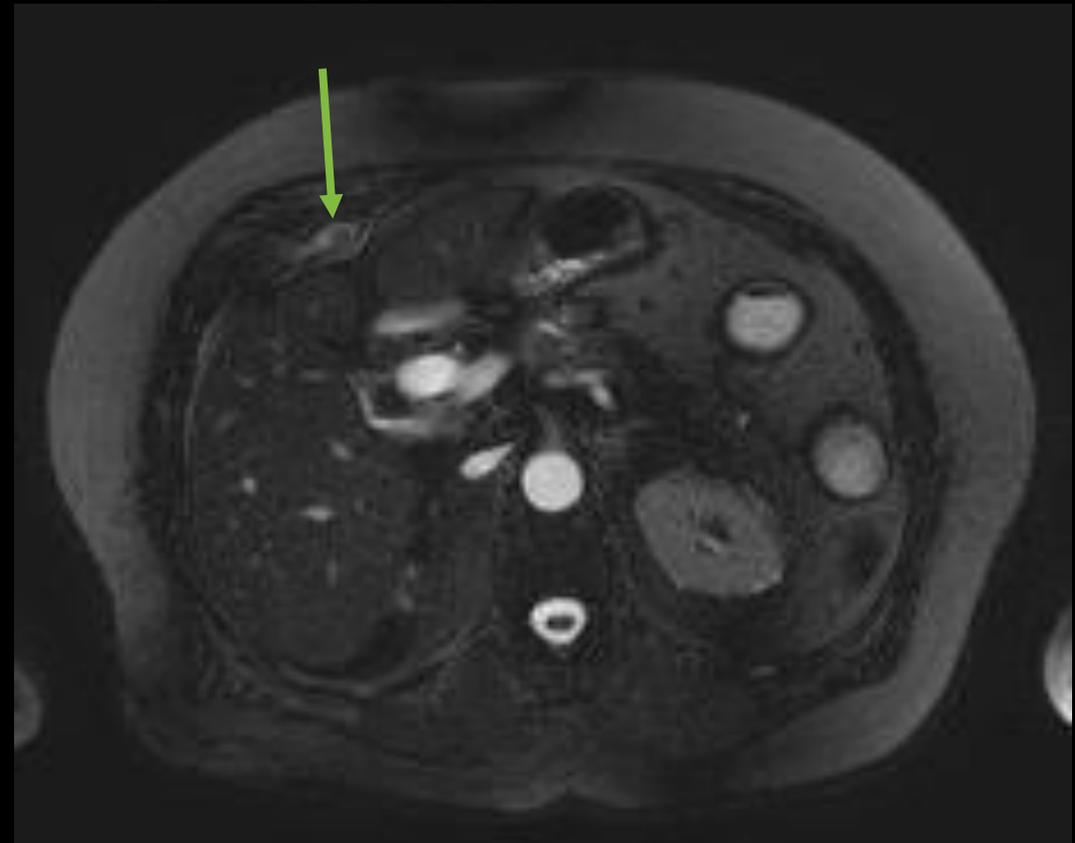
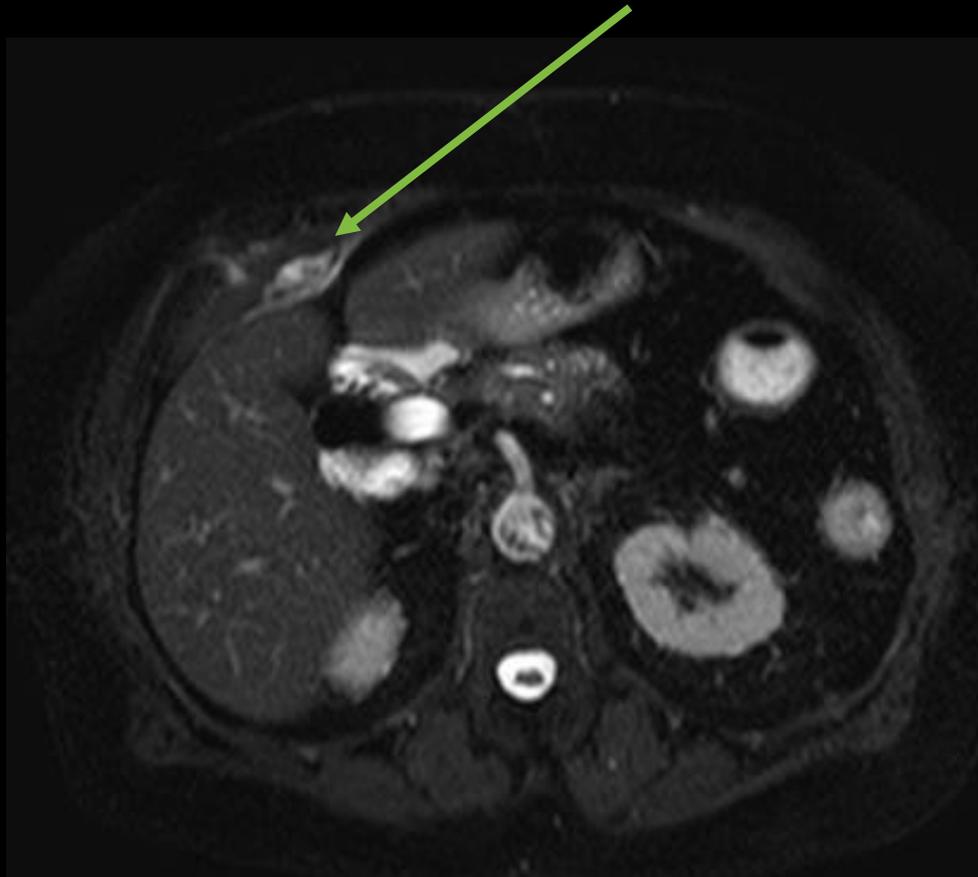


CT demonstrating collection in anterior abdominal wall with a solitary calculus



US demonstrating fluid collection in the anterior abdominal wall with a calculus

ON REVIEW AN MRCP FROM 2 MONTHS PRIOR  
SHOWED A SMALL COLLECTION WITH SUBTLE  
CALCULUS.



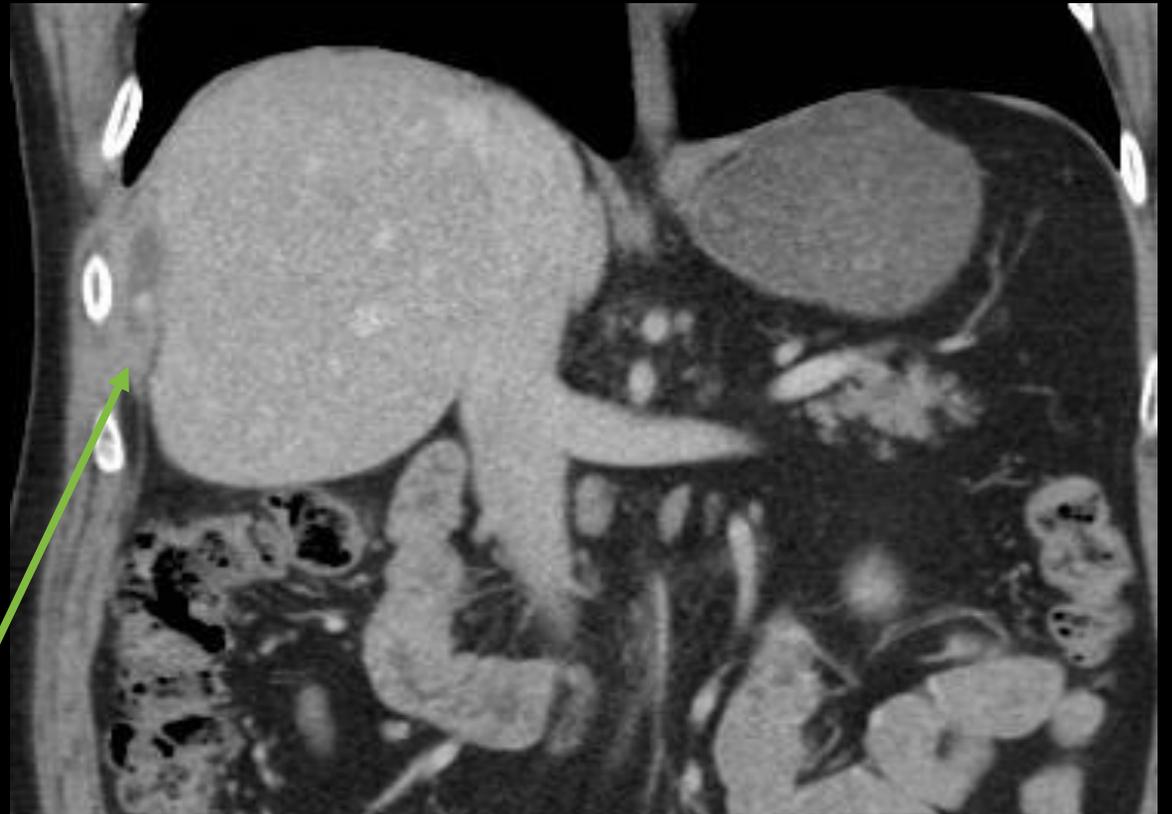
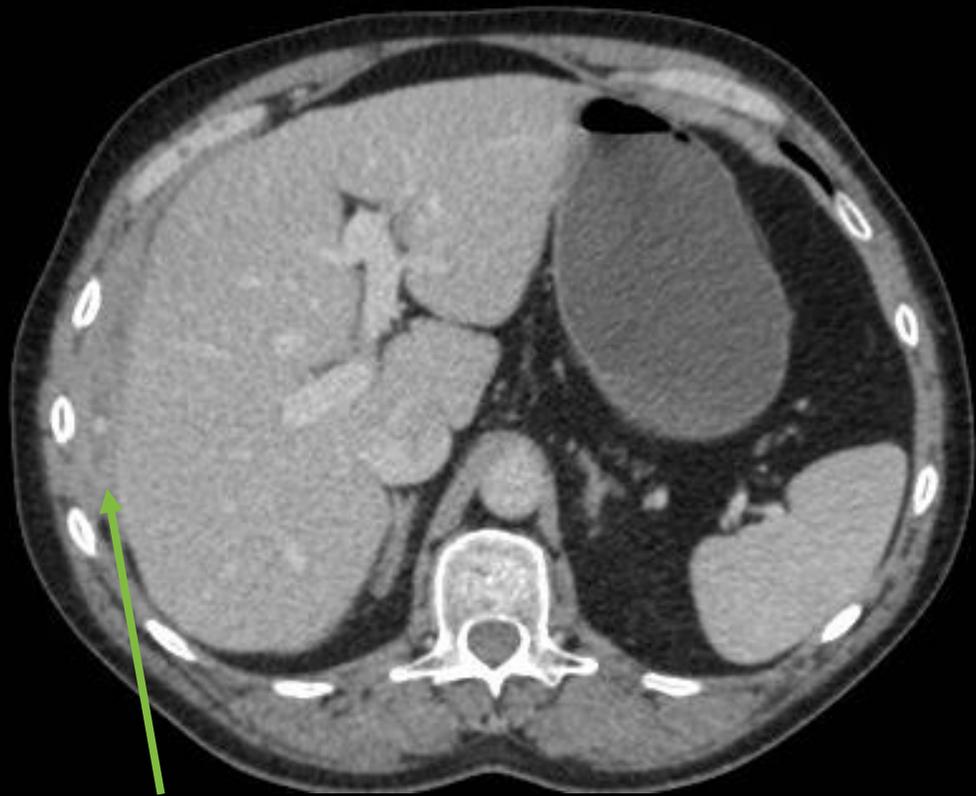
55 YEAR OLD MALE.  
CHOLECYSTECTOMY 2 YEARS PRIOR.  
ADMITTED WITH RECURRENT HEPATIC  
ABSCESSSES. TWO SURGICAL ATTEMPTS  
AT EXTRACTION OF CALCULUS HAD  
BEEN UNSUCCESSFUL.



Initial CT showing subdiaphragmatic collection around the liver with a small solitary calculus within



MRCP also demonstrating a subtle calculus within the fluid collection



CTs performed post surgical drainage show a small residual collection with the calculus still within

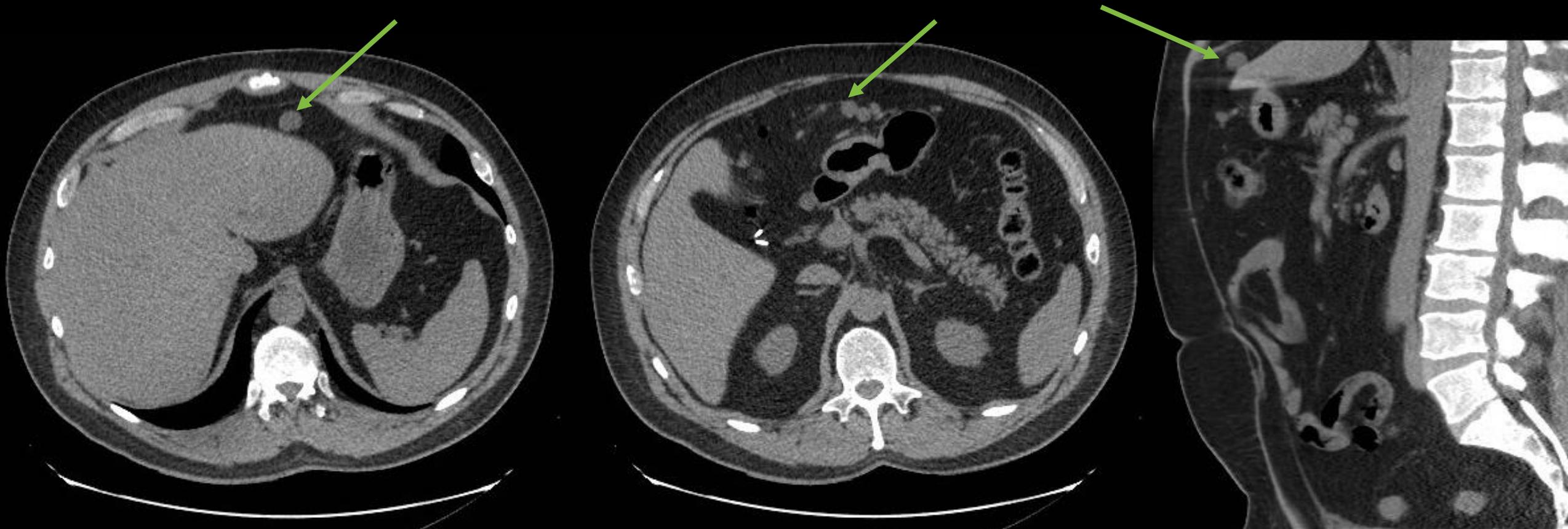


Patient was re-admitted 6 months later and had CT confirming a recurrence of the subdiaphragmatic collection. The solitary calculus had migrated further down and lay within a small locule.

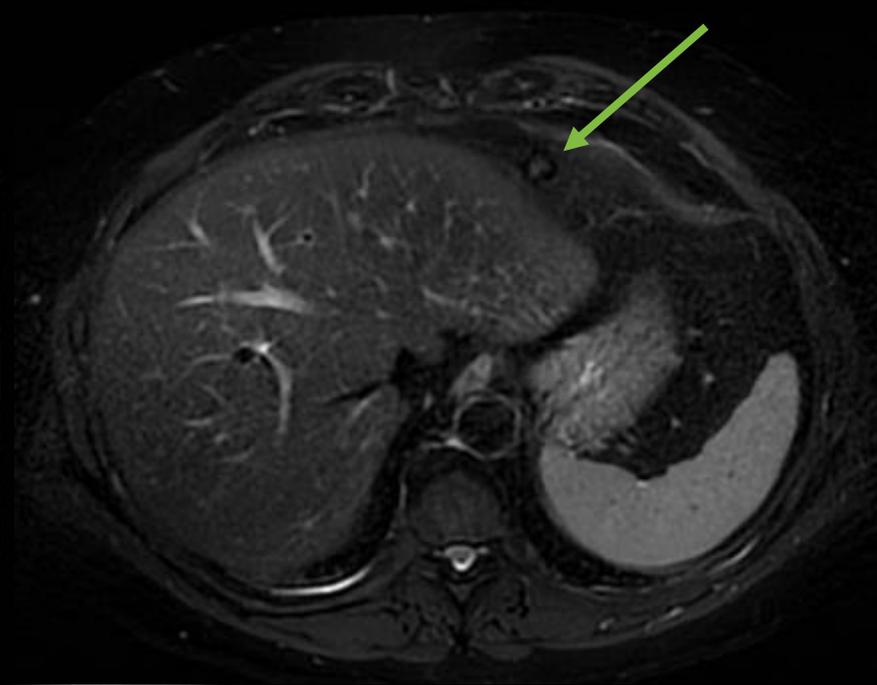
# PERITONEAL SOFT TISSUE NODULE MIMICS



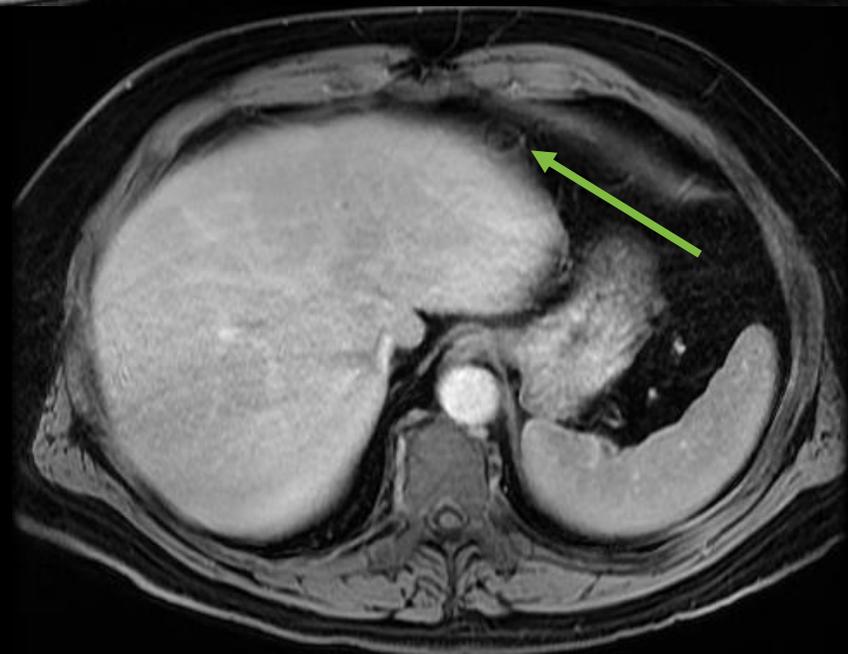
45 YEAR OLD MALE UNDERWENT CTKUB.  
INCIDENTALLY, SEVEN NON-CALCIFIED NODULES  
IDENTIFIED WITHIN THE ANTERIOR PERITONEAL CAVITY.



Non-contrast CT showing non-calcified incidental nodules

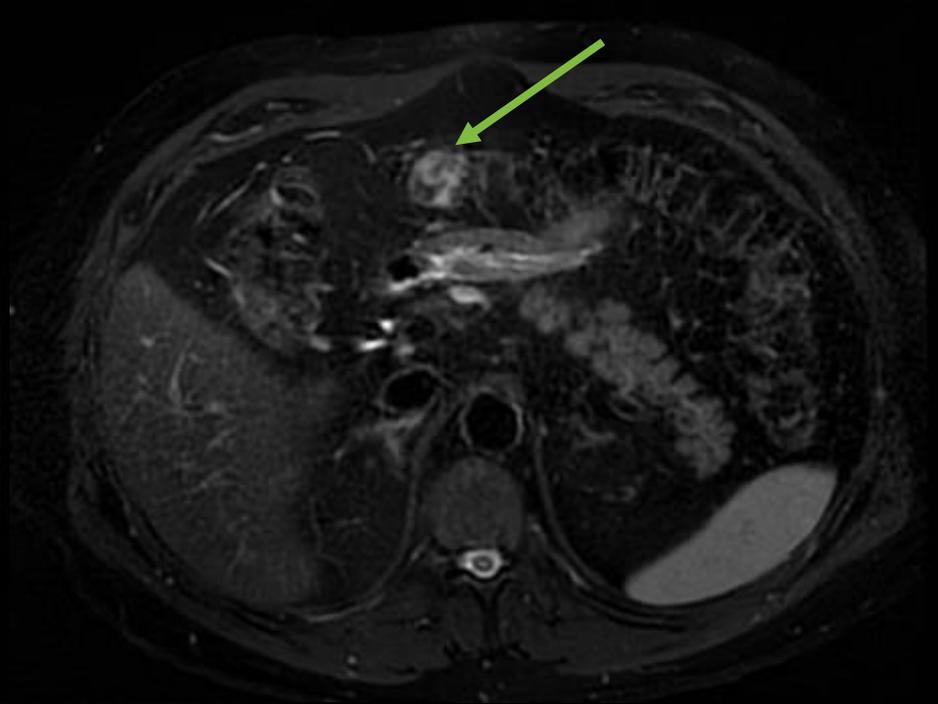
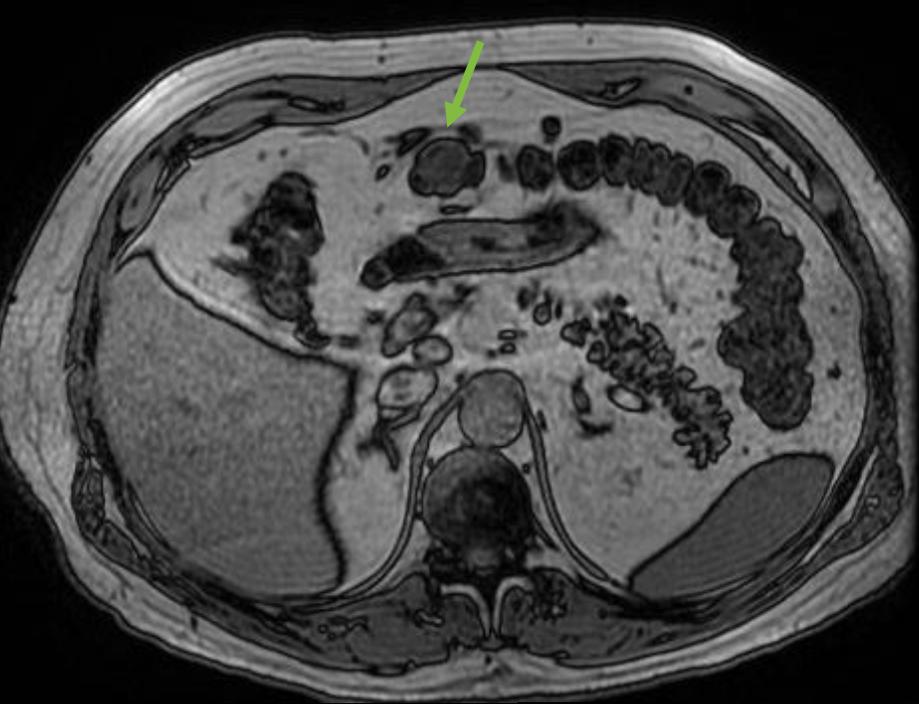


T1W and T2W Fat suppressed Axial images showing peritoneal nodules



Post-Gadolinium image

MRI WITH LIVER PROTOCOL WAS PERFORMED.



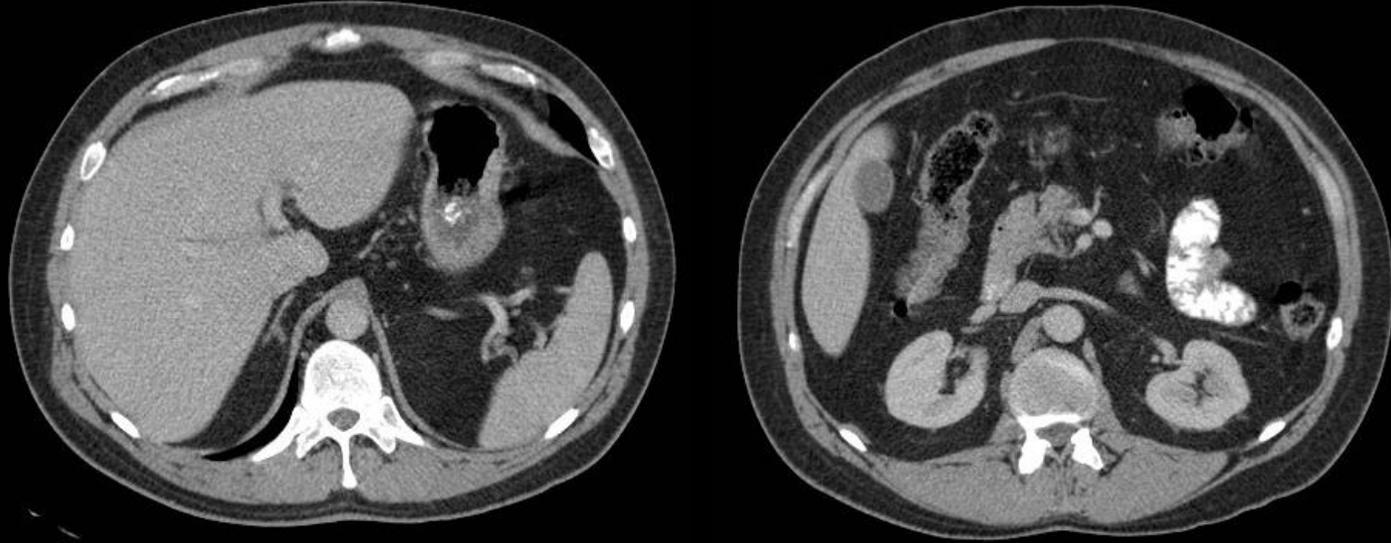
T1W and T2W Fat suppressed Axial images showing peritoneal nodules

Post-Gadolinium image

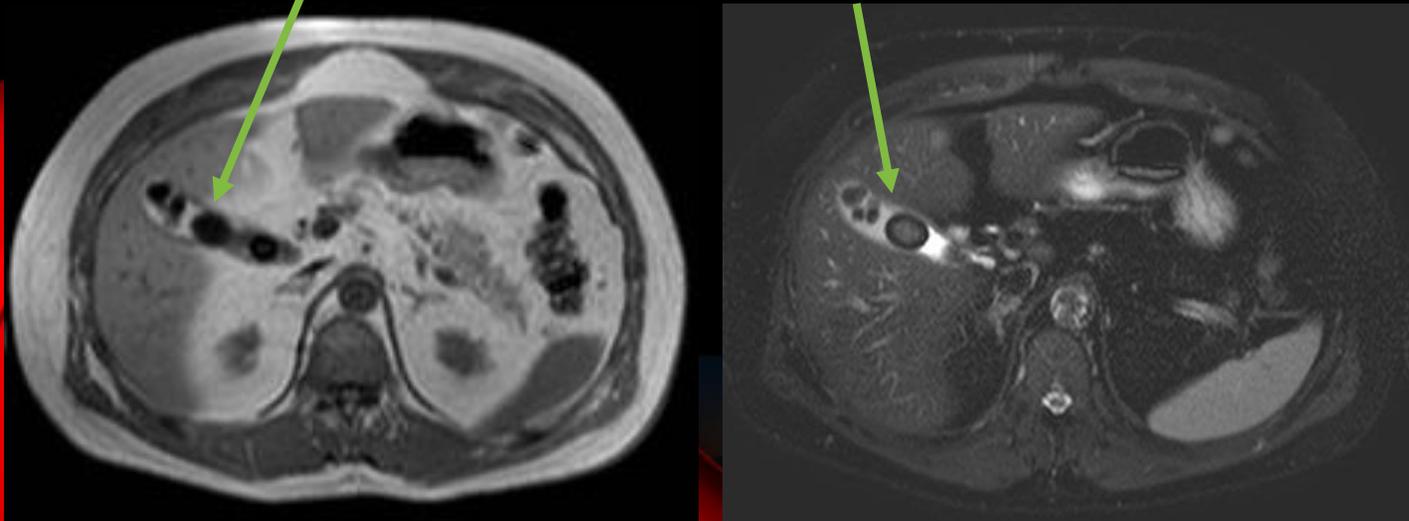


THE NODULES WERE NON-ENHANCING, BUT NO CLEAR PATTERN WAS OTHERWISE DISCERNED.

CT 5 years prior did not demonstrate similar nodules.



MRCP showing gallstones within the gallbladder 5 years prior.



IMAGING 5 YEARS PRIOR WAS REVIEWED. NO NODULES ON CT. GALLSTONES SEEN WITHIN THE GALLBLADDER ON MRCP.



CURRENT IMAGING HAD NOT DEMONSTRATED A GALLBLADDER, SO CHOLECYSTECTOMY WAS ASSUMED.



HISTOLOGY REPORT WAS SOURCED FOR THE REMOVED GALLBLADDER, WHICH NOTED NO CALCULI WITHIN THE GALLBLADDER.



SURGICAL NOTES CONFIRMED SPILLED CALCULI DURING LAPAROSCOPIC CHOLECYSTECTOMY.



DIAGNOSIS OF RETAINED GALLSTONES MADE

# LEARNING POINTS:

- Retained gallstones can result in long term complications post-cholecystectomy.
- They can present a challenge for diagnosis as their appearance and location can vary.
- In post-cholecystectomy patients with peritoneal nodules, consider retained gallstones as a possible cause.
- In post-cholecystectomy patients with peritoneal fluid collections, remember to check fluid collections for the presence of calculi within.

# REFERENCES

1. Perrotti G, O'Moore P and Kirton O (2022) Hey, you forgot something! The Management of Symptomatic Retained Gallstones, *Surgery in Practice and Science*, Volume 8, 100052, <https://doi.org/10.1016/j.sipas.2021.100052>.
2. Aziz H et al. (2024) Current evidence on the diagnosis and management of spilled gallstones after laparoscopic cholecystectomy, *Journal of Gastrointestinal Surgery*, Volume 28, Issue 12, Pages 2125-2133, <https://doi.org/10.1016/j.gassur.2024.10.001>.