

AMSER Case of the Month

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69 year-old female with postoperative RUQ pain

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Patient Presentation

- HPI: 69 year-old female presented to the ED with acute RUQ pain, R shoulder pain on postoperative day #9 after cholecystectomy, laparotomy, and bowel resection. Endorsed fever, N/V, abdominal distention. Denied chest pain, SOB, palpitations.
- PMH: diabetes, GERD, hypothyroidism, DJD, depression, mesenteric venous thrombosis
- Meds: bupropion, levothyroxine, metformin, rivaroxaban
- Vitals: T 37.3C BP 123/91 HR 116 RR 22 SpO2 92% on RA
- Physical Exam:
 - Abdominal – shifting dullness, abdominal tenderness in RUQ and epigastric area with voluntary guarding present.

Pertinent Labs on Admission

- CBC
 - **WBC = 11.38**
 - Hgb = 13.1
 - Hct = 39.5
 - Plt = 440
- Coagulation studies
 - **aPTT = 128.1**
 - INR = 1.0
 - Heparin anti-XA assay = >1.1
- Liver function tests
 - Direct bilirubin = 0.3
 - Total bilirubin = 0.6
 - ALP = 83
 - **AST = 52**
 - **ALT = 53**
- Lipase = 25

*NB: Text in red indicates abnormal values

What Imaging Should We Order?

Select the applicable ACR Appropriateness Criteria

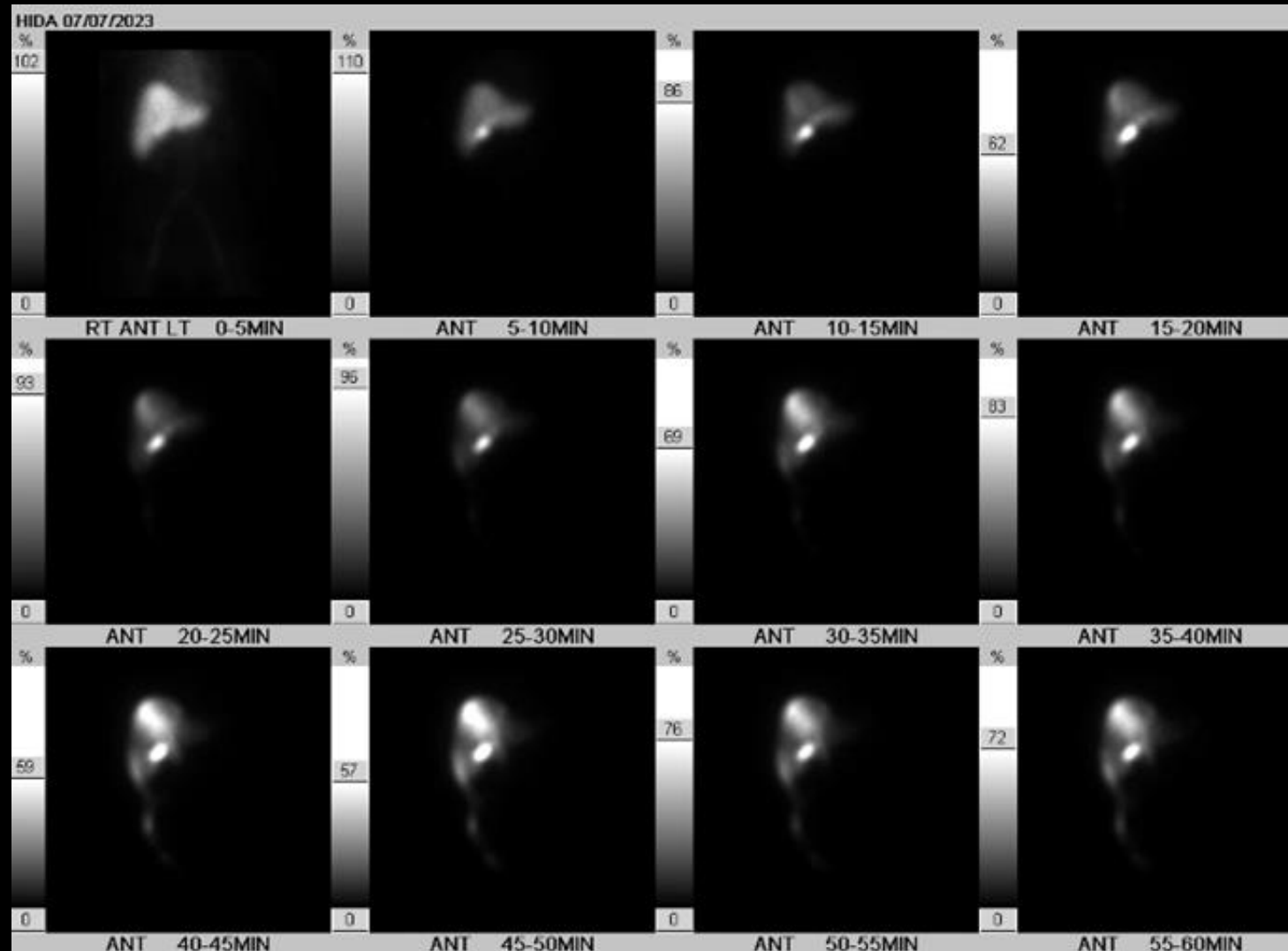
Variant 4:

Right upper quadrant pain. Fever, elevated WBC count. Suspected biliary disease. Negative or equivocal ultrasound. Next imaging study.

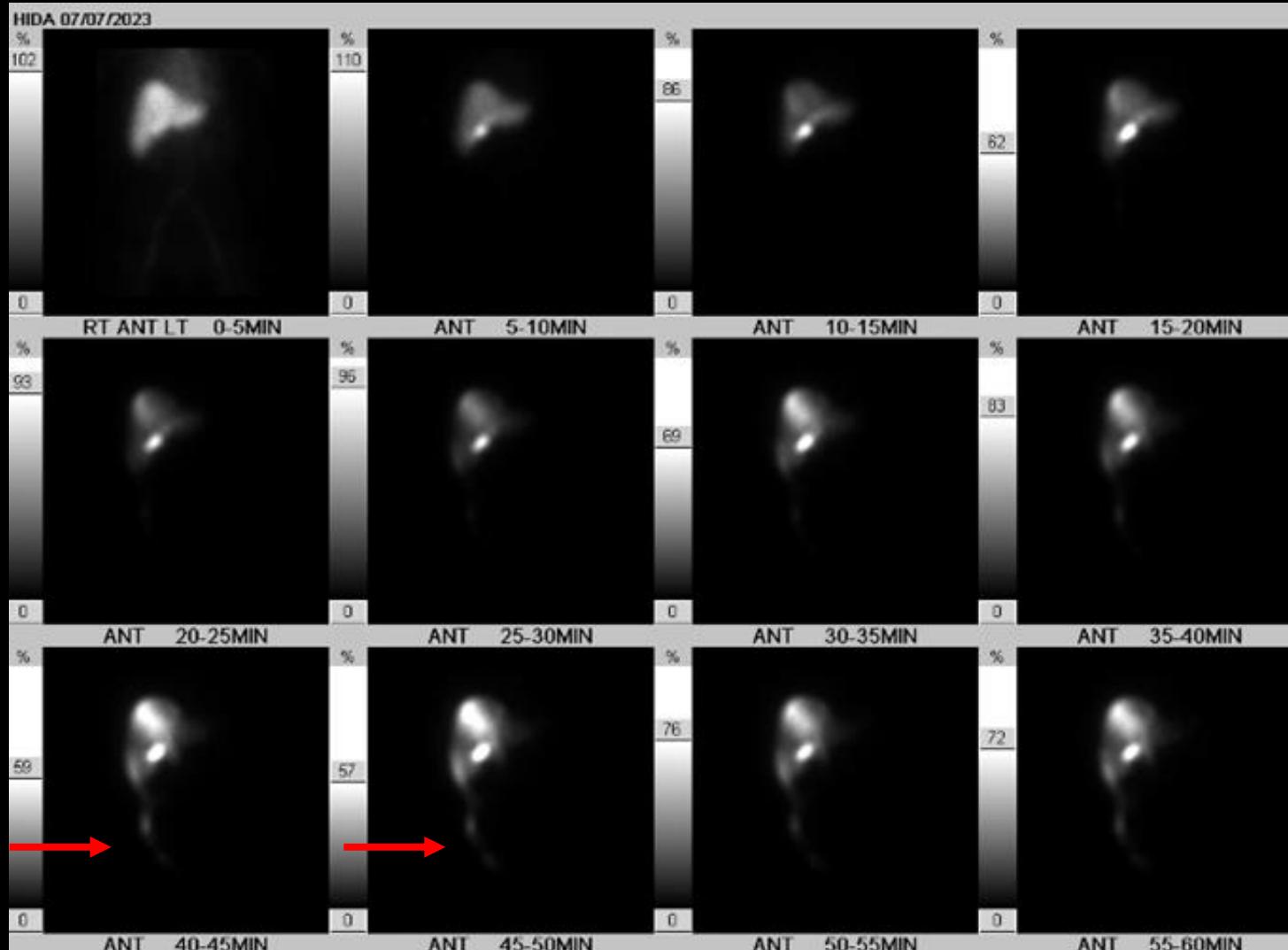
Procedure	Appropriateness Category	Relative Radiation Level
MRI abdomen without and with IV contrast with MRCP	Usually Appropriate	○
CT abdomen with IV contrast	Usually Appropriate	☼☼☼
Nuclear medicine scan gallbladder	Usually Appropriate	☼☼ ←
MRI abdomen without IV contrast with MRCP	May Be Appropriate	○
CT abdomen without IV contrast	May Be Appropriate	☼☼☼
CT abdomen without and with IV contrast	Usually Not Appropriate	☼☼☼☼

This imaging modality was ordered by the on-call CRC surgeon.

Findings (unlabeled) — POD #9



Findings (labeled) — HIDA Scan on POD #9

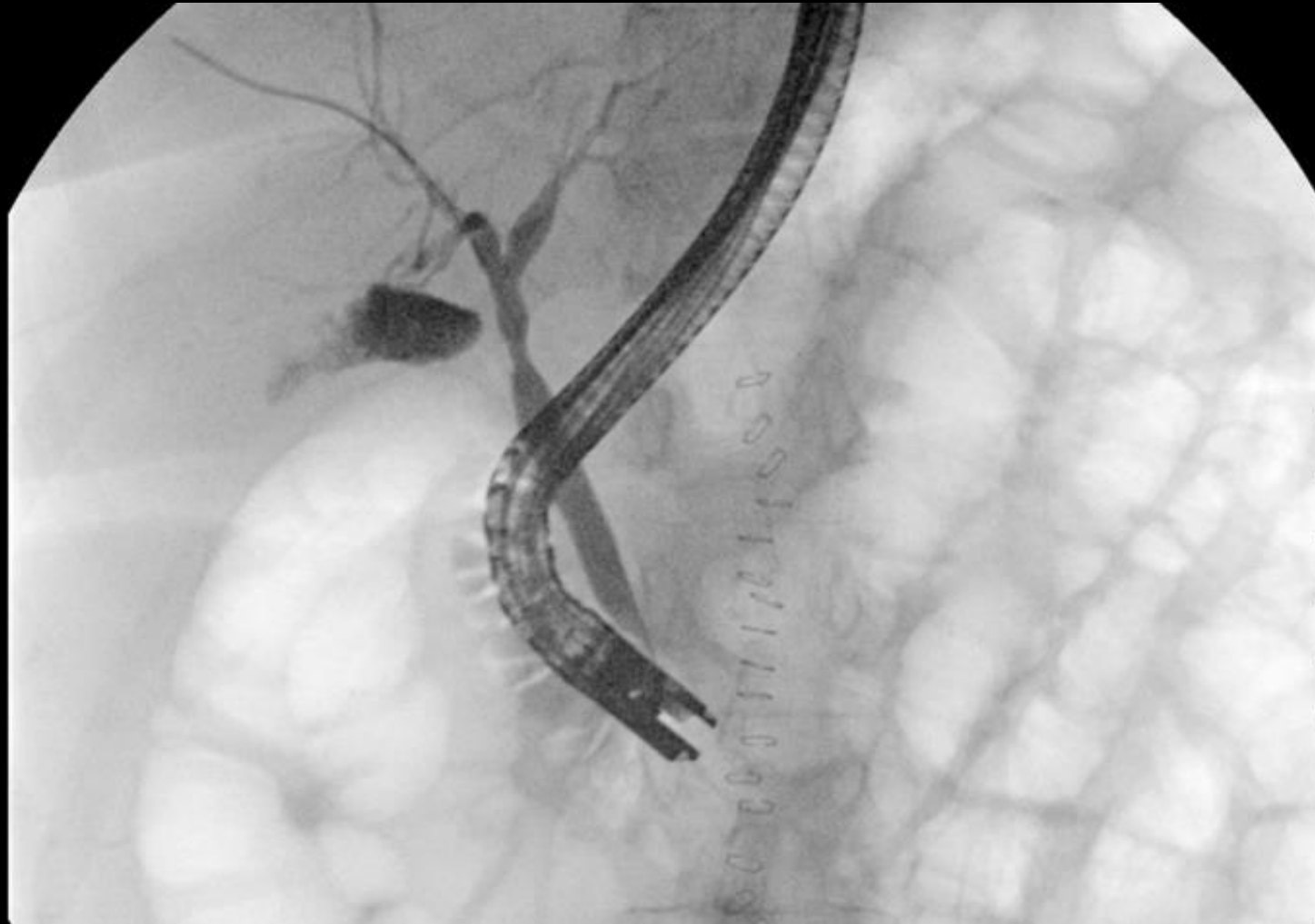


Biliary leakage appreciated, tracking into the R subhepatic space and R paracolic gutter.

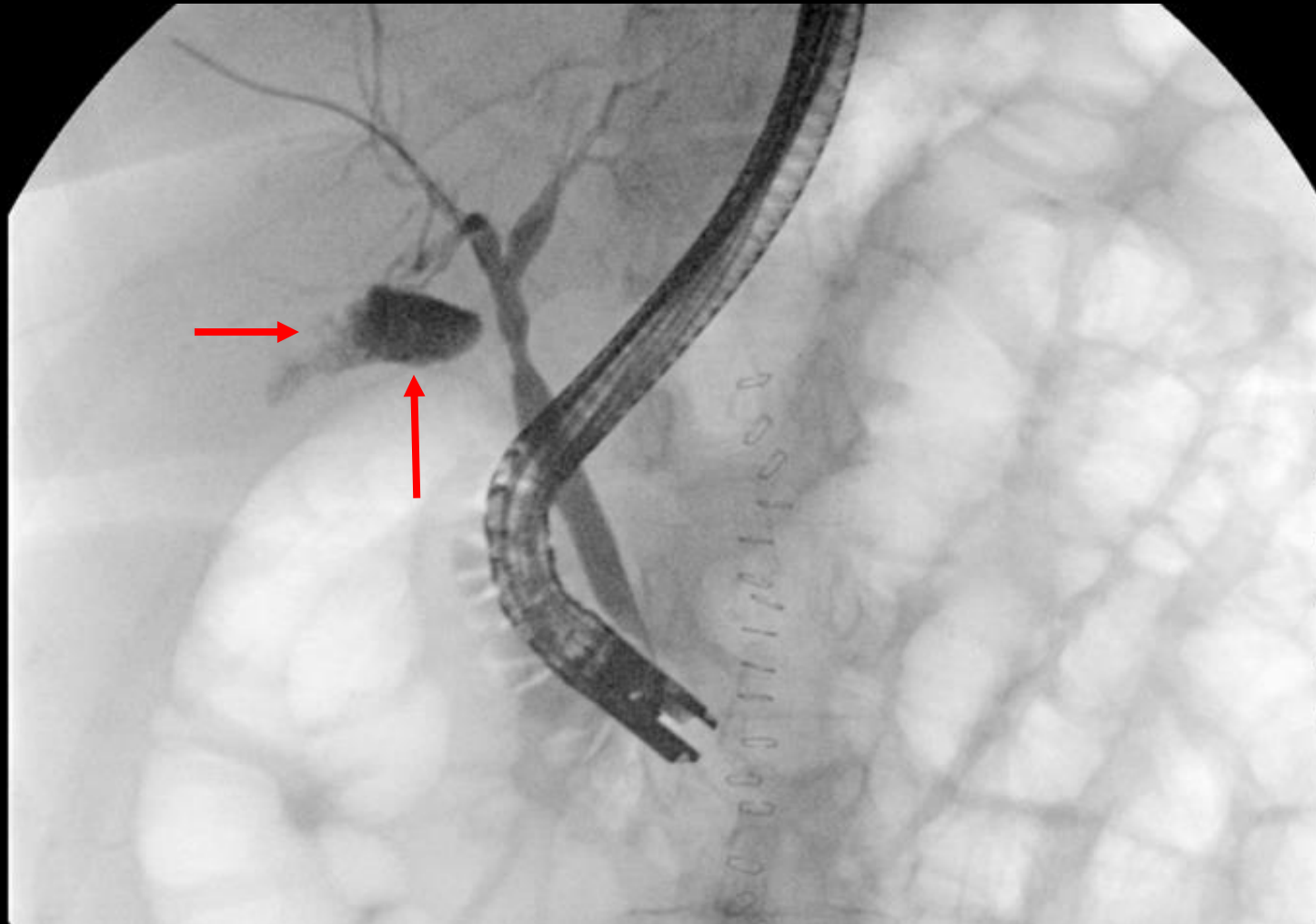
HIDA scan demonstrating expected nonvisualization of gallbladder (patient s/p cholecystectomy).

No Tc-99 visualized entering the bowel.

Findings: (unlabeled) — POD #11



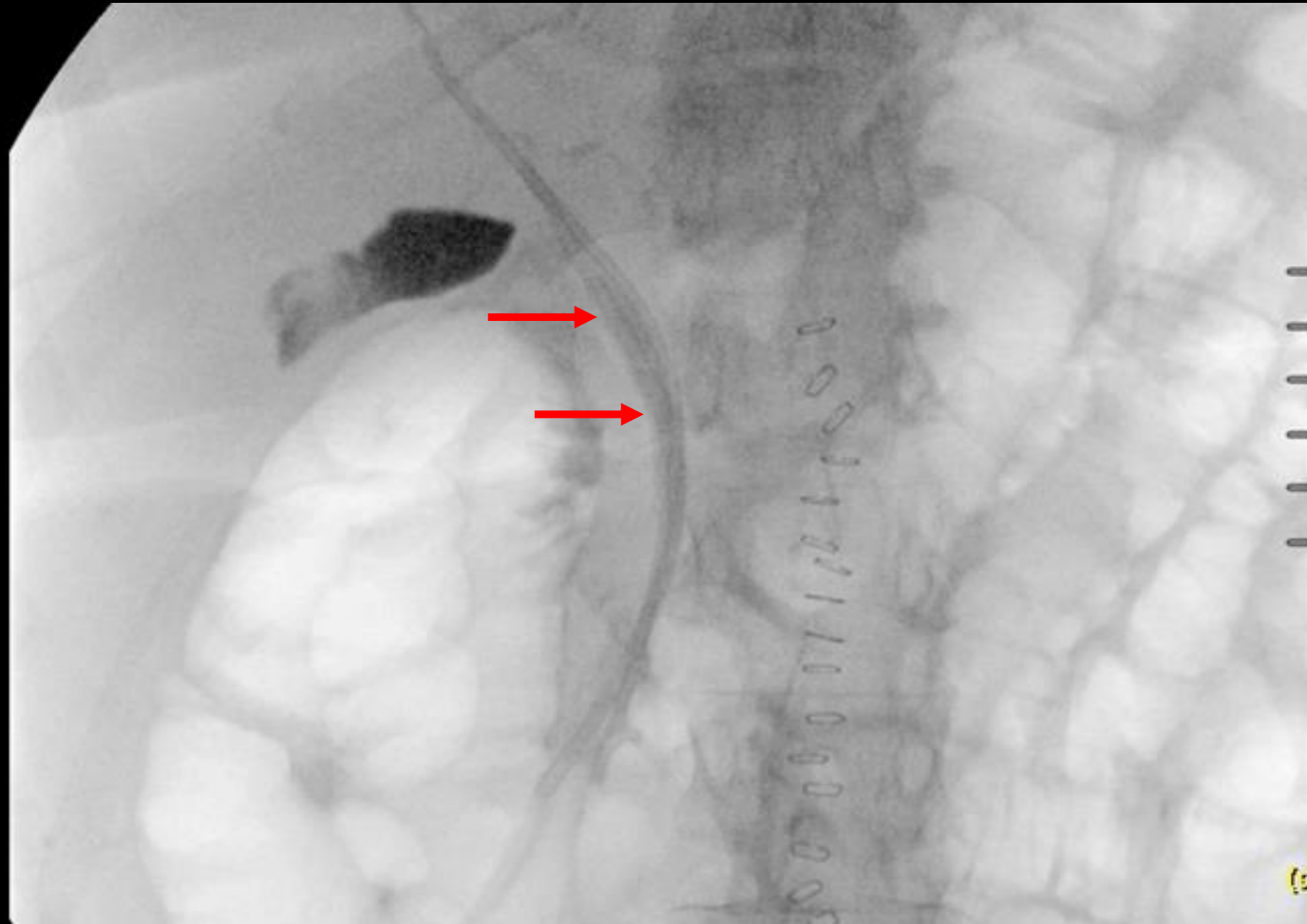
Findings (labeled) — ERCP on POD #11



ERCP demonstrating abnormal accumulation of contrast in the gallbladder fossa.

Extravasation originating from minor branch of R hepatic duct system.

Findings (labeled) — ERCP on POD #11



Fluoroscopic imaging demonstrating correct position of transpapillary stents into the R main duct and R intrahepatic biliary system.

Final Dx:

Iatrogenic Duct of Luschka injury

Case Discussion

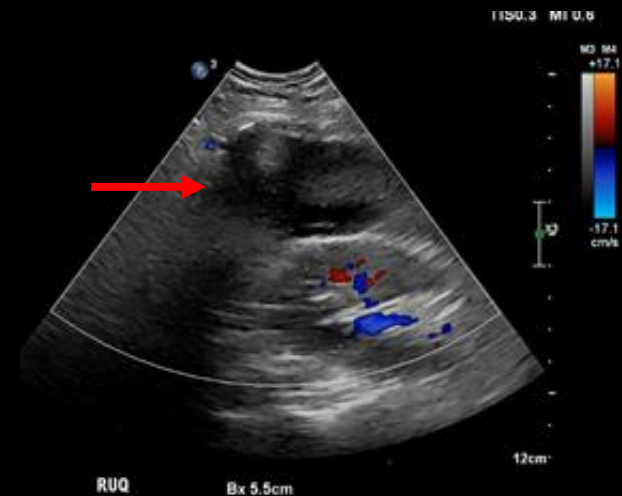
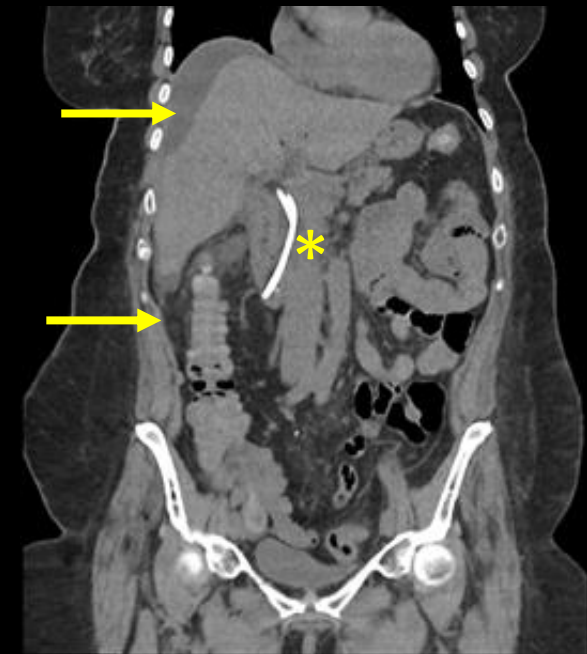
- Epidemiology
 - Bile duct injuries (BDI) occur more frequently during laparoscopic (0.4-1.5% of cases) versus open (0.2-0.3% of cases) cholecystectomies.
 - Risk factors include male sex, age > 60, obesity, cirrhosis, gangrenous or severe cholecystitis, emergency surgery, ductal/vascular anatomic variants.
- Etiology
 - The duct of Luschka, also known as the cholecystohepatic duct, is an accessory biliary duct connecting the gallbladder to the draining ductal system.
 - Obtaining a critical view of safety intraoperatively is crucial in preventing 1) misidentification and clipping of the cystic duct and 2) damage to remaining biliary tree.
- Clinical Presentation
 - Persistent abdominal pain, bilious ascites, nausea, vomiting, fever, jaundice, peritonitic signs.

Case Discussion

- Differential Diagnoses
 - Biliary obstruction from retained gallstone, perforation of gallbladder intraoperatively and resultant biliary peritonitis, bile duct injury +/- biloma formation, abscess, hematoma, hepatic artery pseudoaneurysm.
- Imaging
 - Goals = establish BDI, delineate type and extent of injury, plan appropriate intervention.
 - Imaging of choice for BDI: **hepatobiliary iminodiacetic acid (HIDA) scan**
 - 96% sensitivity and 90% specificity.
 - Can reliably distinguish between bile and other postoperative fluid collections.
 - Alternatives: MRCP with and without contrast (specifically a biliary agent), ERCP (also therapeutic).
- Treatment
 - ERCP: insertion of stent or sphincterotomy to decrease pressure in proximal biliary tree.
 - If severe peritonitis or progression to sepsis, patient may require ex-lap and washout.

Conclusion of this Case

- Repeat CT abdomen with and without contrast obtained on POD #12 for evaluation of drainable fluid collections.
 - Yellow arrows on coronal CT slice demonstrate perihepatic fluid collection pooling into Morrison's pouch.
 - Yellow star demonstrates proper placement of intra-biliary stents.
- Patient experiencing worsening pain, IR-guided perihepatic drain placed on POD#13. Drained 300 mL bilious fluid.
 - Red arrow on ultrasound image demonstrates hypoechoic fluid collection, concerning for biloma.
 - Culture and gram stain of fluid negative.
- Patient's pain improved and drain removed prior to discharge, with follow up in 6 weeks for repeat ERCP and removal of stents.



References:

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