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

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Appropriateness Category</th>
<th>Relative Radiation Level</th>
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</thead>
<tbody>
<tr>
<td>MRI abdomen without and with IV contrast with MRCP</td>
<td>Usually Appropriate</td>
<td>O</td>
</tr>
<tr>
<td>CT abdomen with IV contrast</td>
<td>Usually Appropriate</td>
<td>⚫⚫⚫⚫</td>
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<tr>
<td><strong>Nuclear medicine scan gallbladder</strong></td>
<td>Usually Appropriate</td>
<td>⚫⚫</td>
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<tr>
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<td>⚫⚫⚫⚫⚫⚫</td>
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This imaging modality was ordered by the on-call CRC surgeon.
Findings (unlabeled) — POD #9
Findings (labeled) — HIDA Scan on POD #9

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

No Tc-99 visualized entering the bowel.

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


