AMSER Case of the Month:

A 41-year-old woman presents with sudden onset left lower quadrant pain

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Patient Presentation

• **HPI:** A 41-year-old woman presented to the ED after sudden onset burning left lower abdominal pain radiating to her left leg. She experienced similar but less severe episodes of pain intermittently throughout the past 4 to 6 months.

• **PMH:** obesity, anxiety and depression.

• **PE:** Lower abdominal tenderness without rebound or guarding. Slight tenderness along left flank. Soft non-tender midline pelvic mass palpated.
What Imaging Should We Order?
ACR Appropriateness Criteria for Left Lower Quadrant Pain

This imaging modality was ordered by the ER physician.

<table>
<thead>
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<th>Procedure</th>
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<th>Relative Radiation Level</th>
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<td>CT abdomen and pelvis with IV contrast</td>
<td>Usually Appropriate</td>
<td>🔥🔥🔥🔥</td>
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<tr>
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CT Abdomen and Pelvis with IV Contrast (unlabeled)
Findings: (labeled)

For reference:
- Water: 0 HU
- Fat: -40 - -140 HU
- Air: -1000 HU
- Bone: +1000 HU
- Soft tissue: 40–60 HU
What other Imaging Should We Order?
Ordered by gynecologist to further evaluate mass.

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**American College of Radiology**
**ACR Appropriateness Criteria®**
**Left Lower Quadrant Pain**

**Variant 1:** Left lower quadrant pain. Initial imaging.

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Axial T2 weighted MRI abdomen pelvis with contrast (unlabeled)
Axial T2 weighted MRI abdomen pelvis with contrast (labeled)

The claw sign indicates that a mass originates *from* a structure (as opposed to being located adjacent to a structure).

Difficult to determine which ovary mass arises from, but left ovarian origin is favored due to subtle claw sign.

Heterogenous ovarian mass with elements of fat and soft tissue signal intensity.
Axial T1 weighted FAT SAT MRI abdomen pelvis without contrast (unlabeled)
Axial T1 weighted FAT SAT MRI abdomen pelvis without contrast (labeled)

Low signal intensity on T1 FAT SAT image indicates mass contains fat
Differential Diagnoses

• Mature cystic teratoma
• Germ cell tumor
Gross Images After Excision

Aggregates of light colored hair, and tan-yellow, oily sebaceous material.
Histopathology

H&E Low power (4X)

Ectoderm
- **Skin** (keratinizing squamous epithelium) with adnexa
  - **Sebaceous glands**
  - **Hair**
- **Salivary gland with adipose tissue**
By definition, mature cystic teratomas have **mature tissue from at least two of the three embryonic layers** (ectoderm, mesoderm, endoderm).
Ectoderm

- **Skin** (keratinizing squamous epithelium) with adnexa
  - Sebaceous glands
  - Hair
Final Dx:

Mature Cystic Teratoma
Case Discussion

• Definition
  • Mature cystic teratomas have mature tissue from at least two of the three embryonic layers (ectoderm, mesoderm, endoderm).

• Epidemiology
  • Most common type of all ovarian germ cell tumors.
  • Usually diagnosed in reproductive years.
  • Median age of diagnoses: 35 years of age.
  • Annual incidence: 1.2-14.2 cases per 100,000 people per year.
• **Features**
  - Usually asymptomatic, minority of patients present with vague abdominal pain
  - Slow growing: average rate of 1.8 mm growth per year
  - Benign, but capable of malignant transformation (1% to 2% of cases)
  - Other complications include rupture and torsion

• **Diagnoses**
  - Diagnosed with CT or US
    - Features on CT: ovarian cystic mass with fat and soft tissue attenuation +/- calcifications
    - Features on US: hypoechoic mass with hyperechoic nodule (Rokitansky nodule), calcifications, acoustic shadowing, hyperechoic lines caused by floating hair, fat-fluid level

• **Management**
  - Conservative management for asymptomatic patients with tumors < 6 cm
  - Laparoscopic cystectomy for symptomatic tumors < 5 cm
  - Oophorectomy for tumors ≥ 5-6 cm
References:

