AMSER Case of the Month January 2026

36-year-old female presenting with acute onset left lower quadrant abdominal pain

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Patient Presentation

- HPI:A **36-year-old previously healthy female** presented to the emergency department with **sudden onset severe left lower quadrant abdominal pain** that began approximately 10 hours prior to arrival.
- The pain was described as sharp and constant, associated with **nausea, two episodes of non-bloody emesis, and low-grade fever**.
- She denied dysuria, vaginal bleeding, or prior similar episodes. Her last menstrual period was 4 weeks prior, and she reported irregular cycles.

Patient Presentation

- PMHx: The patient had **no significant past medical or surgical history** and was not taking any medications. She denied any history of ovarian cysts or sexually transmitted infections.
- Vitals: T 37.2°C, HR 97 bpm, RR 18, BP 126/84 mmHg, SpO_2 99% on room air.
- PE: Abdomen was soft but tender to palpation in the left lower quadrant, without rebound or guarding. Pelvic examination demonstrated **left adnexal tenderness** without cervical motion tenderness or palpable mass.

Pertinent Labs

- CBC:
  - WBC: 5.97 x10(3)/uL
  - Hemoglobin: 13.4 g/dL
  - Neutrophils: 3.96 x10(3)/uL
  - Lymphocytes: 1.24 x10(3)/uL
  - Platelets: 262 x10(3)/uL
- BMP/CMP:
  - BUN: 9 mg/dL
  - Creatinine: 0.79 mg/dL
  - Sodium: 139 mmol/L
  - Chloride: 105 mmol/L
  - Glucose: 94 mg/dL
  - AG: 11 mmol/L
  - CO2: 22 mmol/L
- Beta-Human Chorionic Gonadotropin Quant:
  - Beta-HCG: <0.2 mIU/mL
- Urinalysis:
  - UA: unremarkable

What Imaging Should We Order?

Select the applicable ACR Appropriateness Criteria

Clinically Suspected Adnexal Mass, No Acute Symptoms

Variant 1: **Adult patient assigned female at birth. Clinically suspected adnexal mass, no acute symptoms. Premenopausal or postmenopausal. Initial imaging.**

Procedure	Appropriateness Category	Relative Radiation Level
US duplex Doppler pelvis	Usually Appropriate	O
US pelvis transabdominal	Usually Appropriate	O
US pelvis transabdominal and US pelvis transvaginal	Usually Appropriate	O
US pelvis transvaginal	Usually Appropriate	O
MRI pelvis without and with IV contrast	May Be Appropriate	O
MRI pelvis without IV contrast	May Be Appropriate	O
CT pelvis with IV contrast	Usually Not Appropriate	☢☢☢
CT pelvis without IV contrast	Usually Not Appropriate	☢☢☢
CT pelvis without and with IV contrast	Usually Not Appropriate	☢☢☢☢
FDG-PET/CT skull base to mid-thigh	Usually Not Appropriate	☢☢☢☢

This imaging modality was ordered by the ER physician

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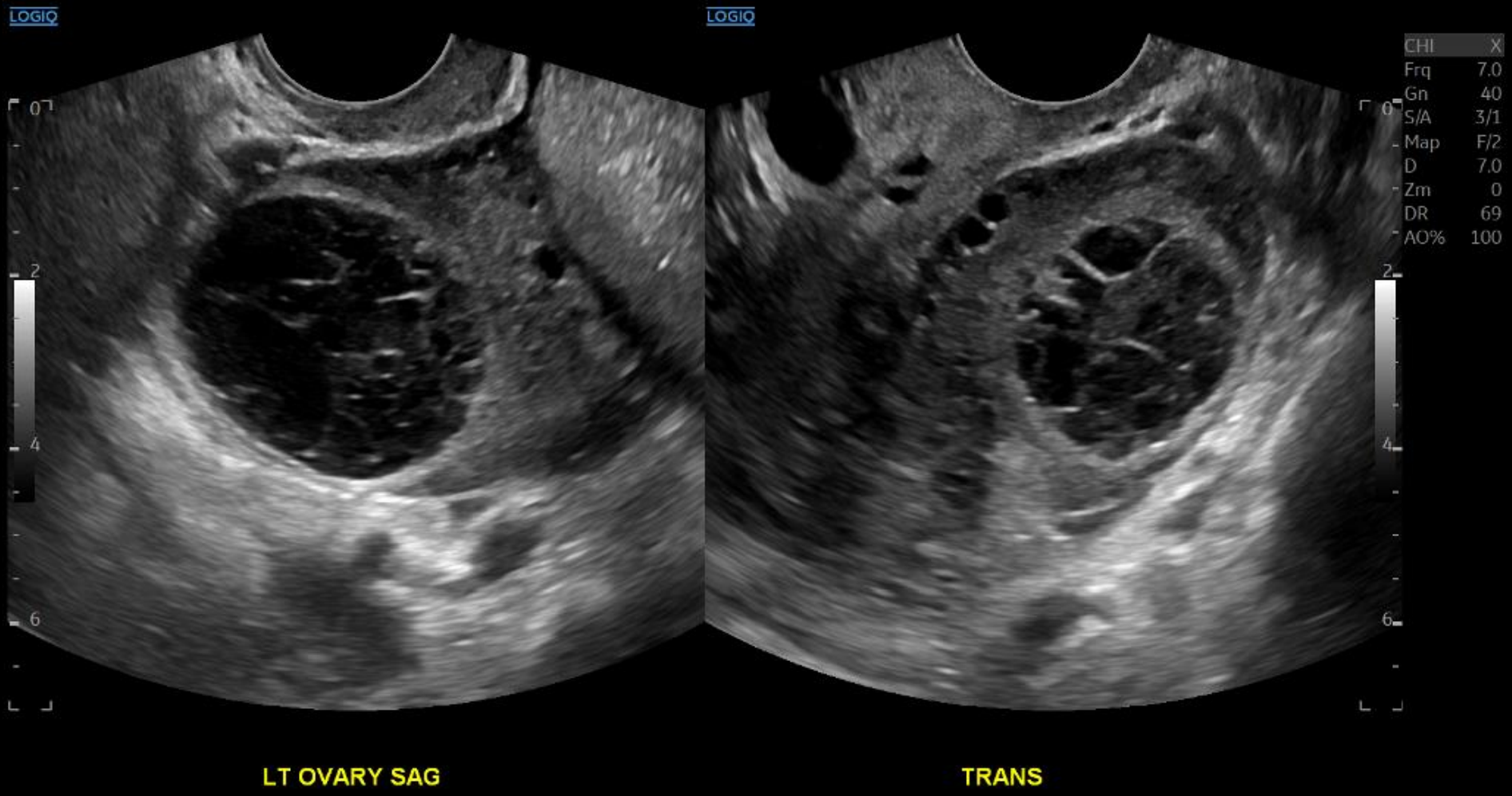
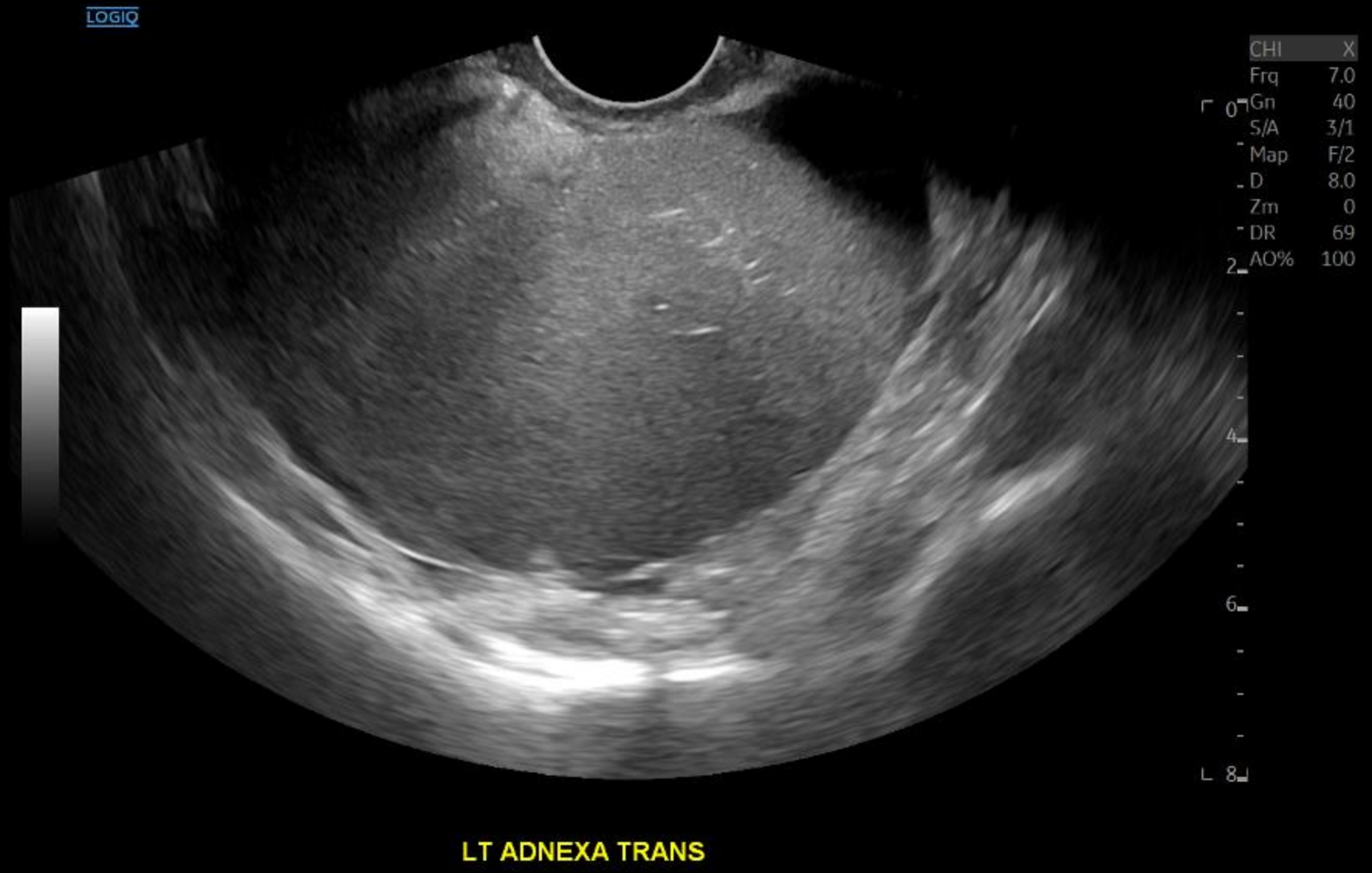
Findings (unlabeled)



Volume: 51 mL. Preserved arterial and venous Doppler flow.

Findings (unlabeled)



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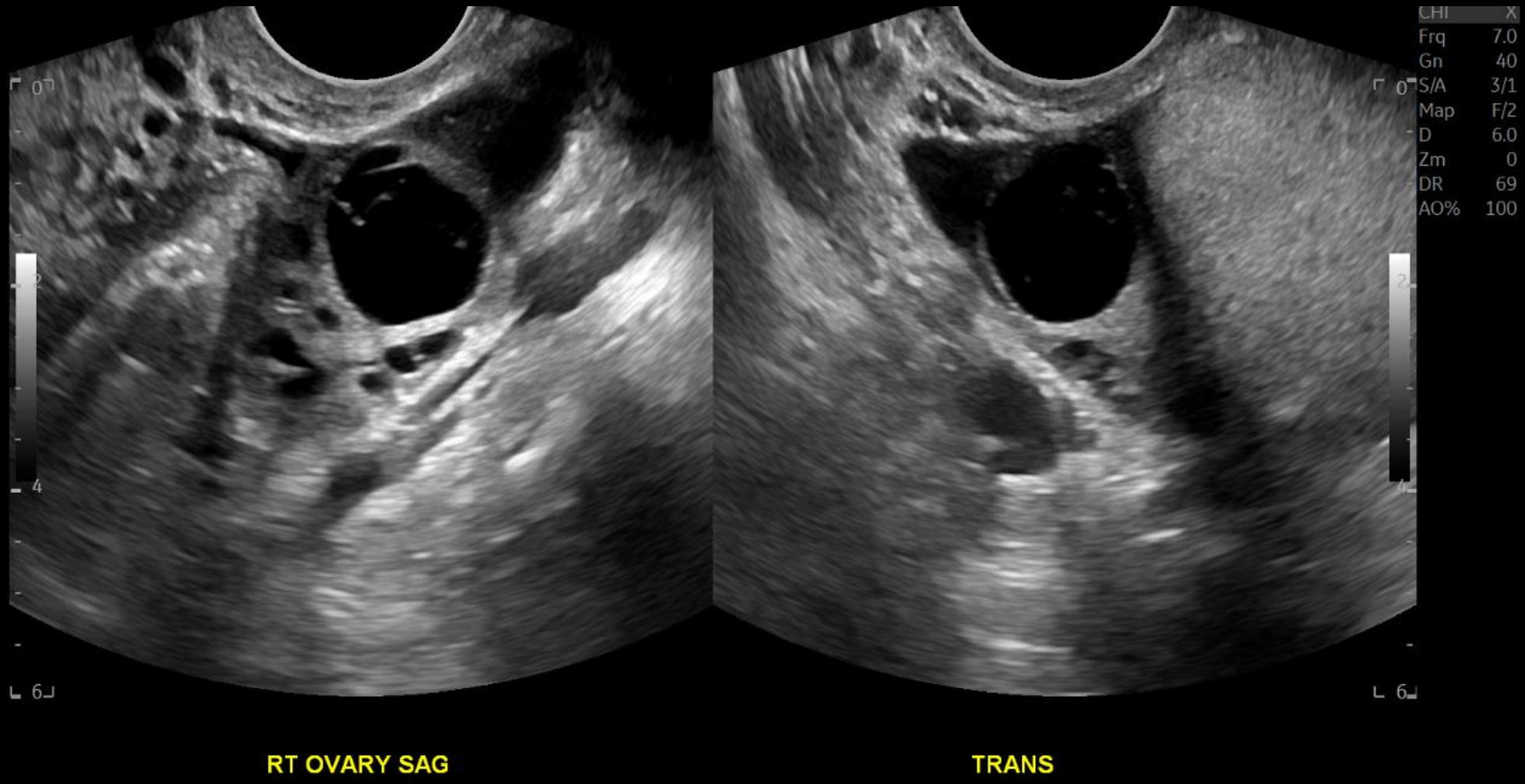
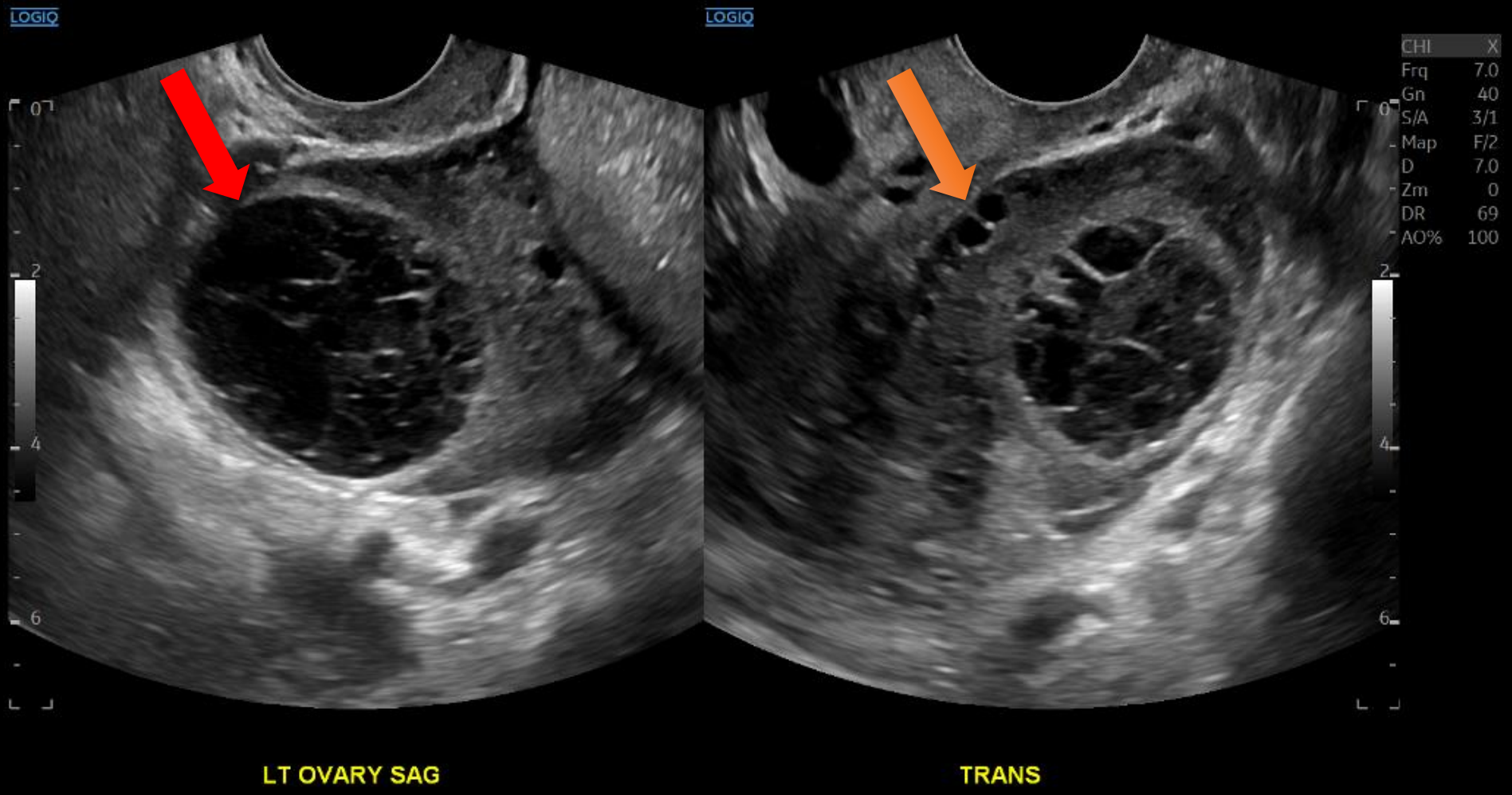
Findings (unlabeled)



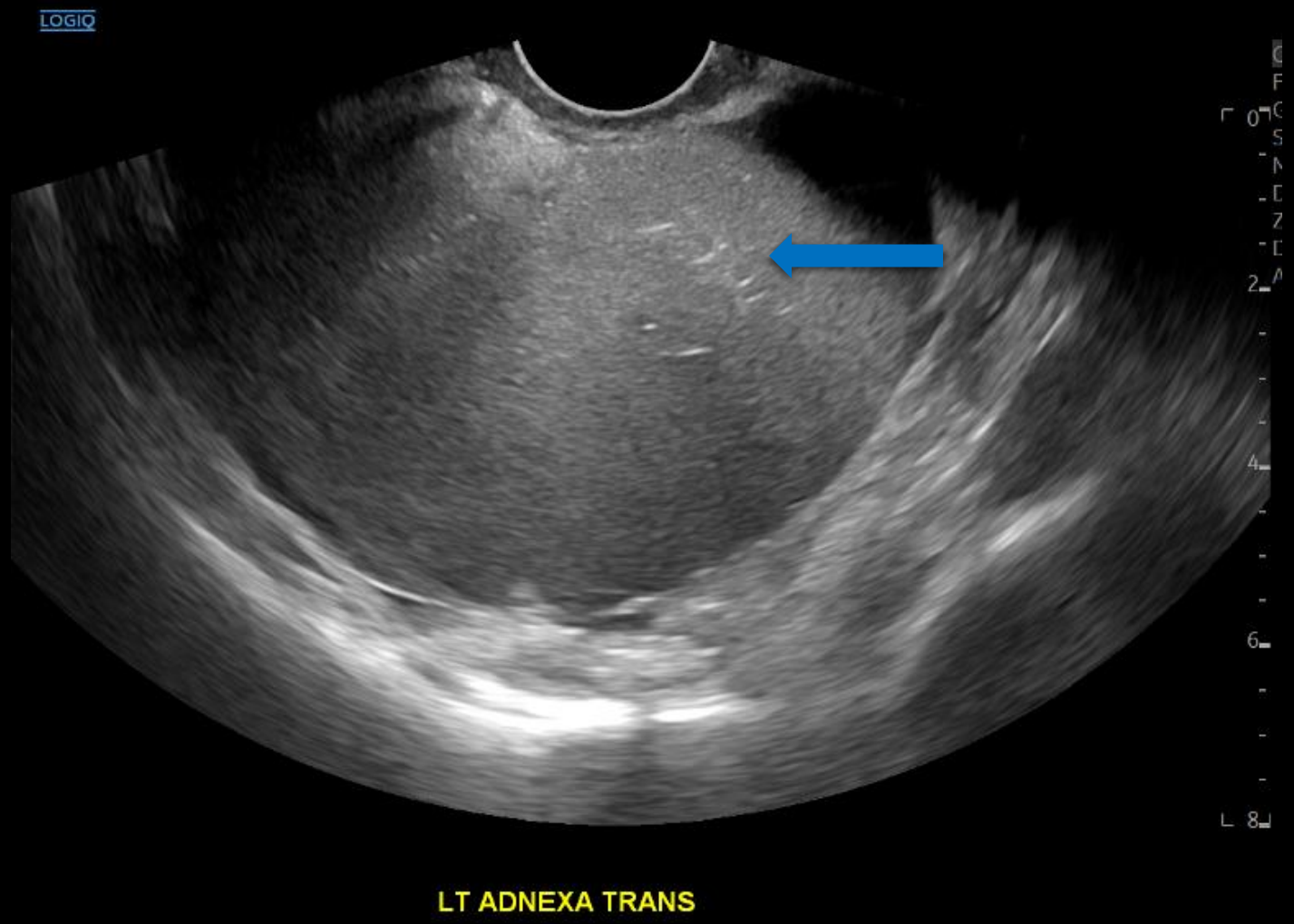
Volume: 8.3 mL. Preserved arterial and venous Doppler flow.

Findings: (labeled)



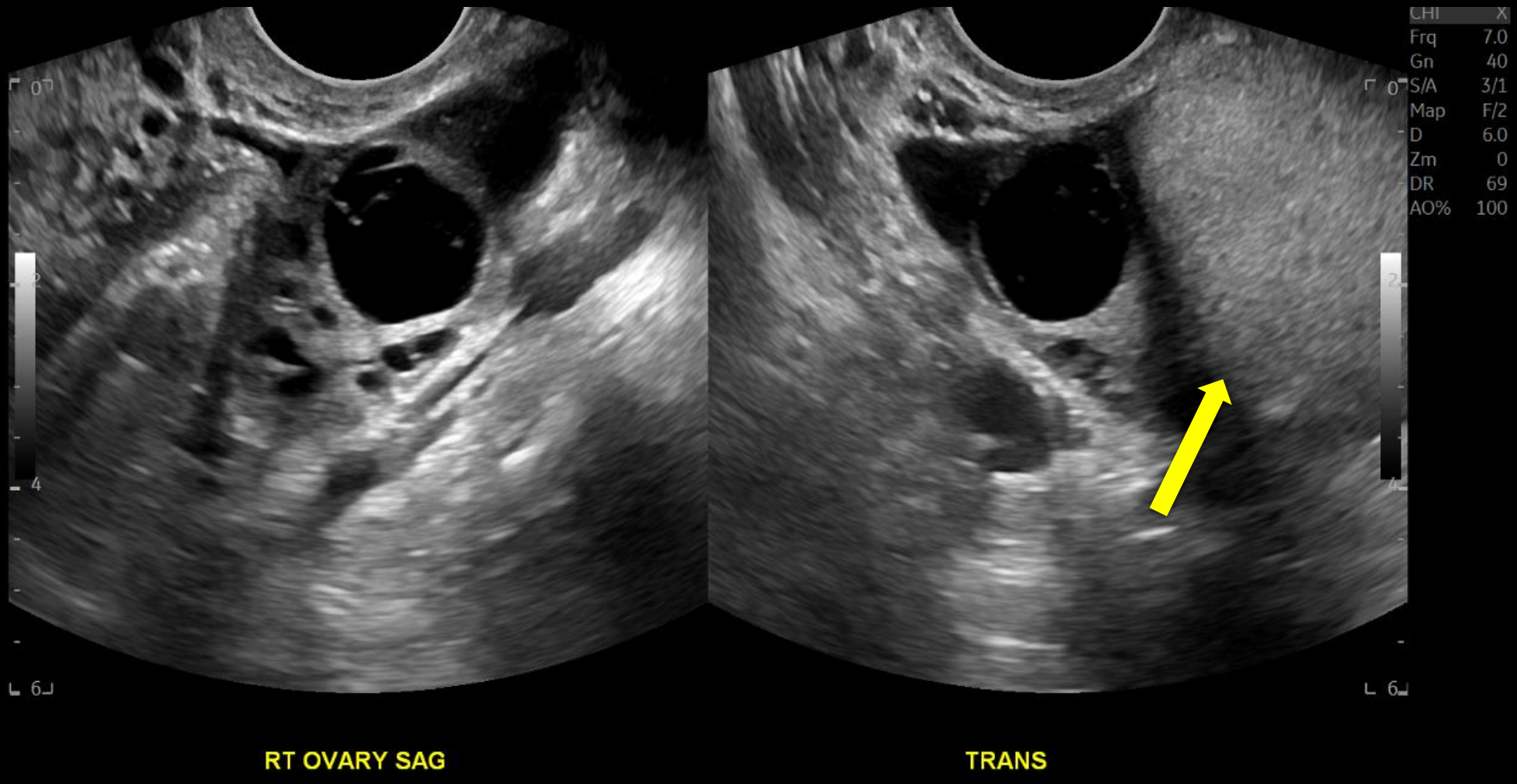
Left ovary: Enlarged and edematous, measuring 5.7 x 4.3 x 4.0 cm, 51mL, with peripheralized follicles (orange arrow) but preserved venous and arterial Doppler flow. A hemorrhagic cyst is present (red arrow) measuring up to 3.6cm.

Findings: (labeled)



Adnexa: An 8.5 x 5.5 x 8.0 cm homogenous isoechoic mass with scattered echogenic bands (blue arrow), appeared to be predominantly within the left adnexa, but extending across midline to the right adnexa, suspicious for dermoid cyst.

Findings: (labeled)



Right ovary: Non-enlarged with normal flow, measuring 3.3 x 2.4 x 2.0 cm, 8.3mL. Adjacent large adnexal mass (yellow arrow).

Differential Diagnosis

- Ovarian torsion: most concerning diagnosis, supported by clinical symptoms, ovarian appearance and two possible lead points for torsion.
- Ruptured hemorrhagic cyst: possible but less likely given the peripheralized follicles and lack of significant free fluid.
- Pelvic inflammatory disease or tubo-ovarian abscess: considered but ovarian appearance and lack of fever/leukocytosis made this diagnosis less likely.
- Ectopic pregnancy: excluded with negative β-hCG.

Ultimately, the most concerning and unifying diagnosis was left ovarian torsion secondary to adnexal mass or left hemorrhagic cyst.

Final Dx:

Left ovarian torsion from a **right** dermoid cyst (mature cystic teratoma)

Case Discussion: Clinical Management

- The patient was taken emergently to the operating room for diagnostic laparoscopy. Intraoperatively, the 8cm left adnexal mass was identified as arising from the right ovary, crossing midline and adhering to the torsed left ovary as well as left pelvic sidewall.
- The adhesions were lysed, and the left ovary was untorsed easily and was noted to be viable. The 3.6cm left ovarian hemorrhagic cyst was drained intra-operatively.
- A right ovarian cystectomy was performed to remove the dermoid cyst. The patient tolerated the procedure well and was discharged the same day.

Case Discussion: Pathophysiology

- Dermoid cysts, or mature cystic teratomas, are the most common benign ovarian neoplasms in adolescents and young women. They contain elements from multiple germ cell layers, leading to their characteristic heterogeneous imaging appearance.
- Ovarian torsion typically occurs ipsilateral to the adnexal mass; contralateral torsion is extremely rare. The proposed mechanism in this case is adhesions formed from the right dermoid cyst to the left ovary (found on surgery) acting as a lead point and causing the left ovary to twist. The left ovary hemorrhagic cyst could also have contributed.
- Torsion initially impedes venous return, leading to ovarian enlargement and edema, followed by arterial compromise and eventual infarction if untreated.

Case Discussion: Radiologic Features

- Dermoid cyst: Appearance is variable, with sonographic features including:
- Predominately homogenous isoechoic echogenic mass
- Heterogenous mass with echogenic interface the obscures deeper structures: "tip of the iceberg sign"
- Echogenic, shadowing calcific or dental components
- Fluid-fluid levels indicating presence of fat, sometimes with floating internal structures: "floating ball sign / Pokeball sign"
- Multiple thin echogenic bands caused by hair: "dot-dash pattern", present in our case
- CT/MRI can confirm presence of fat

Case Discussion: Radiologic Features

- Ovarian torsion: Imaging features include ovarian enlargement, peripheralization of follicles, follicular ring sign, heterogeneous stroma due to edema, absent or diminished Doppler flow, and the pathognomonic “whirlpool sign” of the twisted pedicle.
- Key teaching points:
  - Even when a clear mass is seen on one ovary, careful evaluation of the contralateral ovary is essential, as pathology can occur bilaterally or in unexpected patterns.
  - Preservation of ovarian flow does not exclude ovarian torsion

References:

1. American College of Radiology. ACR Appropriateness Criteria® Clinically Suspected Adnexal Mass, No Acute Symptoms. Revised 2023. Accessed September 26, 2025. https://acsearch.acr.org/docs/69466/narrative/
2. Dawood MT, Naik M, Bharwani N, Sudderuddin SA, Rockall AG, Stewart VR. Adnexal torsion: review of radiologic appearances. Radiographics. 2021;41(2):609–624.
3. Srisajjakul S, Prapaisilp P, Bangchokdee S. Imaging features of unusual lesions and complications associated with ovarian mature cystic teratoma. Clinical Imaging. 2019;57:115–123.
4. Özkan S, Üçerler H, Akman K, et al. Mature cystic teratoma of the ovary: a cutting-edge overview on imaging features. Insights into Imaging. 2017;8:227–241.