

AMSER Rad Path Case of the Month:

Bloating and Weight Gain

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Patient Presentation

Clinical history:

- 62 year old female patient presents with 2-week progressive abdominal distention with decreased appetite, early satiety, and occasional post-prandial N/V (previously attributed to GERD). Baseline QOD stools now intermittent diarrhea; last Bowel movement (soft/formed) yesterday; flatus intact. ~20-lb weight gain. Denies pelvic pain, vaginal bleeding/discharge, dysuria, hematuria, chest pain, dyspnea, or fatigue. Functional status unchanged (walks a block, climbs one flight). New pruritic bilateral-ankle rash after wearing new socks. No PCP/OB-GYN visit ×8 yrs.

Pertinent social history:

- Alcohol – 3 beers per week

Pertinent physical exam findings:

- Abdomen: Severely distended and tense. No tenderness to palpation, rebound or guarding. Hypoactive bowel sounds.
- Pelvis: No bimanual exam, right adnexal fullness palpated without discrete mass.

Pertinent Labs

- CEA – 125: 1940 U/mL (normal: 0-35 U/mL)
- CEA - <1.8 ng/mL (normal <2.5 ng/mL)

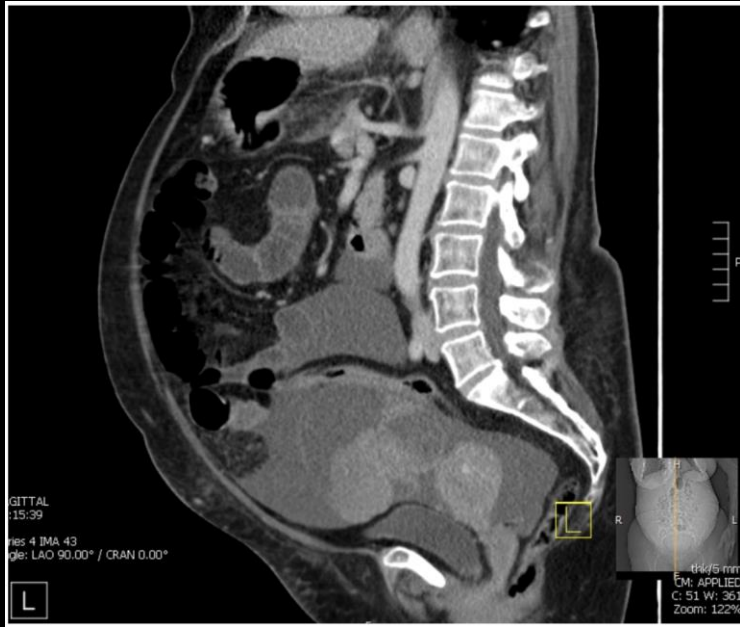
What Imaging to Order?

**American College of Radiology
ACR Appropriateness Criteria®
Acute Nonlocalized Abdominal Pain**

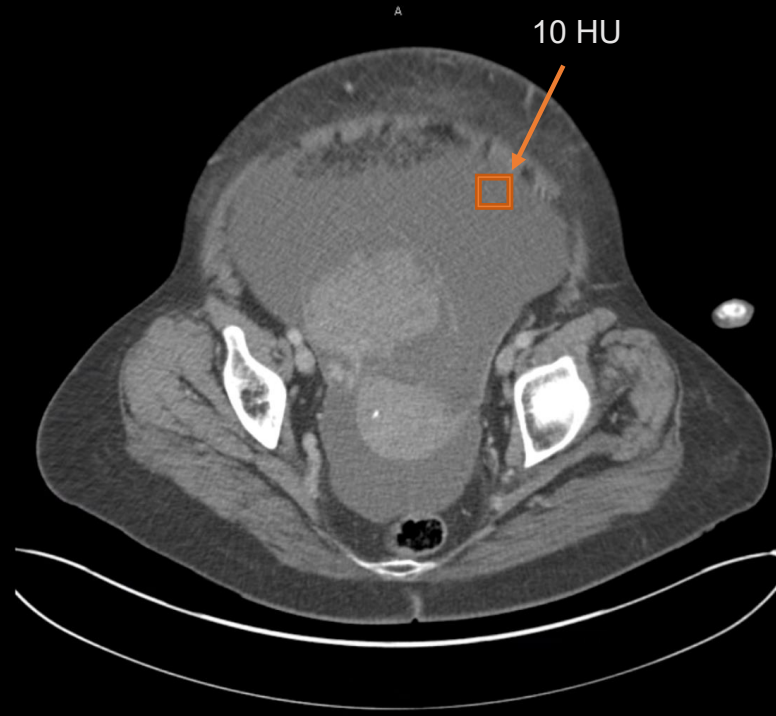
Variant 1: Acute nonlocalized abdominal pain and fever. No recent surgery. Initial imaging.

Procedure	Appropriateness Category	Relative Radiation Level
CT abdomen and pelvis with IV contrast	Usually Appropriate	⊕⊕⊕
MRI abdomen and pelvis without and with IV contrast	May Be Appropriate	○
US abdomen	May Be Appropriate	○
CT abdomen and pelvis without IV contrast	May Be Appropriate	⊕⊕⊕
MRI abdomen and pelvis without IV contrast	May Be Appropriate	○
CT abdomen and pelvis without and with IV contrast	May Be Appropriate	⊕⊕⊕⊕
Radiography abdomen	May Be Appropriate	⊕⊕
FDG-PET/CT skull base to mid-thigh	Usually Not Appropriate	⊕⊕⊕⊕
WBC scan abdomen and pelvis	Usually Not Appropriate	⊕⊕⊕⊕
Nuclear medicine scan gallbladder	Usually Not Appropriate	⊕⊕
Fluoroscopy contrast enema	Usually Not Appropriate	⊕⊕⊕
Fluoroscopy upper GI series with small bowel follow-through	Usually Not Appropriate	⊕⊕⊕

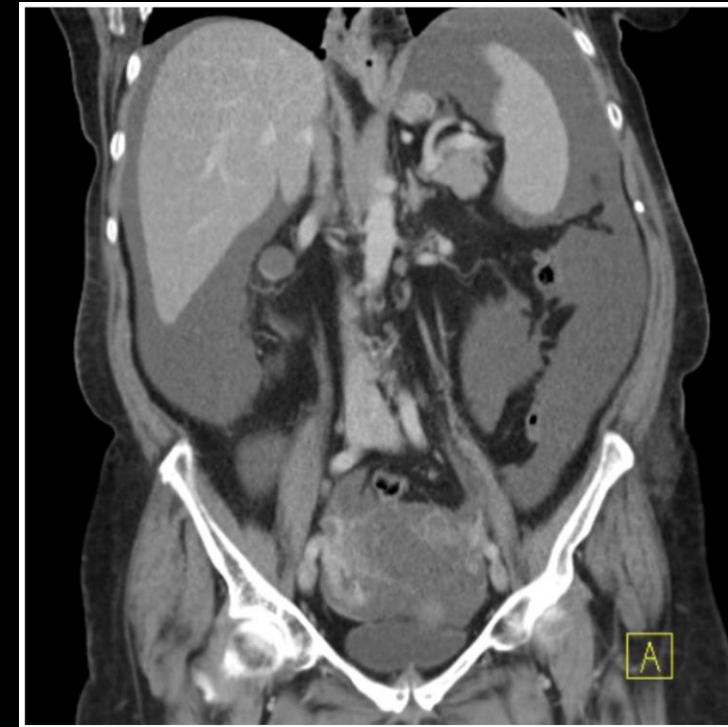
Radiology Images (not labeled)



Sagittal

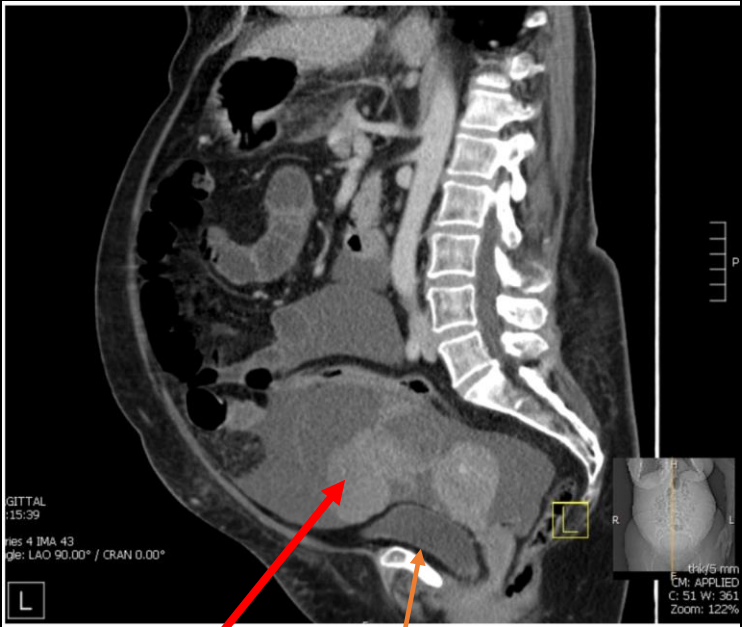


Axial



Coronal

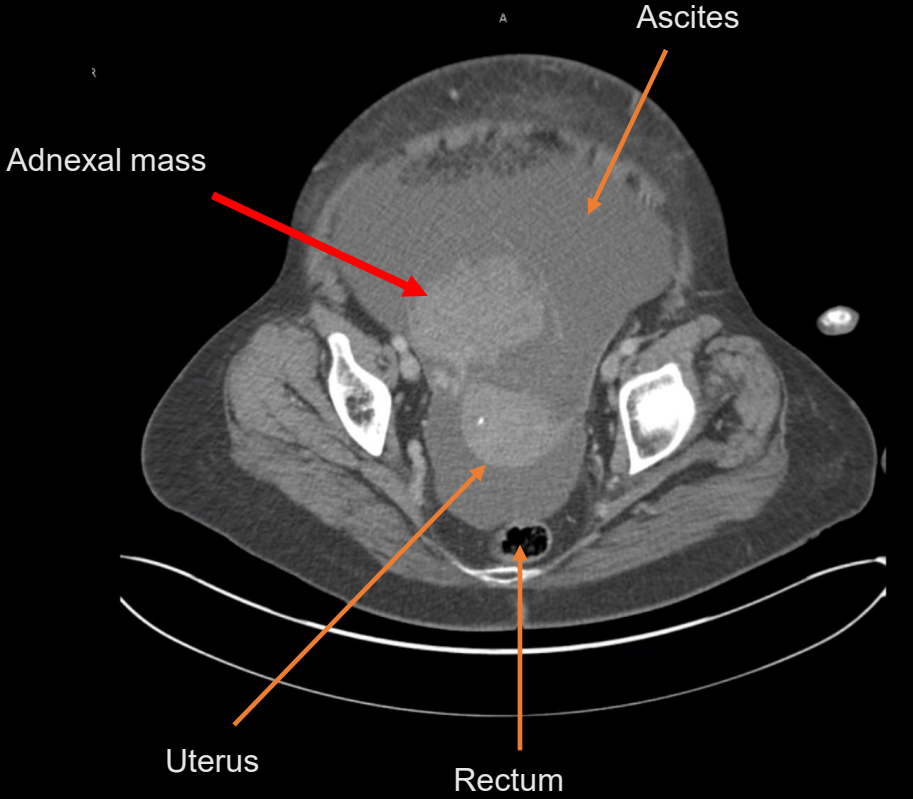
Radiology Images (labeled)



Adnexal mass

Bladder

Sagittal



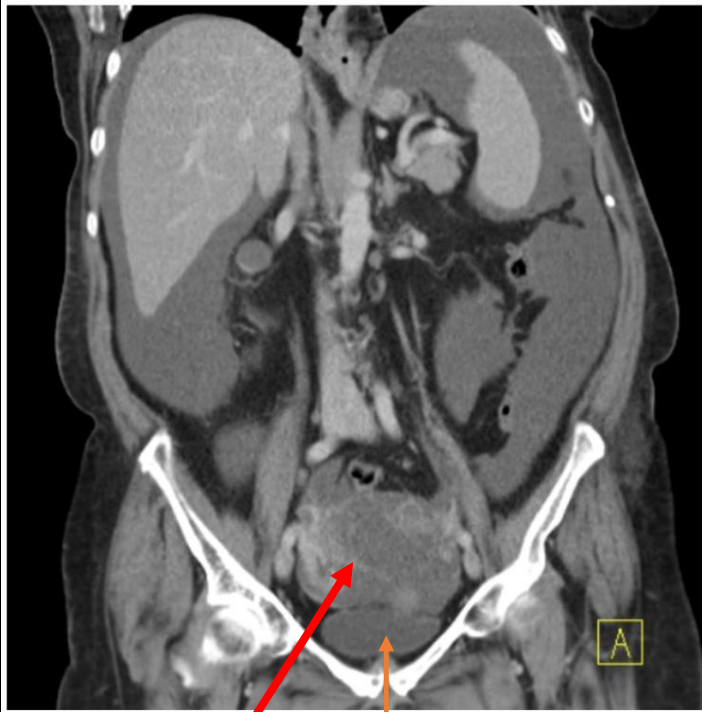
Adnexal mass

Ascites

Uterus

Rectum

Axial



Adnexal mass

Bladder

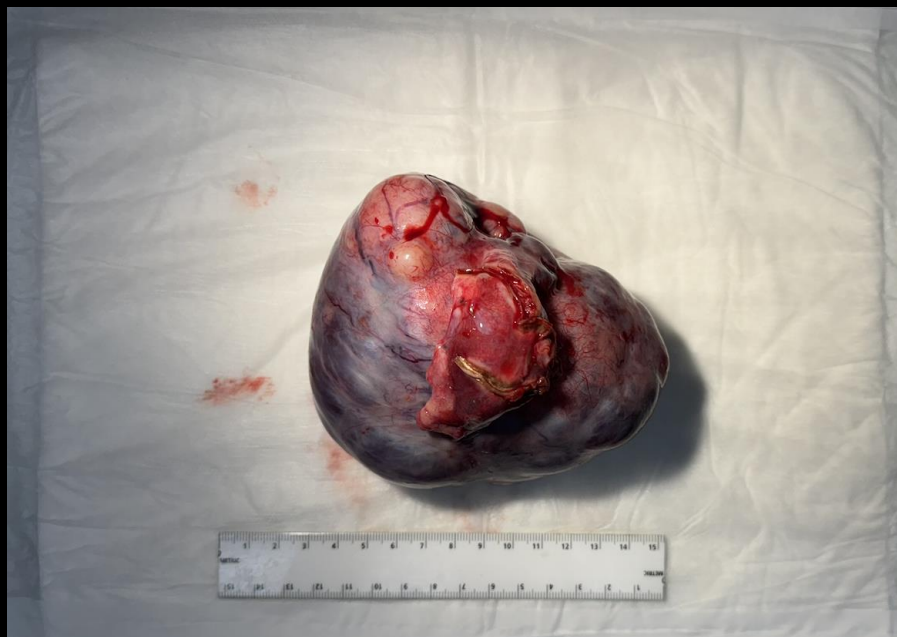
Coronal

DDX (based on imaging)

- Ovarian Malignancy
 - Ovarian Serous Cystadenocarcinoma
 - Granulosa-theca cell tumor
 - Sertoli-Leydig cell tumor
- Cystic Teratoma
- Extrauterine Fibroid
- Metastasis

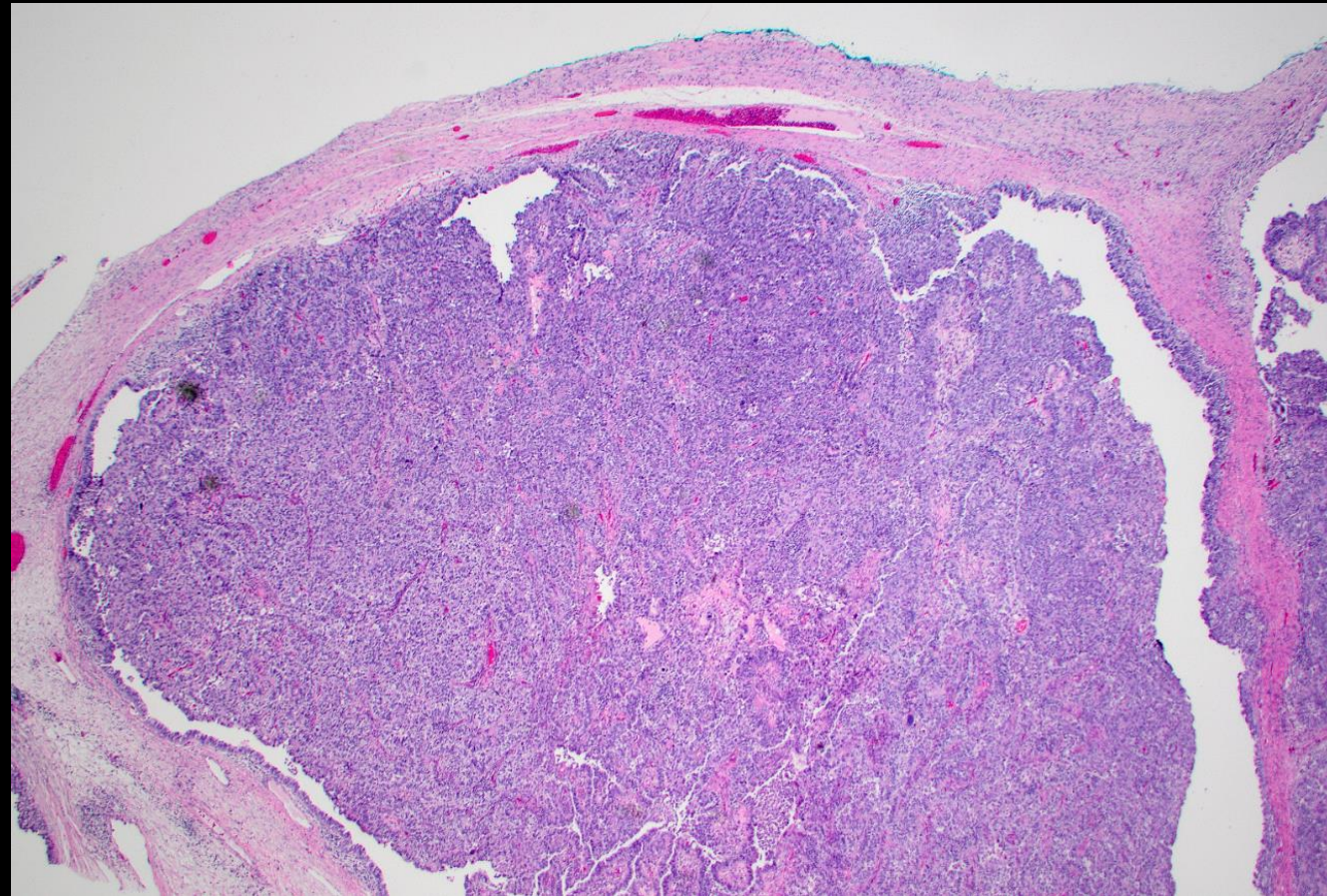
- Patient was taken for laparoscopy

Gross Path (labeled)



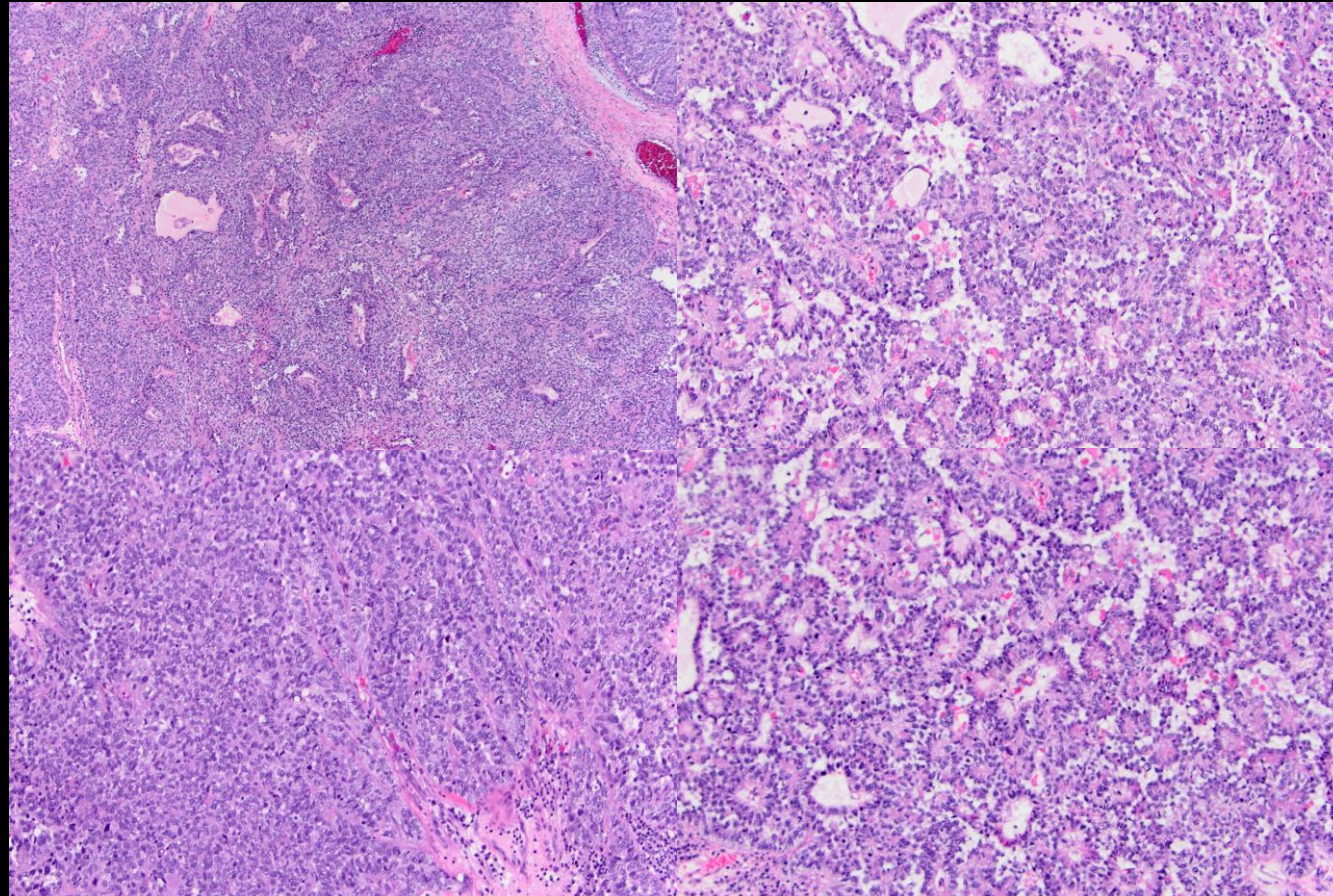
Gross description: The ovary (10.6 x 8.6 x 7.5 cm) displays a tan to purple, smooth to nodular, intact outer surface. Sectioning reveals tan, solid to focally cystic cut surfaces

Micro Path (labeled)



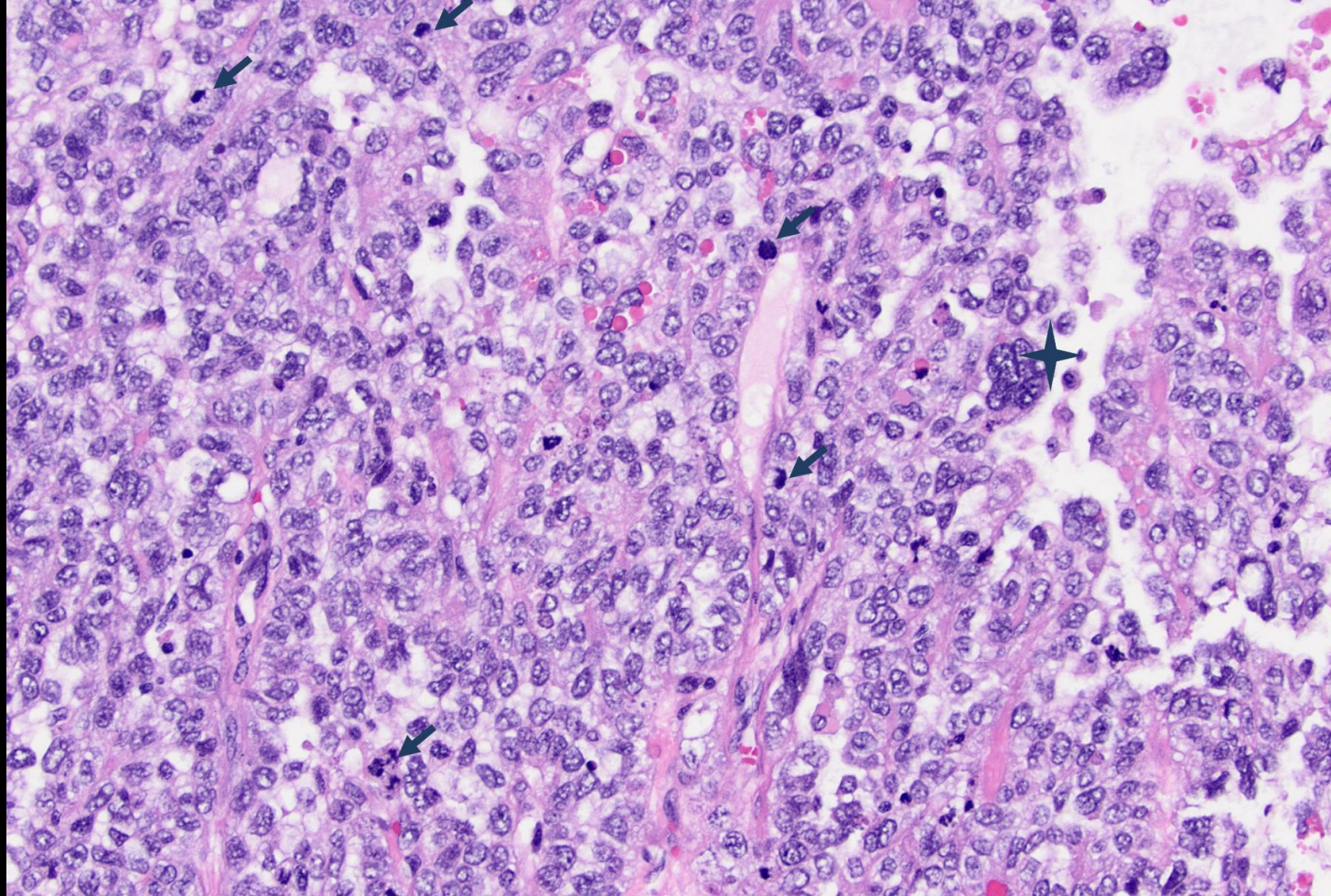
Gross description: Low magnified slide shows diffuse tumor infiltration

Micro Path (labeled)



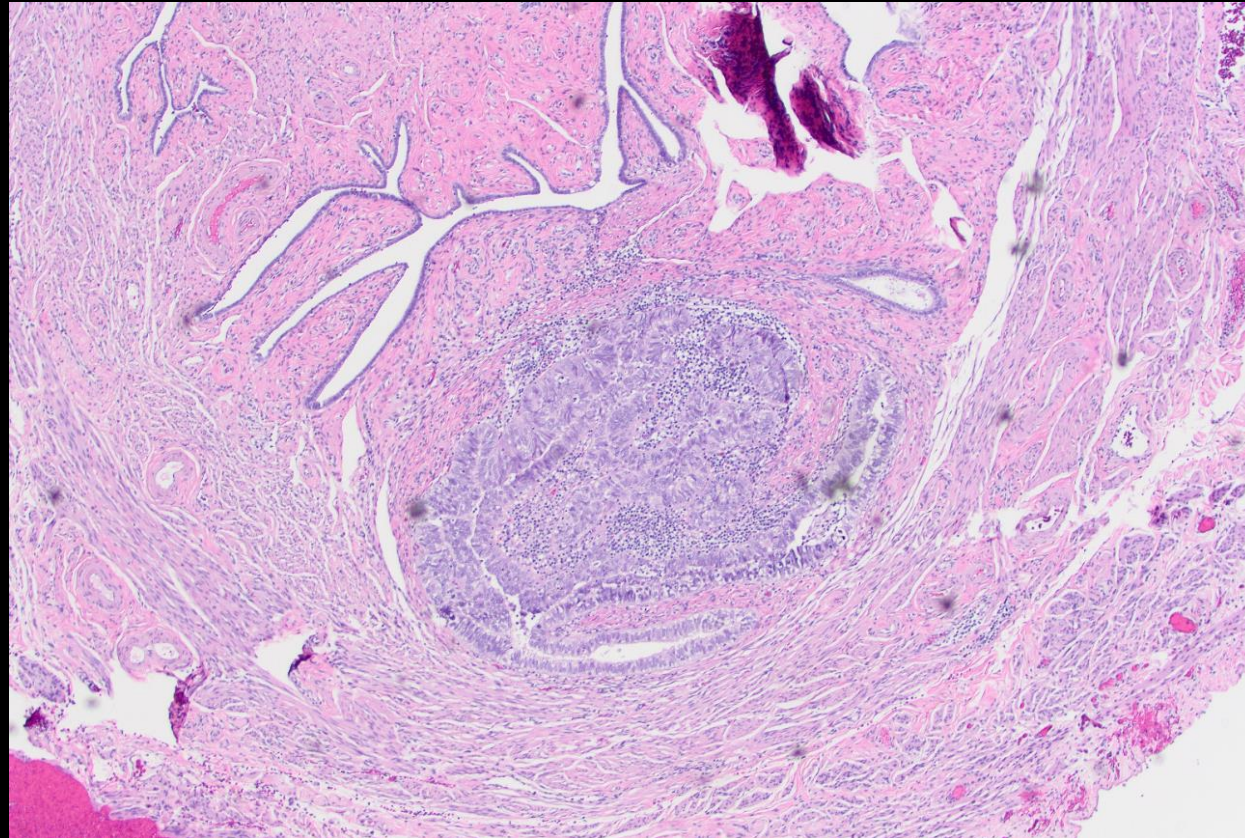
Microscopic description: Tumor shows solid growth pattern (left panel) and papillary pattern (right panel)

Micro Path (labeled)



Tumor cells show malignant features (large nuclei with open chromatin, multinucleated giant cells, many mitotic figures etc.).

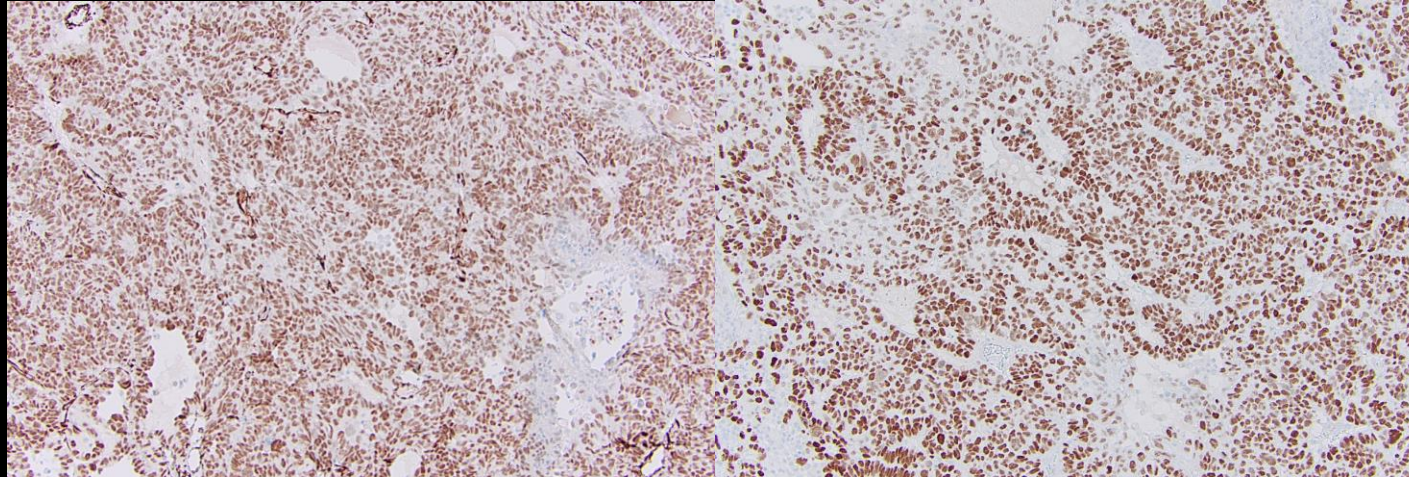
Micro Path (labeled)



Fallopian tube involved by tumor

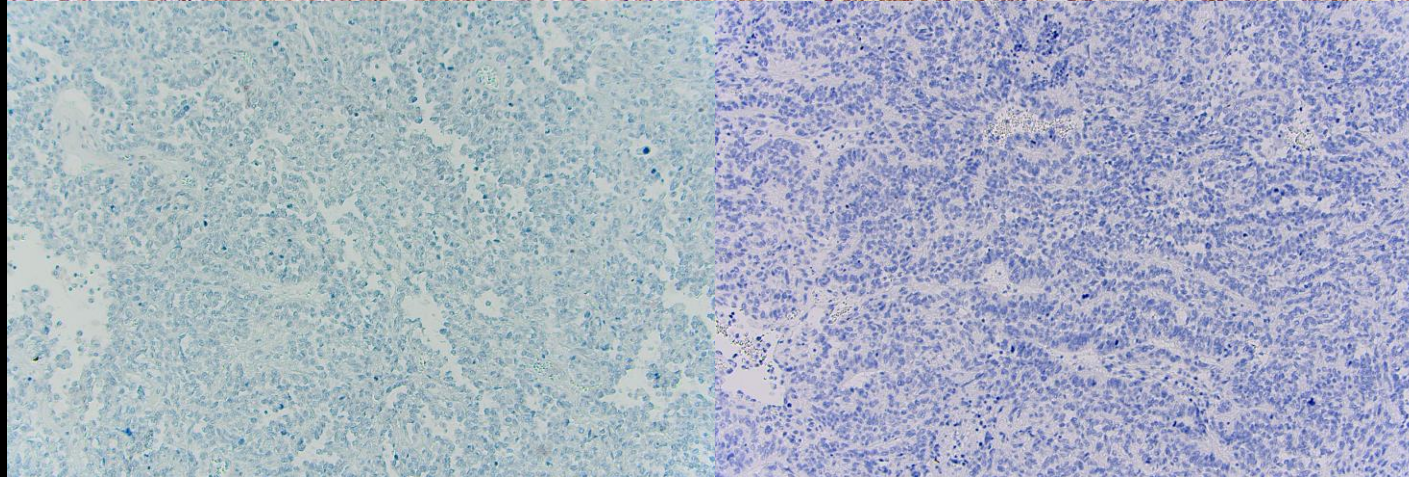
Micro Path (labeled)

WT1



p53

ER



Napsin A

Immunohistochemistry – Positive (WT1/p53); negative (ER, Napsin A)

Final Dx:

High Grade Ovarian Serous Cystadenocarcinoma

Case Discussion

Background:

- Surface epithelial tumor (70% of all ovarian carcinoma) are derived from coelomic epithelium that lines the ovary; this epithelium embryologically gives rise to the epithelial lining of the fallopian tube (serous cells), endometrium and endocervix (mucinous cells)
- **Ovarian serous cystadenocarcinoma** is the malignant form of ovarian serous tumor, the most common type of ovarian epithelial tumor. It is the most common type of ovarian malignancy.

Presentation:

- Bloating, abdominal pain, constipation, and urinary abnormalities

Case Discussion

Radiological Features:

Typical imaging appearance of ovarian cystadenocarcinoma

- **Cystic adnexal mass** with a substantial solid component
- **Often bilateral** involvement
- **Calcification uncommon** ($\approx 12\%$), but possible and also seen in other ovarian tumors

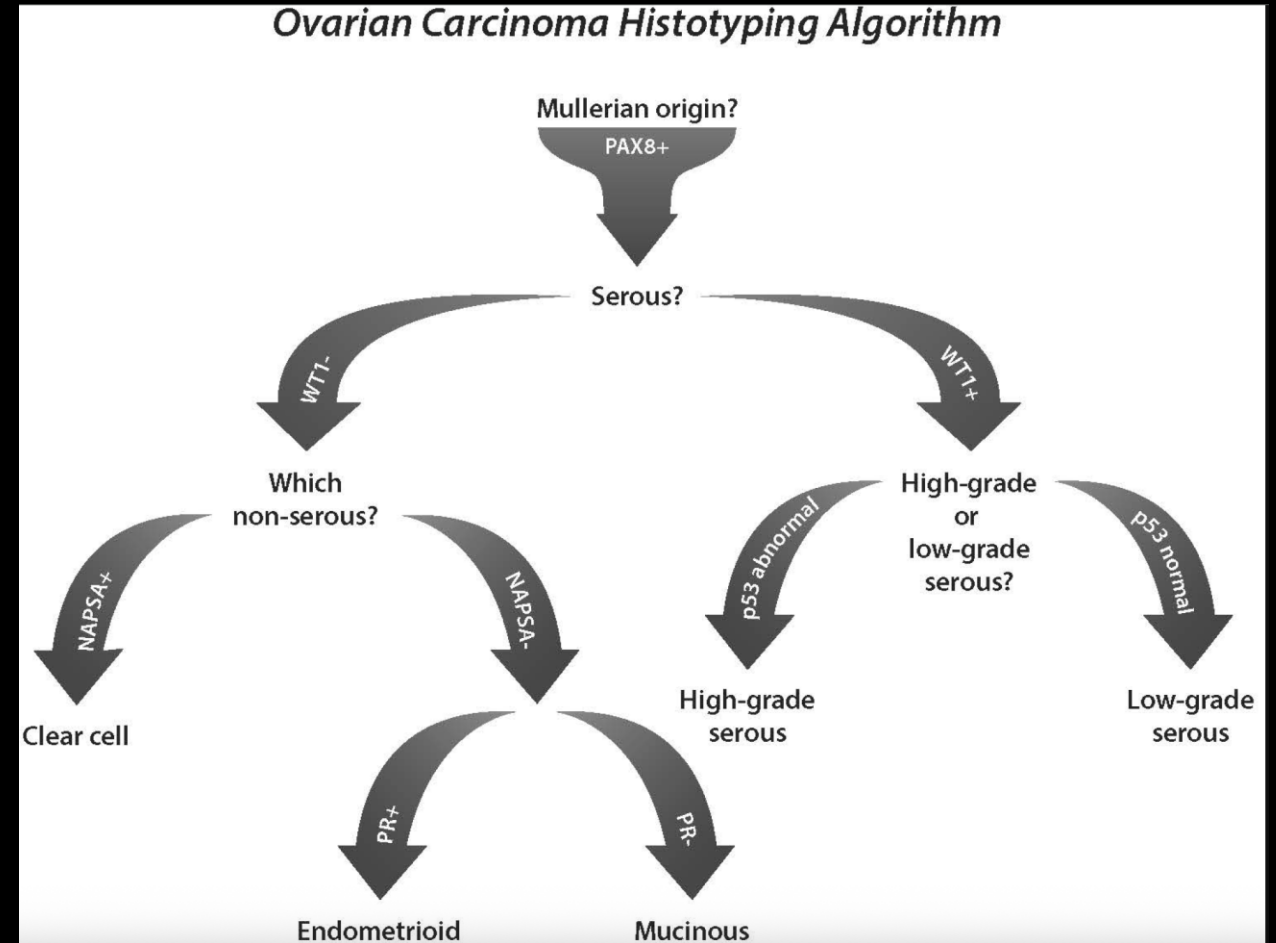
Imaging clues to extra-ovarian metastasis

- **Large-volume ascites**
- **Calcified peritoneal or omental nodules**
- **Lymphadenopathy** (pelvic, para-aortic, or distant nodes)

Case Discussion

Histological Features:

- The unique combination of **WT1 +/p53 +/Napsin A –** narrows the differential to serous carcinoma; adding p53 aberrancy points toward the *high-grade* form. ER negativity is not typical but is reported in a subset of HGSC and does not override the WT1/p53 signature.



Staging

FIGO stage

- IIIC
 - Macroscopic peritoneal metastasis beyond the pelvis - more than 2 cm in greatest dimension with or without metastasis to the retroperitoneal lymph nodes (includes extension of tumor to capsule of liver and spleen without parenchymal involvement of either organ)

Primary Tumor (T)

- cT3c

Regional Lymph Nodes

- cN0
 - No regional lymph node metastasis

Distant Metastasis (M)

- cM0
 - No distant metastasis

Case Discussion

Management:

- Debulking surgery
- Hysterectomy with salpingo-oophorectomy
- Chemotherapy and radiation
- Targeted hormone and immunotherapy

References:

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4. Casey L, McCluggage WG, Carroll JD, et al. *A comparison of p53 and WT1 immunohistochemical expression patterns in tubo-ovarian high-grade serous carcinoma before and after neoadjuvant chemotherapy*. **Histopathology**. 2017;71(5):736-742. doi:10.1111/his.13272
5. Li J, Park E, Park S-Y, et al. *p53 Immunohistochemistry and mutation types mismatching in high-grade serous ovarian carcinoma*. **Diagnostics (Basel)**. 2022;12(3):579. doi:10.3390/diagnostics12030579
6. Köbel M, Hoang LN, Tessier-Cloutier B, et al. *Development and validation of a digital four-marker immunohistochemical classifier for ovarian carcinoma histotyping*. **Histopathology**. 2020;76(6):922–935. doi:10.1111/his.14083
— *Four-marker panel (WT1/p53/Napsin A/PR) differentiates histotypes; HGSC is WT1+/p53+, Napsin A–*.
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