

# AMSER Case of the Month:

58 y.o. Female with Persistent Hip Pain

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# Patient Presentation

- 58 y.o. female with PMHx of uterine fibroids, elevated CA-125, and FMHx of maternal breast CA, presents in 10/2020 with 6 months of chronic left lateral hip pain and no other symptoms
- Radiographs largely negative other than mild joint space narrowing

# ACR Appropriateness Criteria: Chronic Hip Pain with Equivocal Radiographs

**Variant 2:**

Chronic hip pain. Radiographs negative, equivocal, or nondiagnostic. Suspect extra-articular noninfectious soft-tissue abnormality, such as tendonitis.

Radiologic Procedure	Rating	Comments	RRL*
MRI hip without IV contrast	9		0
US hip	7		
Image-guided anesthetic +/- corticosteroid injection hip joint or surrounding structures	5		
MRI hip without and with IV contrast	3		
MR arthrography hip	2		0
CT hip without IV contrast	1		☼☼☼
CT hip with IV contrast	1		☼☼☼
CT hip without and with IV contrast	1		☼☼☼
CT arthrography hip	1		☼☼☼
Bone scan hip	1		☼☼☼
F-18 fluoride PET hip	1		☼☼☼

Demonstrated degenerative changes, labral tear, and some iliac edema

**Rating Scale:** 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate

\*Relative Radiation Level

# Patient Presentation

- Follow up bone scan 2/2021 to assess for stress reaction was negative
- Pain continues despite sacroiliac joint and greater trochanteric bursa injections
- Repeat MRI Hip 4/5/21 at outside hospital demonstrated the following:
  - Lesion of the right superior pubic ramus with ill-defined soft tissue mass adjacent (new since prior exam)
  - Left adnexal mass with congruence to myometrium
  - Patient referred to University of Chicago Gyn/Onc for further evaluation of suspected malignancy

# ACR Appropriateness Criteria: Indeterminate Adnexal Mass

**Variant 6:**

**Adnexal mass, indeterminate, no acute symptoms. Postmenopausal. Initial follow-up.**

Procedure	Appropriateness Category	Relative Radiation Level
US pelvis transvaginal	Usually Appropriate	0
US duplex Doppler pelvis	Usually Appropriate	0
US pelvis transabdominal	Usually Appropriate	0
MRI pelvis without and with IV contrast	Usually Appropriate	0
MRI pelvis without IV contrast	May Be Appropriate	0
CT pelvis without and with IV contrast	May Be Appropriate (Disagreement)	0
CT pelvis with IV contrast	Usually Not Appropriate	☼☼☼
CT pelvis without IV contrast	Usually Not Appropriate	☼☼☼
FDG-PET/CT skull base to mid-thigh	Usually Not Appropriate	☼☼☼☼

Demonstrated adhesions and fluid within endometrial canal, adenomyosis, normal ovaries

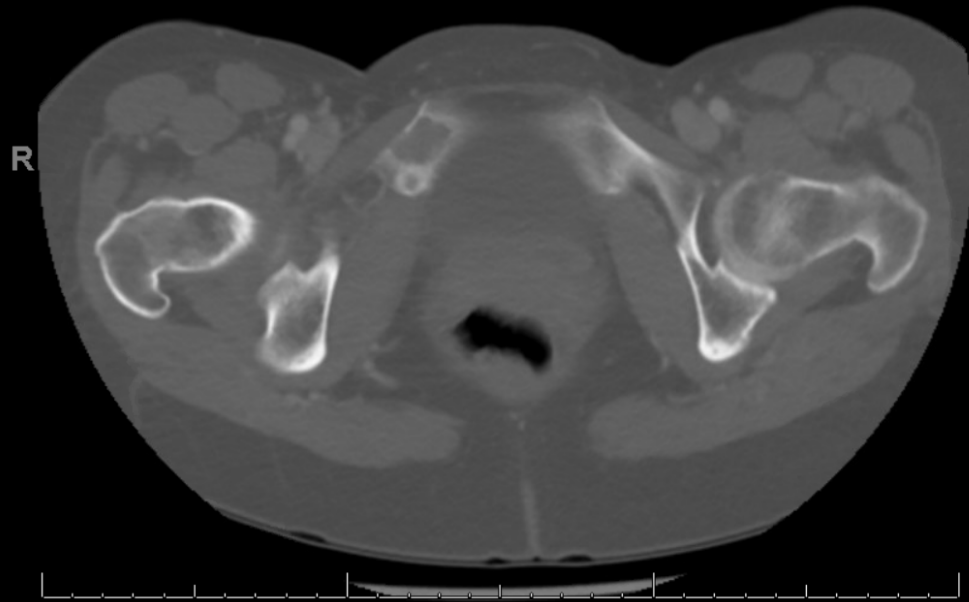
# ACR Appropriateness Criteria: Musculoskeletal Tumor

- Additional imaging was required given primary tumor, as well as other possible locations of metastases, were unknown

**Variant 2:** Malignant or aggressive primary musculoskeletal tumor. Initial staging. Evaluation for extrapulmonary metastasis.

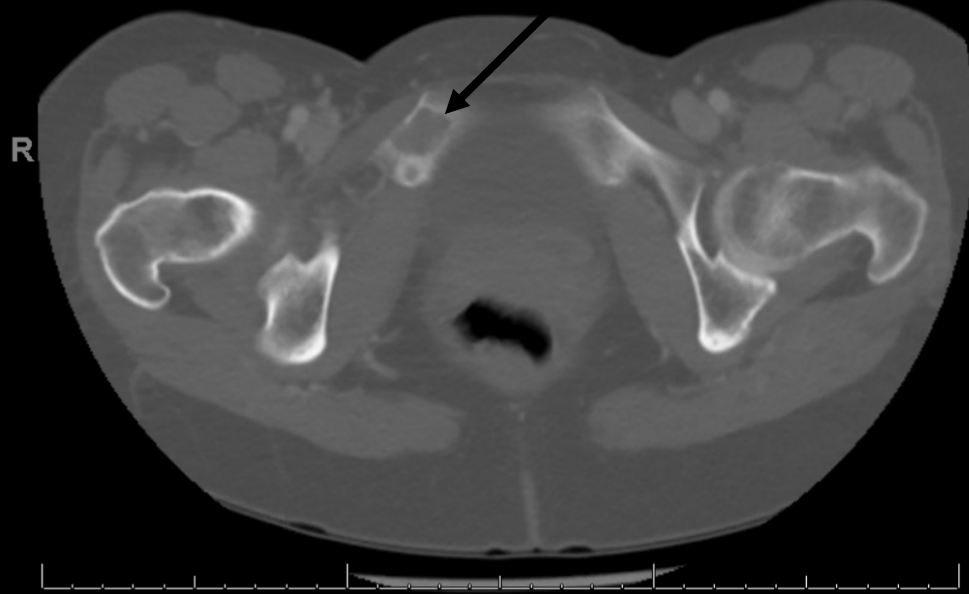
Procedure	Appropriateness Category	Relative Radiation Level
FDG-PET/CT whole body	Usually Appropriate	⊕⊕⊕⊕
MRI whole body without IV contrast	May Be Appropriate (Disagreement)	○
Bone scan whole body	May Be Appropriate	⊕⊕⊕
Bone scan whole body with SPECT or SPECT/CT area of interest	May Be Appropriate	⊕⊕⊕
FDG-PET/MRI whole body	May Be Appropriate	⊕⊕⊕
Fluoride PET/CT whole body	May Be Appropriate (Disagreement)	⊕⊕⊕⊕
US area of interest	Usually Not Appropriate	○
Radiography area of interest	Usually Not Appropriate	Varies
MRI whole body without and with IV contrast	Usually Not Appropriate	○
CT area of interest with IV contrast	Usually Not Appropriate	Varies
CT area of interest without and with IV contrast	Usually Not Appropriate	Varies
CT area of interest without IV contrast	Usually Not Appropriate	Varies

# CT C/A/P Findings

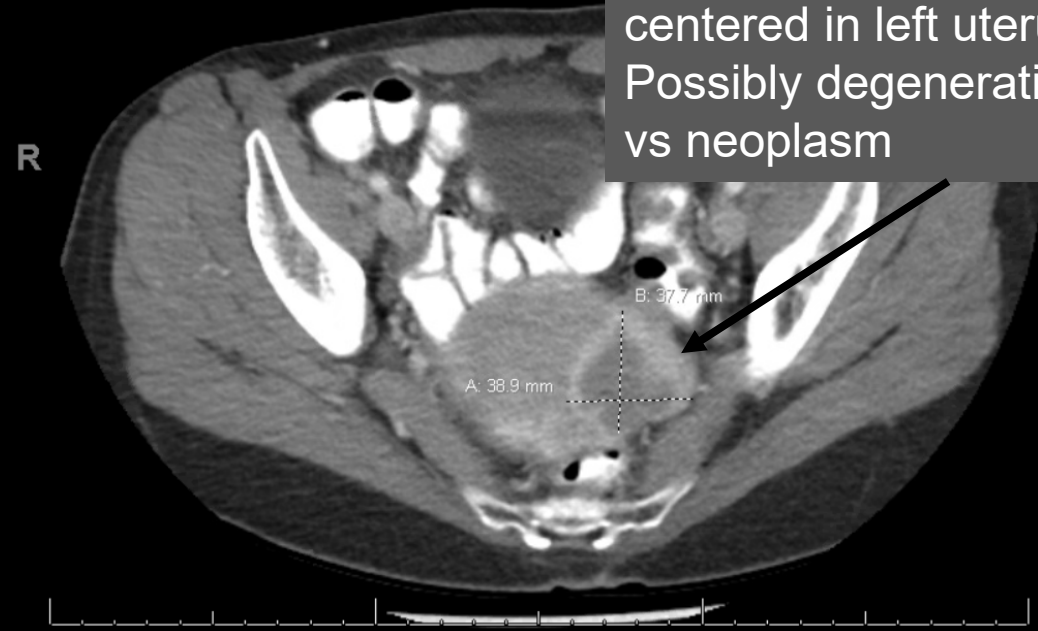


# CT C/A/P Findings

Lucent lesion centered in right pubic ramus

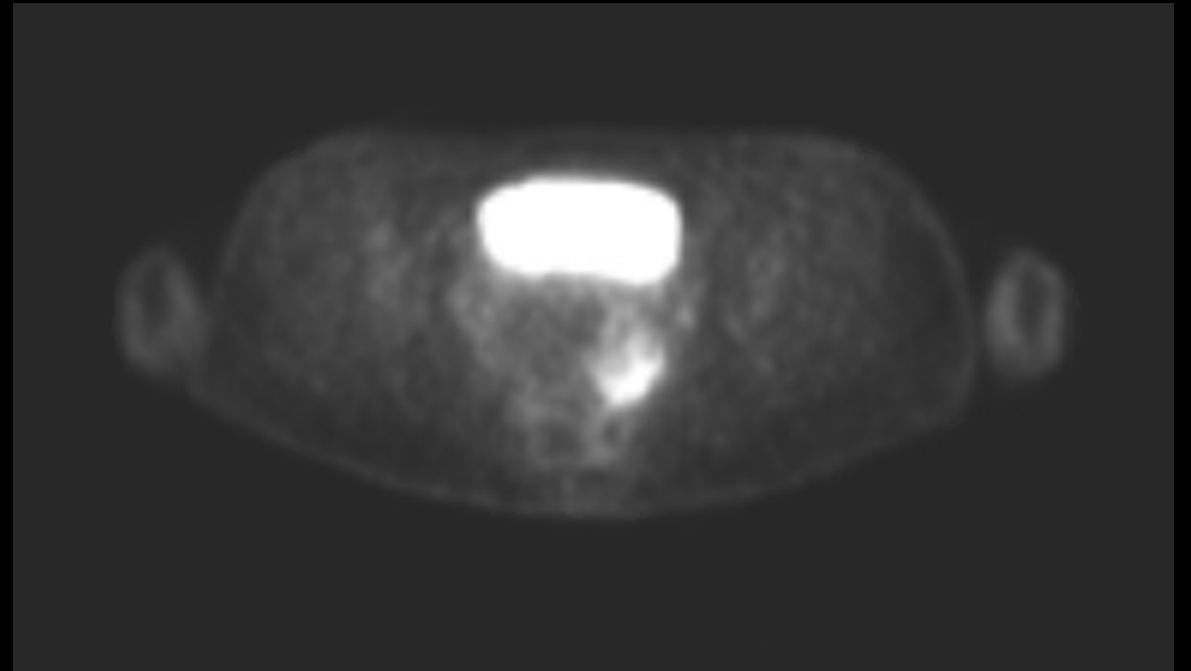
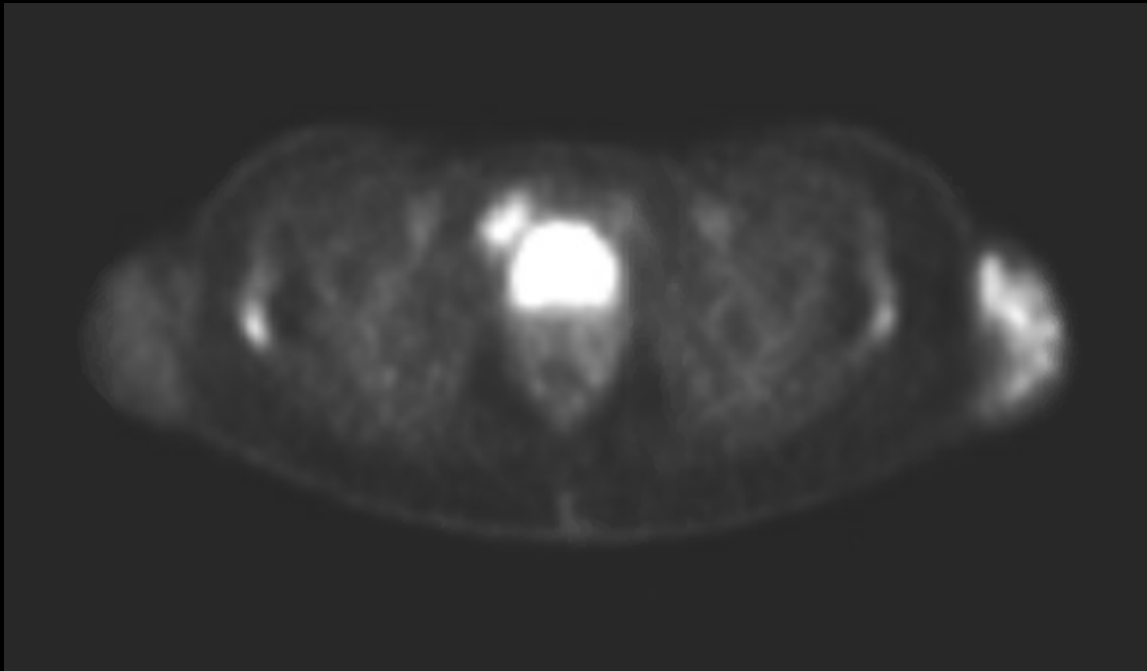


Enlarged fibroid uterus with dominant necrotic-appearing/rim-enhancing lesion measuring up to 3.9 cm centered in left uterus. Possibly degenerating fibroid vs neoplasm



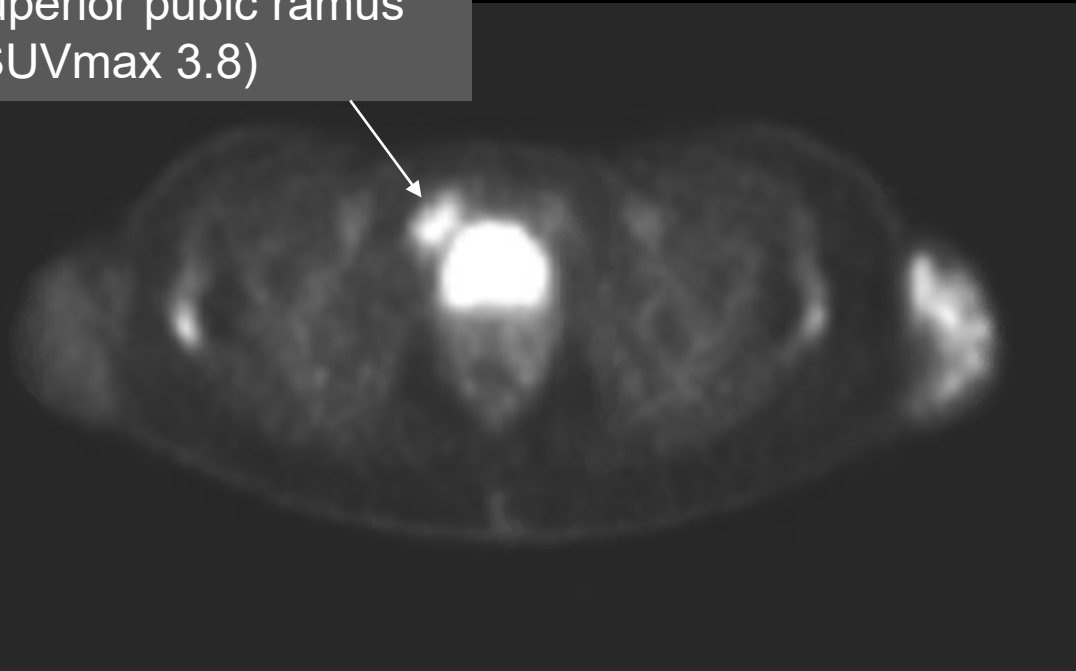


# FDG-PET Findings

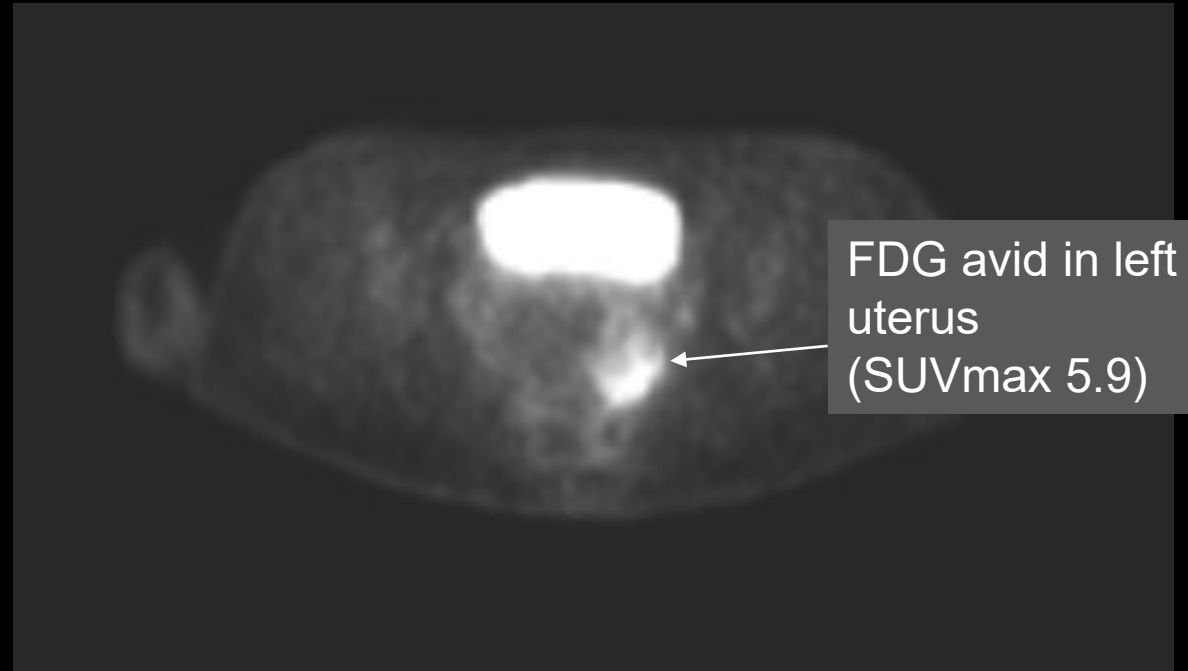


# FDG-PET Findings

FDG avid in right  
superior pubic ramus  
(SUVmax 3.8)



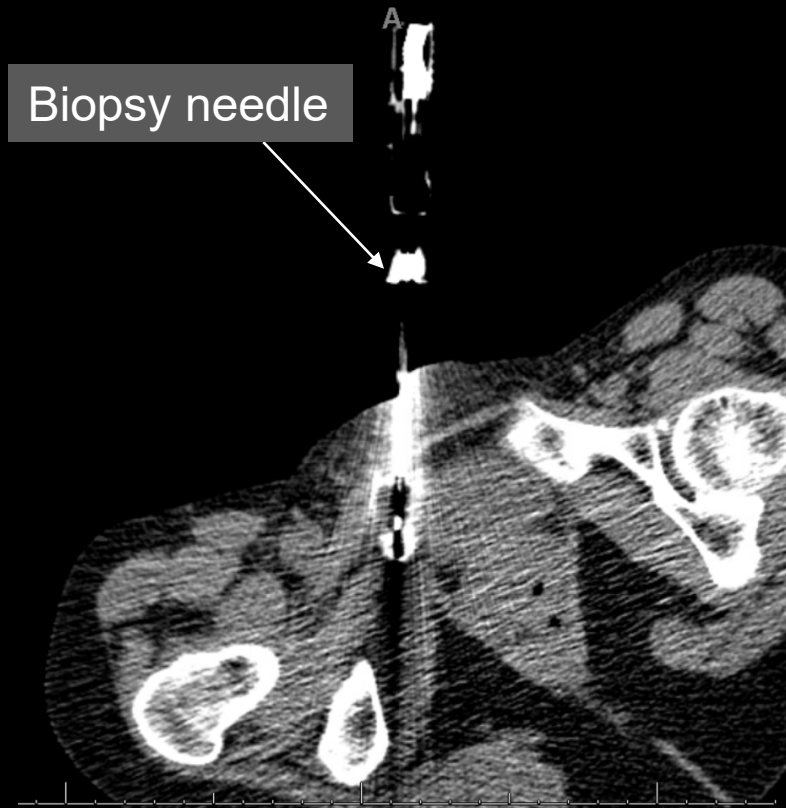
FDG avid in left  
uterus  
(SUVmax 5.9)



# Differential Diagnosis

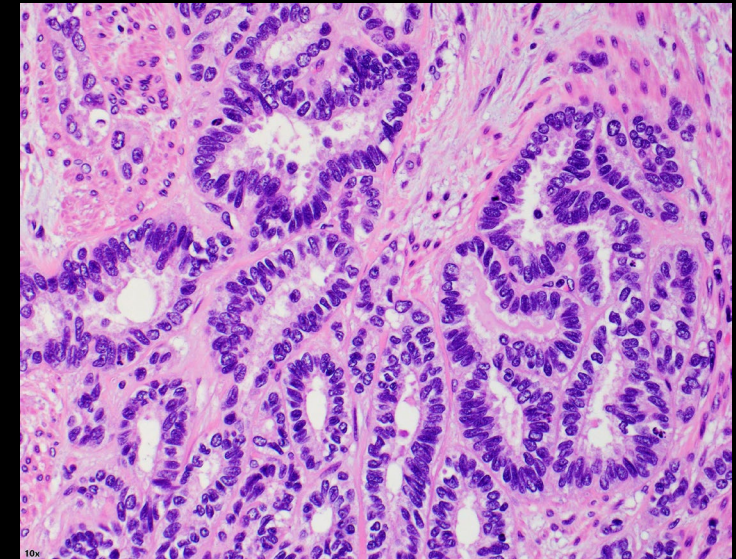
- Primary Endometrial Carcinoma with Musculoskeletal Metastasis
- Primary Musculoskeletal Carcinoma with Endometrial Metastasis
- Unknown Primary Carcinoma with Endometrial and Musculoskeletal Metastasis
- Infection/Inflammatory Process

# CT-Guided Deep Bone Needle Biopsy



## **Pathology Report:**

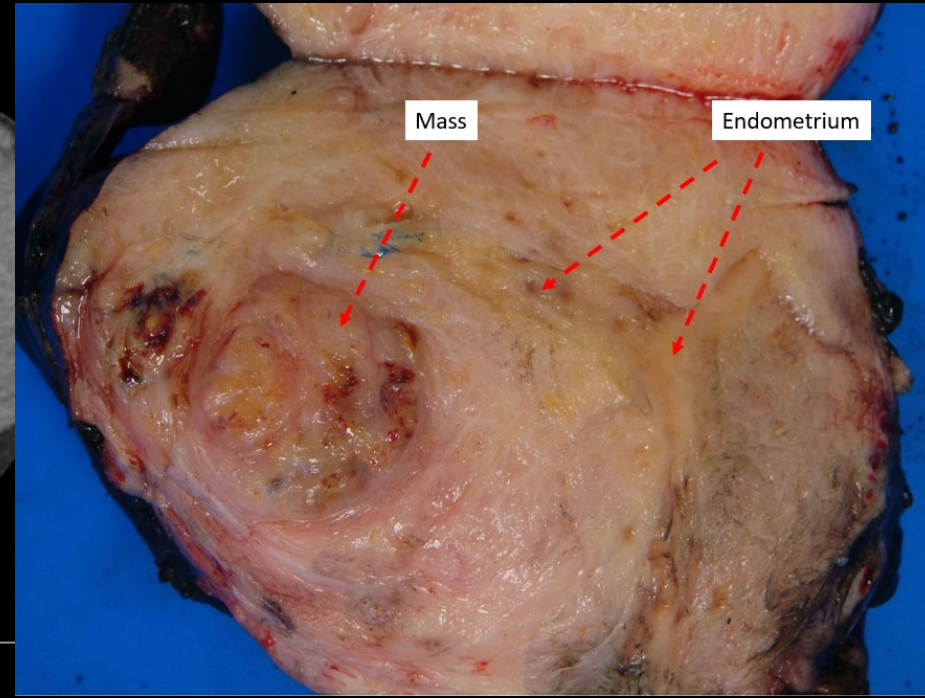
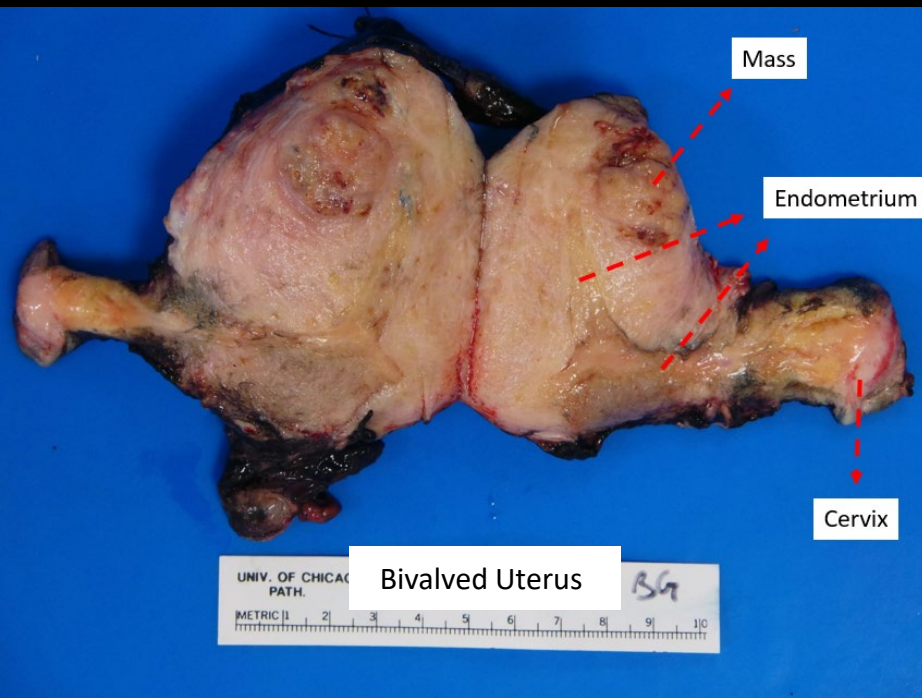
The morphology and immunoprofile support a metastatic carcinoma of Mullerian origin, in which an endometrioid subtype is favored.



*\*Representative sample of primary tumor (biopsy pathology not available)*

# Next Steps

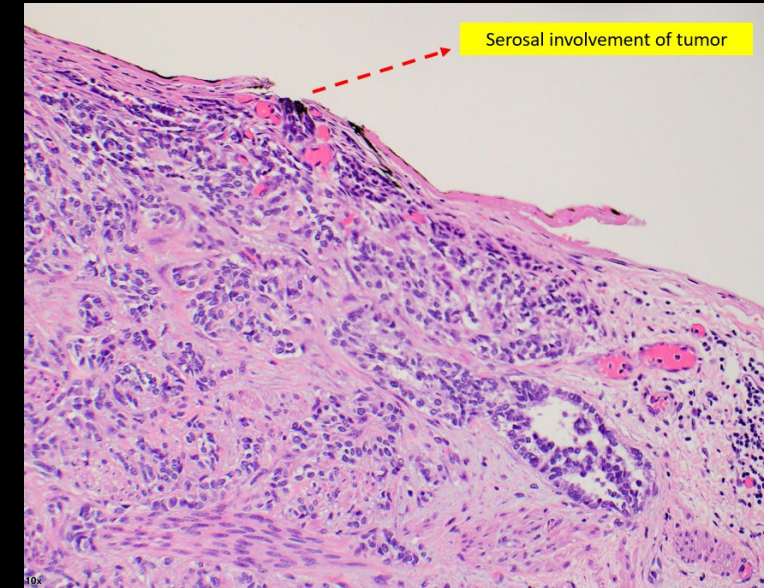
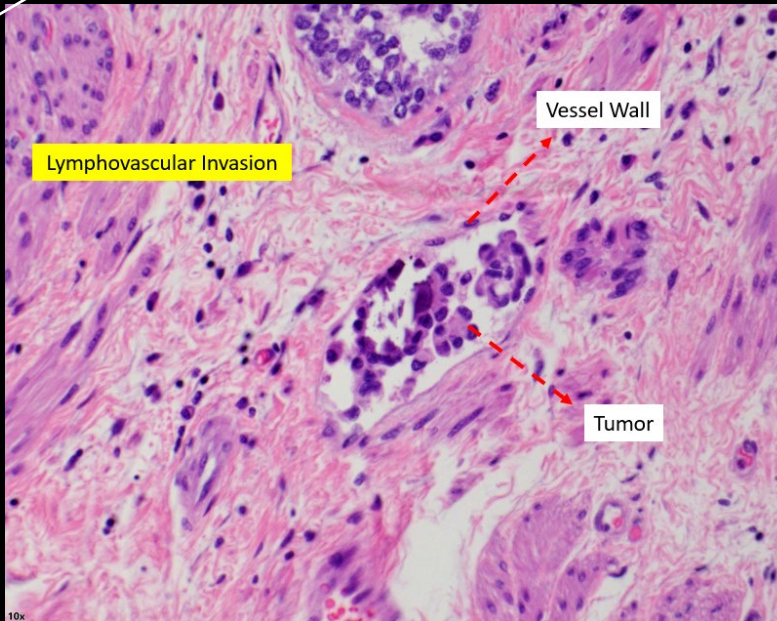
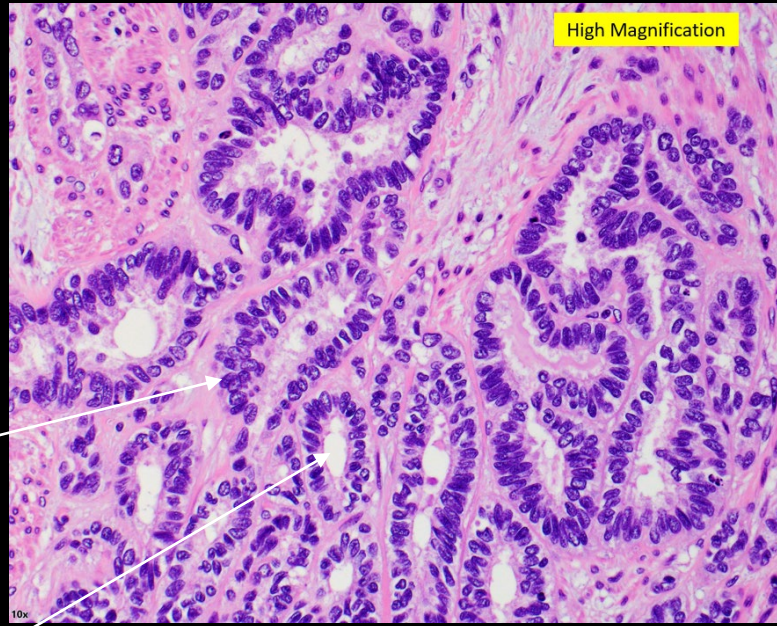
- Exploratory Laparotomy with Total Abdominal Hysterectomy with Bilateral Salpingo-Oophorectomy and Partial Omentectomy performed on 4/29/2021
  - 8-week size uterus with a 6 cm firm nodularity at the left fundus eroding through the serosa



# Microscopic Pathology

## Pathologic features:

- Tall columnar cells lining back-to-back glands
- No intervening stroma
- Glands have a smooth, luminal contour
- Strong and diffuse ER expression



Final Dx:

Endometrial endometrioid carcinoma, FIGO grade 2,  
FIGO stage IVB

# Further Treatment

1. 3 cycles of Carboplatin/Taxol
2. Radiation therapy to the metastasis and pelvis
3. 3 additional cycles of Carboplatin/Taxol



# Case Discussion: Endometrial Endometrioid Carcinoma – Epidemiology, Risk Factors, Presentation

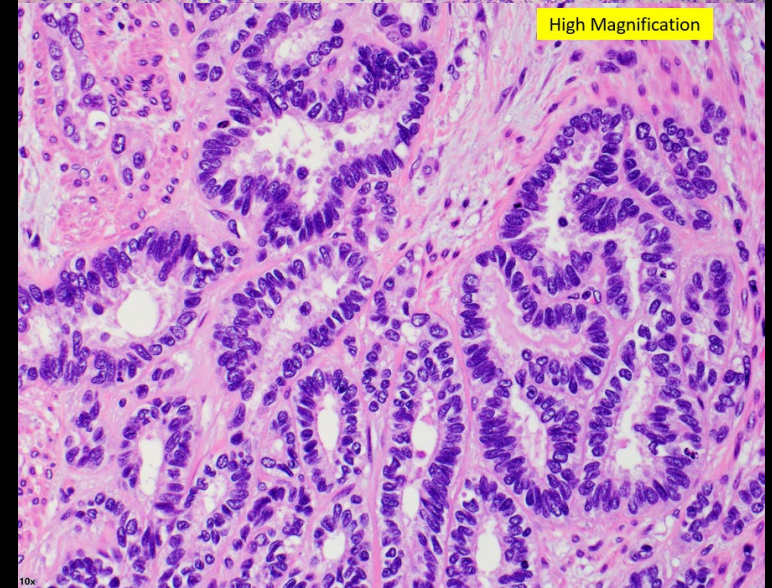
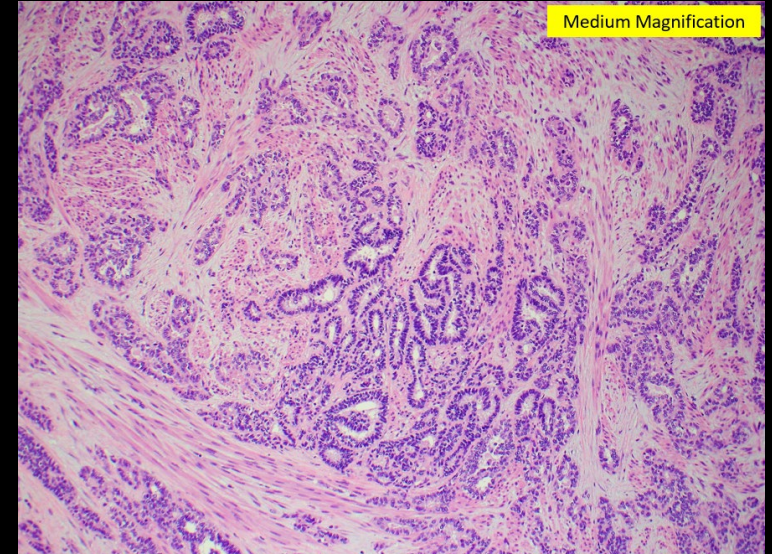
- Endometrial cancer is the most common gynecologic malignancy in the developed world
  - Occurs in 3% of females with peak incidence between 60 and 70 years old
- Excess estrogen exposure is the predominant risk factor and can be due to:
  - Exogenous sources, chronic anovulation, obesity, early menarche, late menopause
- Other risk factors include:
  - Increasing age, diabetes, and a family history of endometrial, breast, ovarian, or colon cancer
- Endometrioid carcinoma is the most common histologic subtype
  - Although not in this case, endometrioid tumors generally present early with abnormal uterine bleeding and have a good prognosis
- Other presentations include symptoms from metastases (as in this case), incidental finding on imaging, or abnormal cervical cytology

# Case Discussion: Endometrial Endometrioid Carcinoma - Imaging

- With classic presentation of abnormal uterine bleeding, TVUS is first line imaging to evaluate for thickened endometrial lining (>5 mm in post-menopausal patient) or mass
- Thickened endometrial lining (and less commonly a mass) may also be found incidentally on TVUS, CT, or MRI
- Pelvic protocol MRI can be used for local staging
- CT/PET to evaluate for distant metastases
- PET SUVmax may have correlation with prognosis
  - High SUVmax (>12.7) has been correlated with a worse prognosis than a low SUVmax

# Case Discussion: Endometrial Endometrioid Carcinoma – Pathology and Grading

- Two histologic categories of endometrial carcinoma:
  - Type I (80%): Grade 1 or 2 endometrioid tumors
    - Good prognosis (estrogen induced and progestin responsive)
  - Type II (20%): Grade 3 endometrioid tumors and nonendometrioid tumors
    - Worse prognosis
- Endometrioid carcinoma histologic features:
  - Tall columnar cells lining back-to-back glands
  - No intervening stroma
  - Glands have a smooth, luminal contour
- Graded with FIGO classification system which helps guide therapy:
  - Grade 1: <5% solid growth patterns
  - Grade 2: 6-50% solid growth patterns
  - Grade 3: >50% solid growth



# Case Discussion: Endometrial Endometrioid Carcinoma – Staging and Treatment

- Staging is surgical and based on the FIGO staging system
- Treatment is mainly surgical (total hysterectomy with bilateral salpingo-oophorectomy is standard)
- Adjuvant therapy based on risk stratification
  - *Low risk endometrial cancer* (low-risk histologic type, histologic grade 1 or 2, limited to the endometrium or invading less than ½ of the myometrium): adjuvant therapy not indicated
  - *Intermediate-risk endometrial cancer*: Radiation therapy and/or chemotherapy may be offered
  - *High-risk endometrial cancer* (stage III or higher regardless of histology or grade): adjuvant therapy is indicated

Stage	Description
I	Tumor confined to the uterus
IA	<50% invasion of the myometrium
IB	≥50% invasion of the myometrium
II	Tumor invades the cervical stroma but does not extend beyond the uterus
III	Local or regional spread of tumor
IIIA	Serosal or adnexal invasion
IIIB	Vaginal or parametrial involvement
IIIC	Metastasis to pelvic or paraaortic lymph nodes
IIIC1	Pelvic lymph node involvement
IIIC2	Paraortic lymph node involvement (with or without pelvic nodes)
IV	Extension to the pelvic wall, lower one-third of the vagina, or hydro-nephrosis or nonfunctioning kidney
IVA	Invasion of bladder or bowel mucosa
IVB	Distant metastases, including abdominal, or involvement of inguinal lymph nodes

# References:

Kitajima, K., Kita, M., Suzuki, K., Senda, M., Nakamoto, Y., & Sugimura, K. (2012). Prognostic significance of SUVmax (maximum standardized uptake value) measured by [18F]FDG PET/CT in endometrial cancer. *European Journal of Nuclear Medicine and Molecular Imaging*, 39(5), 840–845. <https://doi.org/10.1007/s00259-011-2057-9>

Plaxe, S., & Mundt, A. (n.d.). *Overview of endometrial carcinoma*. UpToDate. Retrieved August 24, 2022, from <https://www.uptodate.com/contents/overview-of-endometrial-carcinoma>

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