

# 61-year-old man with a left thigh mass

Alexander Marwaha MS-III

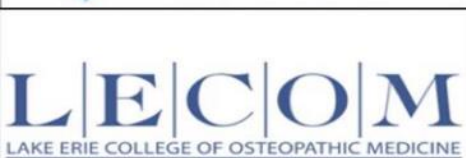
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**Allegheny Health Network**



# Patient Presentation

- HPI
  - 61-year-old male with a past medical history of left groin cyst the size of a fingernail, treated with antibiotics. Growth of the mass prompted a PET-CT, which showed a FDG-avid left adrenal mass and a larger left groin soft tissue mass.
- PMHx: Skin cyst, carpal tunnel syndrome, essential (primary) hypertension
- PSHx: Carpal tunnel release, robot-assisted laparoscopic adrenalectomy, left groin soft tissue mass excision
- Social Hx: Former smoker
- Medications: Hydrochlorothiazide, trazodone, VitD3, VitC, bupropion

# Pertinent Labs on Presentation

- CBC values all within normal limits
- CMP
  - Sodium 135, Potassium 4.3, Chloride 97, BUN 20, Creatinine 0.86, Glucose 97, Calcium 10.6, Albumin 4.9, Total Protein 8.3, AST 24, ALT 28
  - All remaining values within normal limits
- Adrenal
  - ACTH 4 (10-48)
  - Aldosterone, Cortisol, DHEA, and catecholamines within normal limits
  - Pheochromocytoma ruled out, cortisol failed to suppress completely with overnight dexamethasone

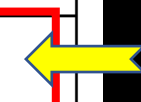
What Imaging Should We Order?

# Select the applicable ACR Appropriateness Criteria

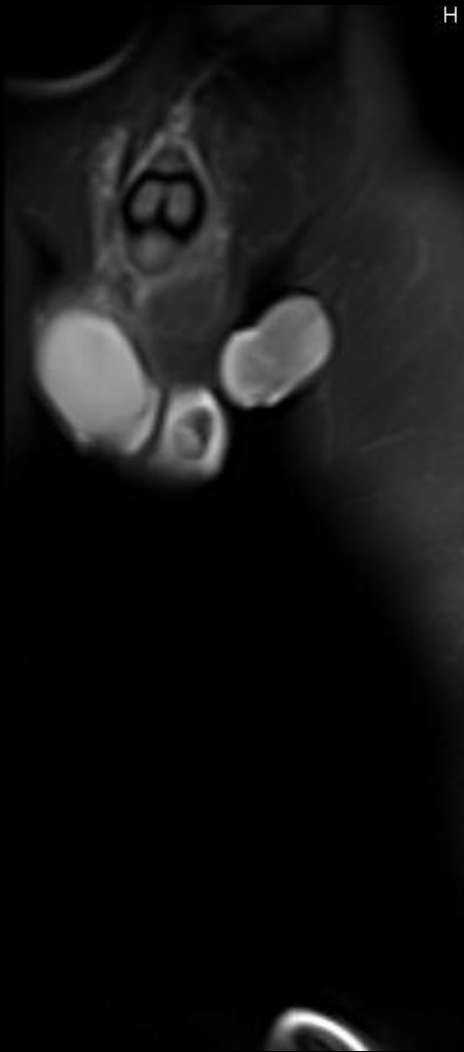
**Variant 1:** Superficial soft tissue mass. Initial imaging.

Procedure	Appropriateness Category	Relative Radiation Level
US area of interest	Usually Appropriate	○
Radiography area of interest	Usually Appropriate	Varies
US area of interest with IV contrast	Usually Not Appropriate	○
Image-guided biopsy area of interest	Usually Not Appropriate	Varies
Image-guided fine needle aspiration area of interest	Usually Not Appropriate	Varies
MRI area of interest without and with IV contrast	Usually Not Appropriate	○
MRI area of interest without IV contrast	Usually Not Appropriate	○
FDG-PET/CT area of interest	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

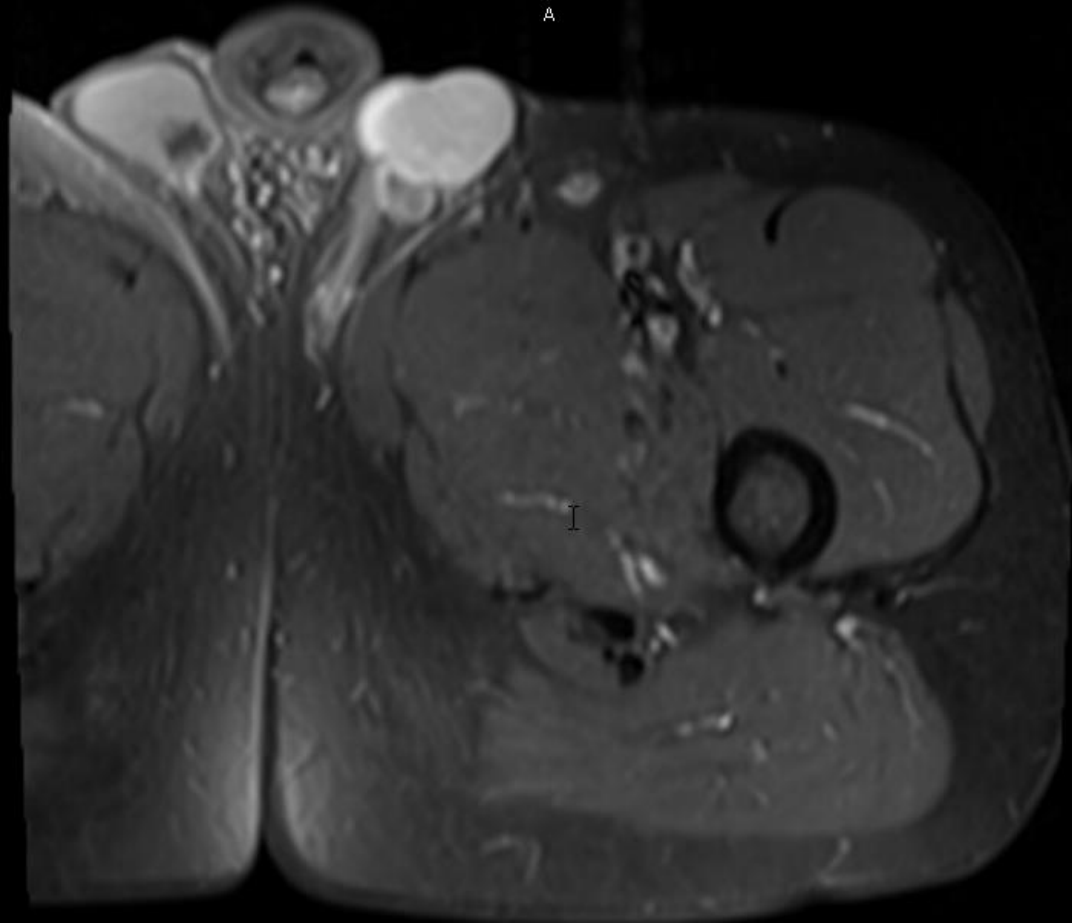
This imaging modality was ordered by the surg-onc physician



# MRI Left Femur (unlabeled)



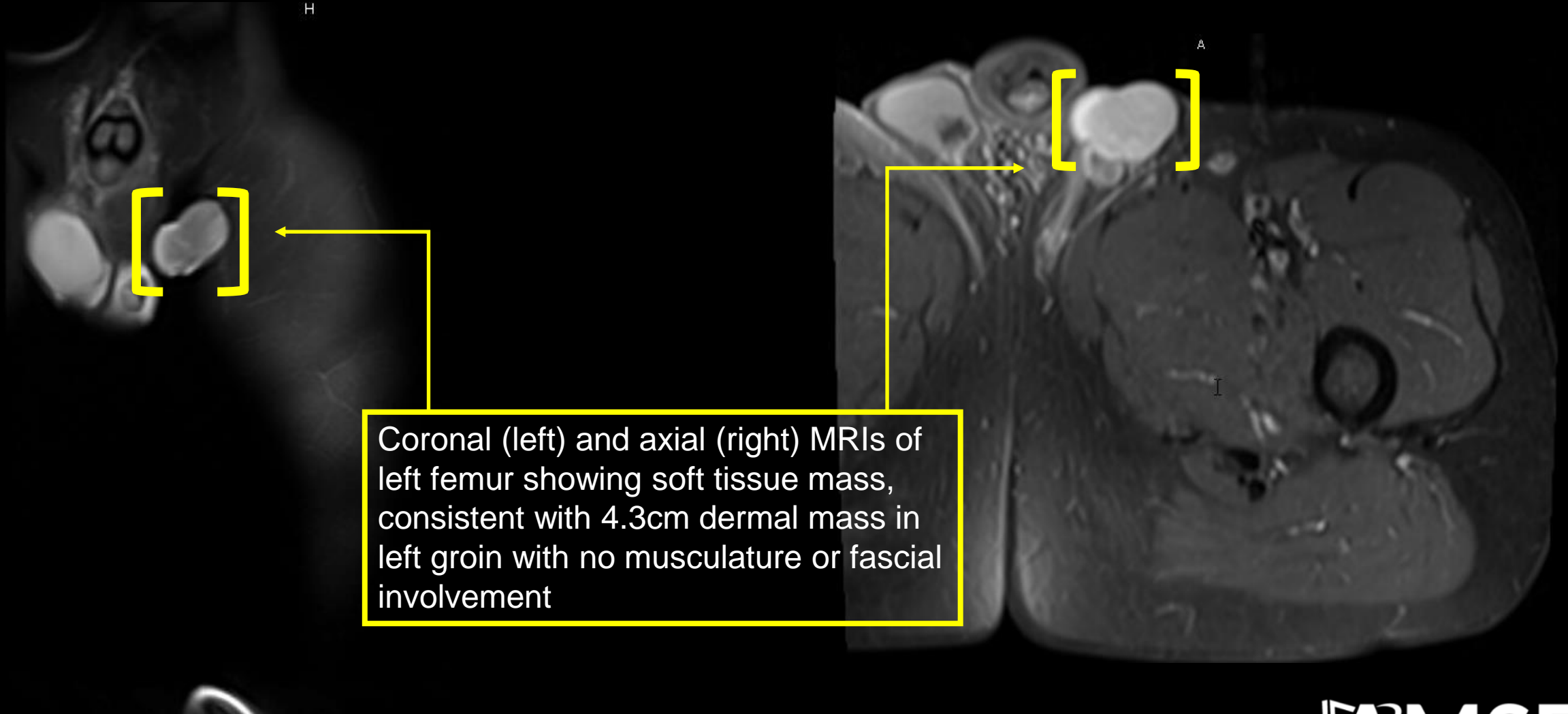
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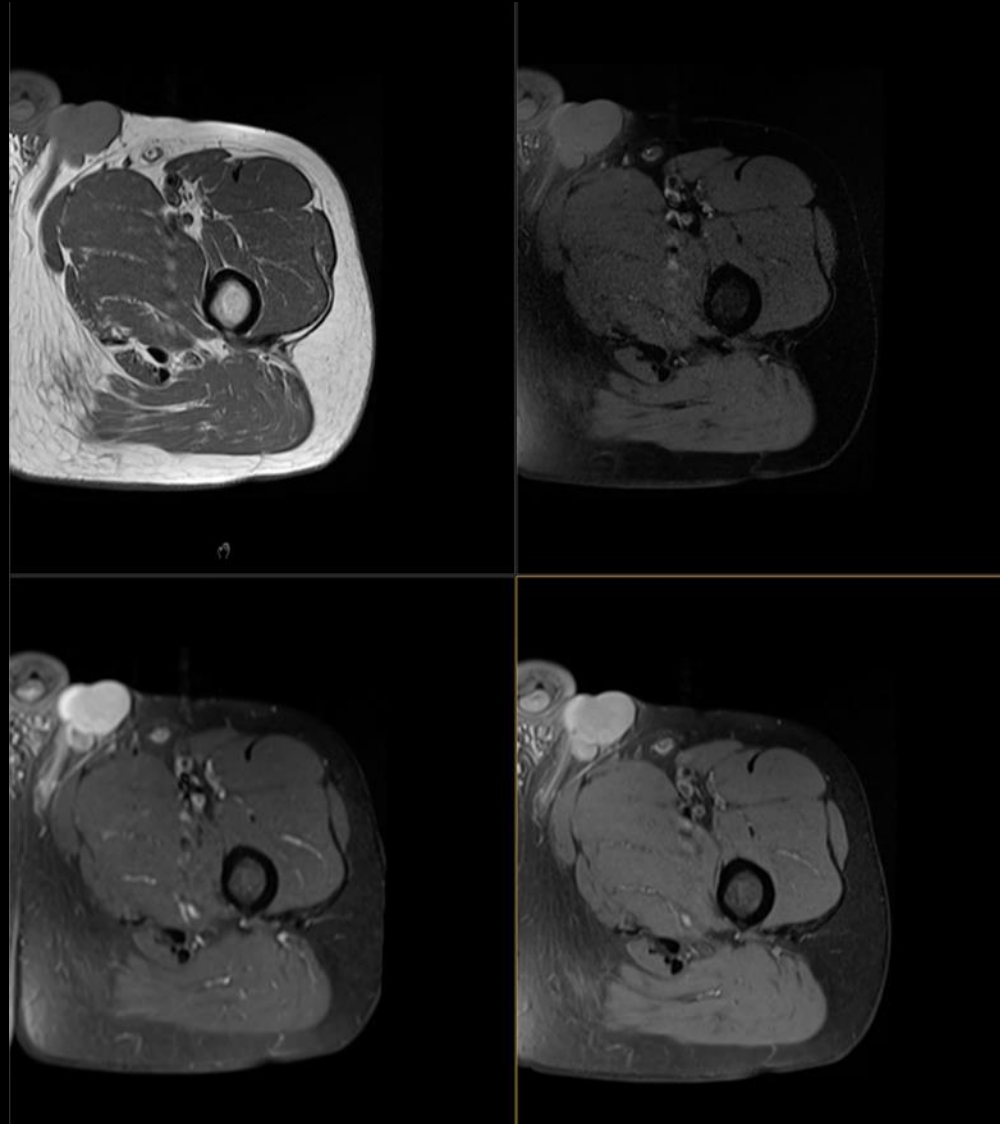
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# MRI Left Femur (labeled)



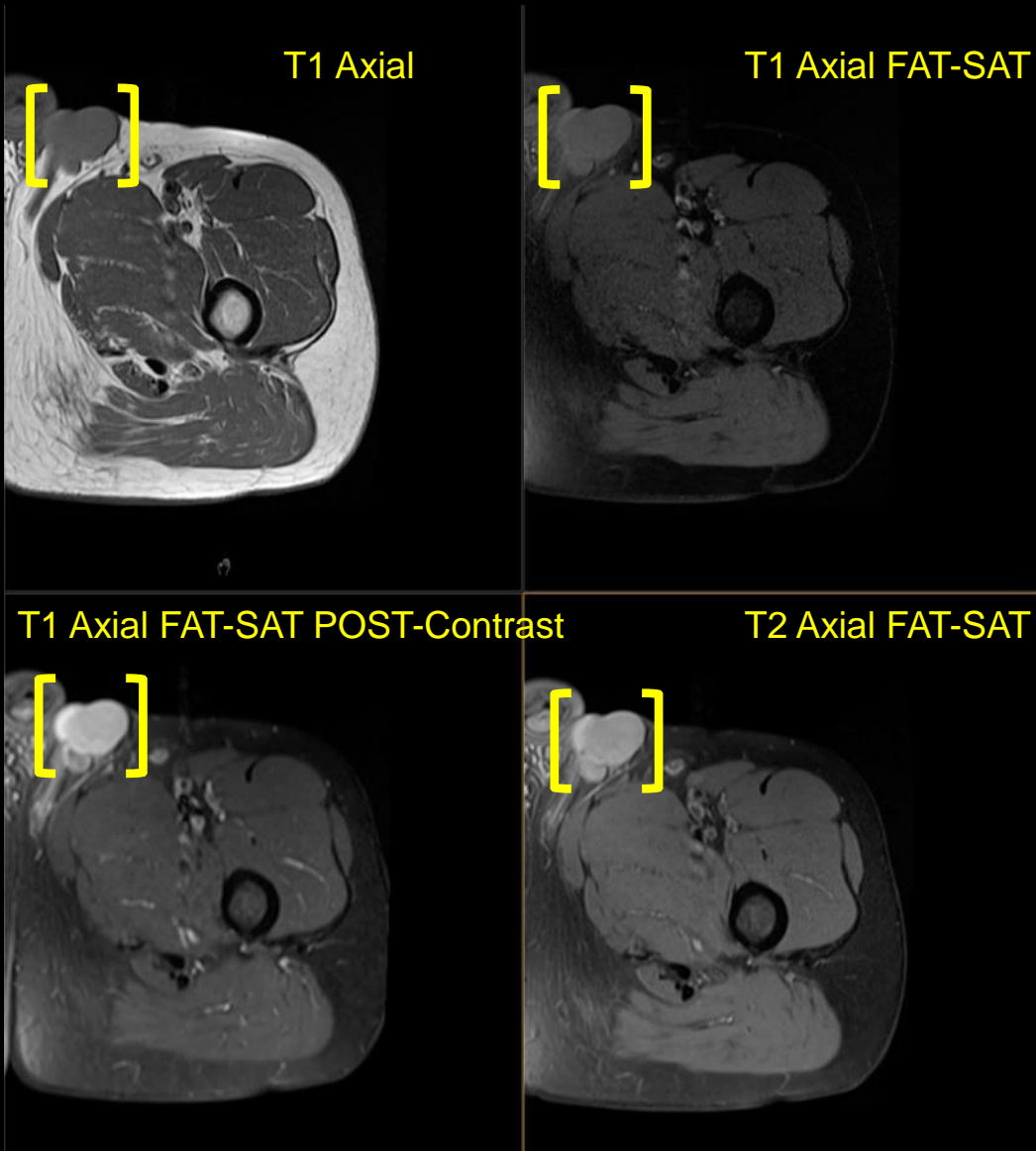
Coronal (left) and axial (right) MRIs of left femur showing soft tissue mass, consistent with 4.3cm dermal mass in left groin with no musculature or fascial involvement

# MRI Left Femur (unlabeled)



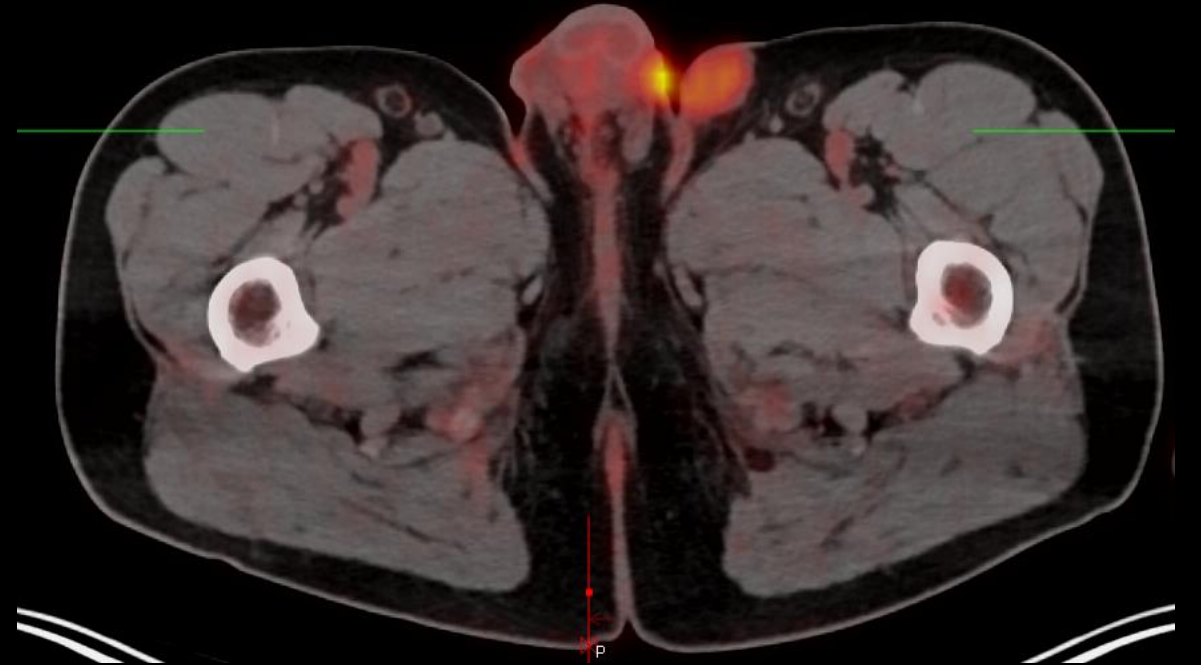
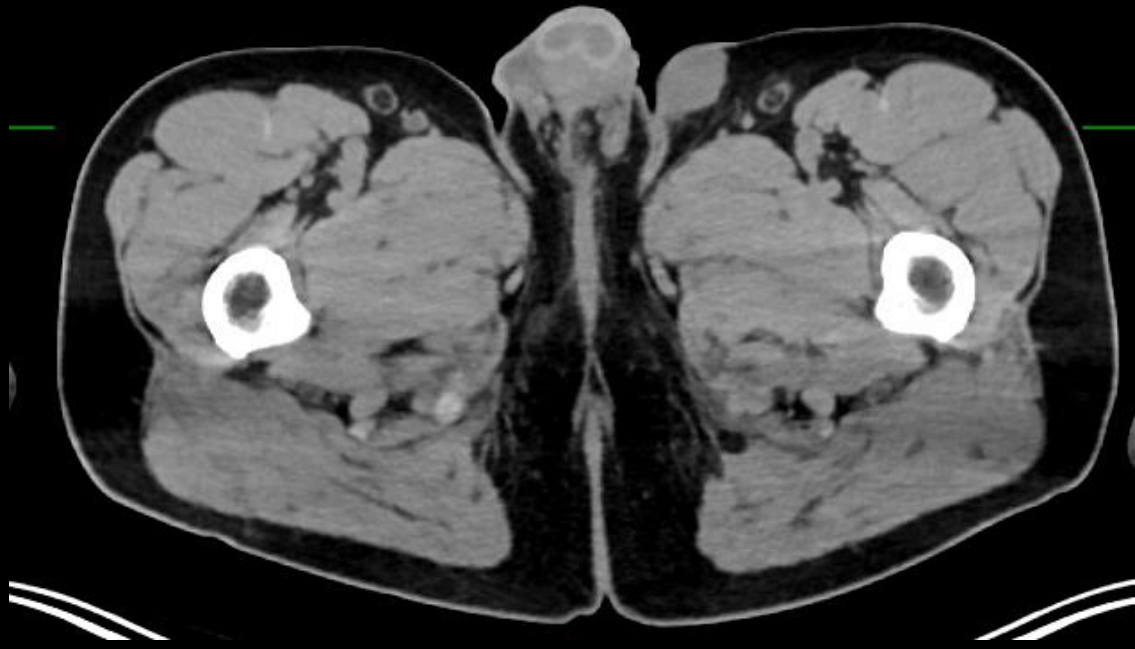


# MRI Left Femur (labeled)

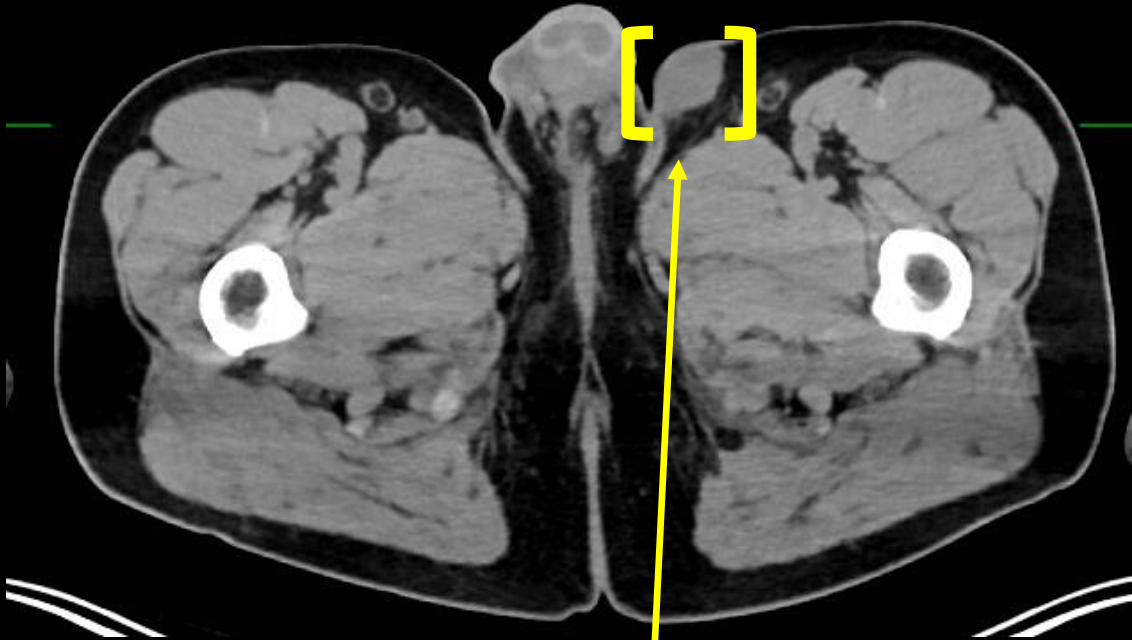


[ ] indicates the soft tissue mass in question, in 4 different MRI sequences. T2 hyperintense fungating dermal mass in the left groin (4.0 x 3.0 x 4.3 cm) with avid postcontrast enhancement

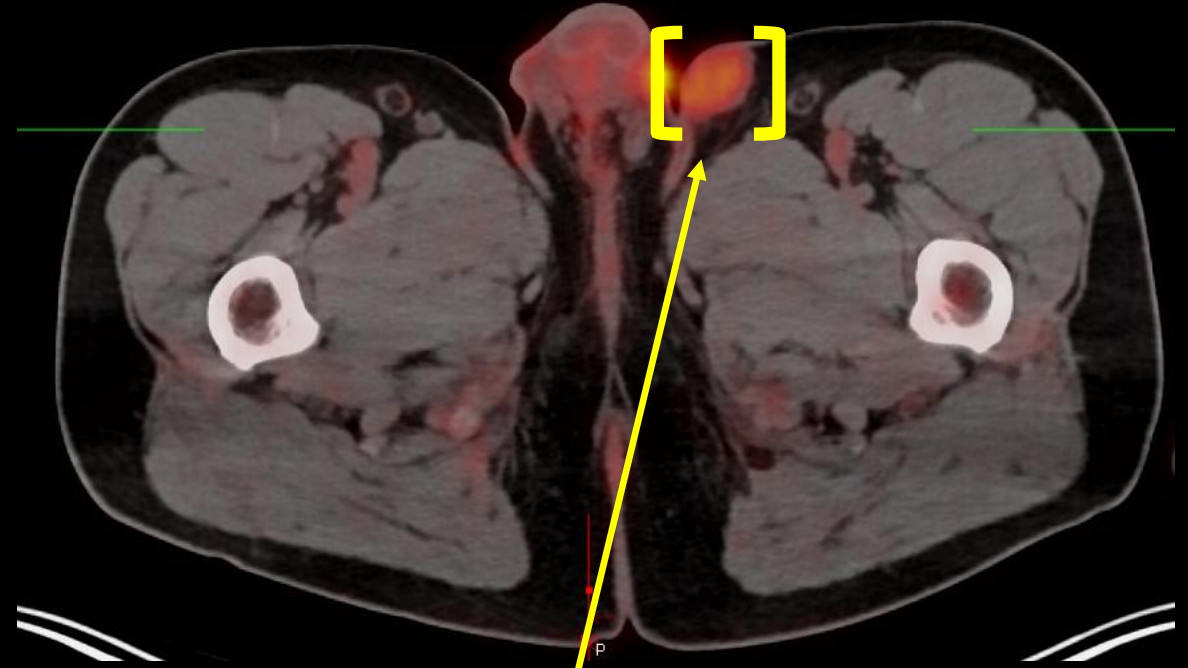
# FDG PET/CT (unlabeled)



# FDG PET/CT (labeled)

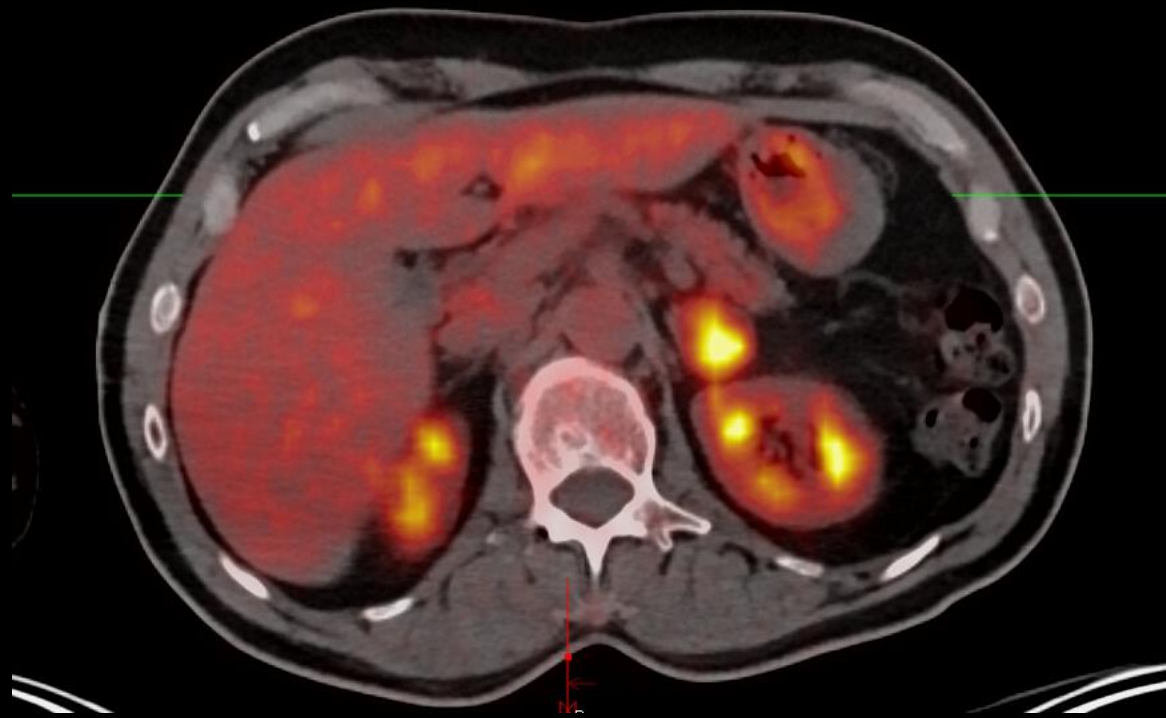


Axial CT showing left groin mass



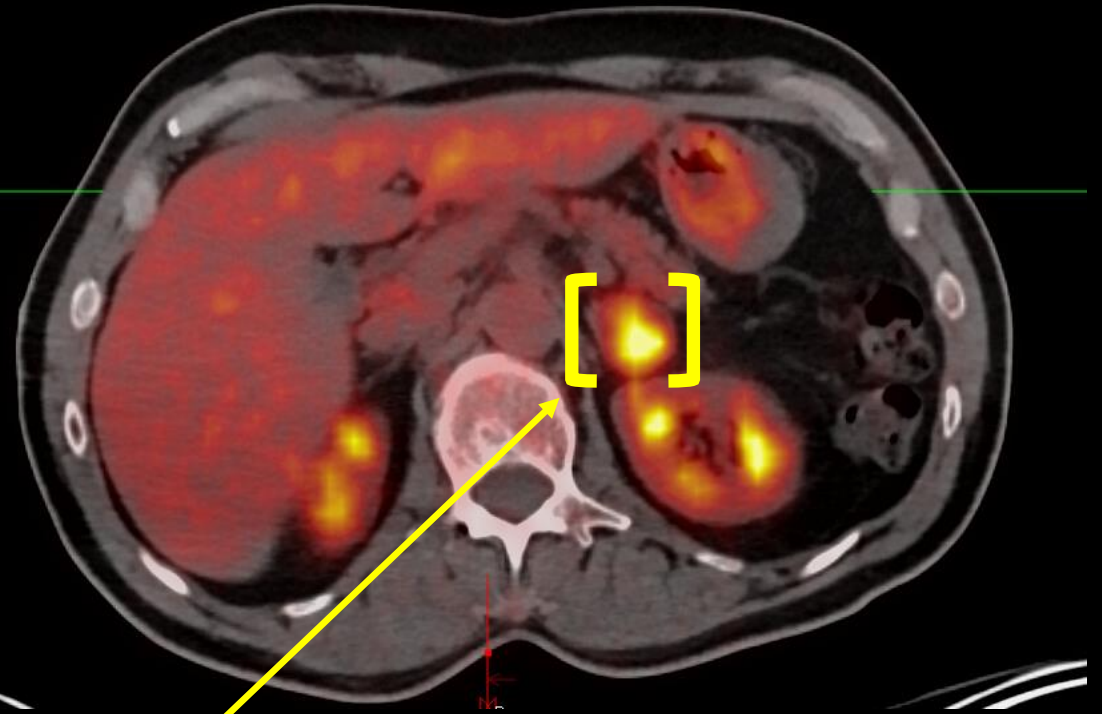
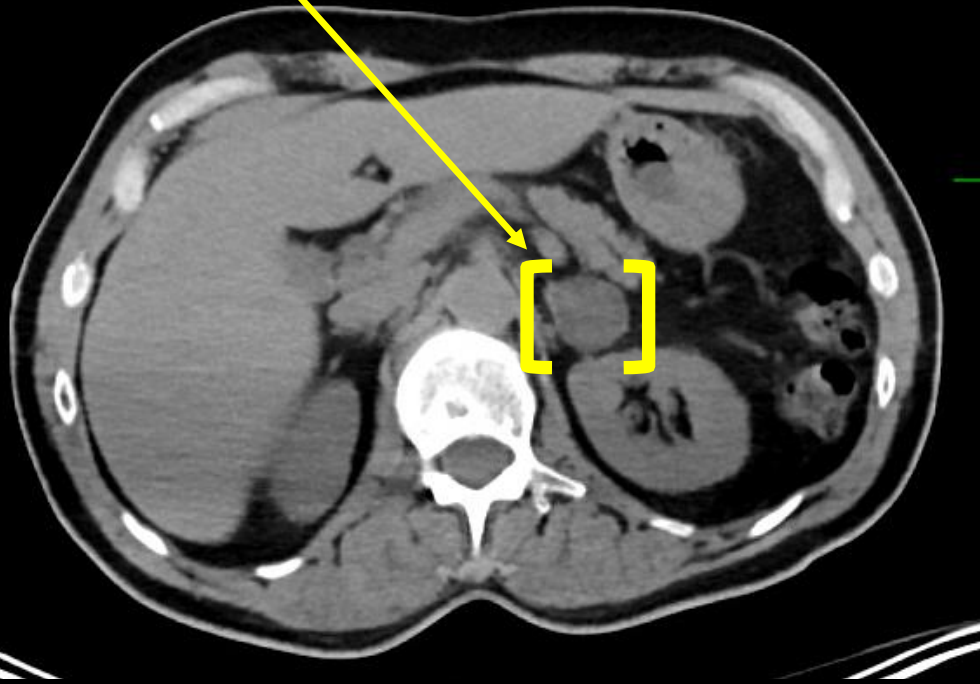
Hypermetabolic left groin lesion consistent w/ primary malignancy, SUV 6.6

# FDG PET/CT (unlabeled)



# FDG PET/CT (labeled)

Mean 14.65 HU



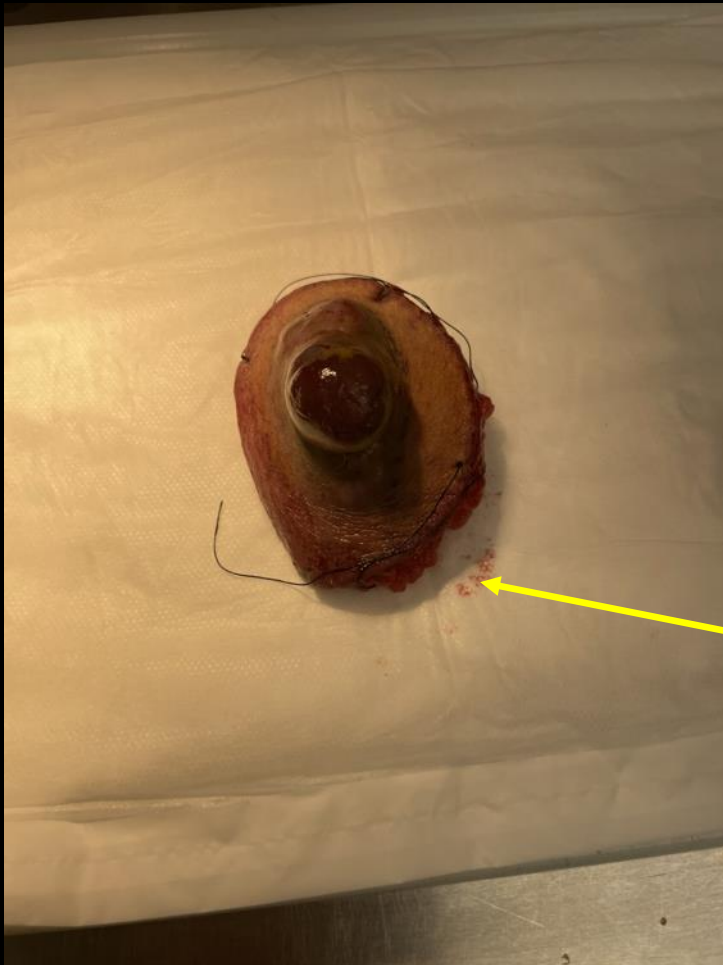
Incidentally-found hypermetabolic left adrenal nodule, SUV 5.5

# Adrenal Lesion Differential Diagnoses

- Based on imaging, DDx for adrenal lesions include
  - Oligometastasis
    - Unilateral involvement more prevalent on the left side
  - Adenoma
    - Most common lesion detected on CT with low HU density
  - Pheochromocytoma
    - Density always >10 HU, size usually 4-6cm. Lab values were negative.
  - Lymphoma
    - Often FDG-avid

Patient was then taken for excision of the groin mass and left adrenal gland based on tumor board discussions...

# Gross Pathology

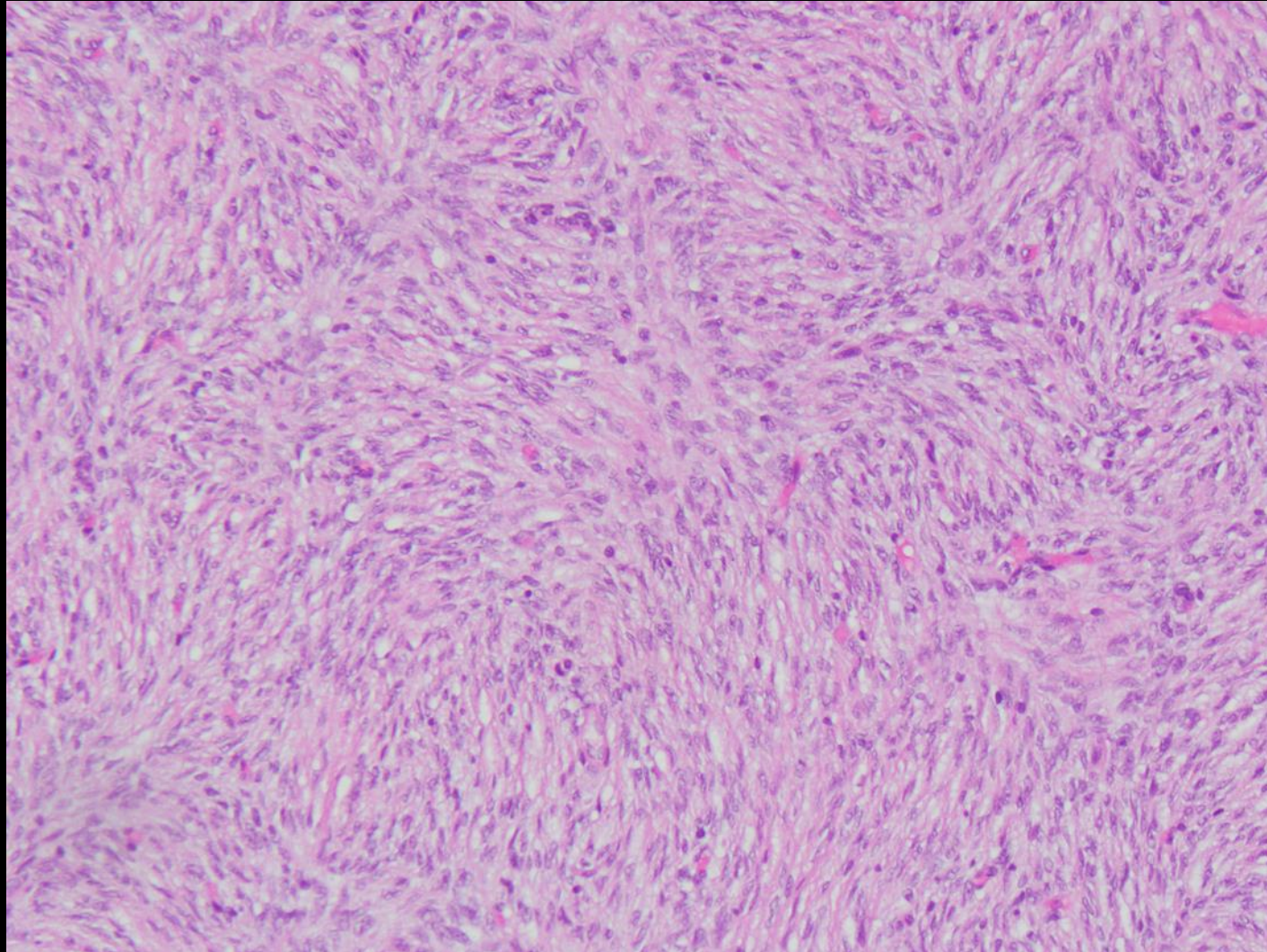


PRE and POST soft tissue mass excision

Excised left groin mass  
11 x 6 x 2 cm  
Tumor is 5.2cm in  
greatest dimension

# Microscopic Pathology of Groin Mass

"Whirling" pattern caused by densely-arranged spindle-shaped cells (of fibroblastic origin)

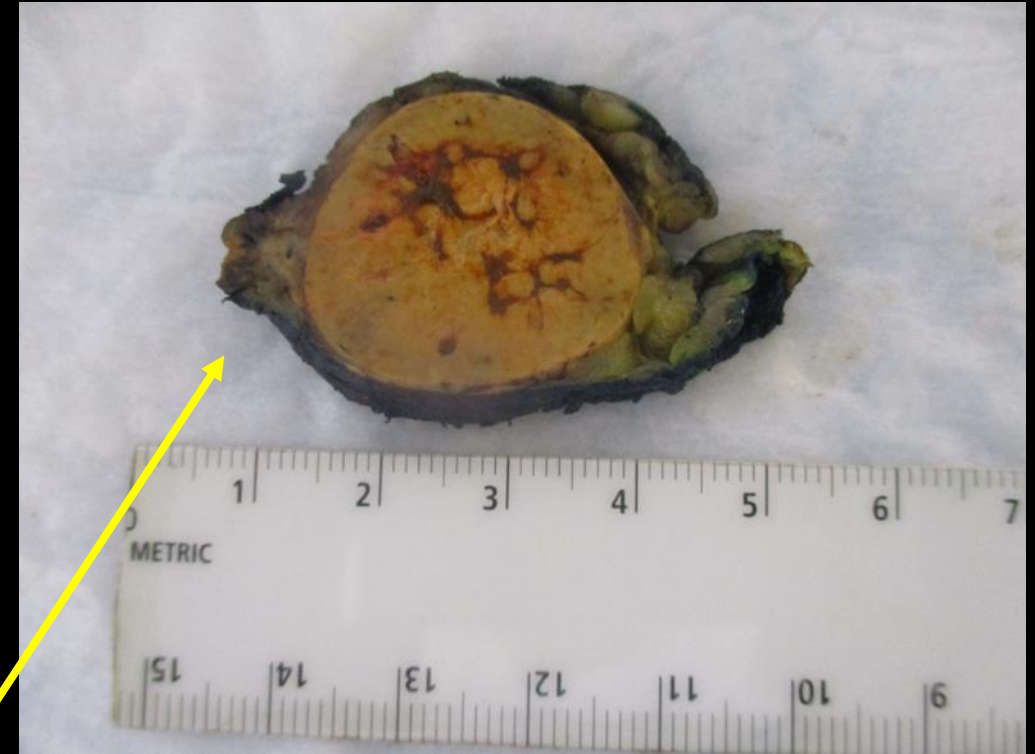


Spindled tumor cells arrange themselves in a storiform pattern



# Gross Pathology

Excised left  
adrenal cortical  
adenoma, 16g



2.5 x 2.4 x 2.4 cm hemorrhagic yellow-tan adrenal mass

Final Dx:

Left Groin Dermatofibrosarcoma Protuberans

Left Adrenal Cortical Adenoma

# Case Discussion

- Epidemiology, Pathophysiology, and Diagnosis/Imaging of dermatofibrosarcoma protuberans (DFSP)
  - DFSP begins as a slow growing painless plaque or cyst, most commonly on the trunk and proximal extremities of 20-50 year-old men
    - Accounts for ~6% of all soft tissue sarcomas
    - The fibrosarcomatous variant accounts for 5%-15% of all DFSP cases, which is more aggressive and has poorer prognosis
    - 10-year survival rate of 99.1%
  - Demonstrates chromosomal translocation t(17;22) in dermal stem cells, fusing PDGFB and COL1A1 genes. Overproduction of PDGF causes continuous cellular proliferation
  - After biopsy, PET/CT indicated for metastatic disease, and MRI indicated for larger/atypical masses preoperatively

# Case Discussion

- Epidemiology and Diagnosis/Imaging of adrenal incidentalomas
  - Most frequent type of incidental adrenal masses are benign, nonhyperfunctioning adenomas
  - Prevalence of unilateral adrenal incidentalomas on autopsy is 2%
  - In oncology patients, an adrenal mass greater than or equal to 4cm is presumed to be metastatic disease and are considered for resection
  - 4cm cutoff for adrenal mass size has a 93% sensitivity of detecting adrenocortical carcinoma
  - HU < 10 has 71% sensitivity and 98% specificity for detecting adrenal adenoma
  - CT adrenal protocol is the recommended radiologic imaging procedure

# Case Discussion

- Management of DFSP
  - Operative treatment includes wide surgical resection with close follow up or 50-70 Gy of radiation therapy
    - ~7.3% local recurrence rate
  - Nonoperative treatment involves imatinib, which has a 65% response rate
    - Patients are required to have the t(17;22) mutation for imatinib to be effective
- Management of incidental adrenal adenomas
  - Surgical resection without biopsy recommended for isolated adrenal masses greater than or equal to 4cm without benign diagnostic features
  - Appropriate lab testing for functional tumors is done prior to surgery

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