AMSER Rad Path Case of the Month:

44-year-old male with incidental finding of left renal mass

April 2026 RadPath GU .pptx

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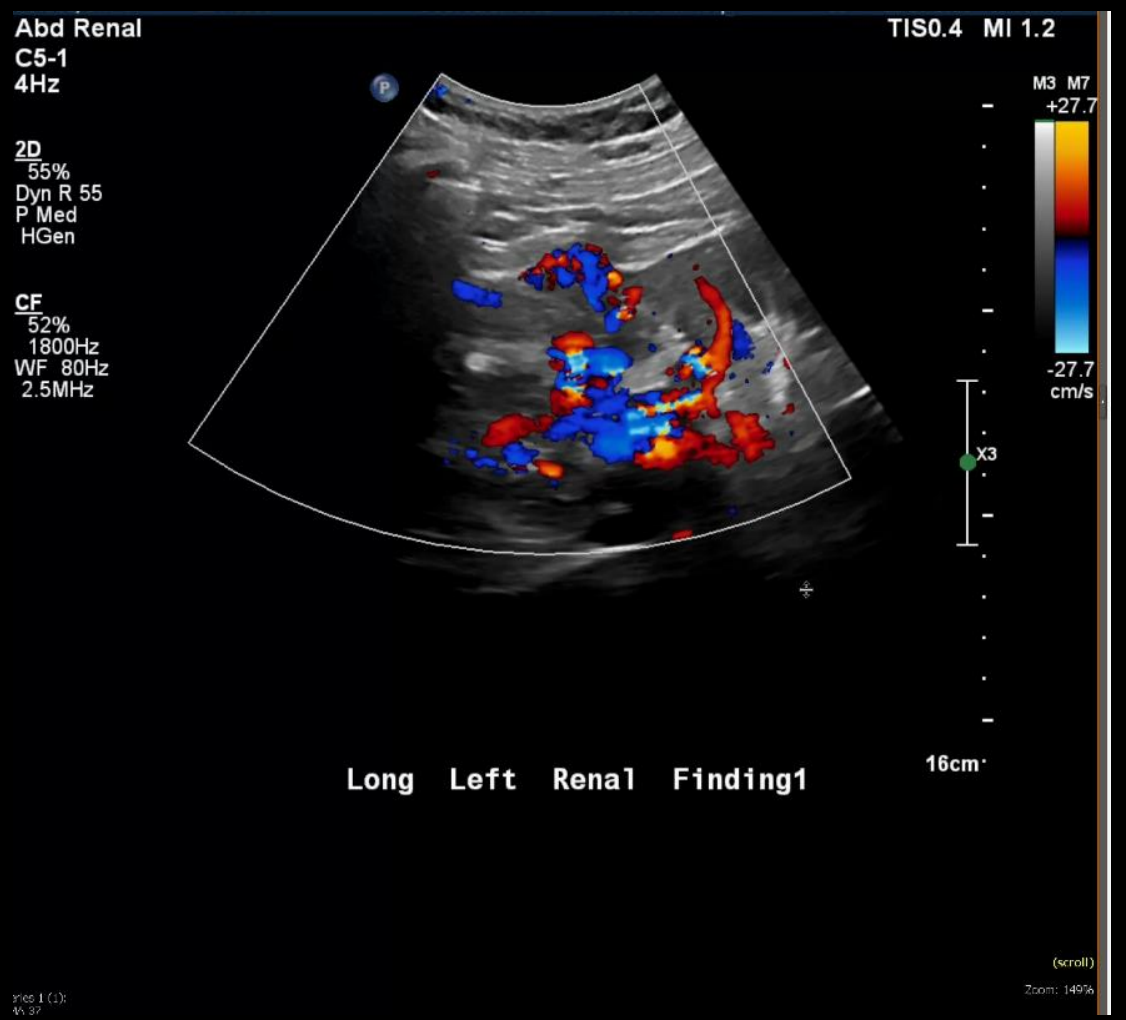
Patient Presentation

- Patient came in for a routine health check. He underwent a renal ultrasound screening. The patient was asymptomatic prior to scan and after. No other pertinent history or presentation.

- Social Hx: Remote history of tobacco use, having quit approximately 8 years ago (1 PPD). No current tobacco use. Drinks 1 0.5 oz of alcohol a week, uses THC 4x weekly via vape, medicinally prescribed.

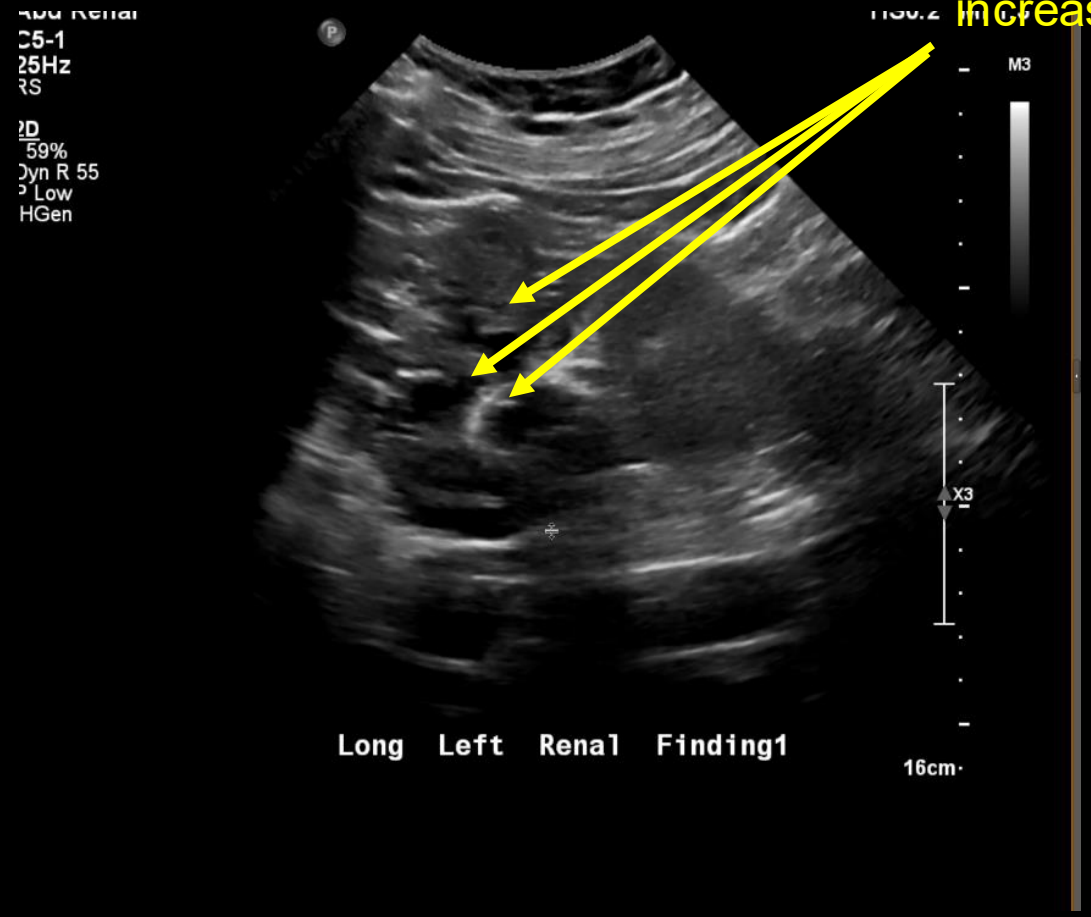
- He has a PMH of GERD and Anxiety, prescribed Xanax 1mg x1 daily PRN

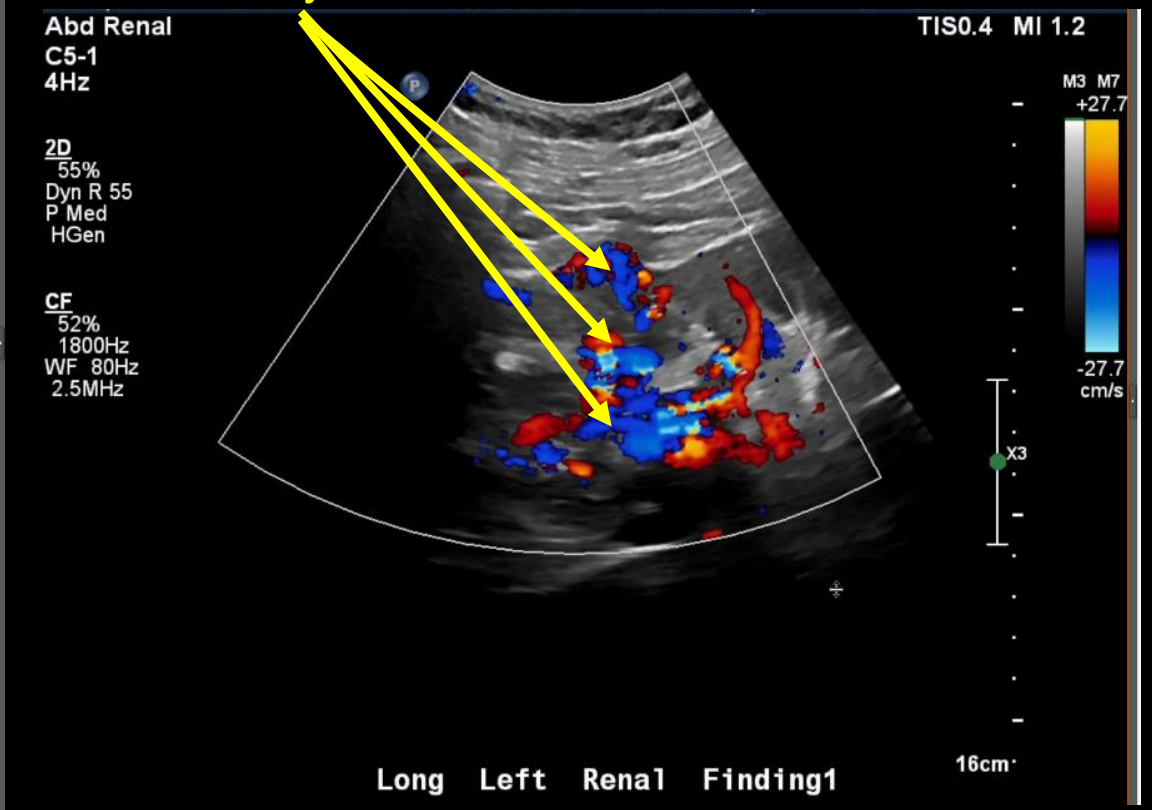
Radiology Images (not labeled)



Radiology Images (labeled)

Left upper pole appears slightly heterogeneous and likely has increased vascularity





What imaging should we order?

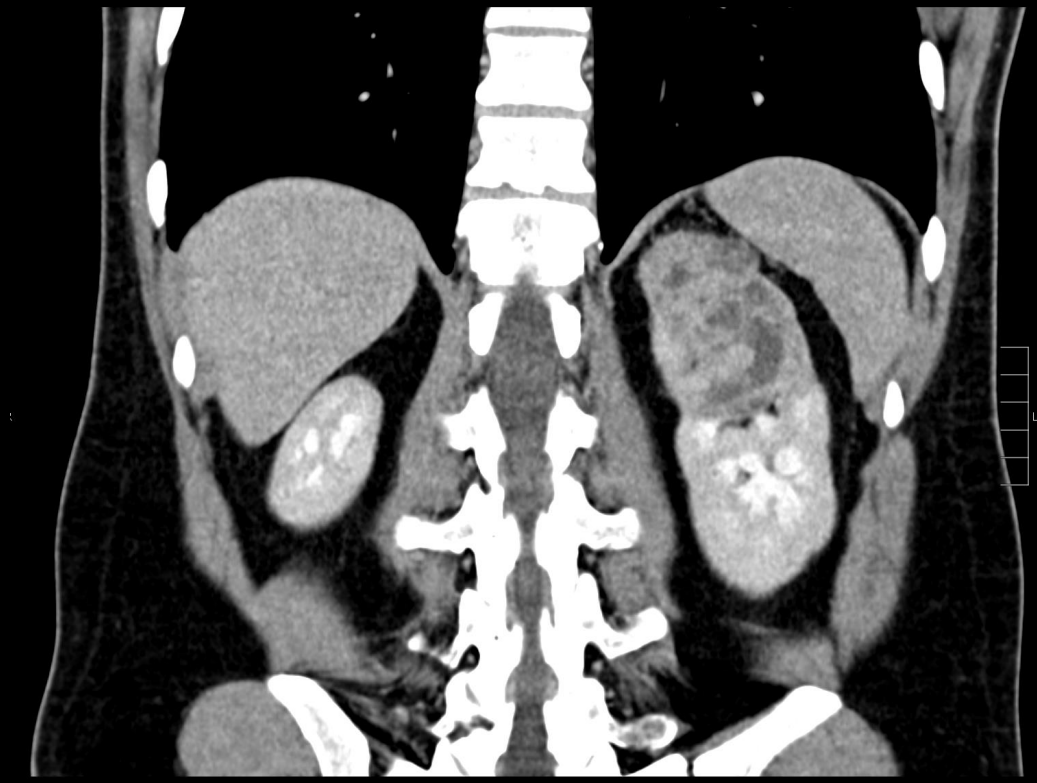
American College of Radiology
ACR Appropriateness Criteria®
Indeterminate Renal Mass

Variant: 1 **Indeterminate renal mass. No contraindication to either iodinated CT contrast or gadolinium-based MR intravenous contrast. Initial imaging.**

Procedure	Appropriateness Category	Relative Radiation Level
US abdomen with IV contrast	Usually Appropriate	O
MRI abdomen without and with IV contrast	Usually Appropriate	O
CT abdomen without and with IV contrast	Usually Appropriate	☢☢☢☢
US kidneys retroperitoneal	May Be Appropriate	O
MRI abdomen without IV contrast	May Be Appropriate	O
CT abdomen with IV contrast	May Be Appropriate	☢☢☢
CT abdomen without IV contrast	May Be Appropriate	☢☢☢
CTU without and with IV contrast	May Be Appropriate	☢☢☢☢
Arteriography kidney	Usually Not Appropriate	☢☢☢
Radiography intravenous urography	Usually Not Appropriate	☢☢☢
Image-guided biopsy renal mass	Usually Not Appropriate	Varies
MRU without and with IV contrast	Usually Not Appropriate	O

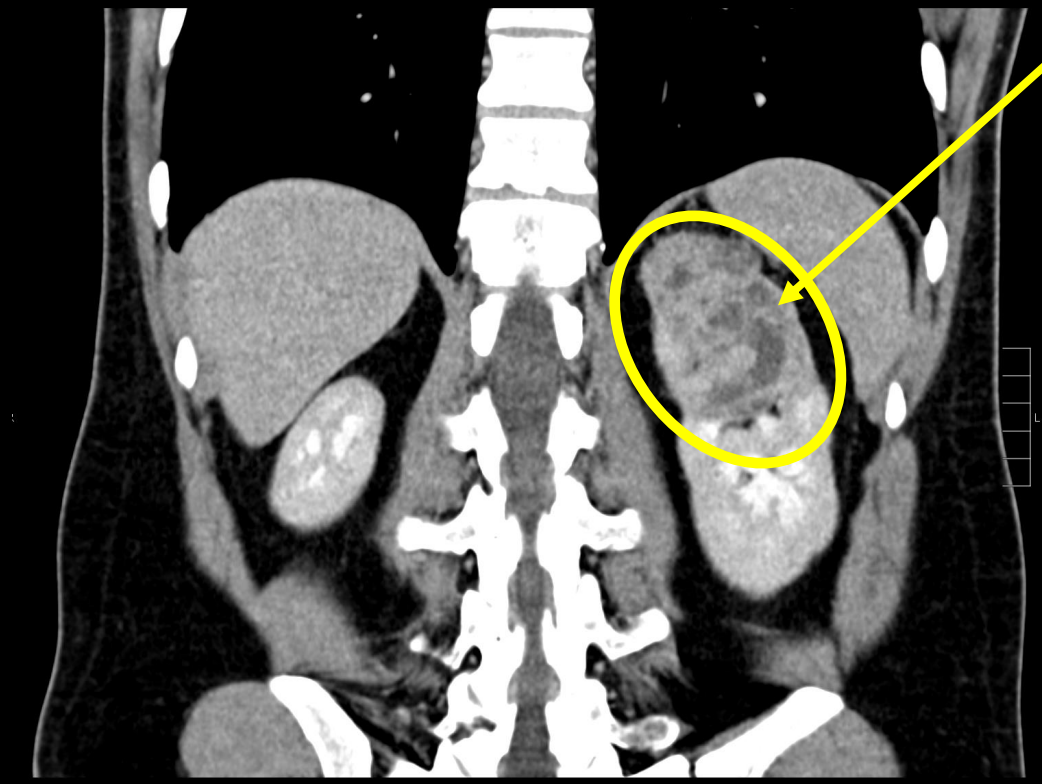
This imaging modality was ordered after routine occupational US screening

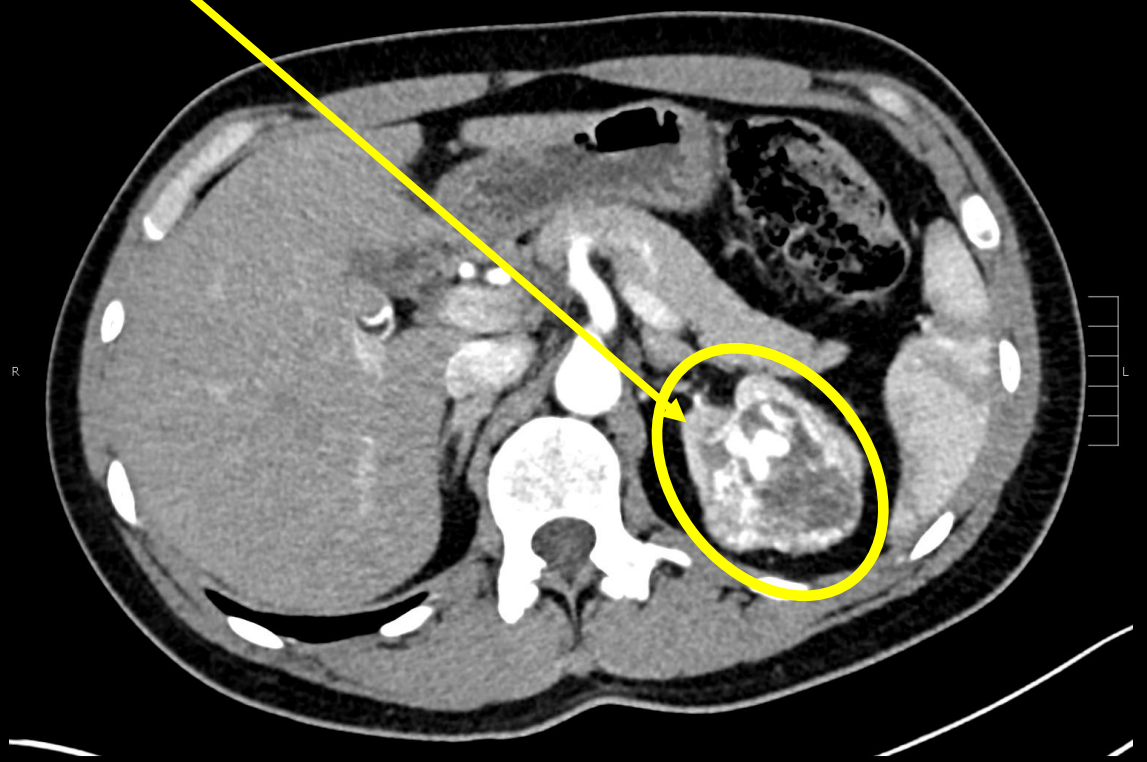
Radiology Images (not labeled)



Radiology Images (labeled)

Solid mass in the left upper kidney
which appears hyper-vascular





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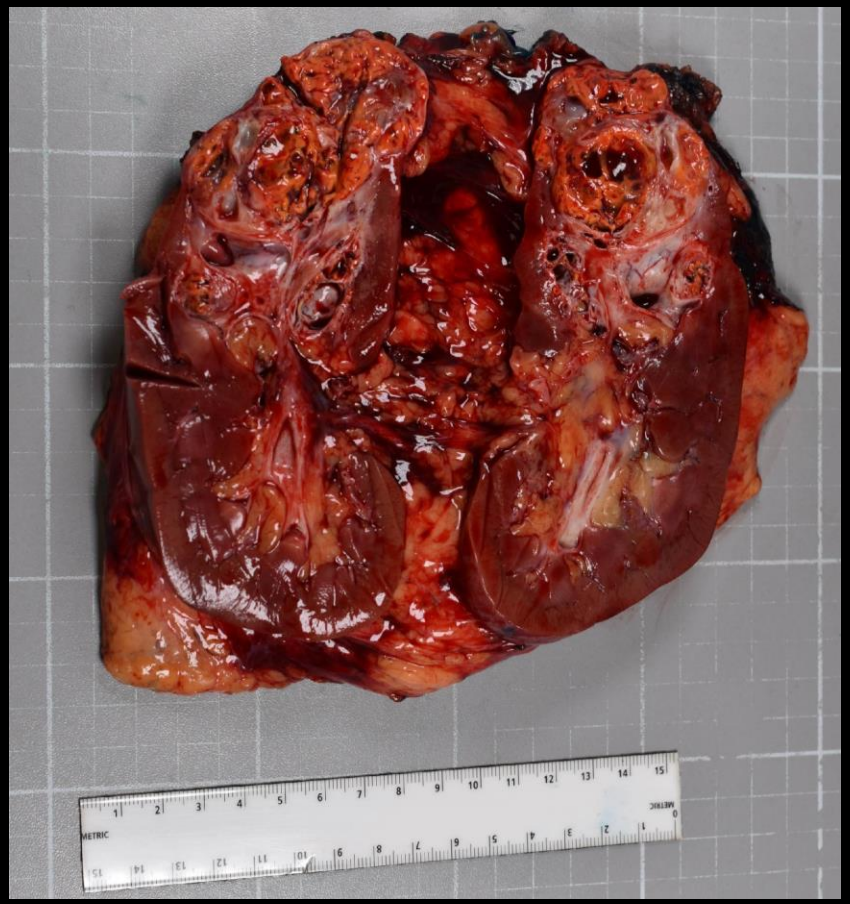
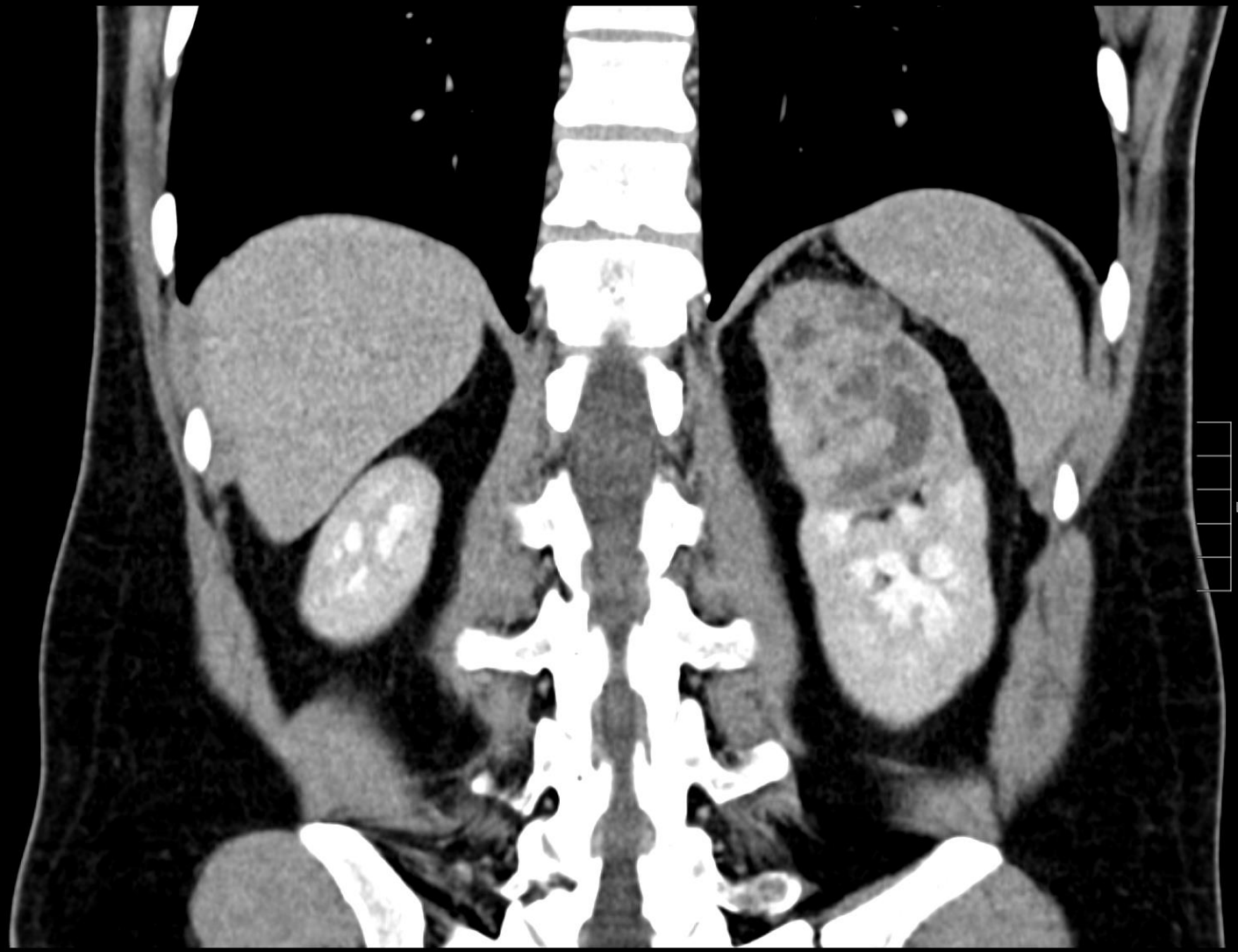
DDX (based on imaging)

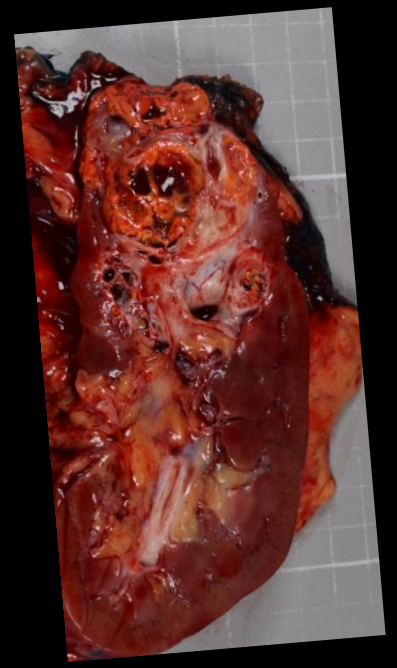
- Renal Cell Carcinoma
- Angiomyolipoma
- Pseudoaneurysm or other vascular lesion
- Metastatic lesions
- Lymphoma
- Oncocytoma

- Because of size, patient was scheduled for left radical nephrectomy

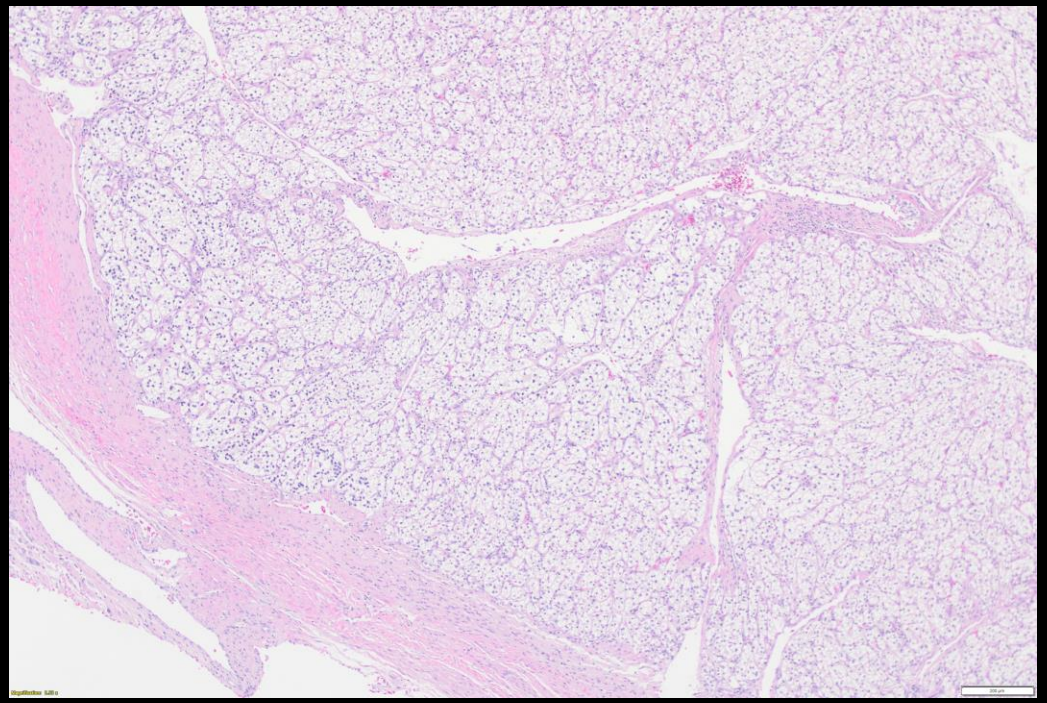
Gross Path of Bivalved Specimen



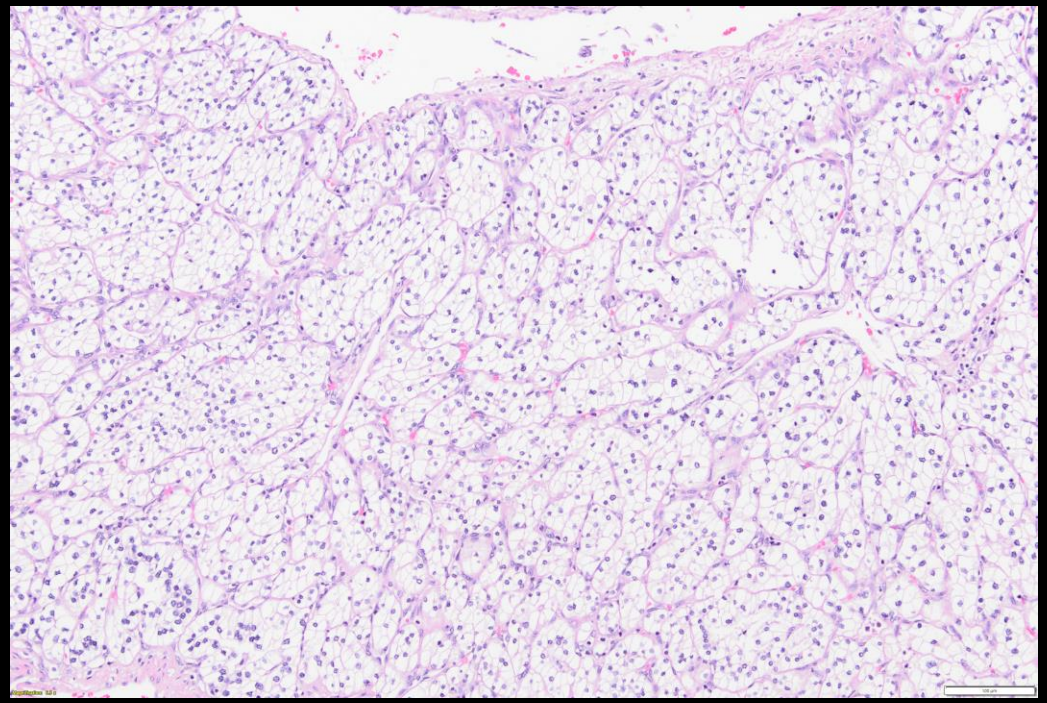




Micro Path



Left radical nephrectomy specimen at 4x: Nests of cells with clear cell morphology surrounded by a thin fibrous capsule.



Left radical nephrectomy specimen at 10x: Cells have ample clear cytoplasm and distinct cell borders.

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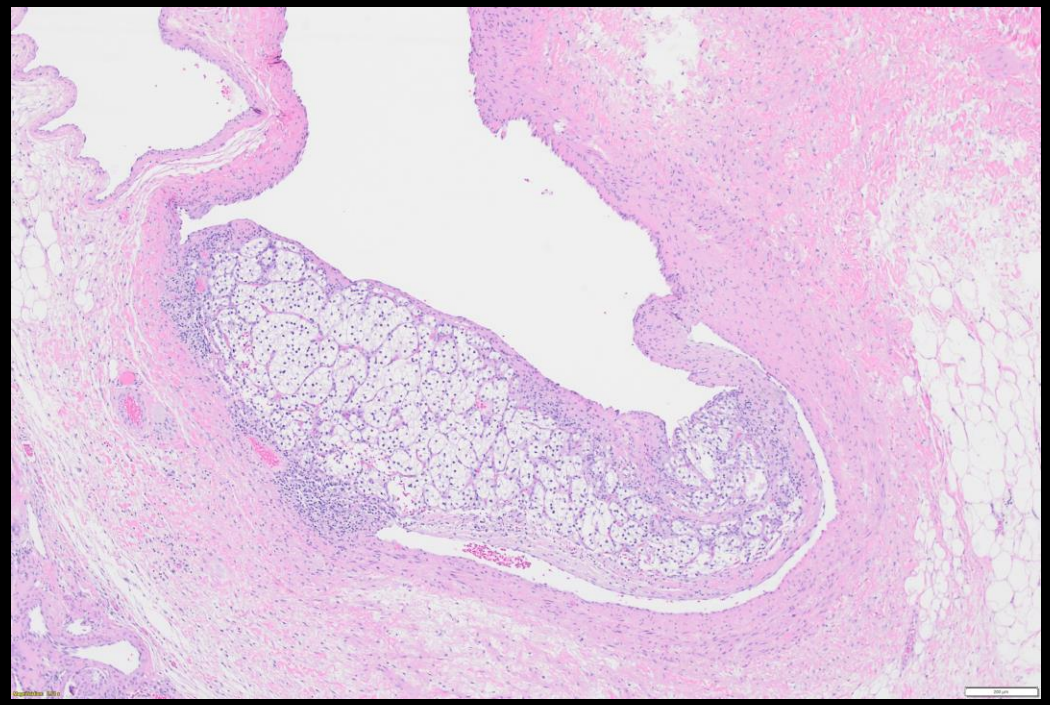
Micro Path



Renal vein (segmental branch) involvement at 4x: The tumor can be seen invading a segmental branch of the renal vein.

Final Dx:

Renal Cell Carcinoma-Clear Cell Type

Renal Cell Carcinoma

- Most common cause of primary renal neoplasms (80-85%) arising from the renal cortex
- Commonly found in the Czech Republic and North America, affecting males more than females. With the median age of diagnosis around 64 years of age. Highly unusual in patients under 40 and rare in children.
- Most common subtype being Clear Cell (~70-80%) associated with deletion on chromosome 3p and a high association with Von Hippel Lindau disease
- Followed by some other subtypes of papillary carcinomas (15%), chromophobe carcinomas (~5%), oncocytomas (~3-7%), collecting duct tumors (<1%) and renal medullary carcinoma (<1%)

Renal Cell Carcinoma

- Management involves partial or radical nephrectomy for surgical treatment
- Nonsurgical treatment involves ablation, cryoablation, or surveillance for tumors <4cm
- Retroperitoneal lymphadenectomy may be performed in patients at increased risk for lymph node involvement such as:
  - T3/T4 grade tumor
  - Sarcomatoid histology
  - presence of coagulative necrosis
- Cavoatrial tumor involvement occurs in ~10% of cases leading to thrombus of IVC and/or right atria
- Adrenal gland involvement or risk for direct extension into the gland may warrant adrenalectomy if the contralateral gland is still present

Risk Factors leading to RCC

- Smoking cigarettes:
  - has an increased risk with current smokers having a higher relative risk for development compared to former smokers (RR 1.36, RR 1.16 respectively)
- Occupational exposures:
  - Exposure to cadmium, asbestos, and petroleum byproducts, with smoking tobacco concurrently increases the risk
- Other factors such as hypertension, obesity, acquired cystic kidney disease and CKD, analgesics use, Genetic factors such as polycystic kidney disease, VHL, and sickle cell disease, chemotherapies, chronic Hepatitis C infection, and chronic kidney stones

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