

AMSER Rad Path Case of the Month:

A 63-year-old female presents with enlarging left adrenal mass

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Patient Presentation

HPI: A 63-year-old female presents for follow up evaluation of an incidental left adrenal mass. She presented to the ED several months ago with abdominal pain. CT abdominal pelvis showed a 3cm left adrenal mass.

PMH: Osteoporosis, hypothyroidism, hyperparathyroidism

PE:N/A

Pertinent Labs

- Urine metanephrines and normetanephrine are within normal limits.
- ACTH, Cortisol, and aldosterone are within normal limits.
- TSH, Free T4, and PTH are within normal limits.

What Images Should We Order?

ACR Appropriateness Criteria

Variant 3:

Indeterminate adrenal mass, greater than 2 cm and less than 4 cm on initial imaging. No diagnostic benign imaging features. No history of malignancy. Adrenal specific imaging.

Procedure	Appropriateness Category	Relative Radiation Level
MRI abdomen without and with IV contrast	Usually Appropriate	○
MRI abdomen without IV contrast	Usually Appropriate	○
CT abdomen without and with IV contrast	Usually Appropriate	☼☼☼☼
CT abdomen without IV contrast	May Be Appropriate	☼☼☼
Image-guided biopsy adrenal gland	Usually Not Appropriate	Varies
CT abdomen with IV contrast	Usually Not Appropriate	☼☼☼
FDG-PET/CT skull base to mid-thigh	Usually Not Appropriate	☼☼☼☼

This imaging modality was ordered

Initial CT Abdomen Pelvis w and w/o contrast in 2017 (not labeled)



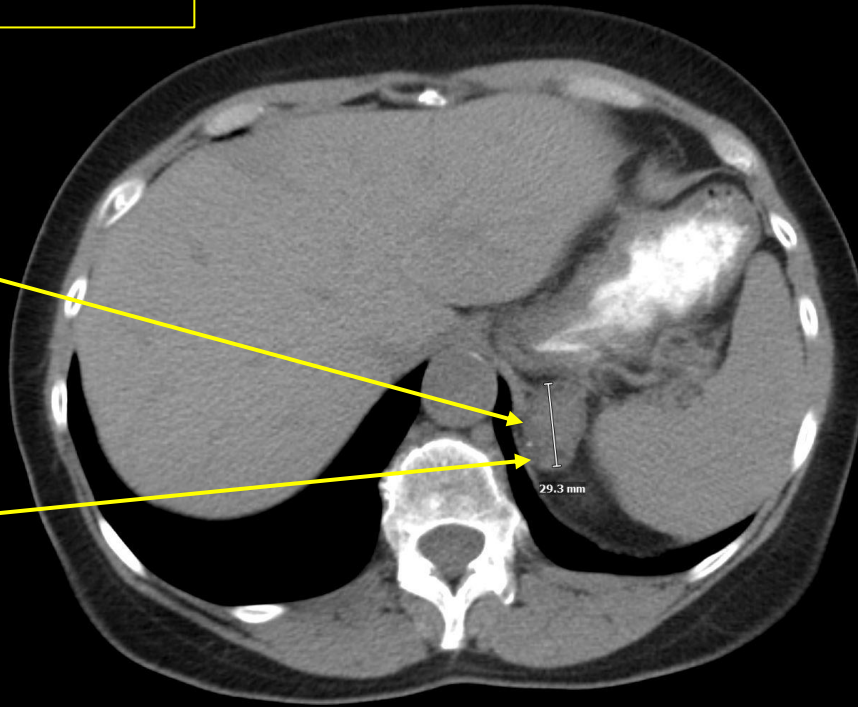
Initial CT Abdomen Pelvis w and w/o contrast in 2017 (labeled)

Adrenal mass measured 3.0 x 2.2 cm with several globules of macroscopic fat and several small calcifications.

Heterogenous left adrenal gland. Washout measurements cannot be performed

Calcification

Tiny amount of macroscopic fat



Non contrast abdomen CT



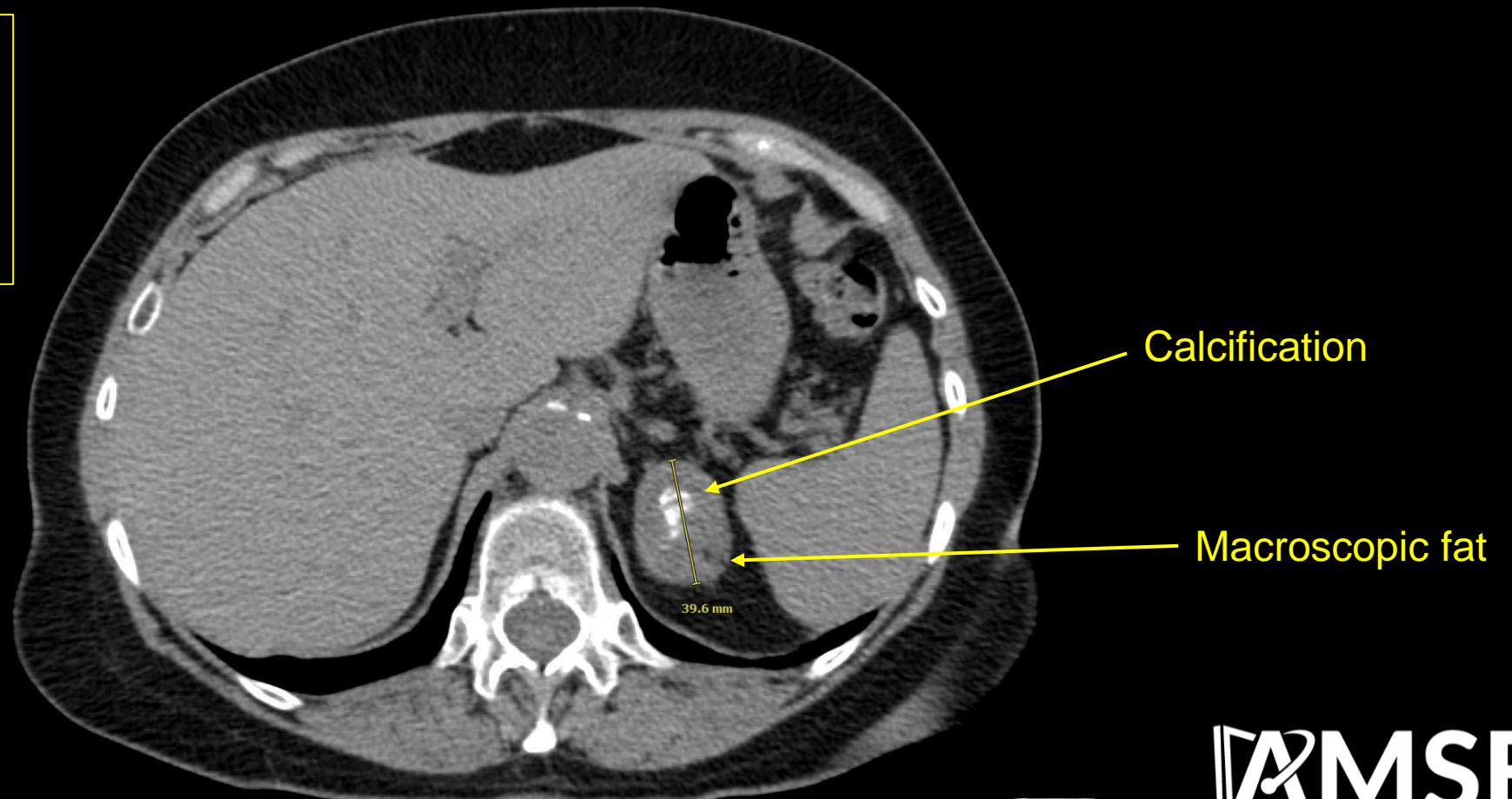
Contrast enhanced CT

CT Abdomen Pelvis w and w/o contrast in 2020 (not labeled)

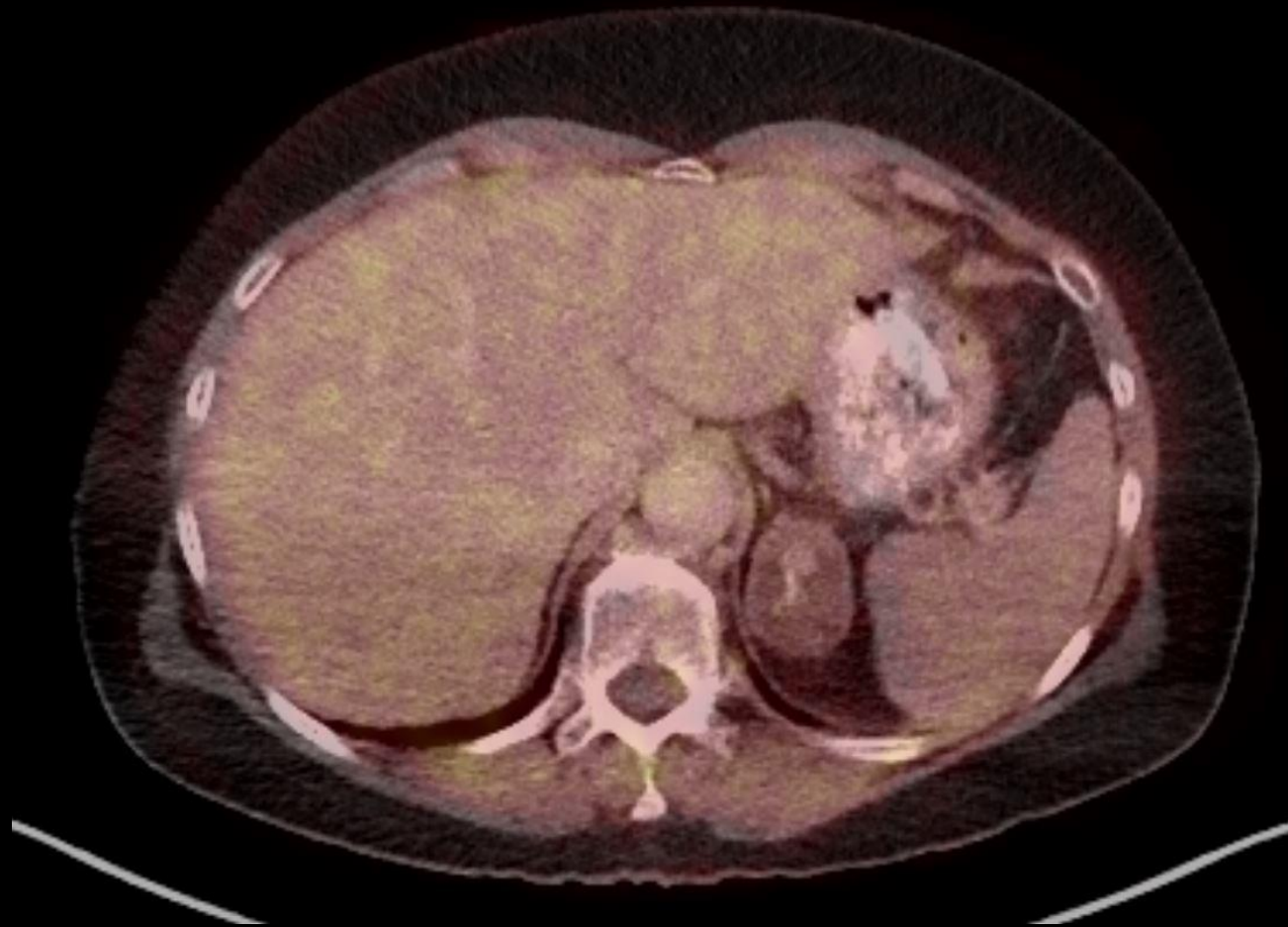


CT Abdomen Pelvis w and w/o contrast in 2020 (labeled)

Adrenal mass measured 4.0 x 2.2 x 3.1cm. There are increasing calcification in the mass. There are 2 small areas of macroscopic fat.

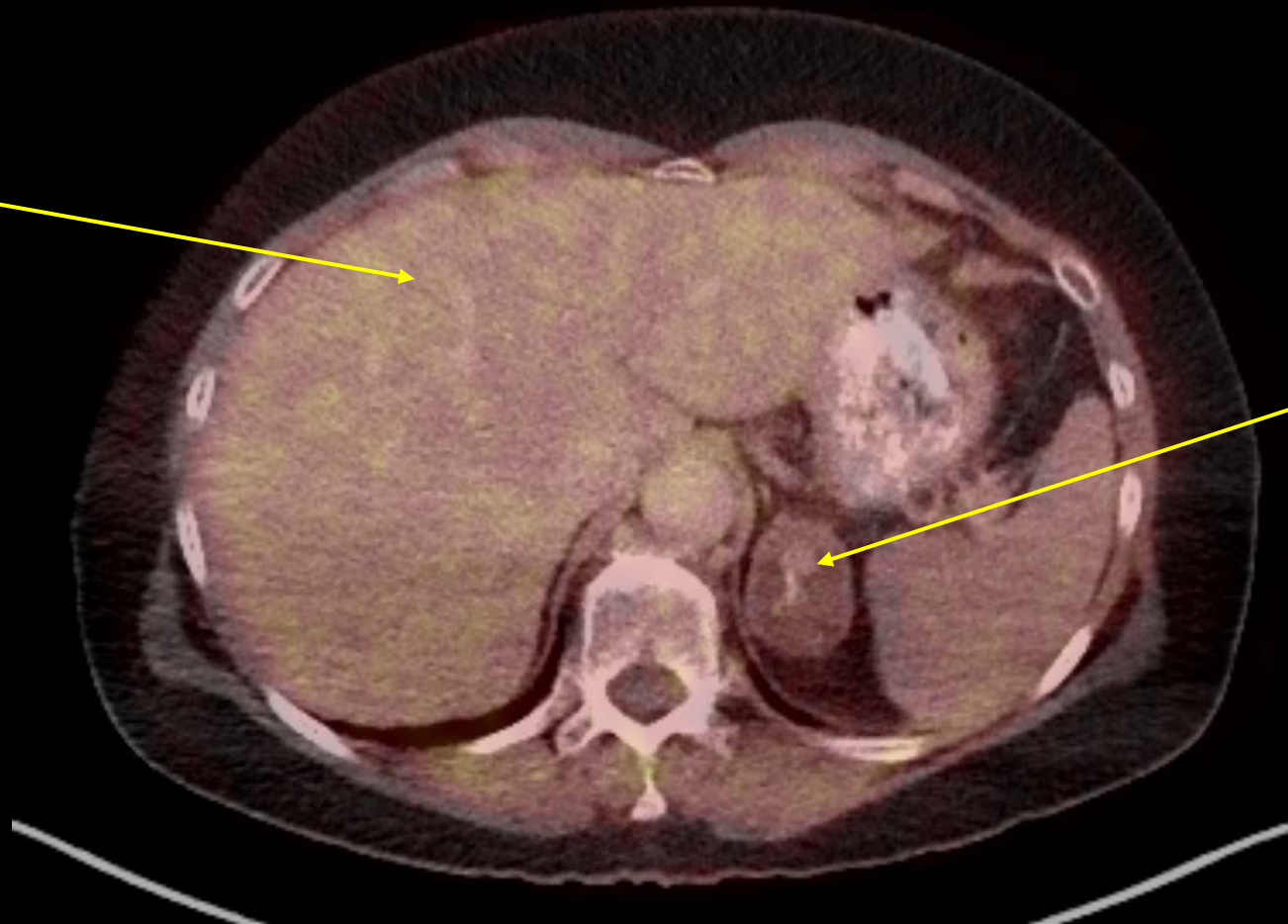


PET/CT in 2020 (not labeled)



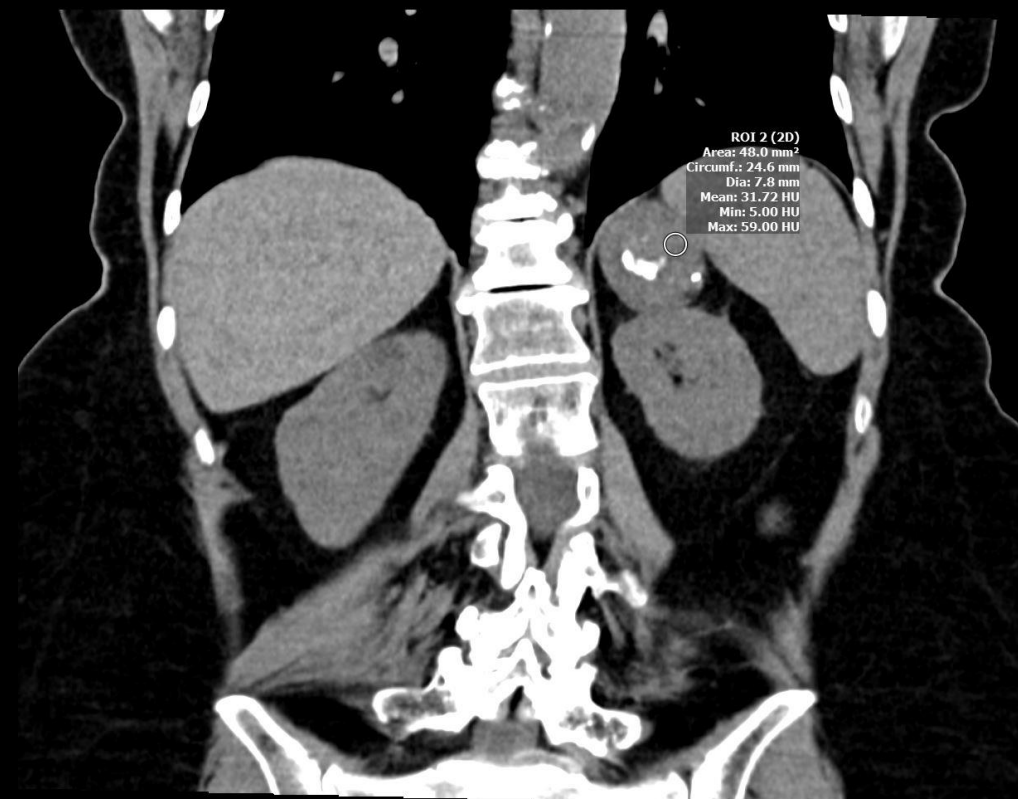
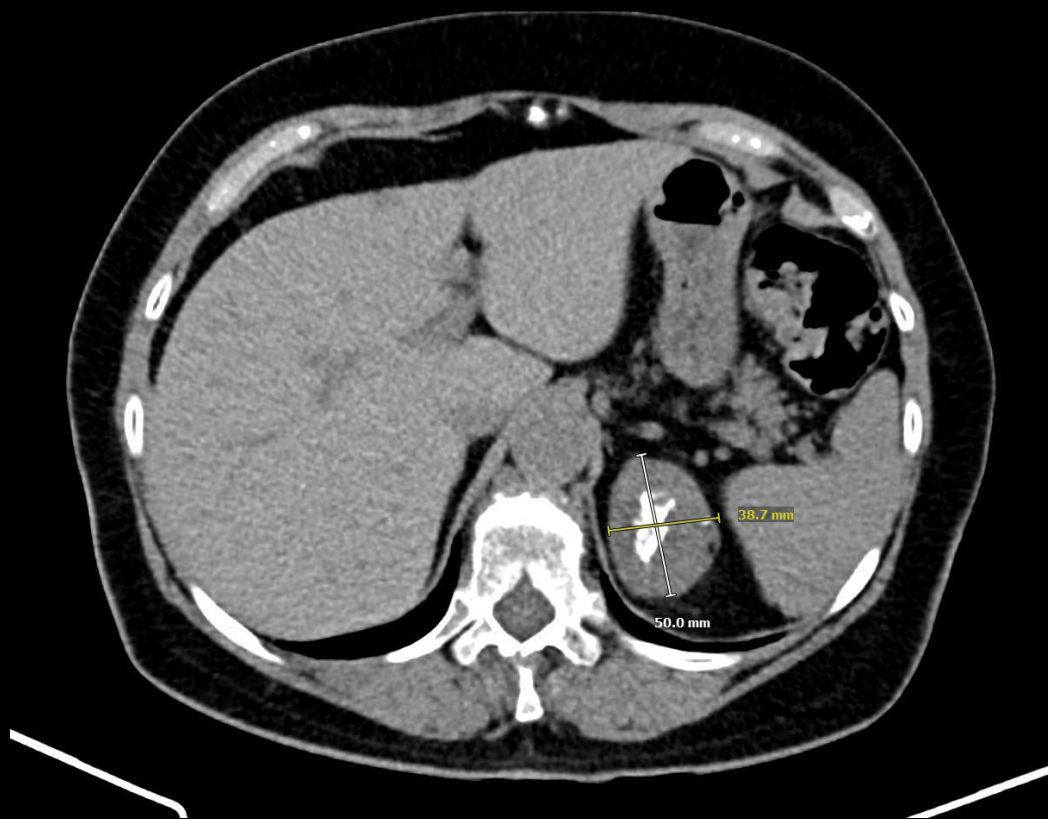
PET/CT in 2020 (labeled)

SUV: 2.7



SUV: 2.1
Lesion is not
metabolically active.

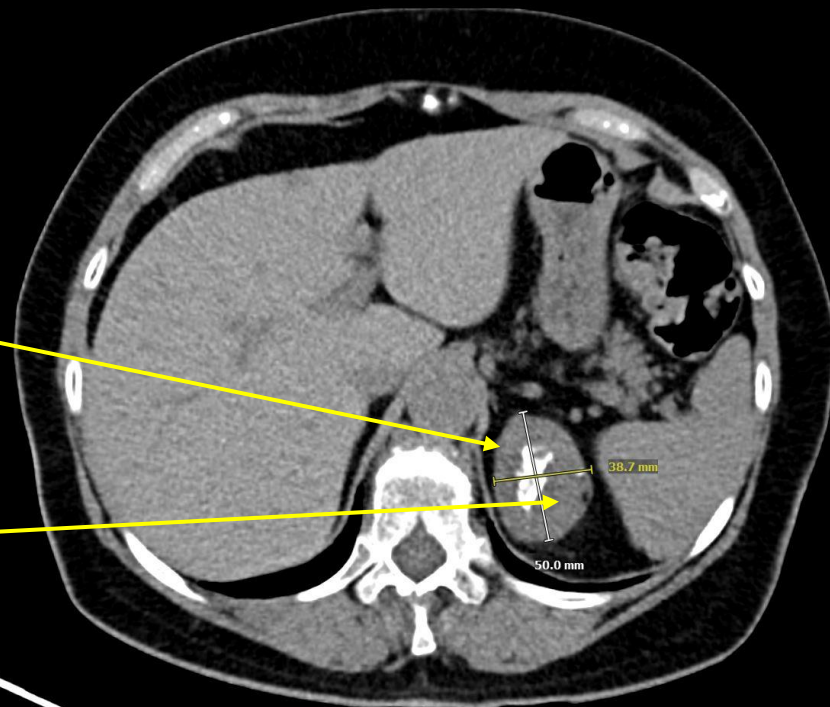
CT Abdomen Pelvis w and w/o contrast in 2023 (not labeled)



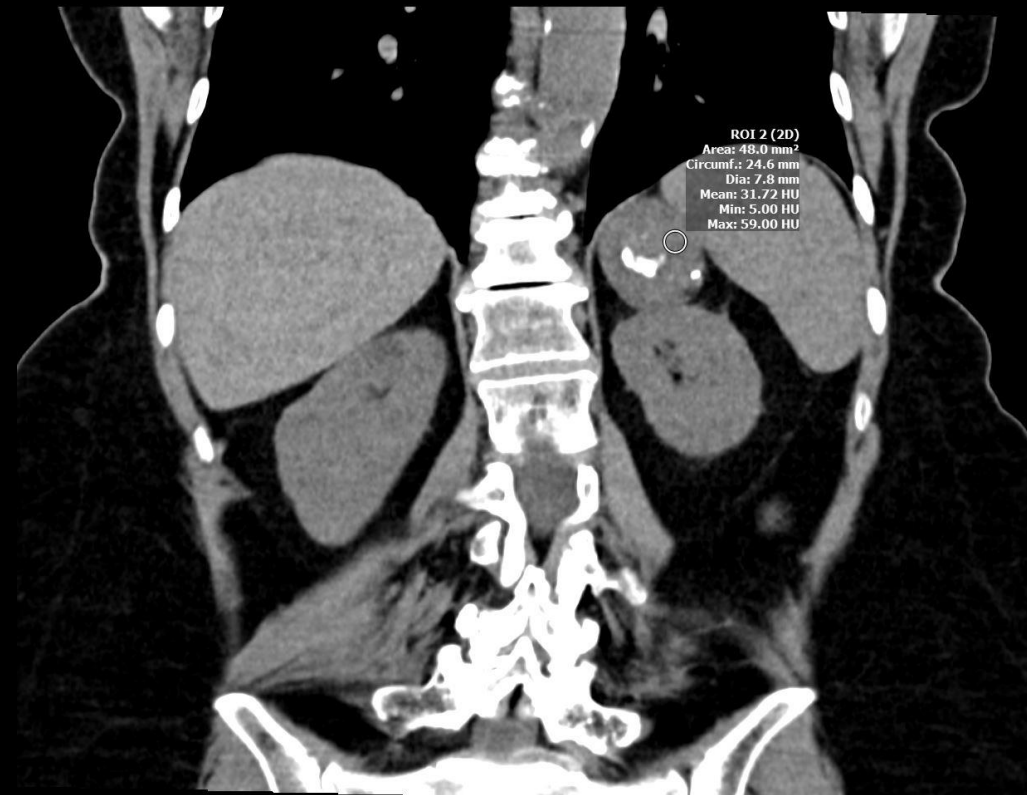
CT Abdomen Pelvis w and w/o contrast in 2023 (labeled)

Continued enlargement of the left adrenal mass, now measuring 5.0 x 3.9 cm. Stable calcification and macroscopic fat noted. Wash out not performed due to heterogenous nature.

Axial



Coronal



Calcification

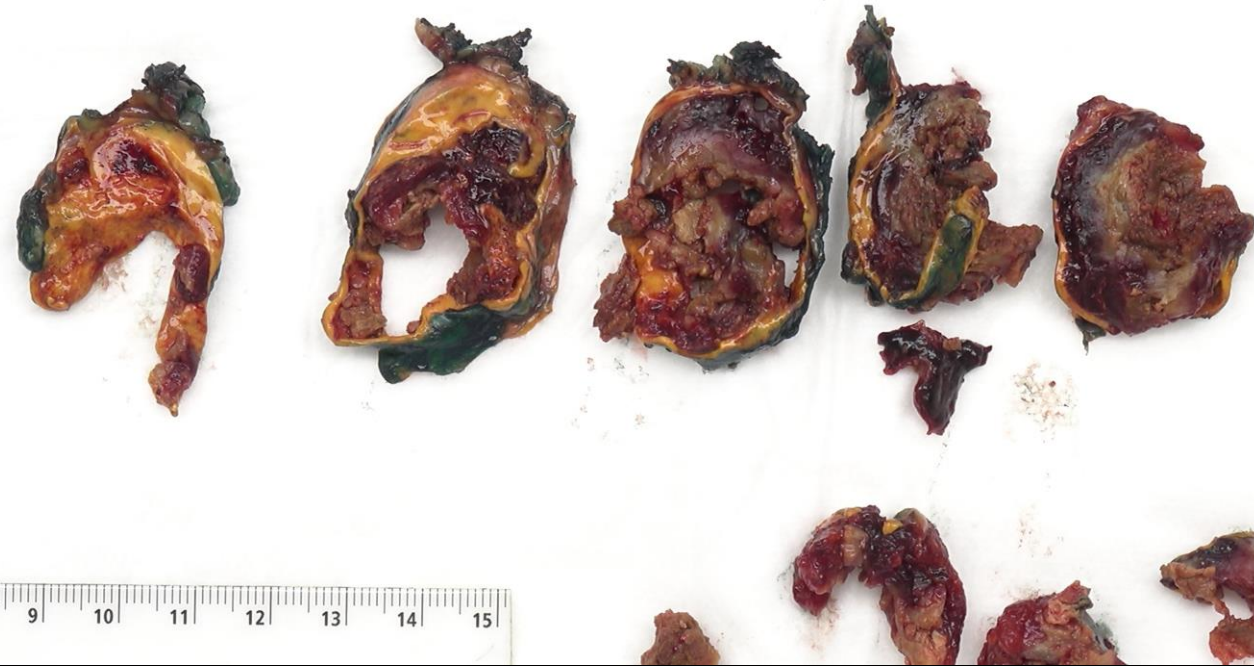
Macroscopic Fat

DDX

- Myelolipoma
- Adrenal Adenoma
- Adrenal Cortical Carcinoma

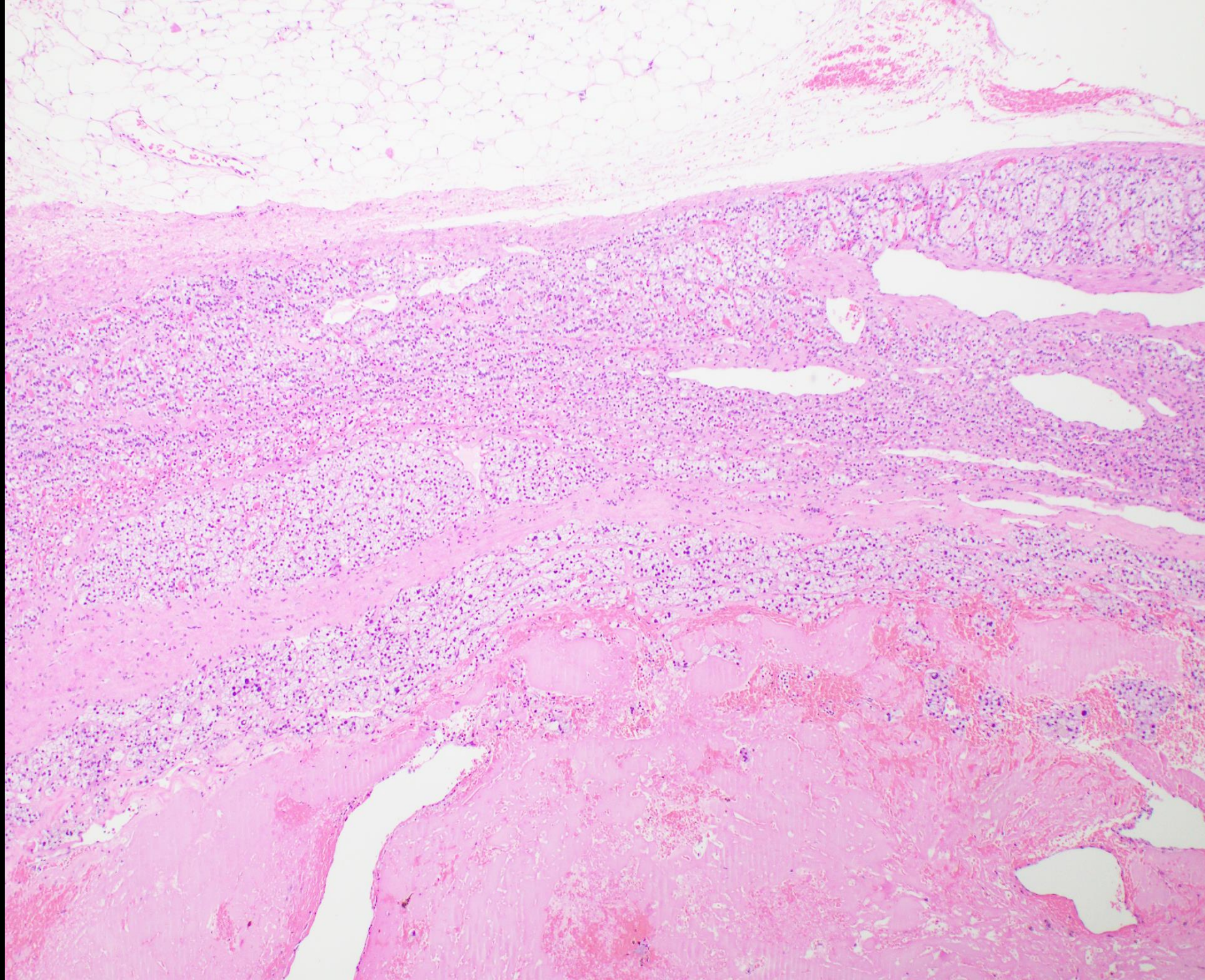
Gross Path

The lesion measured 7.3 x 3.9 x 2.7cm, encompasses both pieces. Central fibrinous dull hemorrhagic nodule replacing the entire medulla.



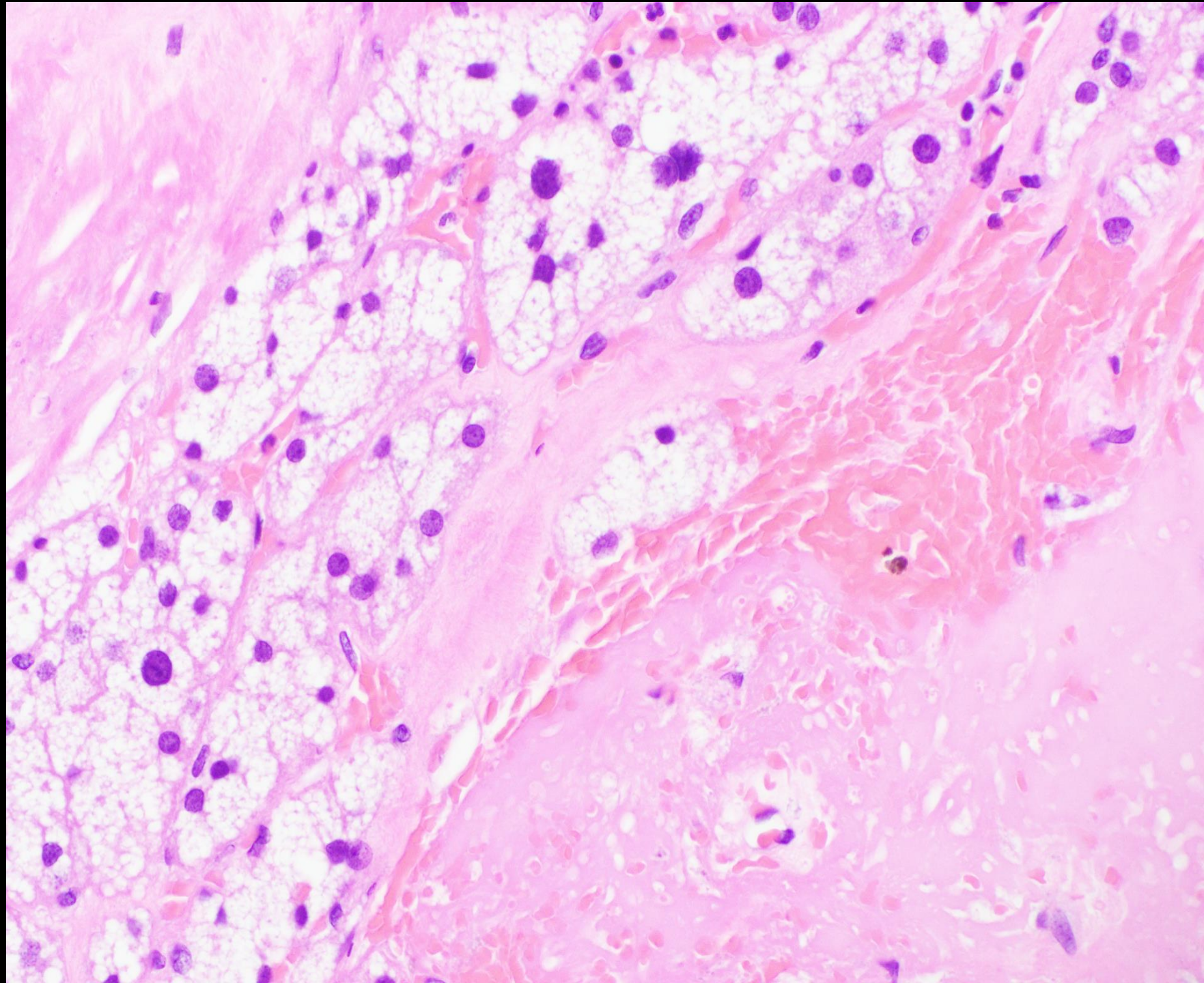
Adrenal Adenoma at Low-power

- Extra-adrenal fat to adrenal gland to adenoma to organizing hemorrhage



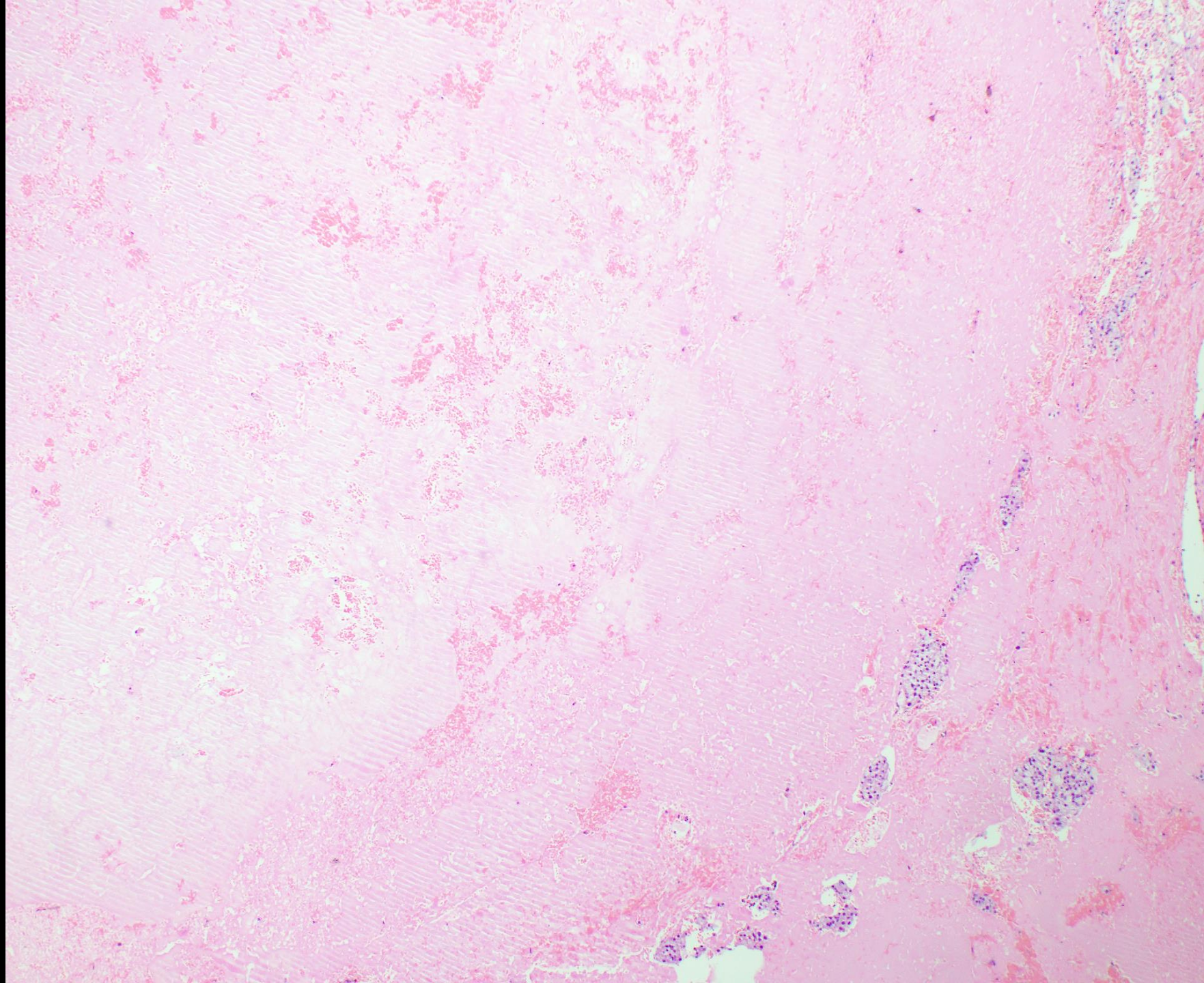
Adrenal Adenoma at High-power

- Tumor cells with surrounding hemorrhage



Adrenal Adenoma at Low-power

- Extent of organizing hemorrhage including RBCs and fibrin



Final Dx:

Adrenal Cortical Adenoma with Organizing Hemorrhage

Case Discussion

Definition:

- Adrenal adenomas are benign neoplasms that originate from the adrenal cortex.
- They are categorized as functional or nonfunctional.
- Functional adrenal adenomas produce adrenal cortical hormones.
- Adrenal adenomas can be lipid rich or lipid poor.

Epidemiology:

- Adrenal adenomas account for 54%-75% of adrenal incidentalomas.
- The frequency of adenoma is 0.14% between age 20-29 and 7% in those older than 70.

Case Discussion

Diagnosis:

- CT scan or MRI should be used to evaluate an adrenal mass.
- Adrenal cortical hormone levels (metanephrines, normetanephrine, cortisol, ACTH, and aldosterone) are evaluated as part of the workup.

Imaging Features of a Typical Adrenal Adenoma

- CT: homogenous hypodense mass, <10HU on non-con CT (lipid rich).
- If >10HU, must do washout study (lipid poor).
- For discussion of washout please refer to:
- [Adrenal Washout](#)
- Heterogenous lesions with large areas of necrosis or hemorrhage cannot be characterized by their washout pattern.

Case Discussion

Management:

- This adrenal lesion was problematic because of its heterogenous nature and increasing size.
- The presence of macroscopic fat suggested that this could have been myelolipoma.
- Calcifications are nonspecific and can be seen with many adrenal pathologies, including hemorrhages and adenocarcinomas.
- Ultimately, the increasing size of the adrenal lesion led to it being resected.

References

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