AMSER Case of the Month: March 2026

An Uptake Most Foul – The Pancreatic Mystery

Kolya Isterabadi, M2
Matthew Kruse, M.D.

Department of Radiology
Creighton University School of Medicine

Patient Presentation

- HPI: A 65-year-old male with MR & biopsy-proven Grade Group 1 prostatic adenocarcinoma (Gleason 6) comes to clinic for staging.

- PMH:
- Several year history of iron-deficiency anemia secondary to diverticulitis hematochezia
- Repeat PSA shown to be elevated at 14.2 ng/mL and 14.8ng/mL.
- IBD with subsequent dx of Crohn's Disease

- Physical Exam:
- Left cervical lymphadenopathy
- Dry pruritic skin on trunk and bilateral LE

Pertinent Labs

- Decipher genomic risk score = 0.52 (intermediate risk, 0.45-0.60)
- PSA-associated risk = 14.2 (intermediate risk)
- Prior 3+ yr hx of anemia corrected on most recent labs

- WBC: Normal (6.2k/uL)
- CA 19-9 = Negative (23.6 u/mL)
- CEA = Negative (<2ng/mL)

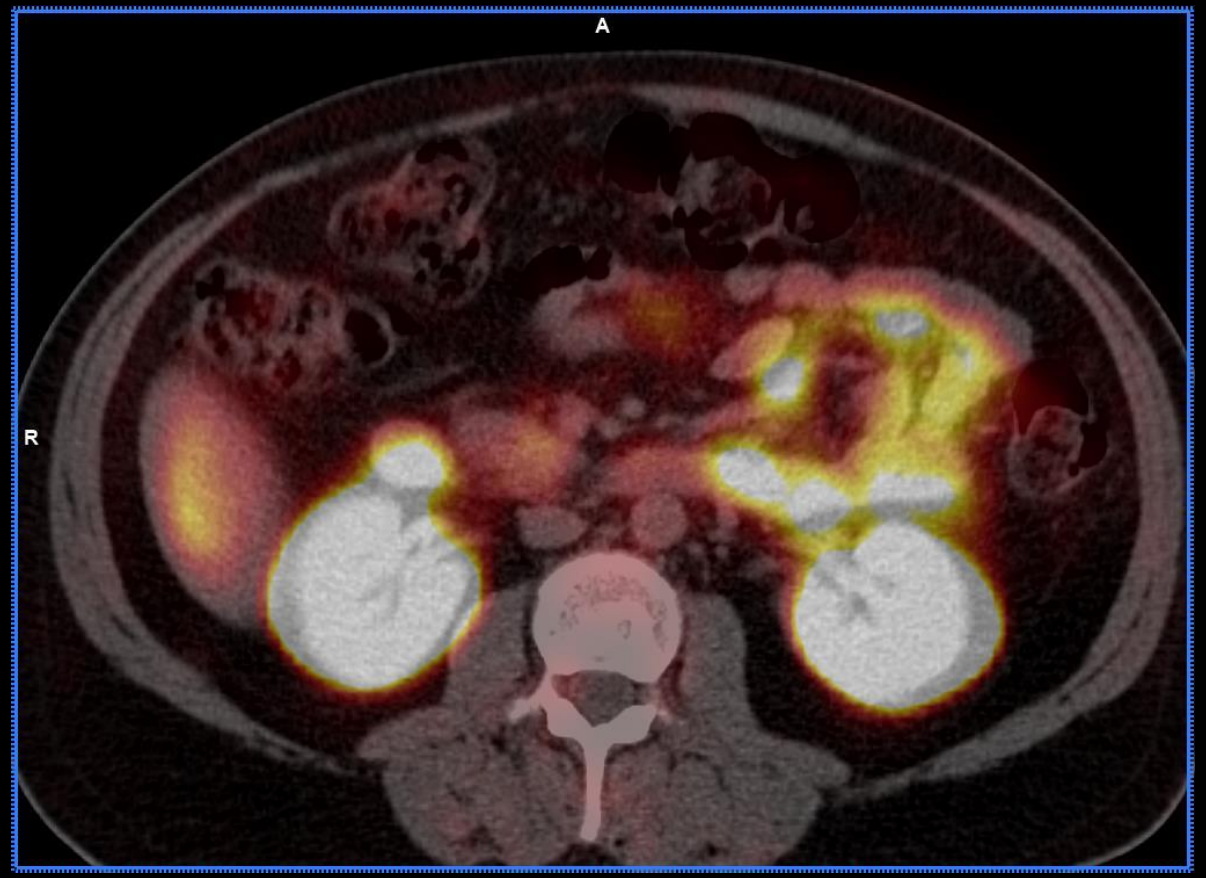
What Imaging Should We Order?

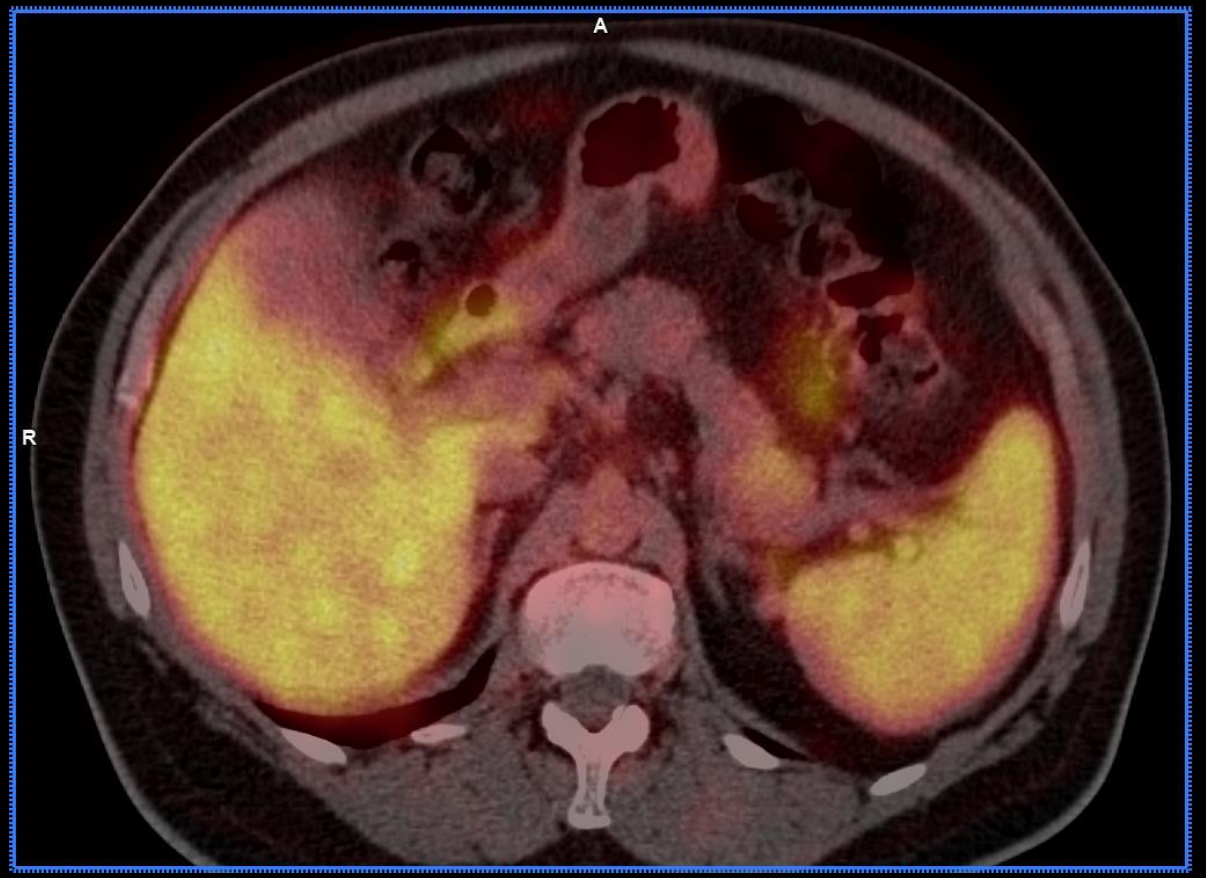
Intermediate-Risk Prostate Adenocarcinoma, Staging: ACR Appropriateness Criteria

Variant 4: **Clinically established intermediate-risk prostate cancer. Staging or surveillance.**

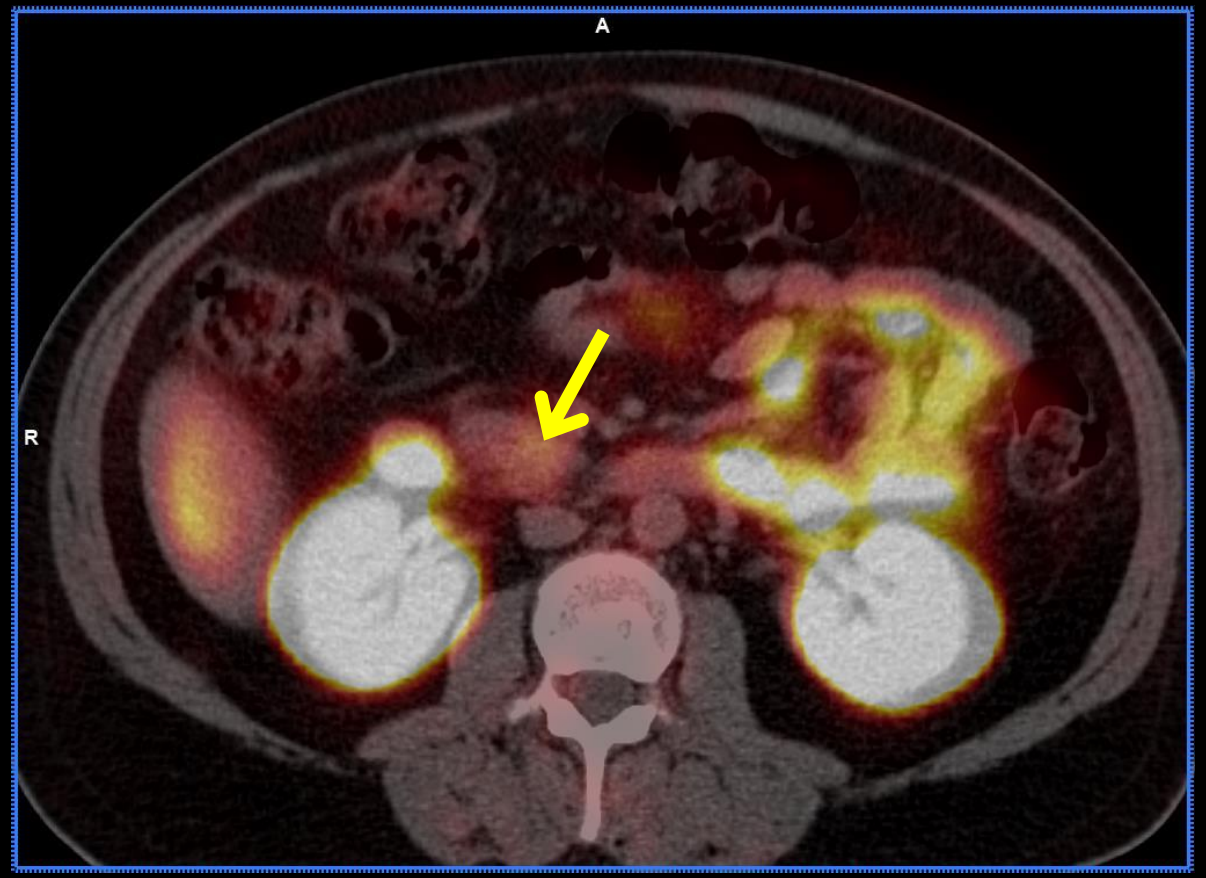
Procedure	Appropriateness Category	Relative Radiation Level
MRI-targeted biopsy prostate	Usually Appropriate	O
MRI abdomen and pelvis without and with IV contrast	Usually Appropriate	O
MRI pelvis without and with IV contrast	Usually Appropriate	O
CT abdomen and pelvis with IV contrast	Usually Appropriate	☢☢☢
PSMA PET/CT skull base to mid-thigh	Usually Appropriate	☢☢☢☢
CT chest abdomen pelvis with IV contrast	Usually Appropriate	☢☢☢☢
Fluciclovine PET/CT skull base to mid-thigh	Usually Appropriate	☢☢☢☢
TRUS-guided biopsy prostate	May Be Appropriate	O
MRI abdomen and pelvis without IV contrast	May Be Appropriate	O
MRI pelvis without IV contrast	May Be Appropriate	O

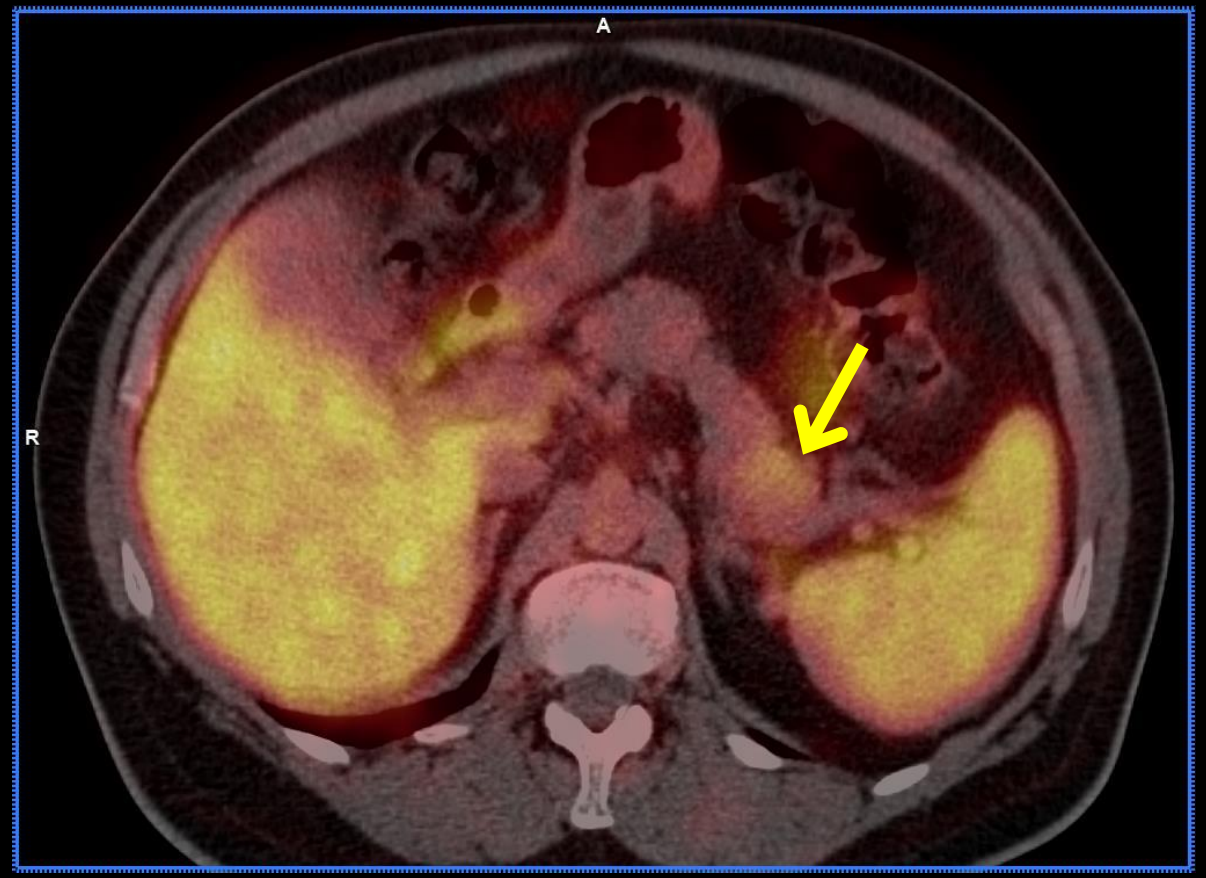
Findings on PSMA PET/CT





Findings on PSMA PET/CT (labeled)





Focal mild to moderately increased PSMA activity associated with the medial pancreatic head (→) and the pancreatic tail (→)

Interlude I

Given the pancreatic hotspots on PSMA-PET, pancreatic-protocol contrast CT of the abdomen was then ordered…

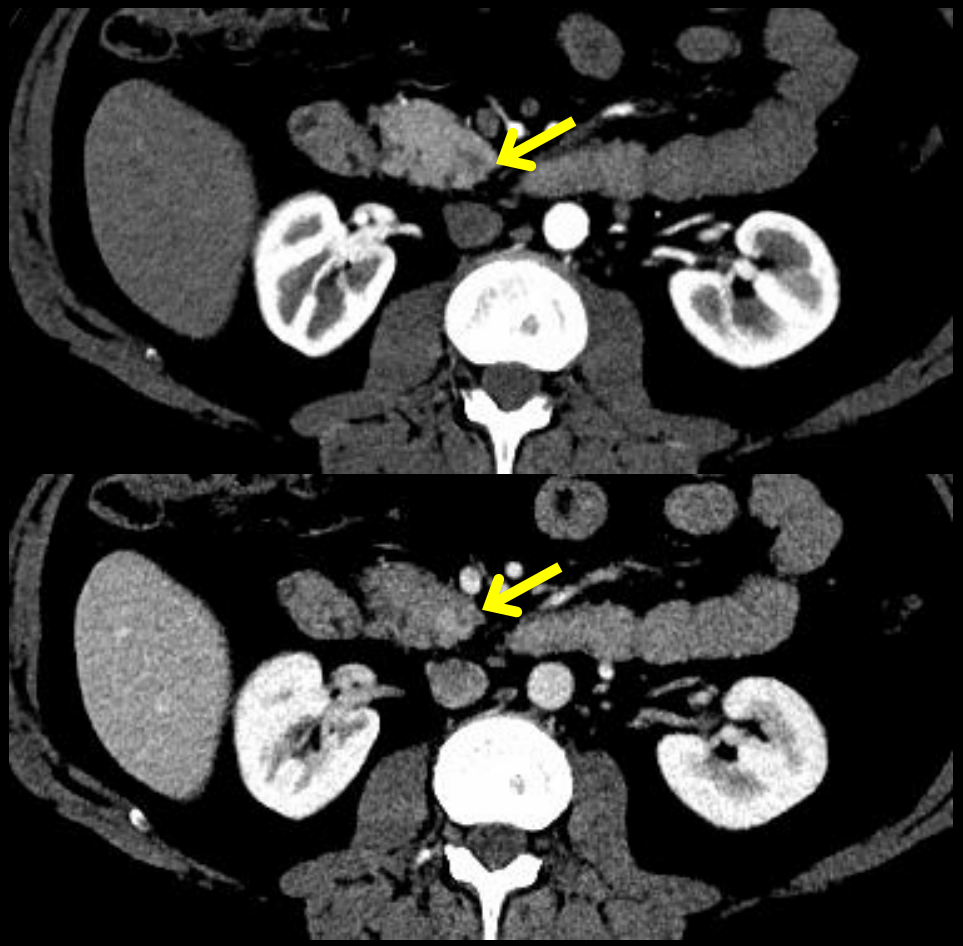
Findings on Pancreatic Protocol CT

Arterial Phase

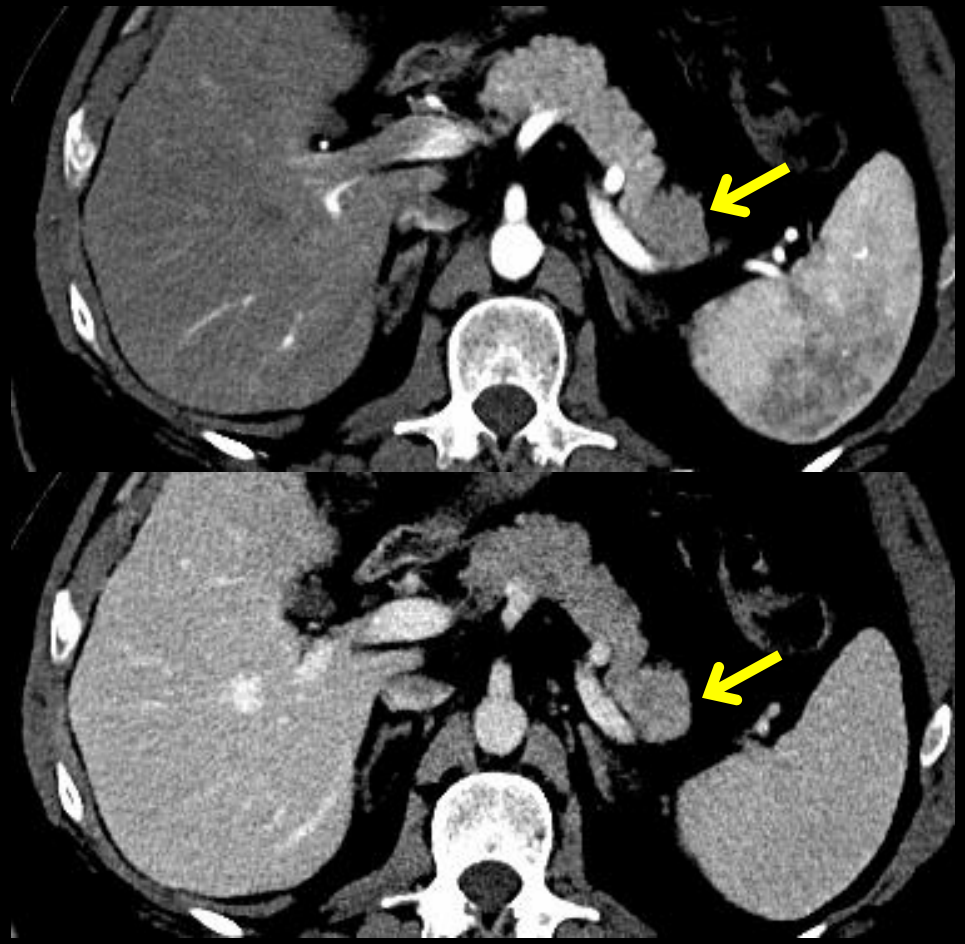
Venous Phase

Findings on Pancreatic Protocol CT (labeled)

Arterial Phase



Venous Phase



Indeterminate arterially hypoenhancing and venous hyperenhancing lesions in the pancreatic uncinate process and tail (→)

AMSER

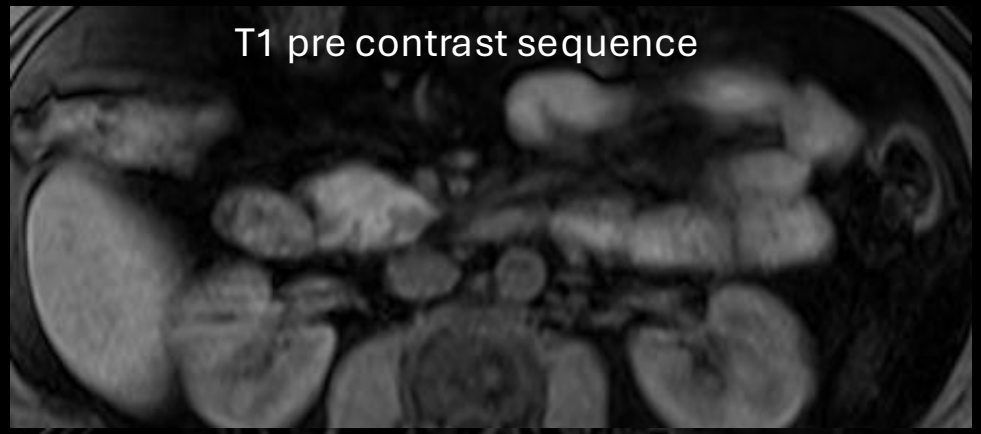
Interlude II

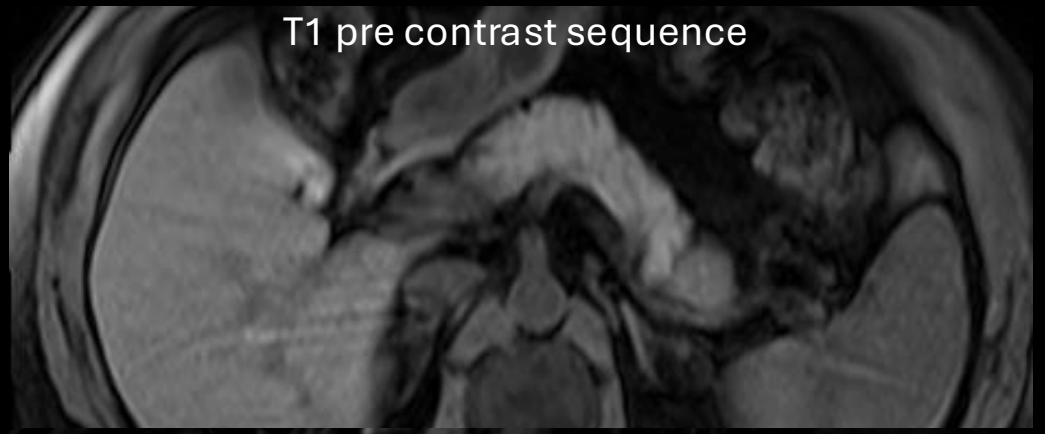
Due to the indeterminate pancreatic lesions, follow-up imaging with MRCP was planned...

Variant 1: **Adult. High-risk screening for pancreatic ductal adenocarcinoma.**

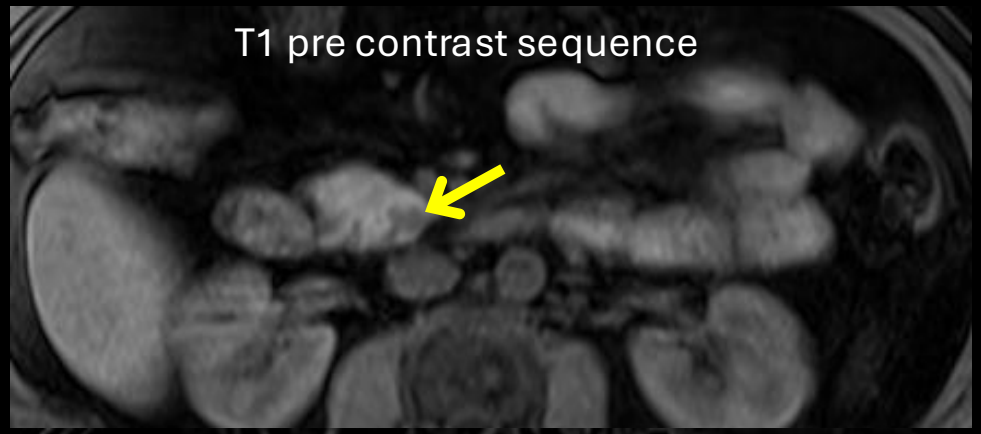
Procedure	Appropriateness Category	Relative Radiation Level
MRI abdomen without and with IV contrast	Usually Appropriate	O
MRI abdomen without and with IV contrast with MRCP	Usually Appropriate	O
CT abdomen and pelvis with IV contrast	Usually Appropriate	☢☢☢
CT abdomen with IV contrast	Usually Appropriate	☢☢☢
CT abdomen with IV contrast multiphase	Usually Appropriate	☢☢☢☢

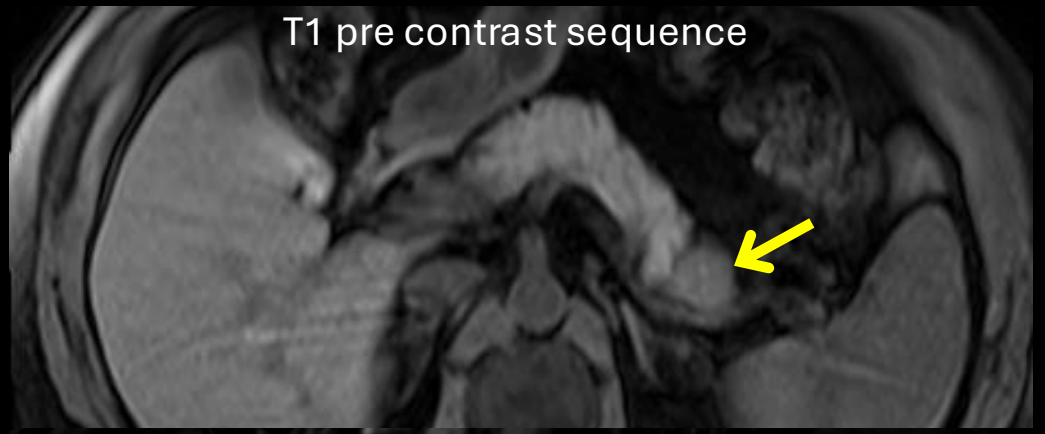
Findings on MRCP

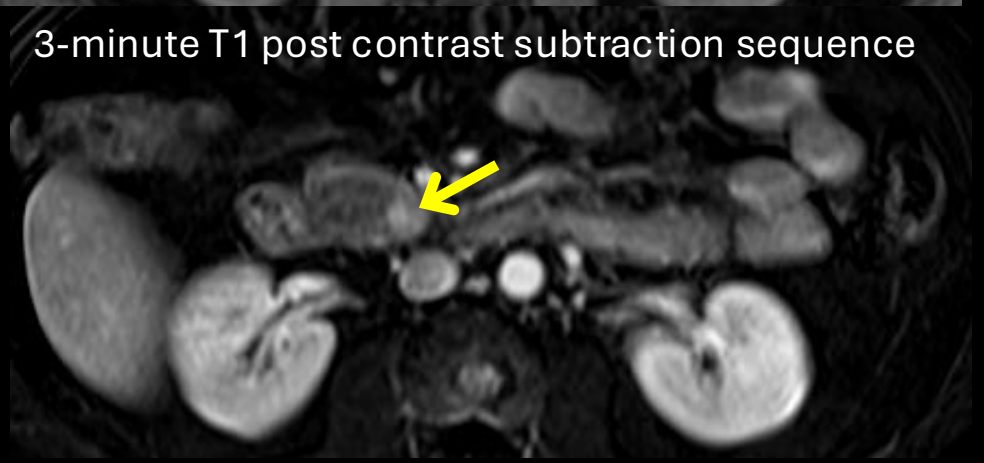


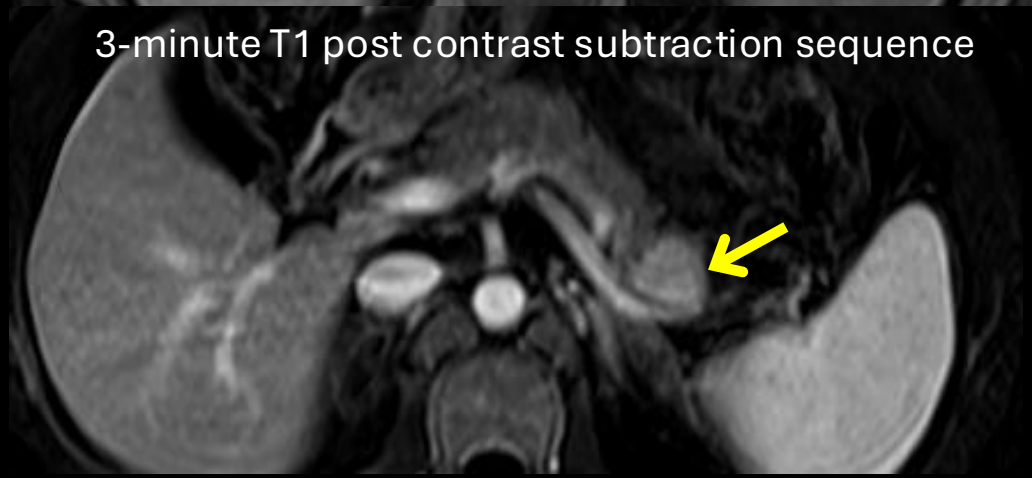


Findings on MRCP









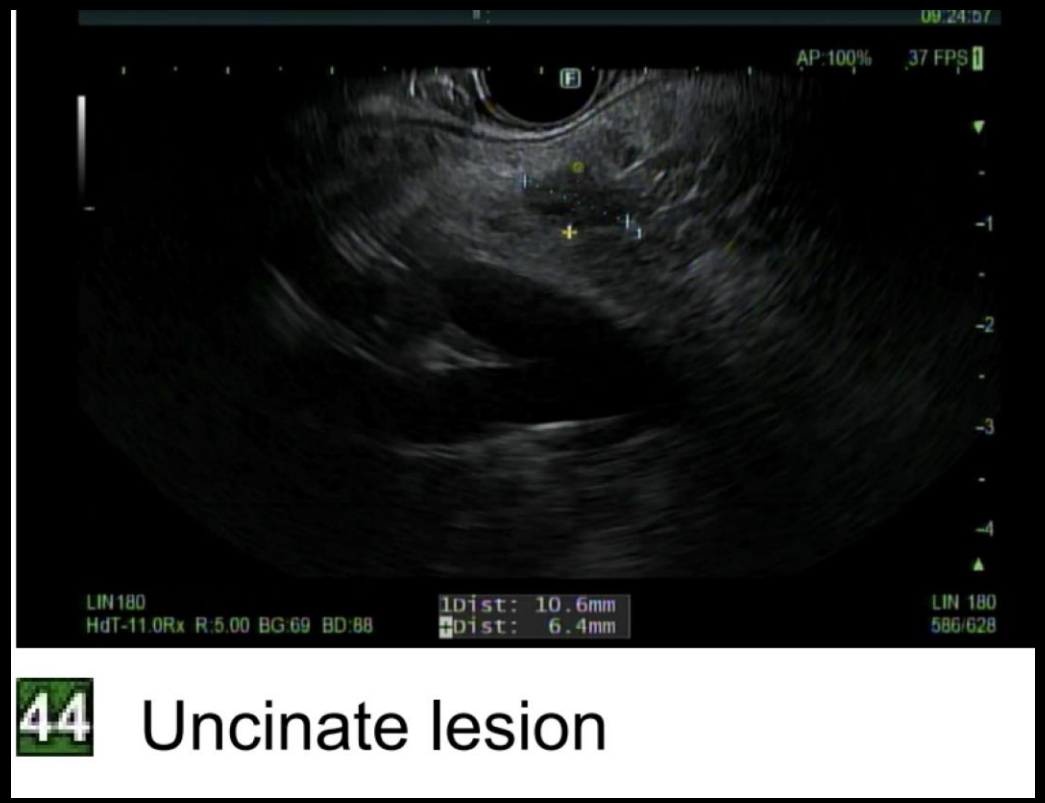
MRCP confirms T1 hypointense progressively enhancing focal lesions in the pancreatic uncinate process and tail (→)

AMSER

Interlude III

At this point, Endoscopic ultrasound and FNA biopsy was performed to rule out pancreatic neuroendocrine tumor (biopsy repeated 11months later)

Endosonographic and FNA Results



44 Uncinate lesion

36 Tail

EUS Findings:

Pancreatic parenchymal abnormalities (diffuse hypo-echogenicity with loss of parenchymal architecture) in tail and uncinate lesions.

Endosonographic and FNA Results

FNA Pathology Findings:

Mixture of benign and chronically inflamed pancreatic tissue with significant plasmacytic infiltrate (IgG+ and CD138+). Negative for type 1 autoimmune pancreatic markers such as IgG4, storiform/pinwheel fibrosis, and obliterative phlebitis.

Final Dx:

Autoimmune Pancreatitis Type II

Case Discussion

- PSMA PET is a relatively new imaging modality, FDA-approved in 2020, and reports of various incidental findings have been made since its clinical introduction. Some incidental findings reported on PSMA-PET/CT include: Paget's disease, multiple myeloma, infectious/inflammatory processes, and benign or malignant neoplasms. As such, its role in defining clinical practice is evolving as we learn more about its diagnostic capabilities. [1, 2]

- Type 2 (IgG4 negative) autoimmune pancreatitis (AIP-2) is a chronic pancreatic inflammatory condition characterized by fibrosis with neutrophilic and lymphocytic infiltration (Th17-mediated) resulting in granulocytic epithelial lesions of the pancreatic ducts. In 15-30% of cases AIP-2 is associated with inflammatory bowel disease, particularly ulcerative colitis and Crohn's disease. [3]

- Imaging features of autoimmune pancreatitis types 1-3 are nearly indistinguishable from one another. Described imaging features of AIP include focal or diffuse sausage-shaped swelling of the pancreas on CT and MRI, rectangular shape of pancreas, hypodense rim surrounding the pancreas on CT, hypo-enhancing rim surrounding the pancreas on MRI. There is notable uptake on 18F-FDG-PET CT. [3, 4]

Case Discussion

- Notably, there currently exists no published material on the imaging of any subtype of autoimmune pancreatitis (AIP1-3) on PSMA-PET/CT.

- Several case reports exist following incidental PSMA-PET pancreatic uptake that were subsequently determined to be low-grade neuroendocrine tumors of the pancreas. [6, 7]

- Furthermore, one case documents a Turkish man with prostate cancer presenting with symptomatic acute pancreatitis. Labs (WBC, amylase, lipase) were elevated, and several acute symptoms of inflammation were present. While both patients' PSMA-PET results were positive, this case contrasts with the largely clinically silent presentation of our patient with a more chronic type 2 autoimmune pancreatitis. [8]

References:

1. Wang, L., Wang, L., Wang, X., & Wu, D. (2025). The Evolving Role of PSMA-PET/CT in Prostate Cancer Management: an Umbrella Review of Diagnostic Restaging, Therapeutic Redirection, and Survival Impact. *Current oncology reports*, *27*(6), 774–787. https://doi.org/10.1007/s11912-025-01682-2
2. de Galiza Barbosa, F., Queiroz, M. A., Nunes, R. F., Costa, L. B., Zaniboni, E. C., Marin, J. F. G., Cerri, G. G., & Buchpiguel, C. A. (2020). Nonprostatic diseases on PSMA PET imaging: a spectrum of benign and malignant findings. *Cancer imaging : the official publication of the International Cancer Imaging Society*, *20*(1), 23. https://doi.org/10.1186/s40644-020-00300-7
3. Gallo, C., Dispinzieri, G., Zucchini, N., Invernizzi, P., & Massironi, S. (2024). Autoimmune pancreatitis: Cornerstones and future perspectives. *World journal of gastroenterology*, *30*(8), 817–832. https://doi.org/10.3748/wjg.v30.i8.817
4. Rehnitz, C., Klauss, M., Singer, R., Ehehalt, R., Werner, J., Büchler, M. W., Kauczor, H. U., & Grenacher, L. (2011). Morphologic patterns of autoimmune pancreatitis in CT and MRI. *Pancreatology : official journal of the International Association of Pancreatology (IAP) ... [et al.]*, *11*(2), 240–251. https://doi.org/10.1159/000327708
5. Zen Y. Type 2 Autoimmune Pancreatitis: Consensus and Controversies. Gut and Liver 2022;16:357-365. https://doi.org/10.5009/gnl210241
6. Demirkol, Mehmet Onur MD[*†]; Kiremit, Murat Can MD[‡]; Acar, Omer MD[§]; Sag, Alan Alper MD[‖]; Kapran, Yersu MD[¶]. False-Positive Pancreatic Uptake Detected on 68Ga-PSMA PET/CT: A Priority Changing Incidental Finding While Assessing the Need for a Prostate Biopsy. Clinical Nuclear Medicine 42(11):p e475-e477, November 2017. | DOI: 10.1097/RLU.0000000000001834
7. Vamadevan, Shankar BMed; Shetty, Deepa MB, BS, FRANZCR; Le, Ken MB, BS, FRANZCR; Bui, Chuong MB, BS, FRACP, FAANMS, DDU; Mansberg, Robert MB, BS, FRACP, FAANMS; Loh, Han MB, BS, FRANZCR, FAANMS. Prostate-Specific Membrane Antigen (PSMA) Avid Pancreatic Neuroendocrine Tumor. Clinical Nuclear Medicine 41(10):p 804-806, October 2016. | DOI: 10.1097/RLU.0000000000001308
8. Tosunoğlu, Zehranur MD; Erol Fenercioğlu, Özge MD; Beyhan, Ediz MD; Arslan, Esra MD; Çermik, Tevfik Fikret MD. Late-Term Findings of Pancreatitis on 68Ga-PSMA PET/CT in a Patient With Prostate Cancer. Clinical Nuclear Medicine 47(12):p e733-e734, December 2022. | DOI: 10.1097/RLU.0000000000004371
9. Gaillard F, Knipe H, Bell D, et al. Autoimmune pancreatitis (diagnostic criteria). Reference article, Radiopaedia.org (Accessed on 29 Aug 2025) https://doi.org/10.53347/rID-6986
10. Yang N, Knipe H, Silverstone L, et al. Autoimmune pancreatitis. Reference article, Radiopaedia.org (Accessed on 29 Aug 2025) https://doi.org/10.53347/rID-6948