AMSER Case of the Month

65-year-old male with fatigue, jaundice, pruritus, and abdominal discomfort

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Patient Presentation

HPI: A 65-year-old male presented to the ED complaining of progressive fatigue, weight loss, jaundice, pruritus, and vague abdominal discomfort for the past 3-4 weeks. He denied any recent fevers, vomiting, diarrhea, or urinary issues.

Patient Presentation

Medical History: HTN

Surgical History: None

Social History: Former cigar use, no EtOH, no illicit drug use

Exam: Scleral icterus, diffuse jaundice, soft abdomen

Pertinent Labs

- Total bilirubin: 15.1 (normal 0.2-1.3 mg/dL)
- AST: 85 (normal 0-48 U/L)
- ALT: 122 (normal 0-40 U/L)
- Alkaline Phosphatase: 628 (normal 40-147 IU/L)
- GGT: 576 (normal 0-61 IU/L)
- Lipase: 357 (normal 0-160 U/L)

What Imaging Should We Order?

Select the applicable ACR Appropriateness Criteria

Variant: 1 Jaundice. No known predisposing conditions. Initial imaging.

Procedure	Appropriateness Category	Relative Radiation Level
US abdomen	Usually Appropriate	0
MRI abdomen without and with IV contrast with MRCP	Usually Appropriate	0
CT abdomen with IV contrast	Usually Appropriate	☢☢☢
MRI abdomen without IV contrast with MRCP	May Be Appropriate	0
US abdomen endoscopic	Usually Not Appropriate	0
ERCP	Usually Not Appropriate	☢☢☢
CT abdomen without IV contrast	Usually Not Appropriate	☢☢☢
CT abdomen without and with IV contrast	Usually Not Appropriate	☢☢☢☢

This imaging modality subsequently ordered

This imaging modality was ordered initially

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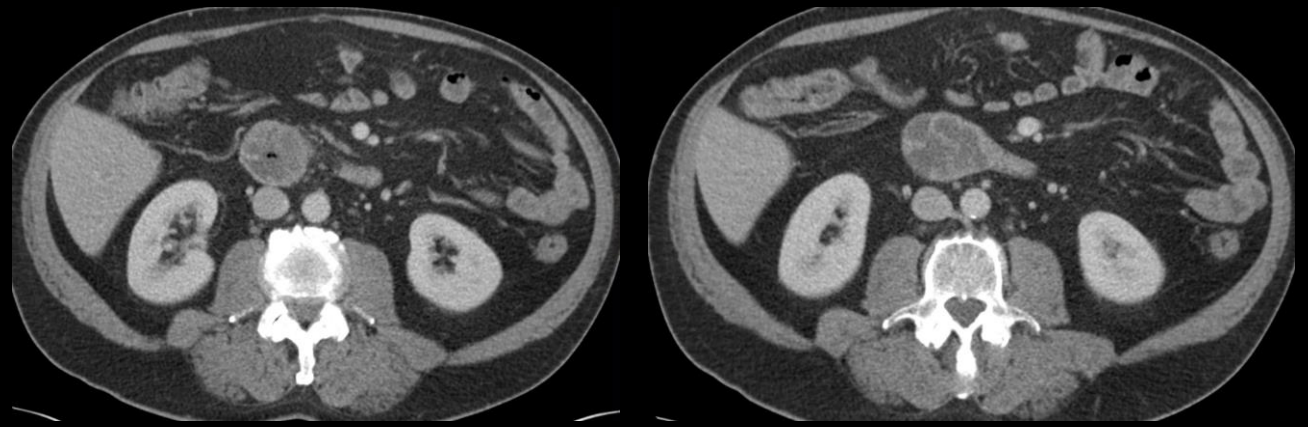
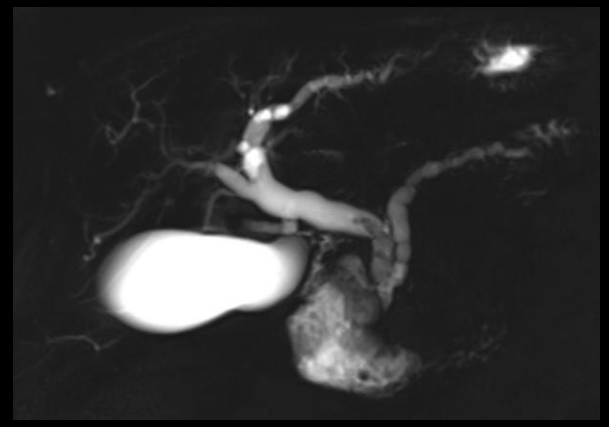
Findings (unlabeled)



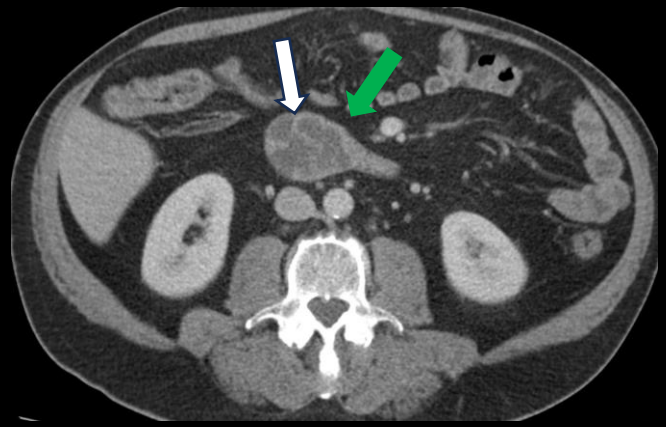
Axial CT with contrast

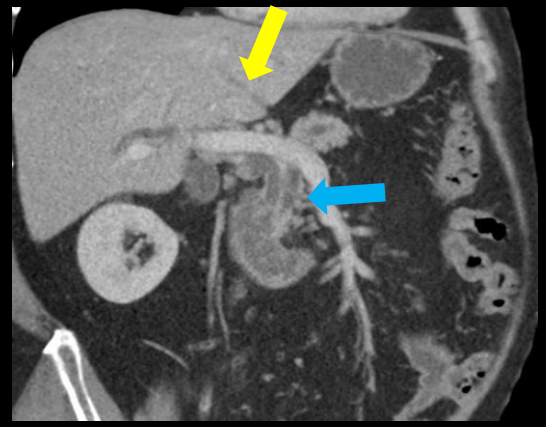
Coronal CT with
multiplanar reconstruction

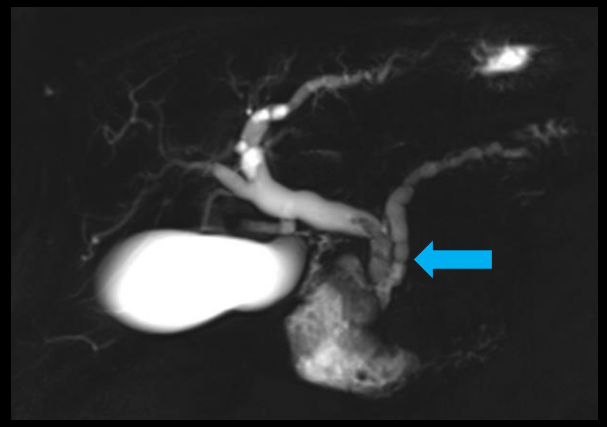


MRCP

Findings: (labeled)







Large proximal duodenal mass with luminal thickness up to 2cm (white arrows).

Abrupt transition point around the third portion of the duodenum (green arrow).

Double duct sign (blue arrows) with intrahepatic ductal dilation (yellow arrow).

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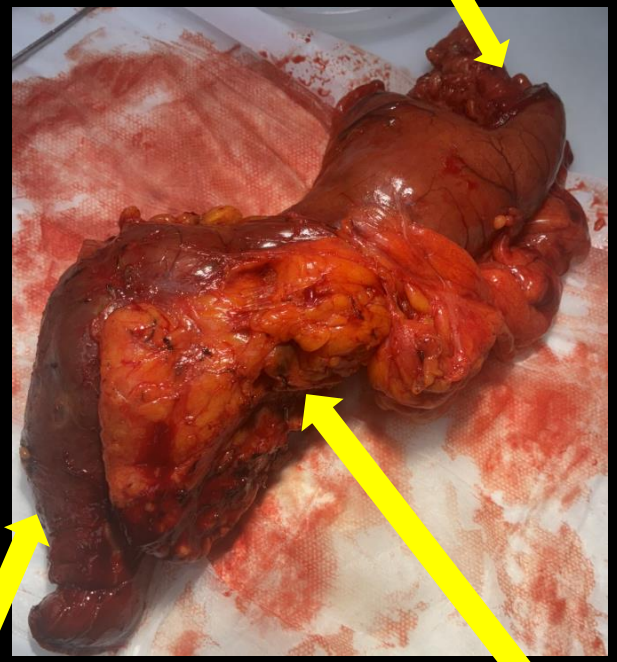
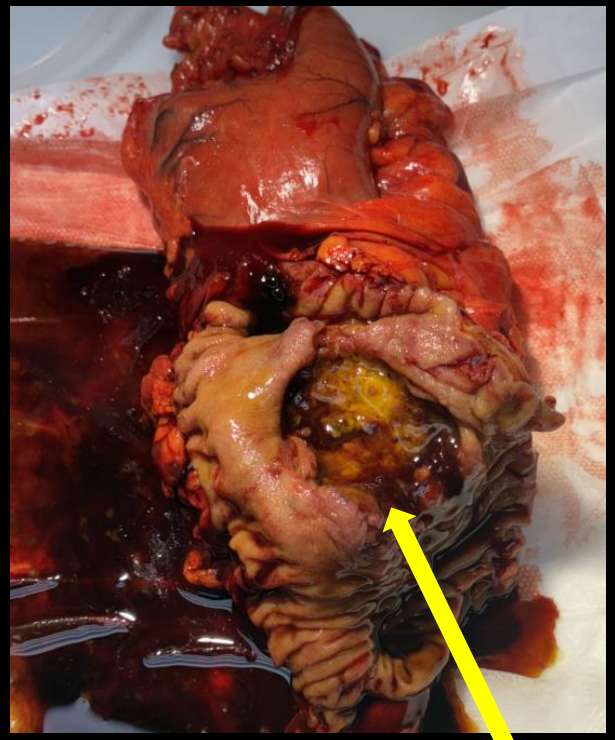
Differential Diagnosis

- Duodenal adenocarcinoma
- Pancreatic head adenocarcinoma
- Cholangiocarcinoma
- Neuroendocrine tumor
- Lymphoma
- Benign duodenal adenoma
- Brunner’s gland hyperplasia
- Duodenitis

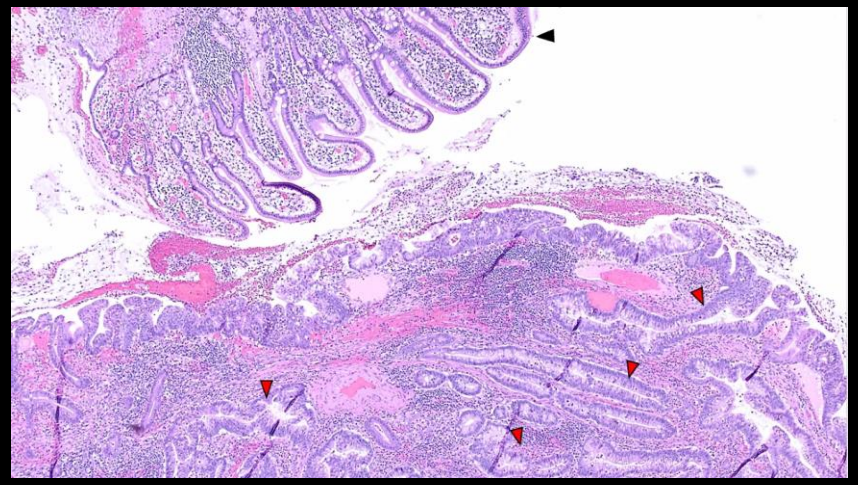
The patient was taken for pancreaticoduodenectomy (Whipple)

Gross Pathology



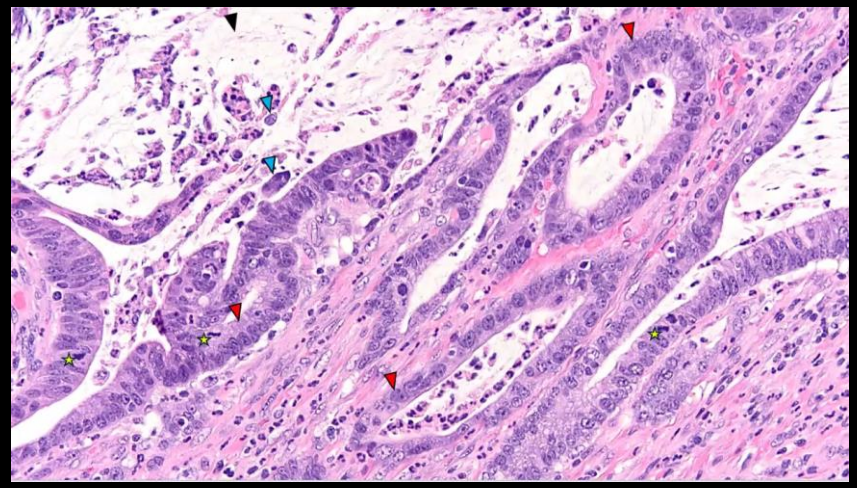


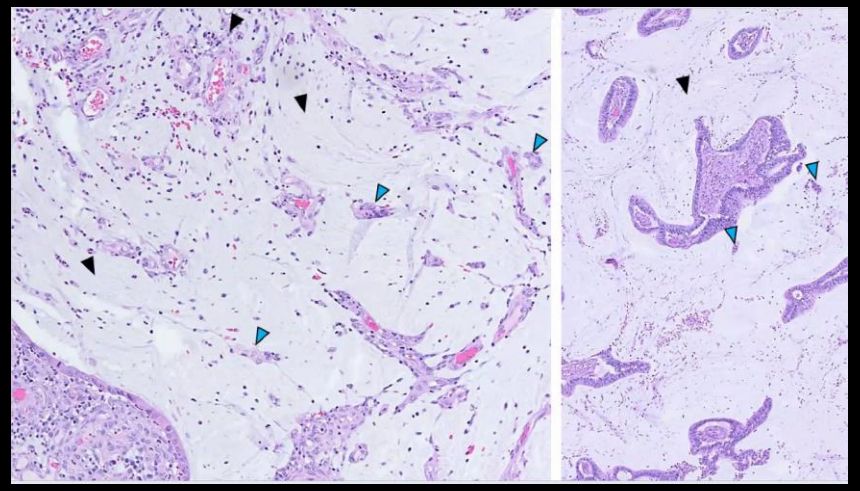
Microscopic Pathology



Black Arrow: uninvolved duodenal mucosa
Red Arrows: well to moderately differentiated adenocarcinoma

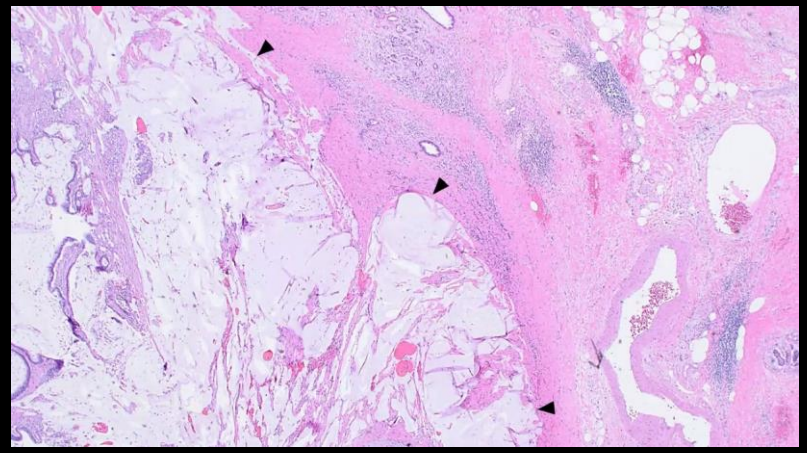
Red Arrows: well to moderately differentiated adenocarcinoma forming glands
Black Arrow: extracellular mucin
Blue Arrows: floating tumor cells and cell clusters
Stars: mitotic figures





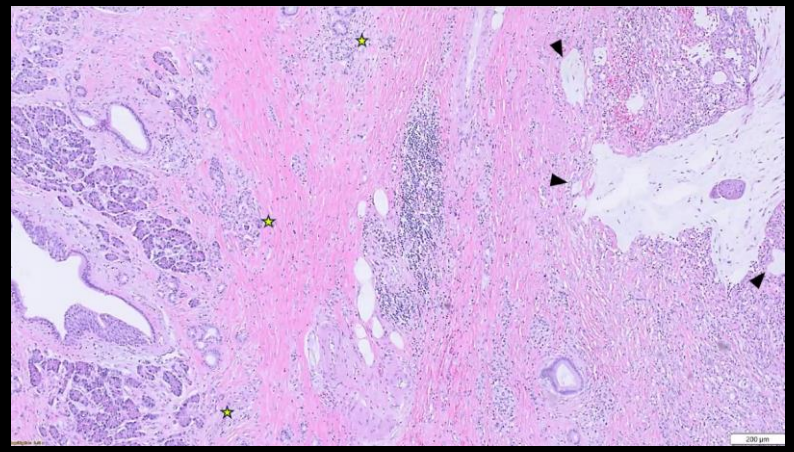
Black Arrows: other areas of tumor comprised predominantly of extracellular mucin
Blue Arrows: floating epithelial cell islands

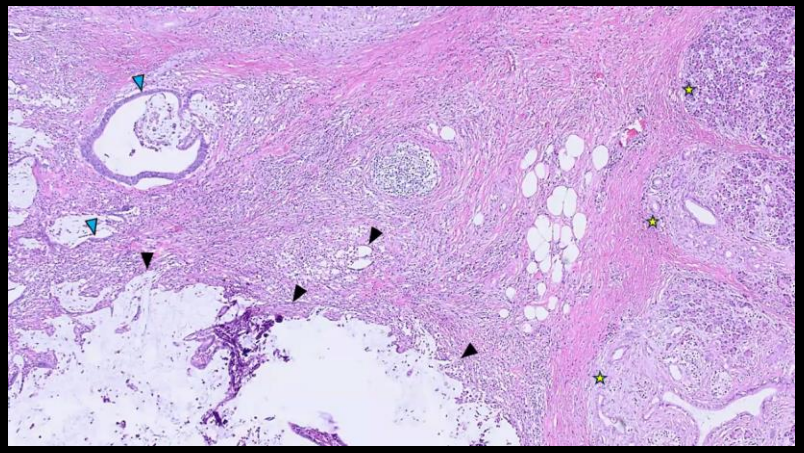
Microscopic Pathology (Continued)



Black Arrows: extracellular mucin from the tumor dissecting through/invading into the wall of the duodenum

Black Arrows: dissecting mucin
Stars: : pancreatic tissue





Black Arrows: dissecting mucins
Blue Arrows: malignant glands
Stars: pancreatic tissue

Final Diagnosis:

Periampullary Duodenal Invasive Mucinous Adenocarcinoma

Case Discussion

- Periampullary tumors are uncommon, accounting for ~5% of GI malignancies, but present earlier compared to pancreatic adenocarcinoma due to biliary obstruction.
- Classically present with painless jaundice, weight loss, fatigue, and cholestatic pattern of liver enzyme elevation.
- Duodenal adenocarcinoma is rare (<1% of GI cancers), and mucinous subtype is an established histologic variant characterized by abundant extracellular mucin.
- Early radiologic and clinical differentiation from pancreatic head carcinoma can be challenging, making pathologic evaluation critical for diagnosis and management planning.

Case Discussion Continued

- Periampullary mucinous adenocarcinoma can arise from the duodenum, ampulla, distal bile duct, or pancreatic duct, with the location of origin significantly influencing prognosis.
- Node-negative (N0) status, as in this case, is associated with significantly improved survival compared to node-positive disease, regardless of tumor subtype.
- Margin status, tumor grade, and depth of invasion are the primary prognostic determinants in resected duodenal periampullary carcinoma.
- Mucinous histology does not always imply worse prognosis but may correlate with more locally advanced disease at presentation; clinical behavior varies by primary site.

Case Discussion Continued

- Pancreaticoduodenectomy (Whipple) remains the standard curative surgical approach for resectable periampullary tumors.
- Adjuvant therapy is considered based on surgical margins, histologic subtype, and staging; node-negative, low-risk patients may undergo observation vs. fluoropyrimidine-based therapy depending on institutional practice.
- Surveillance typically includes periodic imaging (CT or MRI), physical examination, and laboratory monitoring every 3–6 months for the first 2 years, then annually.
- **Key teaching point:** precise identification of tumor origin and lymph node status is essential, as management pathways differ between pancreatic, ampullary, cholangiocarcinoma, and primary duodenal carcinoma.

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