Pancreatic Cysts

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DO YOU HAVE AN IDEA FOR YOUR PROJECT YET?
NO, I'M WAITING FOR INSPIRATION.
YOU CAN'T JUST TURN ON CREATIVITY LIKE A FAUCET. YOU HAVE TO BE IN THE RIGHT MOOD.
WHAT MOOD IS THAT?
LAST-MINUTE PANIC.

Pancreatic Cysts

- Increasingly identified due to the widespread use of cross sectional imaging
- 2% of patients undergoing CT or MRI will have pancreatic cysts
- Incidence increases with age (10% patients older than 70)
- One of the most commonly seen problems in HPB and pancreatology surgery clinics
- 35.5% of 273 patients discussed at our Multidisciplinary Pancreas Tumor Board 2011-2013
- Decisions regarding further evaluation and indications for surgical resection can be a dilemma and remain under debate

Classification

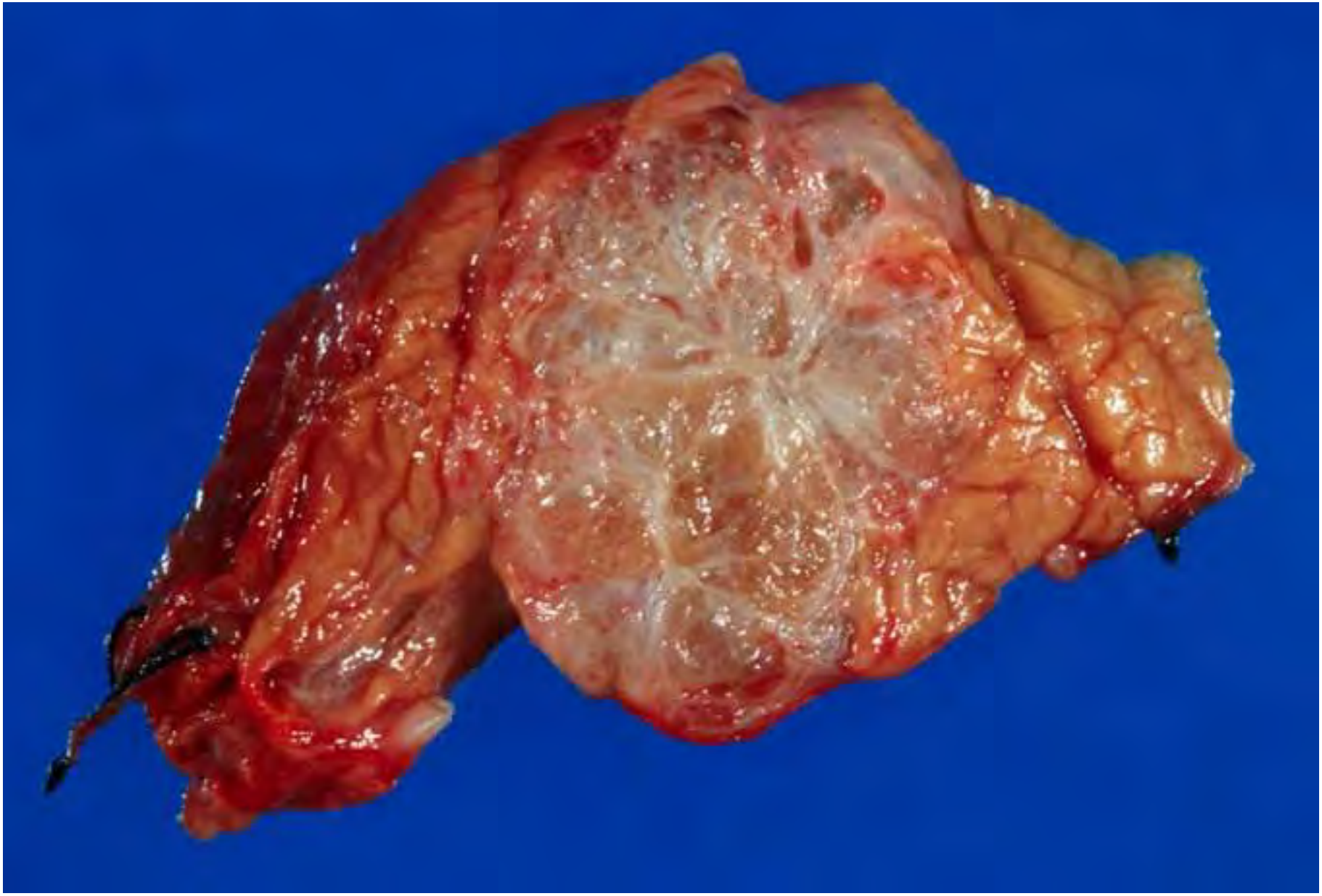
- Serous cystadenoma (microcystic adenoma)
- Mucinous cystic neoplasm (mucinous cystadenoma)
- Intraductal papillary neoplasm (IPMN)
  - Side branch (branch duct)
  - Main duct
  - Mixed type
- Solid pseudopapillary neoplasm (SPN, solid and cystic tumor)
- Pancreatic pseudocyst (2% of lesions in the absence of history of pancreatitis)
- Other cysts (Lymphoepithelial cyst, benign cyst, cystic endocrine tumors)
- Inflammatory cysts

Evaluation

- Careful history and physical examination
  - Symptoms, history of pancreatitis, diabetes, weight loss, exocrine insufficiency
- Review of images (CT versus MRI)
- Use of endoscopic ultrasound (EUS)
  - Suspicious features (mural nodularity, solid component)
  - Cyst fluid analysis (CEA, amylase)
  - Confocal microscopy (Cellvizio)
  - Cytology
  - Molecular markers
- Laboratory analysis (LFT's, CA 19-9)

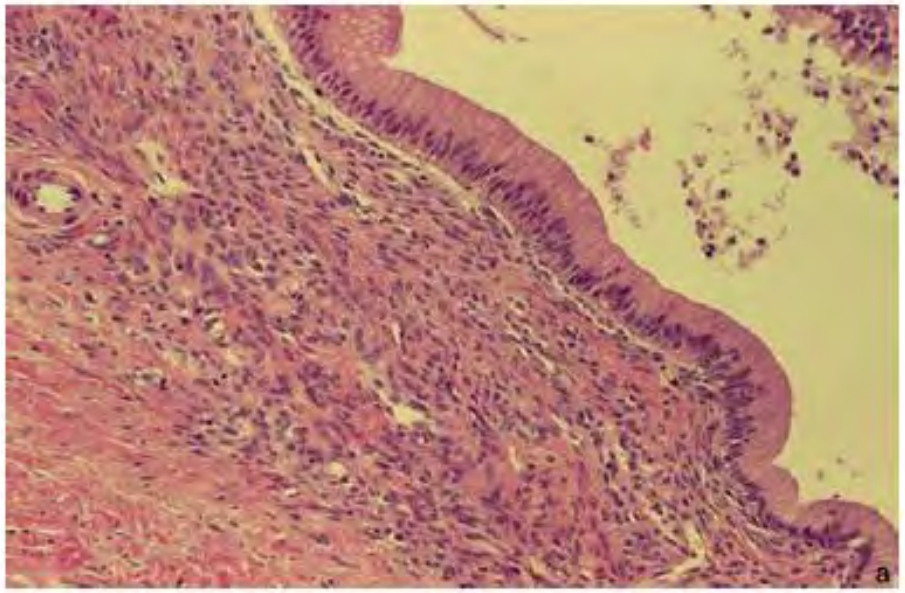
Serous Cystadenoma

- Benign neoplasms lined by glycogen-rich pancreatic centro-acinar cells
- Most common in women > 60
- Indications for surgery
  - Symptoms
  - Diagnostic uncertainty
  - Younger age



Mucinous Cystic Neoplasm

- Occur almost exclusively in women
- Usually middle-aged
- Ovarian-like stroma
- Body-tail
- Usually unilocular
- No duct involvement
- Treatment is resection
- Remnant gland does not require surveillance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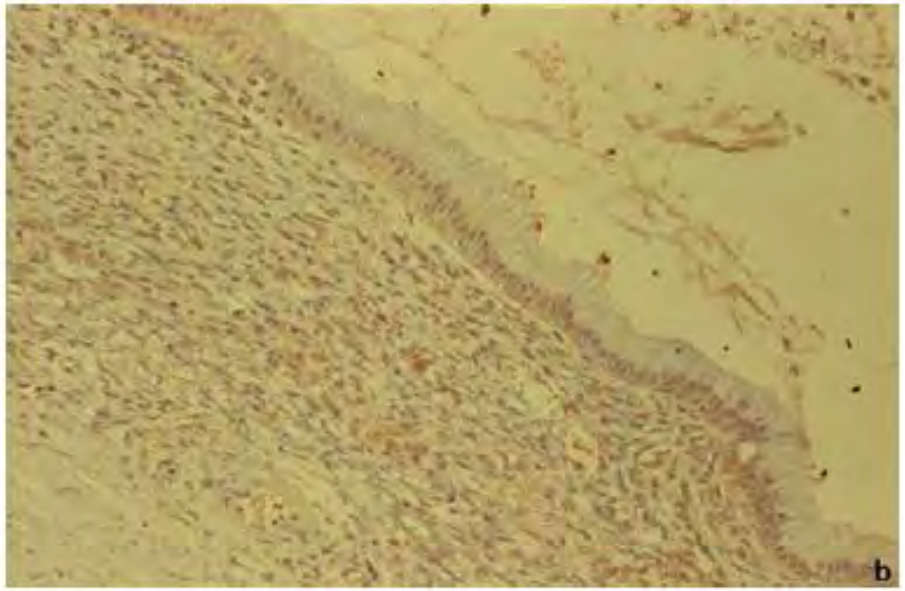
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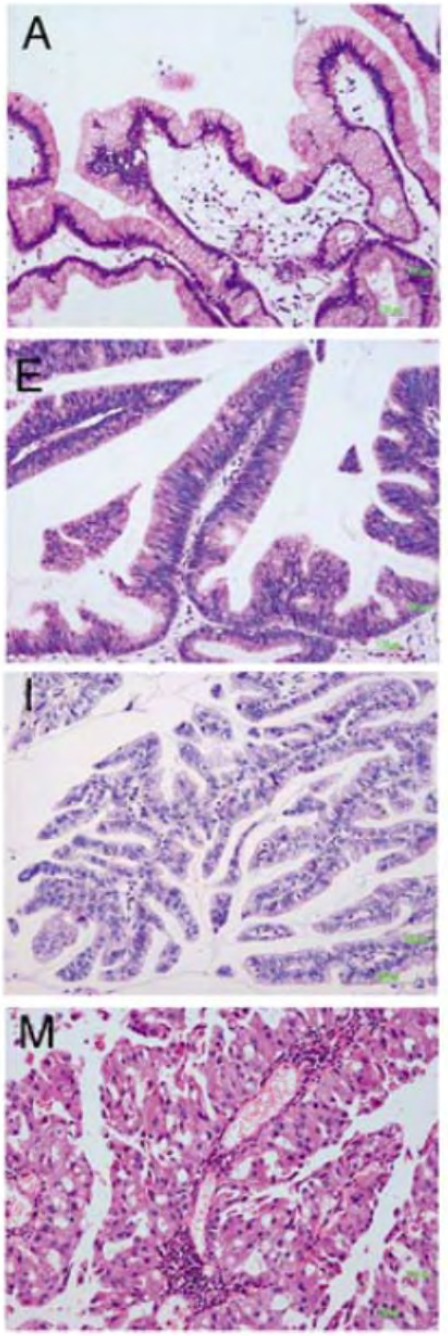
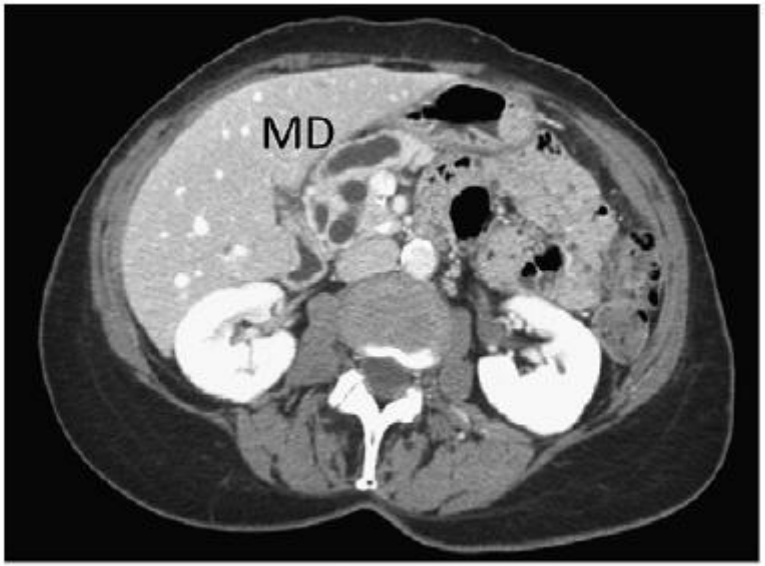
IPMN

- Main Duct
- Side Branch
- Mixed-type

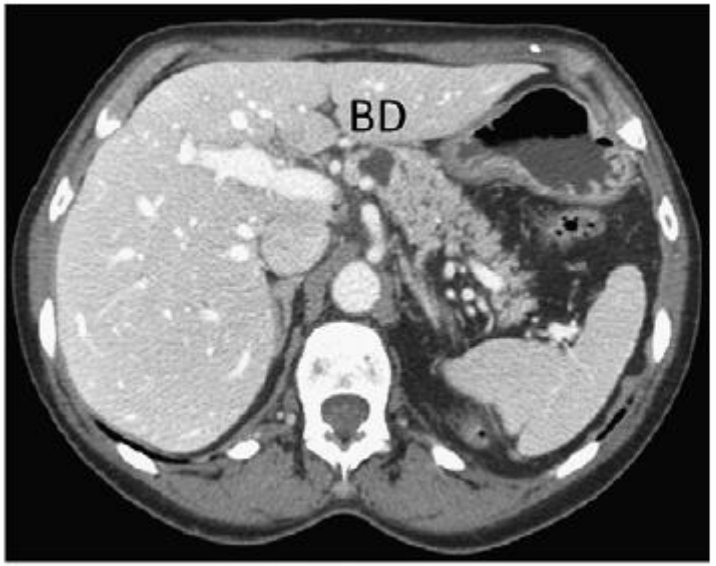
- Gastric
- Intestinal
- Pancreatobiliary
- Oncocytic

- Mild
- Moderate
- High Grade

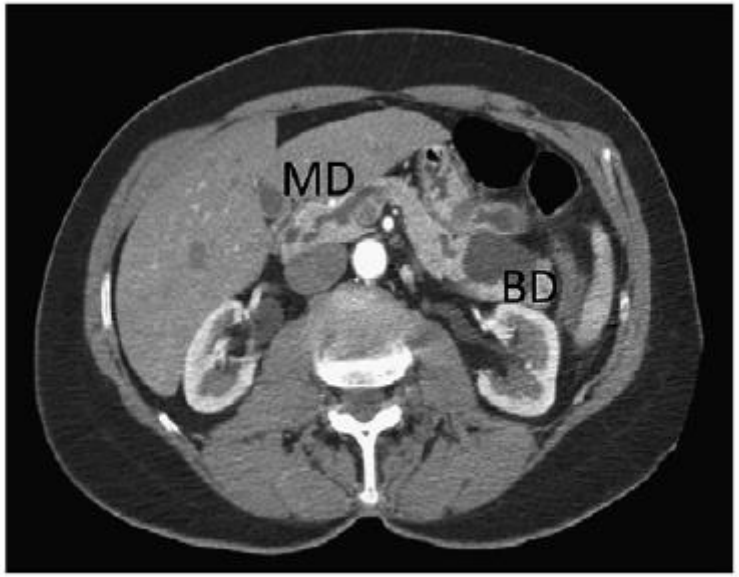




Main-duct IPMN

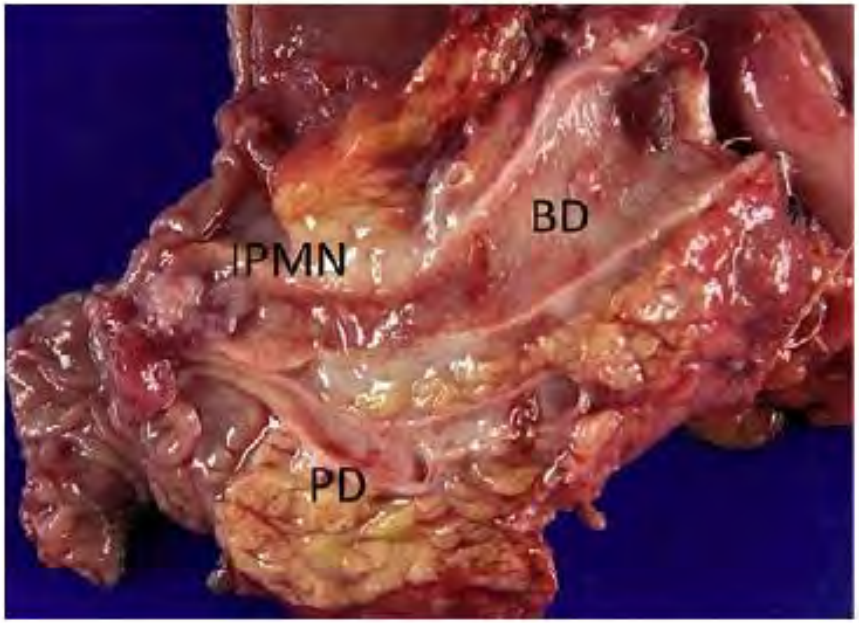


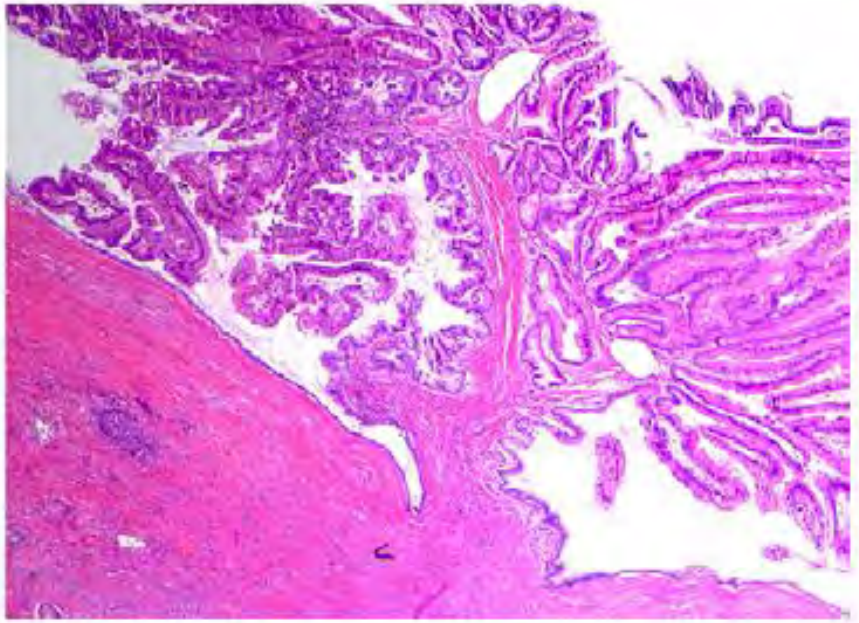
Branch-duct IPMN



Combined IPMN

Main Duct IPMN





IPMN – Malignant Potential

- Side Branch
  - 0-30% (mean 15%)
  - 30-31% symptomatic
  - size >3.0 cm & mural nodules associated with cancer
- Main Duct
  - 60-92% (mean 70%)
  - 29% patients with malignancy are asymptomatic
- Mixed-Type
  - 13%
  - Diffuse duct dilation, elevated CA 19-9, ALP, absence of extrapancreatic cysts associated with increased risk

Solid Pseudopapillary Neoplasm (SPN)

- Rare neoplasms
- Typically occur in women < 35
- Many names (solid and papillary epithelial neoplasm, papillary cystic tumor, solid and cystic tumor)
- May contain both solid and cystic components, calcifications
- Usually located in body and tail
- Treatment is surgical resection

An Aggressive Resectional Approach to Cystic Neoplasms of the Pancreas

Karen D. Horvath, MD, John A. Chabot, MD, *New York, New York*

CONCLUSIONS: **The good outcomes in this study support an aggressive surgical approach to all patients diagnosed with a cystic neoplasm of the pancreas, if medically fit to tolerate surgery. This approach is justified for the following reasons: (1) preoperative differentiation of a benign versus malignant tumor is unreliable and routine testing for this purpose is of questionable utility; (2) potential adverse consequences of nonresectional therapy are significant; (3) perioperative morbidity and mortality of pancreatic surgery is low; and (4) prognosis with curative resection is good.** *Am J Surg.* **1999;178:269–274.**

Cystic Lesions of the Pancreas: Selection Criteria for Operative and Nonoperative Management in 209 Patients

Peter J. Allen, M.D., David P. Jaques, M.D., Michael D'Angelica, M.D., Wilbur B. Bowne, M.D., Kevin C. Conlon, M.D., Murray F. Brennan, M.D.

(J GASTROINTEST SURG 2003;7:970–977)

A Selective Approach to the Resection of Cystic Lesions of the Pancreas

Results From 539 Consecutive Patients

Peter J. Allen, MD, Michael D'Angelica, MD, Mithat Gonen, PhD, David P. Jaques, MD, Daniel G. Coit, MD, William R. Jarnagin, MD, Ronald DeMatteo, MD, Yuman Fong, MD, Leslie H. Blumgart, MD, and Murray F. Brennan, MD

Ann Surg 2006;244: 572–582

International Consensus Guidelines for Management of Intraductal Papillary Mucinous Neoplasms and Mucinous Cystic Neoplasms of the Pancreas

Masao Tanaka[a] Suresh Chari[b] Volkan Adsay[c]
Carlos Fernandez-del Castillo[d] Massimo Falconi[e] Michio Shimizu[f]
Koji Yamaguchi[a] Kenji Yamao[g] Seiki Matsuno[h]

Pancreatology 2006;6:17–32

International consensus guidelines 2012 for the management of IPMN and MCN of the pancreas

Masao Tanaka[a,*], Carlos Fernández-del Castillo[b], Volkan Adsay[c], Suresh Chari[d], Massimo Falconi[e], Jin-Young Jang[f], Wataru Kimura[g], Philippe Levy[h], Martha Bishop Pitman[i], C. Max Schmidt[j], Michio Shimizu[k], Christopher L. Wolfgang[l], Koji Yamaguchi[m], Kenji Yamao[n]

Pancreatology 12 (2012) 183–197

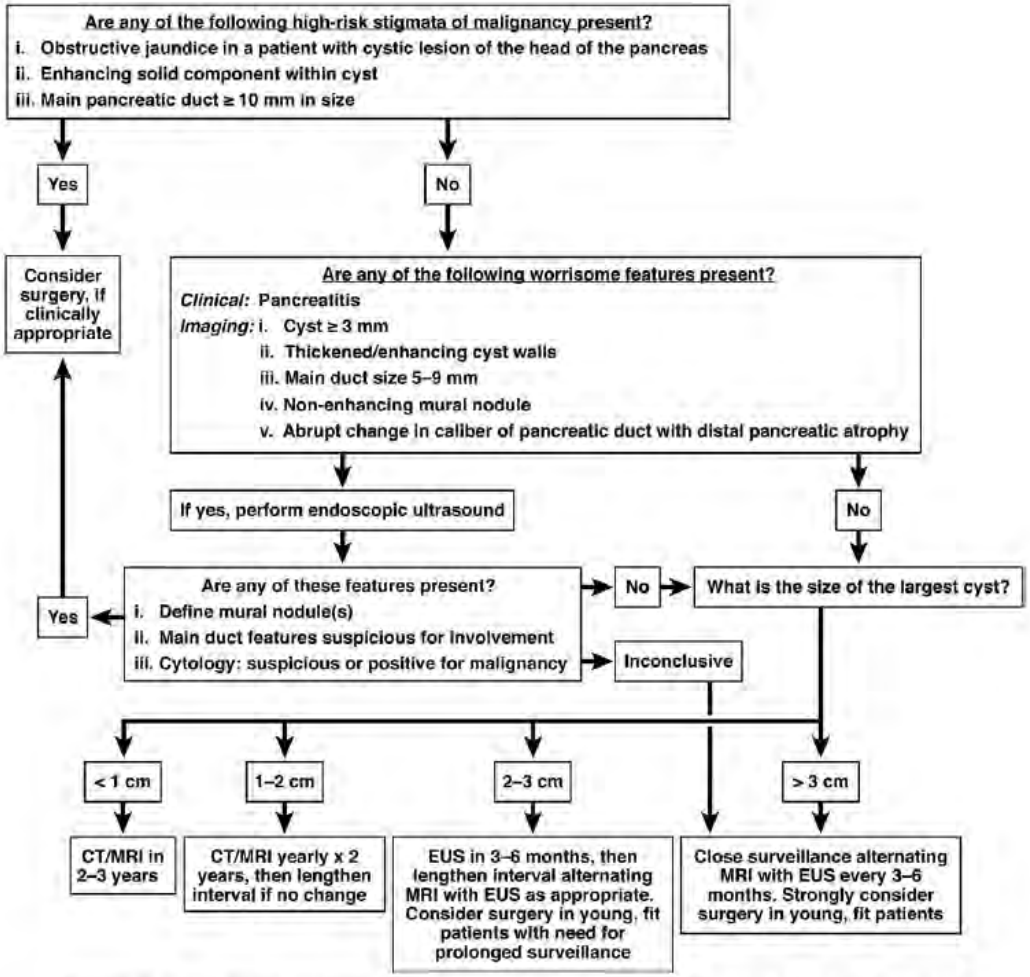


Figure 2. The Fukuoka guidelines for managing patients presumed to have BD-IPMN and MCN.

Inflammatory Cysts

Table 2. Revised Atlanta definitions of peripancreatic fluid collections.

	Timing (weeks)	Presence of necrosis
Acute peripancreatic fluid collection	<4	-
Pancreatic pseudocyst	>4	-
Acute necrotic collection	<4	+
Walled-off necrosis	>4	+

Surgical Decision-Making

- Patients need to be carefully assessed individually
- Key patterns should be kept in mind during assessment
- Guidelines and multidisciplinary review are helpful
- Diagnostic uncertainty or concern for long-term surveillance can be an indication for surgery, particularly in younger patients
- Patients should be included in the decision making process
- Indications for surgery
  - Symptoms
  - Suspicious features (mural nodules)
  - Main duct involvement
  - Elevated tumor markers
  - MCN and SPN should be resected
  - Lesions > 3 cm, particularly in young, fit patients

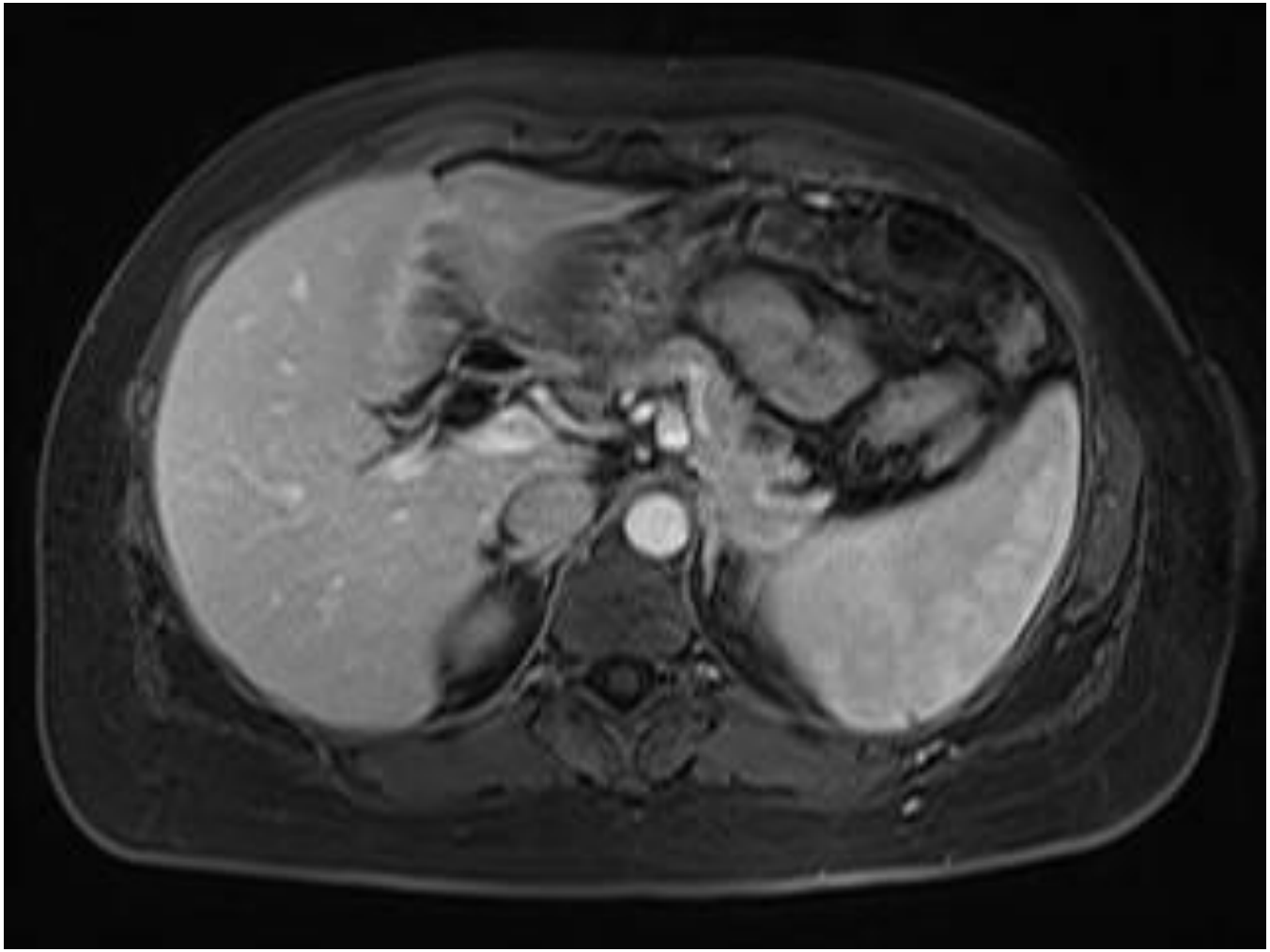
Conclusions

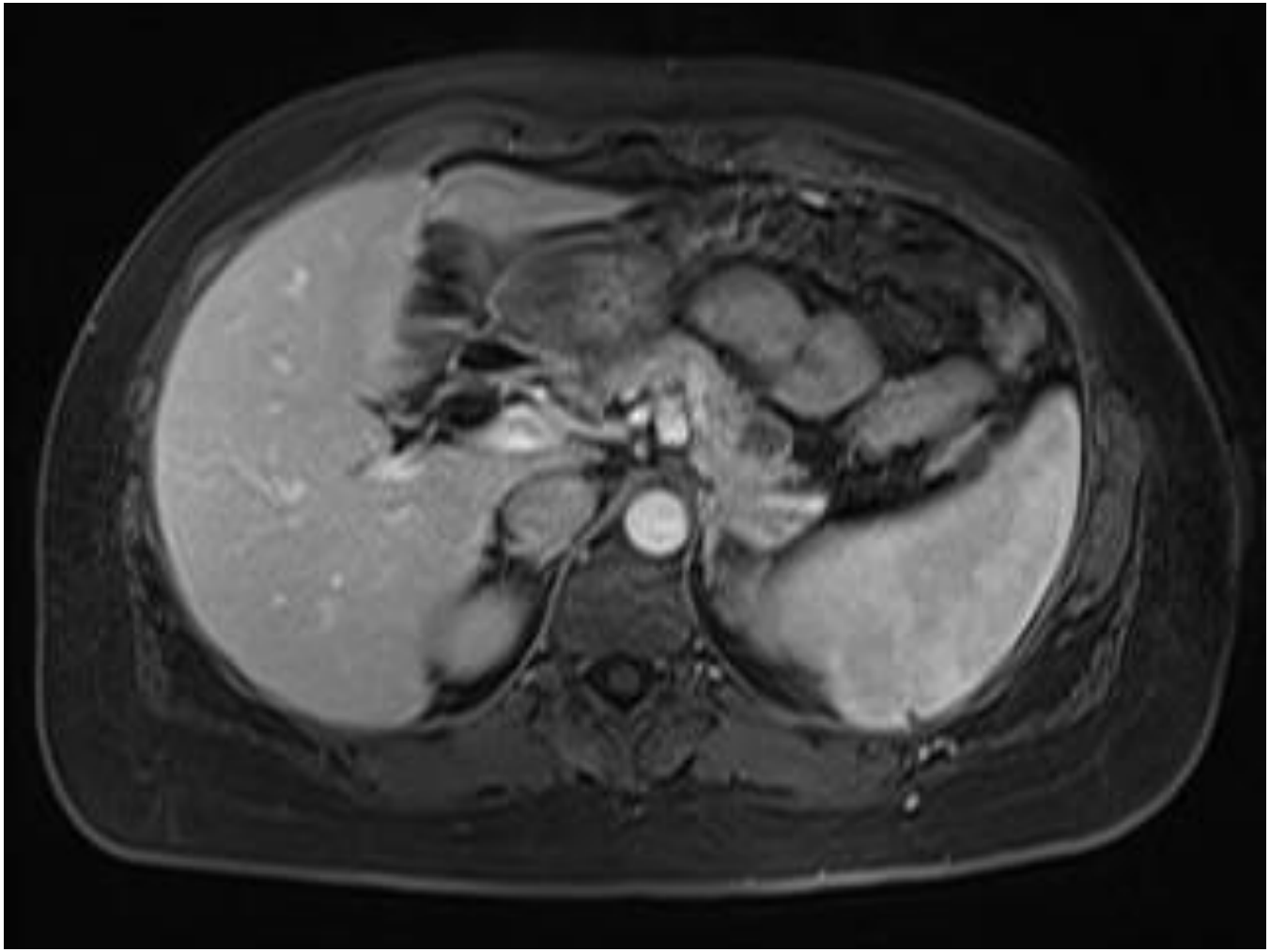
- Pancreatic cystic lesions are common
- Most asymptomatic
- Treatment should be individualized (guidelines available)
- Clinicians should recognize key patterns and use diagnostic tools appropriately
- Surgical resection is the only diagnostic tool that is 100% accurate
- Surveillance is appropriate for unresected lesions and for evaluation of the remant pancreas in patients with IPMN following resection
- Multidisciplinary review of cases is encouraged

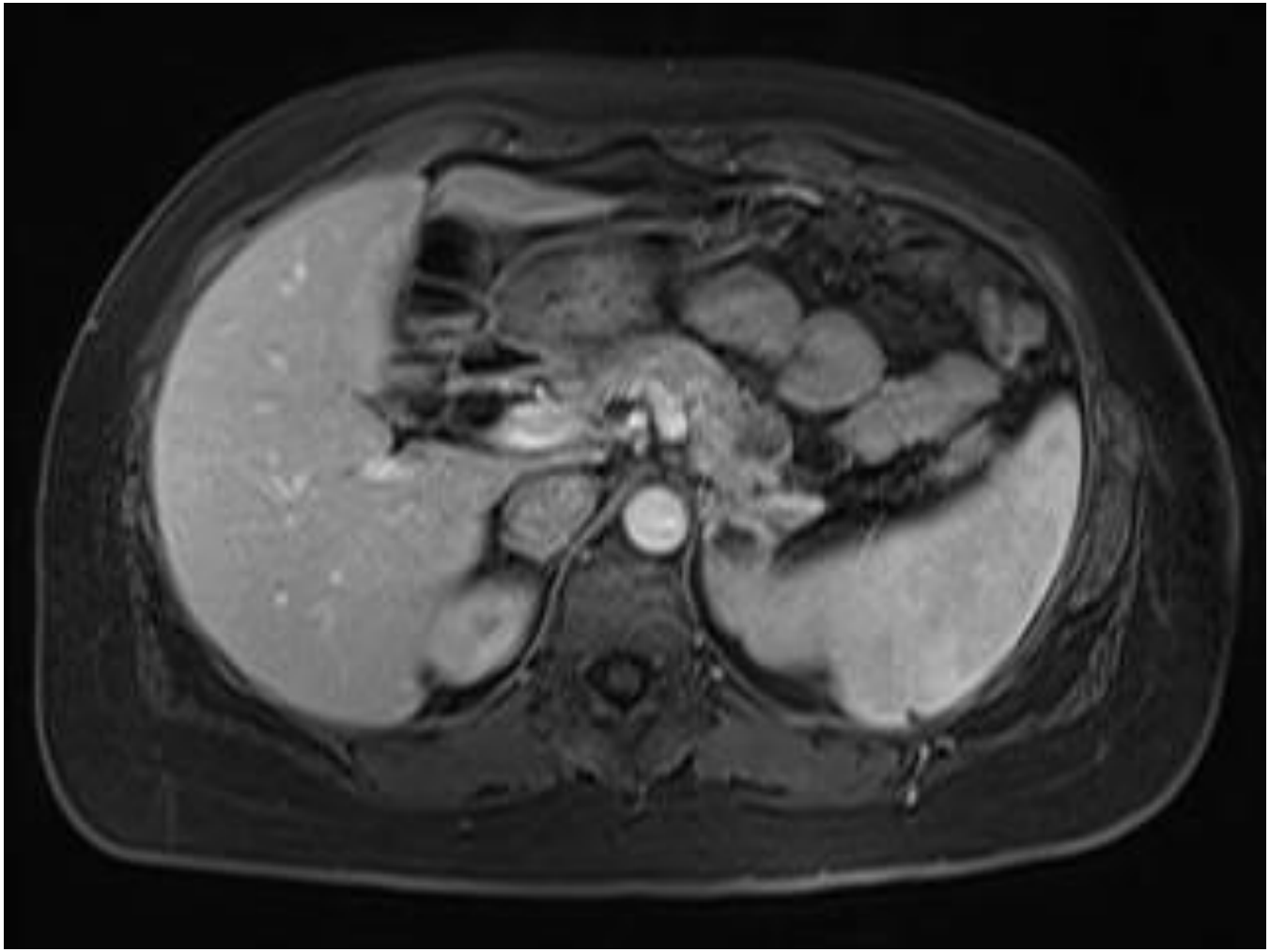
Case presentations

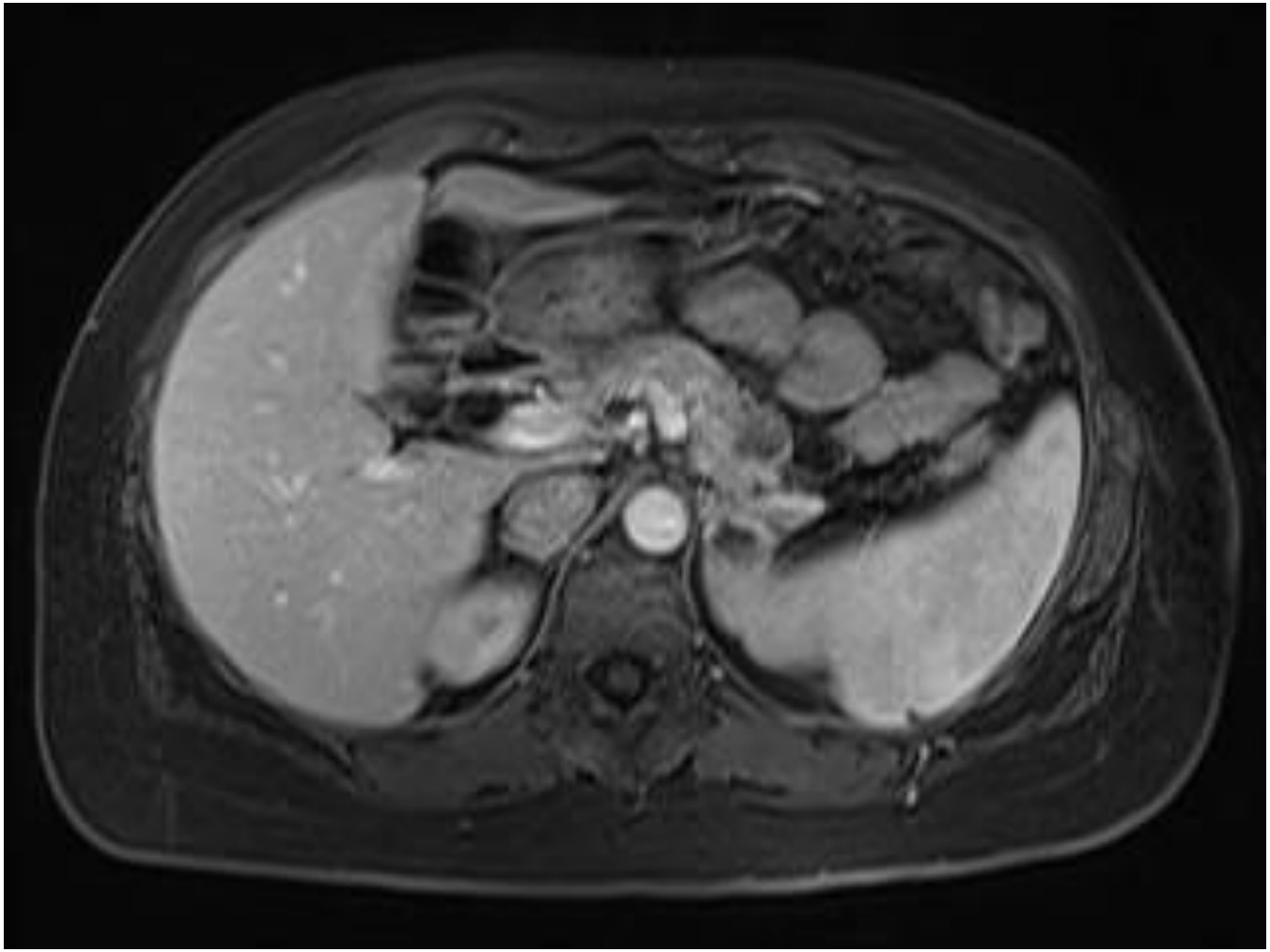
Case #1

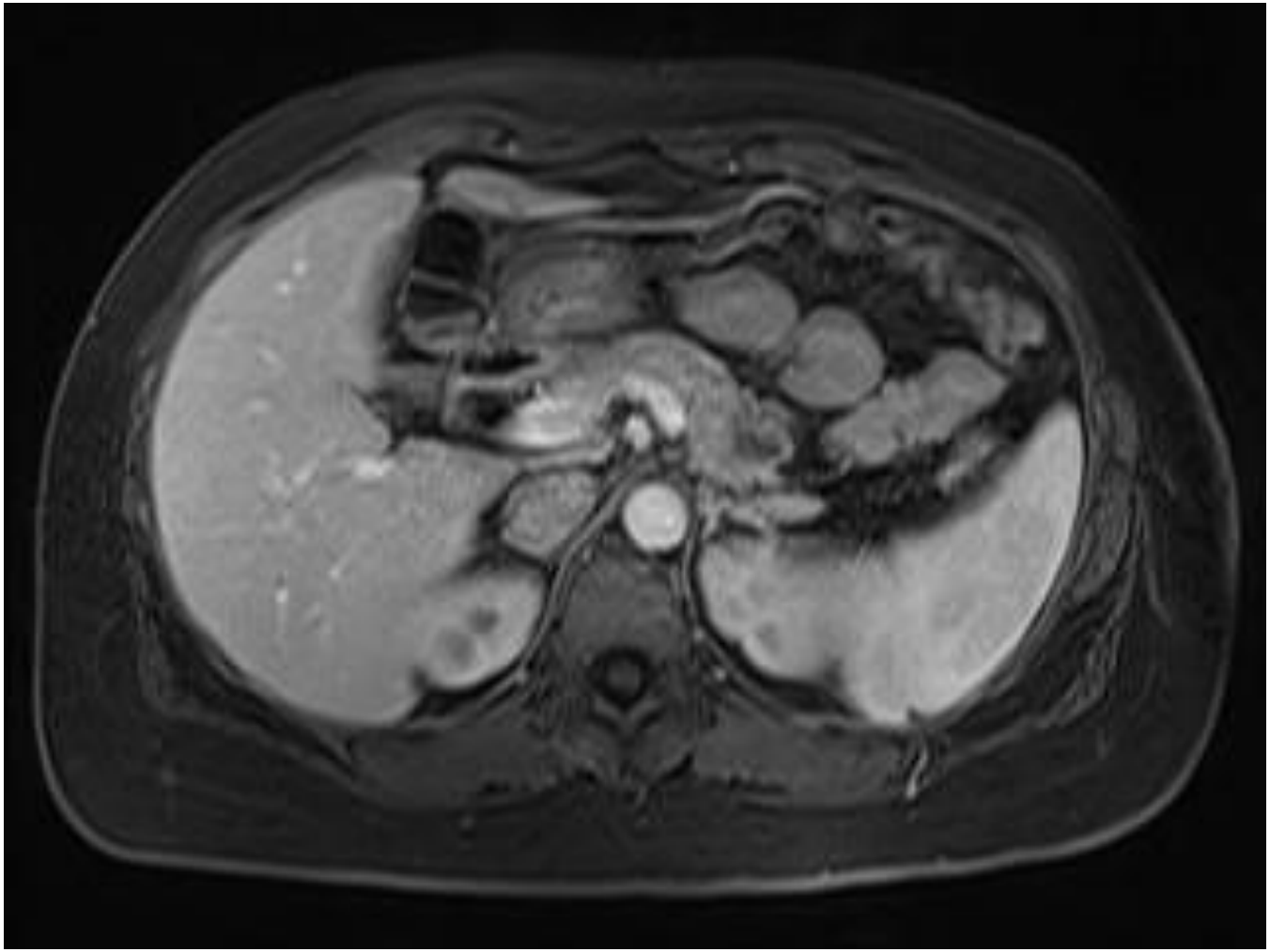
- 31-year-old female no significant previous medical history who was noted to have abdominal pain during pregnancy
- Symptoms were consistent with acute cholecystitis/gallstone disease
- Elevated LFTS
- Right upper quadrant ultrasound demonstrated gallstones, an 8 mm common bile duct, and a cystic lesion in the tail of pancreas
- MRI showed a 4.8 x 4.0 cm lesion in the tail of pancreas
- ERCP was unremarkable, although there may have been some sludge in the duct
- EUS demonstrated a cystic lesion in the tail of the pancreas that was 46 x 27 mm in size. It appeared to be consistent with a pseudocyst, but the CEA was 0.5 and amylase was 35
- She underwent robotic cholecystectomy for her symptomatic cholelithiasis
- Initial follow up MRI demonstrated a 3.5 cm cystic lesion in the tail the pancreas
- Repeat MRI today showed a 4 cm solid and cystic lesion in the tail of the pancreas

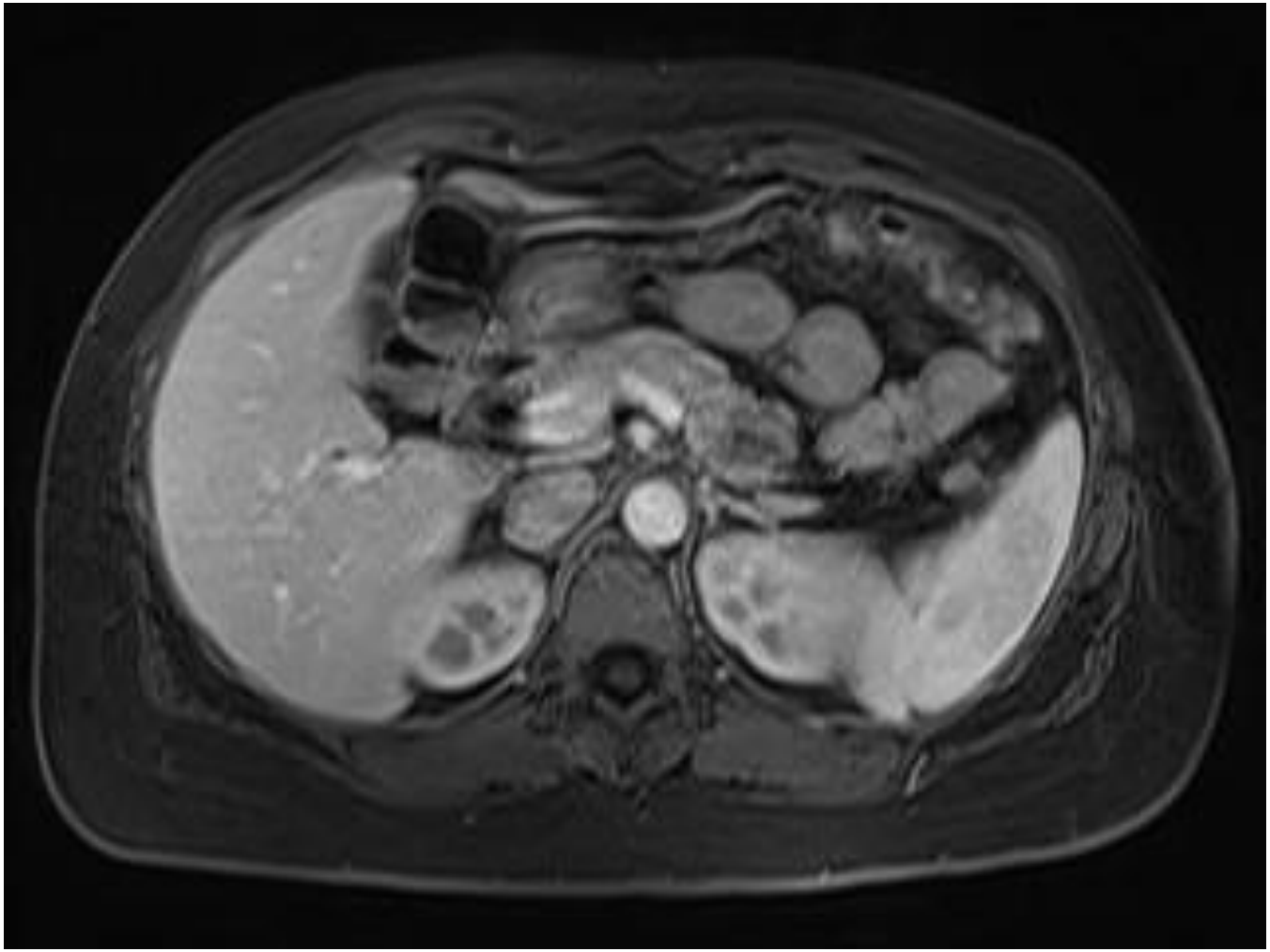


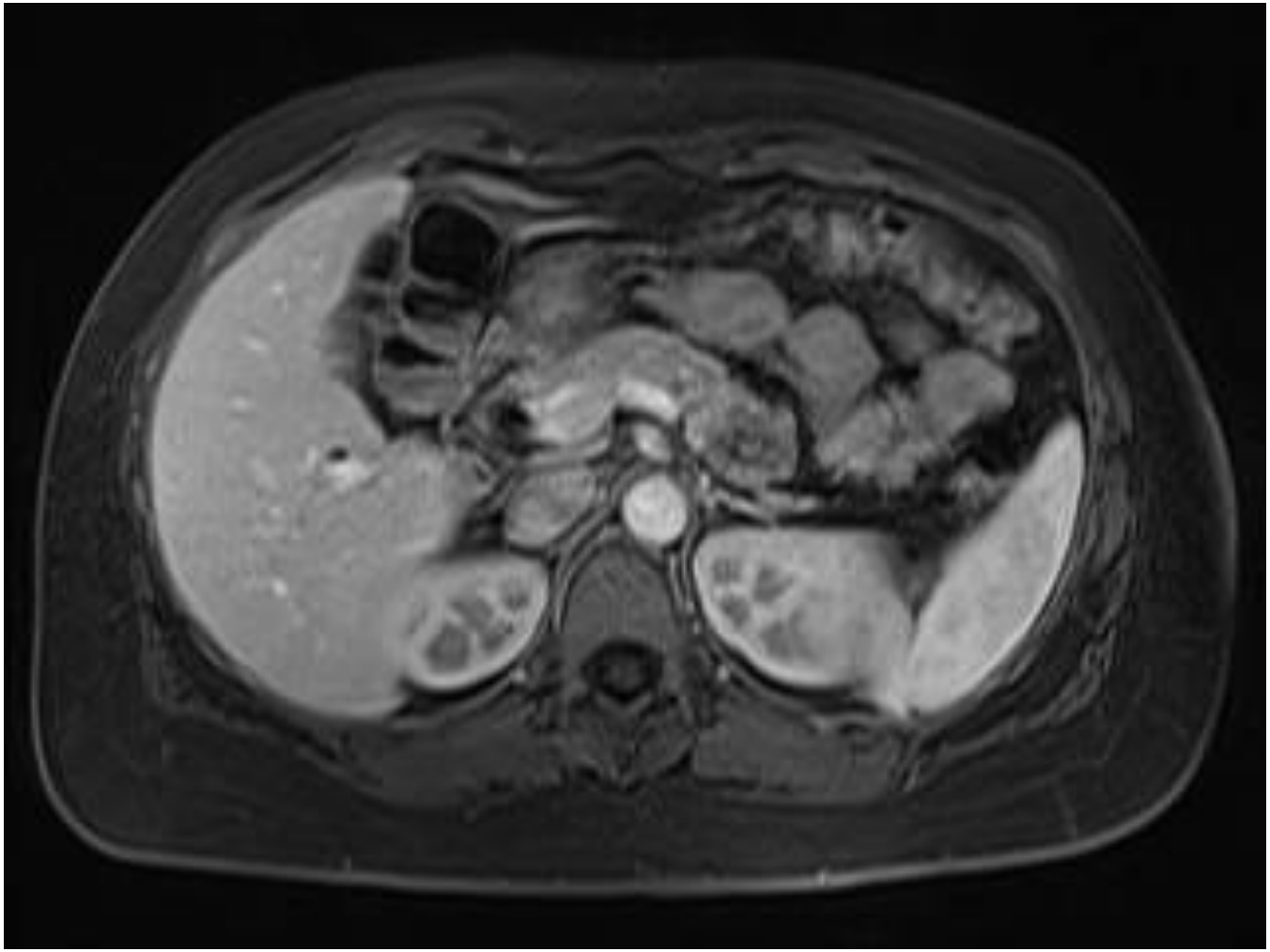


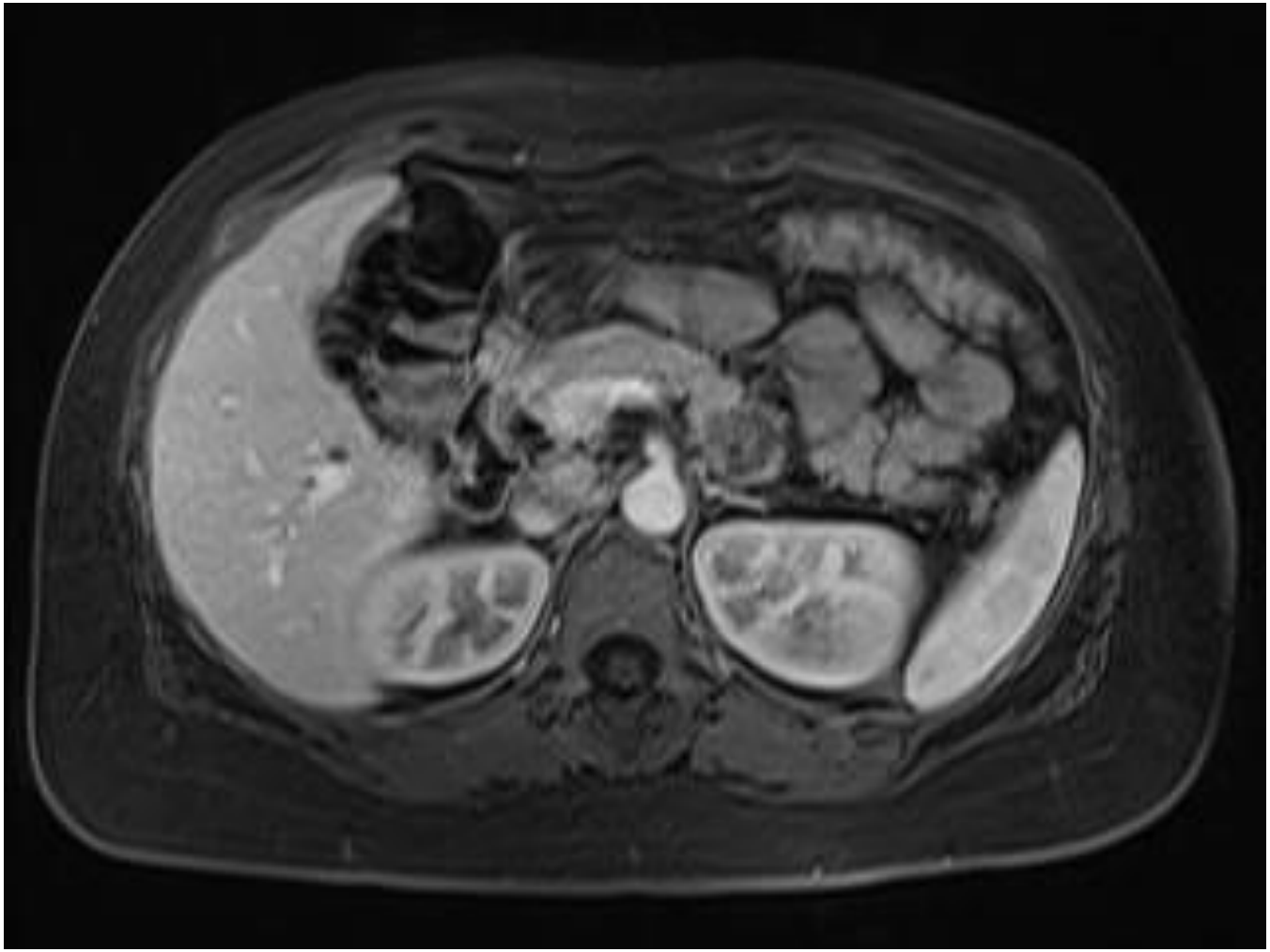


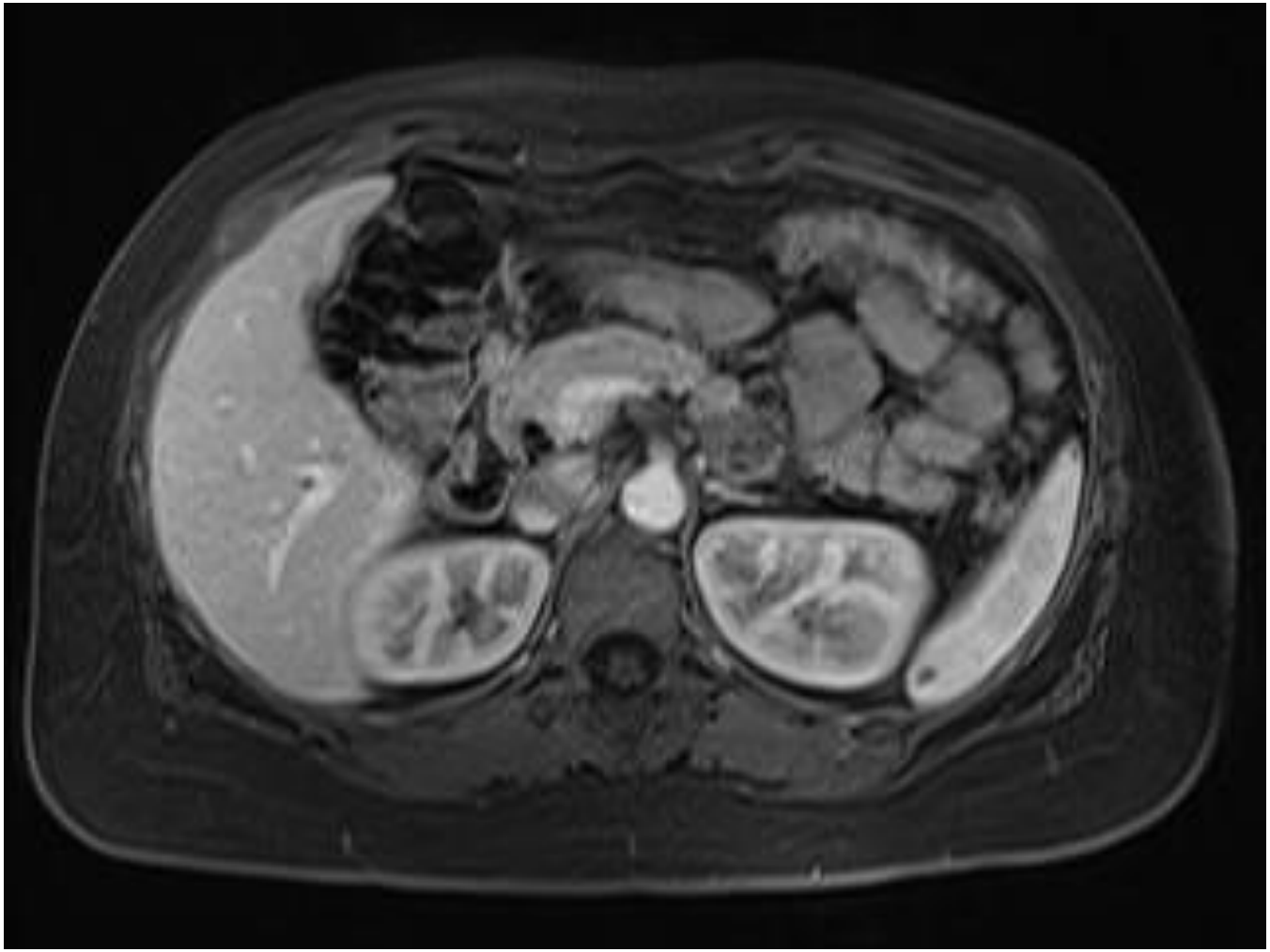


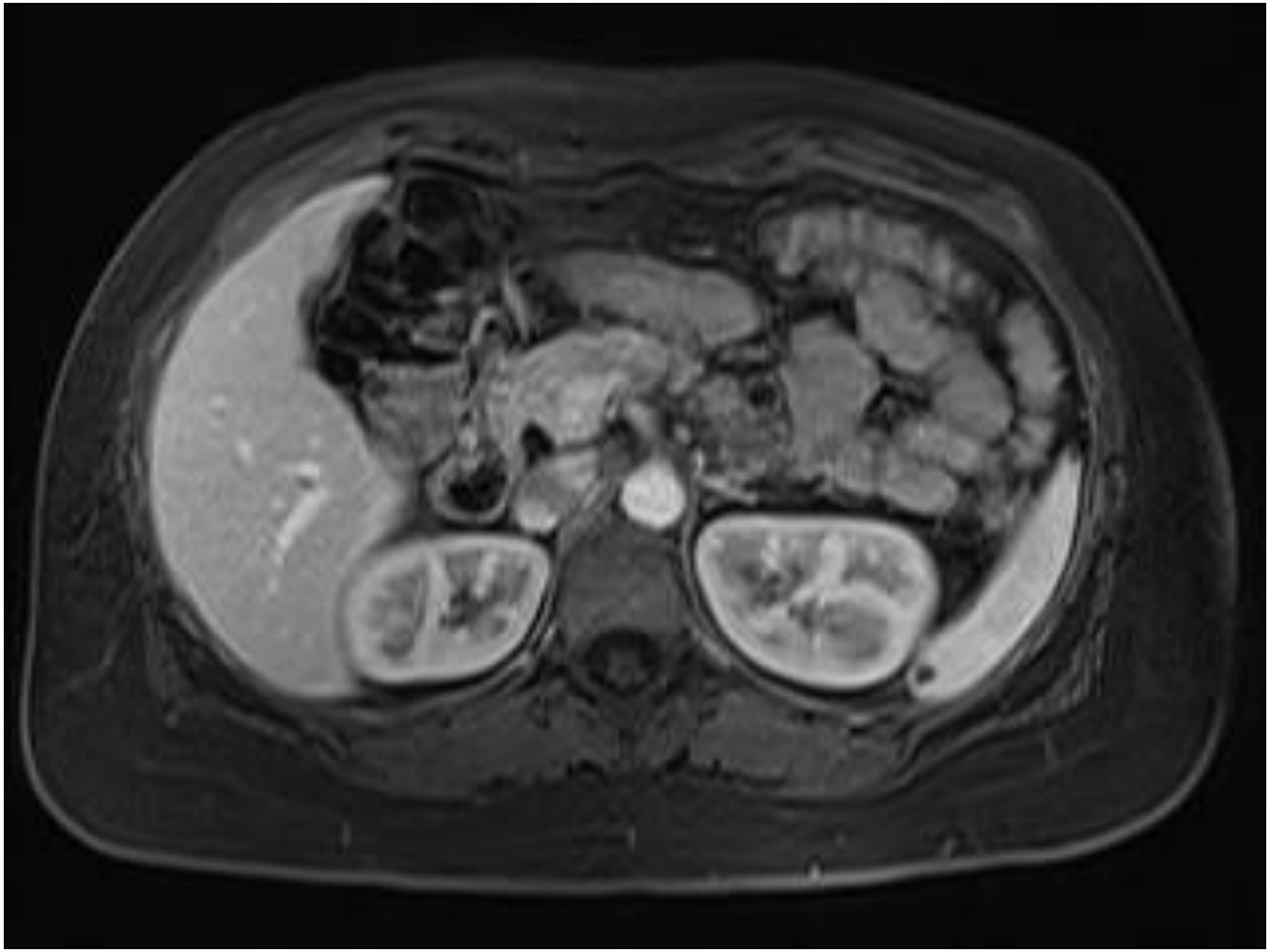












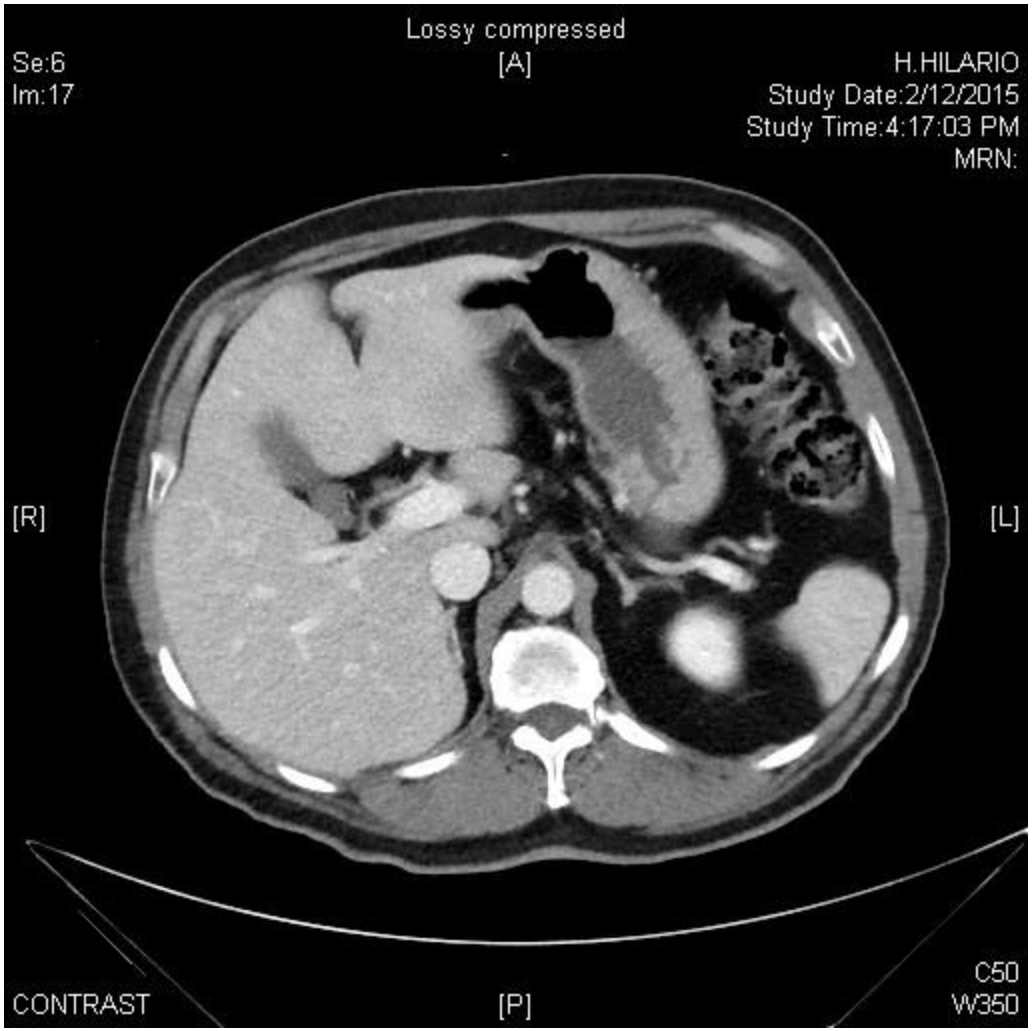
Diagnosis

Diagnosis

Solid Pseudopapillary Neoplasm (SPN)

Case #2

- The patient is a 57-year-old male with a history of renal cell cancer for which he previously underwent a right nephrectomy
- He had an episode of epigastric pain and underwent an MRI that time that showed PD dilation and a 1.9 x 1.6 cm mass in the neck of the pancreas plus an additional 2.8 x 1.7 cm mass below the body and tail of the pancreas
- Urologist planned robotic partial left nephrectomy for a 2.2 x 2.4 x 2.5 cm mass in the lower pole of the left kidney
- DM for four years and he is on oral hypoglycemics. BS runs in 140's. A1C of 12.
- No history of pancreatitis
- EUS demonstrated no evidence of malignancy or solid mass, but there was a 5 mm dilated pancreatic duct in the body and tail that appears to be consistent with a main duct IPMN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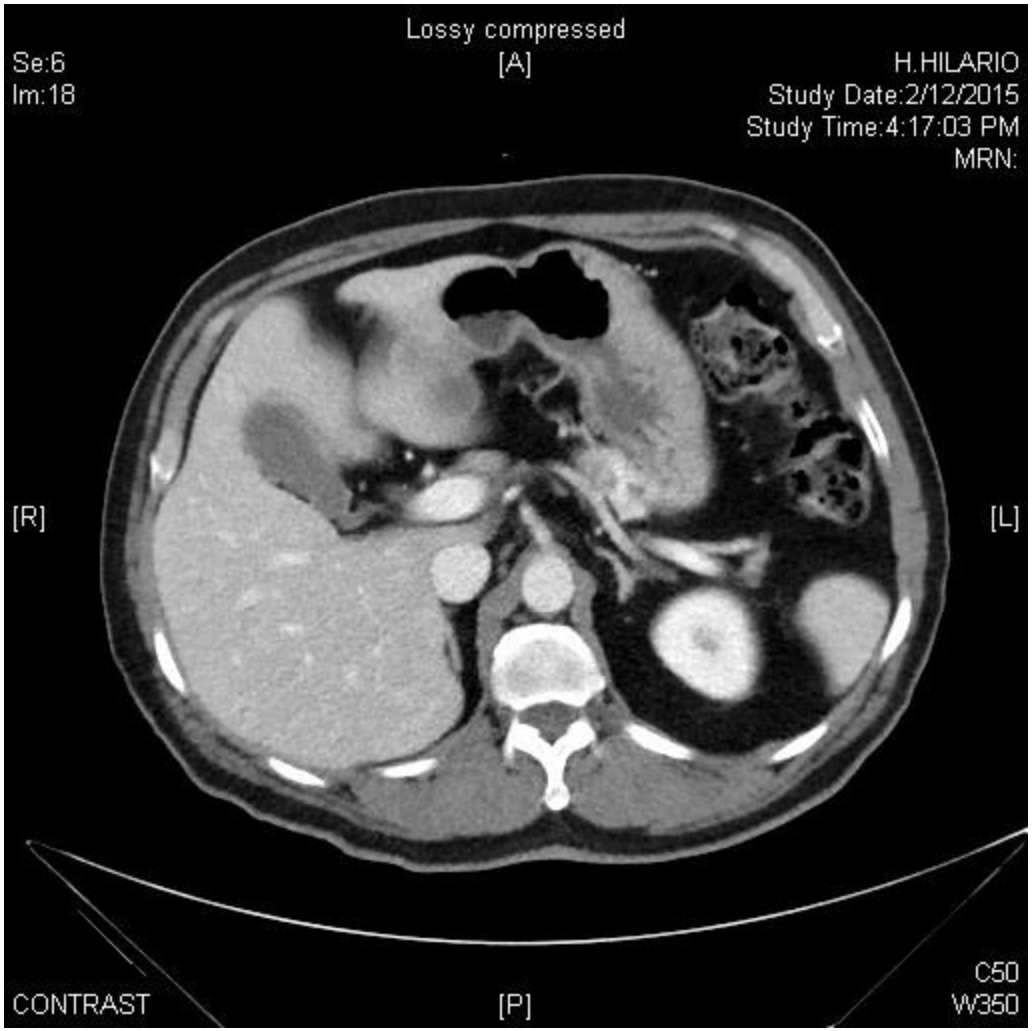
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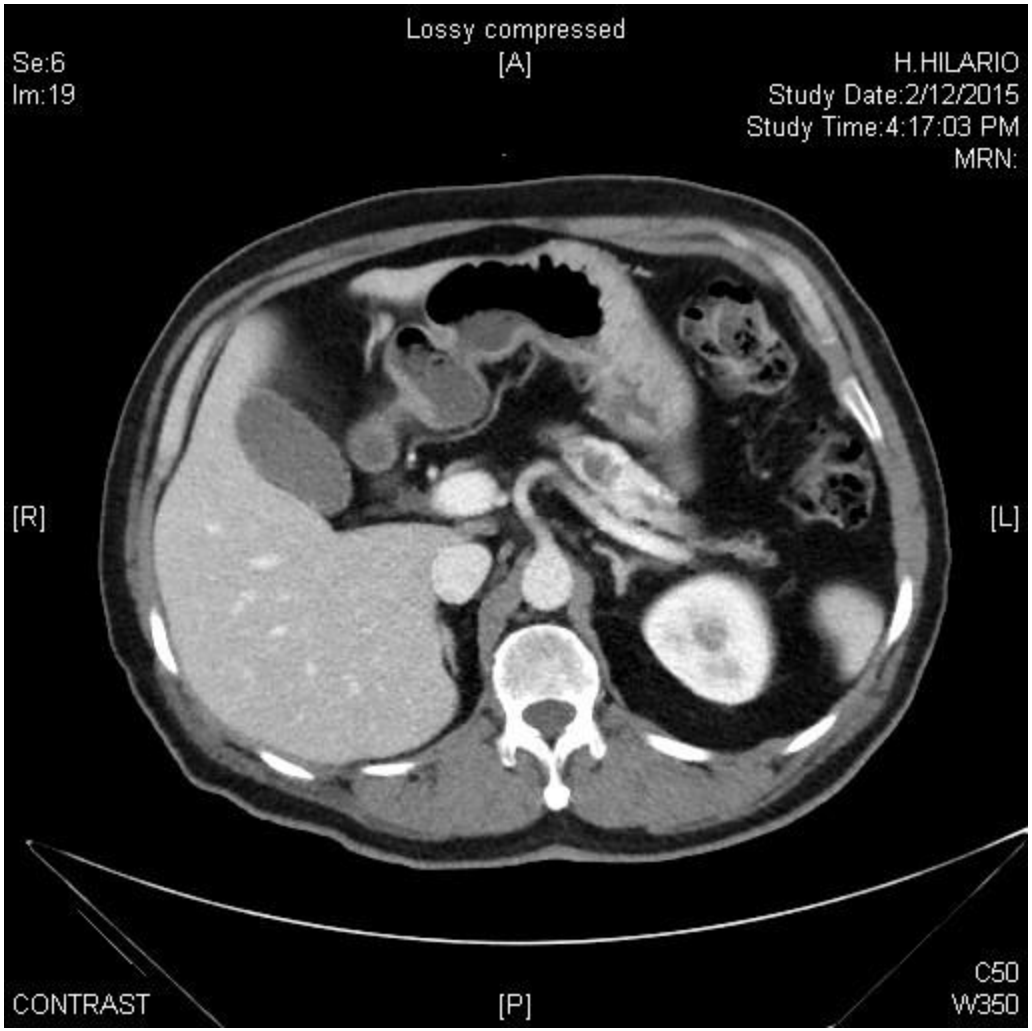
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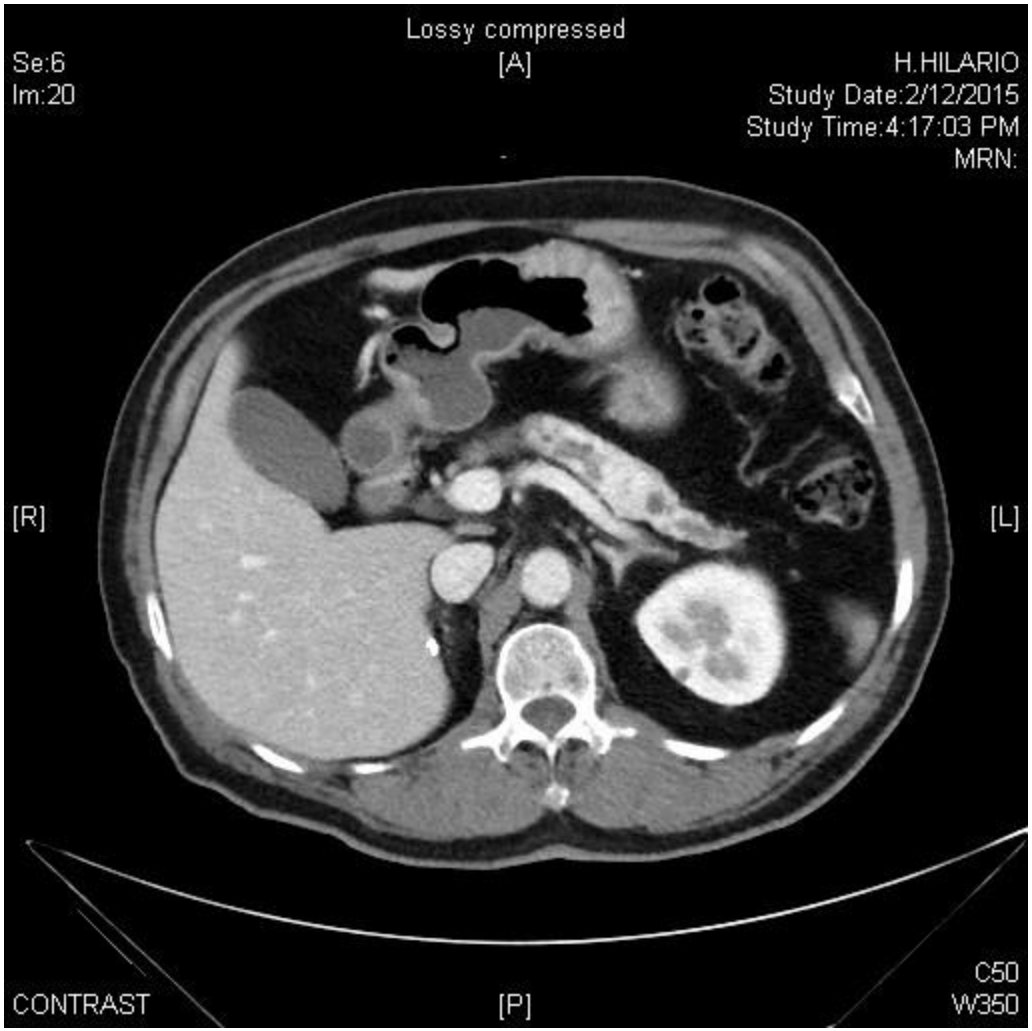
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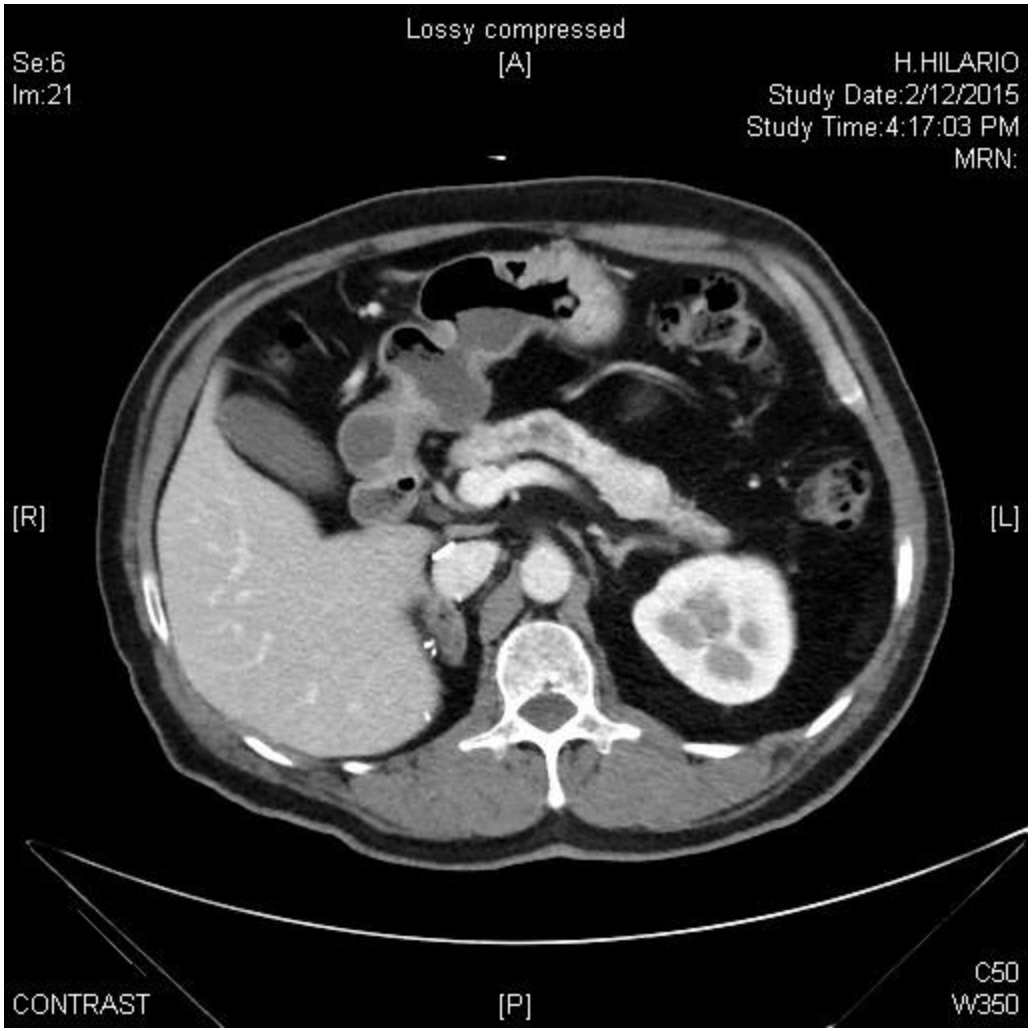
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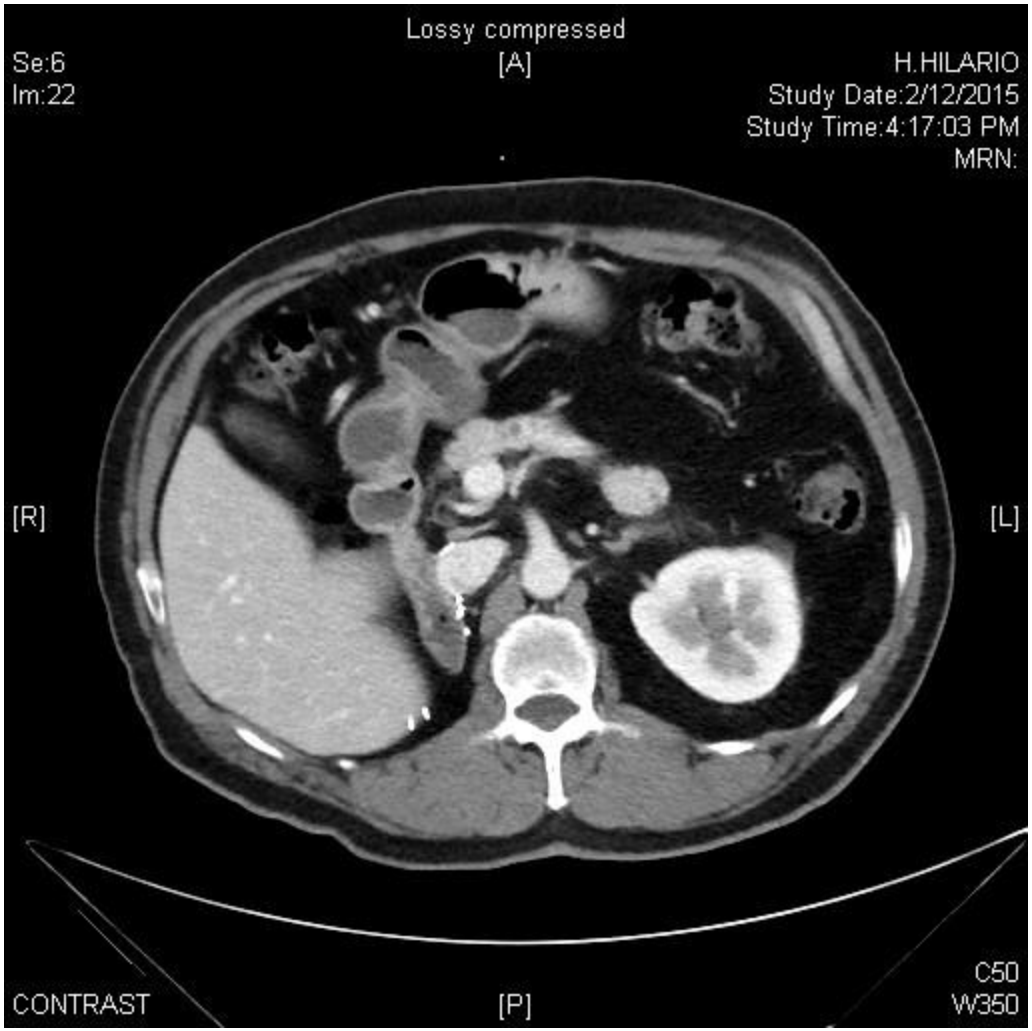
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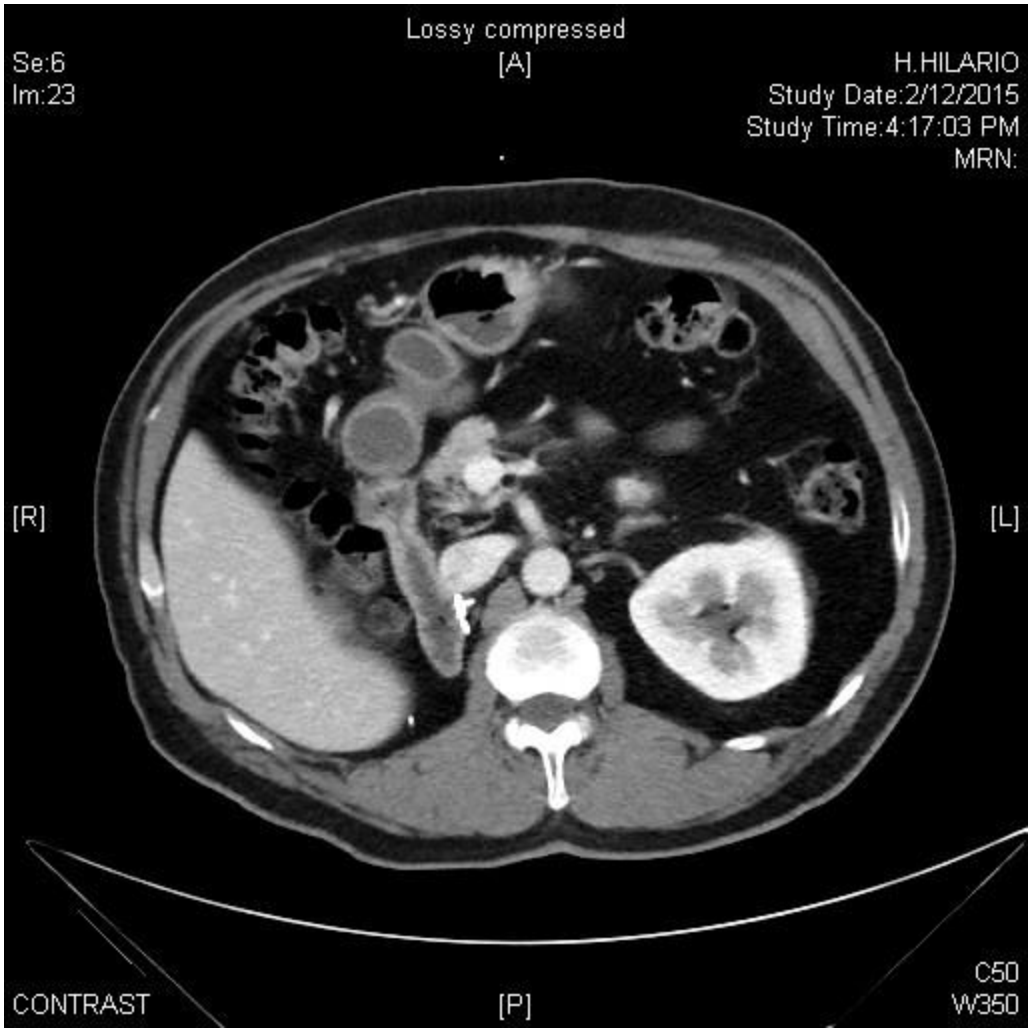
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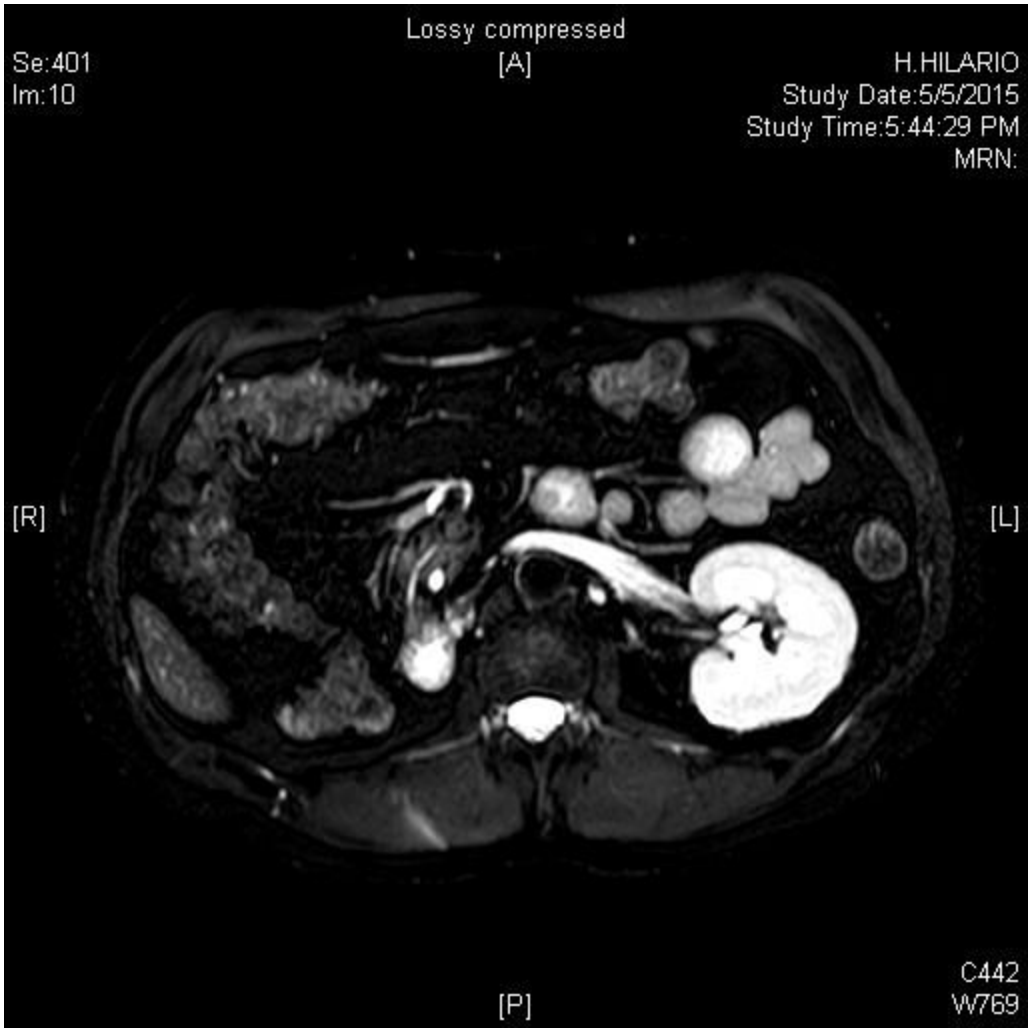
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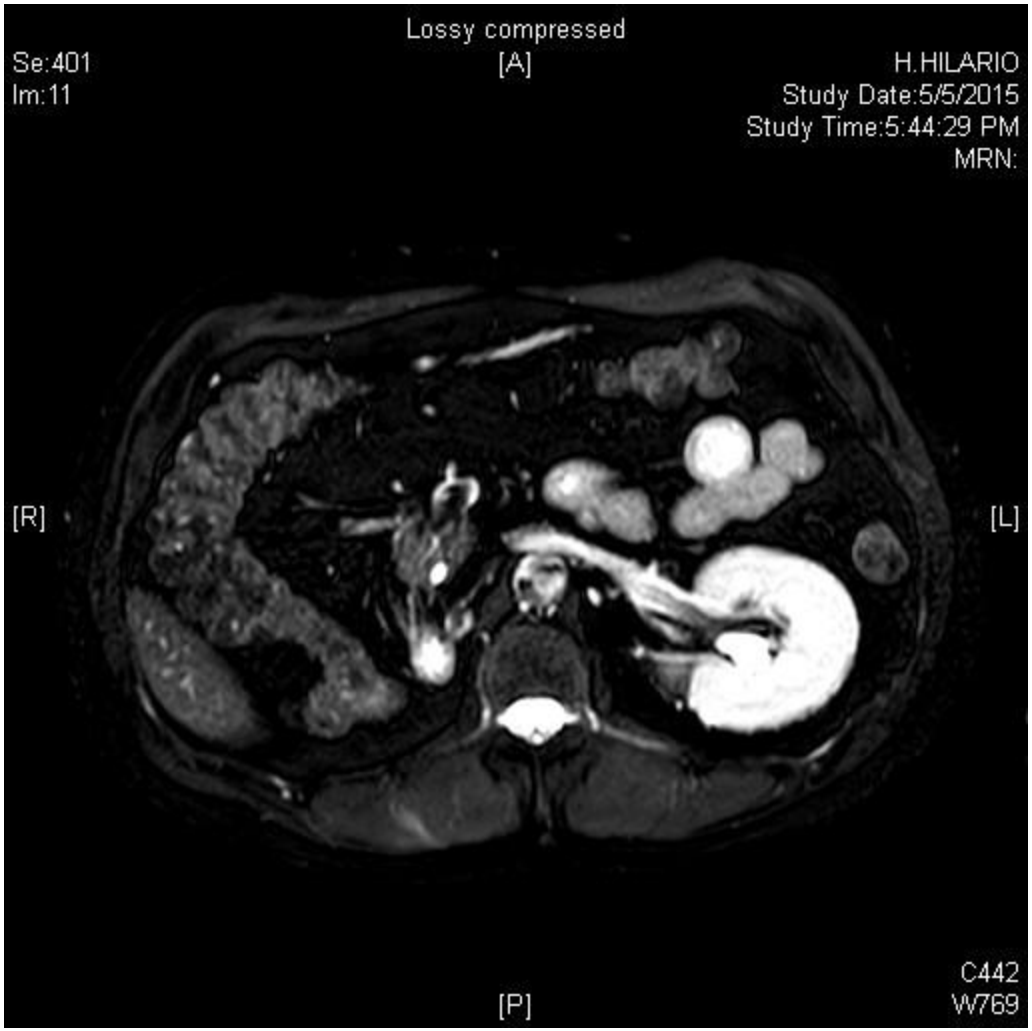
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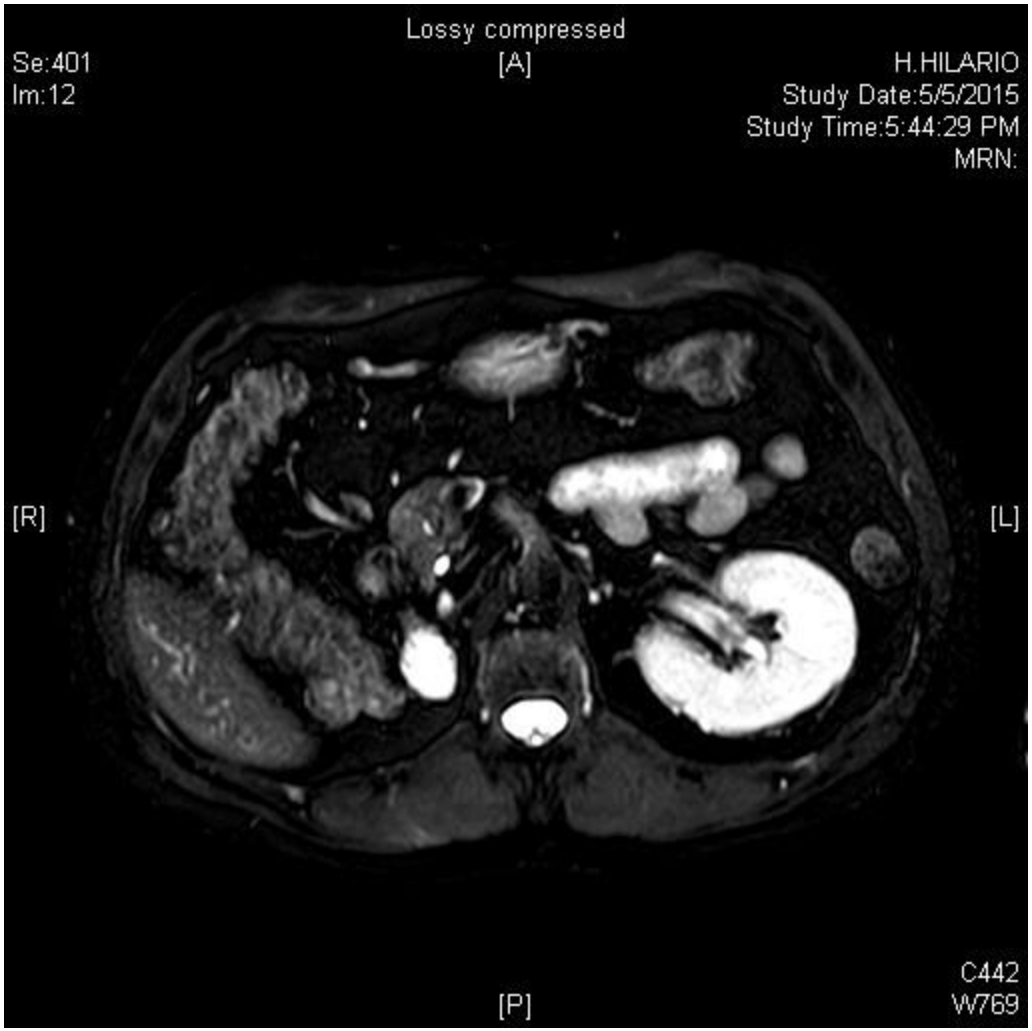
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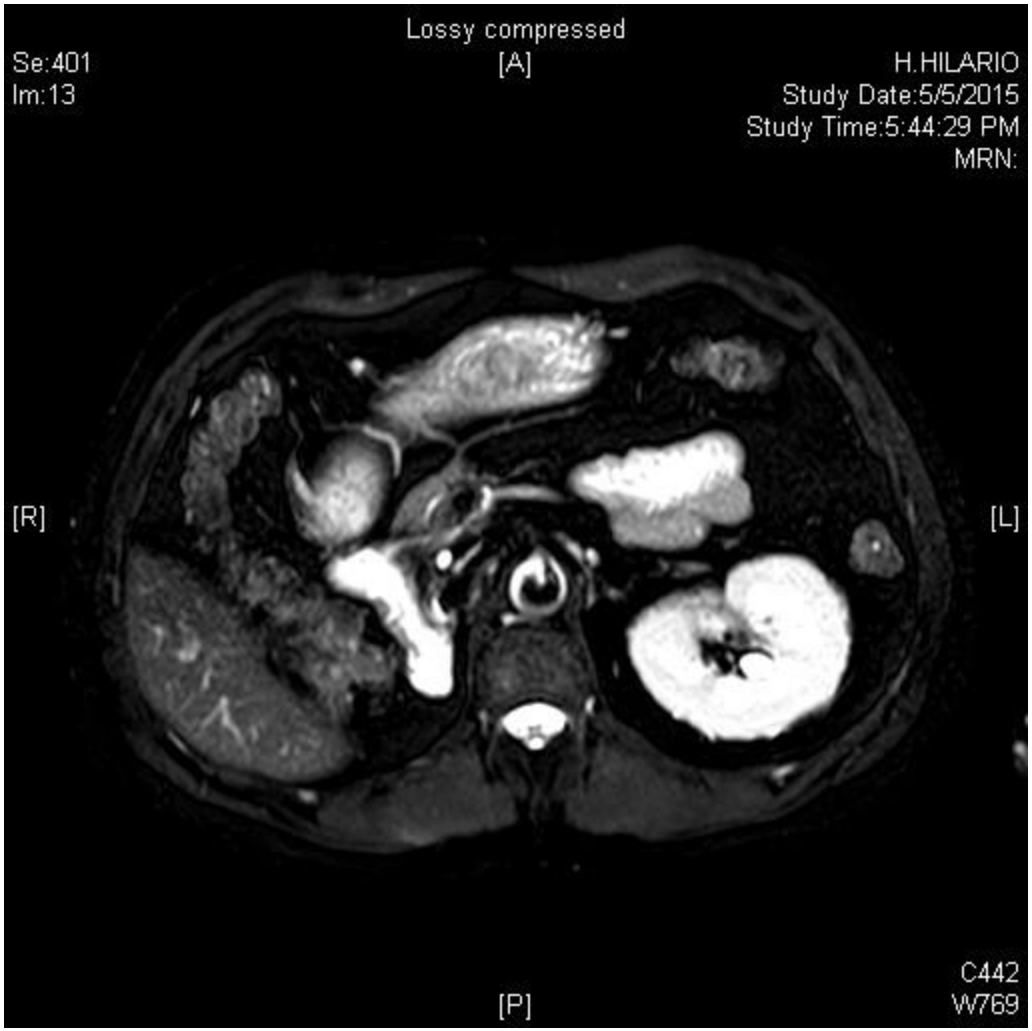
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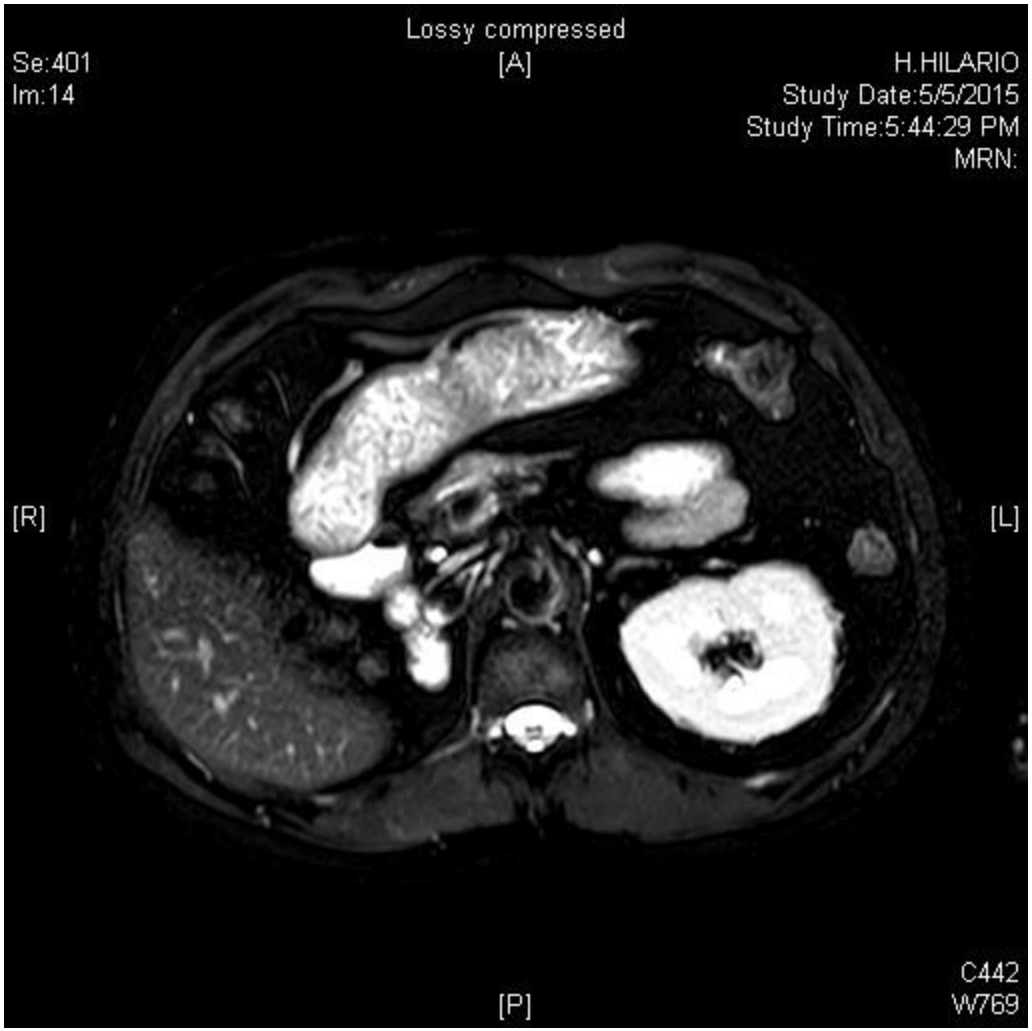
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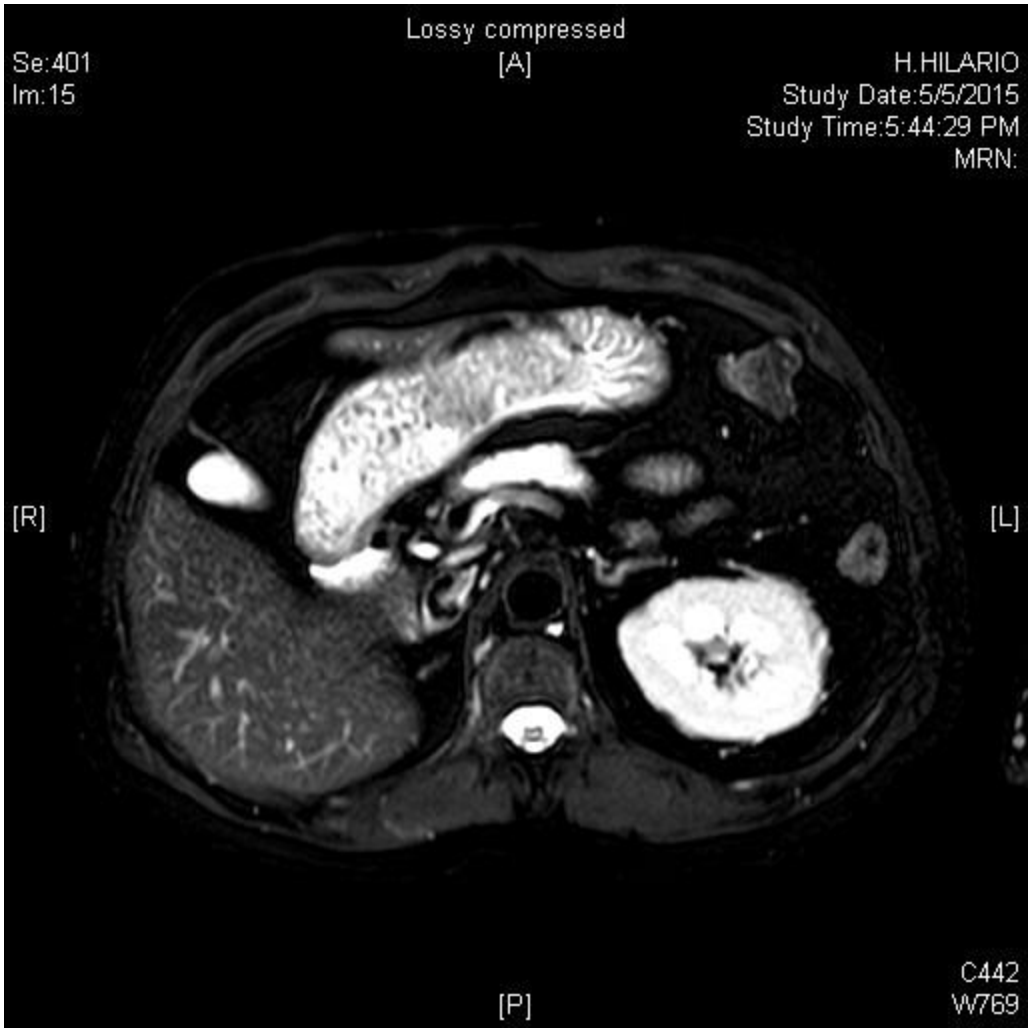
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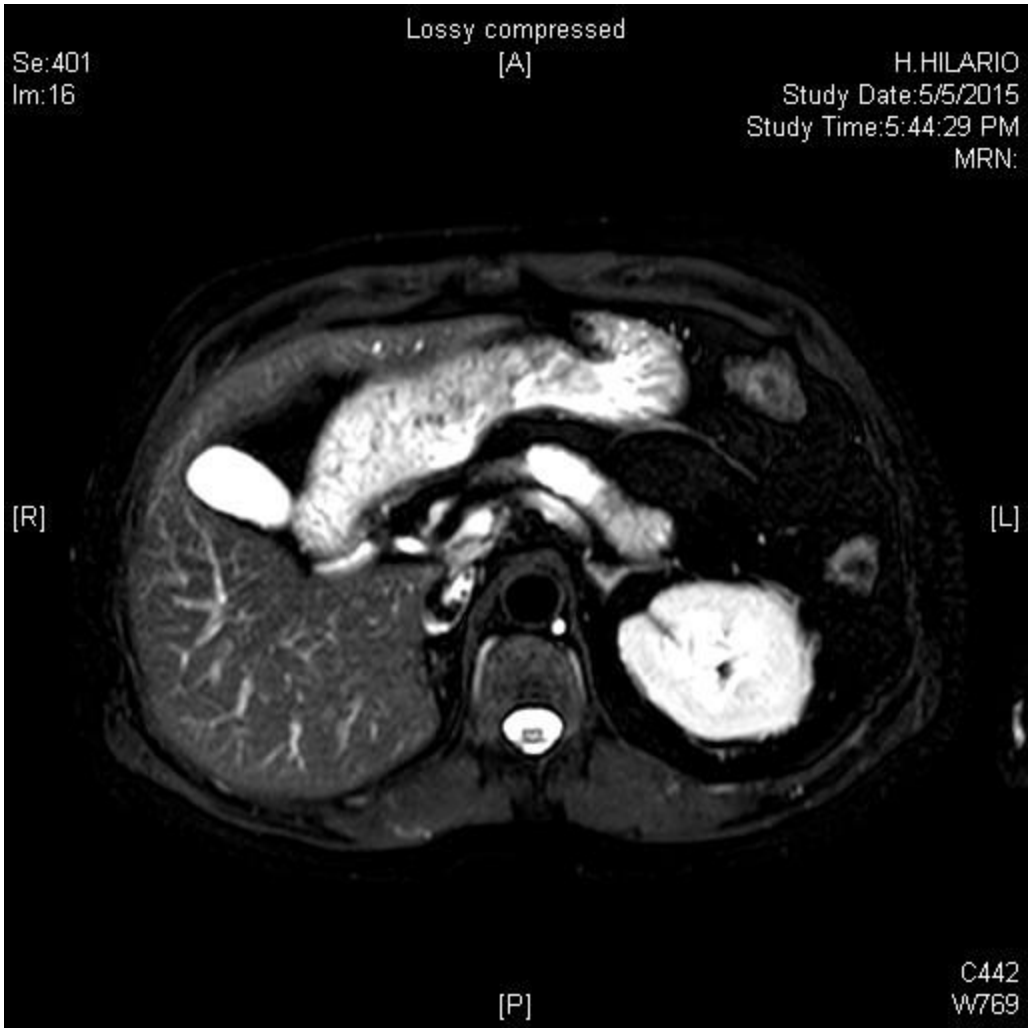
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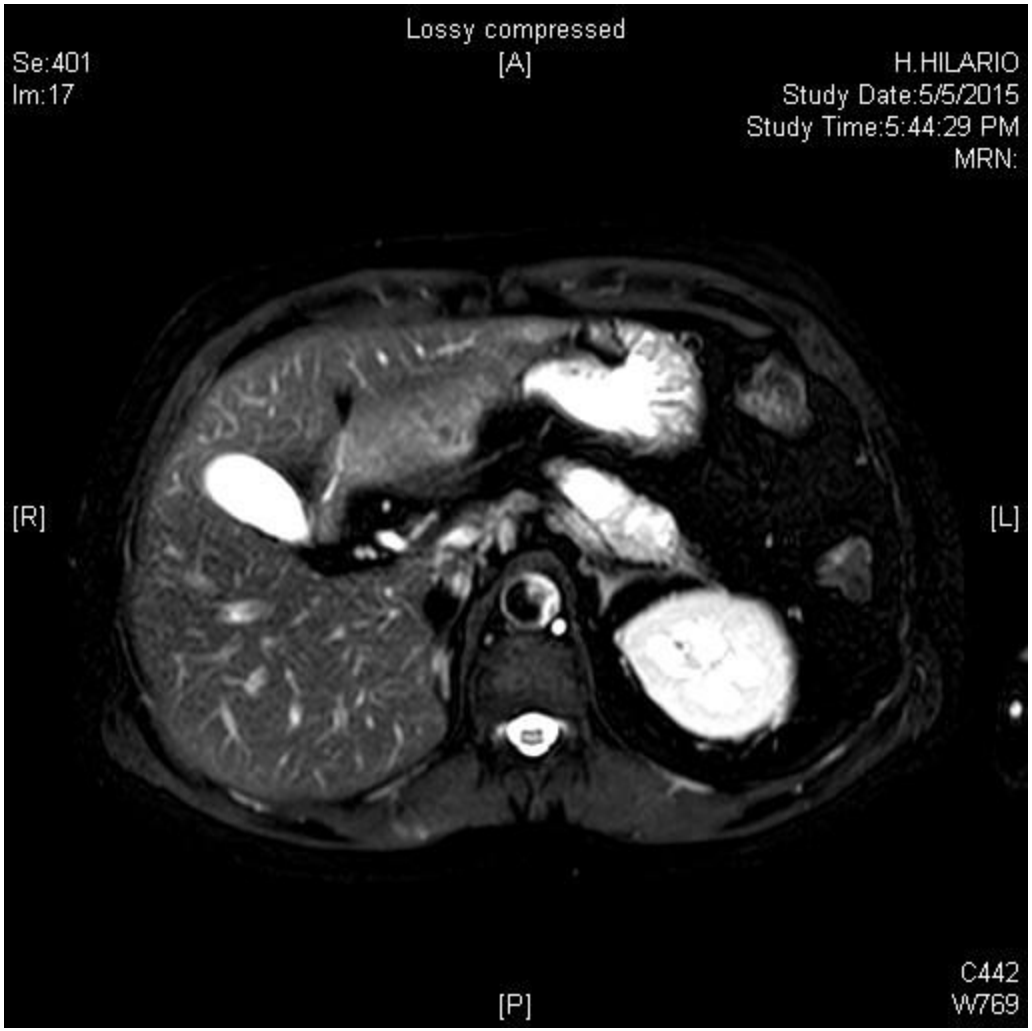
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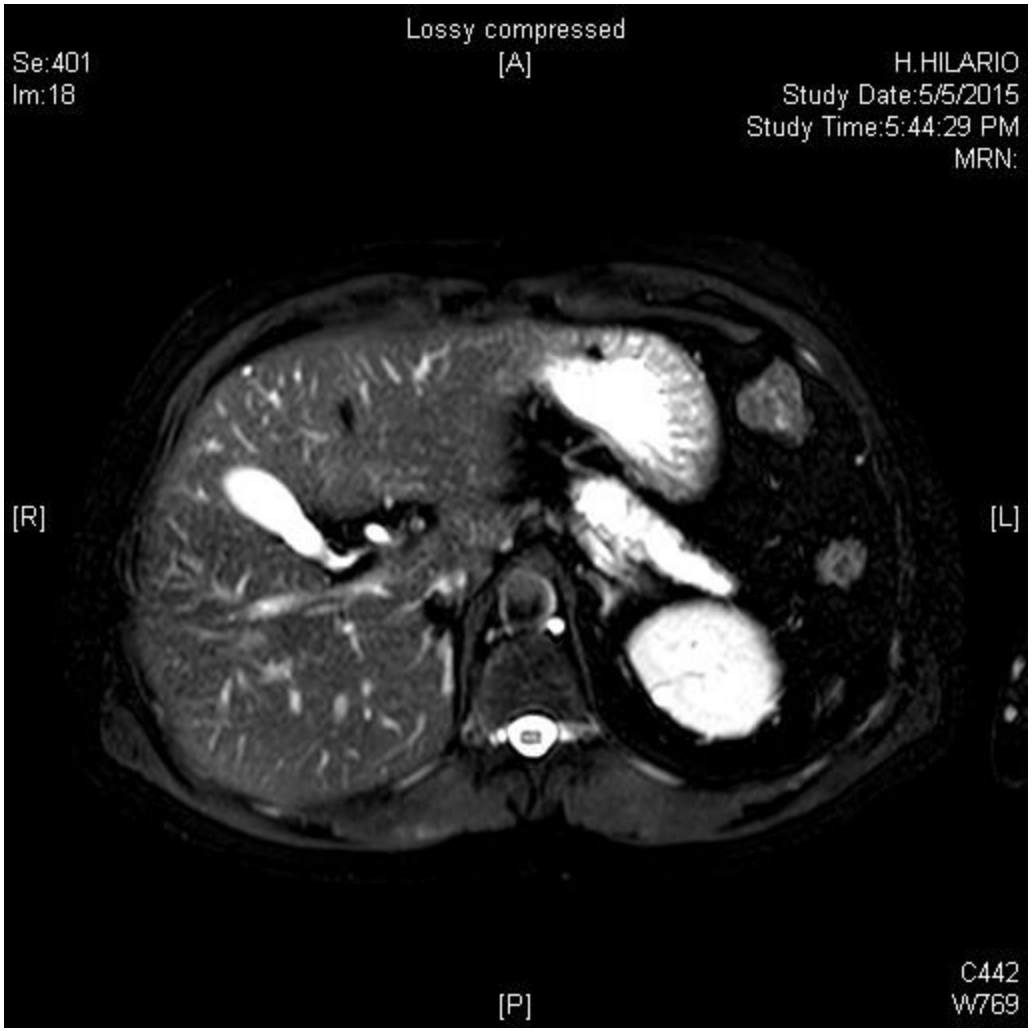
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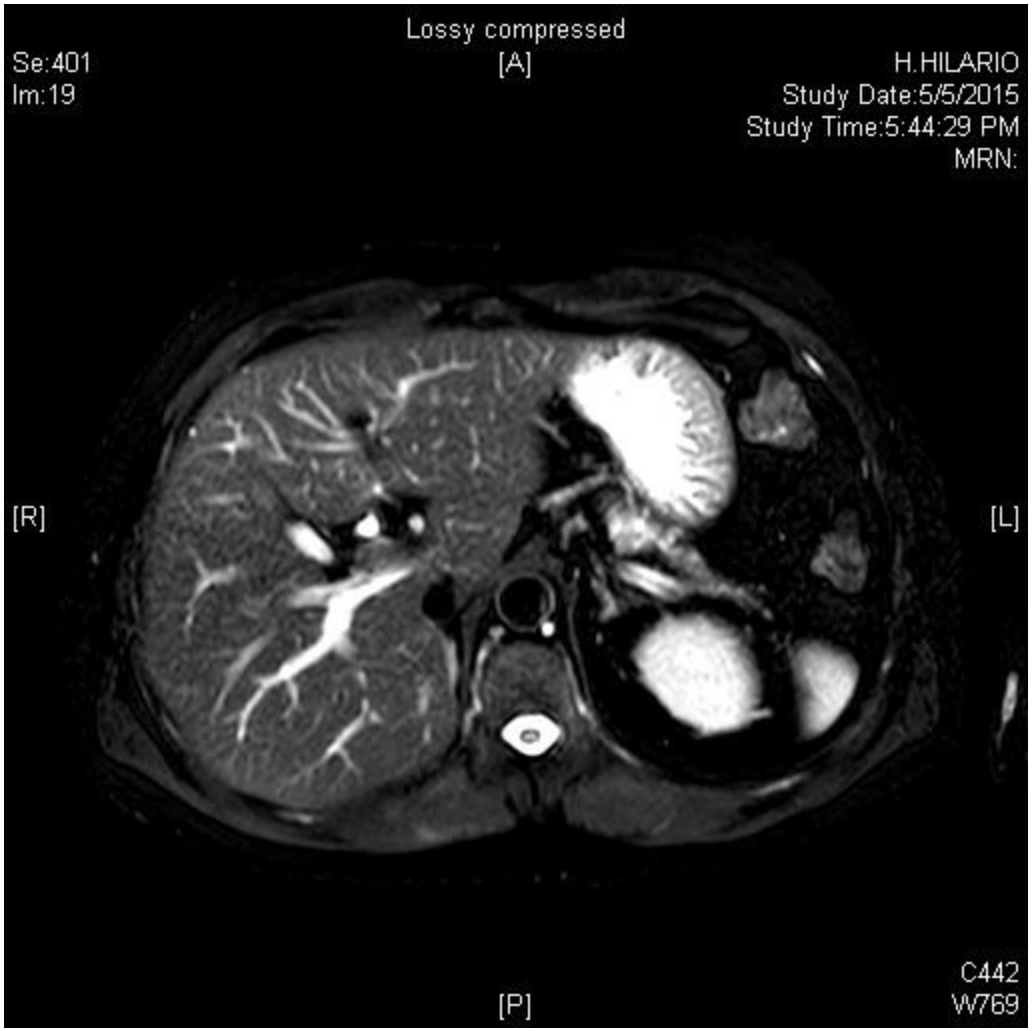
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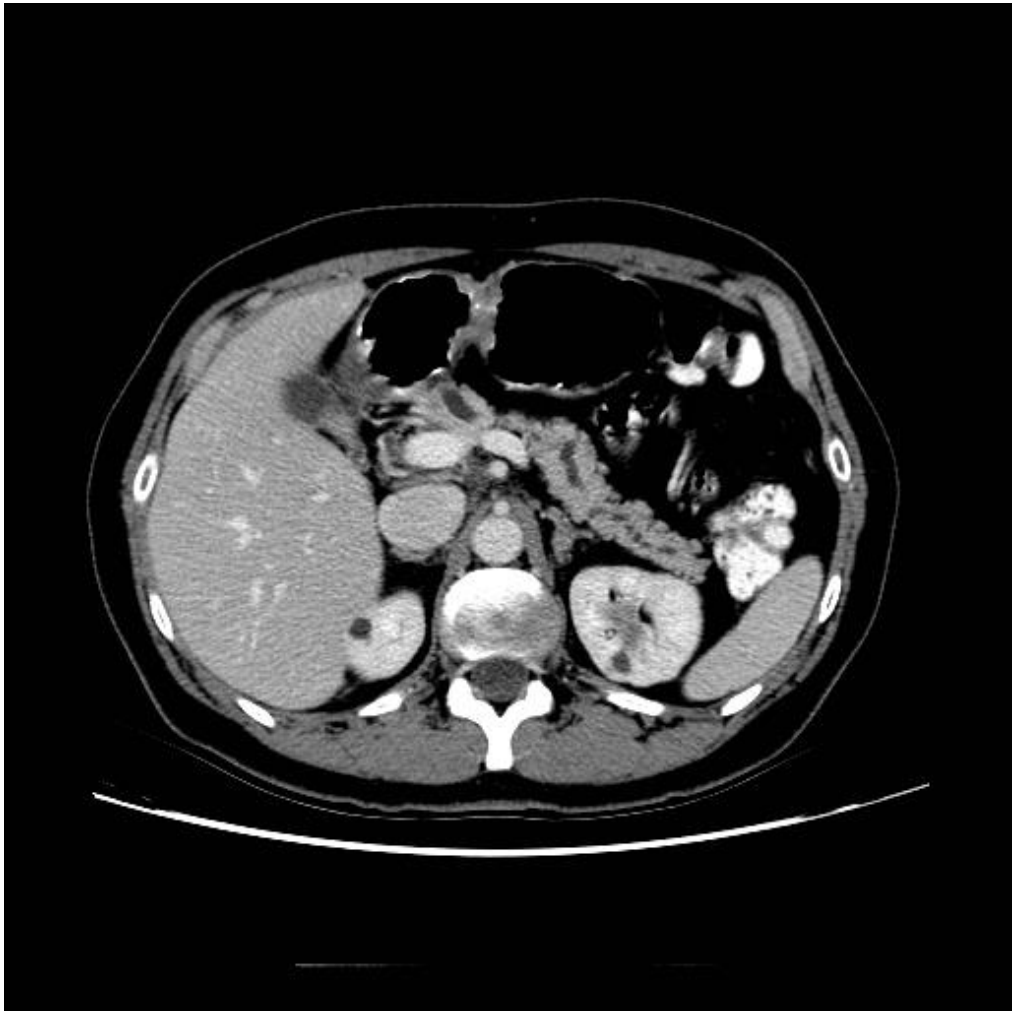
Diagnosis

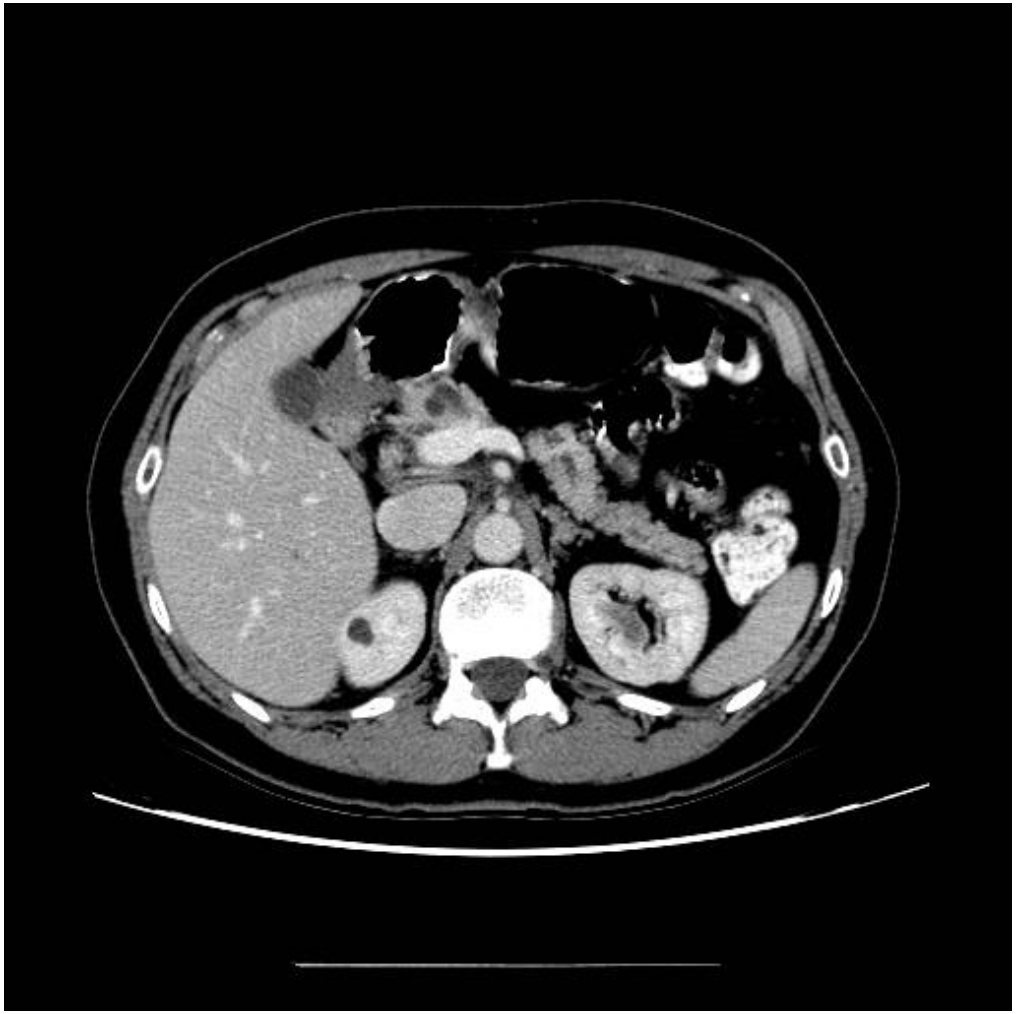
Diagnosis

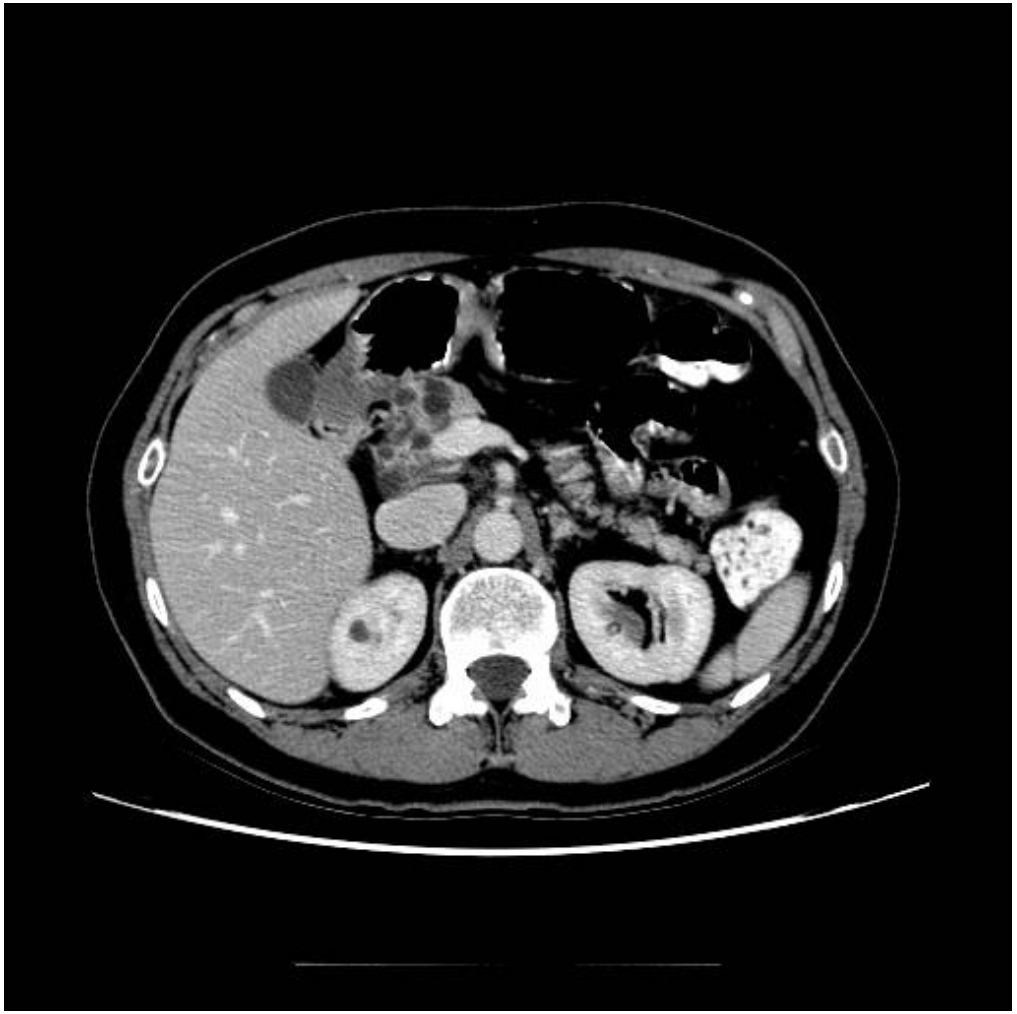
Metastatic Clear Cell Renal Cell Carcinoma

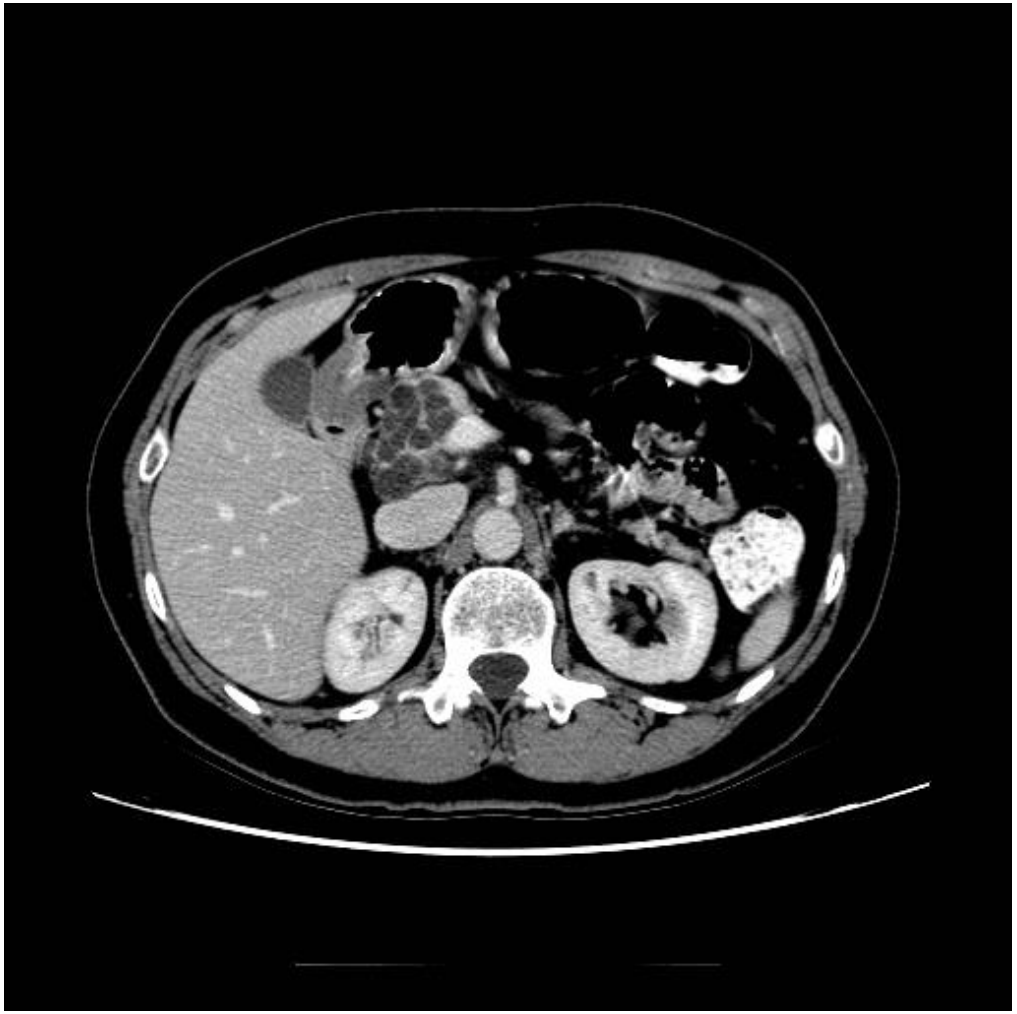
Case #3

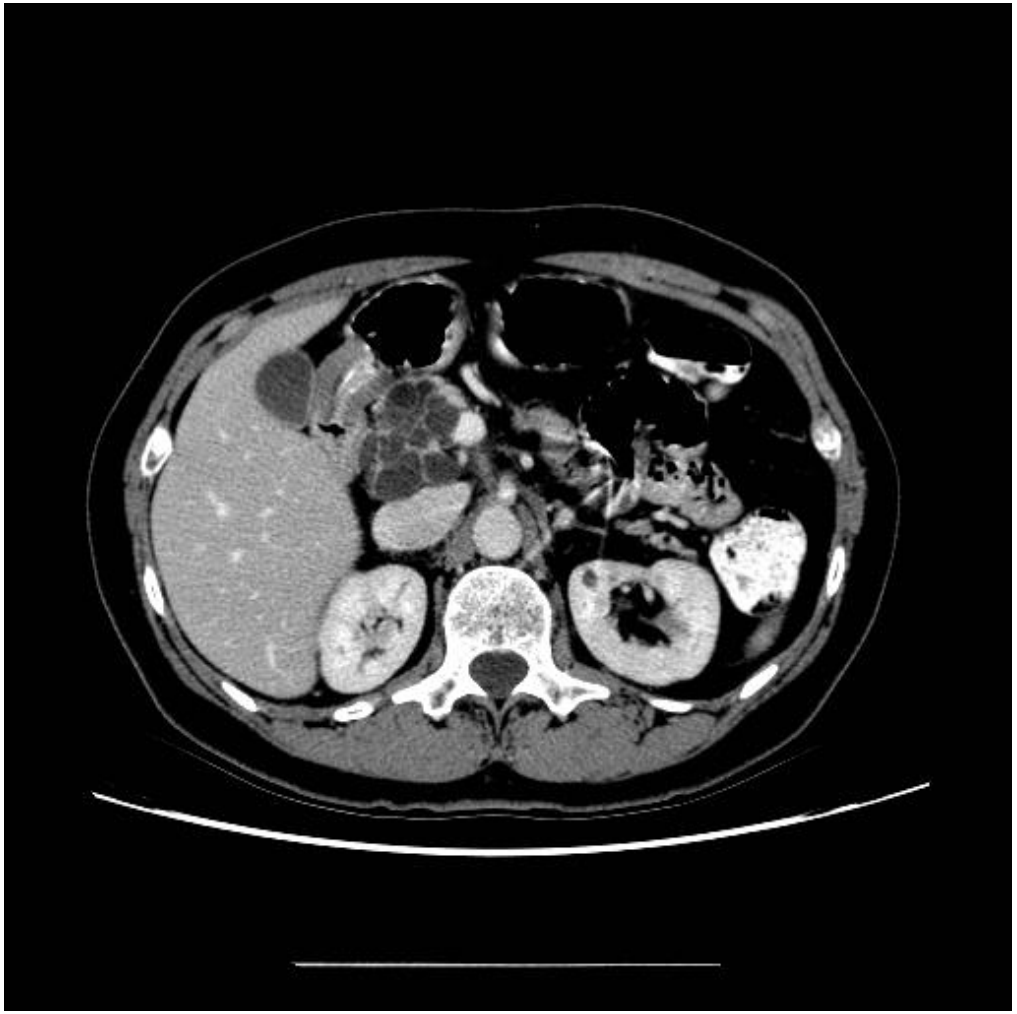
- 55-year-old female who presented with left flank pain
- CT stone survey for kidney stones incidentally demonstrated a 4.5 cm
  mass involving the head of her pancreas
- Repeat CT imaging confirmed the presence of a mass and that has features of a mucinous tumor
- CA 19-9 was within normal limits
- LFTs were mildly elevated

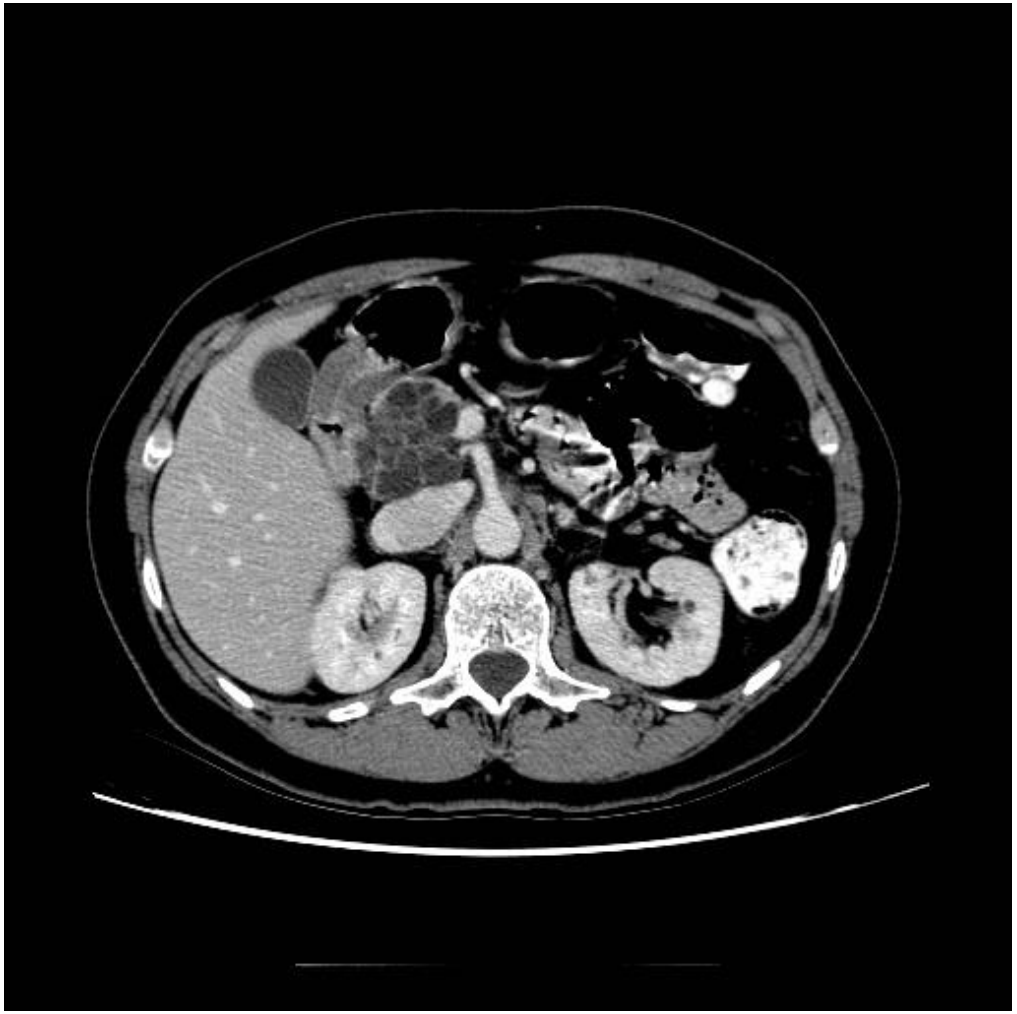


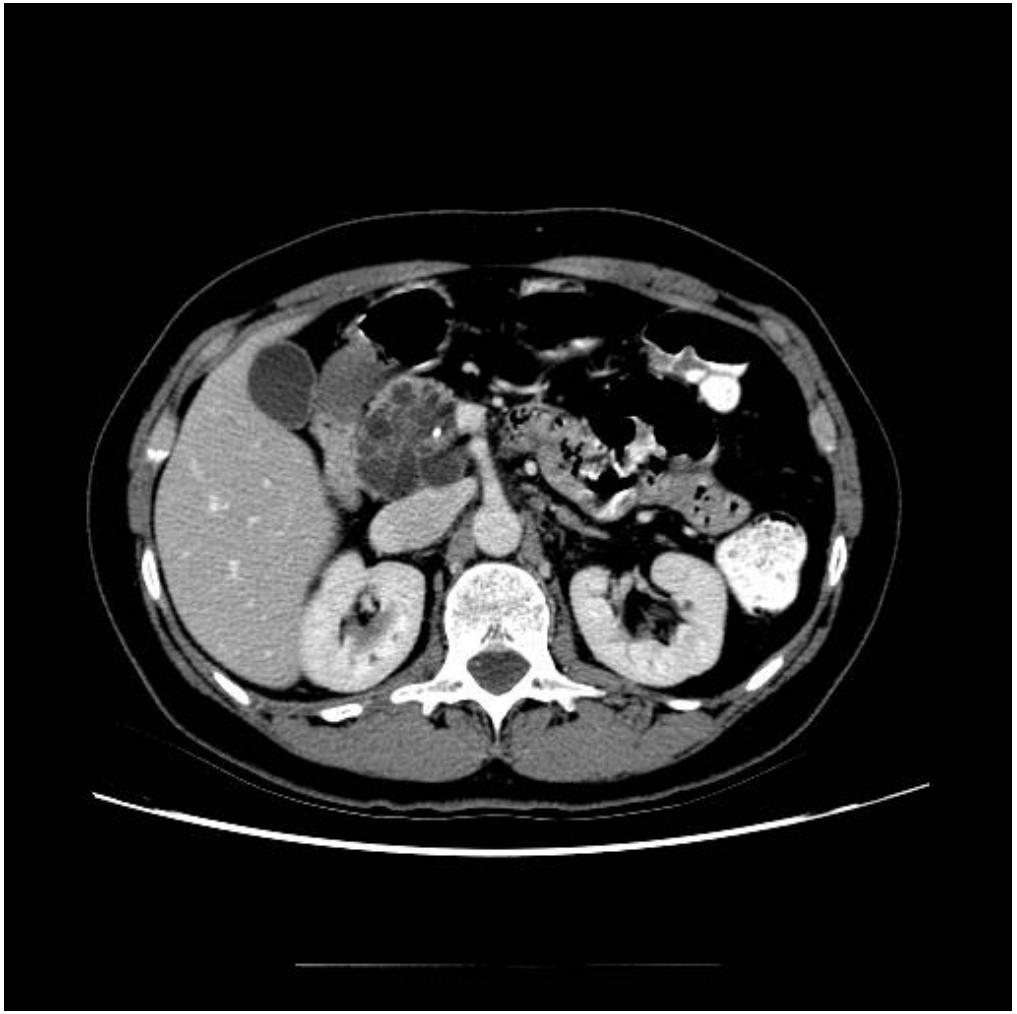


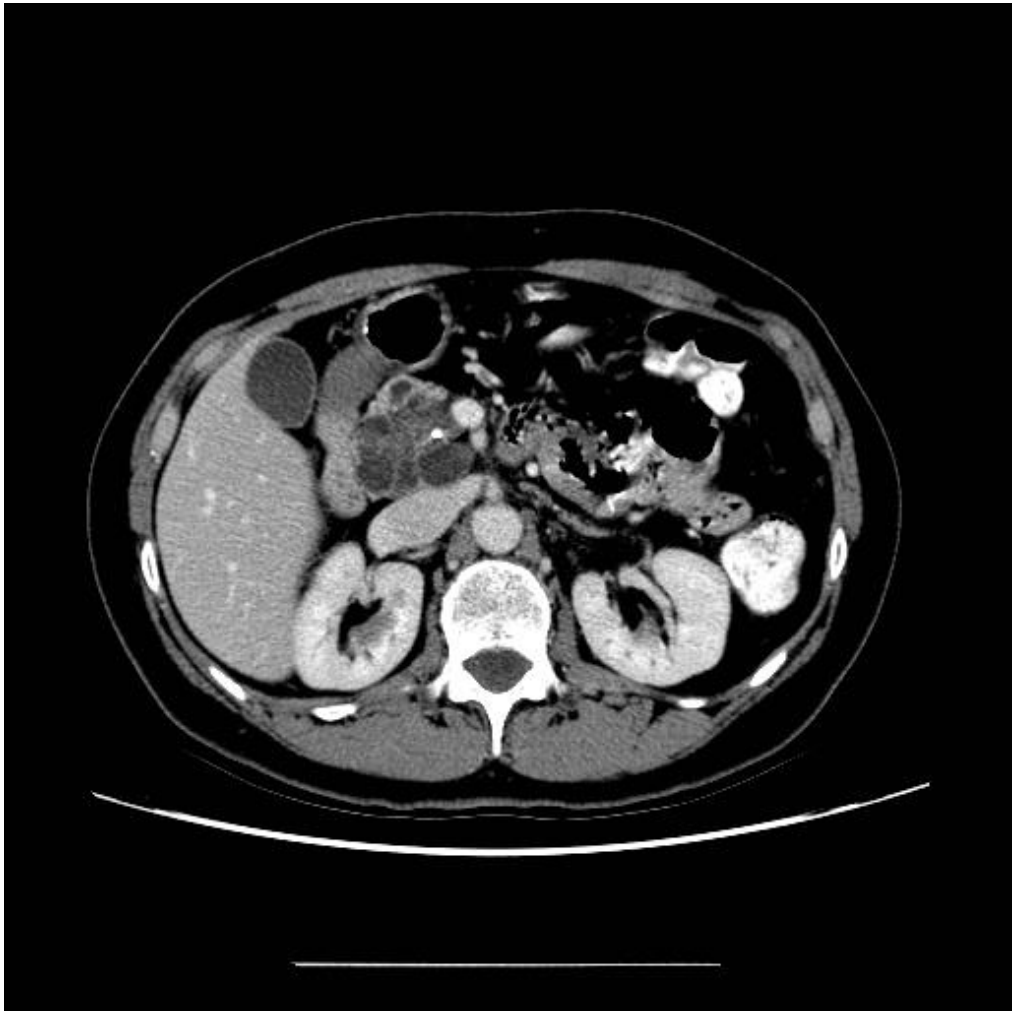


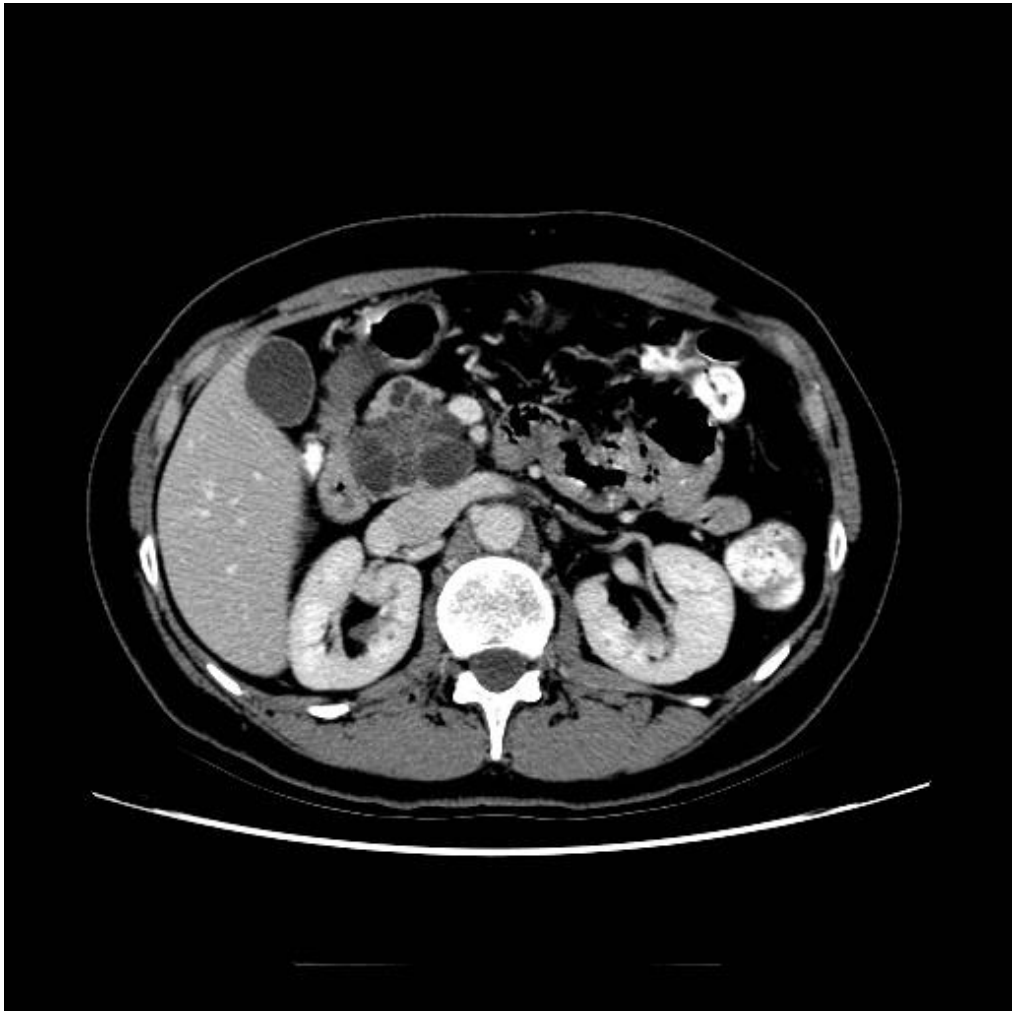


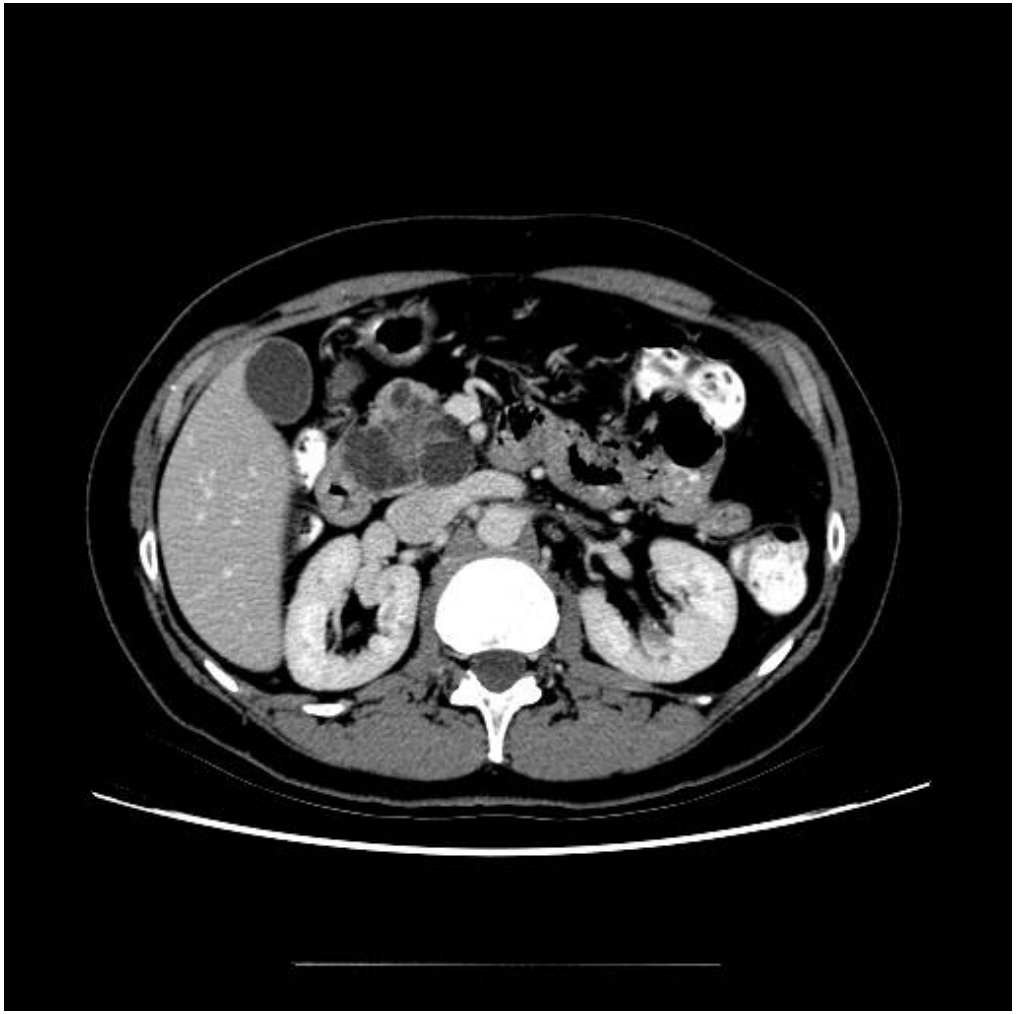


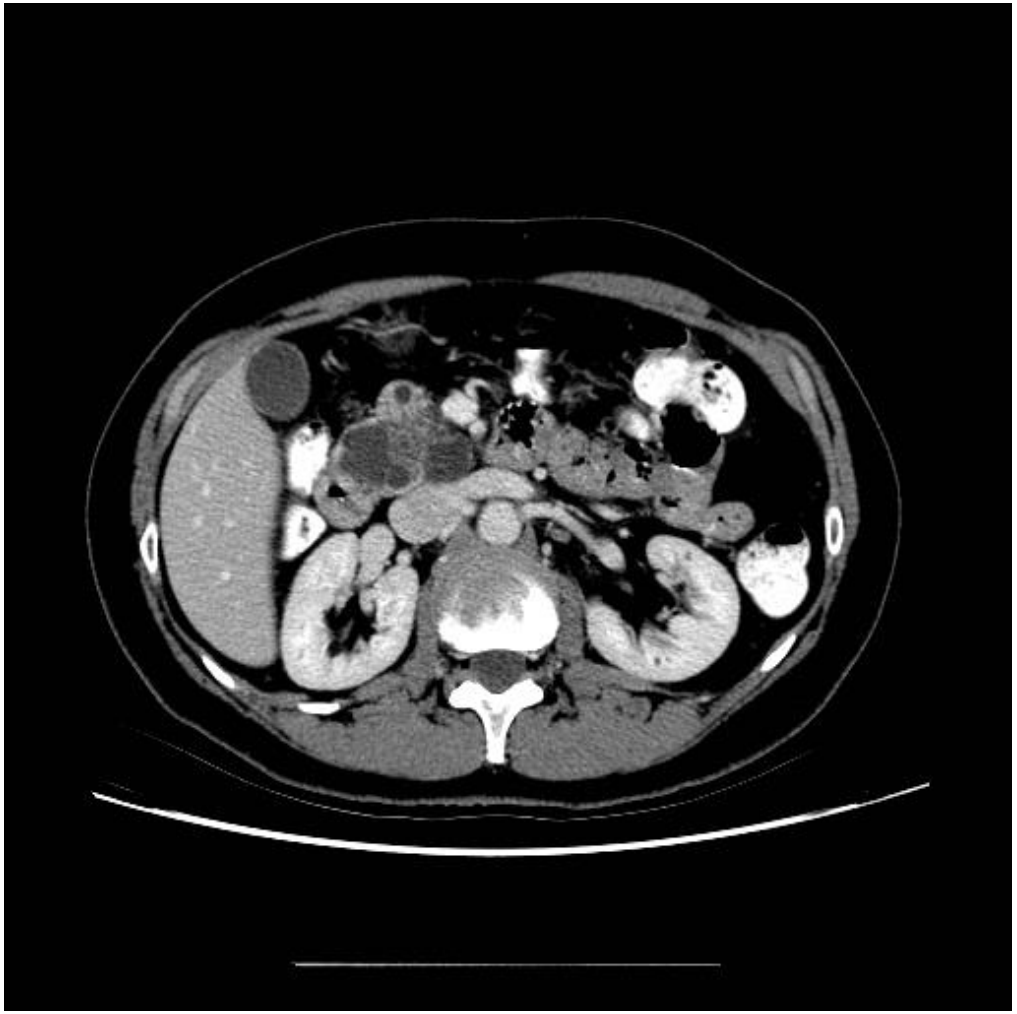


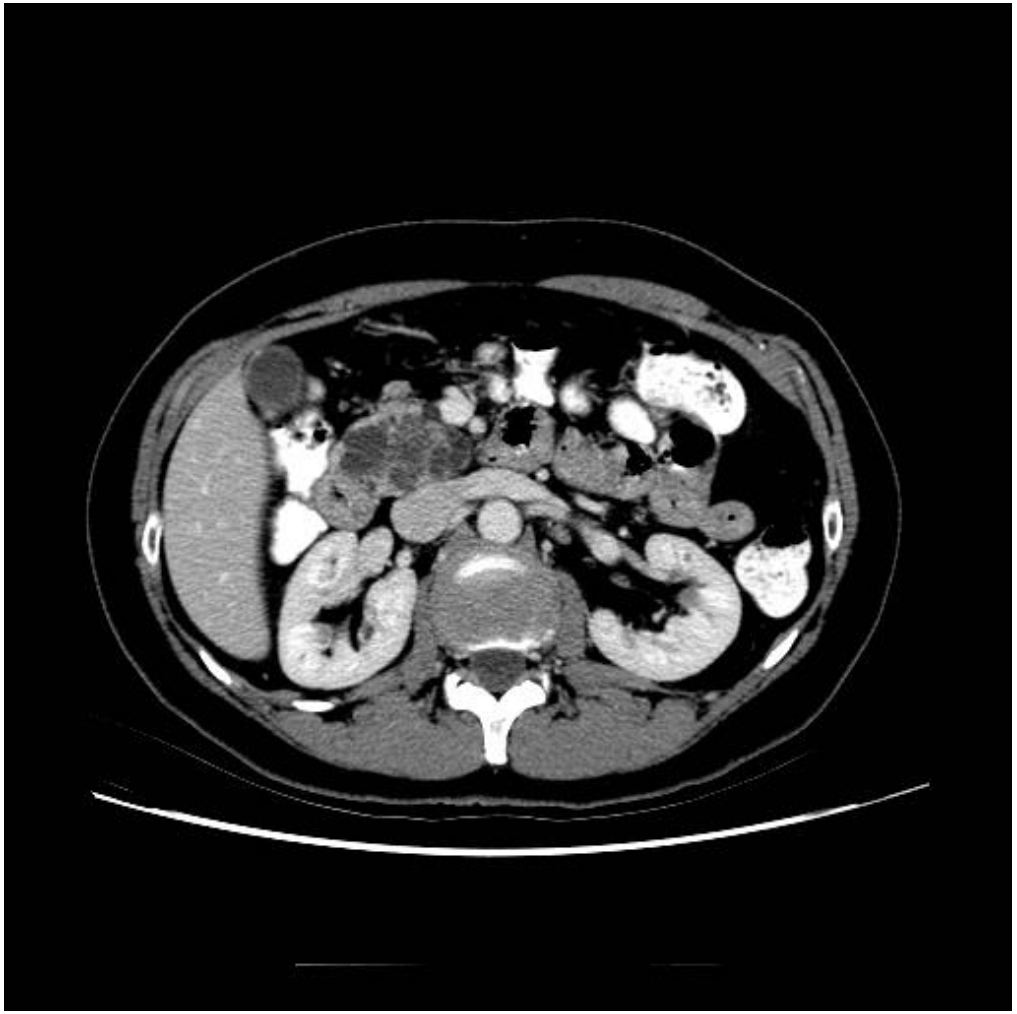


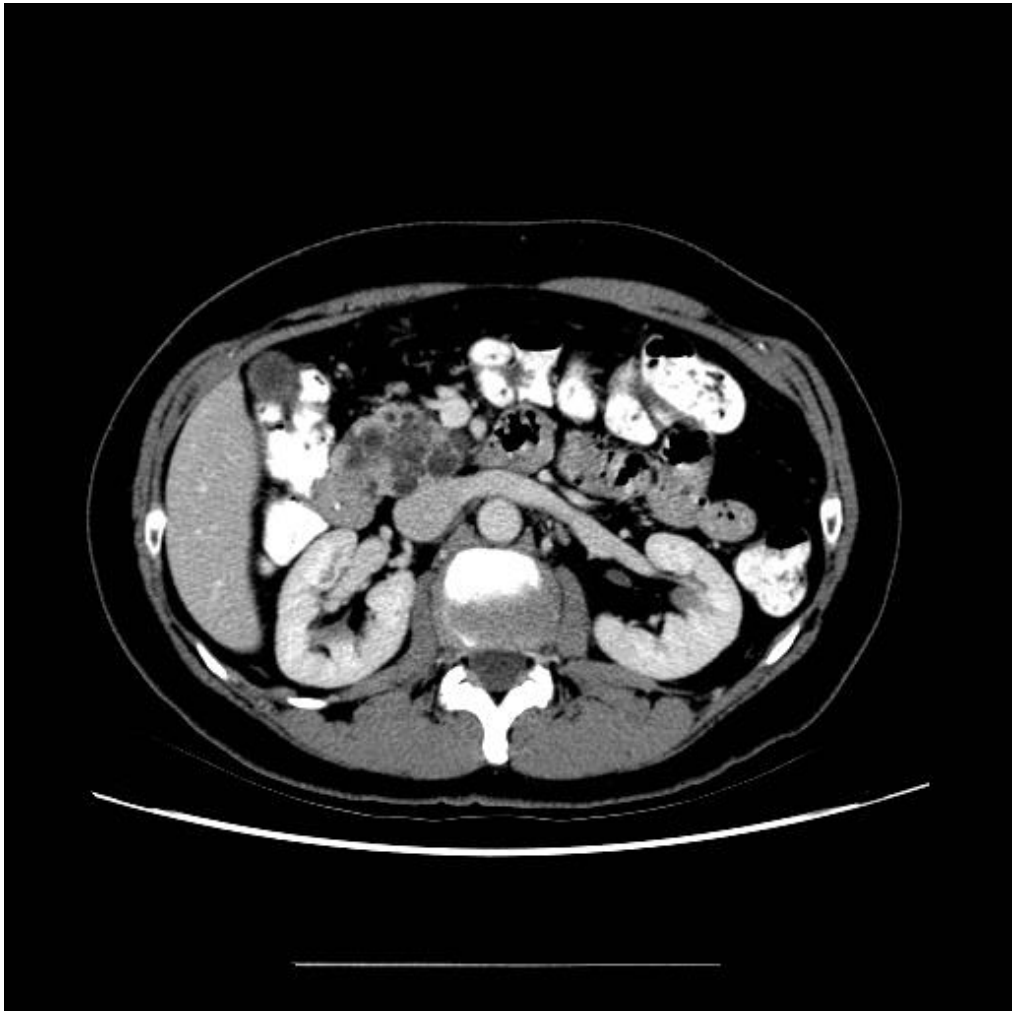


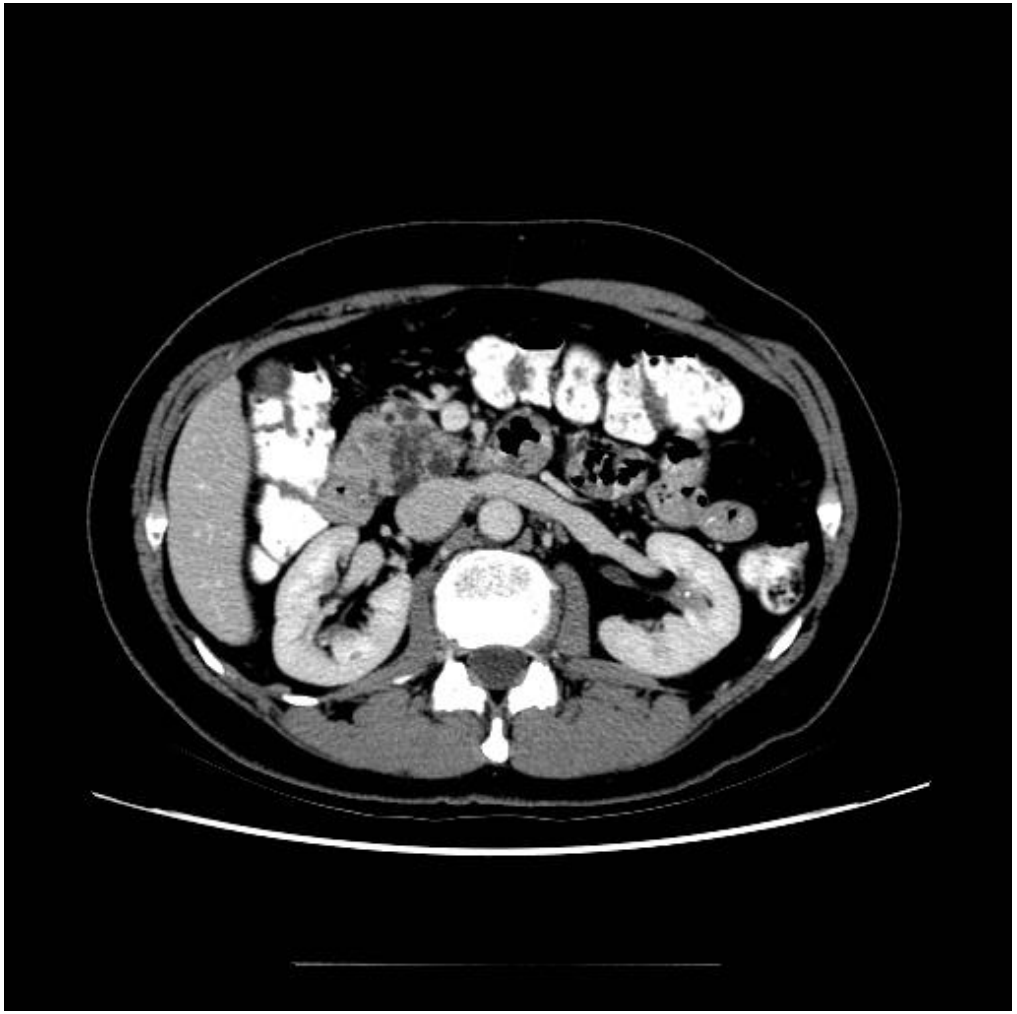


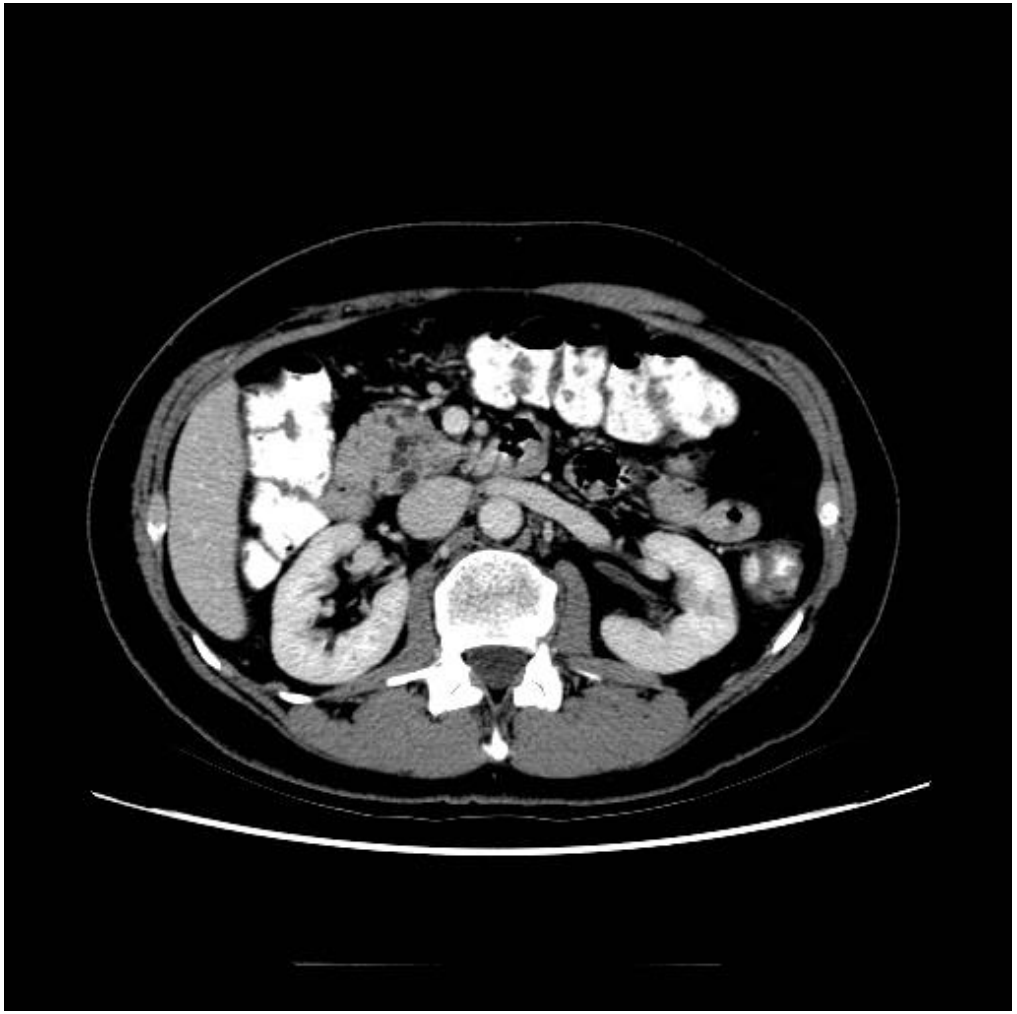












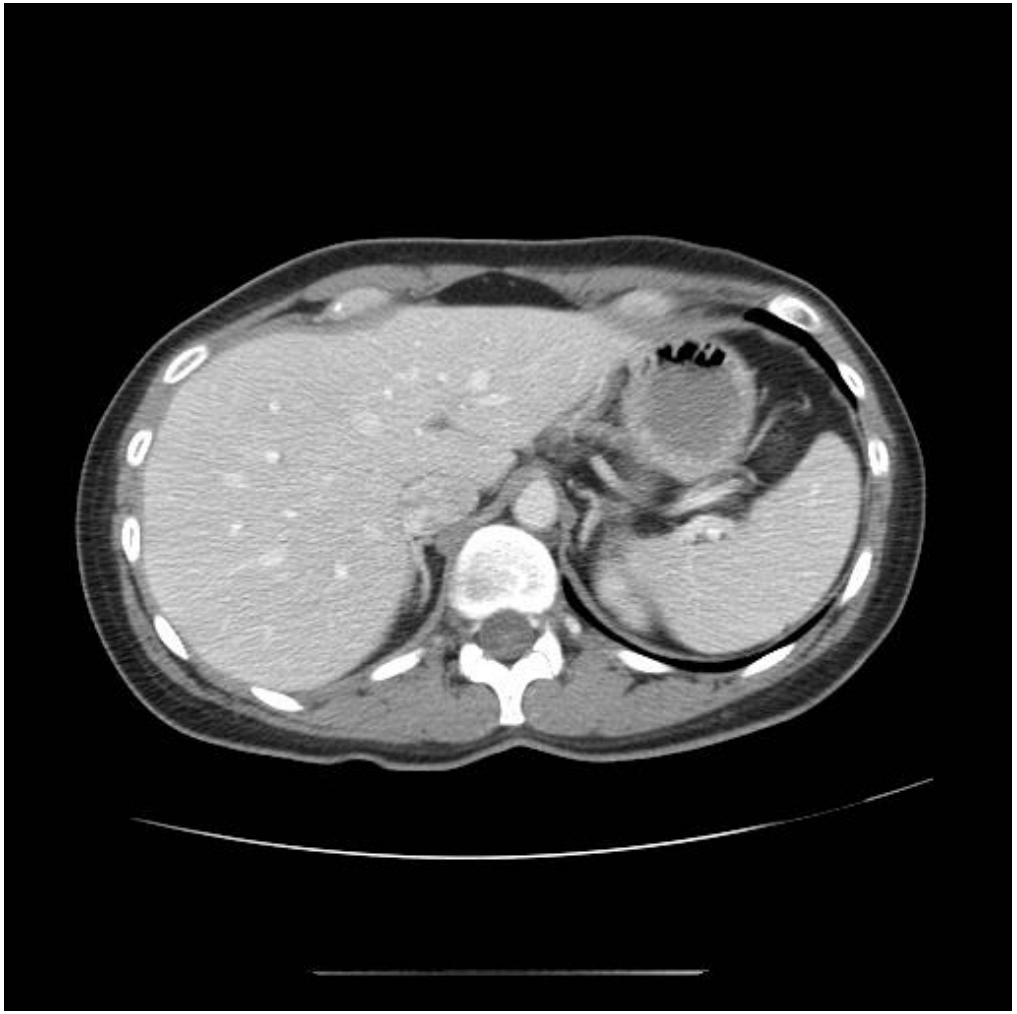
Diagnosis

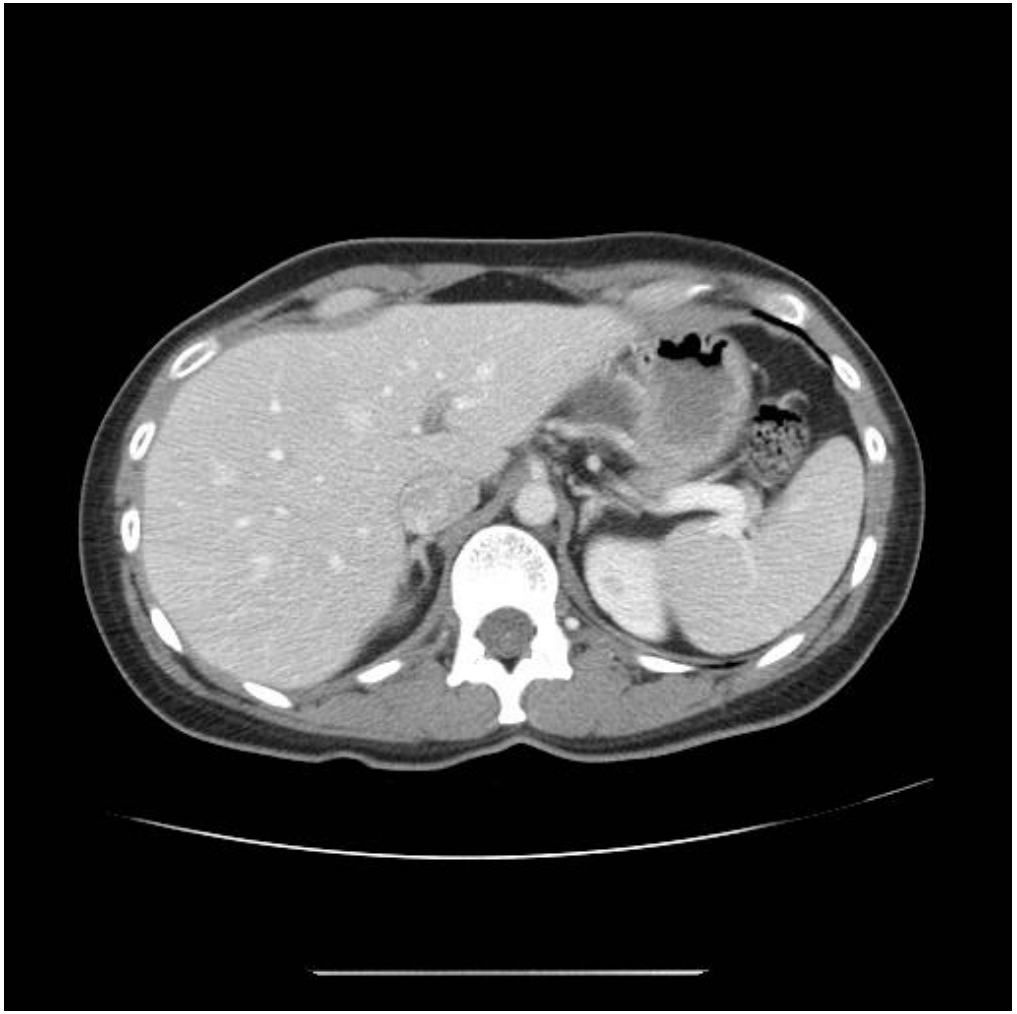
Diagnosis

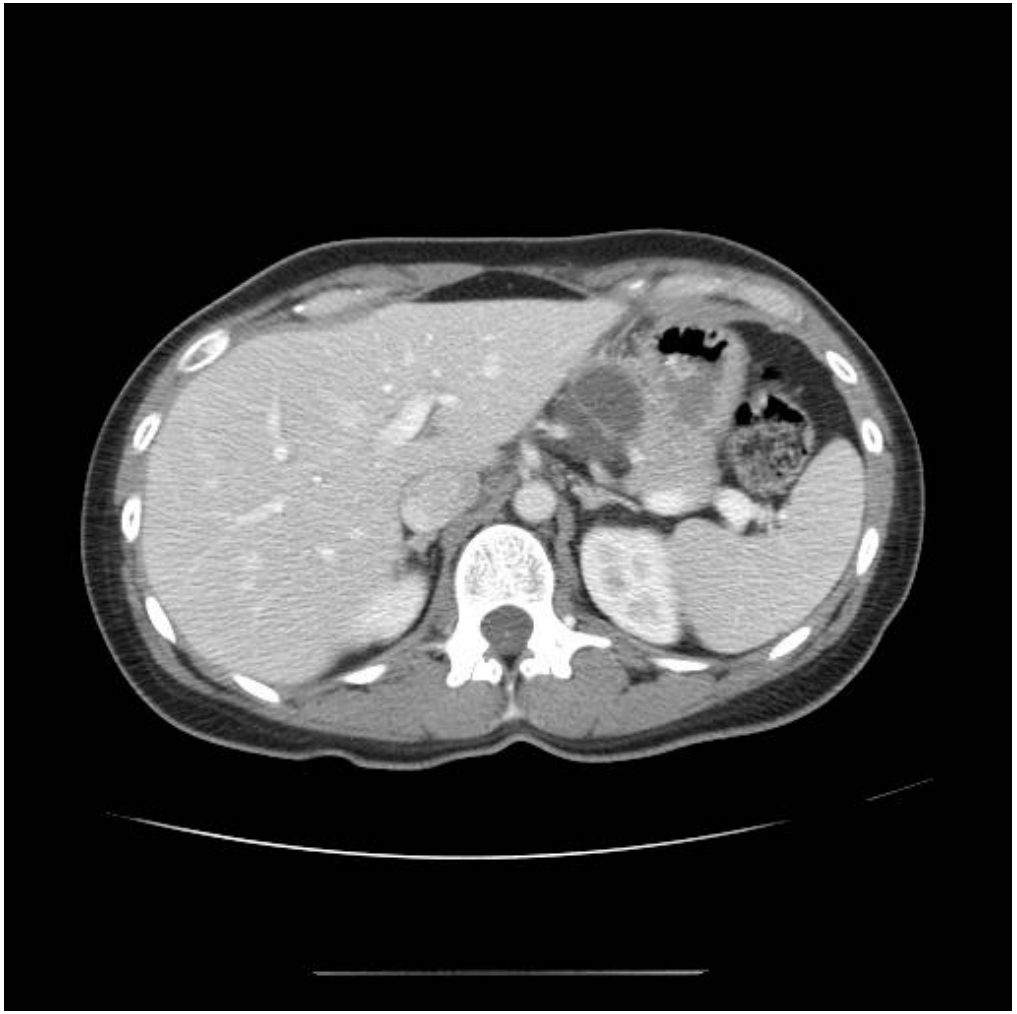
Serous Cystadenoma

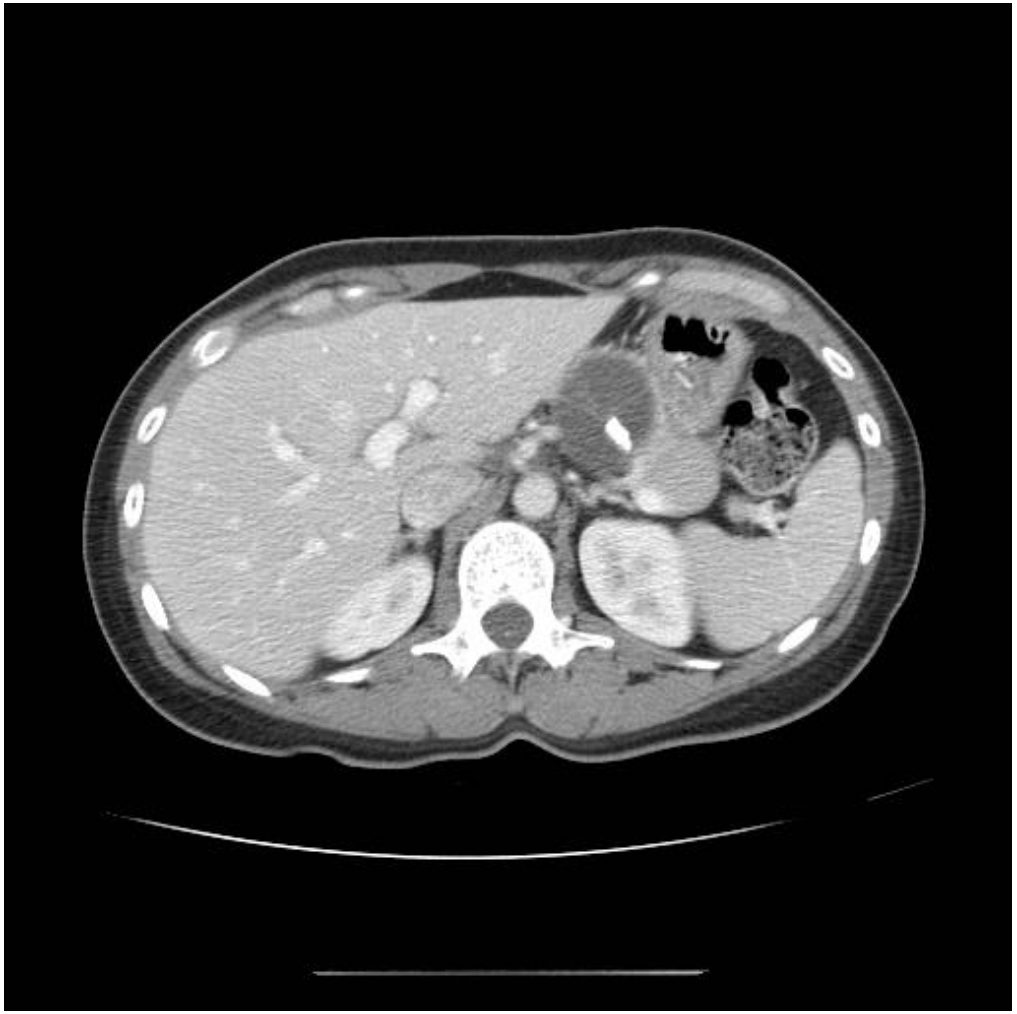
Case #4

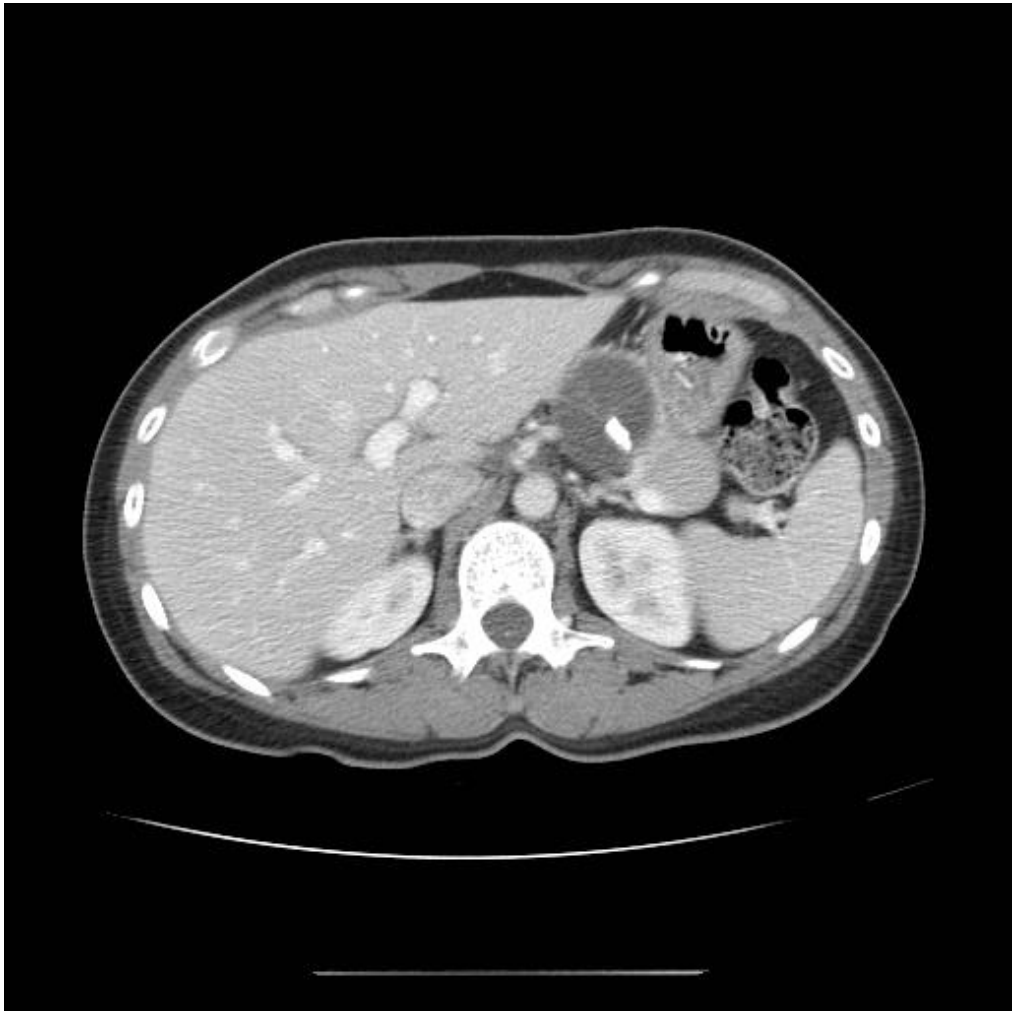
- 44-year-old female with no significant previous medical history who presented with a 2-week history of epigastric abdominal pain
- CT scan of the abdomen and pelvis demonstrated a cystic mass within the body of the pancreas
- Endoscopic ultrasonography demonstrated a 4.3 x 3.5 cm cystic lesion in the body and tail
- Cyst-fluid amylase 108
- Cyst-fluid CEA 2,797

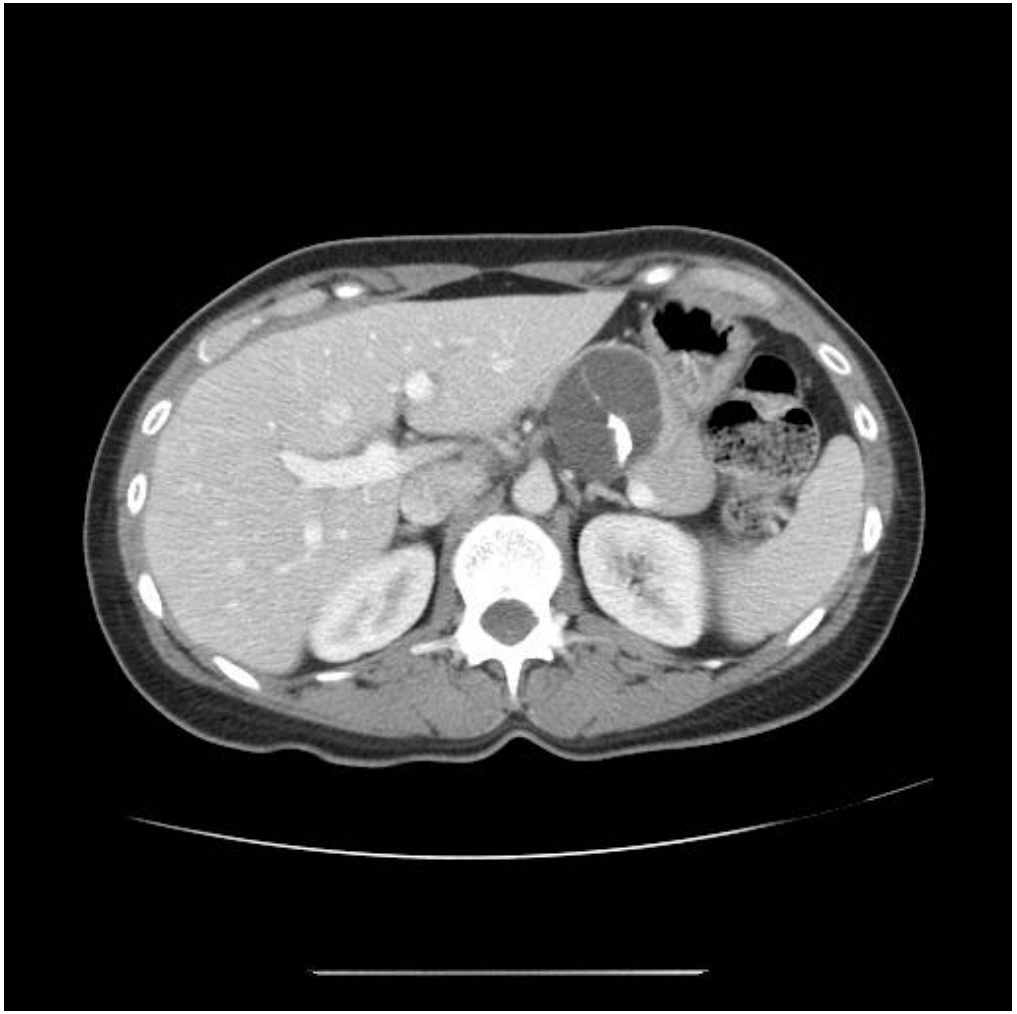


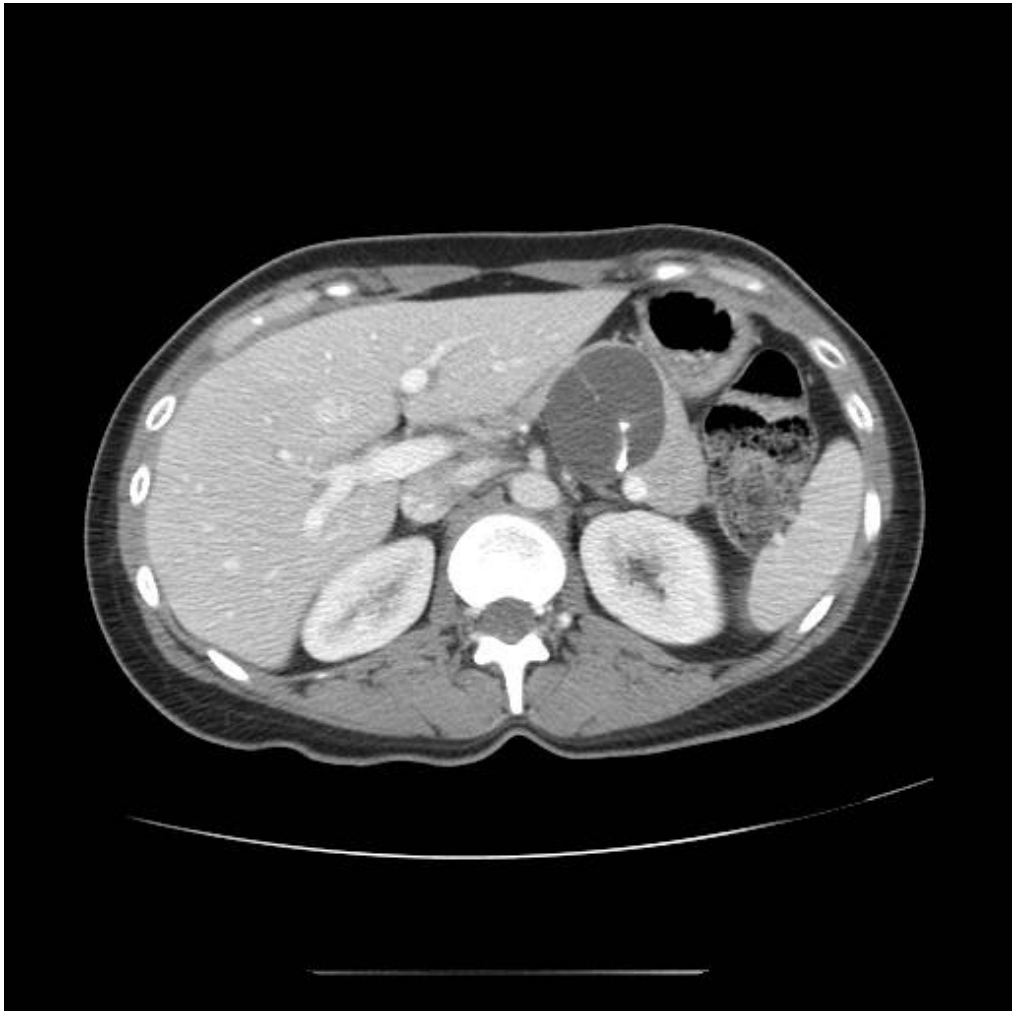


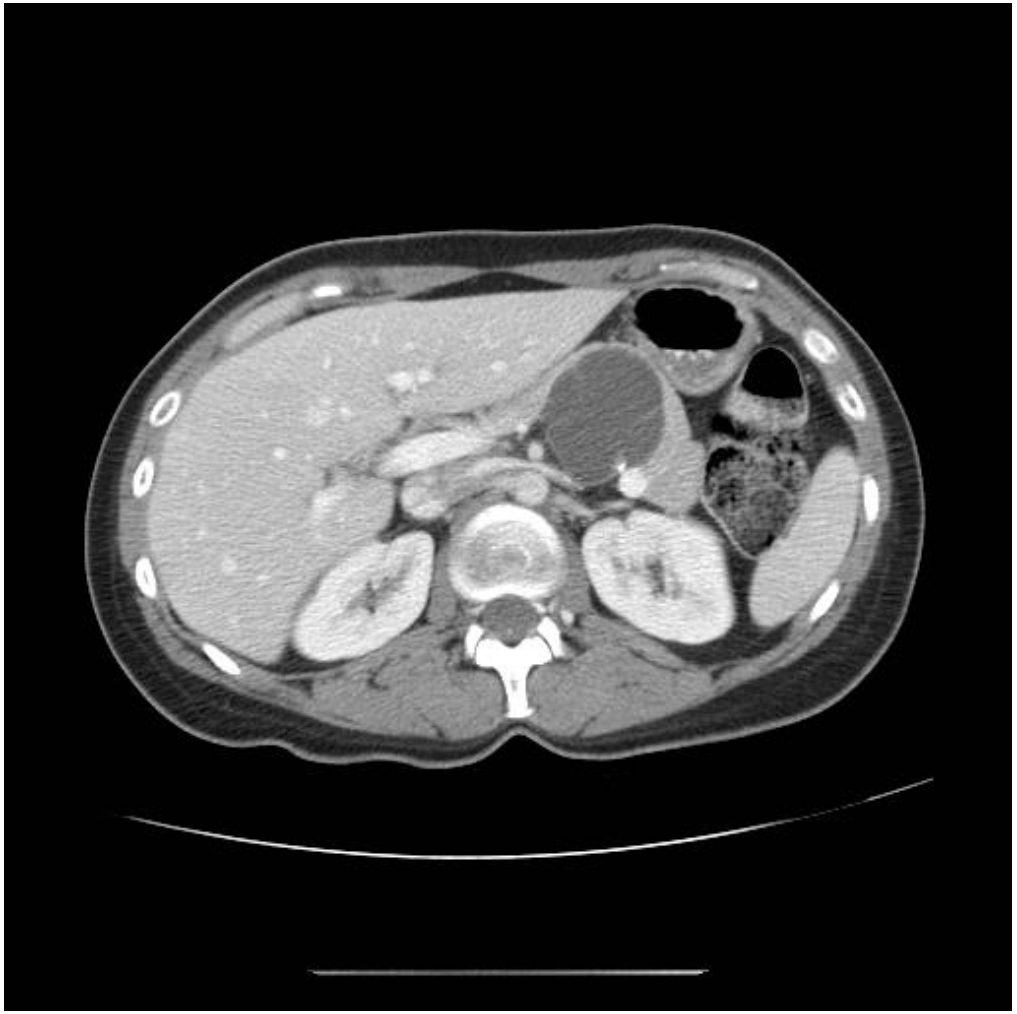


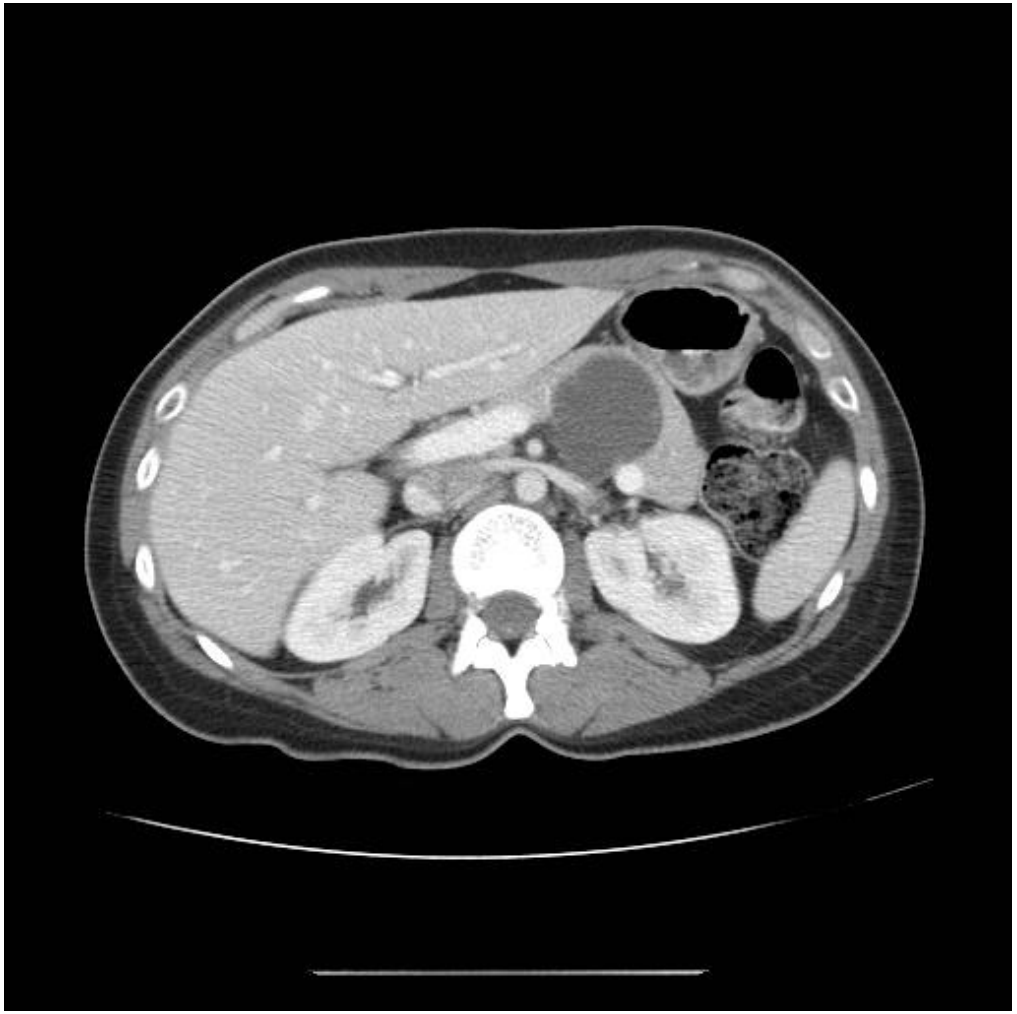


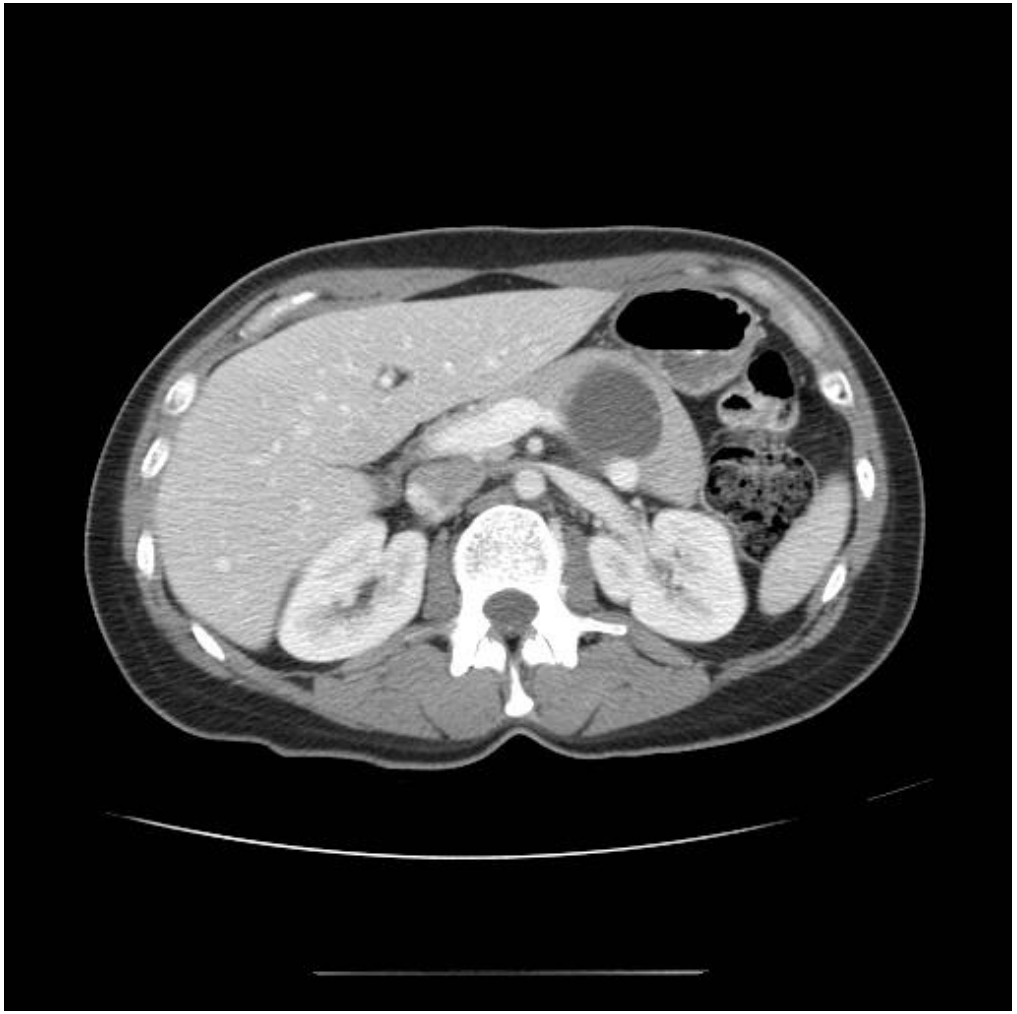


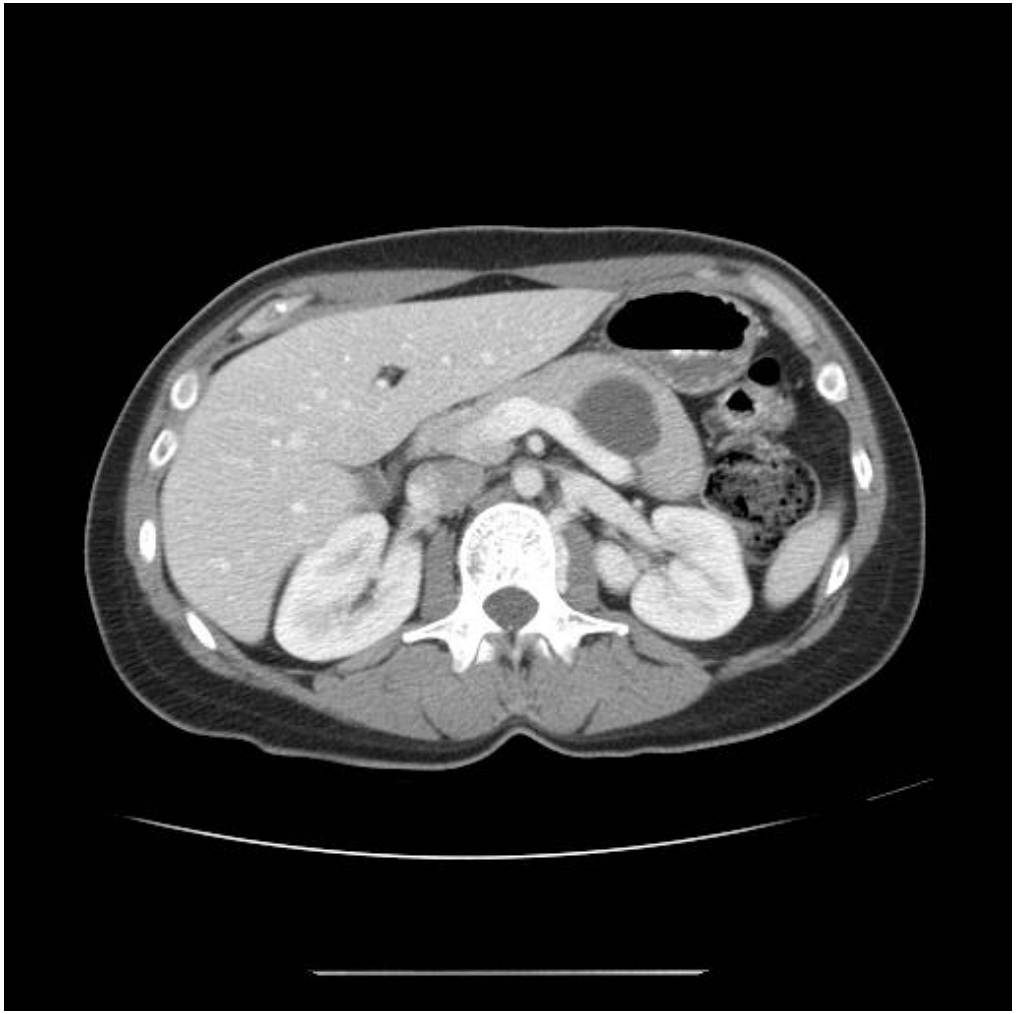


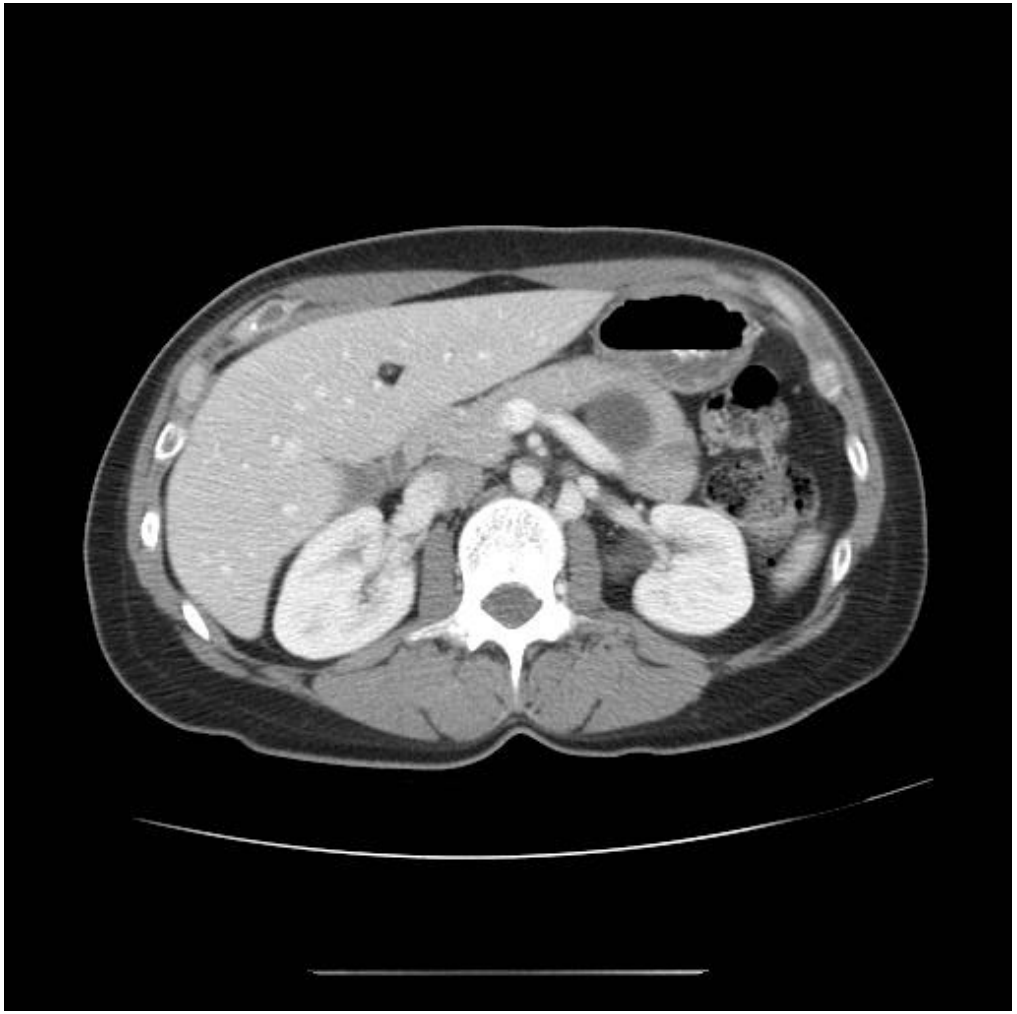


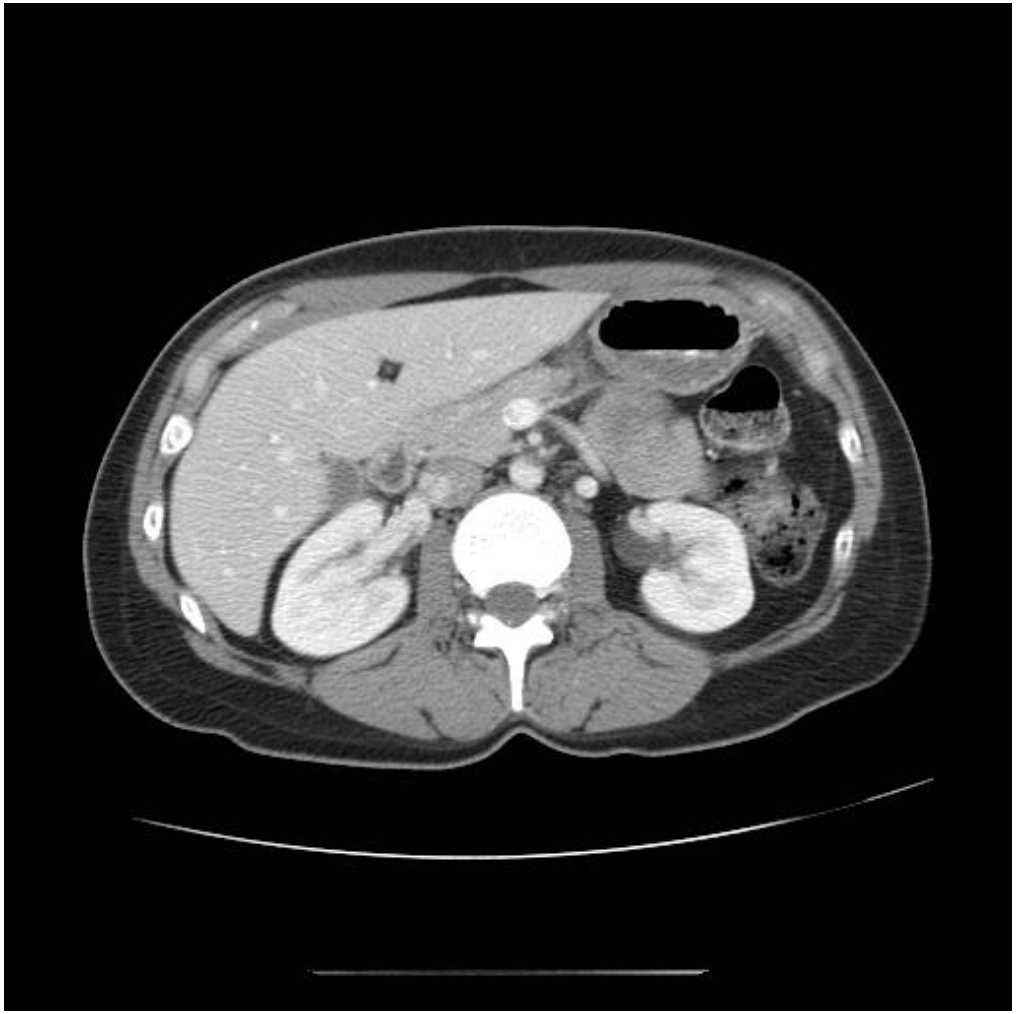












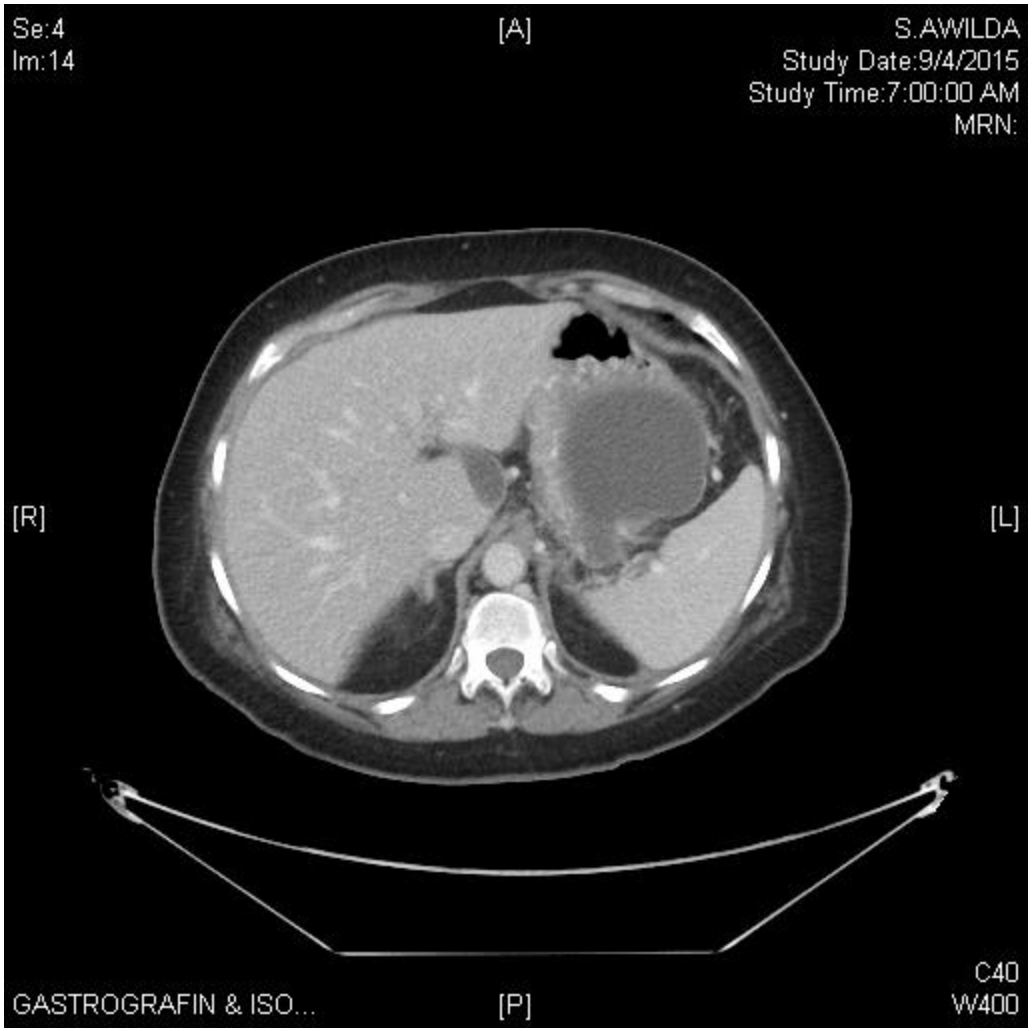
Diagnosis

Diagnosis

Mucinous Cystadenoma

Case #5

- 65-year-old female admitted with abdominal pain and elevated amylase/lipase with necrosis more than two weeks ago
- Etiology though to be Jenuvia that she started 7-8 months
- No organ failure or nutritional support
- No previous pancreatitis
- Diabetes many years
- Denies alcohol. No gallstones on ultrasound.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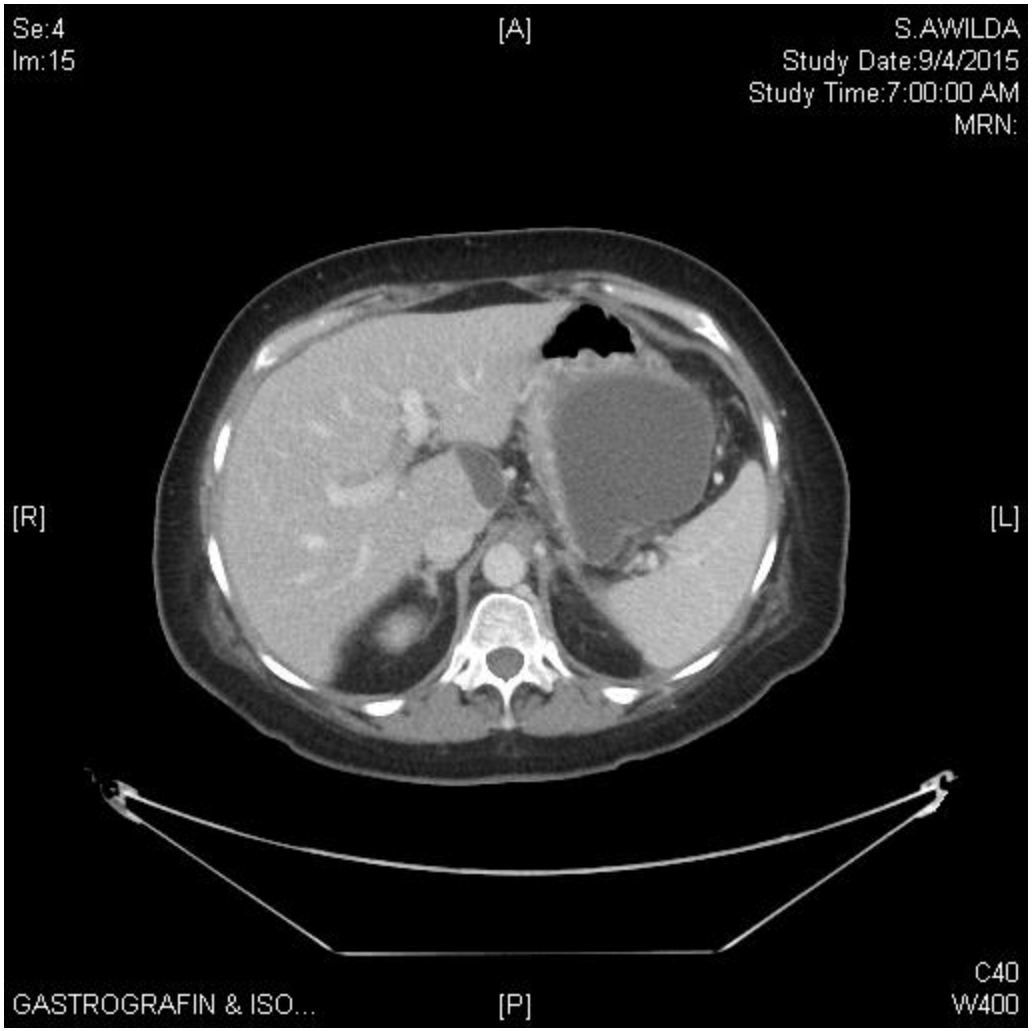
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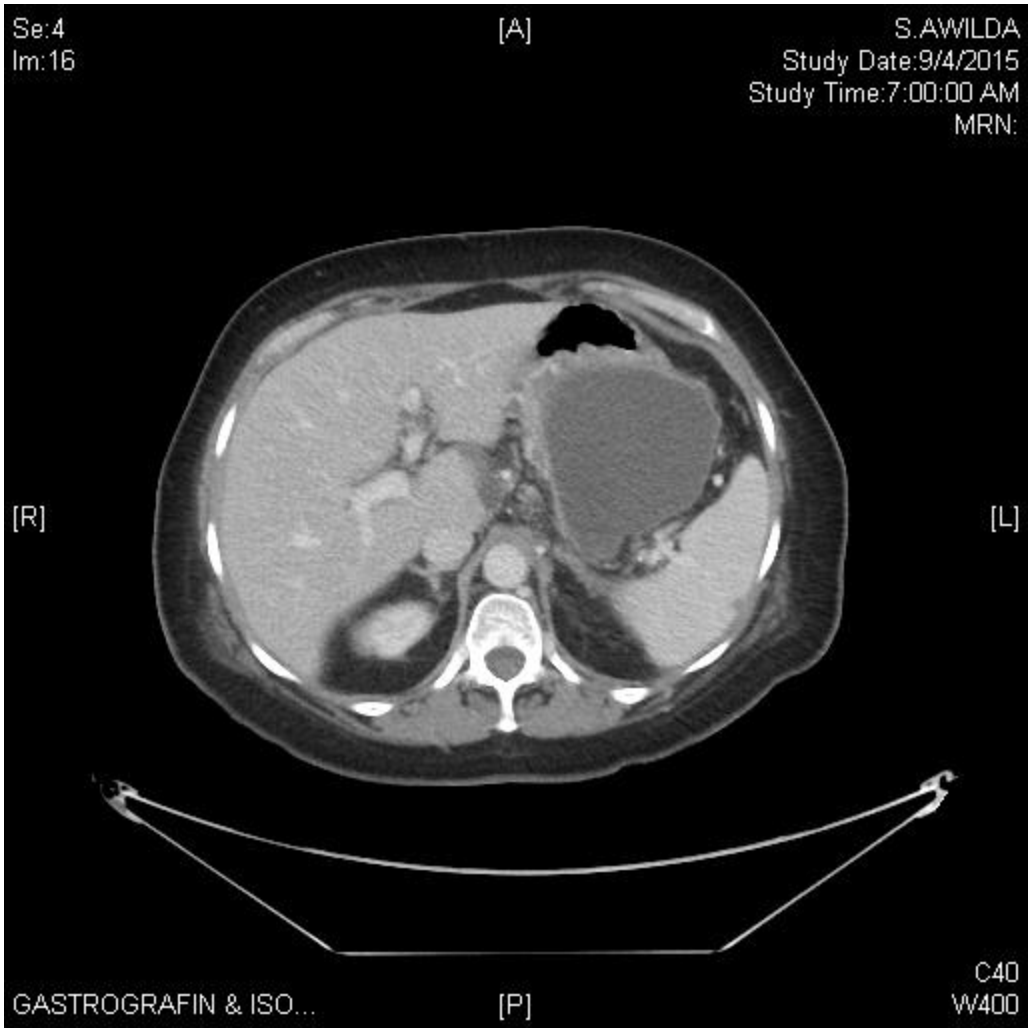
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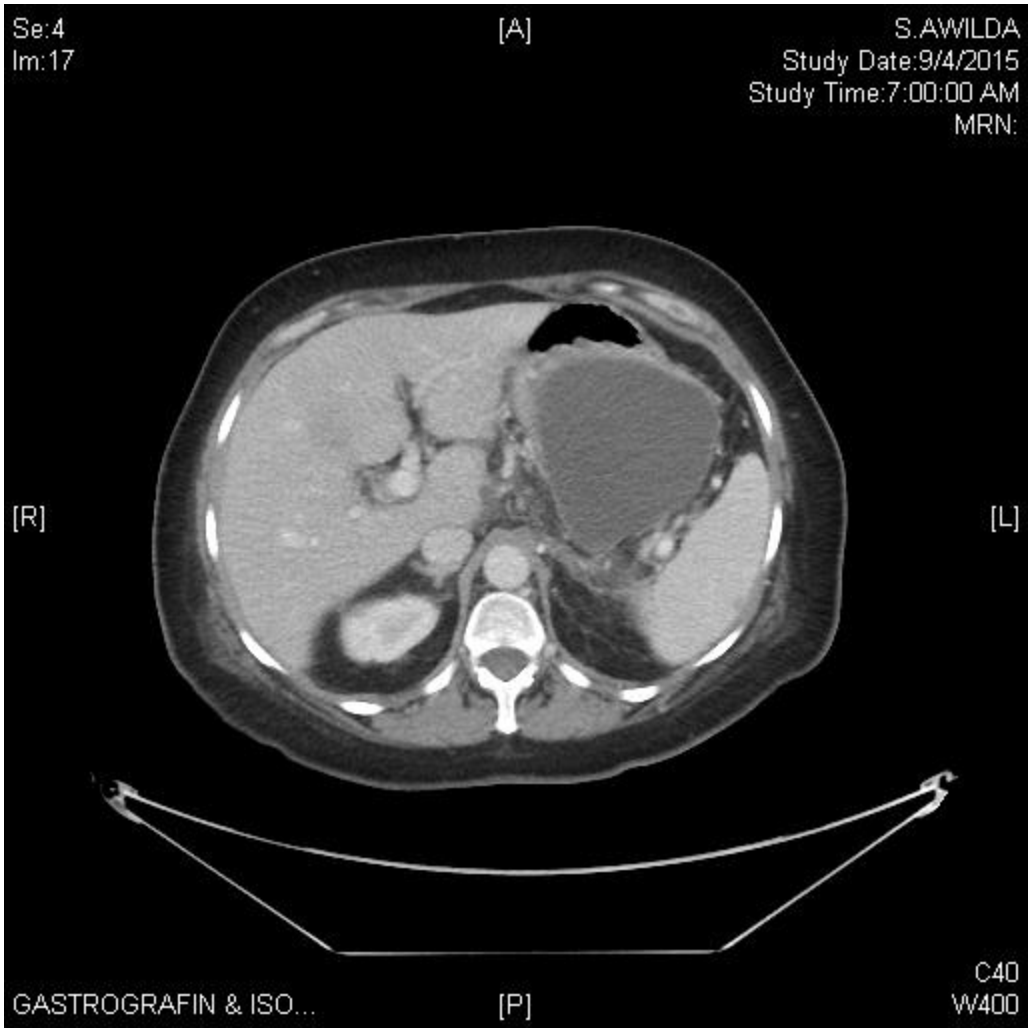
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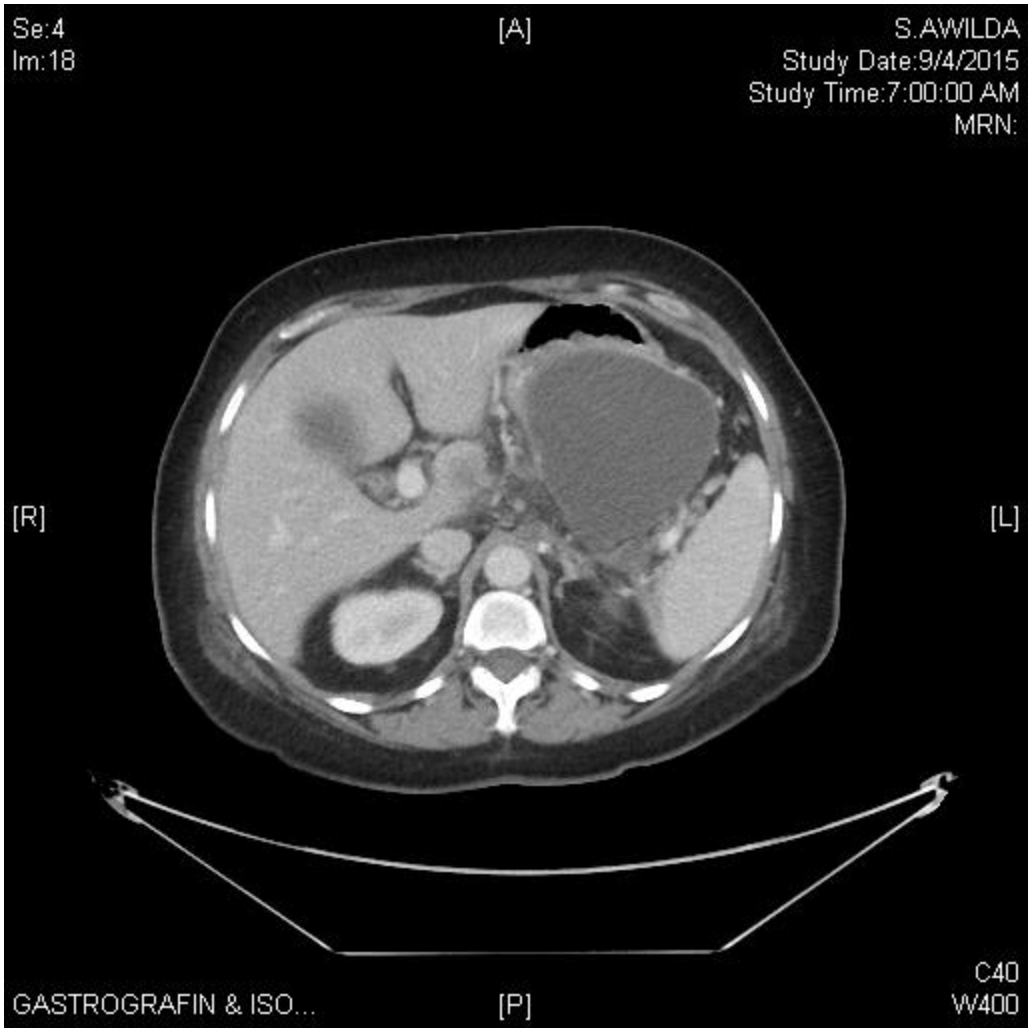
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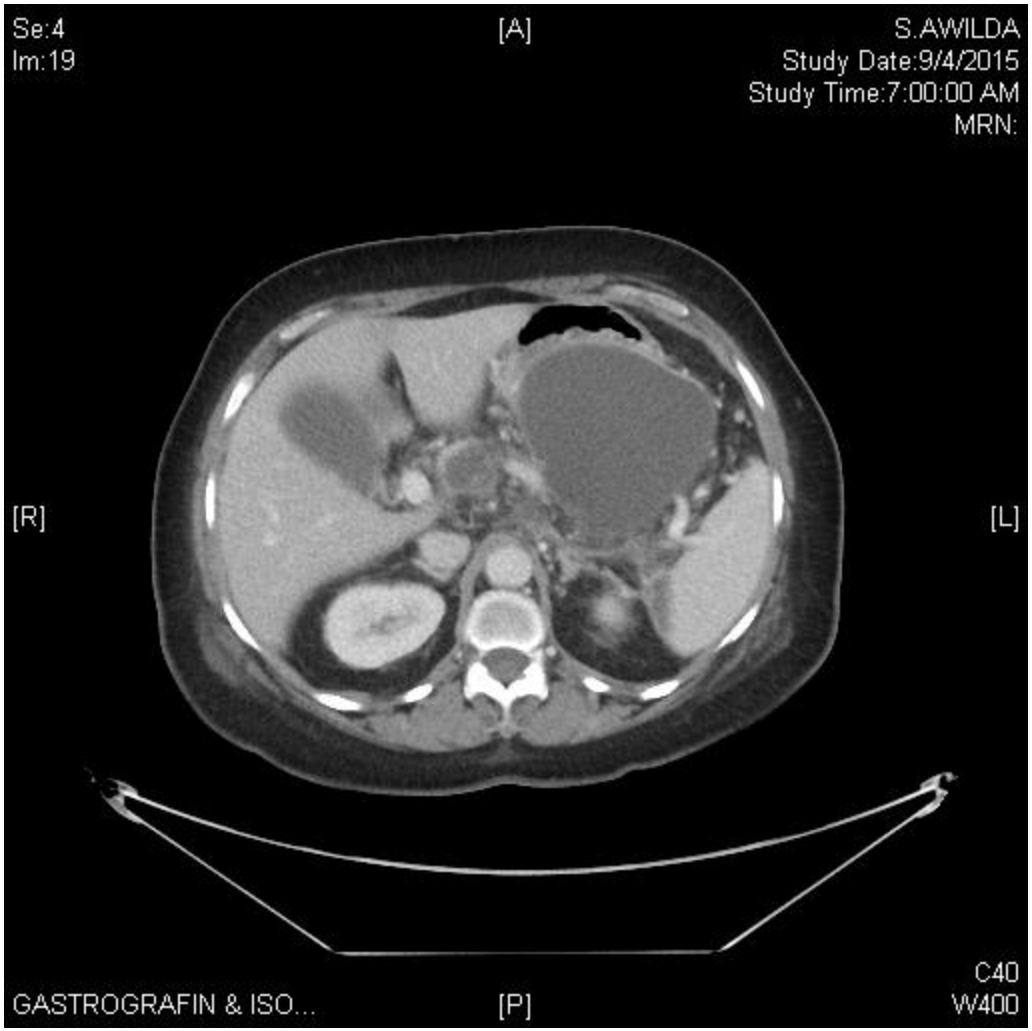
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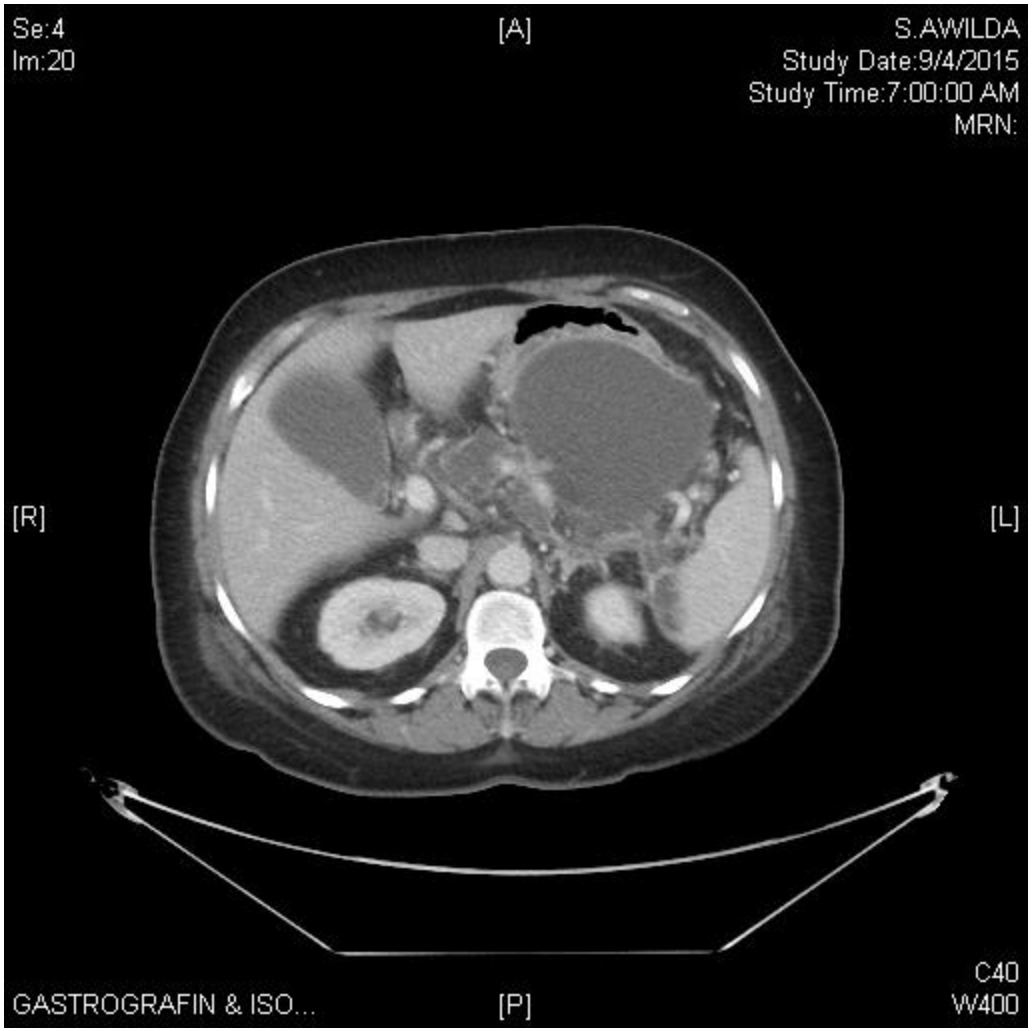
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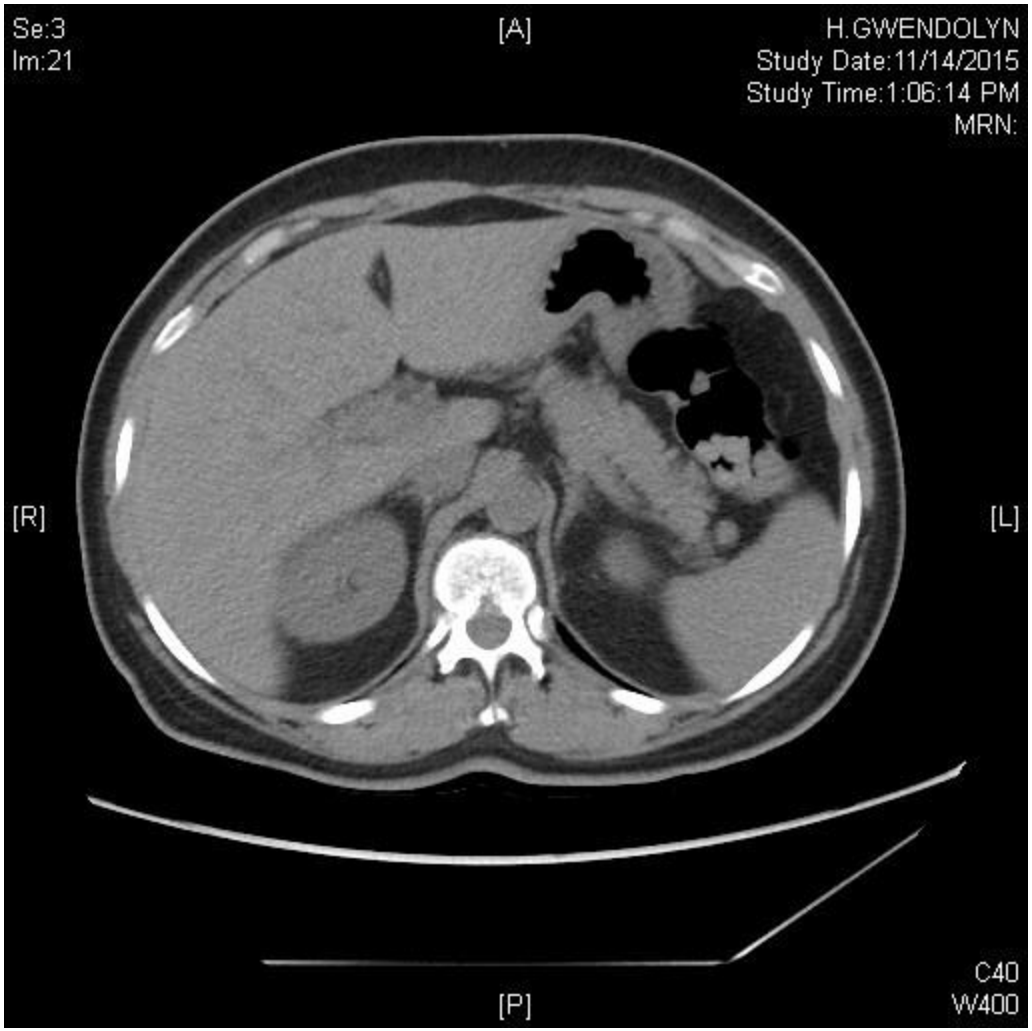
Diagnosis

Diagnosis

- Walled Off Pancreatic Necrosis (WOPN)

Case #6

- 52-year-old female presented with back pain and right hip pain
- CT scan no contrast showed a 2.4 cm lesion in tail of the pancreas that potentially was consistent with a cystic lesion
- MRI demonstrated 2.2 cm multiloculated cystic lesion in the tail of the pancreas that appeared to be consistent with a serous cystadenoma
- Occasional epigastric and periumbilical abdominal pain that is made worse with straining or bowel movements
- DM for 16 years on metformin and glipizide
- No history of pancreatitis
- Unintentional 16-pound weight loss in the last few weeks, although she may have gained some weight since Thanksgiving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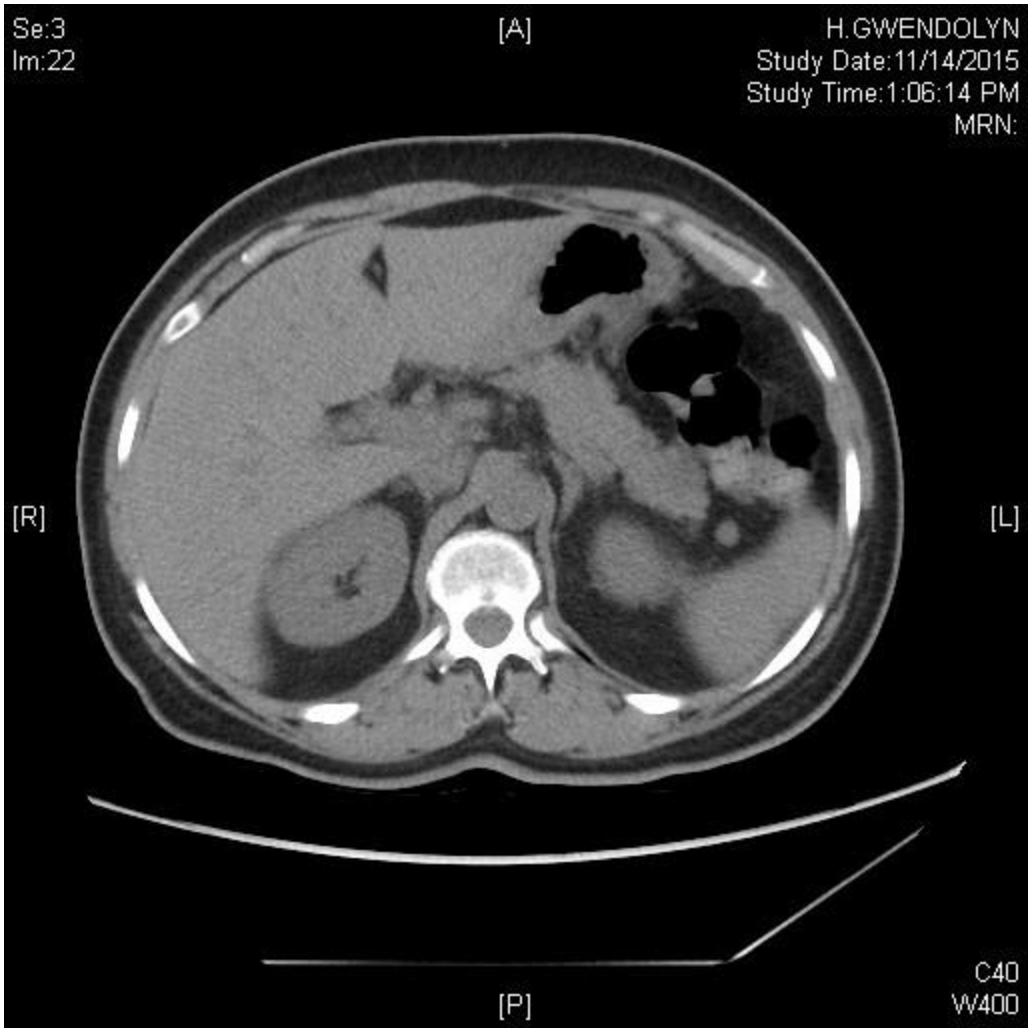
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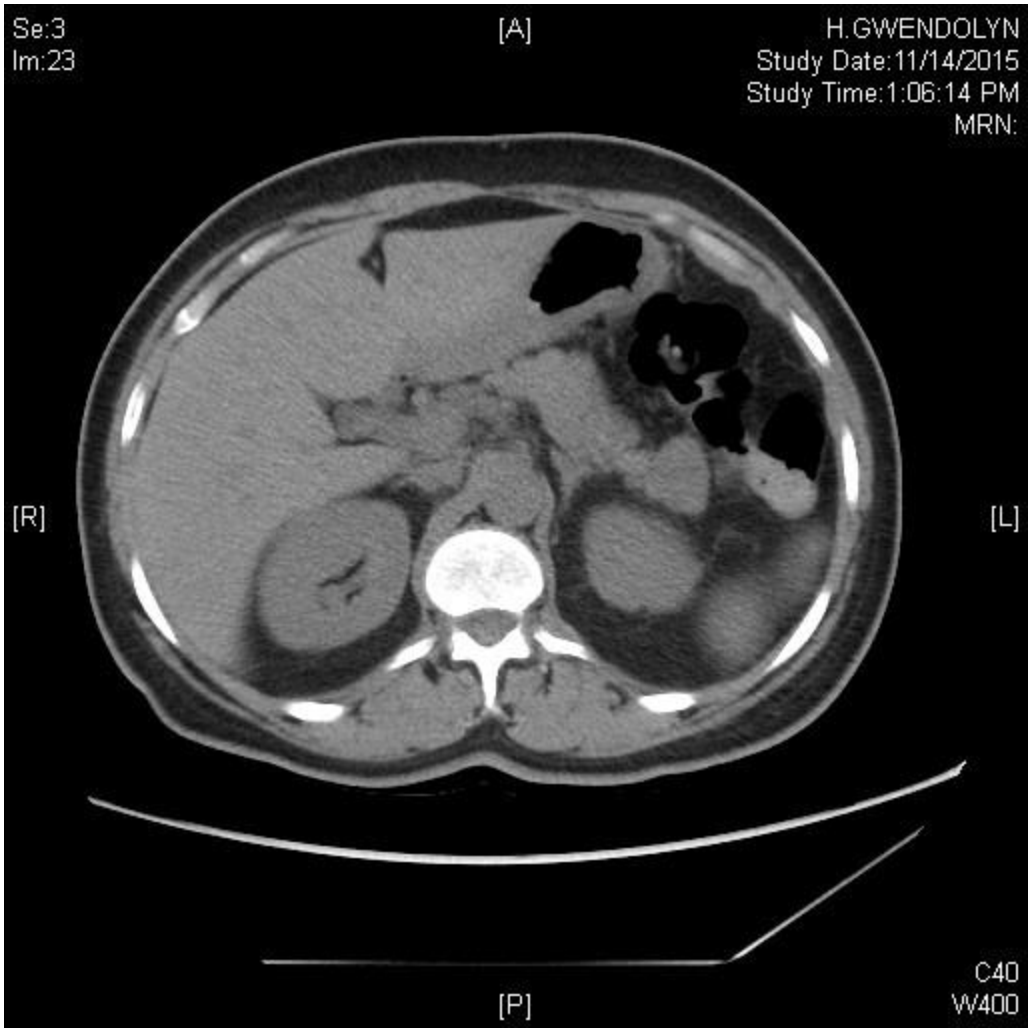
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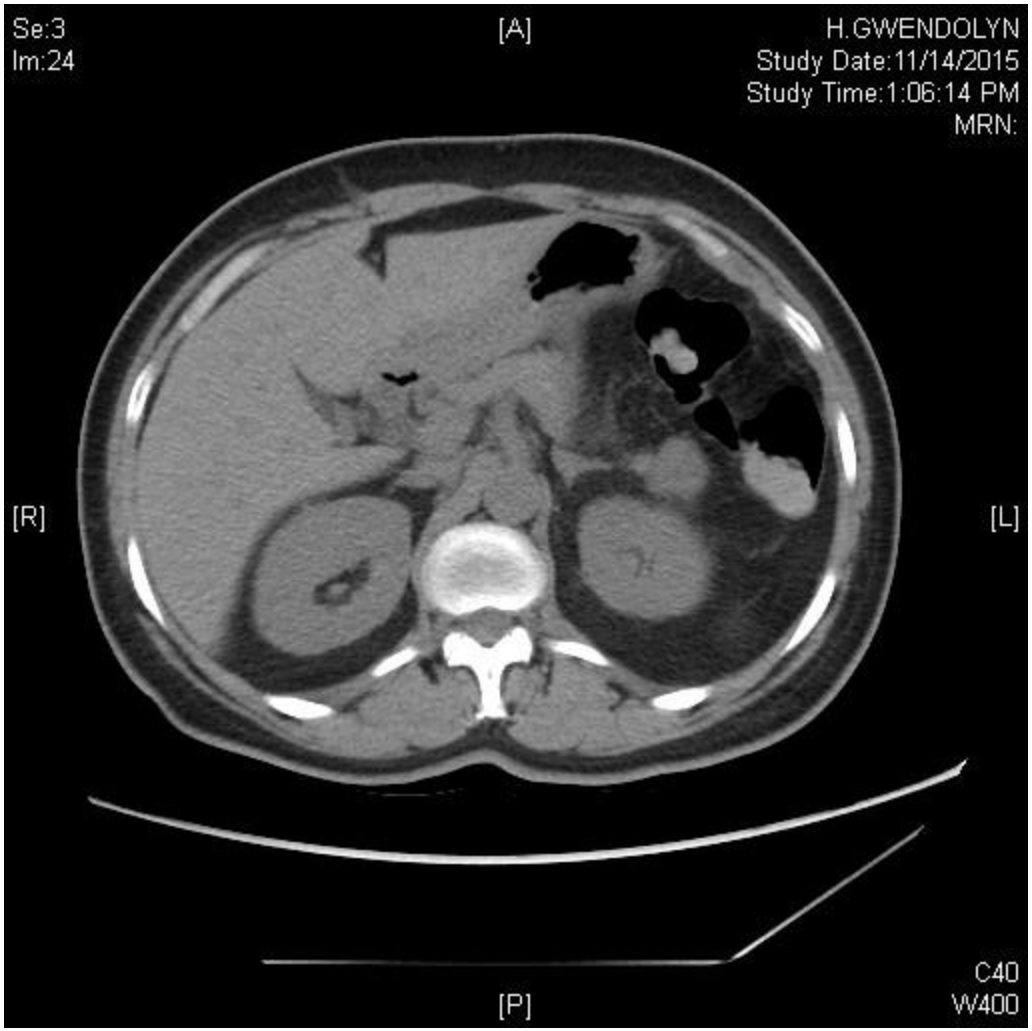
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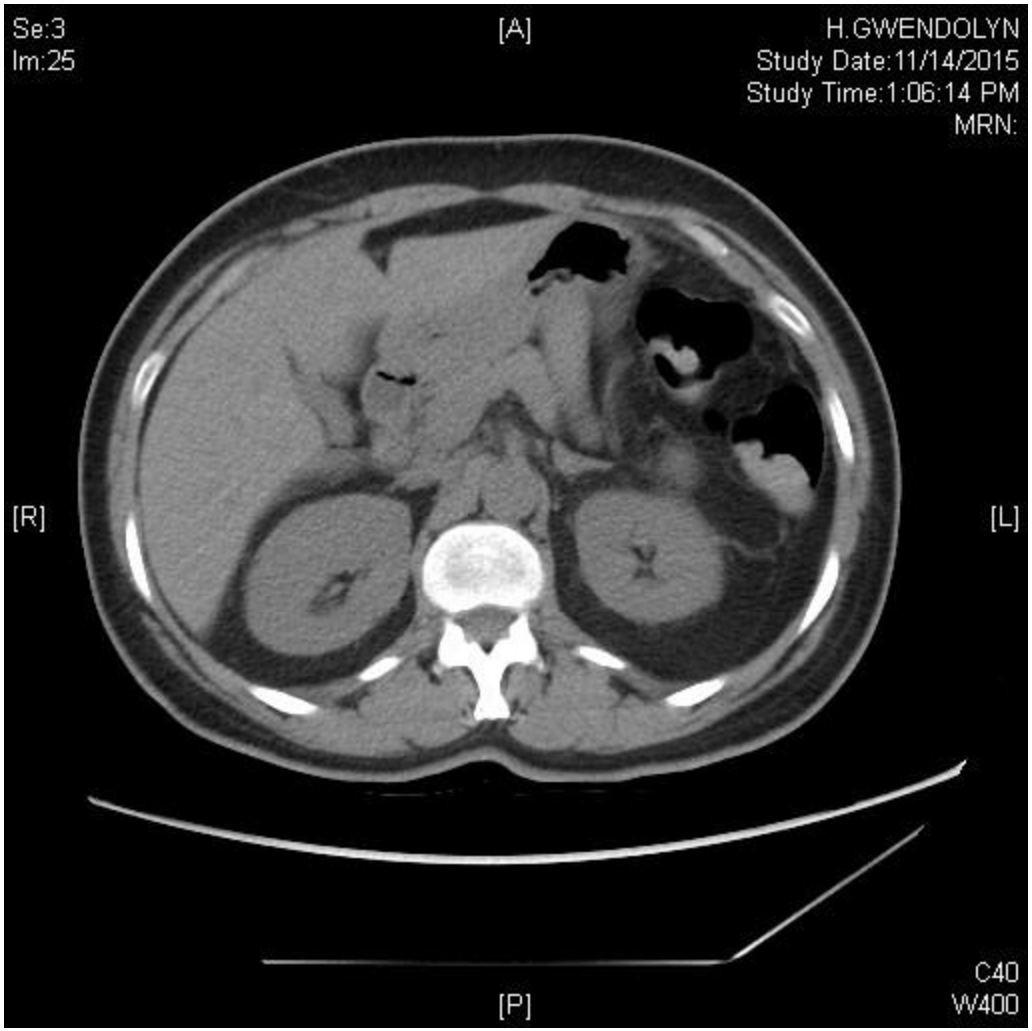
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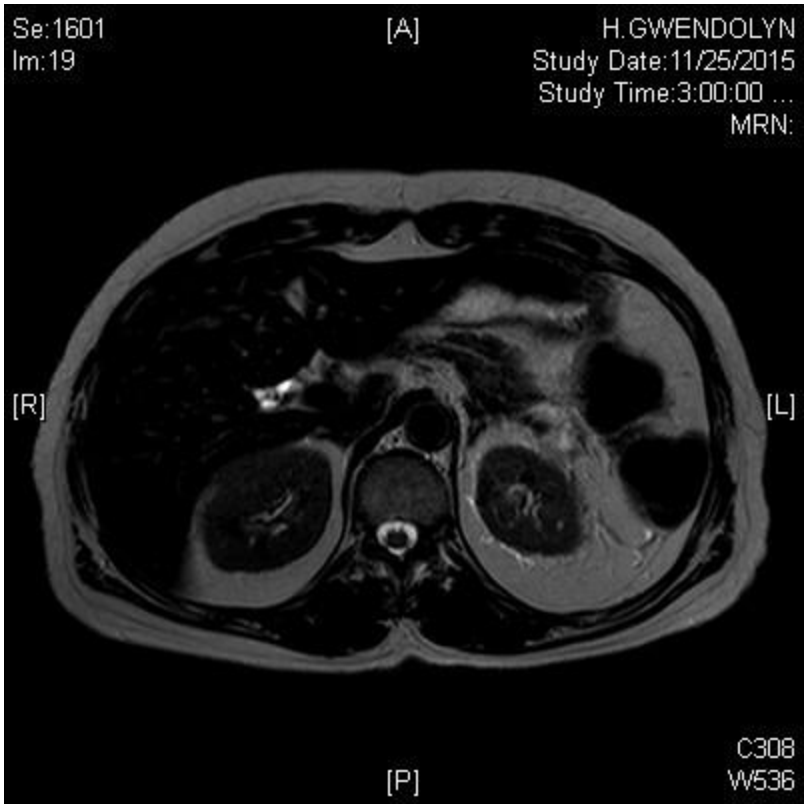
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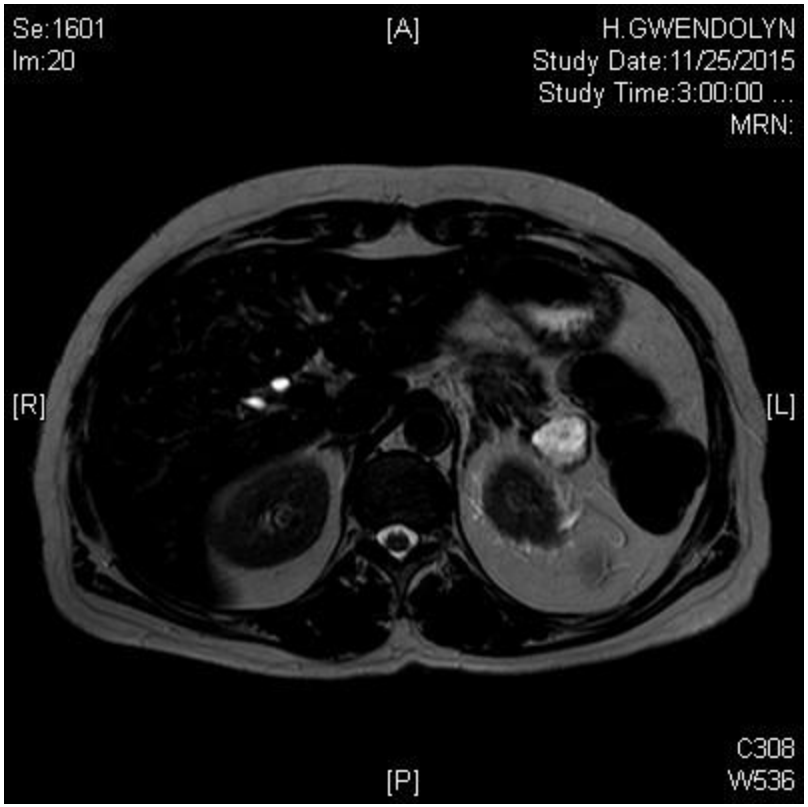
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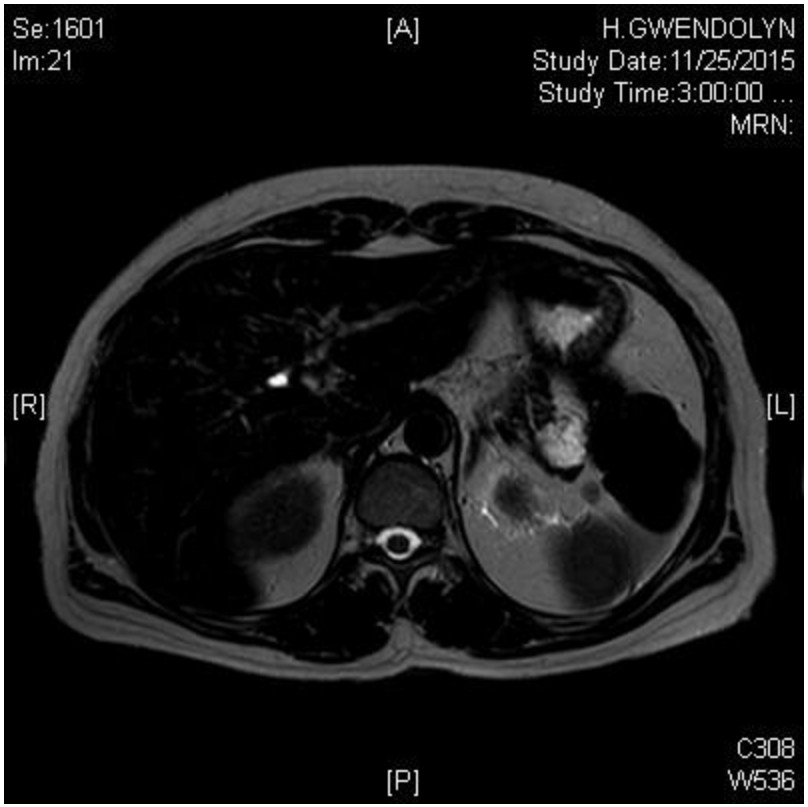
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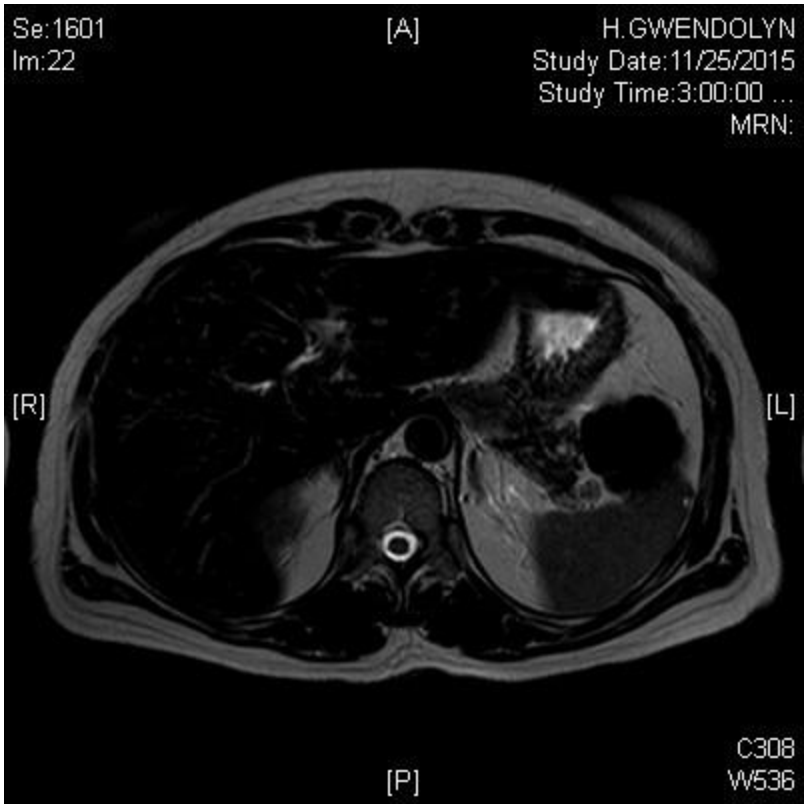
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Management?