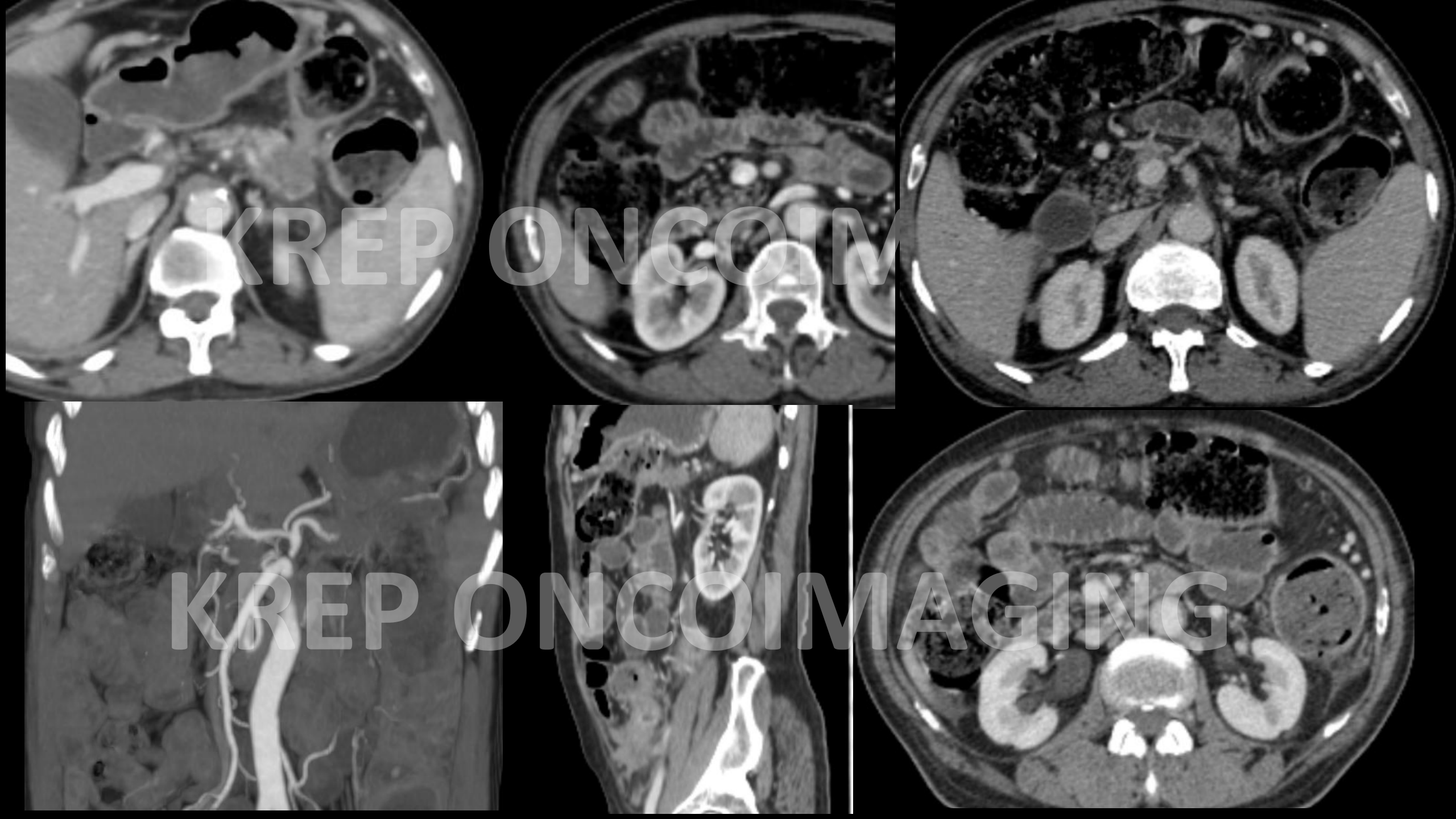
2025

KARNATAKA RADIOLOGY EDUCATION PROGRAM

70 y male, chronic alcoholic, history of pain abdomen, significant weight loss in last 6 months.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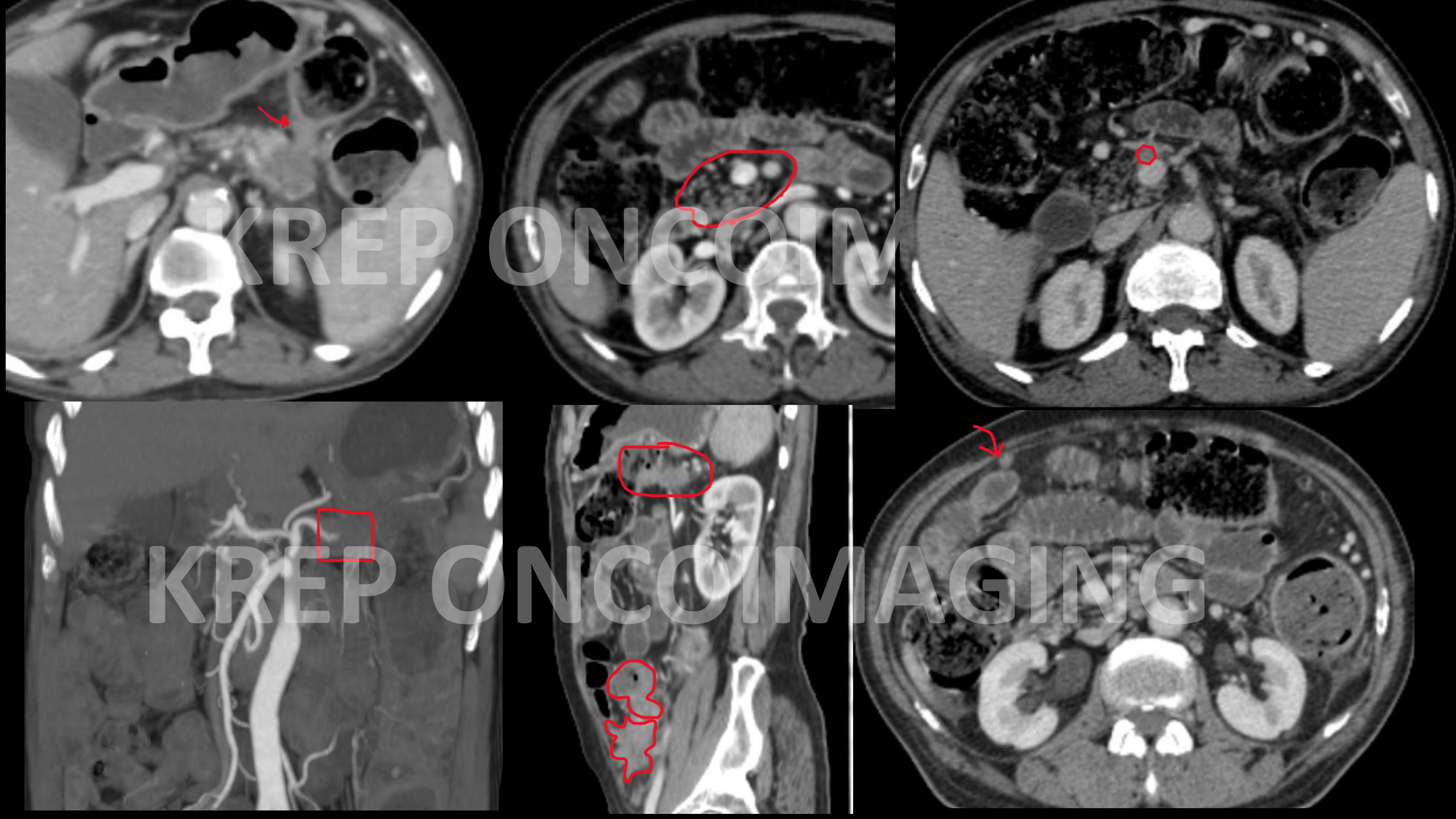
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70 y male, chronic alcoholic, history of pain abdomen, significant weight loss in last 6 months.

- Pancreas is thinned out with diffuse fatty replacement.
- There is a hypoenhancing lesion in tail of pancreas measuring 2 x 2.5 x 1.6 cm. Small lesion also noted in neck/body of pancreas measuring about 0.9 cm.
- The retropancreatic splenic artery and vein are cutoff. No significant perivascular cuffing proximally. No thrombosis. Distal reformation is noted through collateral vessels.
- MPD / CBD are not dilated.
  - Anteriorly it is extending to mesenteric surface of distal transverse colon with focal wall thickening.
  - Few enhancing nodules are noted in the greater omentum.
  - An enhancing deposit is noted in left iliac fossa near the deep ring of inguinal canal with adjacent descending colonic thickening, mild stricture and retrograde prominence of caliber.
- No significant lymphadenopathy.
- No liver metastasis.

- Tail
- Solid
- Hypoenhancing
- CBD-PD, normal
- No stent.
- Atrophic pancreas.
- Celiac trunk – normal, median arcuate ligament compression morphology.
- Distal splenic artery, vein cutoff. The proximal anatomy is otherwise normal.
- IMV is draining near confluence.
- Invasion – transverse colon. Spread to peritoneum.
- No significant regional nodes.
- Additional point: Small 0.9 cm lesion in neck-body junction with focal abutment of portal vein. No significant contact with major arterial branches.
- Conclusion – Carcinoma Pancreas with metastatic foci in peritoneum and colonic serosa.

Checklist Staging Pancreatic cancer

Location	Periampullar - head - body - tail
Morfology	Solid - cystic - mixed
Diameter	Largest diameter in mm in any plane
Enhancement	Hyper - iso - hypo
CBD and PD	Diameter
Stent in situ	No - yes
Parenchyma	Normal - atrophic - pancreatitis
Coeliac trunc-AMS - hepatic.a	Normal anatomy or variation - collaterals Contact: no | <90° | 90°- ≤180° | 180°- ≤270° | >270° Stenosis: no | ≤50% | >50% | occlusion
Portal vein - VMS	Contact: no | <90° | 90°- ≤180° | 180°- ≤270° | >270° - length of venous involvement Stenosis: no | ≤50% | >50% | occlusion | thrombosis
Invasion	Peripancreatic fat - root of mesentery-hepatoduodenal lig - Inferior caval vein - Aorta - duodenum - transverse colon
T-stage	T1 -T4
N-stage	Regional lymph nodes
M-stage	Metastases - non-regional lymph nodes

1. **Pathology & Epidemiology:**
   - >90% are **Pancreatic Ductal Adenocarcinomas (PDAC)**, arising from **ductal epithelium**.
   - **Most common site:** *Pancreatic head (≈70%)* → early biliary obstruction; *body/tail* tumors present later.
   - Peak incidence: **6th–8th decade**, but can rarely occur in **young adults** (esp. familial BRCA2, Lynch, Peutz-Jeghers syndromes).

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2. **Risk Factors:**
   - **Smoking, chronic pancreatitis, diabetes mellitus, obesity**, and **genetic syndromes** (BRCA1/2, PALB2, p16/CDKN2A).
   - **New-onset diabetes in an elderly non-obese individual** may be an early clinical clue.

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3. **CT/MRI Hallmark Features:**
   - **CT (Pancreatic protocol)** is the gold standard for staging.
   - **Typical appearance:**
     - **Ill-defined, hypodense mass** (relative to normal pancreas)
     - **Poor or delayed enhancement** (hypovascular compared to background).
   - **Secondary signs:**
     - **Pancreatic ductal dilatation** with **abrupt cut-off** ("duct cut-off sign").
     - **Double-duct sign:** concurrent dilation of **CBD + PD** in head lesions.
     - **Distal parenchymal atrophy** beyond the lesion.
   - **MRI:** Hypointense on T1, mildly hyperintense on T2, restricted diffusion; delayed enhancement due to desmoplastic stroma.

4. **Vascular Involvement (Crucial for Staging & Resectability):**
   - Evaluate **degree of contact** between tumor and major vessels:
     - **Celiac axis, SMA, SMV, portal vein, hepatic artery.**
   - **Resectable:** ≤180° vessel contact, no deformity.
   - **Borderline resectable:** ≤180° contact with vessel narrowing.
   - **Unresectable:** >180° encasement or vessel occlusion.
   - **Venous involvement** may be reconstructible; **arterial involvement** usually precludes resection.

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5. **Nodal and Metastatic Spread:**
   - **Regional lymphadenopathy** (peripancreatic, celiac, SMA, para-aortic).
   - **Liver metastases** are most common distant spread.
   - Others: **Peritoneum, lungs, adrenals.**
   - **Perineural invasion** is common (accounts for pain and early recurrence).

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6. **PET/CT & Functional Imaging:**
   - **FDG-PET** helpful for **metastatic survey and recurrence detection**, though not mandatory for initial staging.
   - **DWI MRI** can detect **small liver or peritoneal metastases** missed on CT.

7. **Oncoradiologic Reporting Essentials (Structured):**
    - **Tumor location:** head, neck, body, or tail.
    - **Size** and **attenuation pattern**.
    - **Vascular contact:** specify vessel and degree of encasement (in degrees).
    - **Biliary and pancreatic duct status** (double-duct sign).
    - **Peripancreatic fat invasion / adjacent organ involvement** (duodenum, stomach, colon).
    - **Regional lymph nodes**, **liver**, and **peritoneal metastases**.
    - Conclude: *resectable / borderline / locally advanced / metastatic*.

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8. **Staging & Management Correlation (Simplified):**
    - **Resectable:** confined to pancreas, no vascular encasement.
    - **Borderline resectable:** limited venous/arterial contact.
    - **Locally advanced:** unreconstructible vessel encasement, no distant spread.
    - **Metastatic:** distant organ spread (esp. liver/peritoneum).
    - **Therapy:**
        - Surgery (Whipple or distal pancreatectomy) for resectable disease.
        - **Neoadjuvant chemotherapy (FOLFIRINOX)** for borderline/unresectable.
        - **Radiotherapy/palliative stenting** for advanced disease.

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