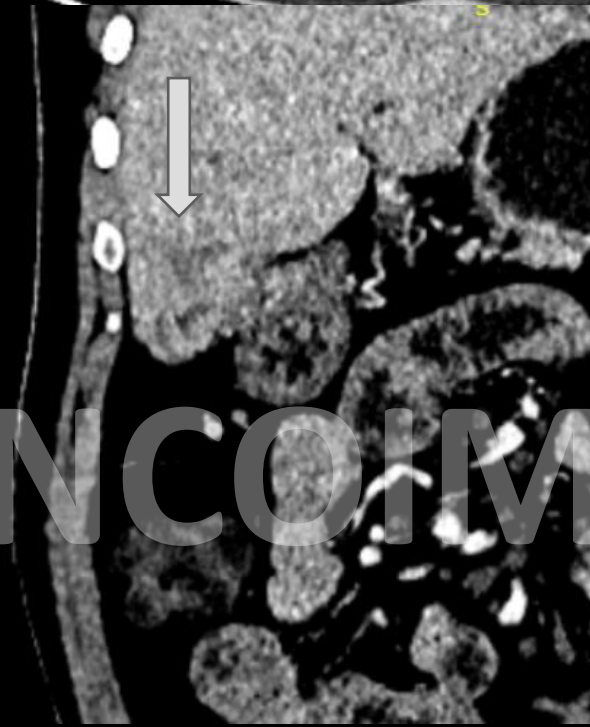
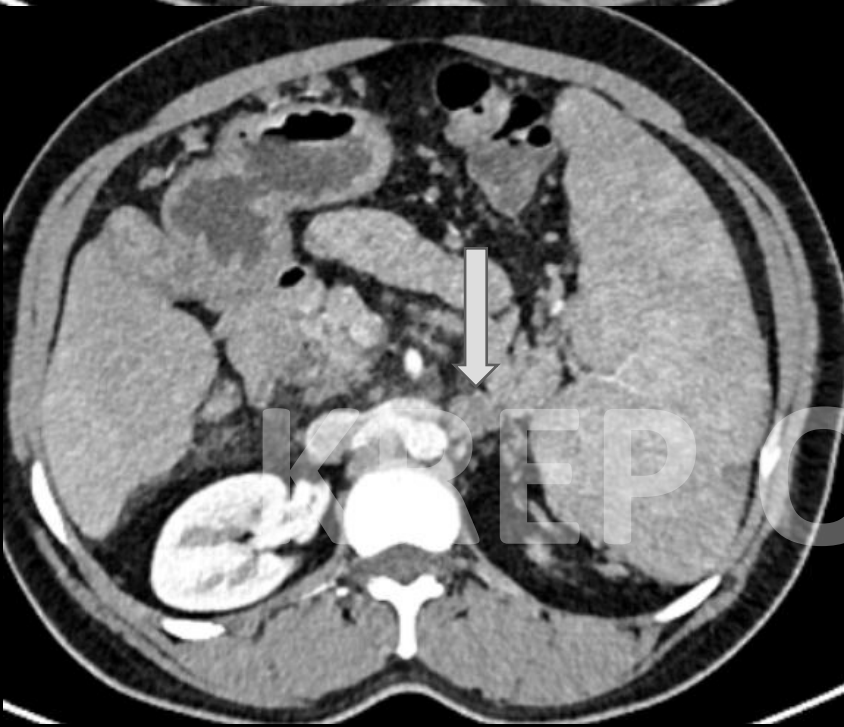
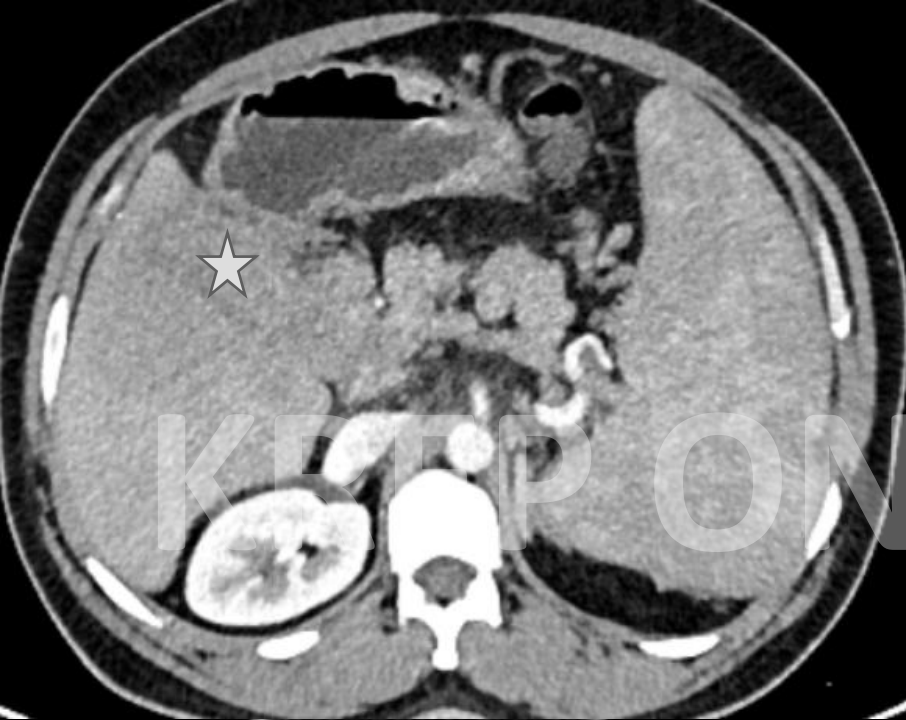




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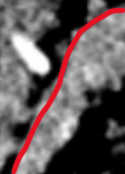
KARNATAKA RADIOLOGY EDUCATION PROGRAM



KREP ONCOIMAGING



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- Ill-defined heterogeneously enhancing mass lesion replacing gallbladder measuring 2.8 x 10.8 x 7.8 cm (AP x TR x CC).
 - Extension into adjacent liver parenchyma is noted in segment 4b.
 - Extension noted to CBD, cystic duct, distal CHD. Confluence top is preserved, minimal central communicating IHBRD was present.
 - Fat planes with pylorus of stomach and duodenum are lost.
 - Fat planes with pancreas are maintained.
 - Ill defined coalescent soft tissue mass in the pericholedochal and porta hepatis regions with complete encasement of CHA. Portal vein is not visualized, most likely involved.
 - Enlarged lymph nodes along celiac axis and in the retropancreatic region. Few in aortocaval and left upper para aortic region.
 - Suspicious lymphnodes are noted in right upper para tracheal region. Few were noted in left supraclavicular region (not shown)
- Other findings – splenomegaly, liver volume redistribution, periesophageal, perisplenic perigastric collaterals.

Features are consistent with carcinoma gall bladder with lymphadenopathy extensions as described.

1. Pathology & Epidemiology:

- Most common biliary tract malignancy, typically adenocarcinoma (90–95%).
 - More frequent in women, especially in regions with chronic cholelithiasis, porcelain gallbladder, or anomalous pancreaticobiliary junction.
 - Usually presents in 6th–7th decade; occasionally incidental on cholecystectomy.
-

2. Routes of Spread (Critical for Staging):

- Direct hepatic invasion through the gallbladder bed (segments IVb and V).
 - Lymphatic spread: cystic → pericholedochal → periportal → celiac → para-aortic nodes.
 - Vascular invasion of portal or hepatic artery branches.
 - Peritoneal seeding and biliary tract extension common in advanced cases.
-

3. CT/MRI Morphologic Patterns:

- (a) Mass-forming (most common) – Large enhancing mass replacing gallbladder and invading adjacent liver.
- (b) Focal mural thickening – Asymmetric, irregular, enhancing thickening of the gallbladder wall (especially fundus).
- (c) Polypoid intraluminal mass – Rare; may mimic benign polyp (> 1 cm concerning for malignancy).

4. Imaging Features Suggesting Malignancy:

- Irregular enhancing wall thickening >3 mm with loss of normal layered pattern.
 - Loss of fat plane between gallbladder and liver → early hepatic invasion.
 - Infiltration of adjacent structures: duodenum, colon, hepatic flexure, portal hepatis.
 - Biliary obstruction (especially with cystic duct or CBD involvement).
 - Regional lymphadenopathy or liver metastases.
-

5. MRI Findings:

- T1: Iso- to hypointense; T2: heterogeneous hyperintensity.
 - Post-contrast: Early, heterogeneous enhancement; persistent on delayed phase.
 - MRCP: Defines biliary involvement, level of obstruction, and extent of cystic duct/CBD encroachment.
 - DWI: Restricted diffusion helps delineate tumor extent and liver infiltration.
-

6. PET/CT Utility:

- FDG-avid in nearly all cases → excellent for detecting nodal and distant metastases.
- Important for restaging and surgical decision-making, as occult peritoneal or hepatic metastases are frequent.

TNM Clinical Classification

T – Primary Tumour

cTX	Primary tumour cannot be assessed
cT0	No evidence of primary tumour
cTis	Carcinoma in situ
cT1	Tumour invades lamina propria or muscular layer
cT1a	Tumour invades lamina propria
cT1b	Tumour invades muscular layer
cT2	Tumour invades perimuscular connective tissue; no extension beyond serosa or into liver
cT2a	Tumour invades perimuscular connective tissue on the peritoneal side with no extension to the serosa
cT2b	Tumour invades perimuscular connective tissue on the hepatic side with no extension into the liver
cT3	Tumour perforates the serosa (visceral peritoneum) and/or directly invades the liver and/or one other adjacent organ or structure, such as stomach, duodenum, colon, pancreas, omentum or extrahepatic bile ducts
cT4	Tumour invades main portal vein or hepatic artery or invades two or more extrahepatic organs or structures

8. Oncoradiologic Reporting Must Address:

- **Morphologic type** (mass-forming, wall-thickening, polypoid).
- **Extent of hepatic invasion** (segments IVb/V or beyond).
- **Biliary involvement** (cystic duct, CBD, hepatic ducts).
- **Vascular invasion** (portal/hepatic arteries).
- **Regional nodes, peritoneal/omental deposits, hepatic and distant metastases.**
- **Potential resectability** (R0 possible vs palliative).

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