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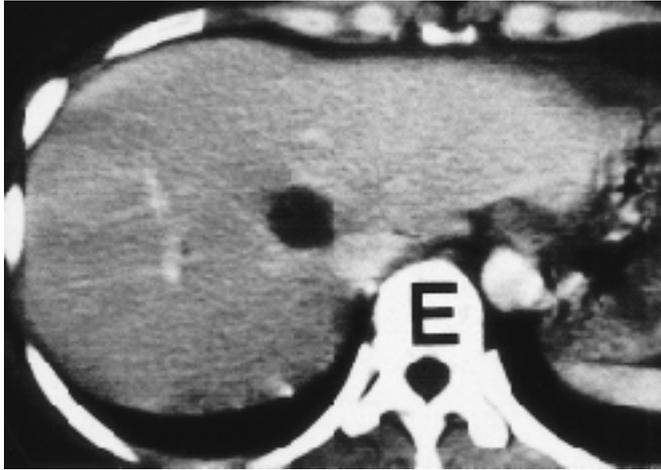
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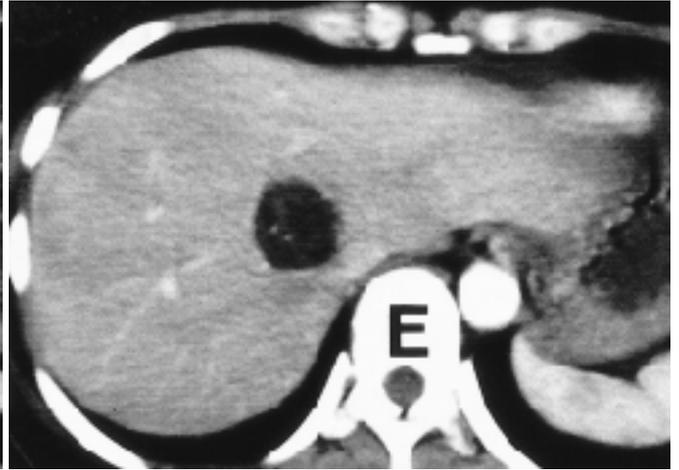
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Matsui Osamu

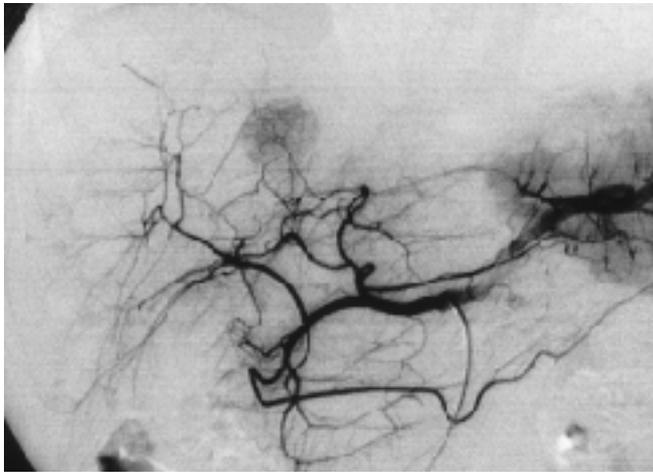
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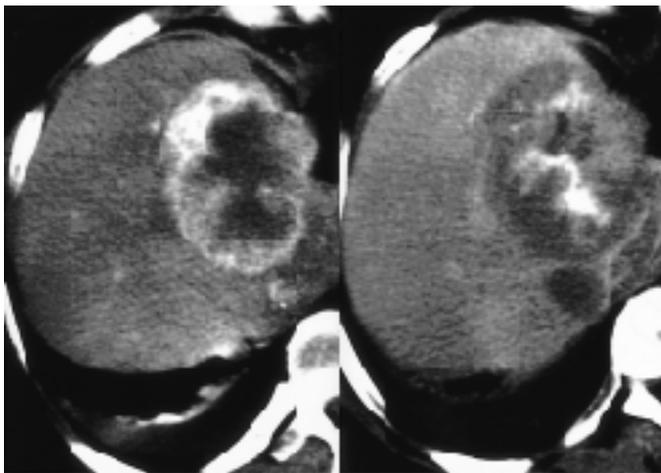
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Fig. 1. Hepatocellular carcinoma with abundant fatty component.

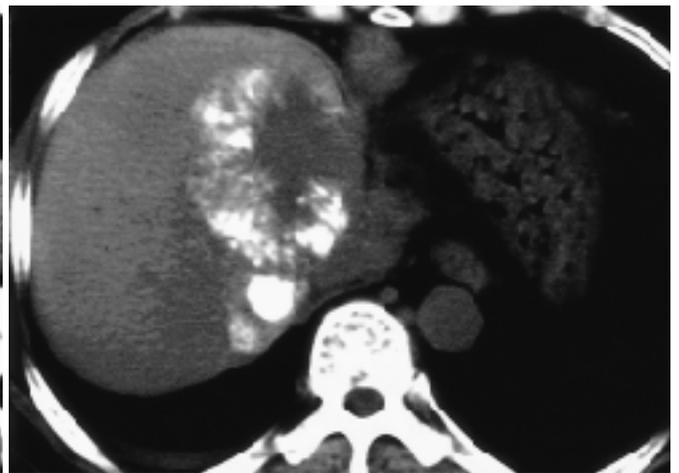
A. Initial CT scan shows about 1.2 cm sized homogeneous hypodense mass lesion in left lobe of liver.

B. On follow-up arterial dominant phase CT scan taken on 16 months later, increased size and newly developed, internal enhancing spots are noted.

C. Hepatic arteriogram shows tumor staining supplied by left hepatic artery.



A



B

Fig. 2. Hepatocellular carcinoma with abundant fibrous tissue component.

A. Periphery of the mass mainly composed by viable tumor is enhanced on arterial dominant CT scan (left) but center mainly composed by fibrous tissue is enhanced on 15 minutes delayed scan after angiography (right).

B. Lipiodol CT shows lipiodol uptake in periphery of the mass corresponding to the area of arterial contrast enhancement.

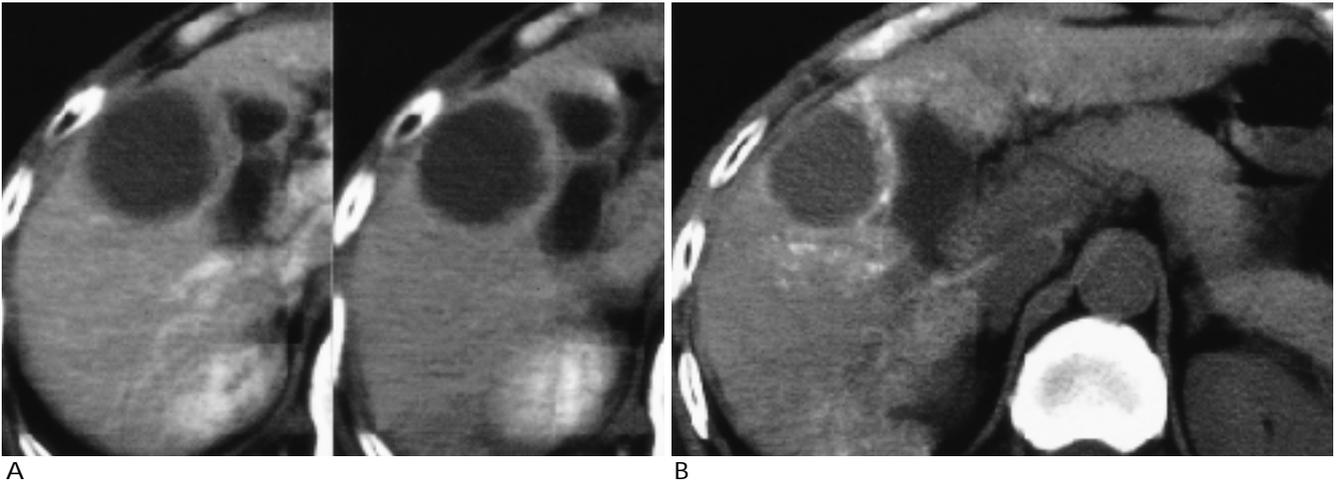
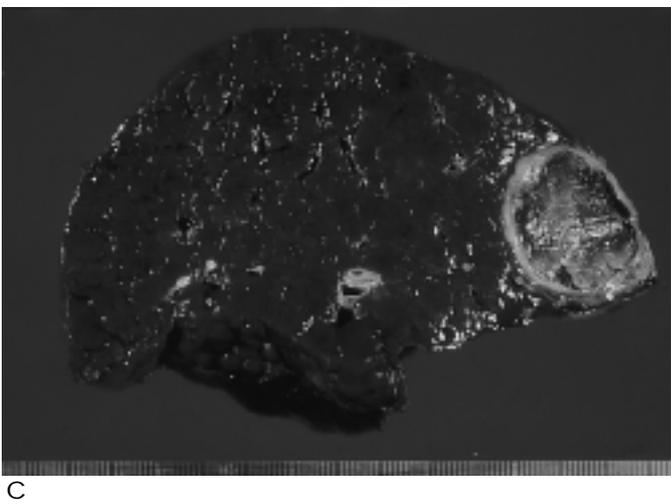


Fig. 3. Hepatocellular carcinoma with coagulation necrosis.
 A. Arterial dominant (left) and equilibrium (right) phase CT scans show nonenhancing mass lesion. Minimal peripheral enhancement is only noted on equilibrium phase CT scan.
 B. Lipiodol CT shows some lipiodol uptake in periphery of the mass.
 C. Cur surface shows well encapsulated mass lesion with reddish brown and nearly total necrotized materials.



C

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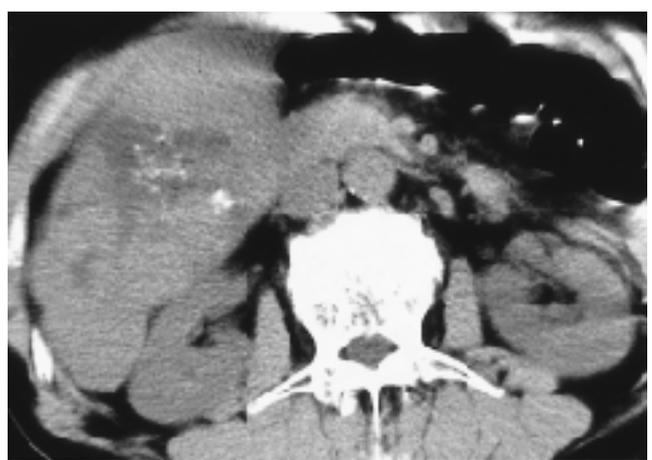
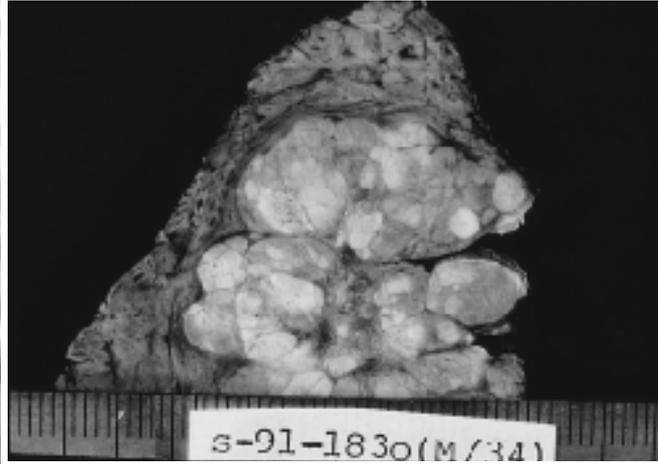


Fig. 4. Hepatocellular carcinoma with calcification. Preenhanced CT scan shows multiple irregular calcifications in the mass.

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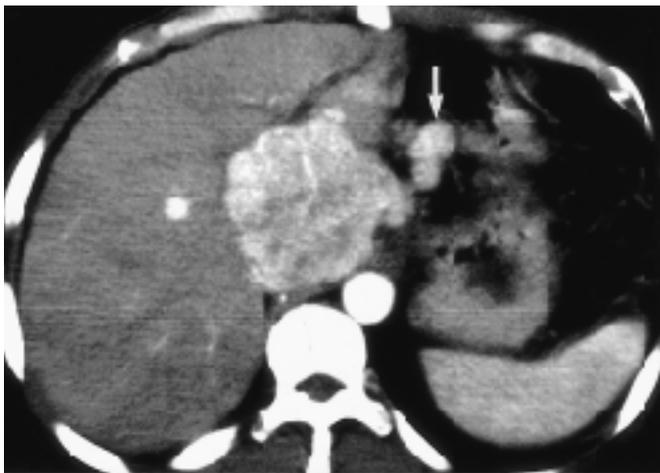


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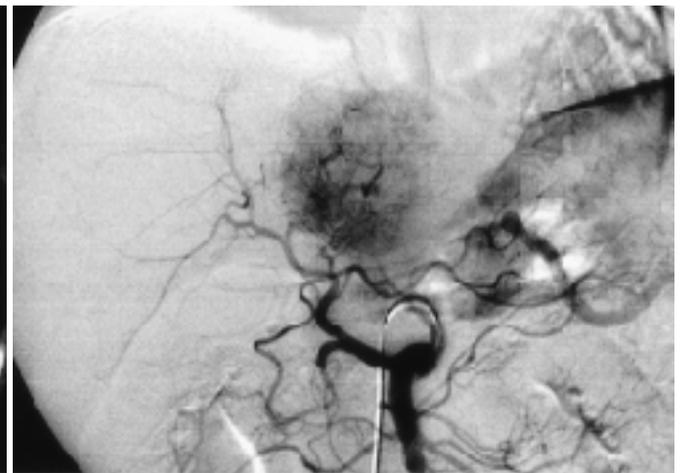


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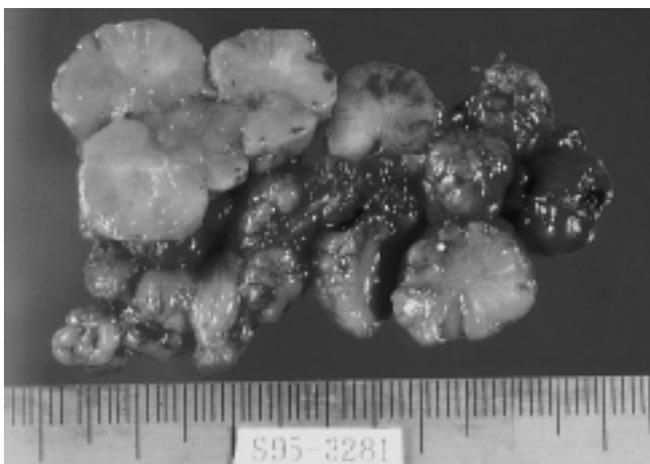
Fig. 5. Hepatocellular carcinoma with sarcomatous change
 A. Abnormal tumor staining is not seen on arterial phase angiography. Incidentally found cavernous hemangioma is noted (arrowhead).
 B. Cut surface shows lobulating solid mass with capsule.



A



B



C

Fig. 6. Fibrolamellar carcinoma with lymph node metastases.
 A. Well enhancing, lobulating mass lesions in left lateral segment of liver and gastrohepatic ligament (arrow) are seen on arterial dominant phase CT.
 B. Tumor staining supplied by left hepatic artery is seen and irregularly dilated vessels are seen in the center of the mass.
 C. (Part of hepatic mass and mass lesion in gastrohepatic ligament were resected.) Gross specimen shows multiple ovoid lobulating masses with pinkish smooth external surface and pinkish homogeneous solid cut surface. Microscopically, diffuse fibrosis arranged in a lamellar fashion is seen around the atypical hepatocytes (not seen here).

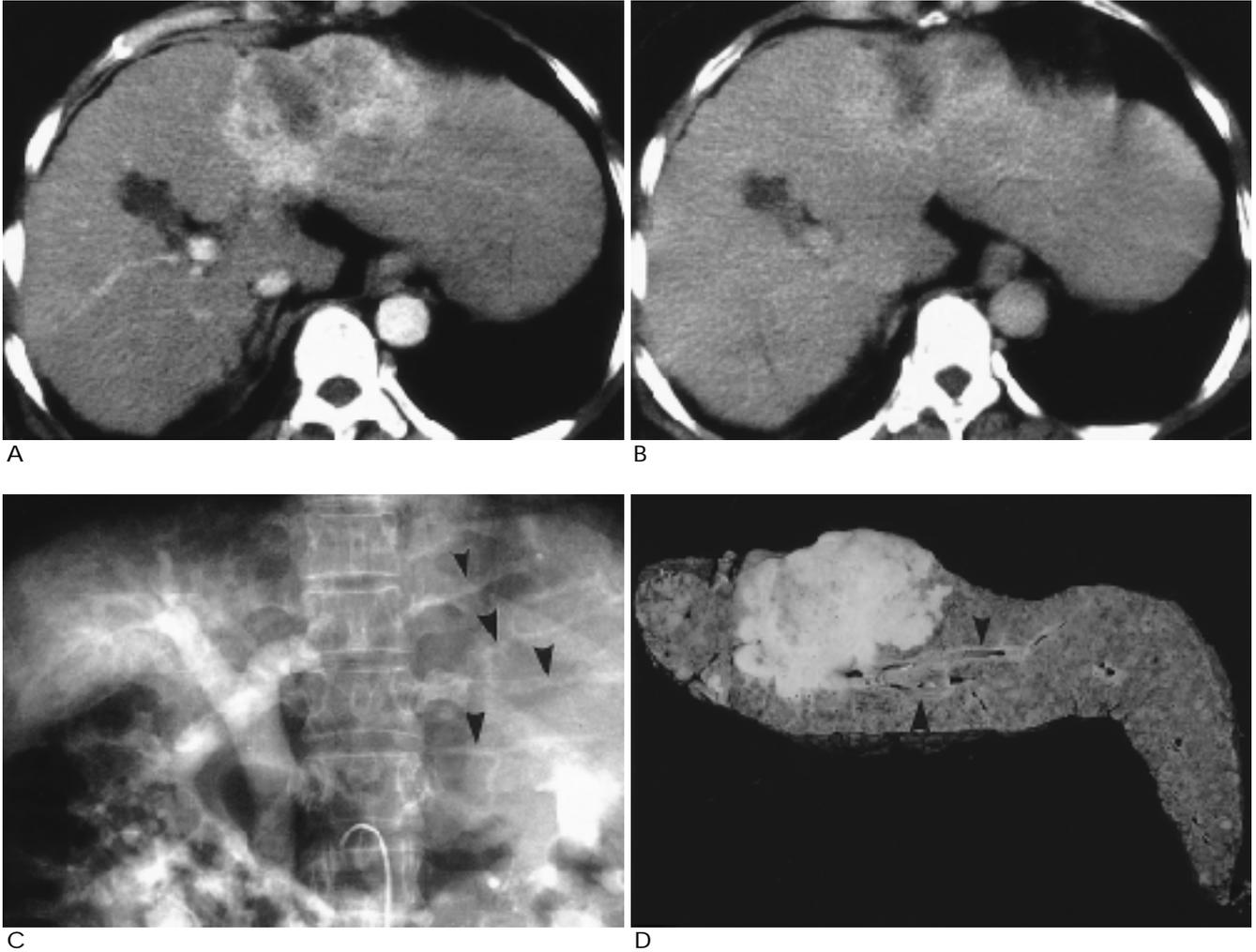


Fig. 7. Combined hepatocellular carcinoma and cholangiocarcinoma.
 A. Arterial dominant phase CT scan shows a lobulating mass lesion with heterogeneous enhancement in left lobe of liver.
 B. Contrast enhancement is still remained until equilibrium phase CT scan.
 C. On SMA portography, compressed proximal portion of left lateral segmental portal vein is noted and peripheral lateral segmental portal veins (arrowheads) distal to mass lesion are well seen.
 D. Gross specimen shows lobulating, whitish to brown mass lesion and patent peripheral portal veins (arrowheads).

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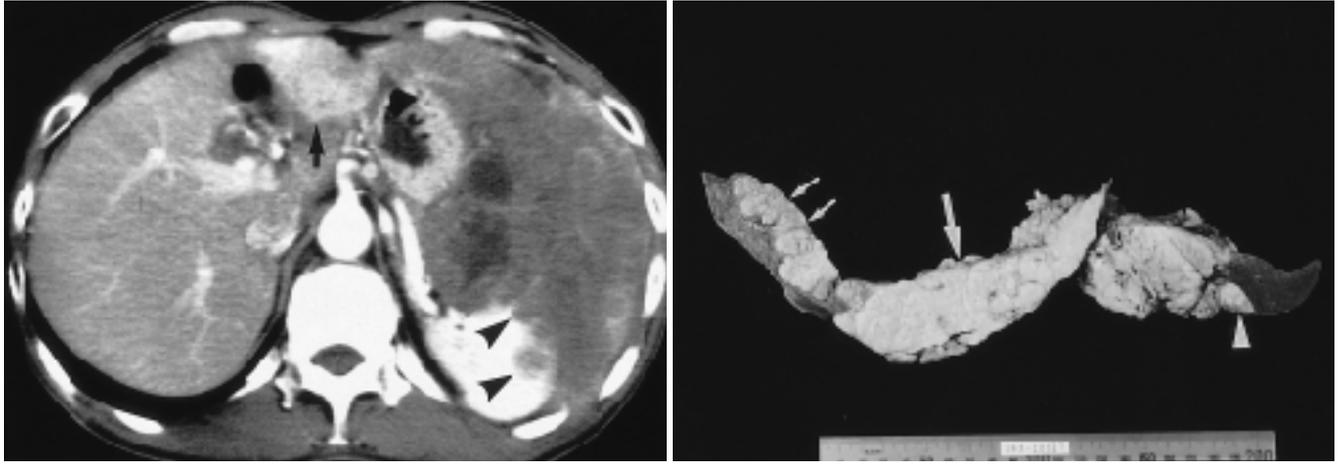


Fig. 8. Hepatocellular carcinoma with prominent extrahepatic growth.
A. Arterial dominant phase CT scan shows irregular shaped, heterogeneous huge mass lesion in left upper abdomen. Contrast enhancement (arrow) is also noted in lateral tip of left lateral segment and splenic invasion (arrowheads) is well demonstrated.
B. Gross specimen well shows hepatic mass originated in lateral tip of left lateral segment (small arrows), part of main intraperitoneal mass (large arrow) and splenic invasion (arrowhead).

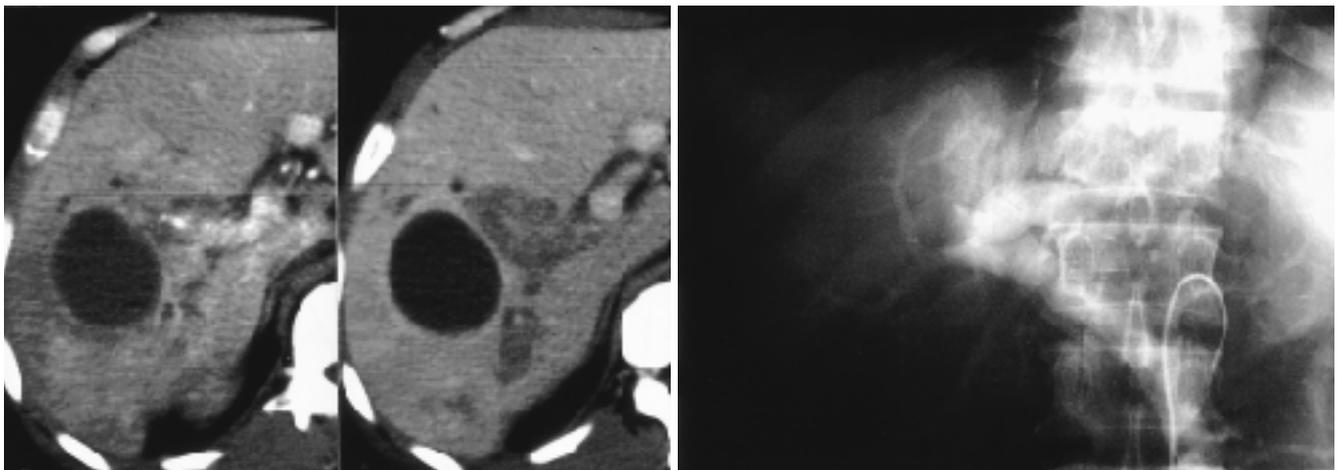


Fig. 9. Hepatocellular carcinoma with portal vein invasion.
A. Arterial dominant (left) and portal (right) phase CT scans show right portal vein thrombosis.
B. SMA portography shows right portal vein thrombosis. Ultrasonography-guided biopsy was undertaken at portal vein thrombosis and pathologically confirmed to hepatocellular carcinoma.

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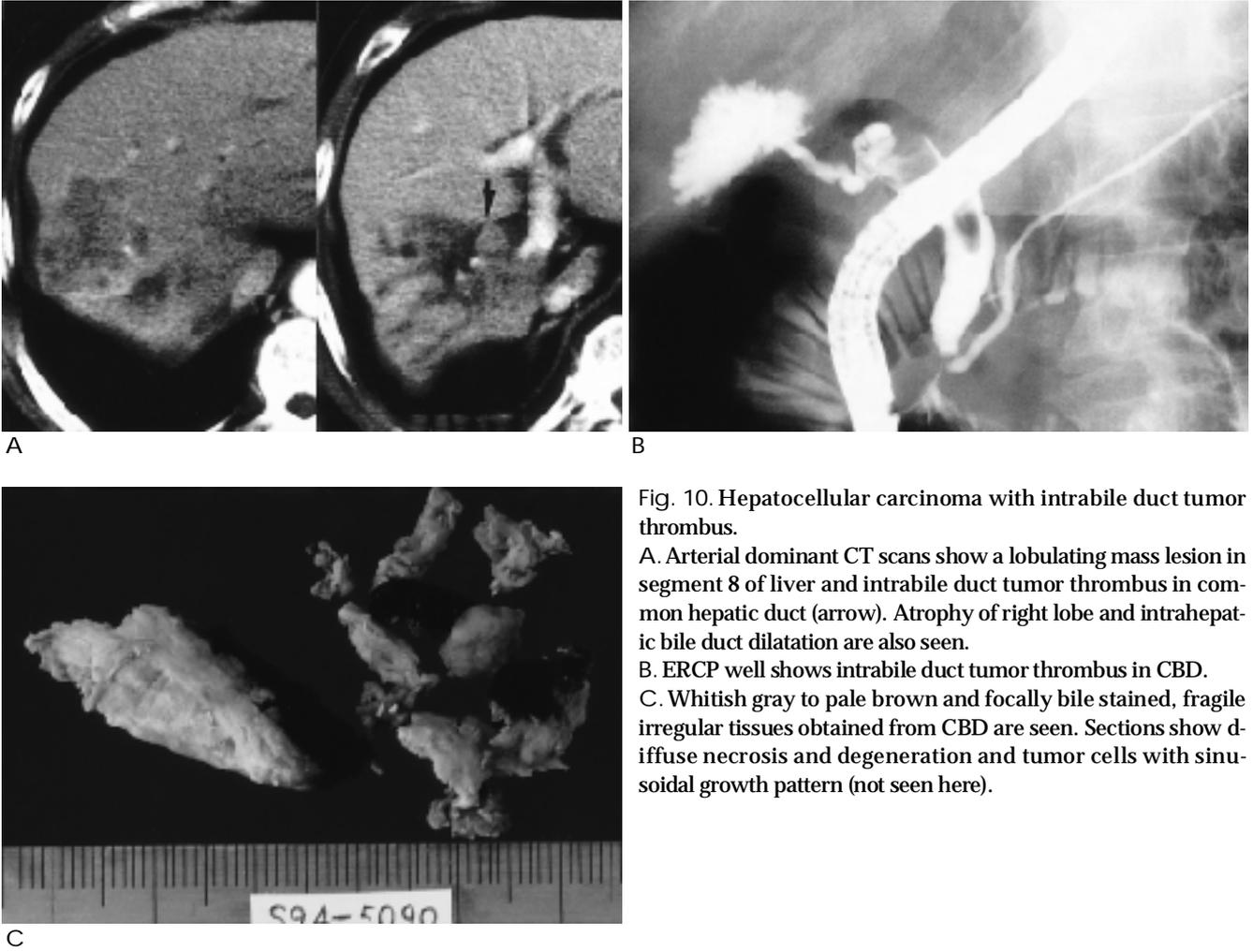


Fig. 10. Hepatocellular carcinoma with intrabile duct tumor thrombus.

A. Arterial dominant CT scans show a lobulating mass lesion in segment 8 of liver and intrabile duct tumor thrombus in common hepatic duct (arrow). Atrophy of right lobe and intrahepatic bile duct dilatation are also seen.

B. ERCP well shows intrabile duct tumor thrombus in CBD.

C. Whitish gray to pale brown and focally bile stained, fragile irregular tissues obtained from CBD are seen. Sections show diffuse necrosis and degeneration and tumor cells with sinusoidal growth pattern (not seen here).

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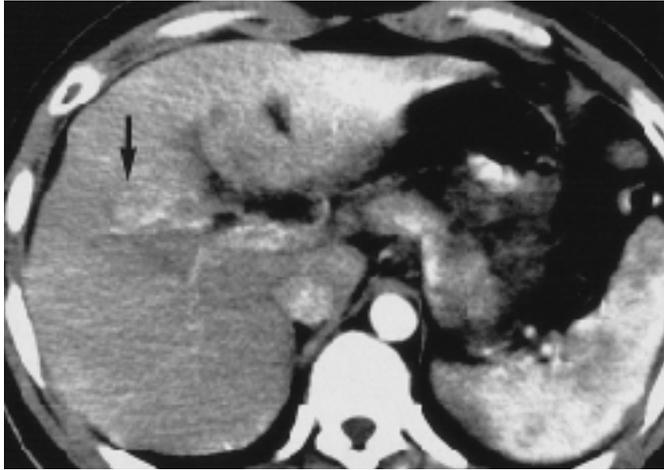
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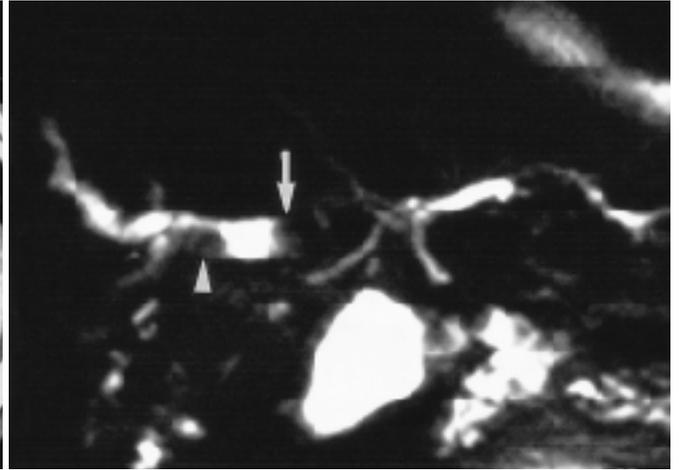
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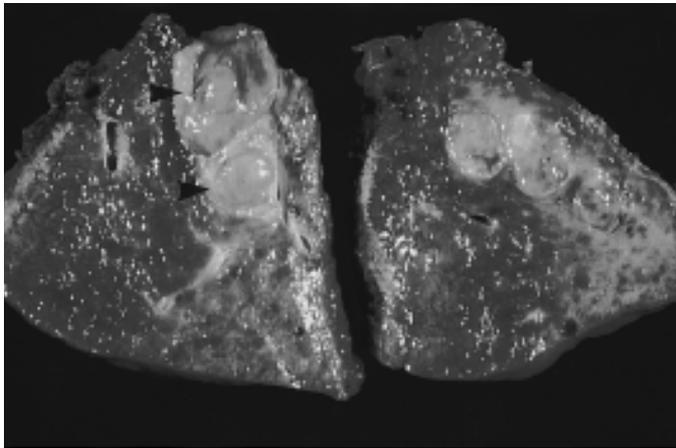
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Fig. 11. Hepatocellular carcinoma only with intrabiliary duct tumor growth.

A. Arterial dominant phase CT scan does not show definite parenchymal mass lesion. Suspicious enhancing mass (arrow) is only noted in right lobe of liver.

B. MRCP shows dilated right anterior segmental bile duct and mass lesion on proximal duct (arrow). Another intraluminal filling defect (arrowhead) is seen.

C. Gross specimen shows two intrabiliary duct tumor masses (arrowheads) but parenchymal mass lesion is not seen.

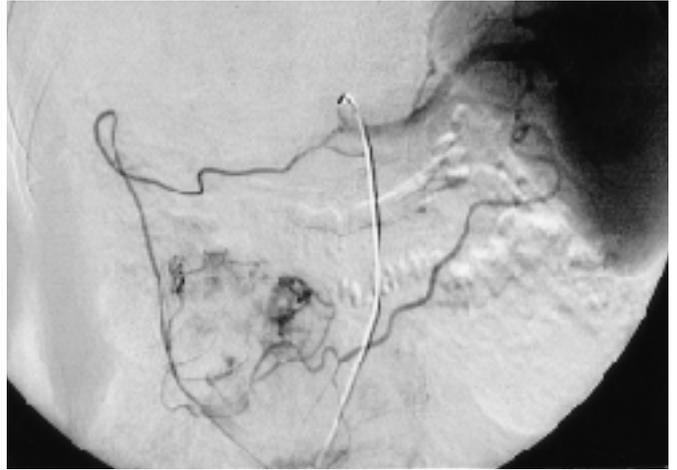
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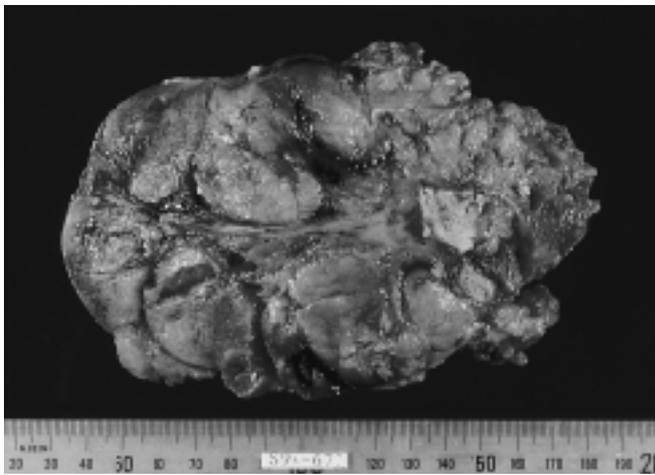
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Fig. 14. Hepatocellular carcinoma with peritoneal cavity mass formation.

A. Arterial dominant phase CT scan shows heterogeneously enhancing omental mass resembling to enhancing pattern of hepatocellular carcinoma.

B. On angiogram, tumor staining supplied by omental branch is noted.

C. The cut surface shows relatively well demarcated and lobulating, grayish brown to dark brown variegated firm mass with hemorrhagic and necrotic foci.

(Fig. 14).

(Fig. 12).

(Fig. 13)

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Atypical Growth & Development of Classic Hepatocellular Carcinoma¹

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Hepatocellular carcinoma is the most common malignant neoplasm arising from the liver. It is well known that early contrast enhancement and attenuation are revealed by flow dynamic imaging studies through the development of abundant feeding vessels. In practice, however, various atypical findings may be noted. These many be due to diversity of various already known pathologic classification methods or the limitations of imaging techniques which cannot exactly delineate all hemodynamic changes. In addition, a variety of degeneration and histopathologic and anatomic subtypes may be the cause of various radiologic findings. This illustrated report attempts to facilitate the radiologic interpretation of atypical hepatocellular carcinoma by classification and introduction according to histologic and anatomic subtypes.

Index words : Liver neoplasms, CT

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