Management of Hydatid disease of the liver

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Biological and pathological basis of modern surgery

The echinococcus or hydatid cyst represents the larval stage of *Echinococcus granulosus* , a 2 – 6 mm long tapeworm . in the adult stage the tapeworm lives in the gut of the dog , the definitive host . the intermediate animal hosts , where the parasite lives and develops at the larval stage , are sheep , cattle , pigs and man

Structure of the cyst

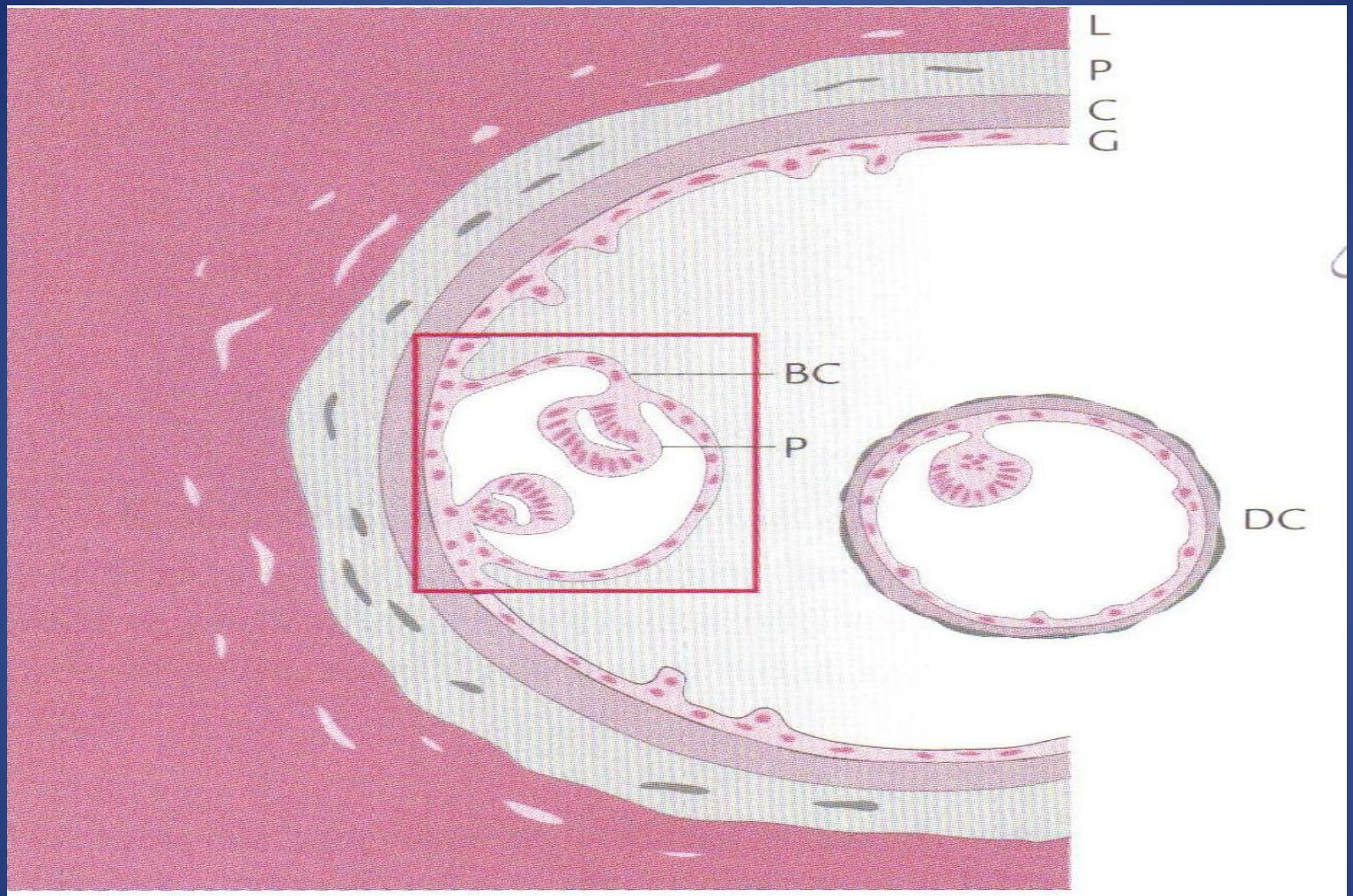
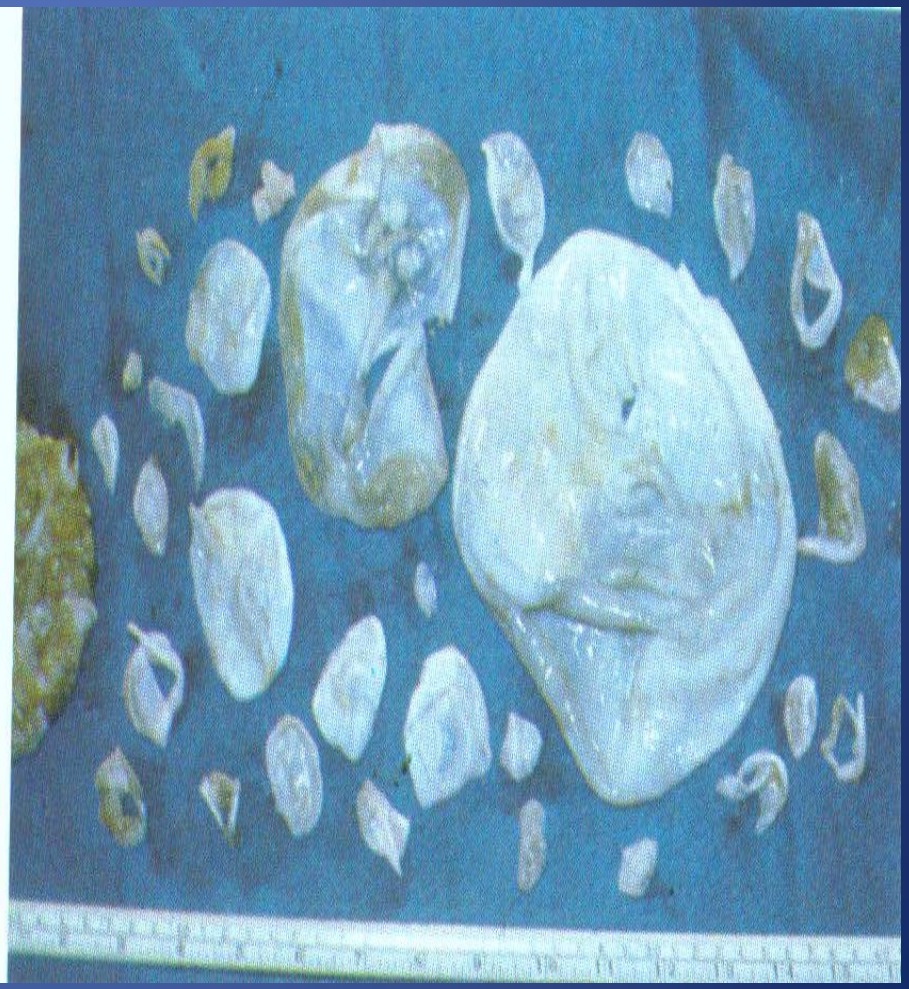
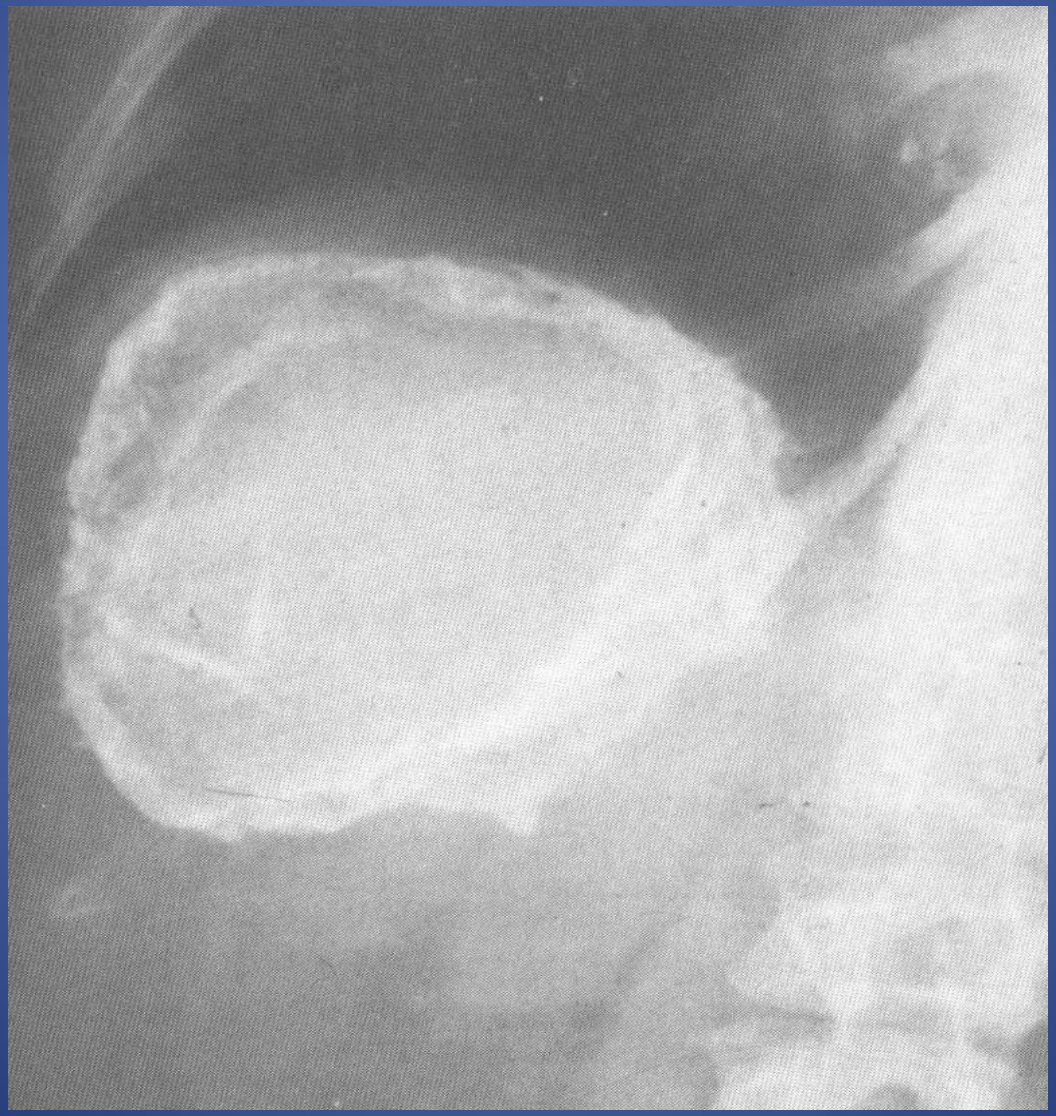


Figure 13.1 Structure of the liver hydatid cyst. L: Liver; P: pericyst; C: chitinous layer; G: germinal layer; BC: brood capsules or vesicles; P: protoscoleces; DC: daughter cysts (similar to mother cyst).

Liver cysts



Liver cyst with calcified walls



Diagnosis

Hydatid cyst of the liver may be asymptomatic for years , at times for decades . diagnosis may be accidental , based on an incidental clinical exam that detects swelling when the cyst is located in a palpable abdominal area or , in the case of a more or less relevant hepatomegaly , subsequently assessed with other exams .

Diagnosis

liver hydatidosis may be an incidental finding in a radiograph of the hepatic region when the cyst is calcified , during a chest radiograph for a raised hemidiaphragm or during US echo exam performed for other reasons such as gallstones .

Diagnosis

a cyst of the liver may cause boring pain at the basal chest for the diaphragmatic pleural or peritoneal reactive process . dyspepsia , possibly from reflexes originating in the periductal nervous network , is not unusual . cholestasis from major bile duct compression may be responsible for fever , also of high grade . liver function tests remain normal for a long time .

Diagnostic imaging

Ultrasonography (US)

Computed tomography (CT)

Magnetic resonance imaging (MRI)

Angiography

Scintography

Immunodiagnosis

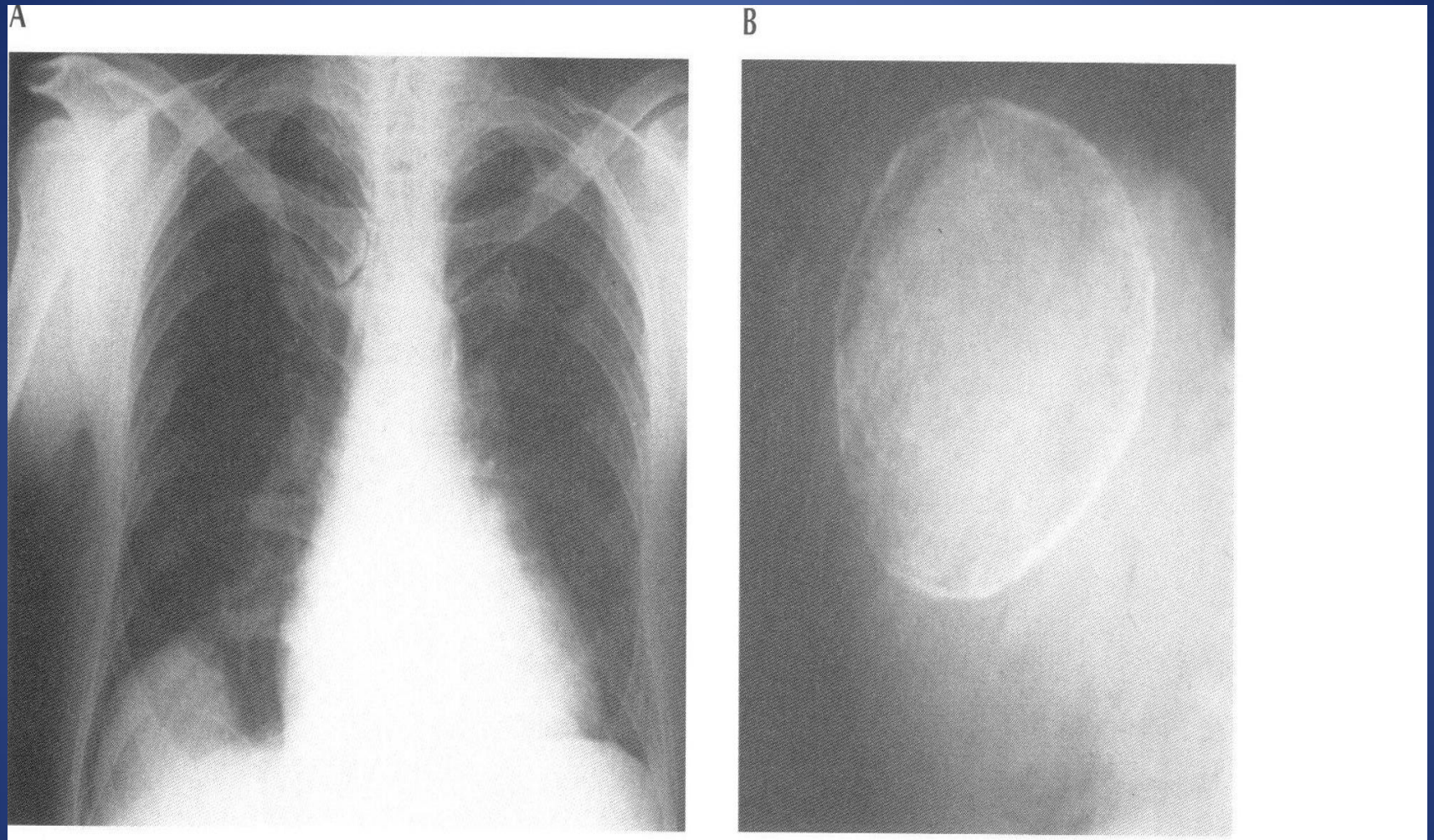


Figure 13.6 Plain radiographs. (A) Partial 'en brioche' image of diaphragm profile; (B) calcific image pathognomonic of hydatid cyst.

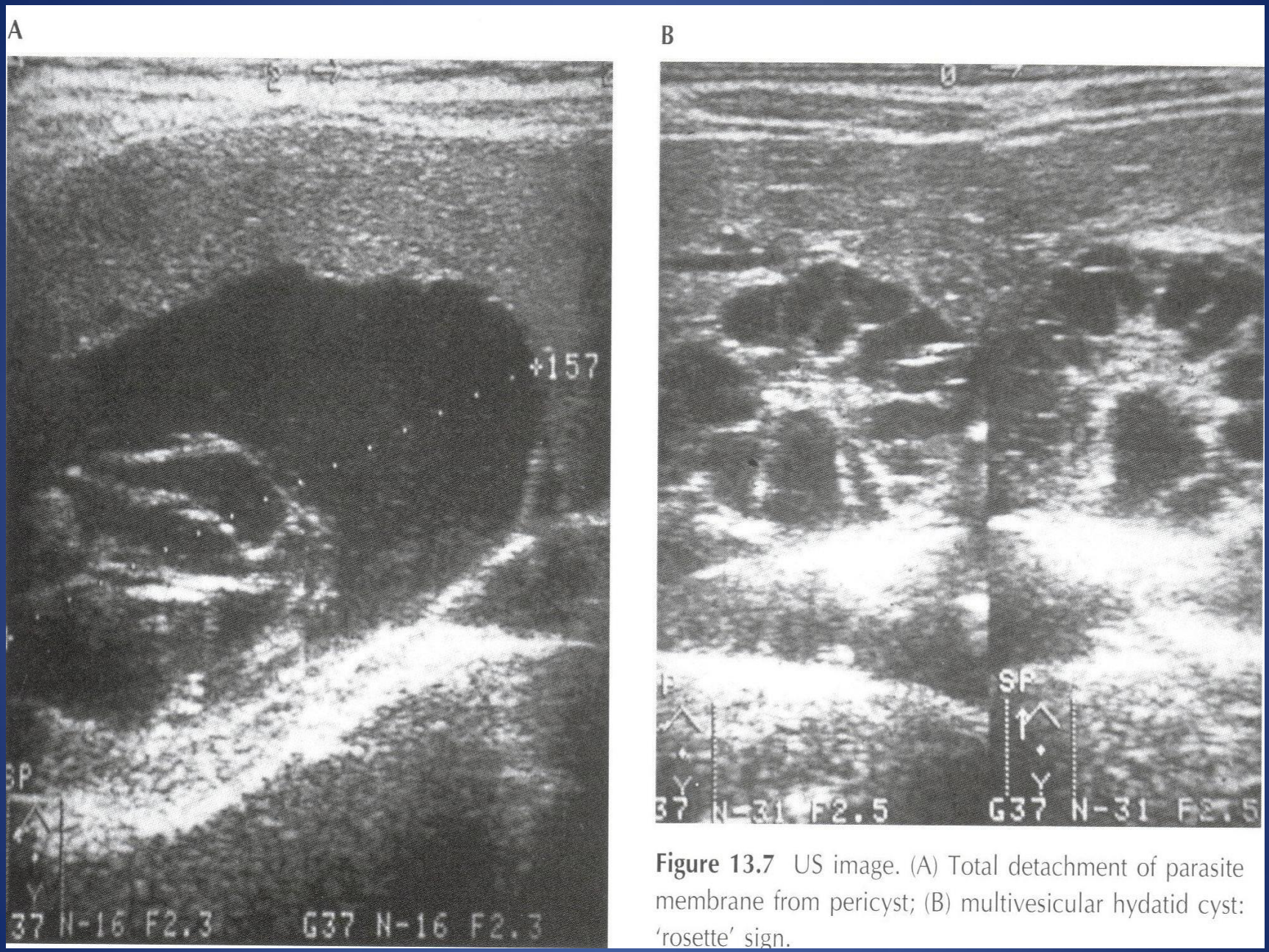


Figure 13.7 US image. (A) Total detachment of parasite membrane from pericyst; (B) multivesicular hydatid cyst: 'rosette' sign.

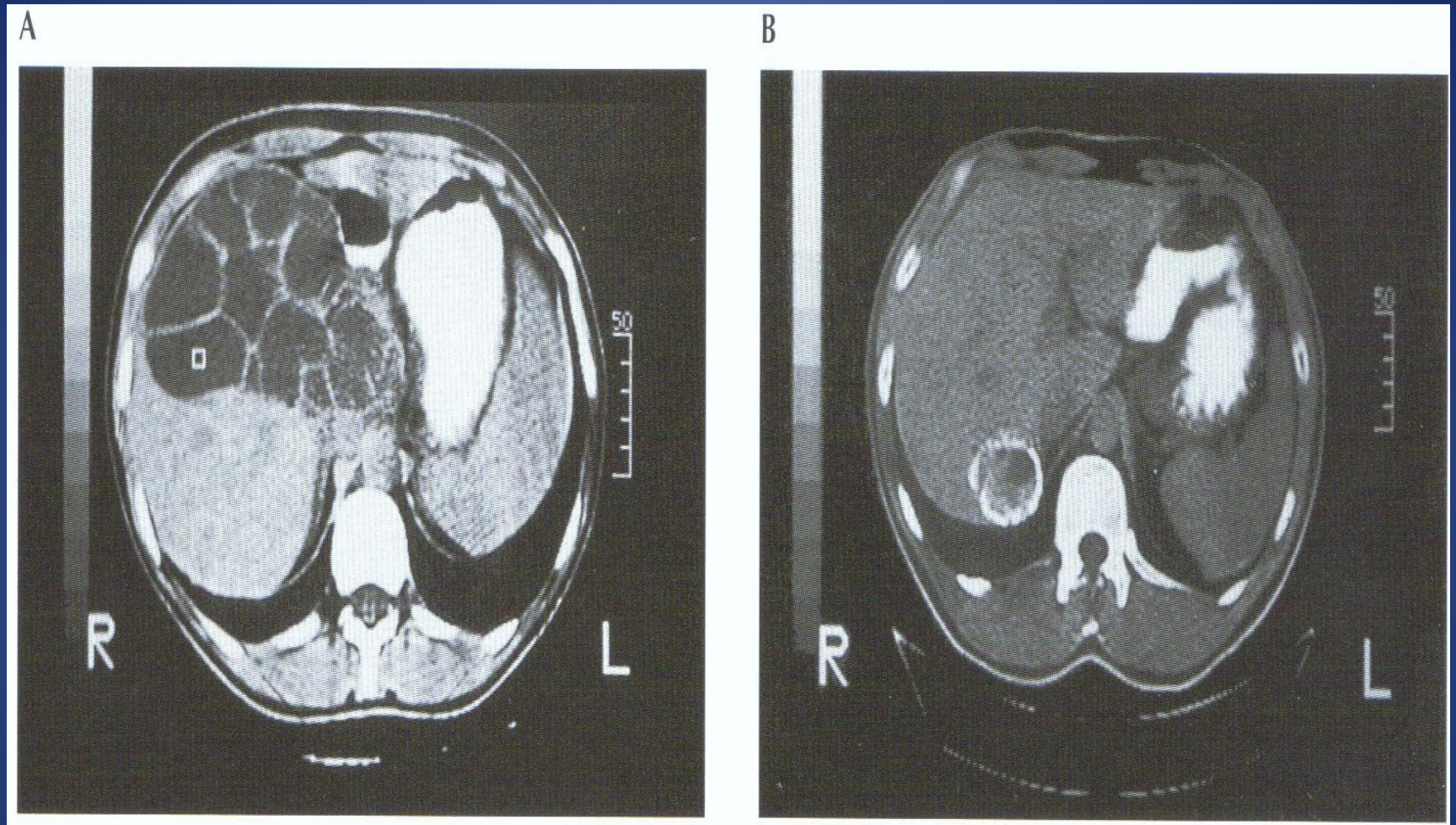


Figure 13.9 CT image. (A) Multivesicular cyst: 'honeycomb' or 'rosette' sign; (B) calcific cyst of segment VII in contact with the caval vein and causing intrahepatic duct dilation stasis.

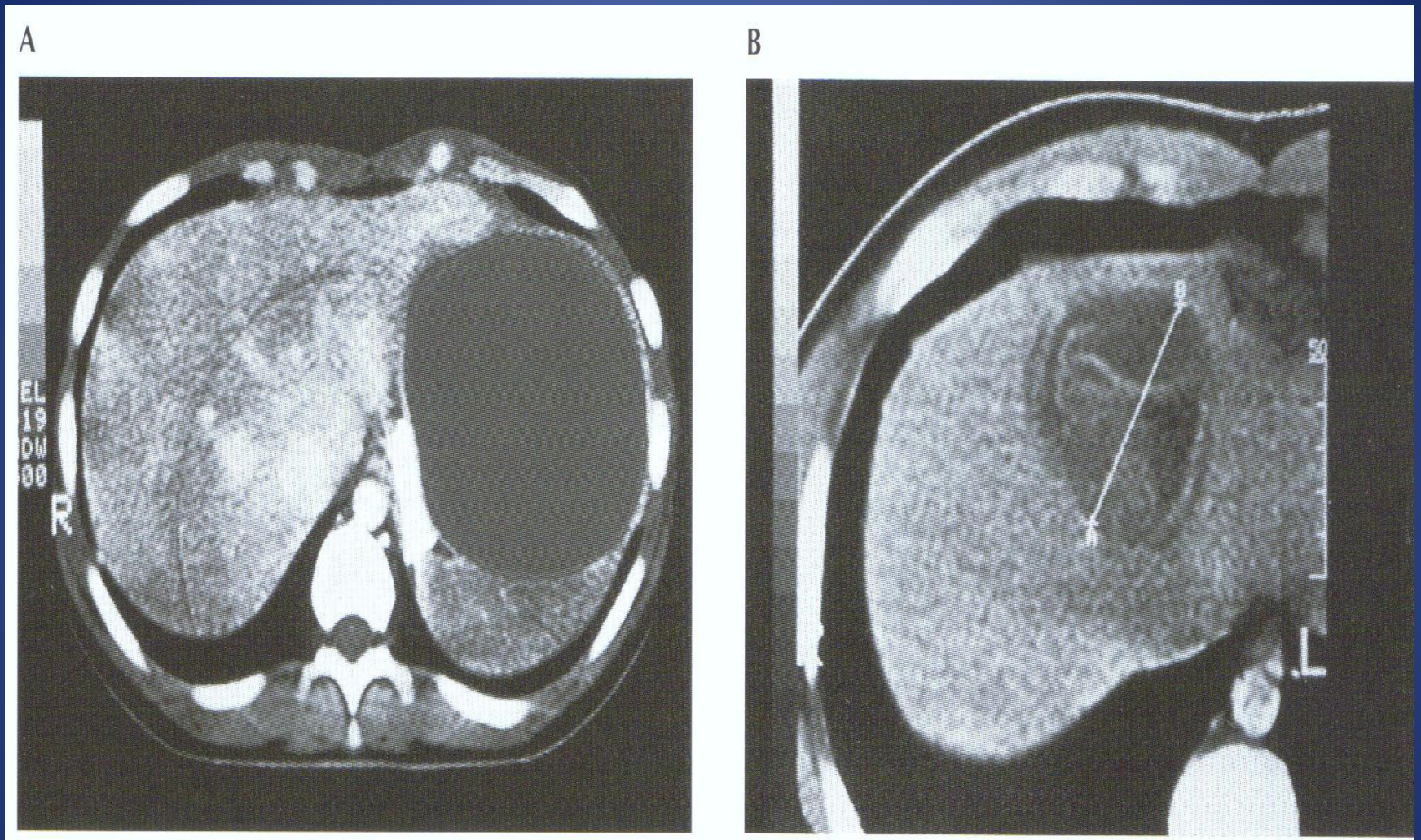
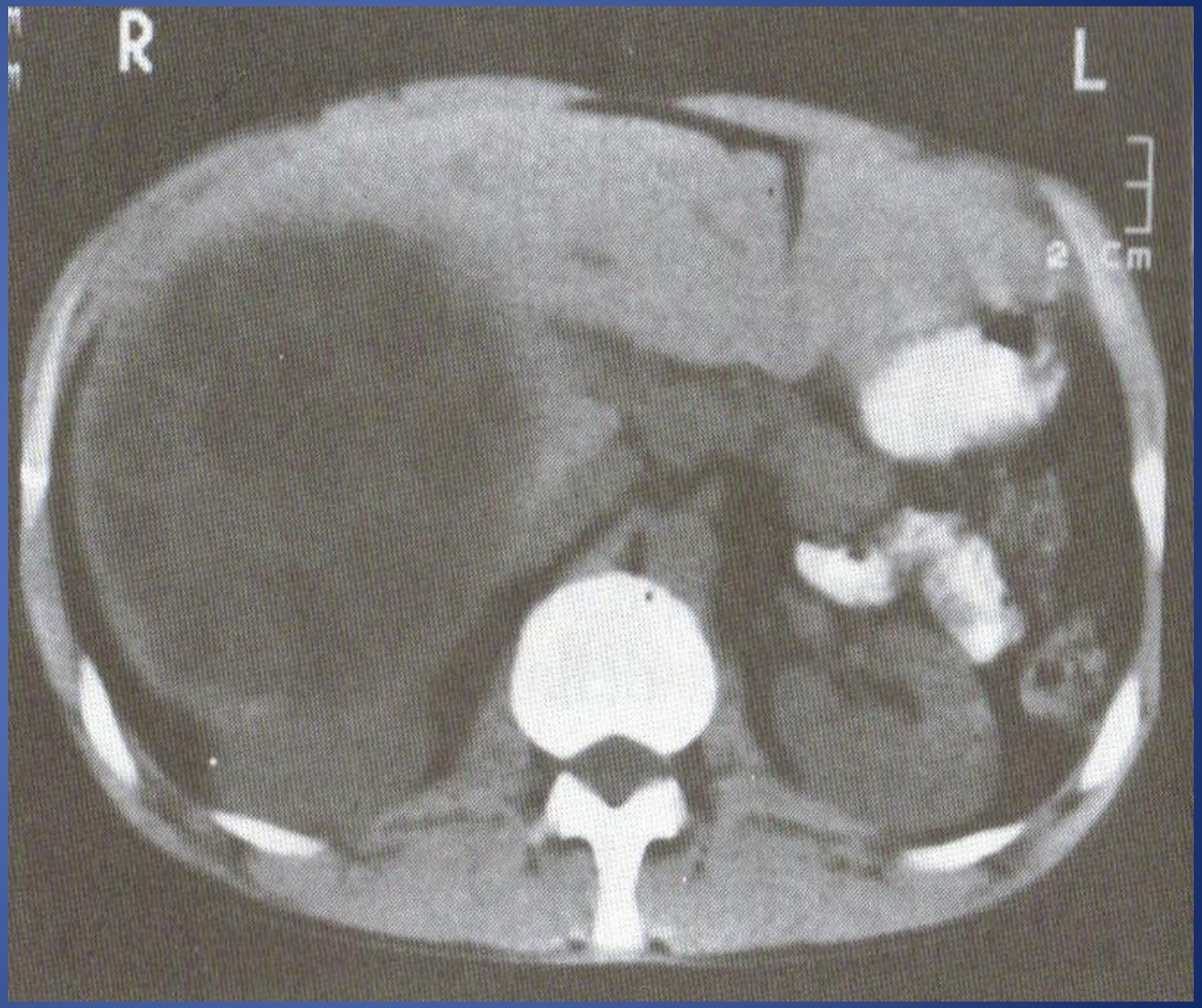


Figure 13.8 CT image. (A) Univesicular cyst; (B) 'water-snake' sign of membrane detachment.

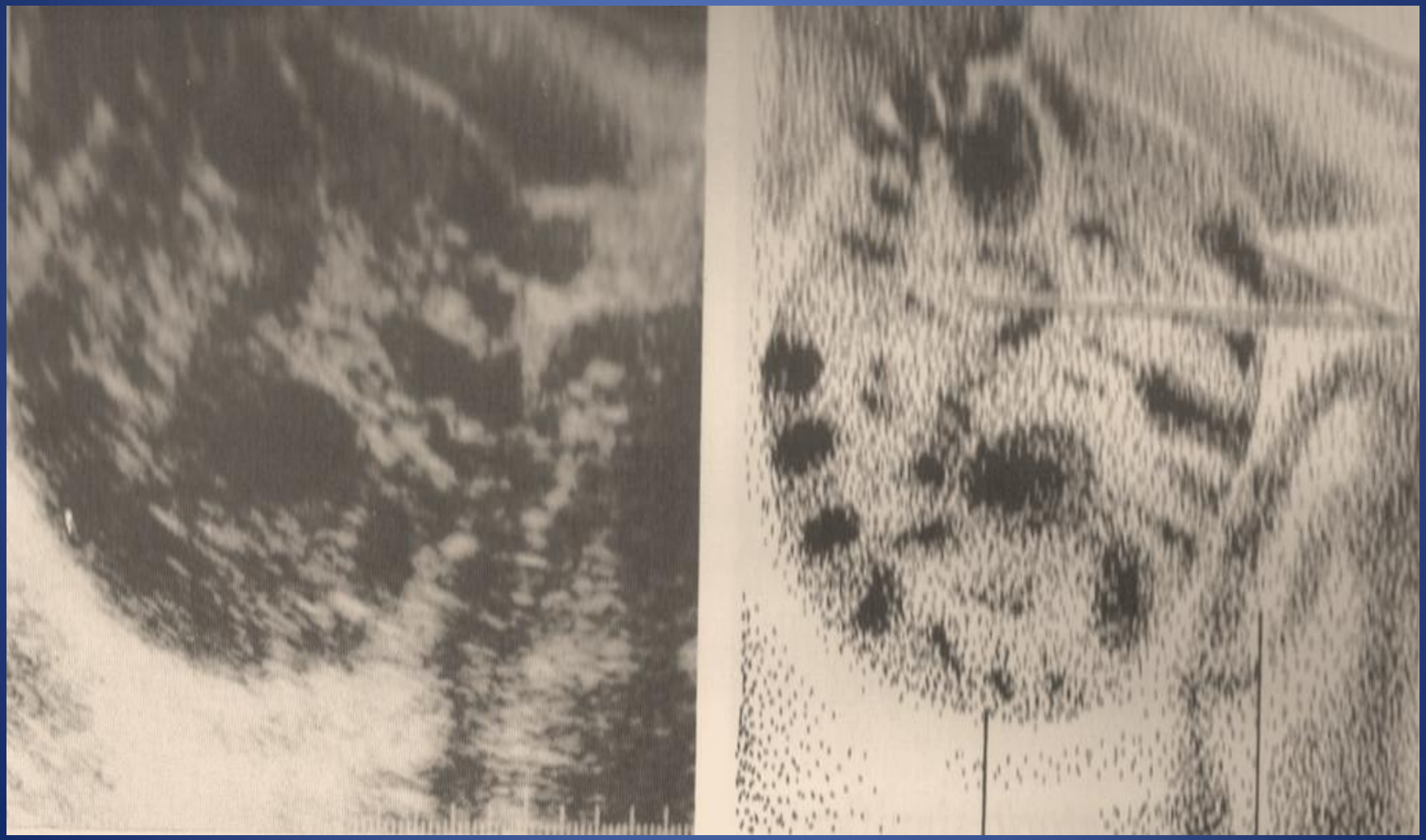
Liver cysts

Ctscan :

Cyst in the right lobe of the liver with multiple cysts inside



echo



tratment:

surgery

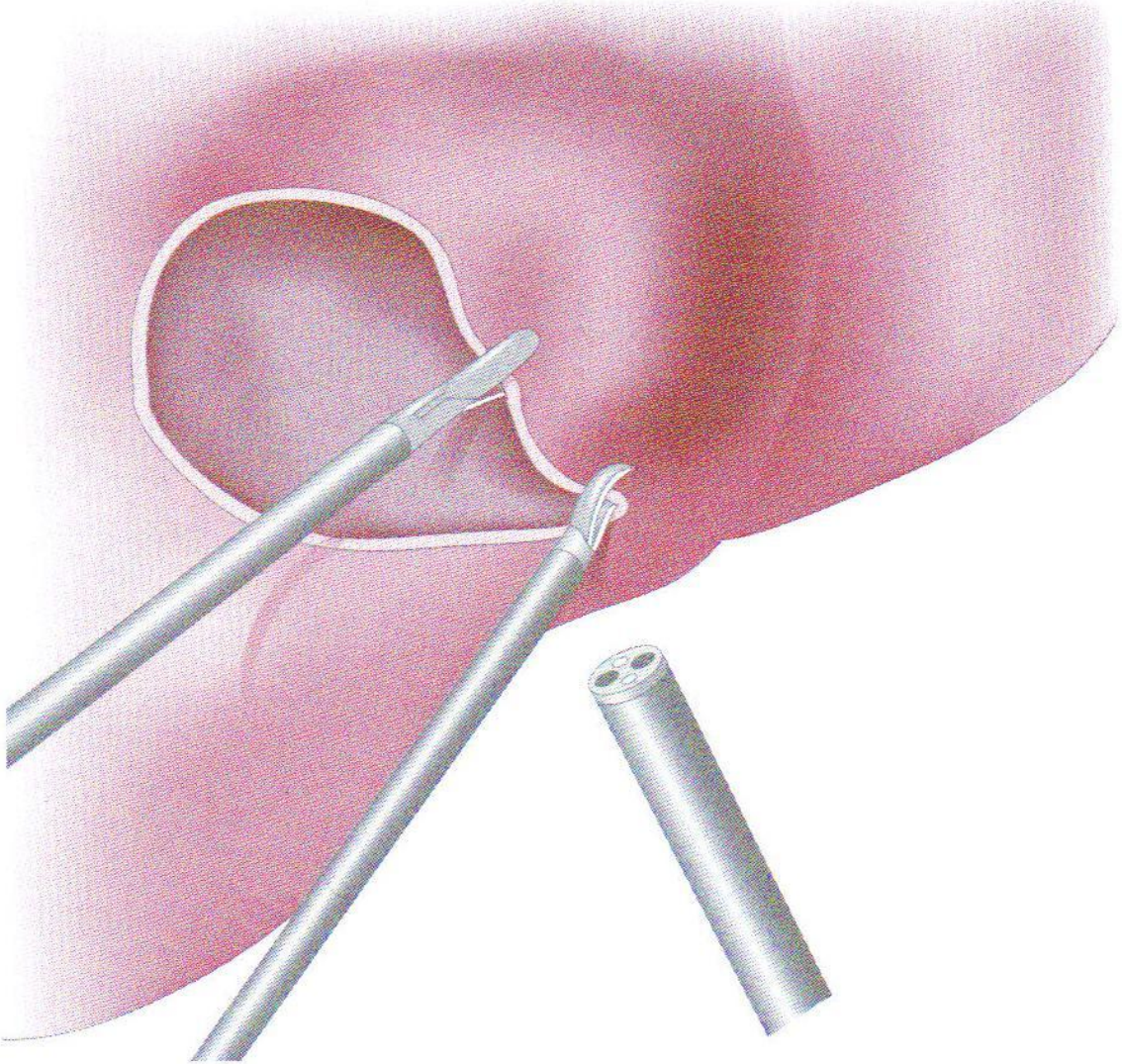
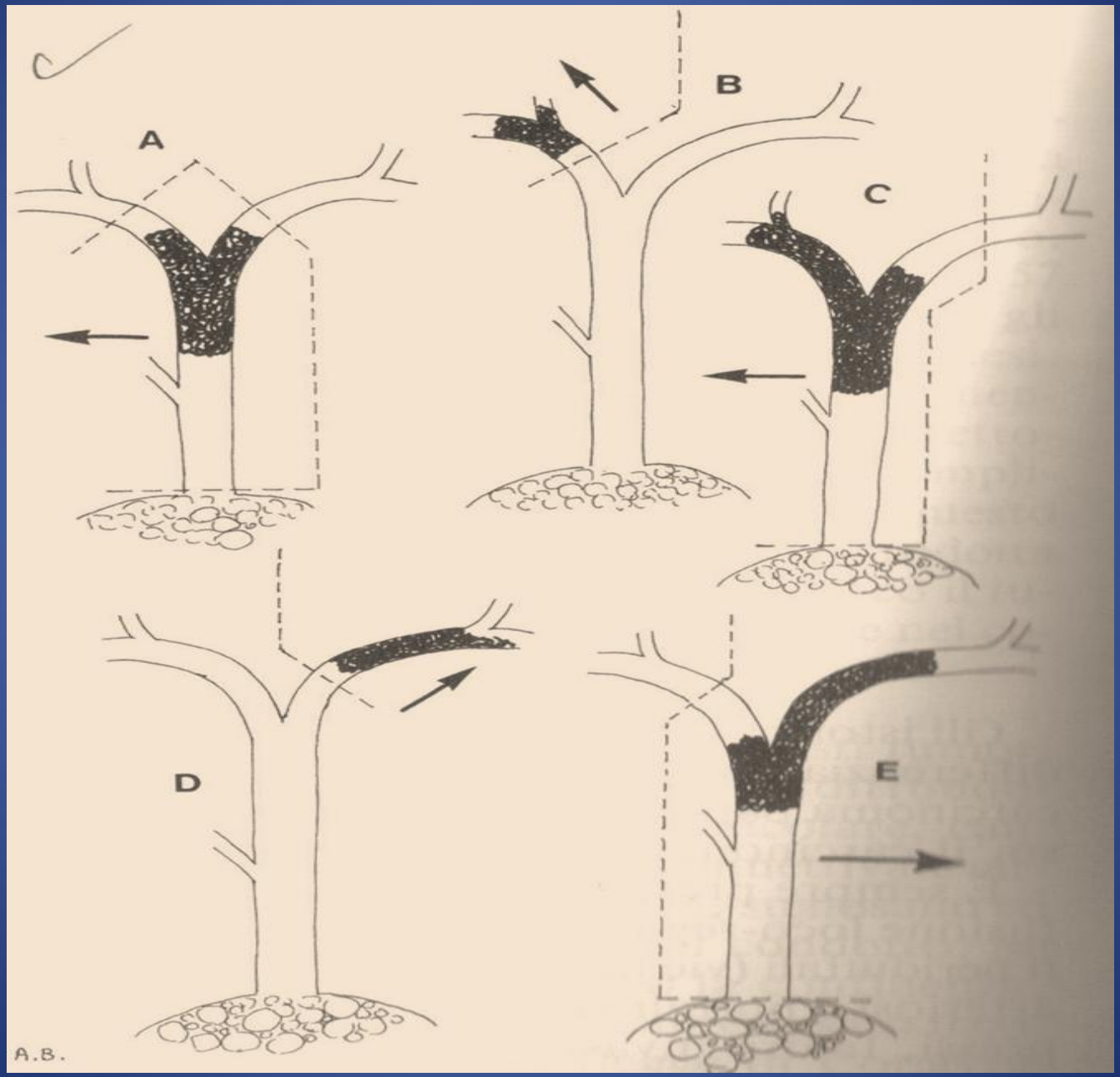


Figure 11.2 Laparoscopic unroofing of a large central simple biliary cyst.

Tumor of Klatskin



key points

Complications of hepatic hydatidosis include:

- Metastatic hydatid
- Secondary bacterial infection
- Intrabiliary rupture
- Intraperitoneal rupture
- Bronchobiliary fistula

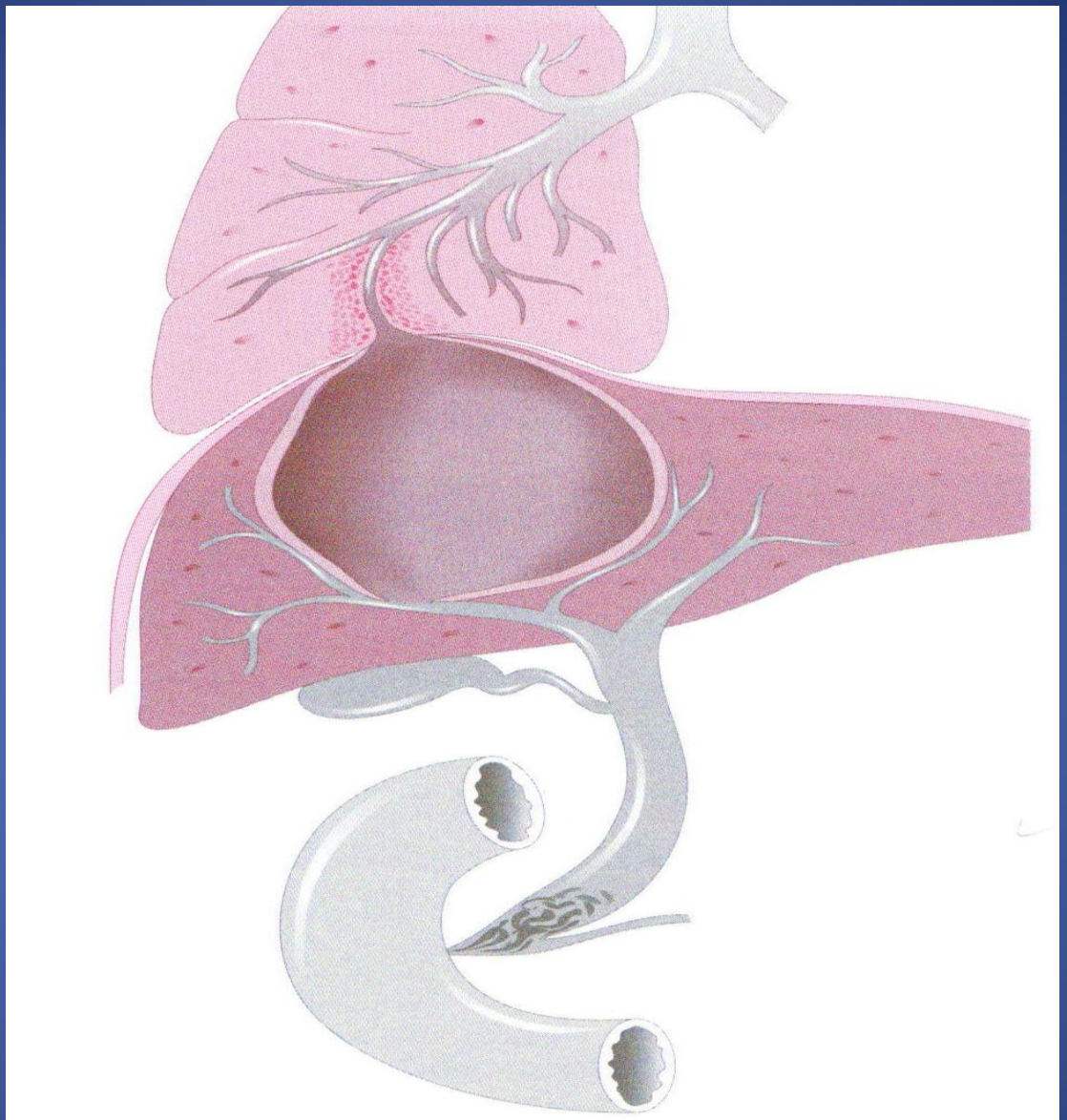
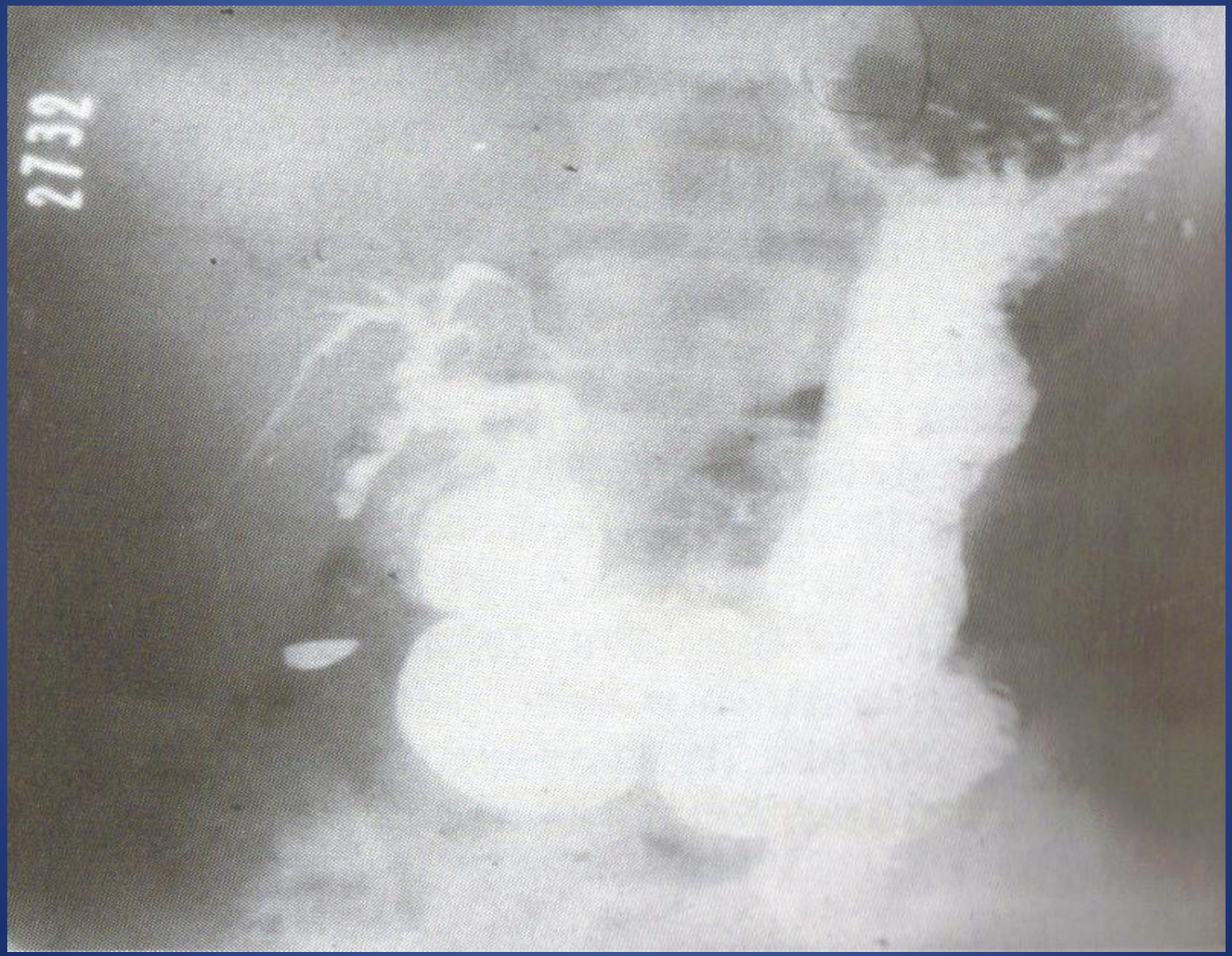


Figure 13.5 Bronchobiliary fistula. Biliary rupture of hepatic cyst, common bile duct obstruction with hydatid material, communication between the cyst cavity and a basal bronchus through an area of attenuated diaphragm are represented.

Biliary digestive fistula



key points

Diagnosis of hepatic hydatidosis:

- Incidental finding (in patient from endemic region)
- Abdominal mass
- Calcified hepatic cyst on the plain abdominal photograph (AXR)
- Ultrasound /CT/MRI
- Hydatid serology/Casoni skin test

key points

Preoperative management :

- Systemic albendazole/mebendazole
- ERCP(exclude cystobiliary fistula)
- Protection of operative field before surgical emptying of cyst contents
- Sterilization of cyst cavity .

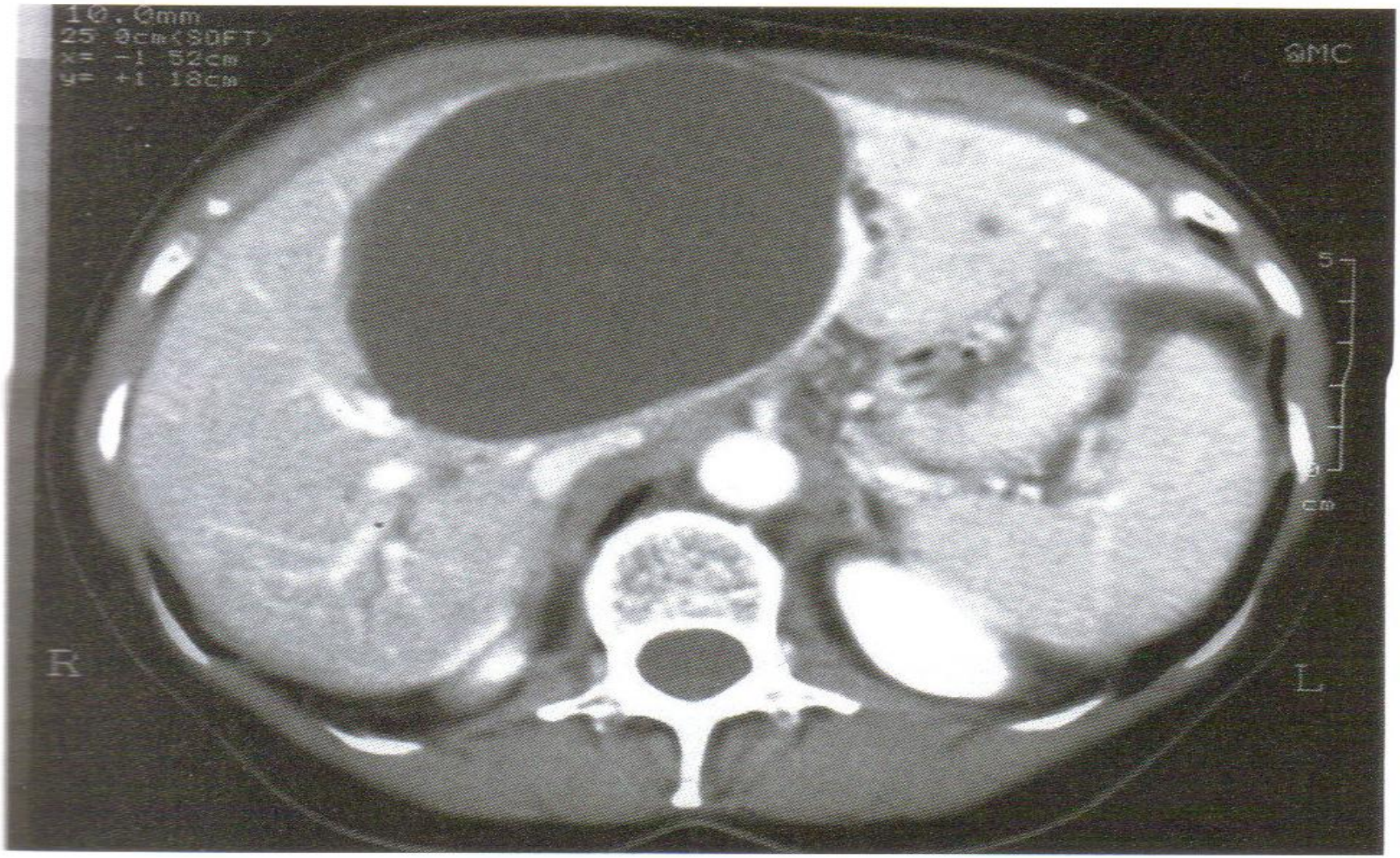


Figure 11.1 A large symptomatic central biliary cyst with glissonian sheath in the left wall. It was treated successfully with unroofing.

Management strategies for benign cysts and polycystic disease of the liver

they are cysts that normally do not communicate with the biliary tract , the surface of the cysts is composed of cuboidal or columnar epithelium , identical to normal biliary epithelium , resting on thin connective tissue and without precise separation from displaced hepatic parenchyma, the intracystic liquid is relatively acellular and the composition is similar to independent secretions of biliary cells .

Natural history of simple biliary cysts

Simple biliary cysts are lesions that may or may not increase in size . during successive ultrasound examination fewer than 20% of cysts are noted to have an increase in their volume and only one time in four does growth attain double the initial volume estimate . only in rare cases does size increase occur rapidly , in less than a year .

The majority of biliary cysts are asymptomatic and their discovery is incidental .

Natural history of simple biliary cysts

the relationship between symptoms of abdominal pain and the presence of a biliary cyst must be accepted with caution and one must consider this only for large cysts where the diameter exceeds 8cm . the temporary disappearance of the symptoms after needle aspiration can serve as an argument in favor of responsibility of the cyst for symptoms .

simple biliary cysts

complications are unusual :

compression of the biliary tree , vascular compression(vena cava or hepatic veins) , intracystic hemorrhage , biliary fistula , rupture and cyst infection .

Natural history of the polycystic liver in the adult

polycystic liver disease can be observed in the absence of renal cysts or can be associated with benign kidney cysts .

Three factors are associated with an increased number of cysts and progressive disease : female sex , number of pregnancies and presence of polycystic kidney disease .

polycystic liver

complications like biliary compression with cholestasis , vascular compression and intraperitoneal rupture are unusual .

intracystic hemorrhage , biliary connections and bacterial infection with suppuration .

Diagnosis of biliary cysts

ultrasound (or the CTscan) examination

the diagnosis rests on the search for scoleces in the cystic liquid removed by a fine needle under ultrasound control after 3 weeks of treatment with albendazole .

MRI

cyst fluid analysis for tumor markers CEA and CA-19-9

Management of simple biliary cysts:

No treatment: in case of asymptomatic, moderately symptomatic or non complicated disease.

sclerotherapy :by needle puncture and aspiration

open surgical treatment

laparoscopic surgical treatment

management of polycystic liver disease :

the treatment consists of treating each one of these voluminous cysts the same as for the isolated simple biliary cysts .the treatment of deep small cysts is often ineffective : alcoholization of each of these cysts is possible but surgical fenestration is simpler and more adaptable .

Figure 11.3 Pathological specimen from a left hepatectomy/fenestration for asymmetrical type II polycystic liver disease.

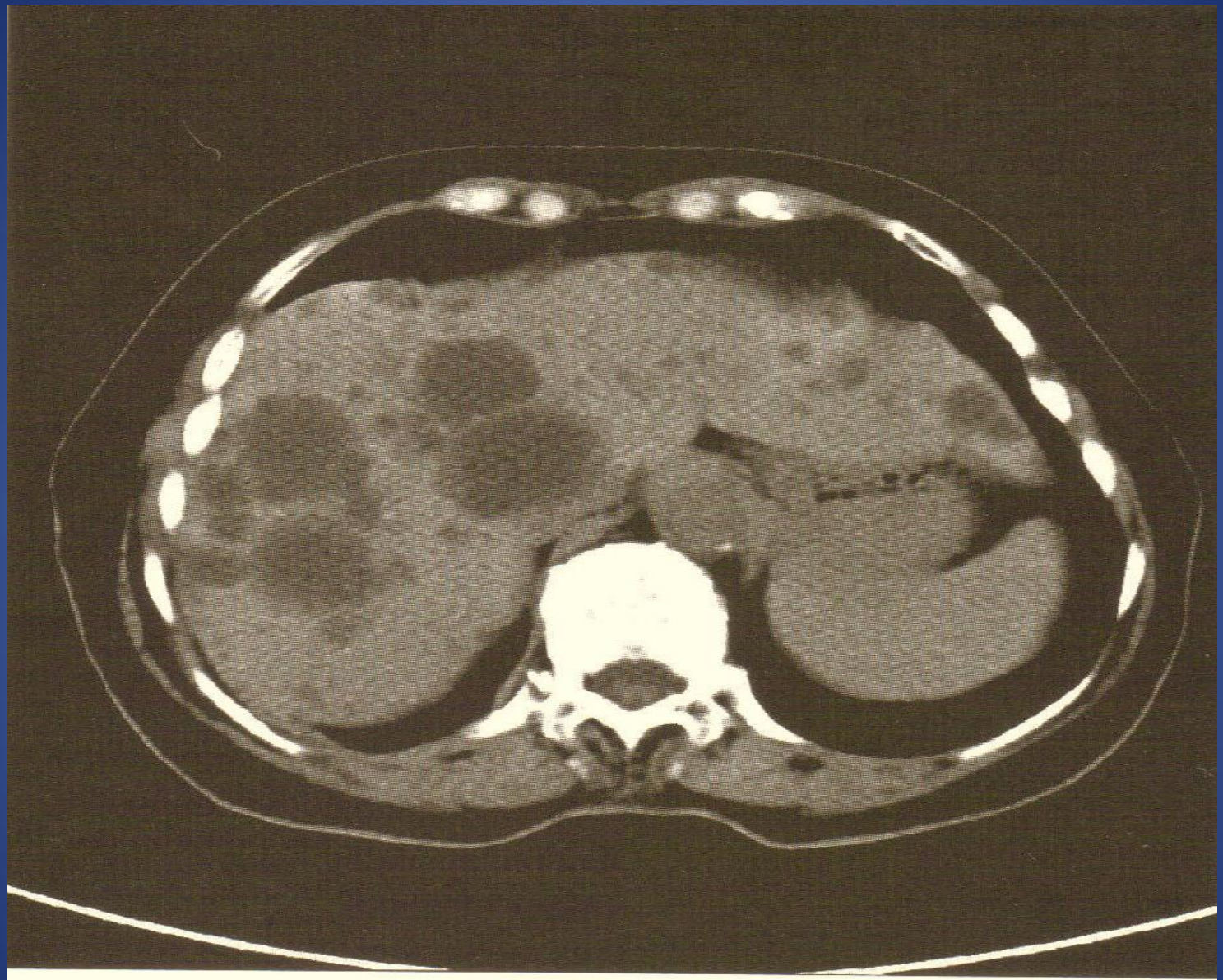


Figure 11.4 Mild type II polycystic liver disease.

Key points

- the vast majority of simple hepatic cysts are small and asymptomatic and should be left alone .
- abdominal pain should only be attributed to large(>8cm) cysts .
- indications for drainage/resection of simple cysts include :
  - resection of pain after aspiration
  - compression of biliary tree , cava or portal system
  - intracystic hemorrhage
  - biliary fistula
  - spontaneous/traumatic rupture
  - infection

Key points

- indications for fenestration in polycystic liver disease :
  - painful abdominal distension
  - early satiety associated with vomiting, malnutrition, loss of muscle bulk , dyspnea , ascites and ankle edema.

Management of choledochal cysts

- **Pathology:**

macroscopic :

- type Ic : cystic
- type If : fusiform
- type II : diverticulum
- type III: choledochocoele (dilatation of intraduodenal bile duct)
- type IV : extra and intrahepatic dilatation
- type V : intrahepatic dilatation

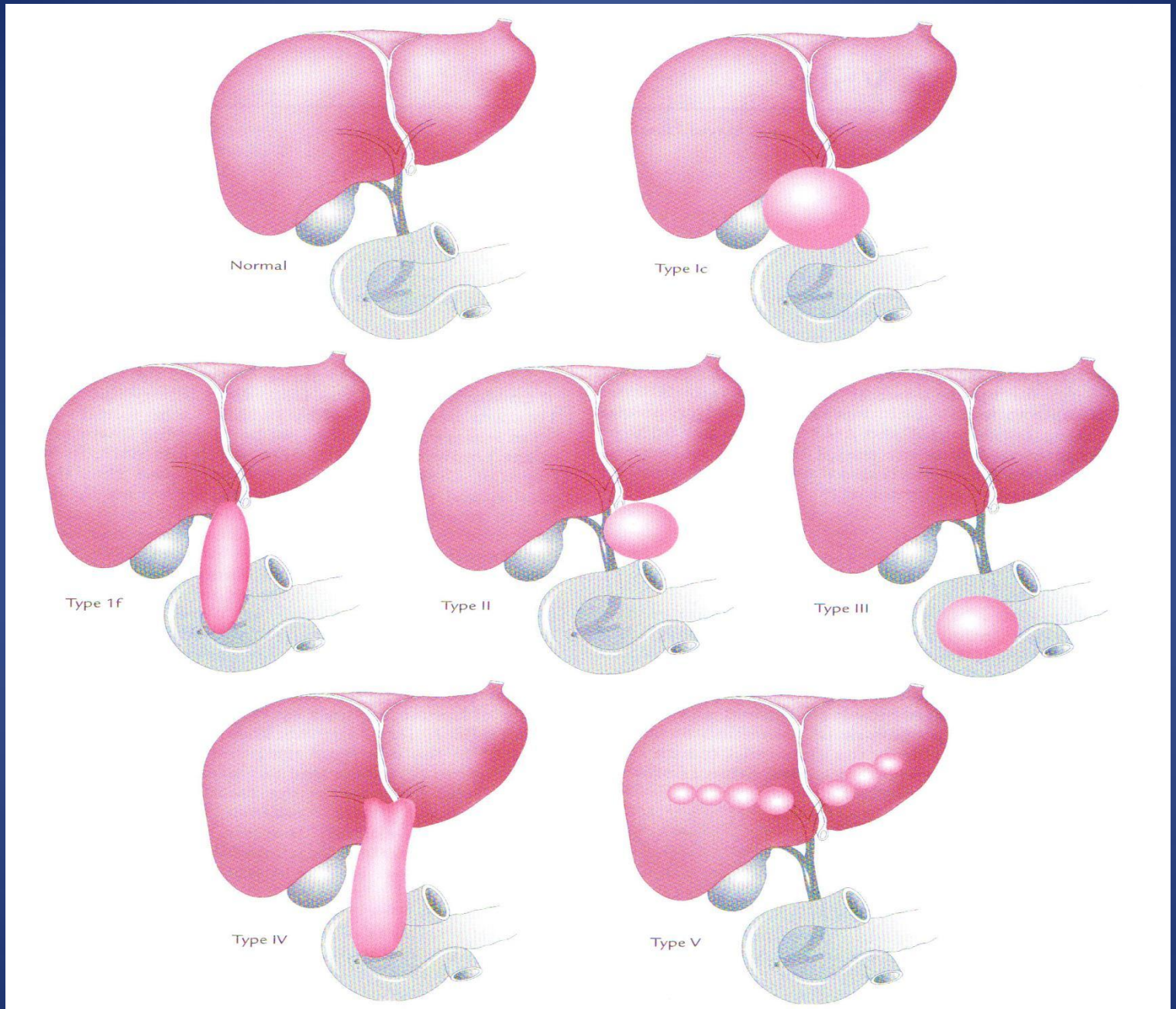


Figure 12.1 Classification of choledochal cysts.

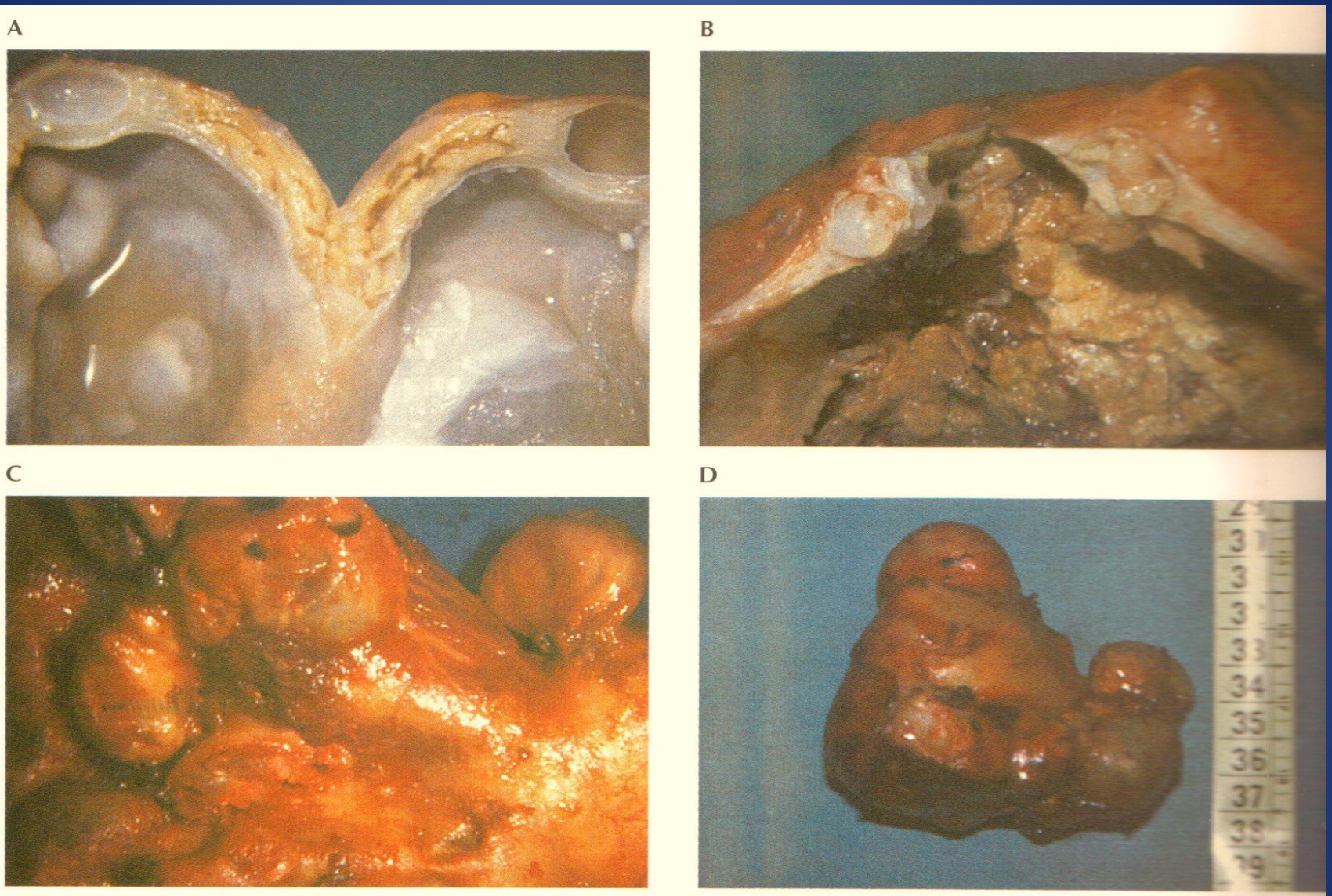


Figure 13.4 Intra- and extrapericyst exogenous vesiculation. Macroscopic appearance in four total pericystectomy specimens. (A,B) Within the pericyst of open cysts viable daughter cysts are observed, separated from the mother cyst cavity; (C,D) clusters of pedunculated pseudodiverticula, non-communicating with the mother cyst cavity, covered with a thin pericyst and containing daughter cysts.

Management of choledochal cysts

- **Pathology:**
- **microscopic:**

the wall of a choledochal cyst is thickened and may vary from 2 to 7,5 mm in thickness . it is composed of fibrous tissue with scanty fibres of smooth muscle and elastic tissue . the cuboidal biliary epithelium may be present , but typically there is extensive ulceration , and only small patches of cells remain

key points

- 60% present before the age of 10 (and may present antenatally on ultrasound).
- Presentation of choledochal cyst :
  - Obstructive jaundice (75%)
  - Abdominal pain (50%)
  - Abdominal mass (30%)
  - (all three together in <50% of cases)
- Complications of untreated choledochal cyst :
  - Intrahepatic calculi and cholangitis
  - Cirrhosis and portal hypertension
  - Hepatic abscess
  - Haemobilia

    Cholangiocarcinoma

key points

- **Diagnosis :**
  - **Ultrasound**
  - **CT scan**
  - **Cholangiography:**
  - **ERCP**
  - **PTC**
  - **MRCP**
  - **Scintigraphy (IDA/HIDA)**

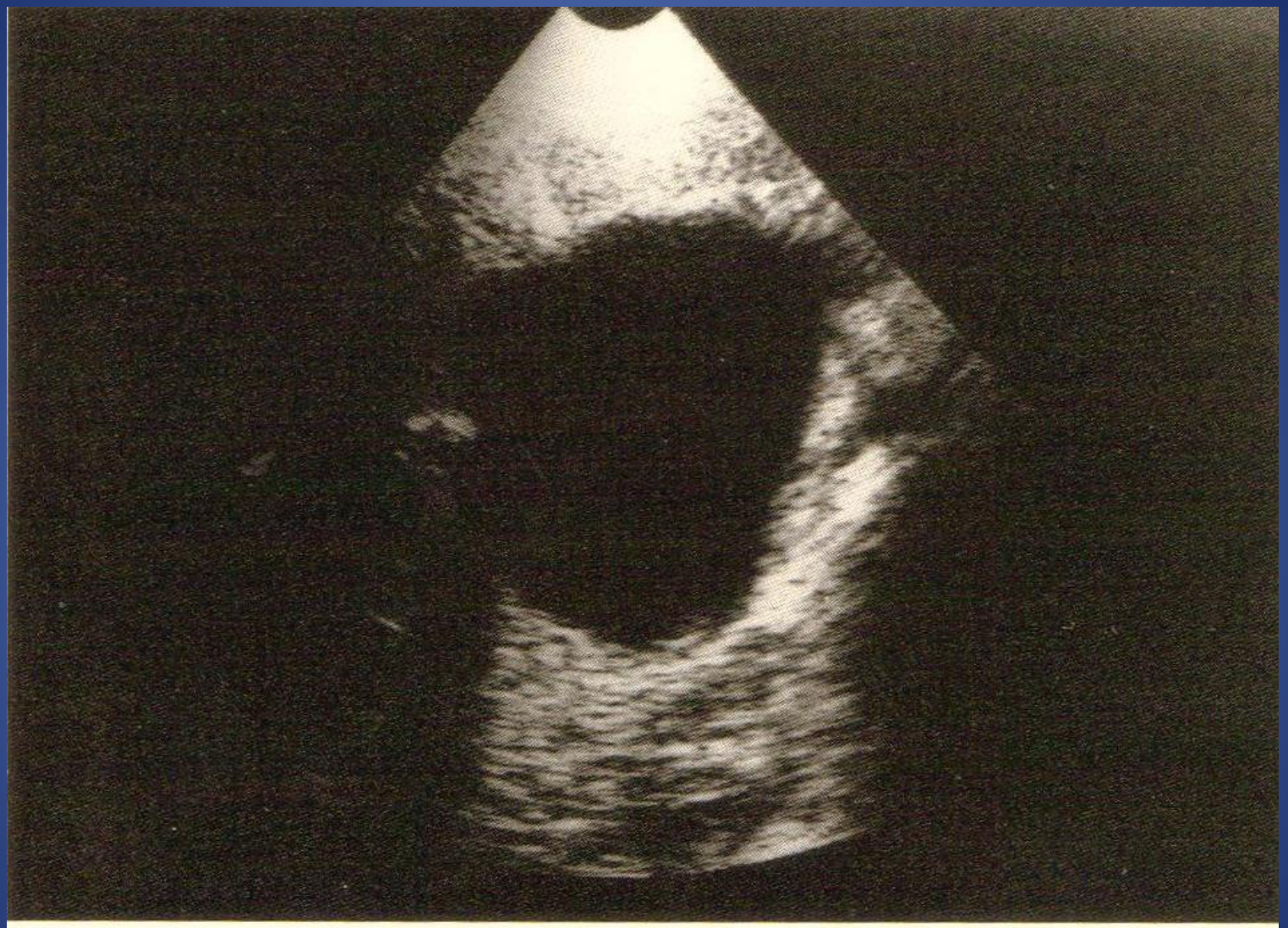


Figure 12.2 Ultrasonography of choledochal cyst.

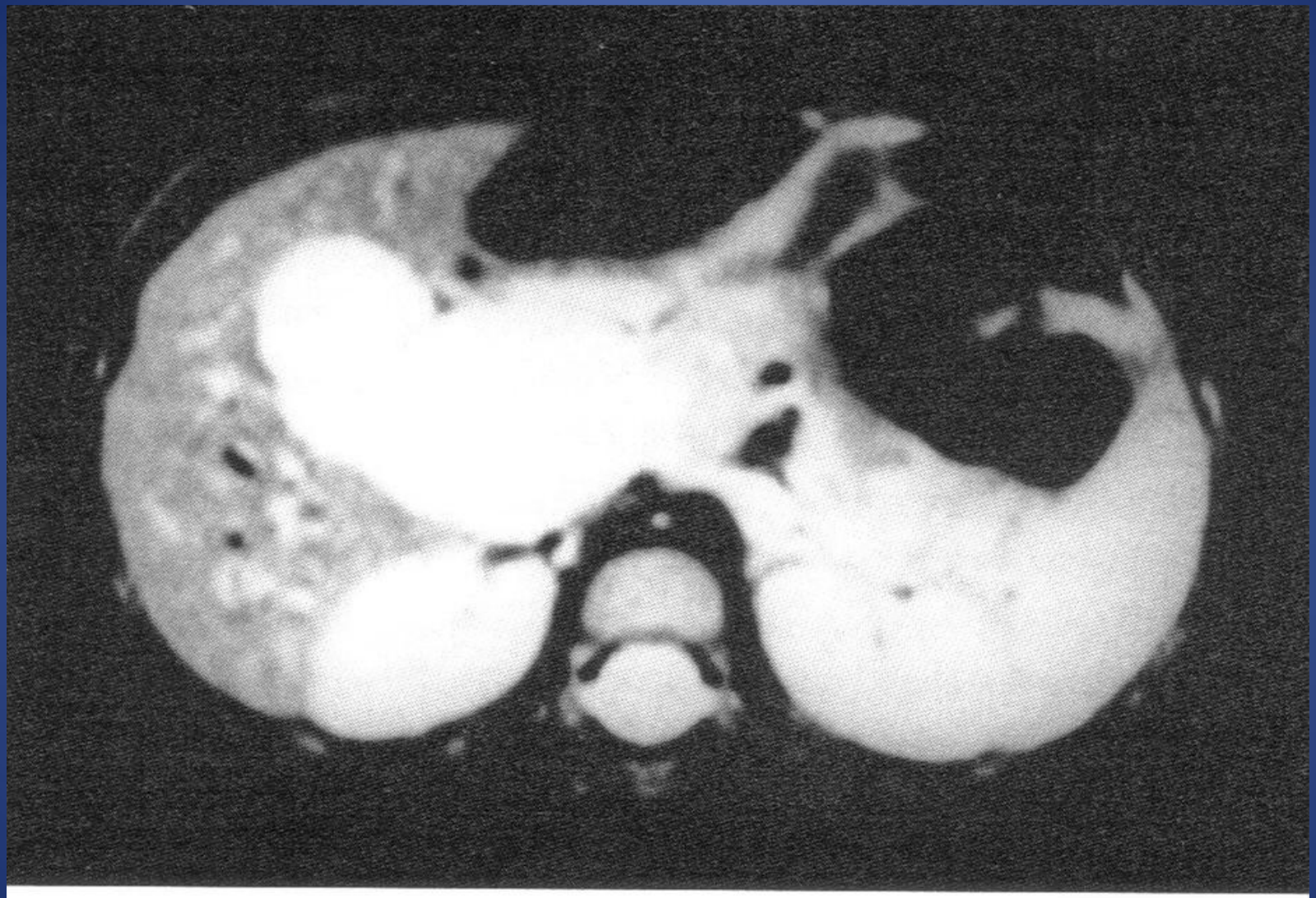


Figure 12.3 MR scan of choledochal cyst.

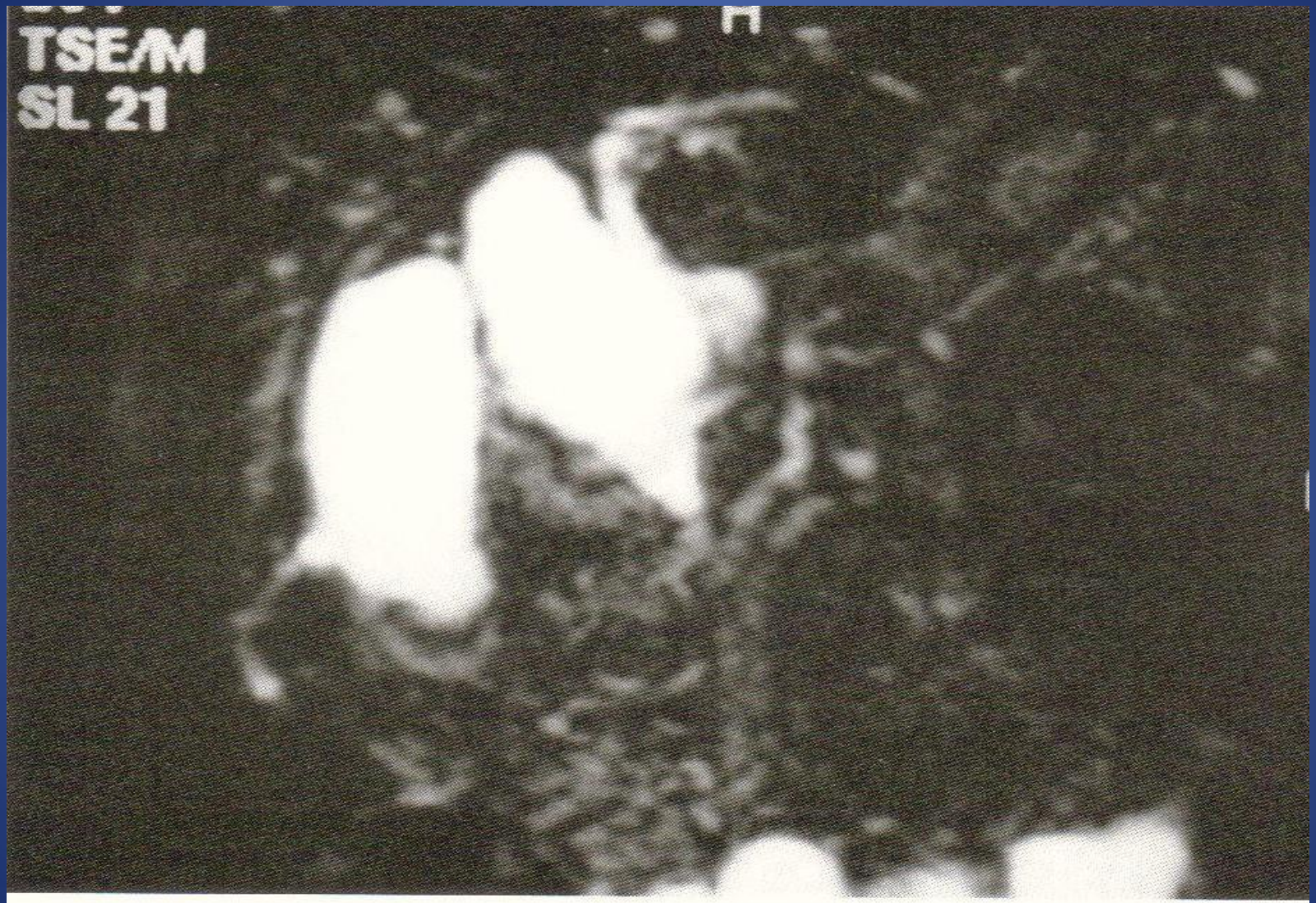


Figure 12.4 MR cholangiogram of choledochal cyst.

key points

- Aims of management :
  - To allow free hepatico-enteric bile flow .
  - To remove all cyst mucosa and therefore associated malignant potential.
  - To exclude any common pancreaticobiliary channel , thereby preventing pancreaticobiliary reflux .
  - To minimize the subsequent risk of cholangitis .
- Presentation :
  - Antenatal ultrasound finding
  - Palpable right upper quadrant mass
  - Childhood obstructive jaundice
  - Cholangitis
  - Cholangiocarcinoma (adult).

key points

- **Objectives of treatment :**
  - **Facilitate free hepato-enteric bile flow .**
  - **Remove all cystic mucosa**
  - **Exclude pancreaticobiliary reflux via common channel.**
  - **Minimize subsequent risk of cholangitis .**
- **Treatment options :**
  - **Excision of cyst with hepaticojejunostomy .**
  - **External drainage .**
  - **Mucosectomy and hepaticojejunostomy.**

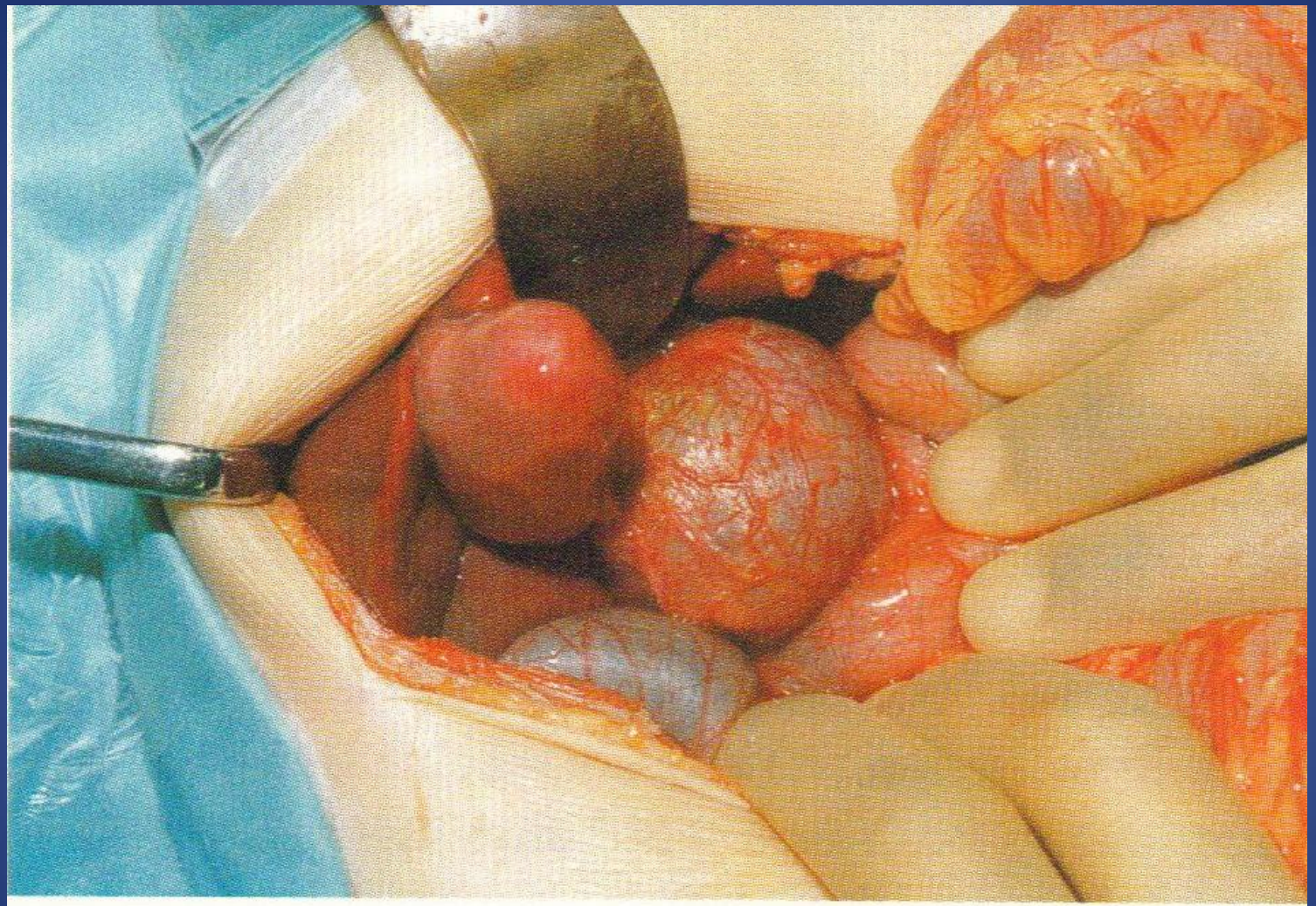


Figure 12.5 Operative field prior to dissection of choledochal cyst.

Hepatic abscesses

The presenting symptoms and physical findings of hepatic abscess are often varied and nonspecific , and the duration of presentation may range from days to months . the most common presenting complaints are fever(80 to 95%), abdominal pain(50 to 95%), anorexia and vomiting (20 to 60%), fatigue , and weight loss .

Hepatic abscesses

- the physical examination is usually unrewarding with abdominal tenderness , hepatomegaly , or a right upper quadrant mass present in only 20 to 60% .
- most patients have leukocytosis , with a significant increase in the percentage of immature leukocytes . liver chemistries vary , with significant elevation of alkaline phosphatase and mild elevation in transaminase levels .

radiologic diagnosis

Ultra sound echo

Ctscan

MRI

cultures from a pyogenic abscess

treatment of pyogenic liver abscess

open surgical drainage of the abscess with appropriate perioperative antibiotic coverage

recently percutaneous drainage using ultrasound or CT scan guidance

Amebic abscess

- amebic liver abscesses do not appear to require predisposing hepatic dysfunction or underlying parenchymal damage other than the necrosis created by trophozote invasion of the liver . most patients with amebic abscess are male and in the 20 to 50 year age range .

Amebic abscess

The presentation of patients with amebic abscess is similar to those with pyogenic abscess , with fever , pain , fatigue , and nausea . surprisingly , diarrhea is infrequent and many patients report no prior history of amebic dysentery .

parasites are not detectable in the stools of the vast majority .

Amebic abscess

physical examination is often unrevealing , with only a few patients demonstrating a right upper quadrant mass of tenderness .

laboratory tests show a leukocytosis without eosinophilia and nonspecific elevation of liver chemistries . ultrasonography is diagnostic in 90 to 95% of cases , and a CT scan may be unnecessary . finally , serologic tests of antibody to E. histolytica are available and detect antibody in patients with invasive intestinal amebiasis as well as those with extraintestinal amebic infections .

treatment

treatment of choice for amebic liver abscess is metronidazole , 750mg every 8 hours for 10 days . this regimen is effective for 85 to 100% of patients .

Patients who do not respond to this treatment , may require surgical drainage or alternative medical therapy (dehydroemetine and chloroquine) .

Thank you