

CBD Stones, Stricture Carcinoma Gall Bladder Cholangiocarcinoma

Common Bile Duct Stones (Choledocholithiasis)

- May be small or large
- Single or multiple
- Found in 6 to 12% of patients with stones in the gallbladder
- Incidence increases with age
- Secondary stones:
 - Formed within the gallbladder and migrate down the cystic duct to the common bile duct
 - Cholesterol stones
- Primary stones : form in the bile ducts
 - Brown pigment type
 - Associated with biliary stasis and infection

Clinical Manifestations

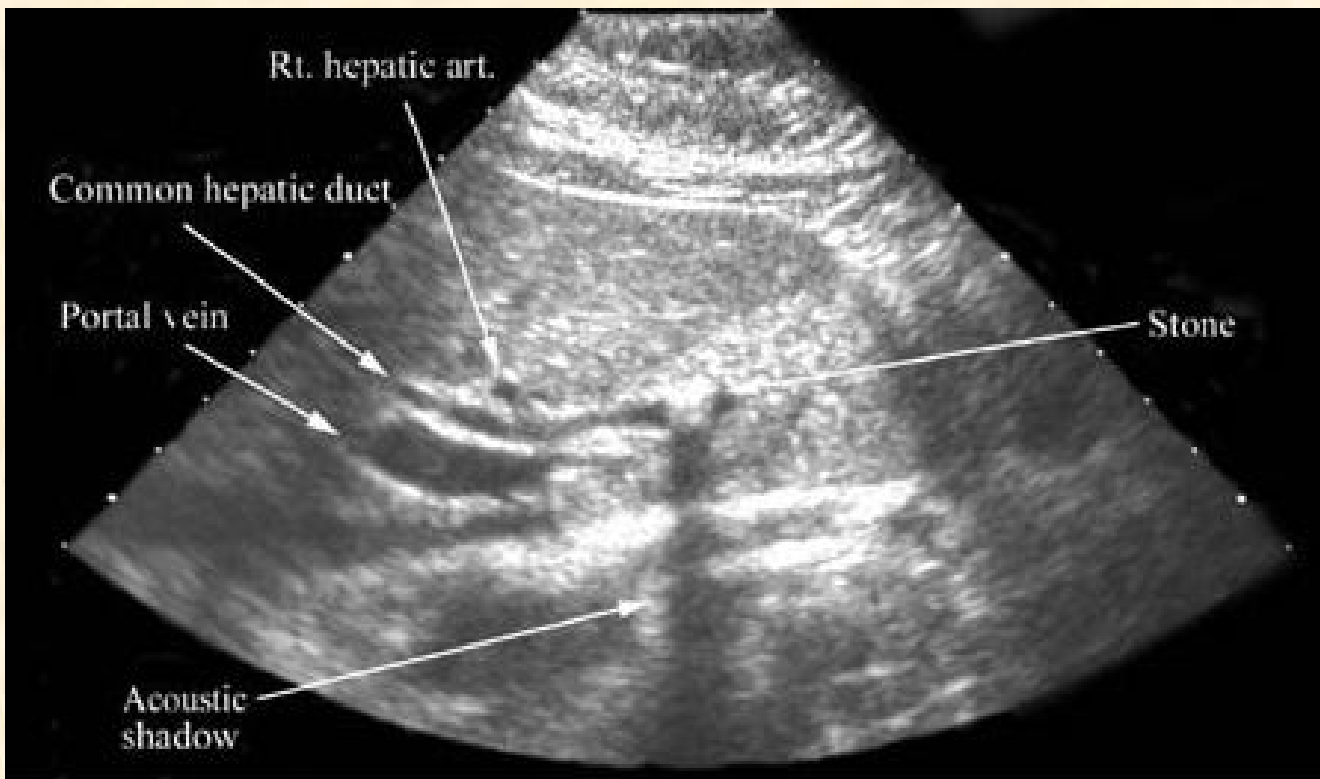
- Silent and often are discovered incidentally
- May cause obstruction, complete or incomplete
- Cholangitis or gallstone pancreatitis
- Pain
- Mild epigastric or right upper quadrant tenderness

Clinical Manifestations

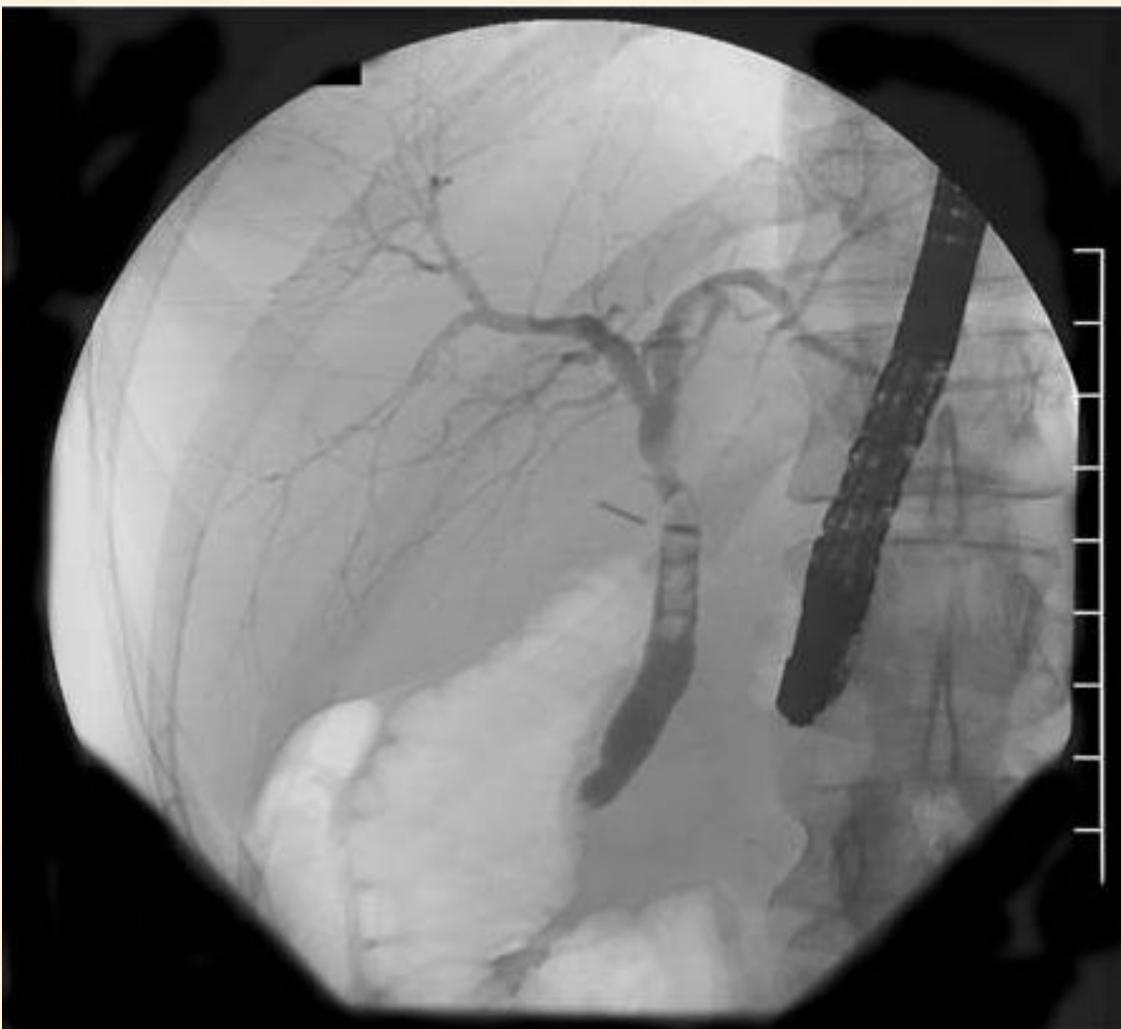
- Mild icterus
- Symptoms may also be intermittent
- Elevation of serum bilirubin, alkaline phosphatase, and transaminases are commonly seen in patients with bile duct stones
- However, in about one third of patients with common bile duct stones, the liver chemistries are normal

Diagnosis

Investigation	Sensitivity	Specificity
US	25-82%	56-100%
EUS	95 %	95-98 %
MRCP	95 %	97 %
CT	87 %	97 %



Ultrasound shows a normal or mildly dilated common bile duct with a stone



ERCP shows multiple stones in the common bile duct

- Dilated CBD (**>8 mm in diameter**) on ultrasonography in a patient with gallstones, jaundice, and biliary pain is highly suggestive
- Magnetic resonance cholangiography (MRC) provides **excellent anatomic detail**
- Endoscopic cholangiography is the **gold standard** for diagnosing common bile duct stones.

Management Options– CBD Stones

- Open cholecystectomy + CBD exploration
- ERCP + Endoscopic Sphincterotomy (followed by cholecystectomy – most frequently used).
- Laparoscopic cholecystectomy + Laparoscopic CBD exploration – in specialized centers.
- Choledochoscopy at laparoscopy or percutaneous cholecystoscopy or cholecystoscopy through T tube.

- ERCP has become a popular technique to clear CBD stones.
- Currently in the laparoscopic era studies have shown that laparoscopic treatment of CBD stones is possible and is potentially as effective as ERCP.
- This is most commonly done by a transcystic approach, though evidence of success in large volume cohorts with a more technically demanding laparoscopic Choledochotomy is emerging .

Common Bile Duct Stricture

Causes

- operative injury MC by lap. cholecystectomy
- fibrosis due to:
 - chronic pancreatitis
 - common bile duct stones
 - acute cholangitis

biliary obstruction:

- cholecystolithiasis (Mirizzi's syndrome)
- sclerosing cholangitis
- Cholangiohepatitis
- strictures of a biliary-enteric anastomosis

Clinical presentation

- Episodes of cholangitis
- Jaundice
- Liver function tests usually show evidence of cholestasis

Diagnosis

- **Ultrasound / CT scan** will show dilated bile ducts proximal to the stricture
- **MRC** : anatomic information about the location and the degree of dilatation
- **Endoscopic cholangiogram** will outline the distal bile duct



ERC showing stricture of the common hepatic duct

Management

Depends on the location and the cause of the stricture

- **Percutaneous or endoscopic dilatation and/or stent** placement give good results in more than one half of patients
- **Surgery with Roux-en-Y choledochojejunostomy or hepaticojejunostomy** is the standard of care with good or excellent results in 80 to 90% of patients
- **Choledochoduodenostomy** may be a choice for strictures in the distal-most part of the common bile duct

Carcinoma Gallbladder

Pathology

- 80 and 90% of the tumors are adenocarcinomas
 - papillary, nodular, and tubular

Squamous cell

Adenosquamous

Oat cell

Cancer of the gallbladder spreads through:

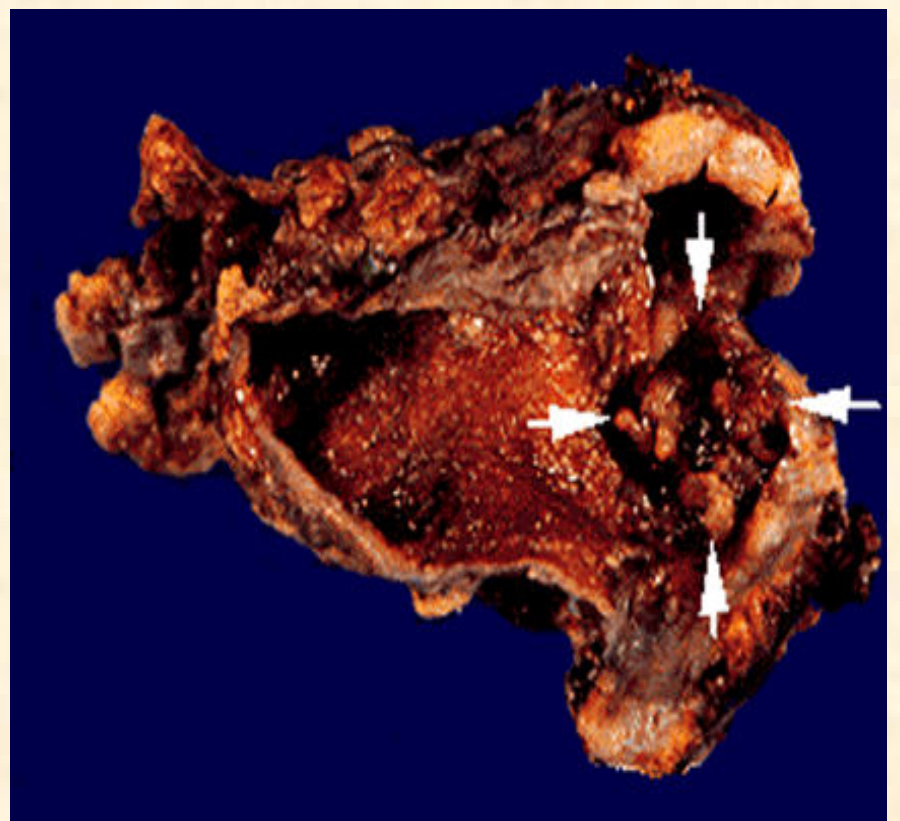
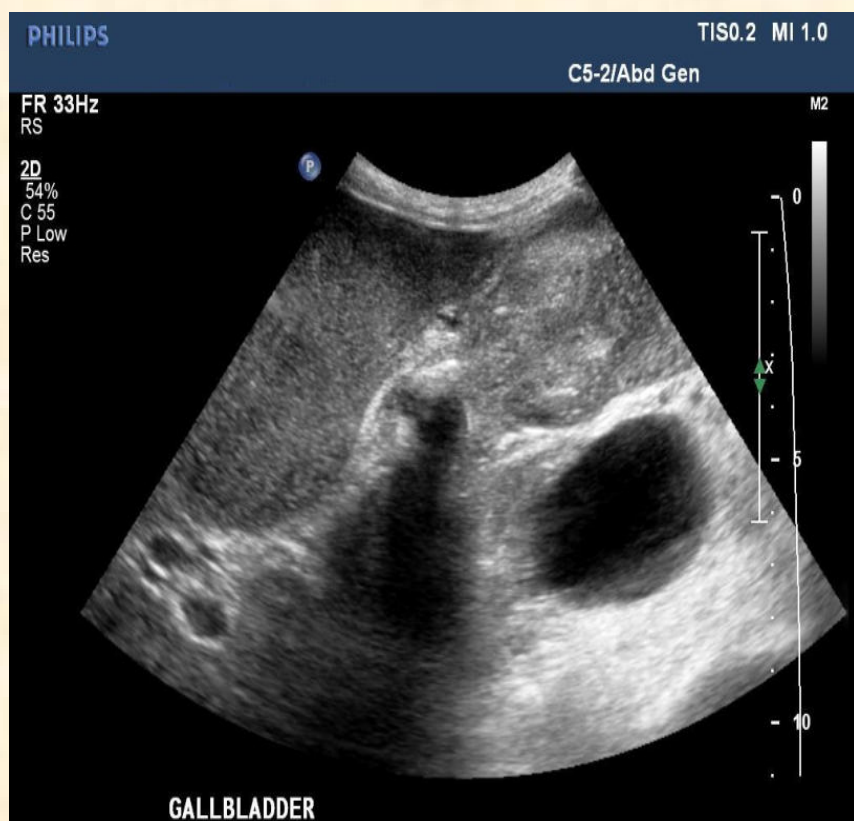
- lymphatics
- venous drainage
- direct invasion into the liver parenchyma

Clinical Manifestation

- Abdominal discomfort
- Right upper quadrant pain
- Nausea & vomiting
- Jaundice
- Weight loss
- Anorexia
- Ascites
- Abdominal mass

Diagnosis

- FNAC /Biopsy (guided)
- Ultrasonography
- CT scan
- Percutaneous transhepatic or endoscopic cholangiogram
(in jaundiced pt)
- MRCP



CT scan of a patient with gallbladder cancer

Staging: (AJCC 7th Edition)

Table 2 American Joint Committee on Cancer (AJCC) TNM Staging for Gallbladder Cancer (7th ed., 2010)		Distant Metastasis (M) M0 No distant metastasis M1 Distant metastasis	
Primary Tumor (T) TX Primary tumor cannot be assessed T0 No evidence of primary tumor Tis Carcinoma in <i>situ</i> T1 Tumor invades lamina propria or muscular layer T1a Tumor invades lamina propria T1b Tumor invades muscle layer T2 Tumor invades perimuscular connective tissue; no extension beyond serosa or into liver T3 Tumor perforates the serosa (visceral peritoneum) and/or directly invades the liver and/or one other adjacent organ or structure, such as the stomach, duodenum, colon, pancreas, omentum, or extrahepatic bile ducts T4 Tumor invades main portal vein or hepatic artery or invades two or more extrahepatic organs or structures		Anatomic Stage/Prognostic Groups Stage 0 Tis N0 M0 Stage I T1 N0 M0 Stage II T2 N0 M0 Stage IIIA T3 N0 M0 Stage IIIB T1-3 N1 M0 Stage IVA T4 N0-1 M0 Stage IVB Any T N2 M0 Any T Any N M1	
Regional Lymph Nodes (N) NX Regional lymph nodes cannot be assessed N0 No regional lymph node metastasis N1 Metastases to nodes along the cystic duct, common bile duct, hepatic artery, and/or portal vein N2 Metastases to periaortic, pericaval, superior mesenteric artery, and/or celiac artery lymph nodes		Histologic Grade (G) GX Grade cannot be assessed G1 Well differentiated G2 Moderately differentiated G3 Poorly differentiated G4 Undifferentiated	

Treatment

- **Surgery :**
 - Radical Cholecystectomy, Liver resection with regional lymphadenectomy
- **Radiotherapy**
 - Adjuvant (pT1b onwards)
- **Chemotherapy**
 - Concurrent
 - Adjuvant
 - Palliative

Prognosis

- 5-year survival rate of all patients <less than 5%
- Median survival: 6 months
- T1 disease treated with cholecystectomy have an excellent prognosis (85 - 100% 5-year survival rate)
- 5-year survival rate for T2 lesions treated with an extended cholecystectomy and lymphadenectomy compared with simple cholecystectomy is over 70% versus 25 to 40%, respectively
- Patients with advanced but resectable gallbladder cancer are reported to have 5-year survival rates of 20 to 50%
- Median survival for patients with distant metastasis at the time of presentation is only 1 to 3 months

**Cholangiocarci
noma**

- Rare tumor arising from the biliary epithelium
- May occur anywhere along the biliary tree
- About 2/3rd are located at the hepatic duct bifurcation
- Male to female ratio is 1.3:1
- Average age of presentation is between 50 to 70 years

Etiology

Ulcerative Colitis	Thorotrast Exposure
Sclerosing Cholangitis	Typhoid Carrier
Choledochal Cysts	Adult Polycystic Kidney Disease
Hepatolithiasis	
Liver Flukes	
Papillomatosis of Bile Ducts	

Distribution

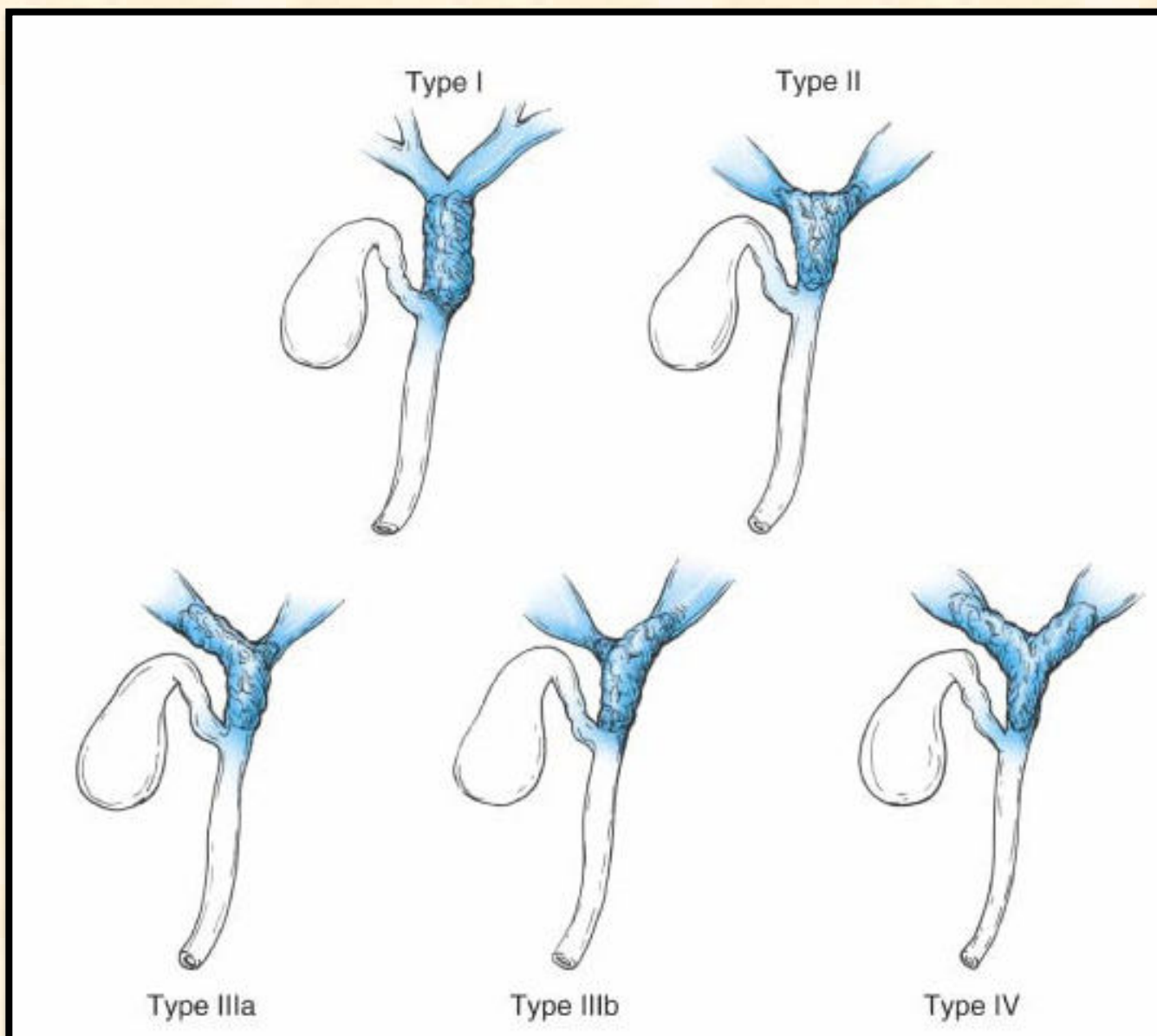
- Right or left hepatic duct = 10%
- Bifurcation = 20%
- Proximal CBD = 30%
- Distal CBD = 30%

Pathology

- Over 95% of bile duct cancers are adenocarcinomas.
- Anatomically they are divided into distal, proximal, or perihilar tumors.
- Intrahepatic cholangiocarcinomas are treated like hepatocellular carcinoma, with hepatectomy when possible.
- About two-thirds of cholangiocarcinomas are located in the perihilar location
- Perihilar cholangiocarcinomas, also referred to as Klatskin tumors, are further classified based on anatomic location by the Bismuth-Corlette classification

Bismuth-Corlette classification

- **Type I:** confined to the common hepatic duct
- **Type II:** involve the bifurcation without involvement of the secondary intrahepatic ducts
- **Type IIIA & IIIB:** extend into the right and left secondary intrahepatic ducts, respectively
- **Type IV:** involve both the right and left secondary intrahepatic ducts



Clinical Presentation

- Painless jaundice
- Pruritus
- Mild right upper quadrant pain
- Anorexia
- Fatigue
- Weight loss
- Cholangitis
- Elevated ALK PO4 and GGT levels

Intra and Extra-hepatic Cholangiocarcinoma



Diagnosis

- Ultrasound abdomen
- CT scan
- Cholangiography : biliary anatomy is defined
- PTC

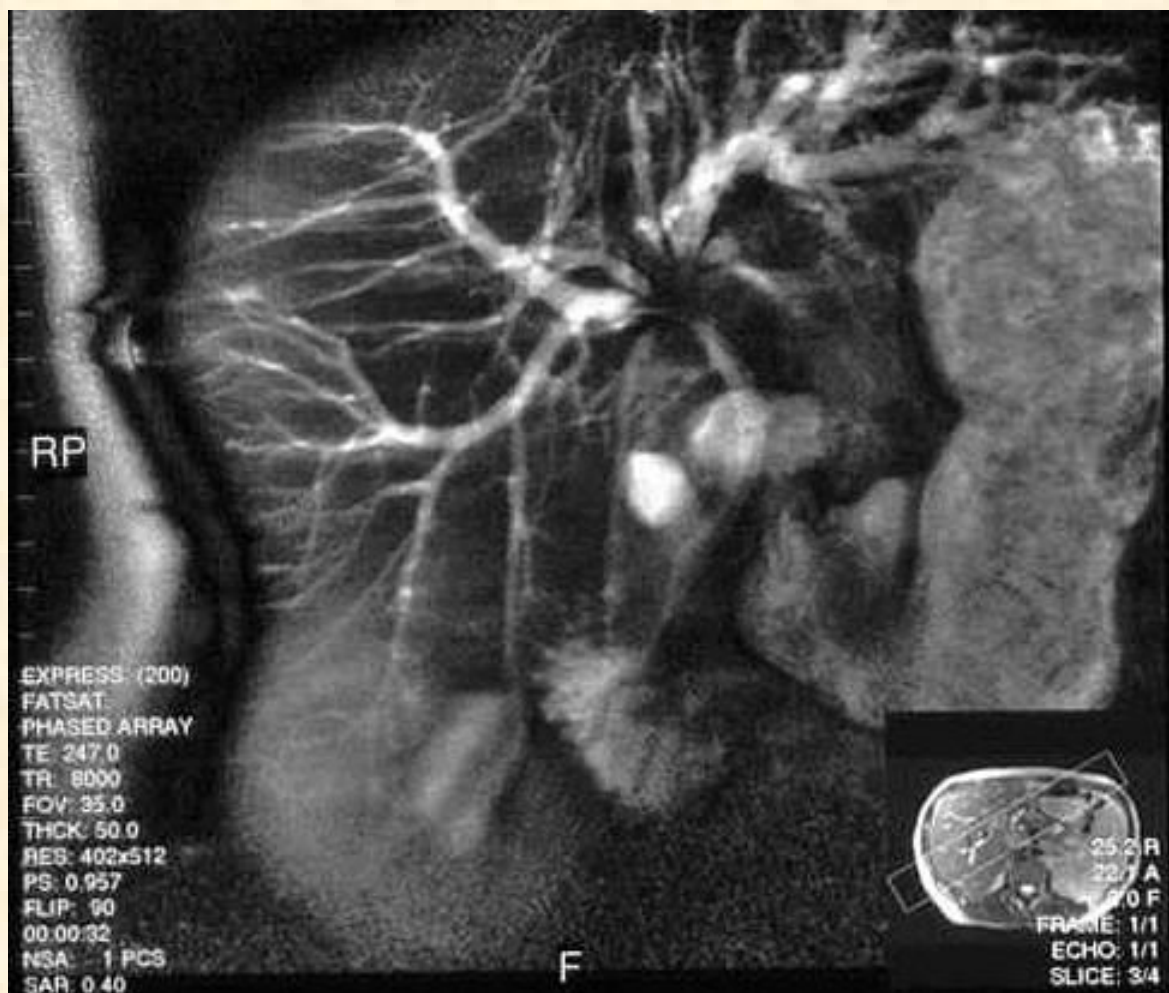
Defines the proximal extent of the tumor, which is the most important factor in determining resectability.

- ERC: evaluation of distal bile duct tumors
- Celiac angiography: evaluation of vascular involvement
- MRI: has the potential of evaluating the biliary anatomy, lymph nodes, vascular involvement, tumor growth

ERCP: Distal CBD Cancer



MRCP of Extra-hepatic Cholangiocarcinoma at the Bifurcation



Klatskin tumor

Treatment

- Surgical excision is the only potentially curative treatment
- Location and local extension of the tumor dictates the extent of the resection

Bismuth-Corlette type I or II with no signs of vascular involvement:

- local tumor excision with portal lymphadenectomy, cholecystectomy, common bile duct excision, and bilateral Roux-en-Y hepaticojejunostomies

Bismuth-Corlette type IIIa or IIIb:

- right or left hepatic lobectomy respectively should also be performed

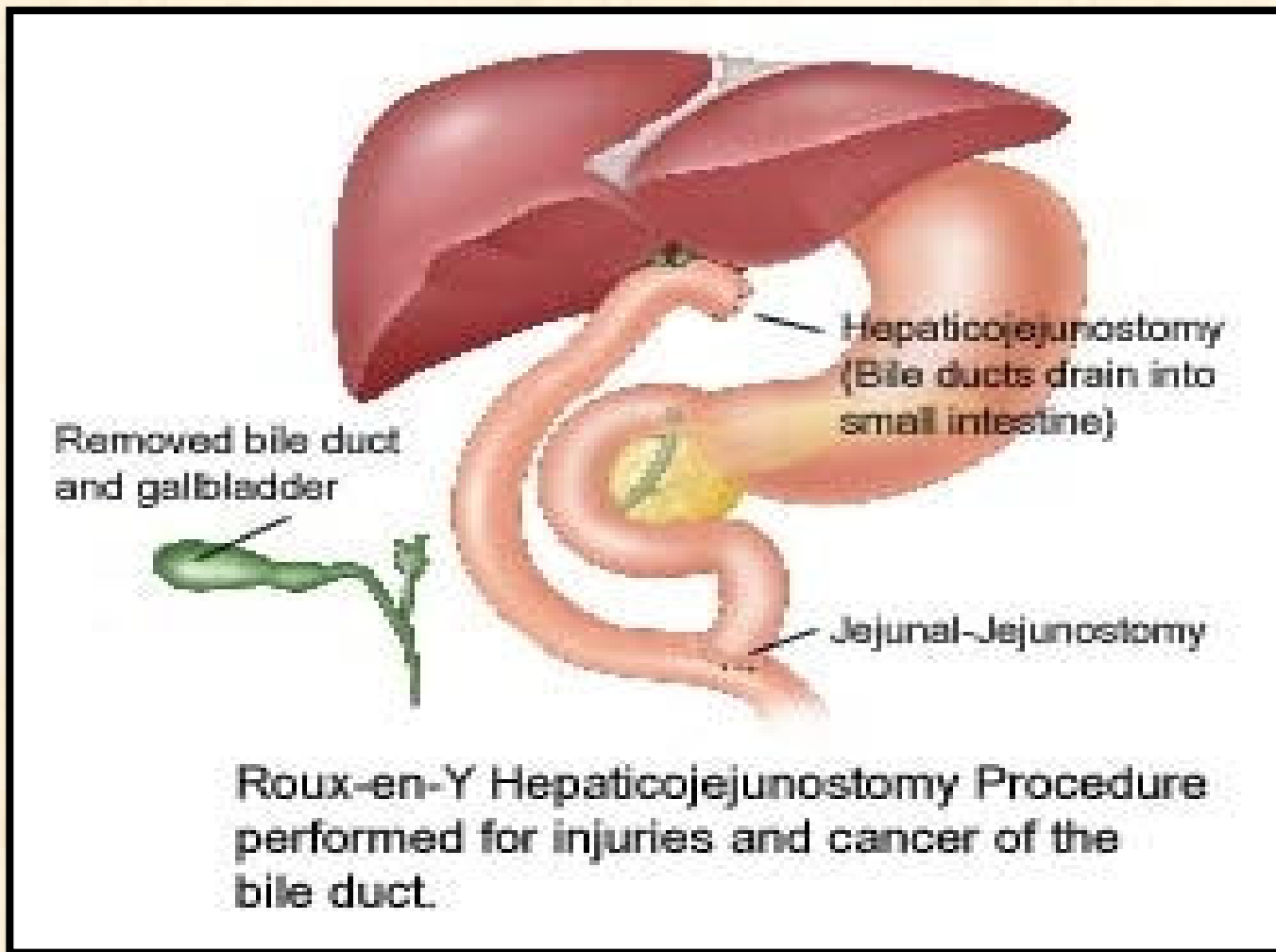
Distal bile duct tumors:

- pylorus-preserving pancreatoduodenectomy (Whipple procedure)

Unresectable distal bile duct cancer:

- Roux-en-Y hepaticojejunostomy, cholecystectomy and gastrojejunostomy

Roux-en-Y Hepaticojejunostomy



Cholangiocarcinoma

Extra-hepatic Disease: Positive Margins or Unresectable

- Stent and Chemo/Radiation Therapy
- 5-FU based or Gemcitabine or Clinical Trial
- Survival with surgery and chemo/radiation is 24 to 36 m
- With chemo/radiation alone survival is 12 to 18 m.

Cholangiocarcinoma

Extra-hepatic Disease: Unstentable

- Bypass if possible
- If not use proximal decompression and feeding jejunostomy
- Chemotherapy/Radiation
Therapy/Brachy therapy as tolerated or clinical trial.

Prognosis

- Best Result are with distal CBD tumors completely excised.
Cure = 40%
- Incomplete resection plus radiation gives a median survival of 30 m.
- Stenting plus chemo/radiation gives a median survival of 17 to 27m
- Those stented alone live only a few months