Surgical Jaundice

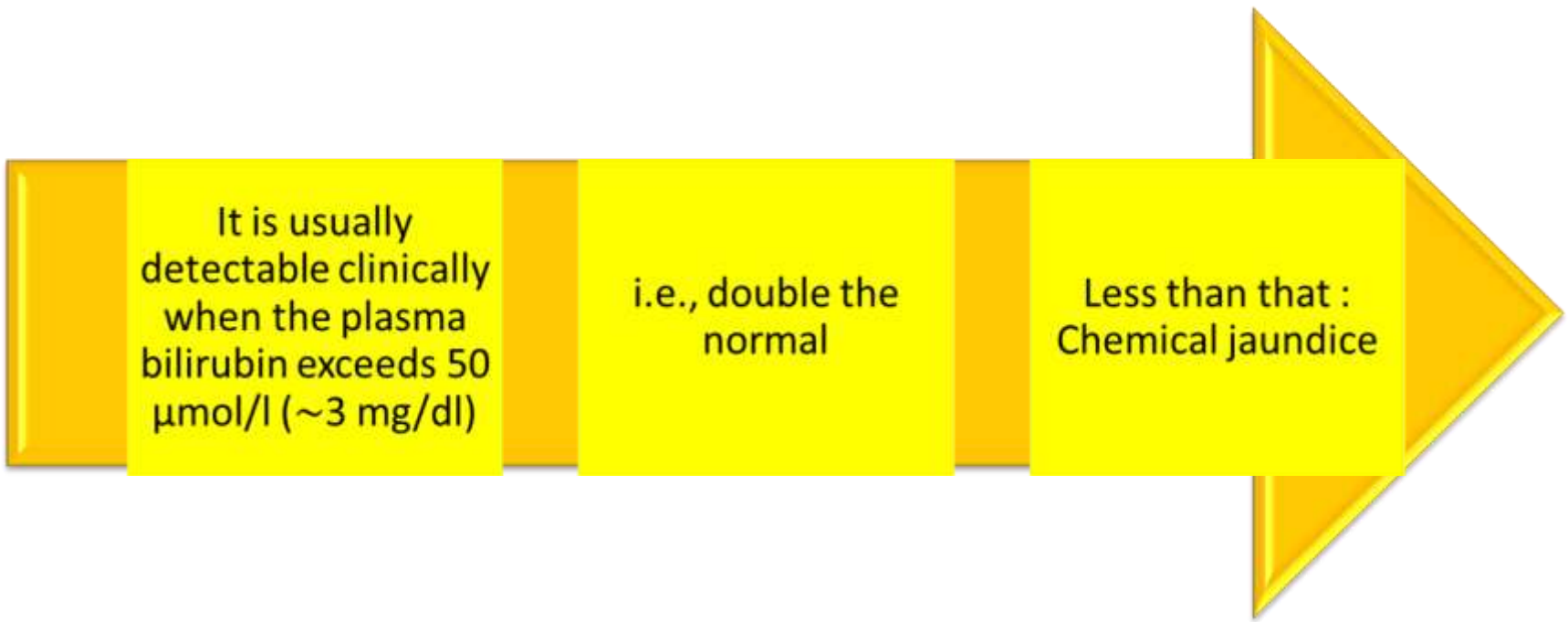
Dr. Mohammad Nebih Nofal

Associate Professor of General Surgery

Definition

Jaundice

From the French *jaune* (yellow),	Synonymous: Icterus from Greek ikteros	The yellow-orange discoloration of the skin, conjunctivae, and mucous membranes that results from elevated concentrations of bilirubin in plasma


It is usually detectable clinically when the plasma bilirubin exceeds 50 µmol/l (~3 mg/dl)
i.e., double the normal
Less than that : Chemical jaundice

- **The presence of scleral icterus indicates a serum bilirubin of at least 51 mol/L (3 mg/dL).**
- **If the examiner suspects scleral icterus, a second place to examine is underneath the tongue.**

- If the process is long-standing: oxidation of bilirubin to biliverdin will give green color.

Post Hepatic or Surgical Jaundice Obstruction of The Biliary Duct System

Intrinsic (Biliary Diseases)

- Cholelithiasis
- Choledocholithiasis
- Benign and malignant biliary strictures
- Cholangiocarcinoma
- Cholangitis
- Papillary disorders
- Complication of surgery

Extrinsic (Pancreatic Disorders)

- Pancreatitis
- Pseudocysts
- Malignancies
- Complication of surgery

HISTORY

- A complete medical history is perhaps the single most important part of the evaluation of the patient with unexplained jaundice.

- It is nearly always possible to differentiate between conjugated and unconjugated hyperbilirubinemia on clinical grounds alone:

conjugated hyperbilirubinemia

- Is associated with dark urine and pale feces

unconjugated hyperbilirubinemia

- Not associated

Conjugated Jaundice History Tips

History

- RUQ Pain (“Painful Jaundice”)
- abdominal discomfort

Suggests

- Obstructive jaundice (malignancy or CBD stones)
- Hepatitis

History	Suggests
• Pain + Fever+leukocytosis(lab)	• Cholecystitis • Pancreatitis
• Pain +Fever+ jaundice	• Cholangitis

History

- Weight loss
- Pruritus

Suggests

- Malignancy
- obstructive jaundice (malignancy or gallstone)

History

- Medications

Suggests

- Common medications associated with cholestatic jaundice include:

Chlorpromazine, ciprofloxacin, phenytoin, erythromycin, cloxacillin,

amoxicillin-clavulanic acid, cimetidine, estrogen, enalapril and captopril

History	Suggests
• Transfusions/injections	• Hepatitis
• Contacts	• Contact with jaundiced patient suggests hepatitis
• Alcohol intake	• Liver cirrhosis

PHYSICAL EXAMINATION

General Assessment

Nutritional status

Muscle wasting

Pancreatic cancer

Cirrhosis

- **Stigmata of chronic liver disease**

Choledocholithiasis

Epidemiology and Risk Factor

- **Age** — Age is a major risk factor for the gallstones. Gallstones are exceedingly rare in children except in the presence of hemolytic states; in addition, less than 5 percent of all cholecystectomies are performed in children. Age 40 appears to represent the cutoff between relatively low and high rates of cholecystectomies.

Epidemiology and Risk Factor

- **Sex** — As noted above, a higher prevalence of gallstones has been observed in women in all age groups . The difference between women and men is particularly striking in young adults. One study found a female-to-male ratio of 2.9 between the ages of 30 to 39 years; the ratio narrowed to 1.6 between the ages of 40 to 49 years and 1.2 between the ages of 50 to 59 years . The higher rates in young women is almost certainly a result of pregnancy and sex steroids.

Epidemiology and Risk Factor

- **Pregnancy** — Pregnancy is a major risk factor for the development of cholesterol gallstones. The risk is related to both the frequency and number of pregnancies. In one report, for example, the prevalence of gallstones increased from 1.3 percent in nulliparous females to 12.2 percent in multiparous females. Another study recruited 272 women in the first trimester of pregnancy . The incidence of new biliary sludge and gallstones was 31 and 2 percent, respectively.

Epidemiology and Risk Factor

- Oral contraceptives and estrogen replacement therapy
- Family history and genetics
- Obesity
- Rapid weight loss
- Diabetes mellitus
- Serum lipids
- Cirrhosis

Epidemiology and Risk Factor

- Drugs (ceftriaxone)
- Crohn disease
- Hemolysis
- Recurrent Biliary Infection .
- Large bile ducts and periampullary diverticular are at elevated risk for the formation of primary bile duct stones

Protective Factors

- ✓ Statins
- ✓ Ascorbic acid
- ✓ Coffee
- ✓ Vegetables
- ✓ Poly- and monounsaturated fats.

Clinical Manifestations

- Most patients with choledocholithiasis are symptomatic, although occasional patients are asymptomatic.
- The most common cause of painless obstructive jaundice is CBD stones.

Physical examination

- Patients with choledocholithiasis often have right upper quadrant or epigastric tenderness and may also appear jaundiced.
- Courvoisier's sign (a palpable gallbladder on physical examination) may be seen when gallbladder dilation develops because of an obstruction of the common bile duct.
- Courvoisier’s Law .

Laboratory Investigation

- Serum ALT and AST concentrations are typically elevated early during biliary obstruction.
- Later, liver tests are typically elevated in a cholestatic pattern, with increases in serum bilirubin, alkaline phosphatase, and (GGT) exceeding the elevations in serum ALT and AST.

Laboratory Investigation

- An elevation in serum bilirubin had a sensitivity of 69 percent and a specificity of 88 percent for diagnosing a common bile duct stone. For elevations in serum alkaline phosphatase, the values were 57 and 86 percent, respectively.
- Normal liver tests play a greater role in excluding choledocholithiasis than elevated liver tests play in diagnosing stones.

Complicated Choledocholithiasis

- The two major complications associated with choledocholithiasis are **pancreatitis** and **acute cholangitis**.
- Patients with acute cholangitis often present with Charcot's triad (fever, right upper quadrant pain, and jaundice) and leukocytosis.
- In severe cases, bacteremia and sepsis may lead to hypotension and altered mental status (Reynolds' pentad)

Complicated Choledocholithiasis

- Long-standing biliary obstruction from various causes, including common bile duct stones, may result in liver disease that may progress to cirrhosis, a phenomenon referred to as **secondary biliary cirrhosis**.

Diagnosis

- Patients are stratified according to laboratory tests and transabdominal ultrasound to stratify a patient as high risk, intermediate risk, or low risk for having choledocholithiasis.
- Subsequent management varies depending on the patient's level of risk weather low , Intermediate and high .

Risk Assessment
The American Society For Gastrointestinal Endoscopy (ASGE)

- Very strong" predictors
- **The presence of a common bile duct stone on transabdominal ultrasound**
- **Clinical acute cholangitis**
- **A serum bilirubin greater than 4 mg/dL .**

- "Strong" predictors
- A dilated common bile duct on ultrasound (more than 6 mm in a patient with a gallbladder in situ)
- A serum bilirubin of 1.8 to 4 mg/dL

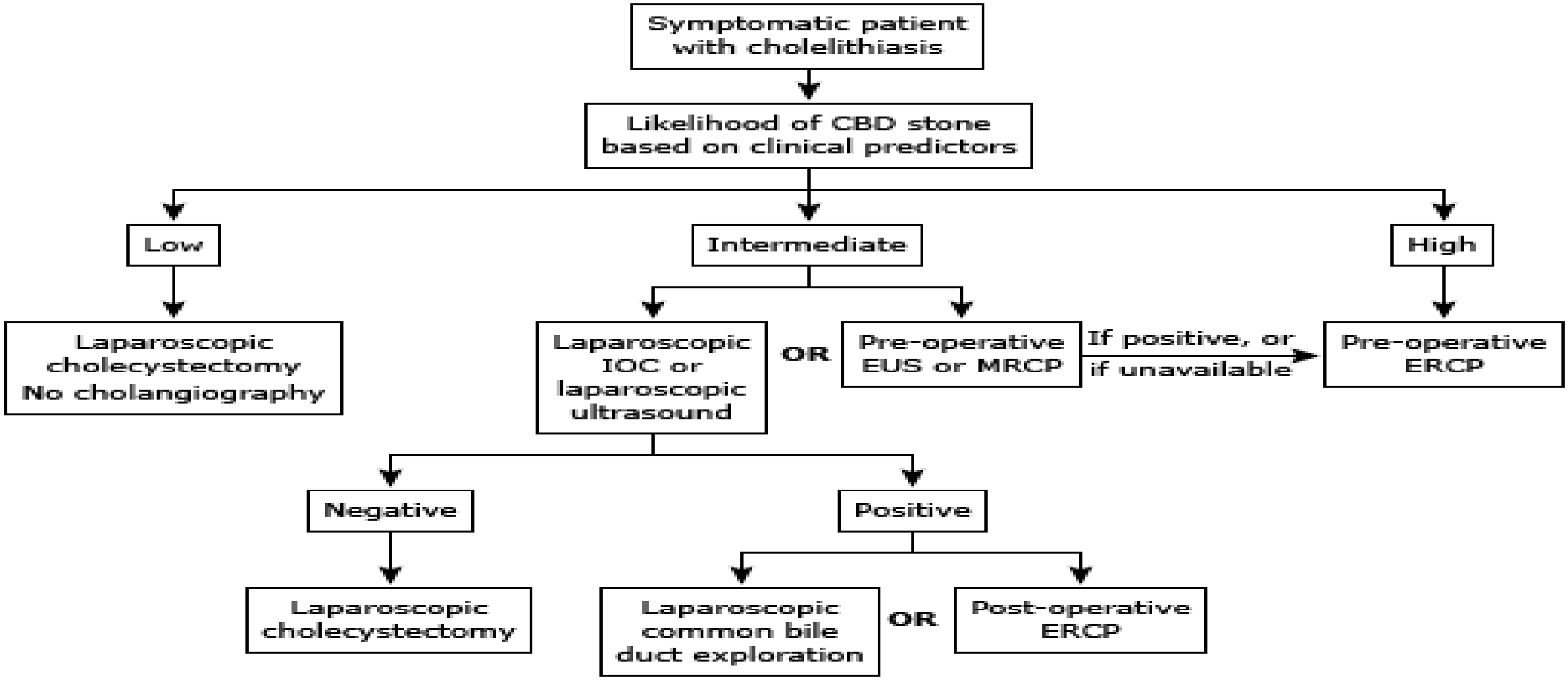
- Moderate" predictors
- Abnormal liver biochemical test other than bilirubin
- Age older than 55 years
- Clinical gallstone pancreatitis

- High risk
- At least one very strong predictor **and/or**
- Both strong predictors
- Intermediate risk
- One strong predictor **and/or**
- At least one moderate predictor
- Low risk
- No predictors

Diagnosis

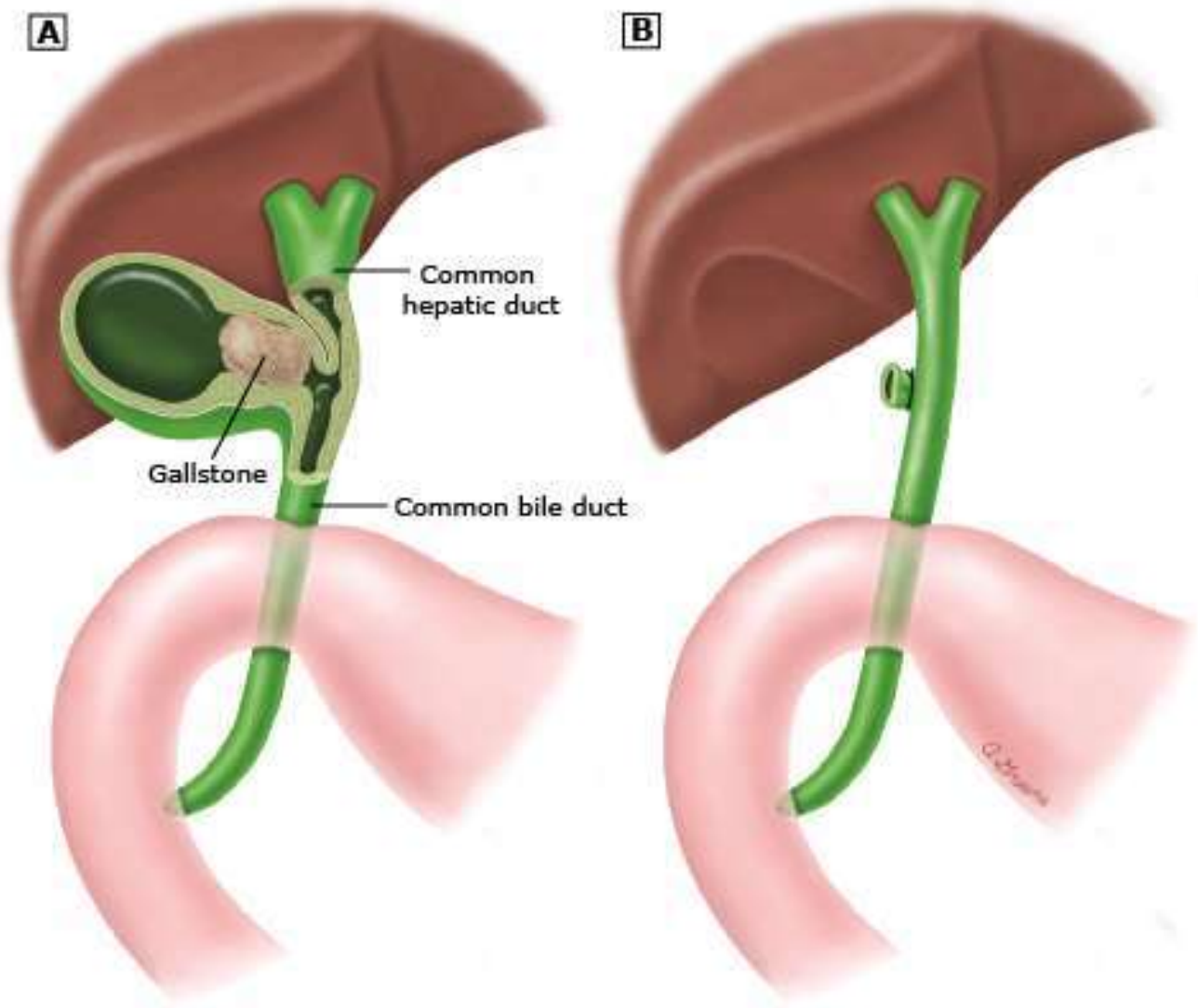
- MRCP is preferred for many patients because it is noninvasive. However, the sensitivity of MRCP may be lower for small stones (<6 mml]), and biliary sludge can be detected by EUS, but generally not by MRCP.
- As a result, EUS should be considered in patients in whom the suspicion for choledocholithiasis remains moderate to high despite a negative MRCP.

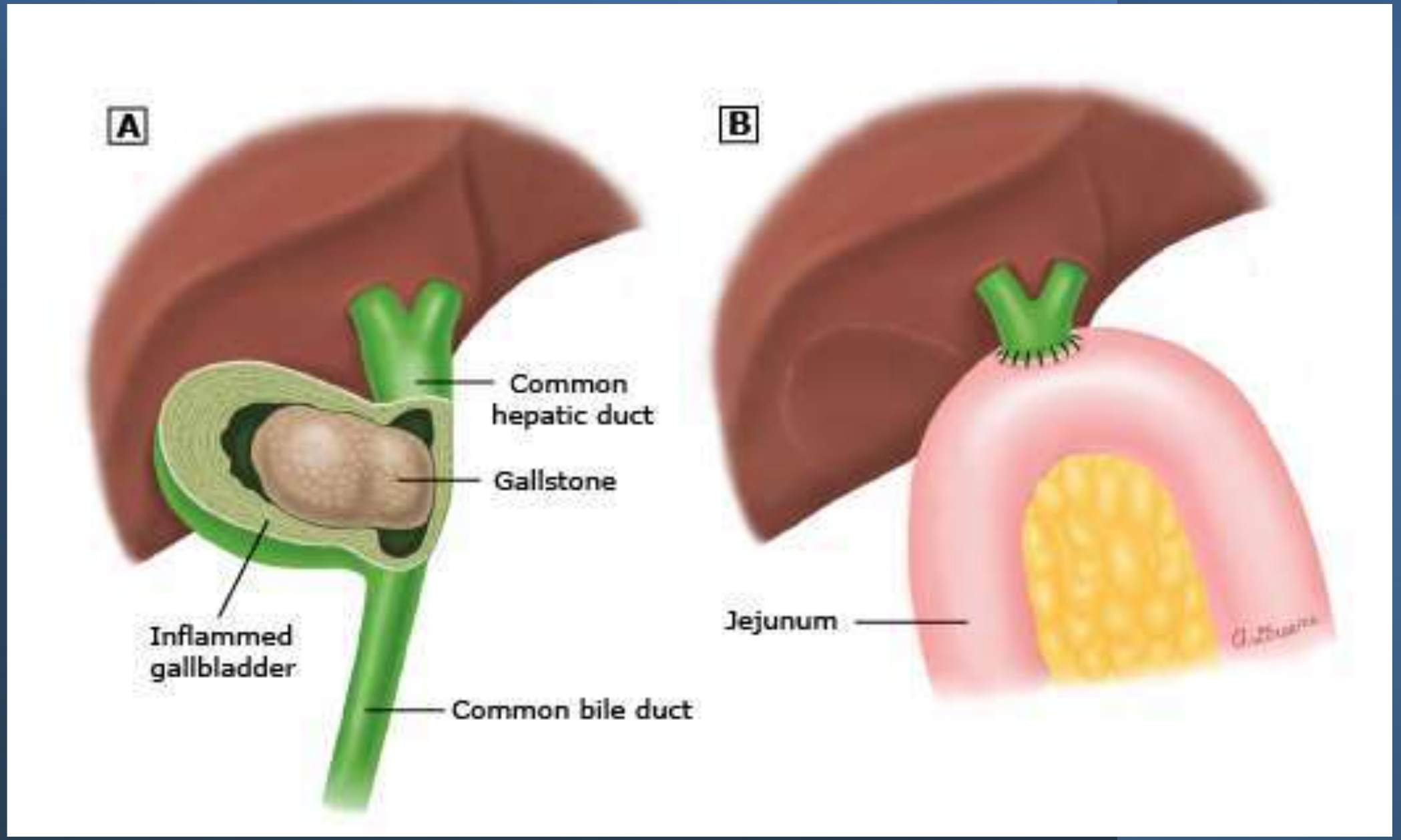
Management Of Choledocholithiasis



Mirizzi Syndrome

- Defined as common hepatic duct obstruction caused by an extrinsic compression from an impacted stone in the cystic duct or Hartmann's pouch of the gallbladder.
- Mirizzi syndrome has been associated with gallbladder cancer . It has been hypothesized that recurrent inflammation and biliary stasis may predispose to both conditions.


A
B
Common hepatic duct
Gallstone
Common bile duct

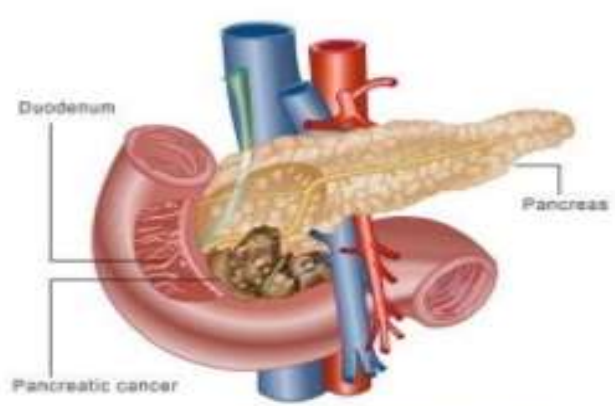

A
Common hepatic duct
Gallstone
Inflammed gallbladder
Common bile duct
B
Jejunum

malignancy causes of jaundice

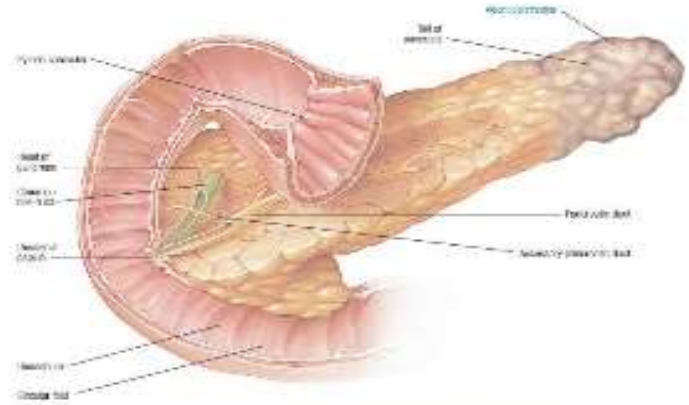
in malignant causes of jaundice, the jaundice is painless and progressive.

Malignancy causing complete blockage of bile can result in significant itching due to accumulation of bile pigments within the skin, and malnutrition as bile is part of the digestive system

Pancreatic adenocarcinoma

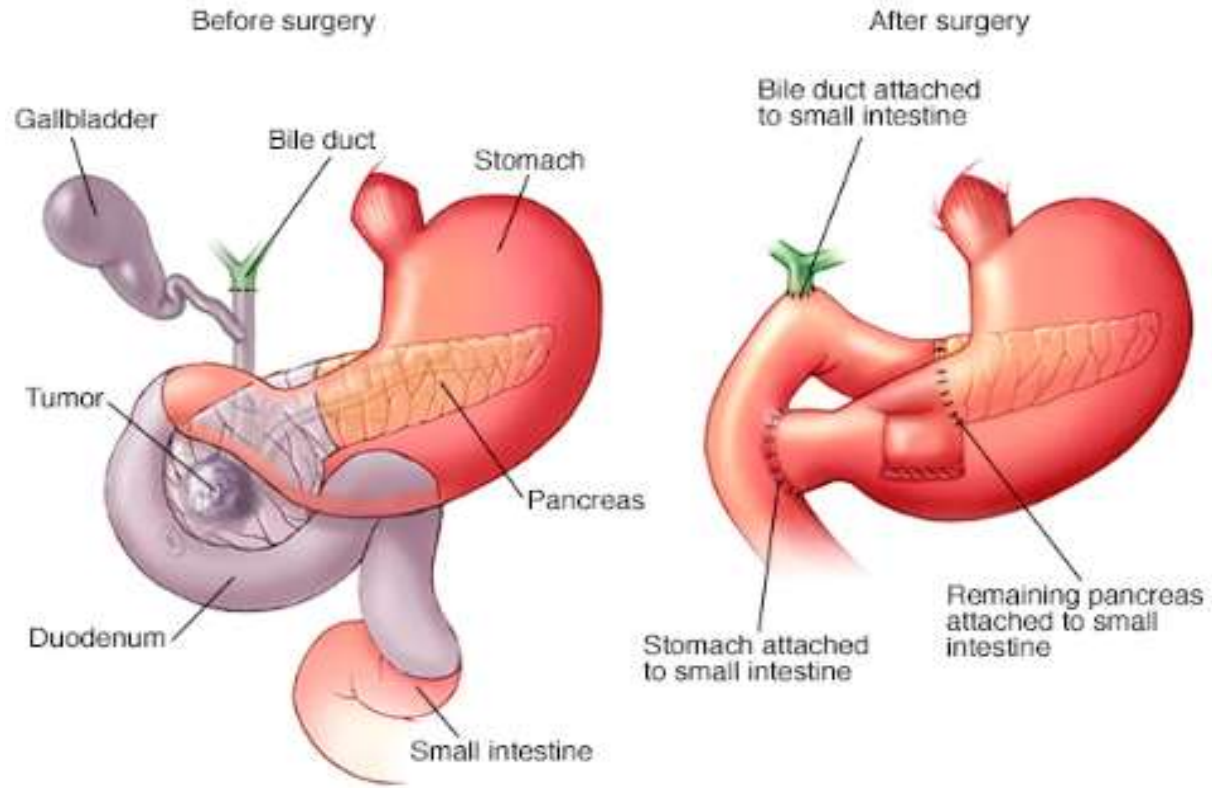


Head of Pancreas Tumour


Tail of Pancreas Tumour

About **two-thirds** of pancreatic adenocarcinomas arise within the head or uncinate process of the pancreas; 15% are in the body, and 10% in the tail

- For potentially resectable pancreatic head cancer, the standard operation is **pancreaticoduodenectomy (the Whipple procedure)**



Cholangiocarcinoma
“bile duct cancer

is an adenocarcinoma of the bile ducts; it forms in the biliary epithelial cells
About two thirds are located at **the hepatic duct bifurcation**.(klatskin tumor)
Painless jaundice is the most common presentation.

Pruritus, mild right upper quadrant abdominal pain, anorexia, fatigue, and weight loss also may be present.
Diagnosis : CT and MRI

Risk factors

primary sclerosing cholangitis, choledochal cysts, ulcerative colitis, hepatolithiasis, biliary-enteric anastomosis, and biliary tract infections.

Other risk factors: dietary nitrosamines, thorotrast, and exposure to dioxin.

Surgical resection offers the only chance for cure; however, many patients have advanced disease at the time of diagnosis.

Most patients with unresectable disease die within 1 year of diagnosis.

Periampullary tumor

is a cancer that forms around The ampulla of Vater (a small opening that enters into the duodenum)
the most common presenting symptom is intermittent obstructive jaundice (80%), caused by compression of the distal bile duct by the tumor.(pancreatic ,duedenalor biliary)

Additional symptoms may include diarrhea due to fat malabsorption (steatorrhea), mild weight loss, and fatigue

ERCP is the single most useful endoscopic study for diagnosing ampullary carcinoma because it permits identification of the tumor, biopsy, and decompression, if needed.
Whipple procedure (pancreaticoduodenectomy)

Bile duct strictures

- Benign causes :
  - **operative injury**, most commonly by laparoscopic cholecystectomy
  - fibrosis due to chronic pancreatitis, common bile duct stones, acute cholangitis, biliary obstruction due to cholecystolithiasis (Mirizzi's syndrome), sclerosing cholangitis
- Malignant causes :
  - cholangiocarcinoma, adenocarcinoma of the pancreas and ampullary tumors

most commonly present with episodes of cholangitis
An ultrasound or a CT scan will show dilated bile ducts proximal to the stricture, as well as provide some information about the level of the stenosis.

Treatment depends on the location and the cause of the stricture.

- Roux-en-Y choledochojejunostomy or hepaticojejunostomy is the standard of care with good or excellent results in 80% to 90% of patients
- Percutaneous or endoscopic dilatation and/or stent placement

Choledocal cyst

The classic triad in adults is abdominal pain ,jaundice,and palpable RUQ abdominal mass (10%)
All cysts should be resected and bile flow should be restored.

Have A Nice Day