

Jaundice and Hepatobiliary Diseases

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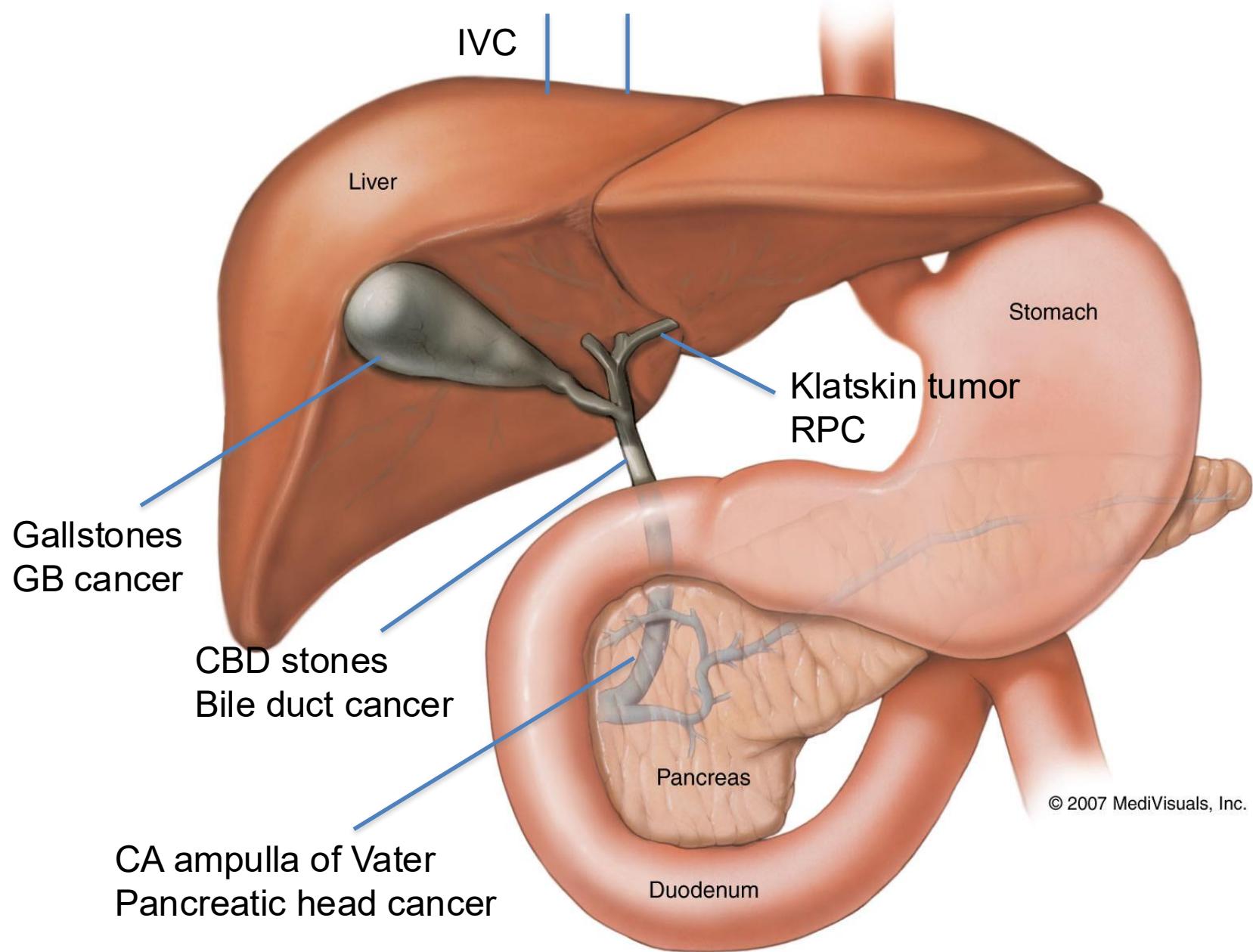
Jaundice

- Yellow discoloration of the skin due to high serum bilirubin level

Causes

- Pre-hepatic
 - Budd Chiari, suprahepatic IVC obstruction, cardiac causes
- Hepatic
 - Hepatitis (viral, drug, herbal medicine, autoimmune)
- Post-hepatic
 - CBD obstruction

Ductal Anatomy of Liver and Pancreas



Gallstones

- Gallstones are hard, pebble-like deposits that form inside the gallbladder. Gallstones may be as small as a grain of sand or as large as a golf ball.



Epidemiology of gallstones

- 12% men
- 24% women
- 10-30% symptomatic

Types of gallstones

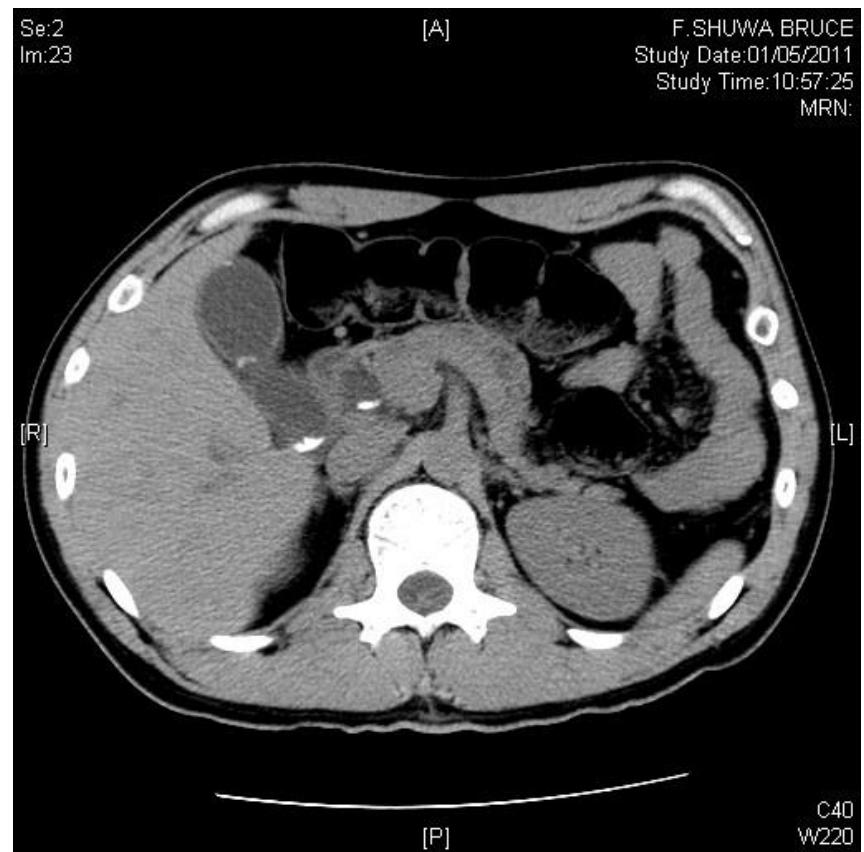
- Cholesterol stones
 - Most common type of stones
- Pigment stones
 - Made from too much bilirubin in bile

Risk factors for gallstones

- Females, middle age, obesity
- Failure to empty bile from gallbladder
 - Pregnancy
 - Previous gastrectomy
- Liver cirrhosis
- Haemolytic anaemia, haemolytic disorders
- Diabetes mellitus
- Bone marrow transplant/solid organ transplant
- On long-term parenteral nutrition

Investigations

- Liver ultrasonography
- CT scan



Management

- Laparoscopic cholecystectomy
 - 4 ports
 - Single port
- Percutaneous transhepatic cholecystostomy

Complications

- Acute cholangitis
- Acute pancreatitis
- Empyema of gallbladder
- Gallbladder gangrene
- Mucocele of gallbladder
- Choledochoduodenal fistula

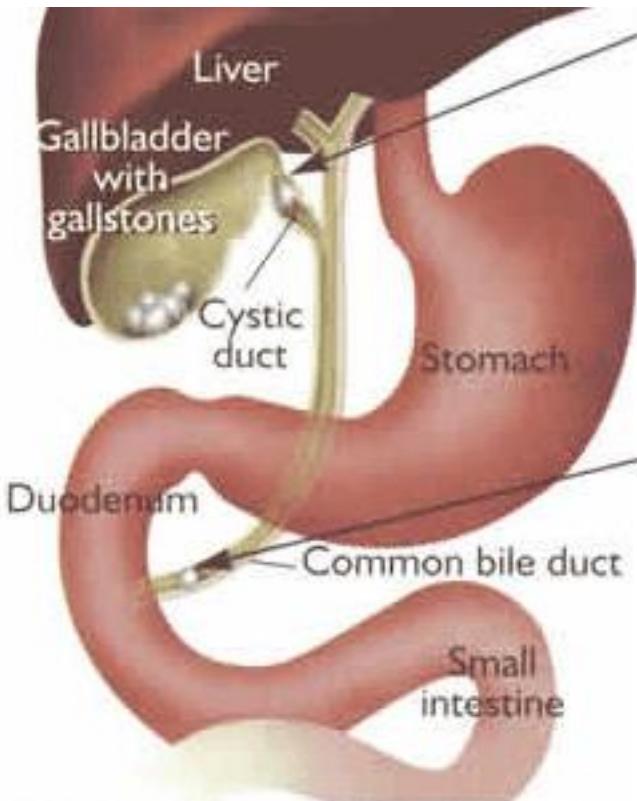


Illustration courtesy of RACS(Royal Australasian College of Surgeons) and Mi-tec Medical Publishing

Acute cholangitis

- Infection of the biliary tract due to bile flow obstruction
- Charcot's triad
 - Fever
 - Jaundice
 - Abdominal pain

Investigations

- Blood tests
 - Complete blood profile
 - Renal and liver function tests
 - Coagulation profile, type and screen
- Microbiology
 - Blood culture and sensitivity

Imagings

- Liver ultrasonography
 - Bile duct diameter
 - Presence of stones
 - Liver abscess
- CT scan

Treatment

- Endoscopy
 - Endoscopic retrograde cholangiopancreatography (ERCP)
- Surgical
 - Exploration of common bile duct
- Radiological
 - Percutaneous transhepatic biliary drainage

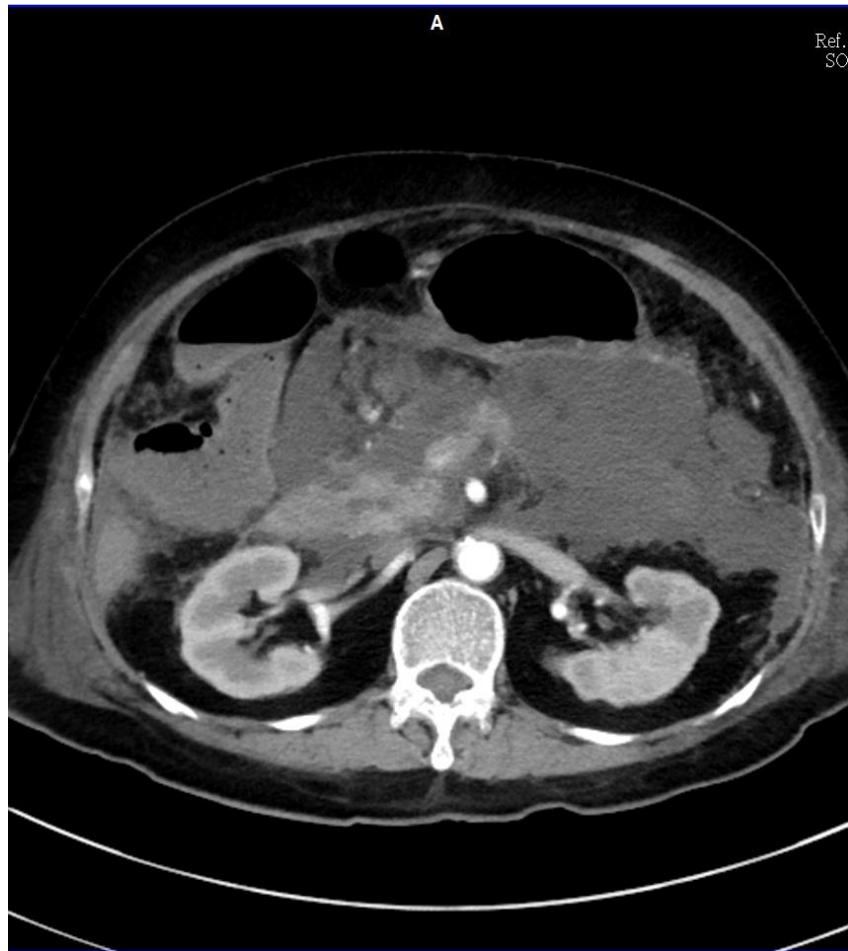
Acute pancreatitis

- Characterised by sudden onset epigastric pain with radiation to the back
- Usually associated with nausea and vomiting
- High fever not a common symptom but when it occurs, it often implies complications have already arisen
- The pain is so severe than it could mimic signs of generalised peritonitis due to perforated viscus

Complications of acute pancreatitis

- Pseudocyst
- Infected pseudocyst
- Necrotising pancreatitis
- Haemorrhagic pancreatitis
- Pleural effusion
- Ascites
- Splenic vein thrombosis

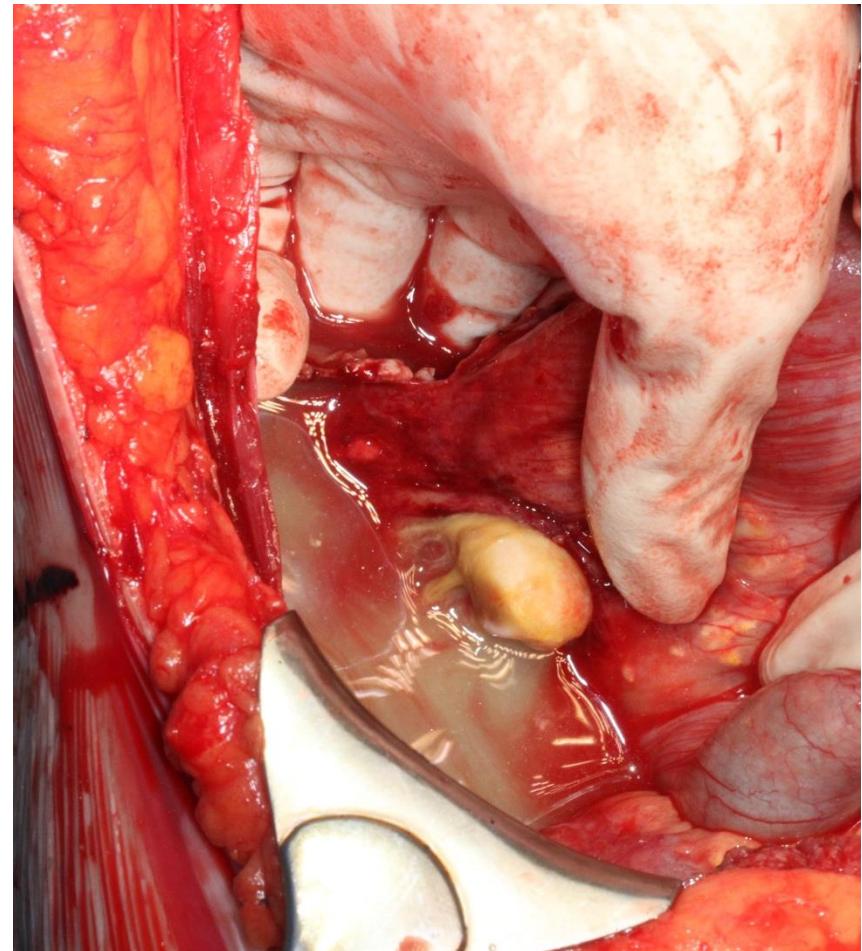
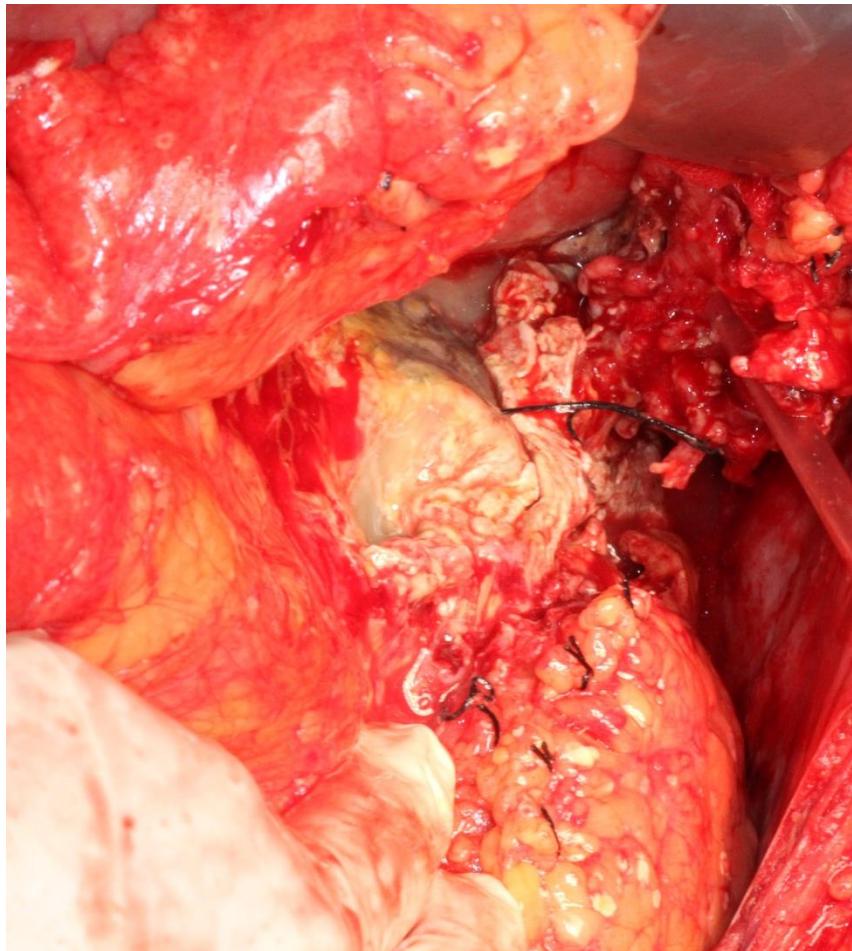
Necrotising pancreatitis



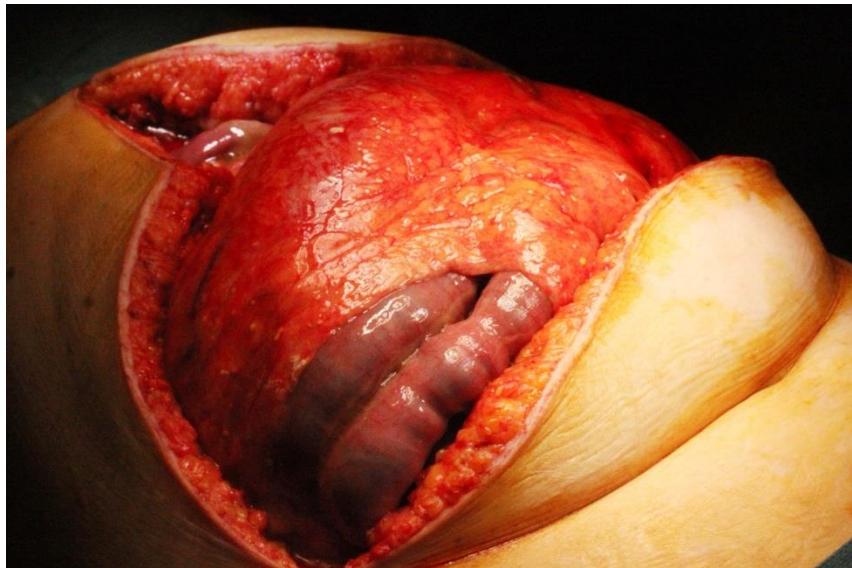
Treatment

- Conservative treatment with nutritional support and intravenous antibiotics
- Indication for necrosectomy if clinical deterioration or evidence of infected necrosis
- Approach for necrosectomy
 - Endoscopic
 - Open approach

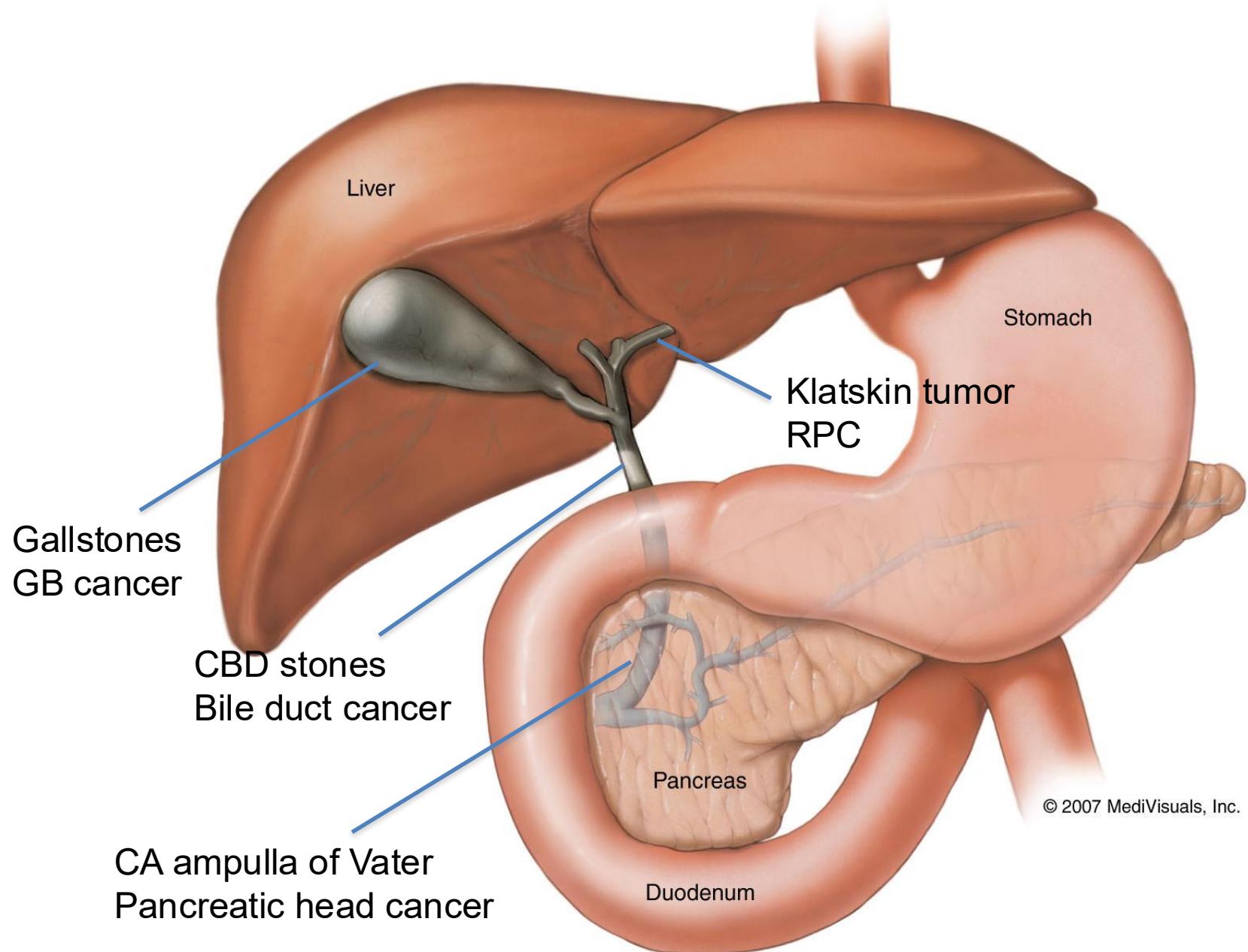
Pancreatic necrosectomy



2nd look laparotomy



Ductal Anatomy of Liver and Pancreas



Cholangiocarcinoma

- 2% of all cancers
- Advanced age is a risk factor
- Peak incidence: age 70-80

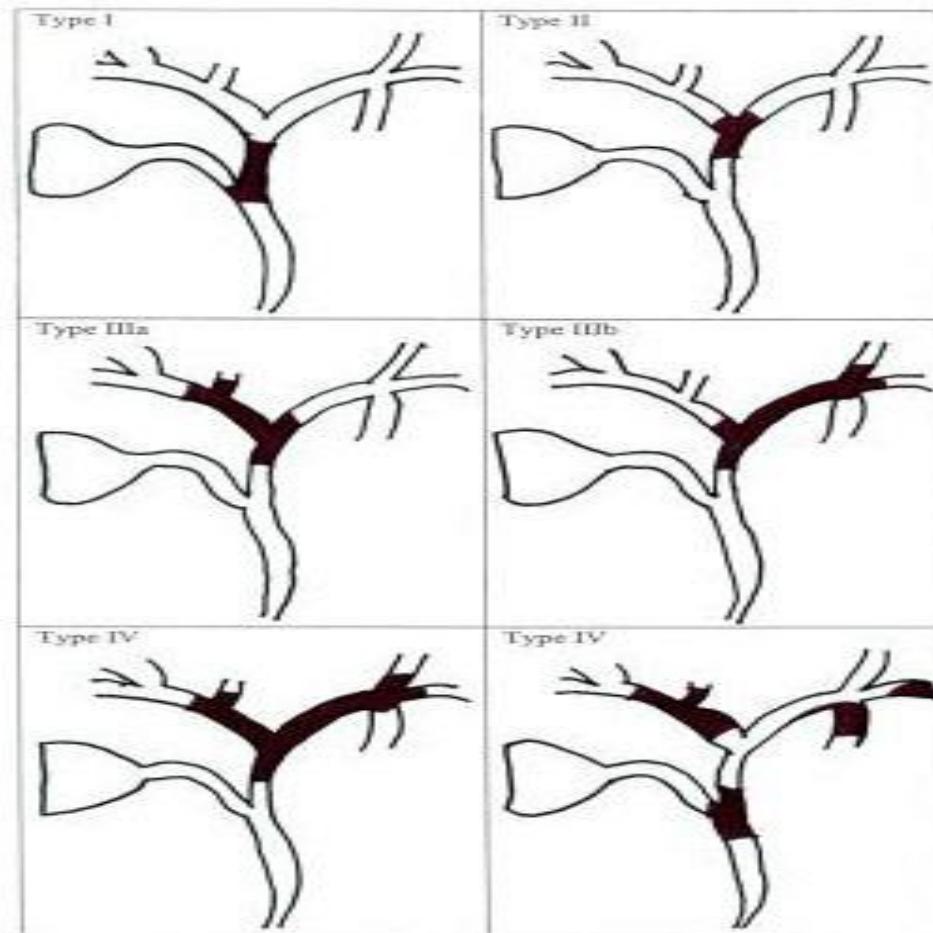


Clinical presentation

- Painless jaundice
- Weight loss
- Loss of appetite
- Fever



Bismuth classification

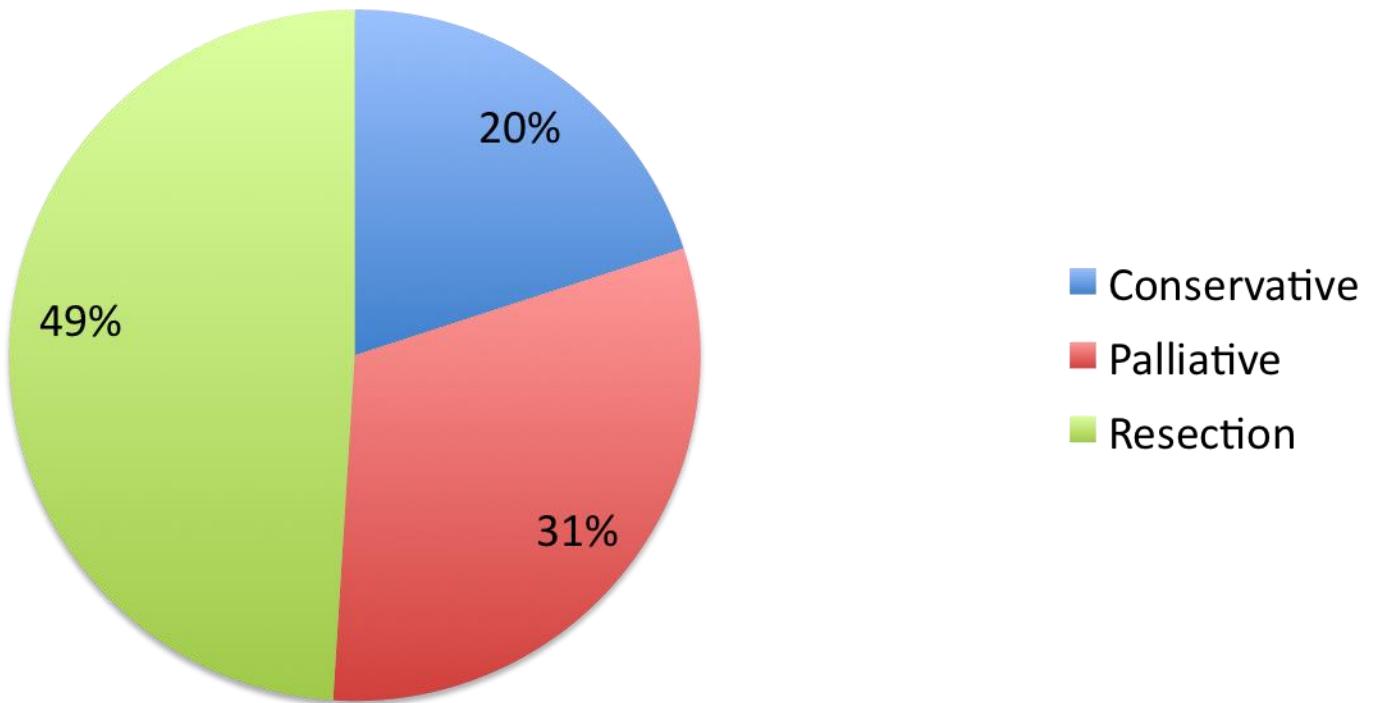


Treatment

- Curative
 - Hepatectomy + bile duct excision + hilar lymph node clearance + bile duct reconstruction
- Palliative
 - Radiotherapy
 - Chemotherapy
 - Metallic stenting/Surgical bypass

Queen Mary Experience

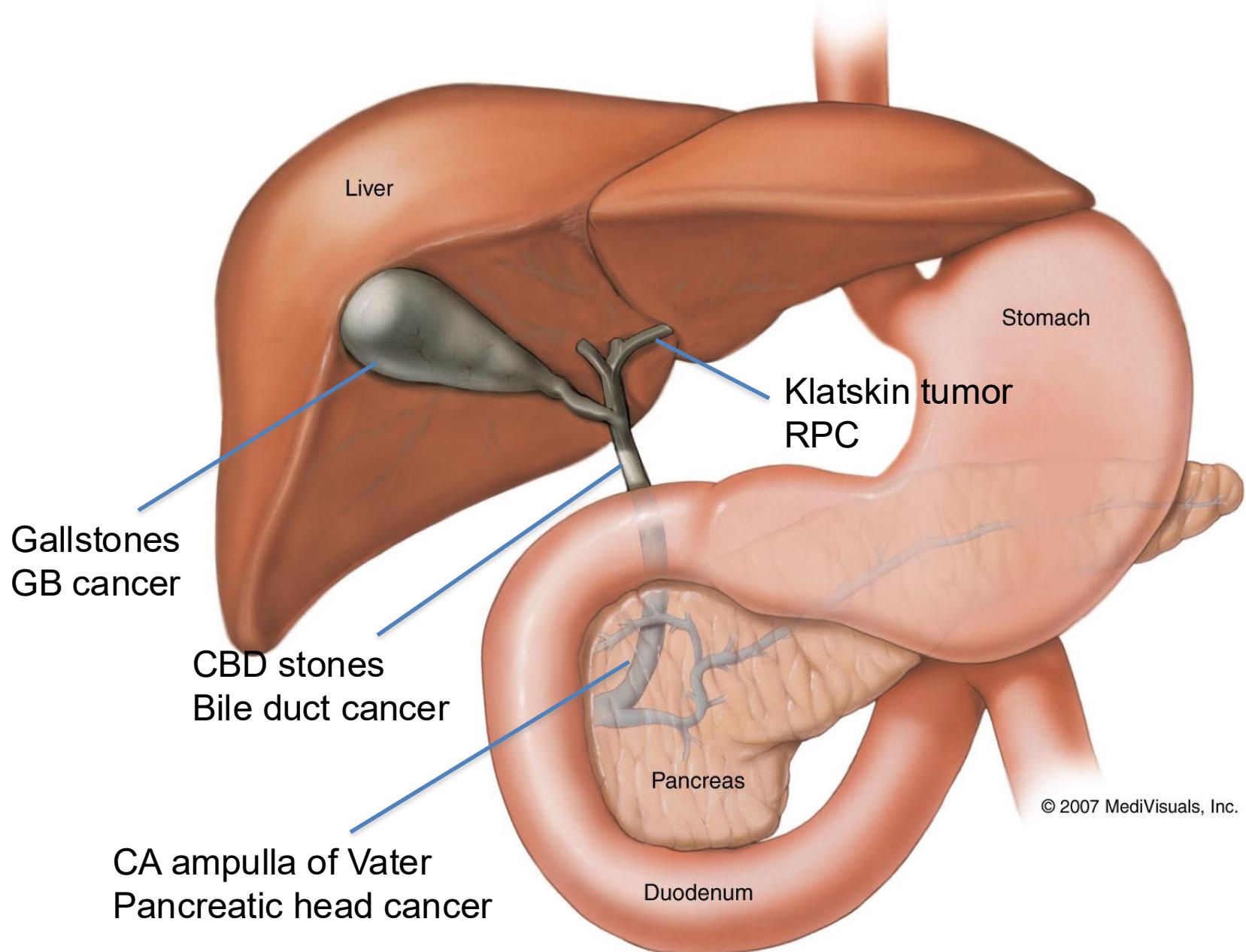
Choice of treatment



Treatment outcome

- 1-year survival: 60.3%
- 3-year survival: 29.4%
- 5-year survival: 22.0%

Ductal Anatomy of Liver and Pancreas



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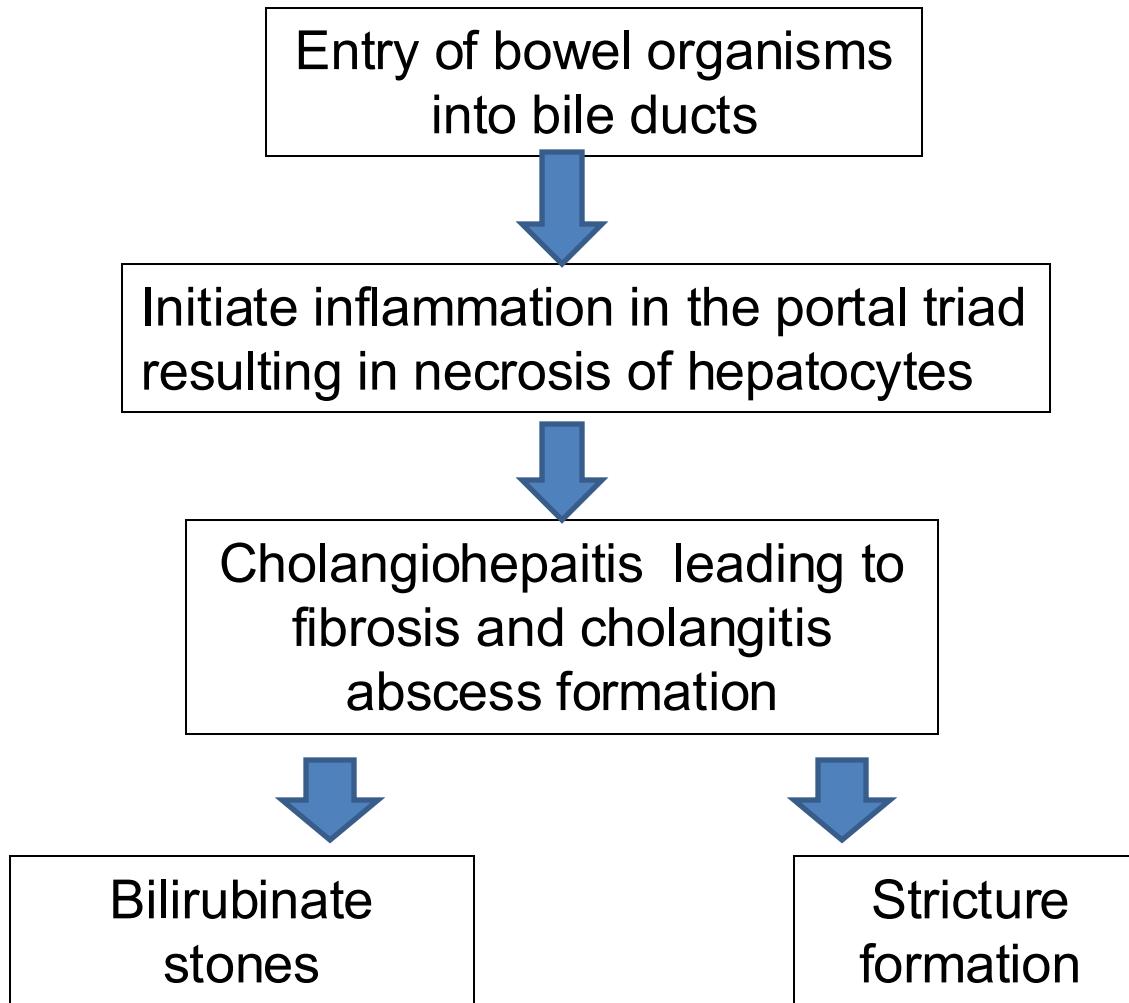
Recurrent Pyogenic Cholangitis

'characterised by repeated attacks of bacterial infection of the biliary tract as a result of stones and strictures in the bile ducts, especially in the intrahepatic segments '

Eastern and Western perspectives

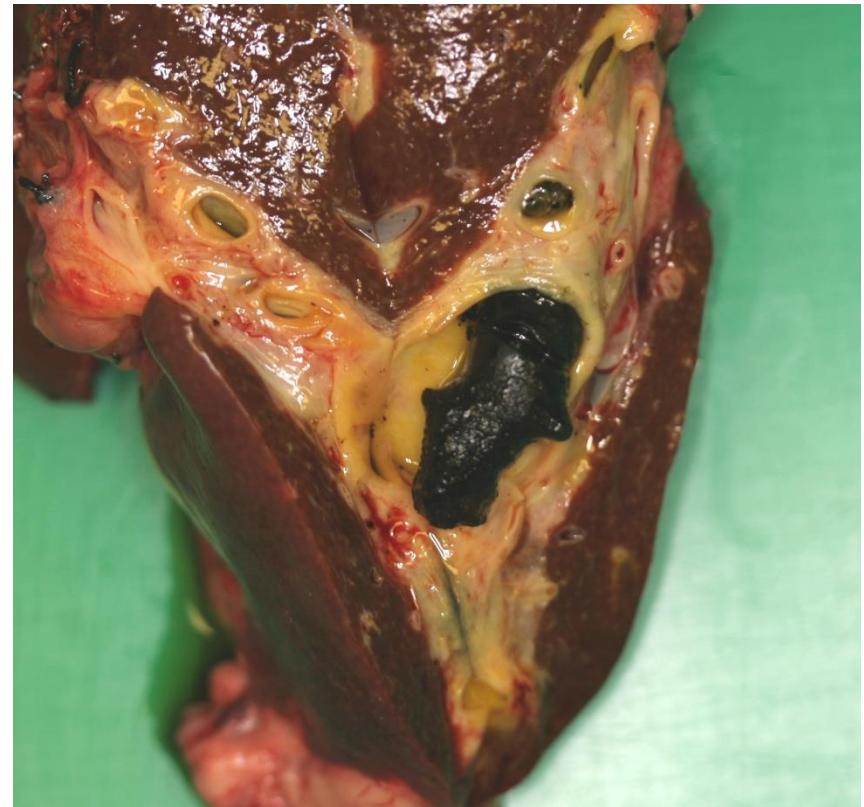
- Rare in western countries
- Increased incidence in Asian migrants
- Common in South East Asia
- Young and lower socio-economic groups
- No gender preponderance

Pathogenesis



Characteristics of RPC

- Infection
- Stricture formation
- Stone formation



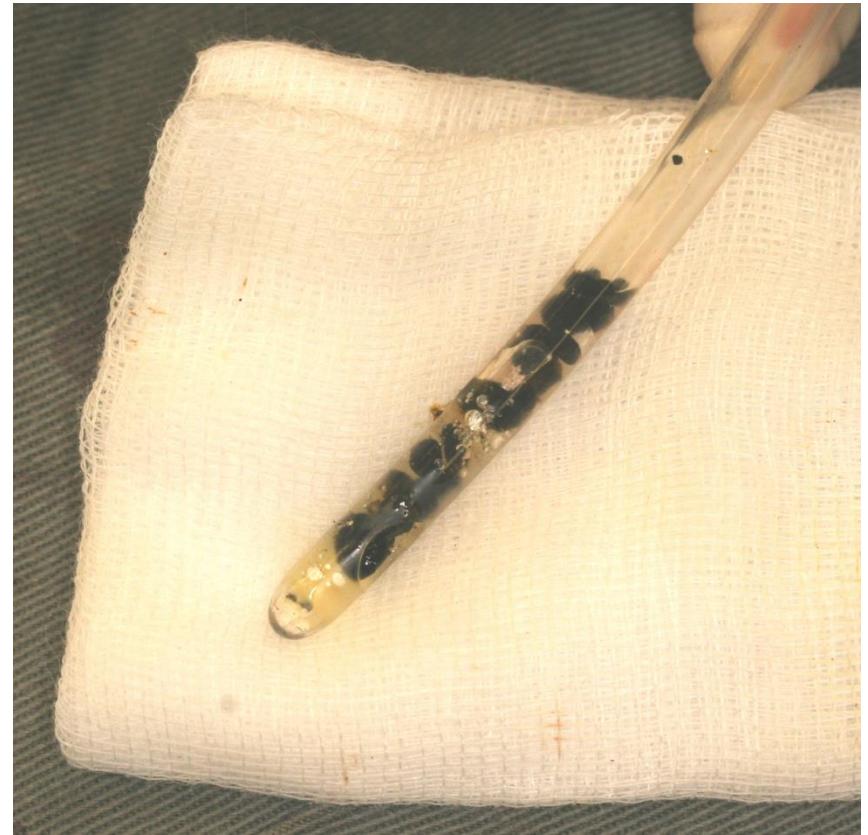
Causative organism

- *Clonorchis sinensis*
 - Liver fluke
 - flatworm



Stones in RPC

- Bilirubinate stones
- Infected bile becomes an insoluble precipitate from a supersaturated solution



Stricture formation

- More common in left main hepatic duct or segmental ducts
- Stricture in the main duct usually short-segment
- Intrahepatic strictures usually long-segment
- Proximal dilatations behind the strictures

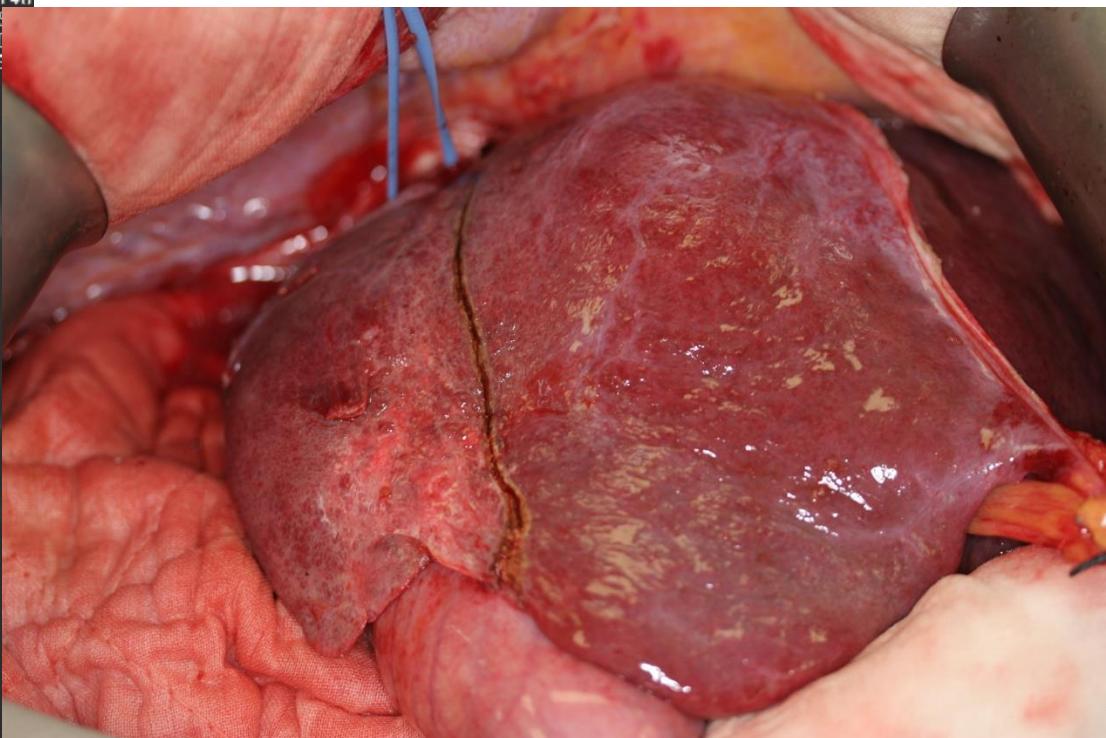
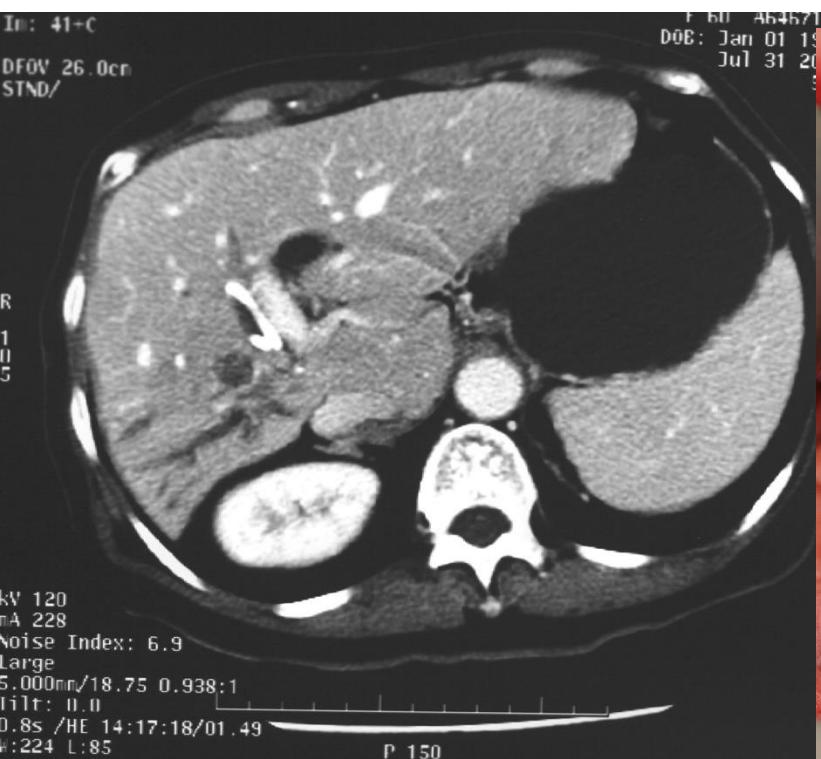
Clinical presentation

- Pain
- Fever
- Jaundice

Investigations

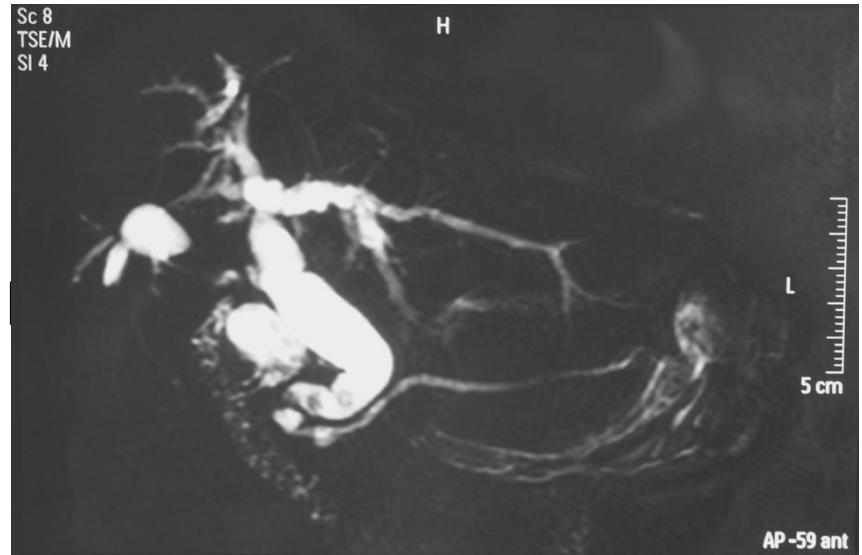
- Liver ultrasonography
- Computer tomography
- Magnetic resonance imaging
- Endoscopic retrograde
pancreatobiliaryangiography
- Percutaneous transhepatic cholangiogram

CT scan



MRI

- Enhancement of ductal walls on contrast enhanced T1 weighted images
- On T2 weight images
 - Bile – high intensity signal
 - Stones – signal void
 - Good for showing ductal di



ERCP



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Run 1 - Frame 1 / 1

Queen Mary Hospital
77kV, mAs, 180mA, 52s
Zoom 60%



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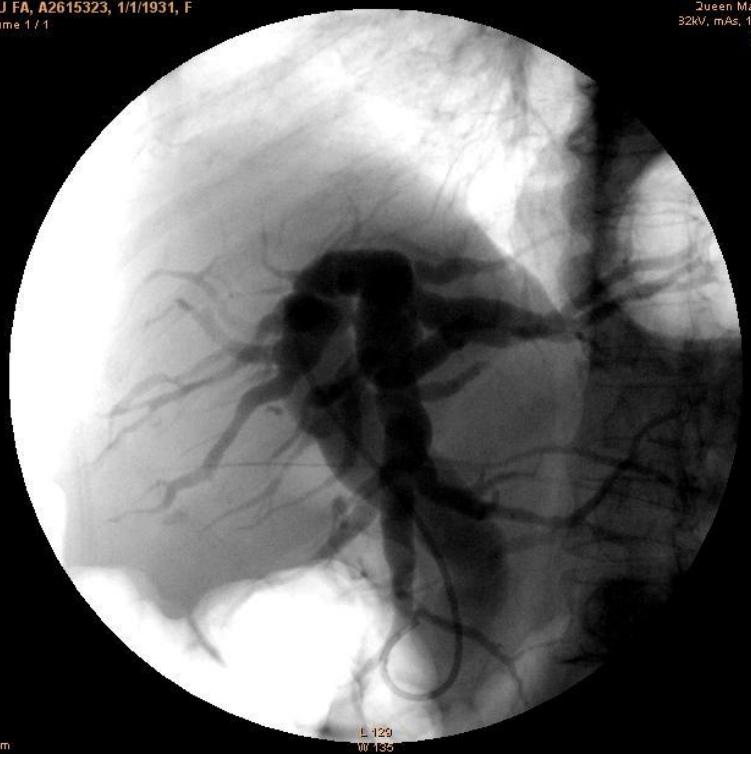
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Run 1 - Frame 1 / 1



Queen Mary Hospital SHUM, YU FA, A2615323, 1/1/1931, F
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Zoom 60%

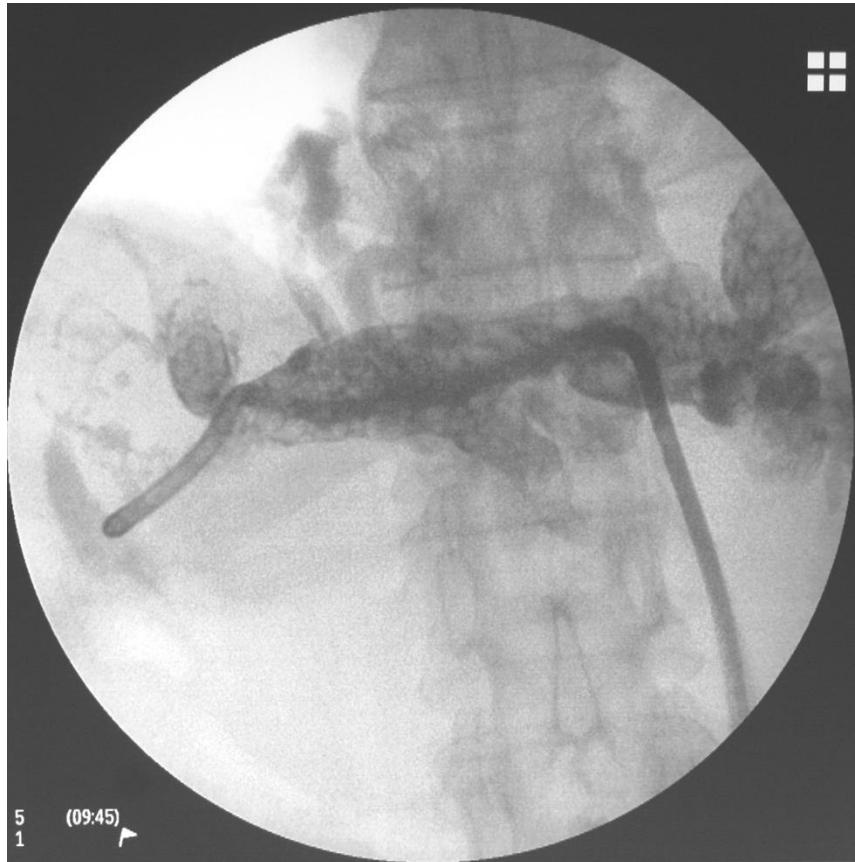
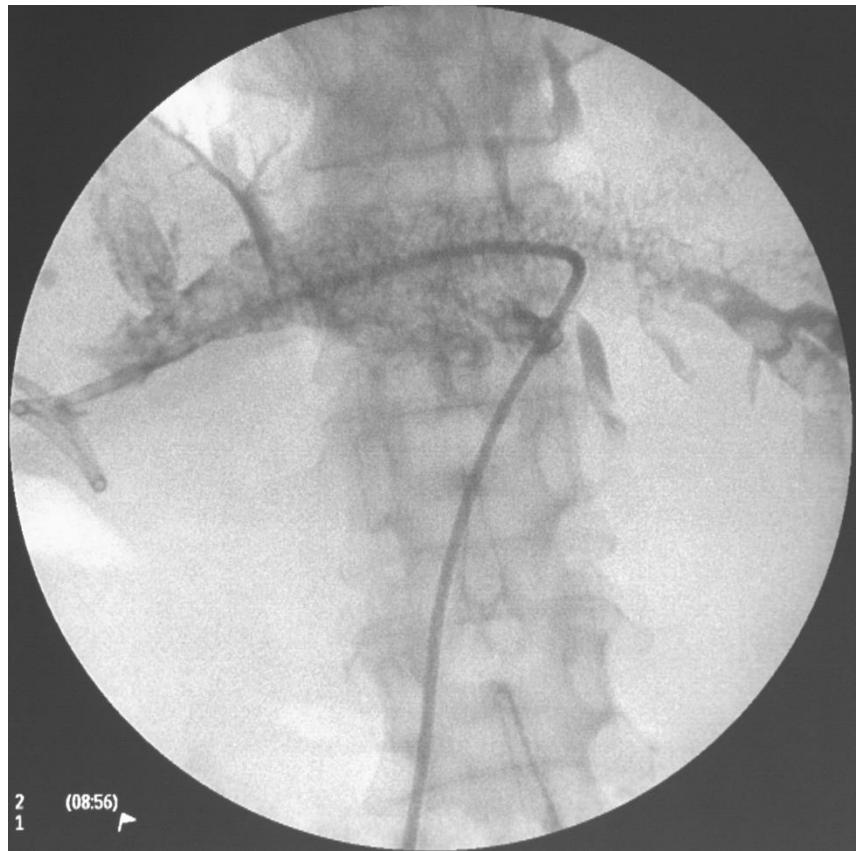
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Queen Mary Hospital
32kV, mAs, 140mA, 60s
Zoom 60%



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PTC



Clinical management

- Acute attack
- Definite treatment

Acute attack

- Most resolved with intravenous antibiotics, rehydration, and analgesics
- Common pathogens
 - *Escherichia coli*
 - *Klebsiella* spp
 - *Pseudomonas*
 - Anaerobes

Acute attack

- Conservative treatment only successful in 30% cases
- Fluid resuscitation and intravenous antibiotics
- Urgent biliary decompression
 - Radiologically
 - Endoscopically
 - Laparotomy

Non-operative approach

- ERCP + insertion of endoprosthesis



Operative approach

- Exploration of common bile duct
- Drainage of pus and infected bile
- Removal of stones within common bile duct

Definitive treatment - objectives

- To remove biliary ductal stones
- To enlarge or bypass strictures
- To provide adequate biliary drainage
- To provide permanent percutaneous access to the biliary tract

Surgical options

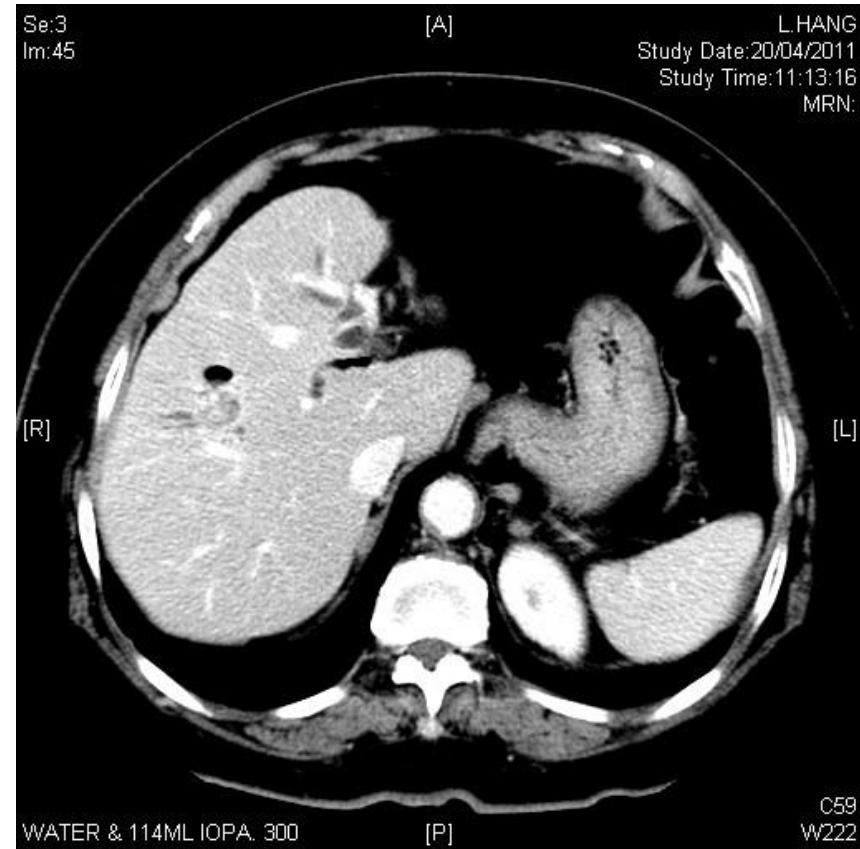
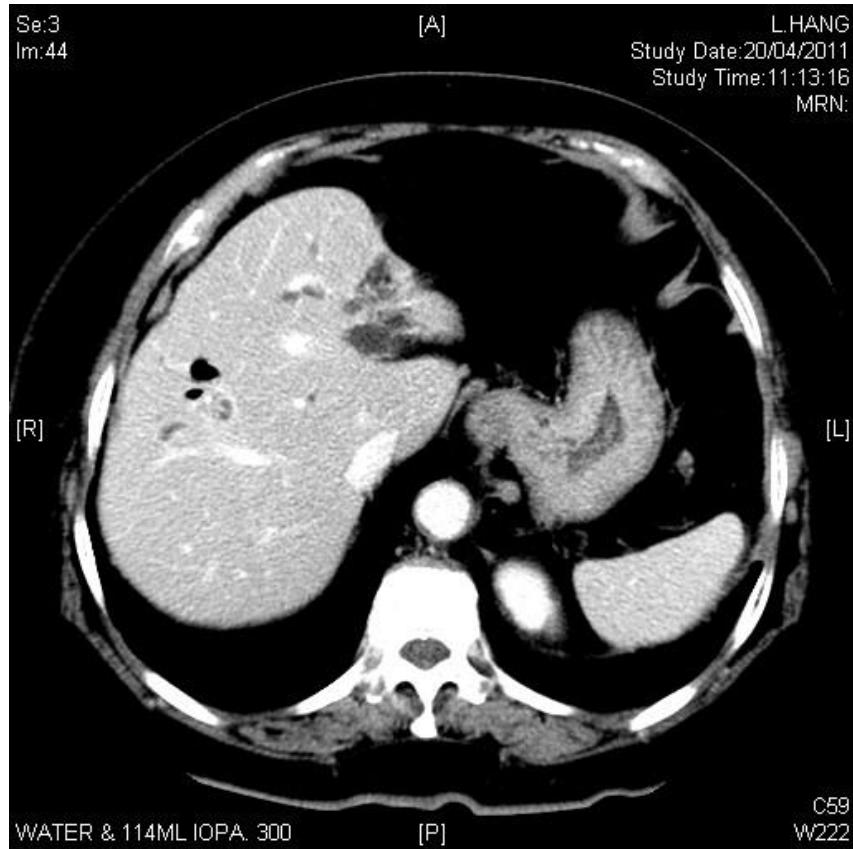
- Hepaticojejunostomy
 - Allow passage of bile, sludges and stones into small bowel
- Hepaticojejunostomy with a cutaneous stoma i.e. hepaticocutaneous jejunostomy
 - Provides a percutaneous route for future stone removal via choledoscopy

Hepatectomy

- For destroyed liver segment
- Intrahepatic strictures and stones
- Multiple liver abscess
- cholangiocarcinoma



Female, age 75



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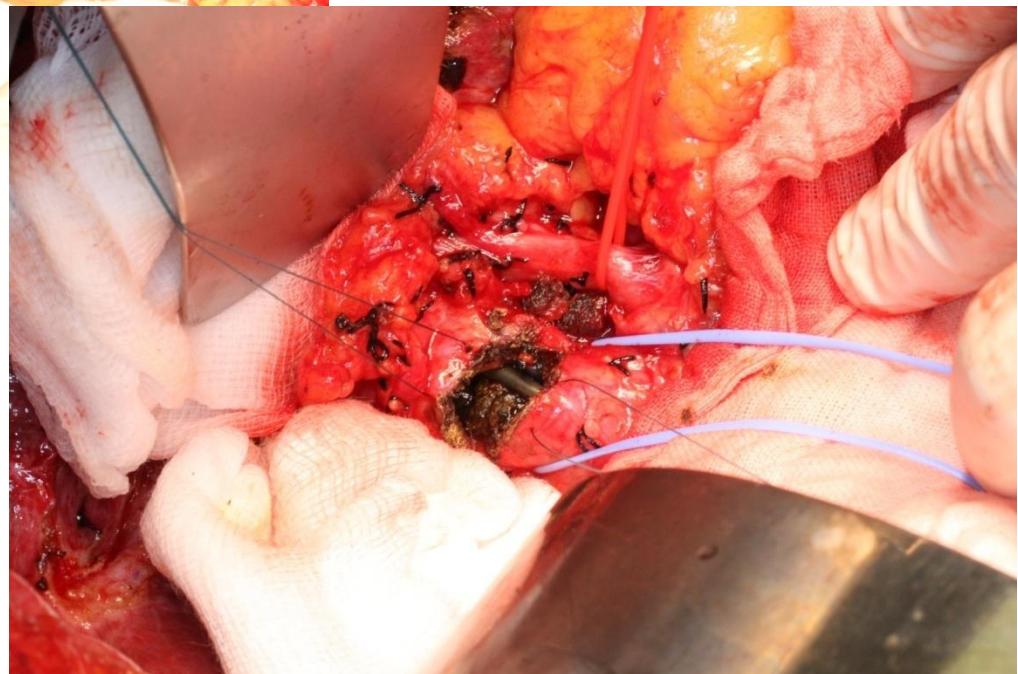
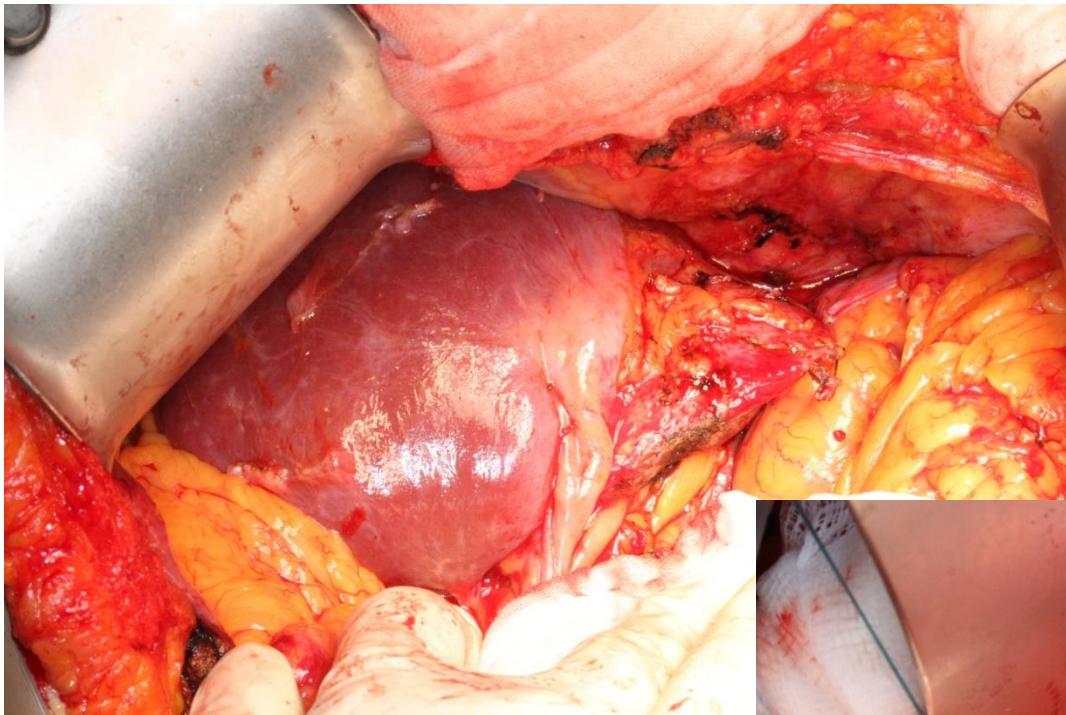
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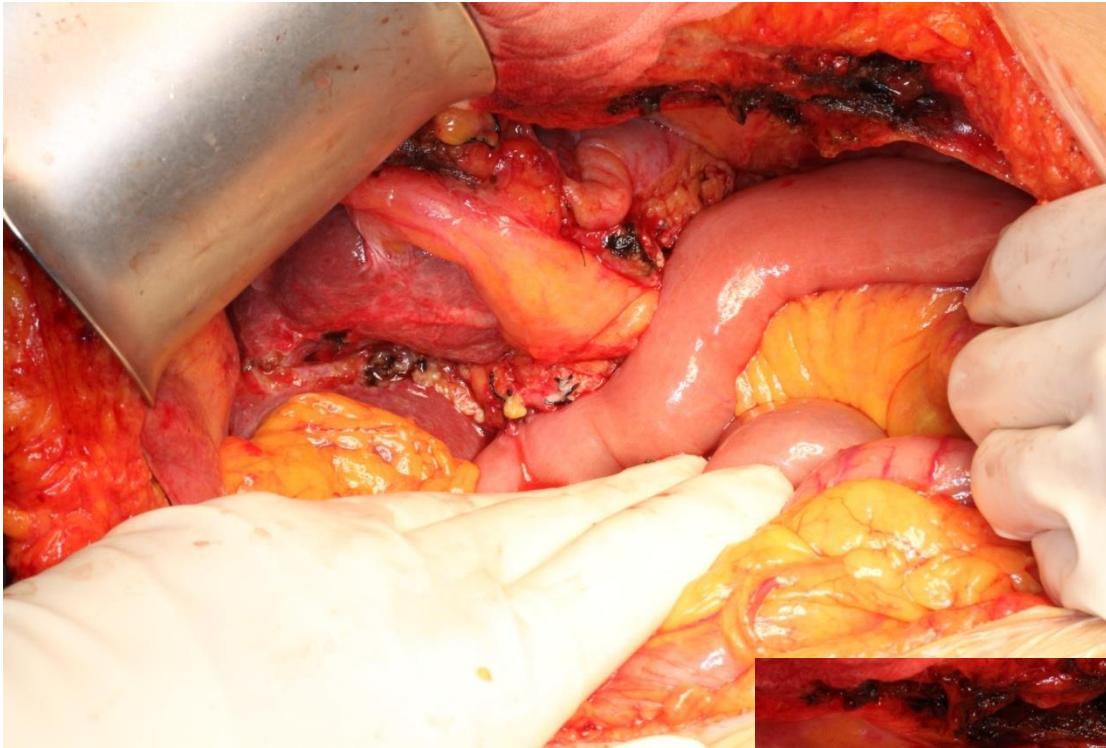
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Exploration of CBD and bile duct excision

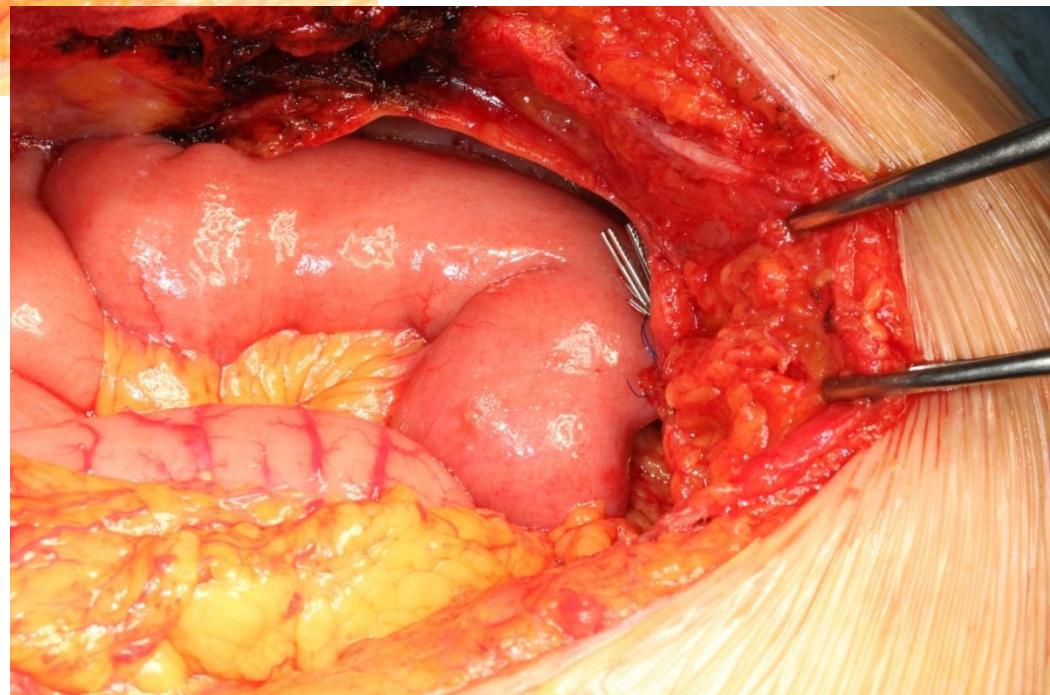


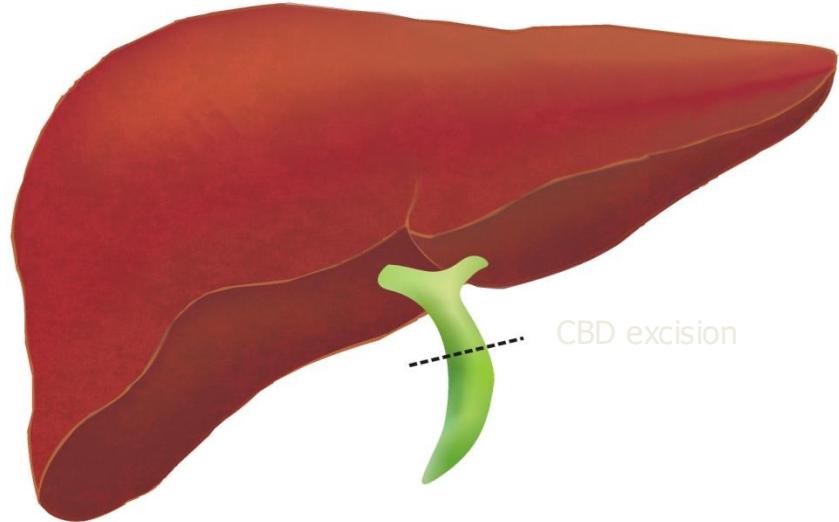
Fiber-optic choledochoscopy





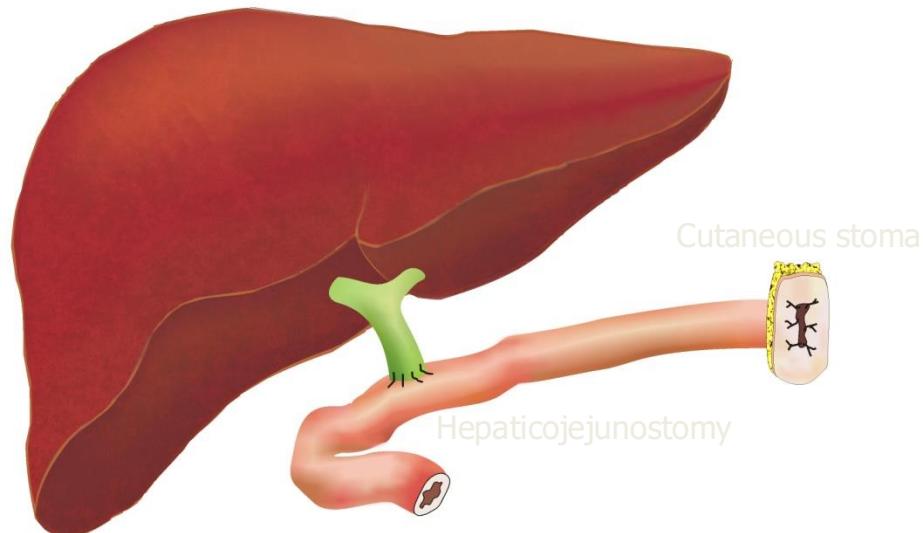
Hepatico-cutaneous
jejunostomy





CBD excision

Hepatojejunostomy

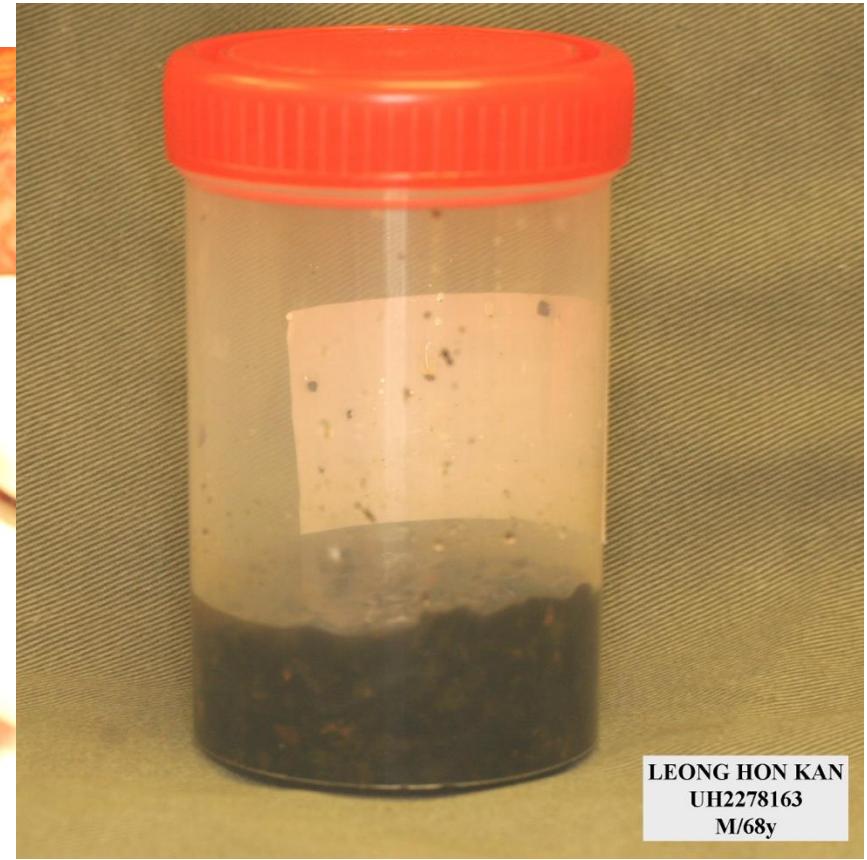
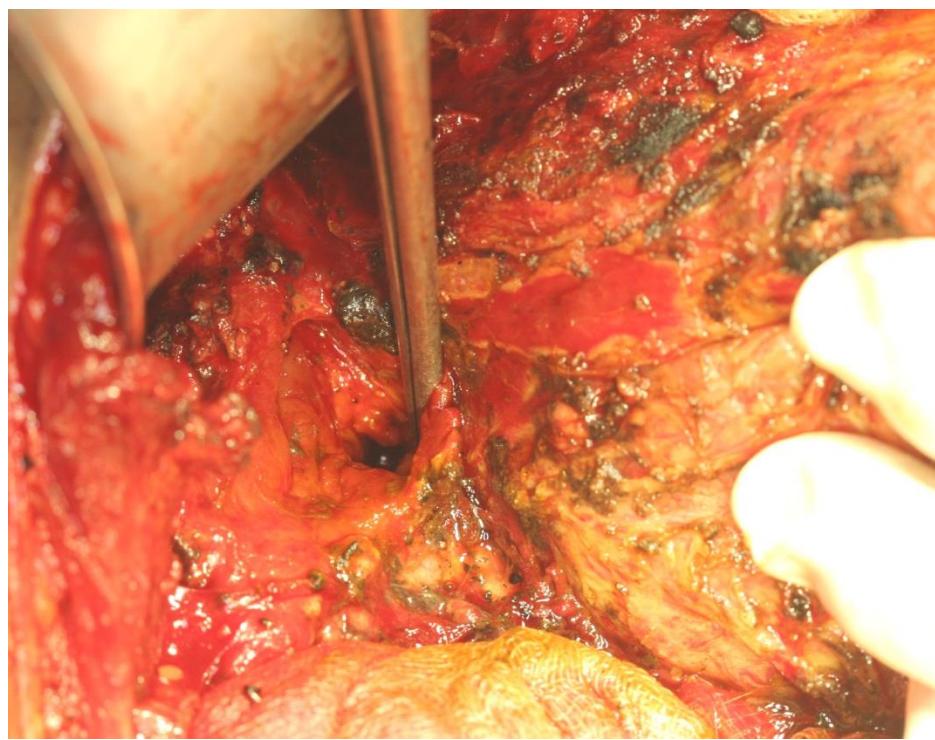


Hepaticojejunostomy

Cutaneous stoma

Complications of RPC

- Liver abscess
- Choledochoduodenal fistula
- Acute pancreatitis
- Portal vein thrombosis
- Biliary cirrhosis
- Cholangiocarcinoma

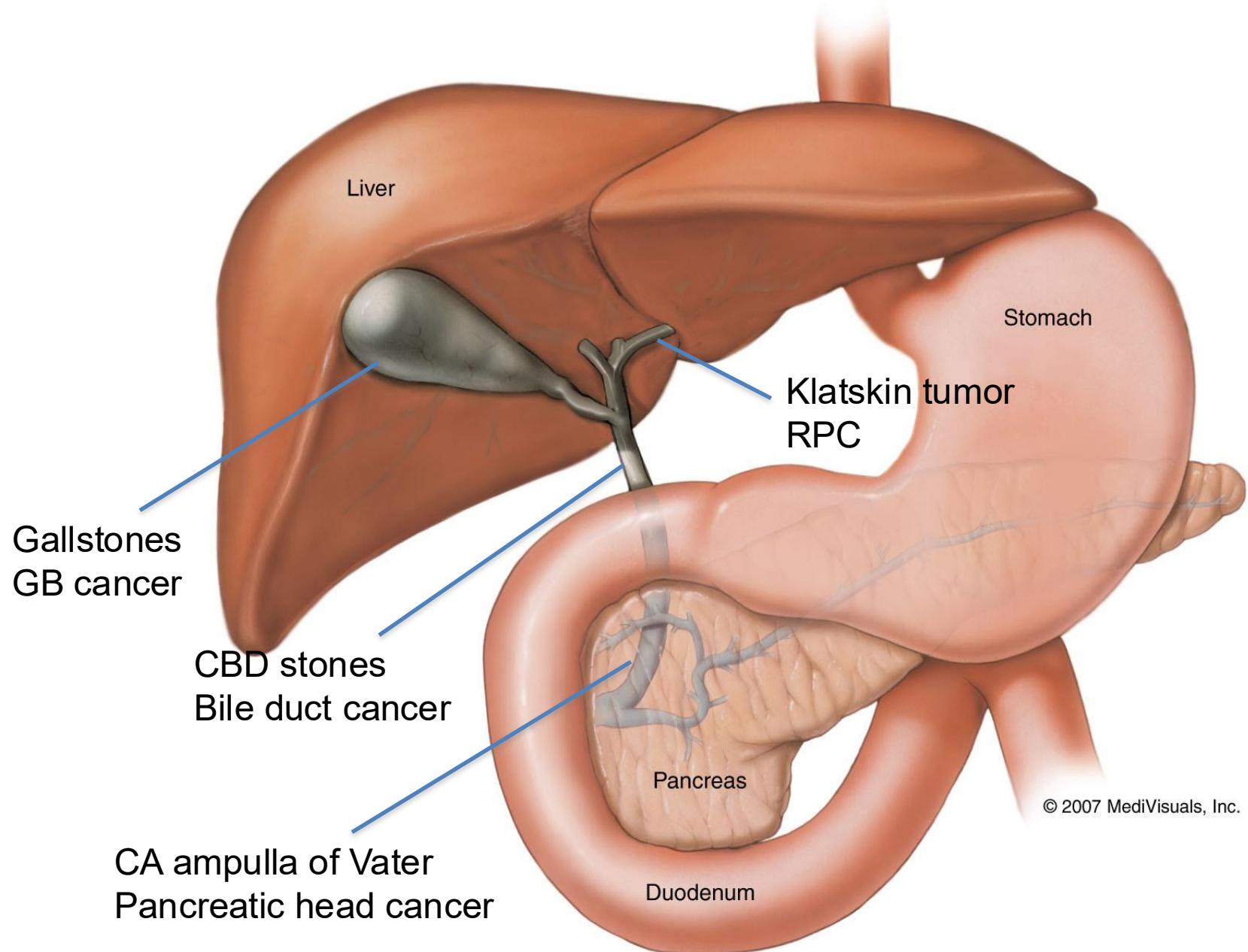


LEONG HON KAN
UH2278163
M/68y

Outcomes of treatment

- Short-term outcomes
 - Immediate stone clearance: 90%
 - Final stone clearance: 98%
 - 10% had concomitant cholangiocarcinoma
- Long-term outcomes
 - Stone recurrence: 9%
 - 5-year survival
 - With cholangiocarcinoma: 9%
 - Without cholangiocarcinoma: 93%

Ductal Anatomy of Liver and Pancreas



Pancreatic cancer

- Highly lethal cancer, even if resectable
- Peak age of onset: above 60s
- Early cancer is usually asymptomatic
- Clinical presentation often indicates advanced diseases

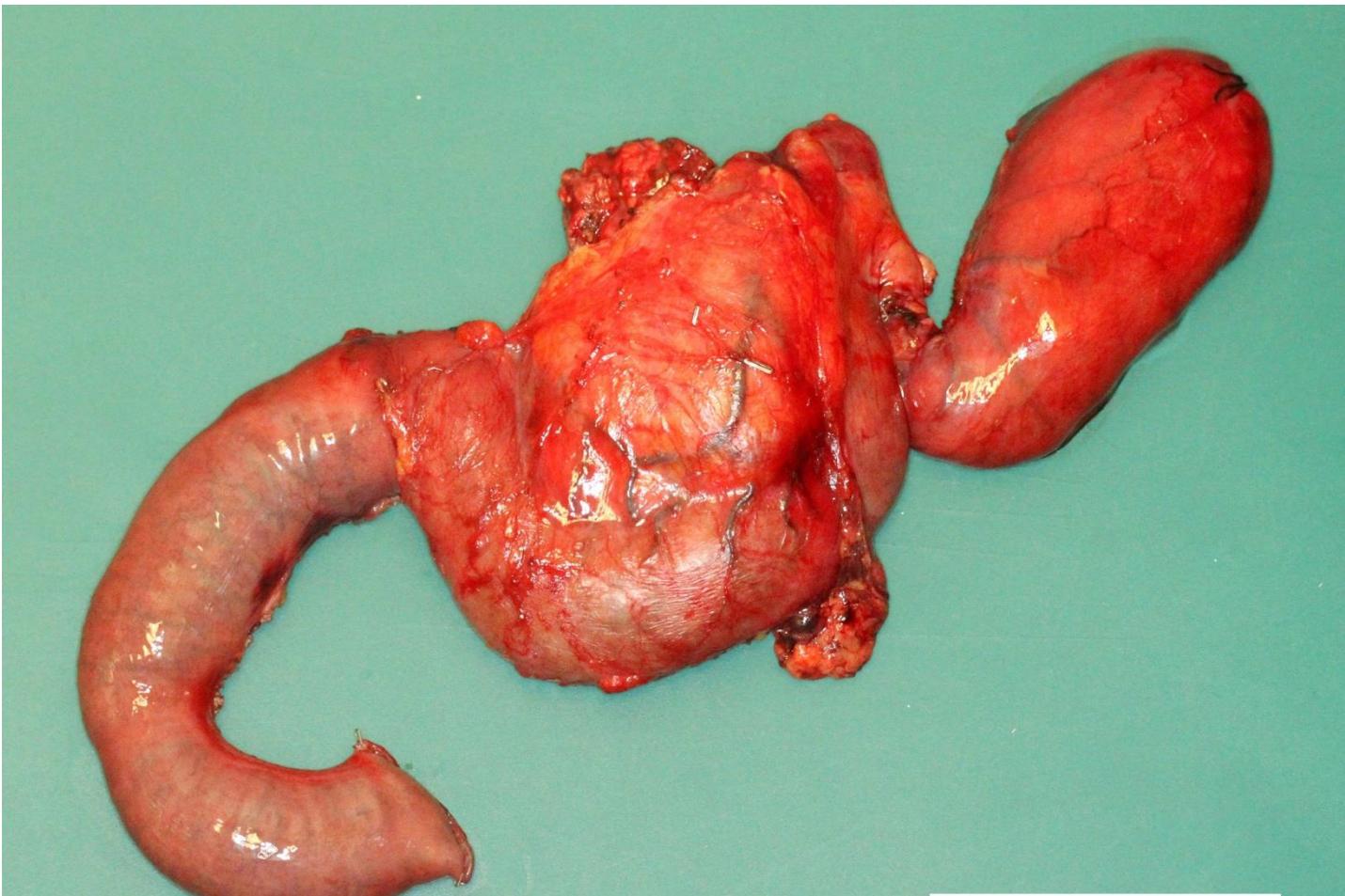
Indications for Whipple operation

- Medically fit for major surgery but age is not a contraindication
- Localised disease
- Free from metastasis
- No tumor involvement in superior mesenteric artery



Curative treatment

- Radical pancreaticoduodenectomy (Whipple operation)
 - Excision of pancreatic head
 - Excision of duodenum
 - Excision of common bile duct
 - Partial excision of stomach
- Reconstruction to restore GI tract continuity
 - Pancreatojejunostomy
 - Hepaticojejunostomy
 - Gastrojejunostomy



Palliative treatment

- Double bypass + coeliac axis block
 - Gastrojejunostomy
 - Hepaticojejunostomy
- Metallic stenting
- Radiotherapy
- Chemotherapy



Thank You