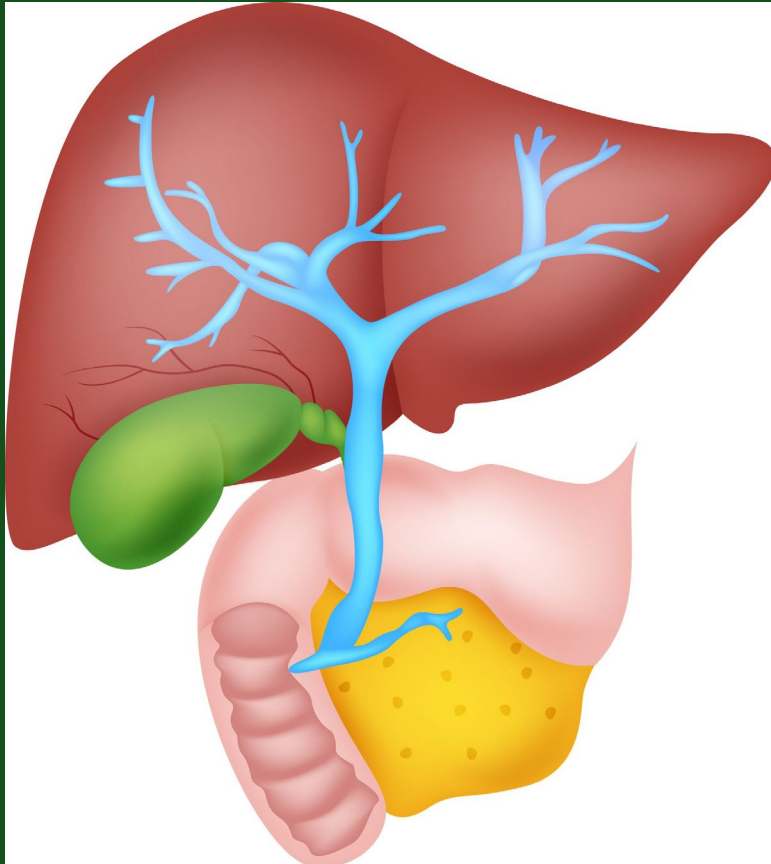


# Management of Gallbladder Pathology



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# Disclosures

- No disclosures related to this presentation



# Objectives

## Discuss

- Discuss diagnostic approaches for diagnosing gallbladder pathology

## Review

- Review treatment options for gallbladder pathology

## Analyze

- Analyze post treatment management after cholecystectomy

# When to perform cholecystectomy?

Symptomatic  
cholelithiasis

Large gallstone

Choledocholithiasis

Acute  
cholecystitis

Cholangitis

Gallstone  
pancreatitis



# When to perform cholecystectomy?

Biliary  
dyskinesia

Gallbladder  
polyp

# Imaging Modalities

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## Right upper quadrant abdominal ultrasound

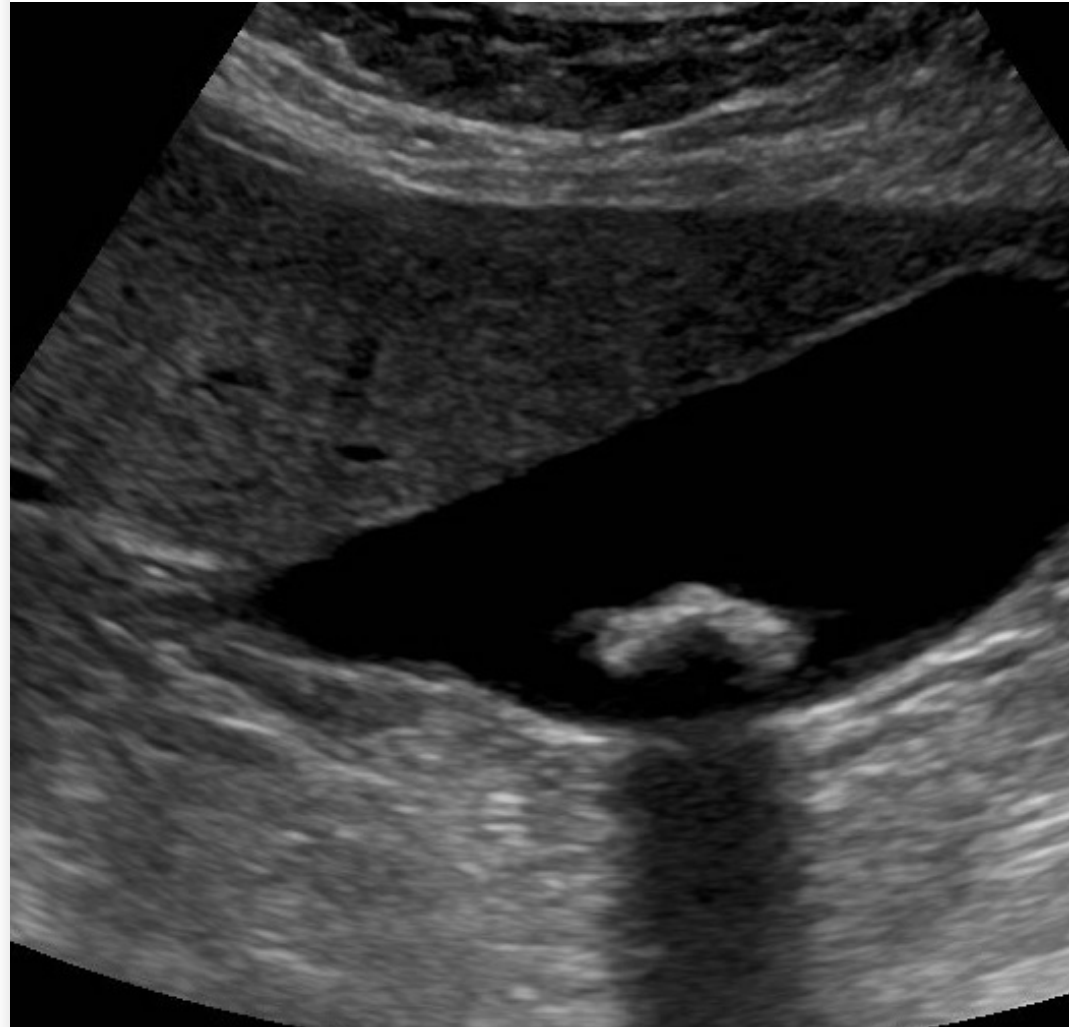
- Cholelithiasis
- Gallbladder wall thickening
- Pericholecystic fluid
- Polyps
- Assess common bile duct

## HIDA scan without ejection fraction

- Assess for obstructed cystic duct

## HIDA scan with ejection fraction

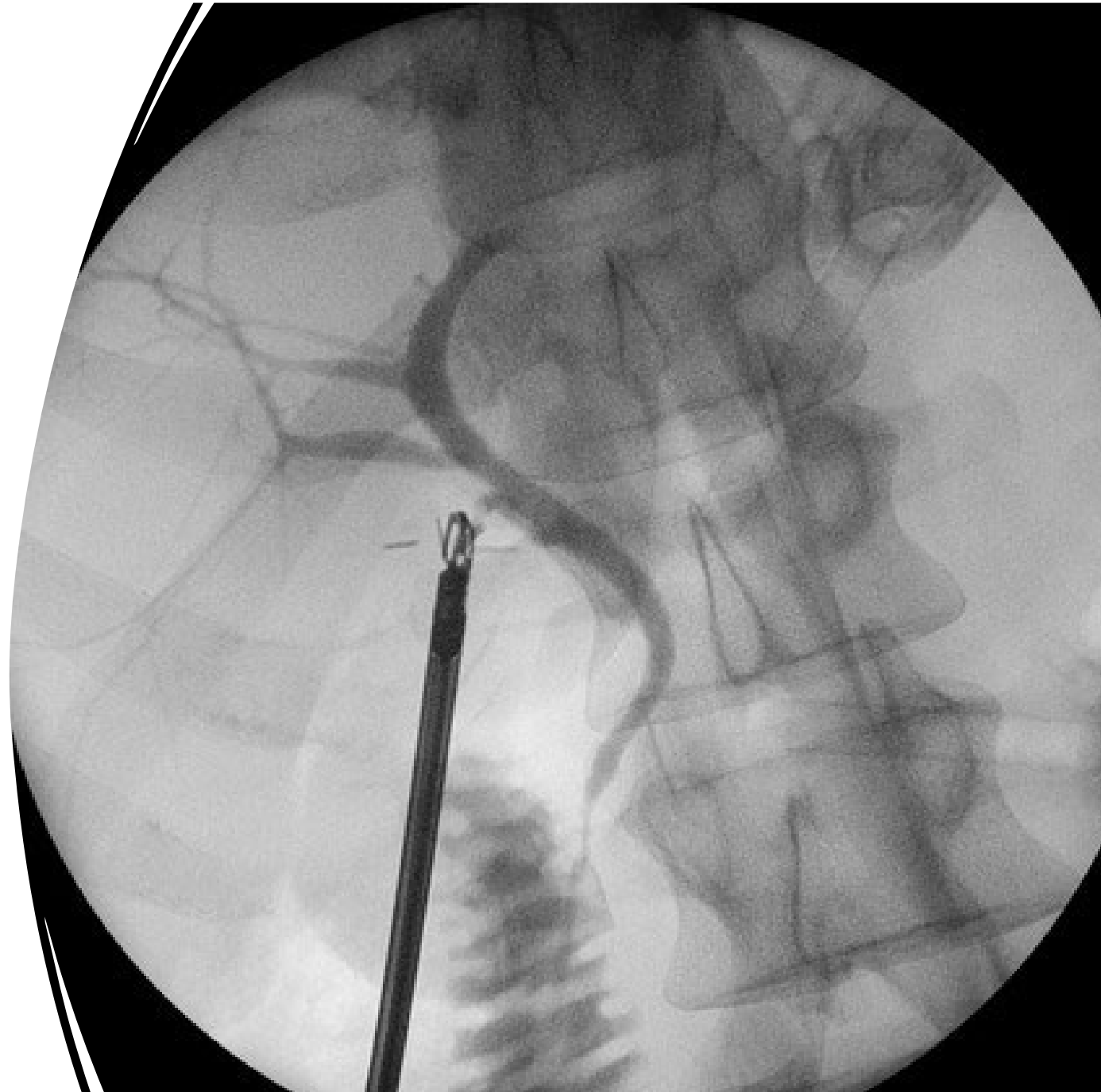
- Assess function of gallbladder

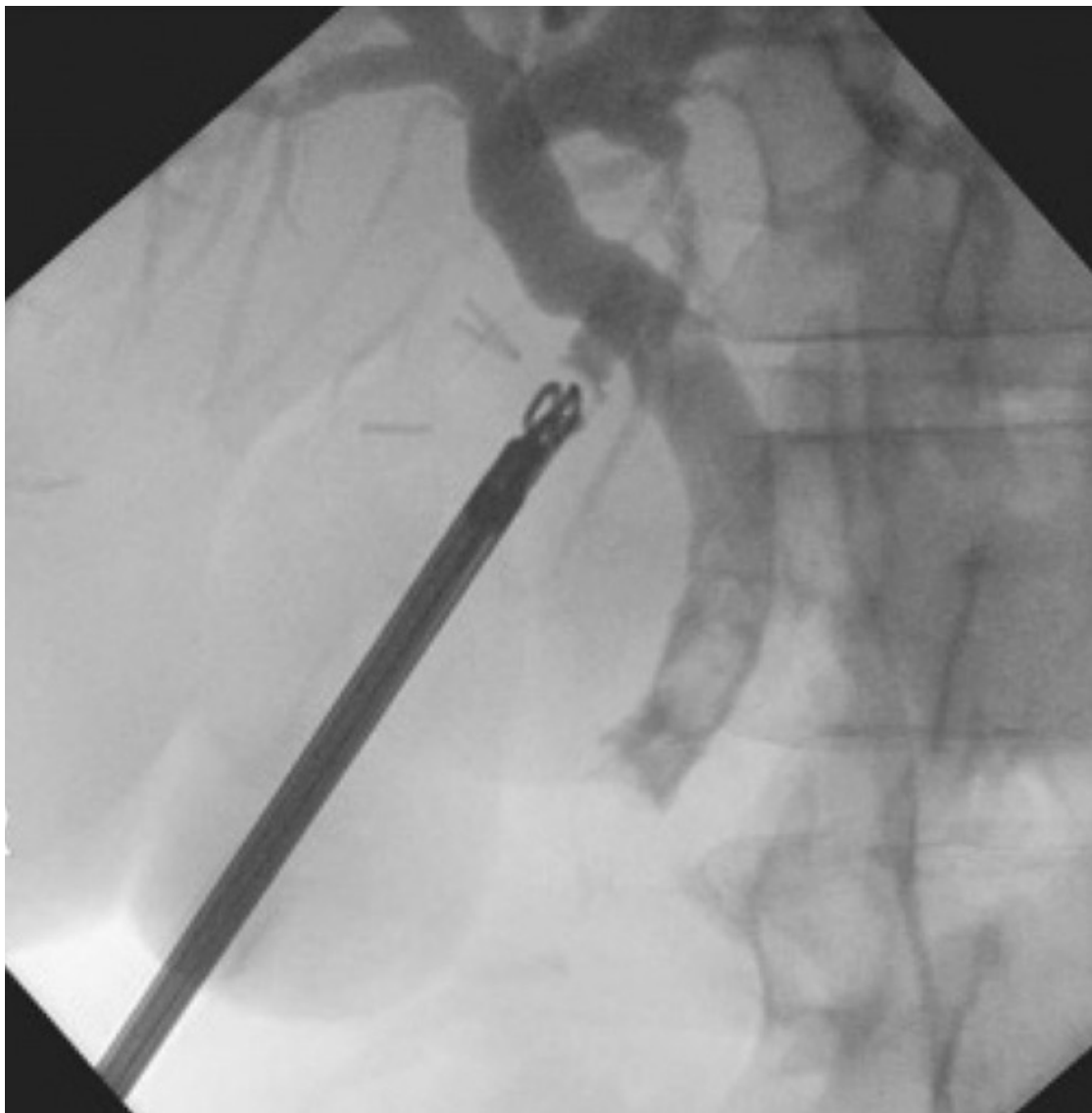
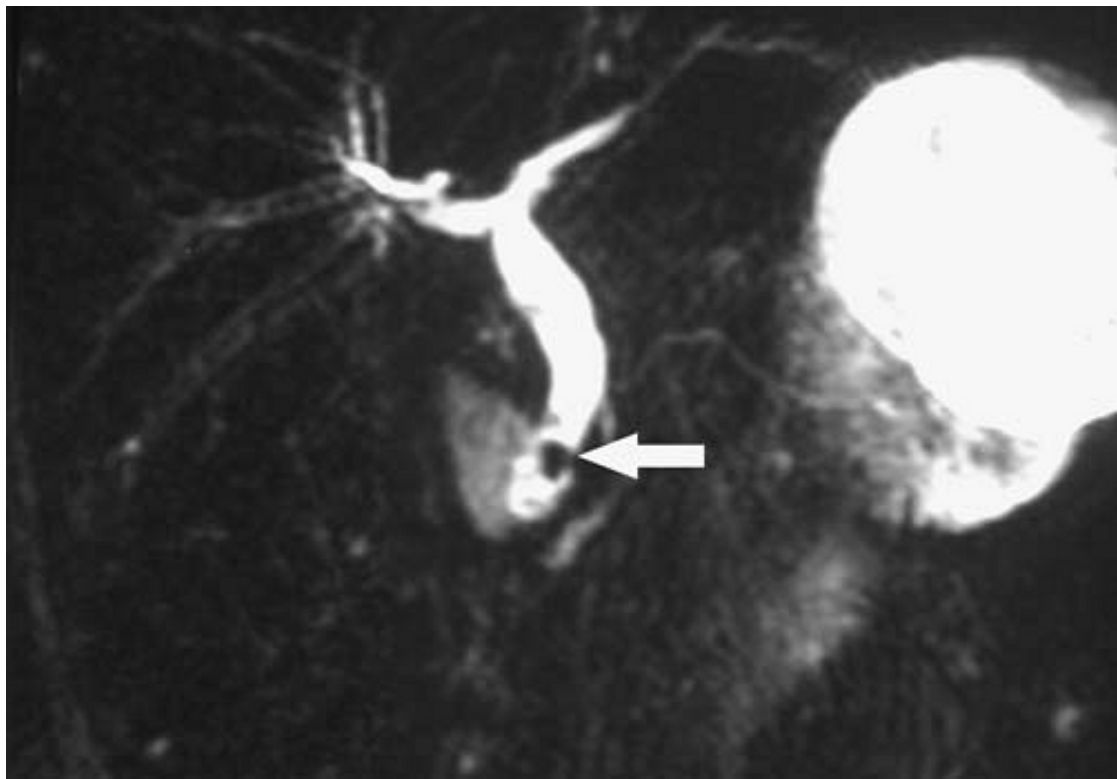


# Imaging Modalities

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- MRCP
  - Assess common bile duct
- Intraoperative cholangiogram







# Labs



## CBC

WBC



## Hepatic function panel

AST

ALT

Alk Phos

Total bilirubin

Direct bilirubin



## Lipase

# Symptomatic Cholelithiasis

- Intermittent RUQ abdominal pain after eating – especially fatty meals
  - Pain can radiate to back
- Nausea/vomiting
- RUQ US
  - Cholelithiasis with no evidence of cholecystitis



# Asymtomatic Gallstones

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- When do we offer cholecystectomy?



# Large Gallstones

- 1676 Females
- Strong relationship between gallstone size and gallbladder cancer
  - Large stones > 3 cm found in 40% of gallbladder cancer patients
  - Large stones > 3 cm found in 12% of non-cancer patients
- relative risk for gallbladder cancer in subjects with stones greater than or equal to 3 cm was 9.2 compared with subjects with stones less than 1 cm. (95% confidence interval: 2.3-37)
- Lowenfels AB, Walker AM, Althaus DP, Townsend G, Domellof L. Gallstone growth, size, and risk of gallbladder cancer: an interracial study. *Int J Epidemiol.* 1989;18:50–54.  
doi: 10.1093/ije/18.1.50.

# Choledocholithiasis

- +/- RUQ abdominal pain
- Jaundice
- Itching
- RUQ US:
  - Cholelithiasis
  - Dilated common bile duct
- MRCP/ERCP
- Intraoperative cholangiogram

# Acute cholecystitis

RUQ abdominal pain which gets worse and does not go away

- Positive Murphy Sign

Nausea/vomiting

RUQ US:

- Cholelithiasis – stone in neck of gallbladder
- Gallbladder wall thickening
- Pericholecystic fluid

HIDA without ejection fraction

- Non-filling of gallbladder

# Cholangitis

- Charcot's Triad
  - Jaundice
  - Fever
  - RUQ abdominal pain
- Reynold's Pentad
  - Hypotension
  - Altered mental status



# Pancreatitis

- Most common Causes
  - Gallstones – Acute pancreatitis
  - Heavy alcohol use – Chronic pancreatitis
  - Medications
  - High triglycerides







# Gallstone Pancreatitis

- Epigastric pain
- Elevated lipase
- Cholelithiasis

# Biliary Dyskinesia

Symptoms of symptomatic cholelithiasis

No stones seen on RUQ US

HIDA scan with ejection fraction

Normal > 35%

# Biliary Hyperkinesia

- Ejection fraction > 80 %
- Outcomes after laparoscopic cholecystectomy in hyperkinetic biliary dyskinesia. Whitaker LF, Bosley ME, Refugia JM, et al. <https://doi.org/10.1177/00031348211023390>. Am Surg. 2022;88:1983–1987. doi: 10.1177/00031348211023390.
  - 98 patients
  - 92.3% of patients had complete resolution of symptoms
  - 79.8% had pathology of chronic cholecystitis

# Biliary Hyperkinesia

- Systematic review and meta-analyses of cholecystectomy as a treatment of biliary hyperkinesia. Eltyeb HA, Al-Leswas D, Abdalla MO, Wayman J. <https://doi.org/10.1007/s12328-021-01463-x>. Clin J Gastroenterol. 2021;14:1308–1317.
  - 13 studies
  - 332 patients
  - 91.3% of patients had symptomatic improvement



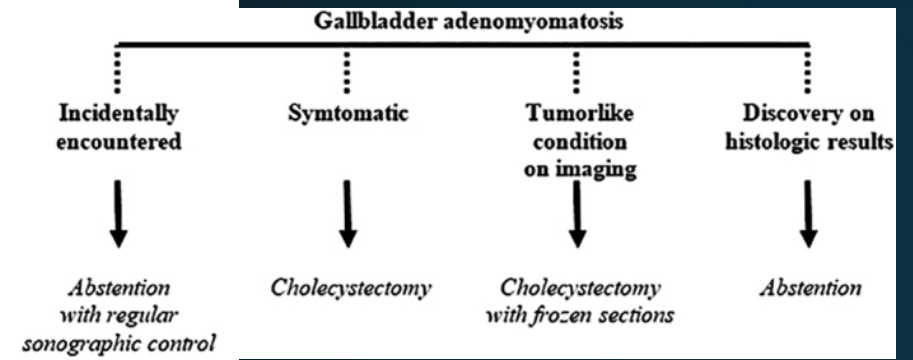
# Gallbladder Polyps

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- Primary goal in management -> prevent gallbladder cancer
- Cholesterol polyps
  - 60-90% of all polyps
  - Benign
- Inflammatory polyps
  - 10% of all polyps
  - Benign

# Gallbladder Polyps

- Gallbladder adenomas
  - Benign but may exhibit premalignant behavior
  - Most associated with gallstones
  - Often coexist with hyperplastic and metaplastic lesions
- Adenomyomatosis
  - Can mimic gallbladder cancer on imaging



# Gallbladder Polyps

- < 1 cm
  - Monitor with US 6-12 months to assess growth
- > 1 cm
  - Cholecystectomy

# Post Operative Complications

## Cystic duct bile leak/Duct of Luschka leak

- 4-7 days post op

## Retained gallstone in common bile duct

- Jaundice
- Cholangitis

## Injury to common bile duct





Questions?