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Post Cholecystectomy Syndrome

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• No financial relationships to disclose
Post-Cholecystectomy Syndrome (PCS)

- Complex heterogeneous symptoms including persistent abdominal pain and dyspepsia that recur and persist after cholecystectomy*
- Can be early or late after cholecystectomy

Cholelithiasis
Cholelithiasis

- 7-20 % adults in US
- > 600,000 cholecystectomies per year in US
- 80% patients with gallstones are asymptomatic
- Incidence of developing pain ~ 2% / year
- After 1st episode of pain, 50% will have recurrent episodes, the complication rate 1-2% / year
Cholelithiasis: Complications

• Occlusion of cystic duct, passage into common duct or erosion into gallbladder wall

• The most frequent complications of gallstone disease
  – Acute cholecystitis
  – Choledocholithiasis
  – Mirizzi's syndrome
  – Cholecystoenteric fistula
Cholelithiasis: Complications

- **Choledocholithiasis**
  - Retained stone in common hepatic or common bile duct

- **Mirizzi’s syndrome**
  - Impacted stone in cystic duct or neck of gallbladder
  - Causes extrinsic compression of adjacent bile duct or fistula
  - Present with jaundice > recurrent cholangitis
Choledocholithiasis

- Gallstone lodged in common duct (CBD)
- Pathogenesis
  - Originate in gallbladder or forms *de novo*
    - 5% to 10% of patients with gallbladder stones have concomitant common bile duct stones (most asymptomatic)
  - Retained stone after cholecystectomy
    - Choledocholithiasis complicates 10-15%
Cholecystoenteric Fistula

- May result from GB perforation and decompression into a viscus
- Commonly duodenum or hepatic flexure of colon
- Presents as bilious, watery diarrhea or cholangitis
- Cholelithiasis + SB involvement can induce gallstone ileus
Gallstone Ileus
Complications of Cholecystectomy: Biliary Injury

• Unique to laparoscopic technique
  – 2.5x risk of bile duct injury (compared to open), although still low at 0.4-0.6%

• Most common injuries
  – Bile leak at site of cystic duct clip
  – Injury to an anomalous duct
  – Transection of the bile duct

• Early diagnosis crucial, ERCP can diagnose and also treat

Post-Cholecystectomy Syndrome: Early Complications

- Retained cystic duct stone
- Retained long cystic duct remnant
- Choledocholithiasis
Post-Cholecystectomy Syndrome: Late Causes

- **GI**
  - IBS, pancreatitis, pancreas tumors, PUD, diverticulitis, mesenteric ischemia

- **Non-GI**
  - Intercostal neuritis, wound neuroma, CAD, psychosomatic disorder

*Br J Radiol.* 2010;83:351.
PCS: Symptoms

- Fatty food intolerance
- Nausea, vomiting
- Heartburn
- Flatulence
- Dyspepsia
- Diarrhea, choleretic?
- Jaundice
- Intermittent Abdominal pain
PCS: History, Accuracy of Biliary Origin

- Biliary colic, 90%
- Abdominal pain, 75%
- Fever, 38%
- Diarrhea, 35%
PCS Diagnosis: Early Onset

- Labs: CBC, LFT, amylase/lipase
- Imaging: U/S, CT abdomen, MRCP
- Endoscopy: EUS, ERCP
PCS Diagnosis: Late Onset

- Labs: LFT, CBC, lipase
- Imaging: CT, MRCP
- Endoscopy: EGD, EUS, ERCP, biliary manometry (rarely used currently)
- GI functional studies: gastric emptying, smart pill, esophageal manometry/pH/impedence
PCS: Treatment Medical

- Empiric trials of acid suppression for 8 weeks
- Trial of bile acid binders (eg, cholestyramine, colestipol)
- Prokinetic agents where available
- Antispasmodic trials (eg, hyoscyamine, dicyclomine)
- TCAs for chronic pain
Choledocholithiasis: *Diagnosis*

- MRCP
- EUS
- ERCP
  - Large stone producing complete obstruction of the distal duct (white arrow)
Choledocholithiasis: *Treatment*

ERCP with sphincterotomy and stone extraction
Cholangitis

- Infection proximal to CBD obstruction
- 6-9% of patients with gallstone disease
- 5-10% mortality
- Causes of obstruction
  - CBD stone / stricture
  - Neoplasm
  - Infiltration (Clonorchis, Opisthorchis)
- Mechanism of bacterial entry
  - Biliary tract manipulation
  - Intrabiliary pressure (migration from portal system)
Sphincter of Oddi Dysfunction (SOD)

- S.O. = fibromuscular sheath encircling the terminal portion of CBD, PD, and common channel as they traverse the duodenal wall
- Typically females age 40-50 years
- Features
  - Post-cholecystectomy abdominal pain
  - Recurrent pancreatitis in up to 50% of patients
  - Episodic biliary colic with negative diagnostic studies
Sphincter of Oddi
SOD: Milwaukee Classification

A. Typical biliary-type pain
B. Abnormal AST/ALT > 2-3x ULN
C. Dilated CBD (>12 mm)
   - Type I: all of the above criteria
   - Type II: A + (B or C)
   - Type III: only A
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<th>Noninvasive</th>
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<tr>
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Sphincterotomy

• Indications:
  – Type I SOD
  – Type II SOD pts
  – Type III SOD only if noninvasive therapies fail

Over 90% of Type I and Type II with elevated pressures have favorable response, compared to <50% favorable response in Type III [biliary sphincter manometry rarely performed now]
Post Cholecystectomy Syndrome: Summary

- Symptoms can occur early or late
- Be certain of pre-operative diagnosis
- Thorough history, emphasize aggravating and relieving factors
- Acknowledge patients’ symptoms
- Appropriate investigation
- Judicious use of empiric therapies


Girometti R et al. PCS, spectrum of biliary findings at MRCP. *Br J Radiol.* 2010;83: 351.
