Gallstones

& Other Biliary Disorders

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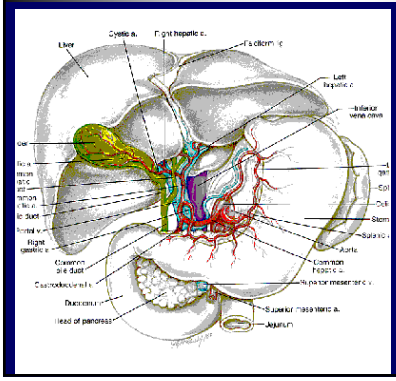
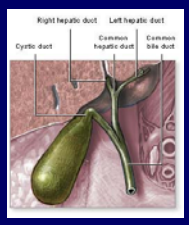
Introduction

- Gallstones are found in 12% men and **24% women**
- Prevalence increases with advancing age
- 10-30% become symptomatic
- Peak **Age** 25-44 years
- 12% of those with stones in the gallbladder have stones in the common bile duct
- 40,000 cholecystectomies are performed annually in UK
- More than 4,000 common bile ducts are cleared of stones
- Over 80% of patients die with their stones

Anatomy

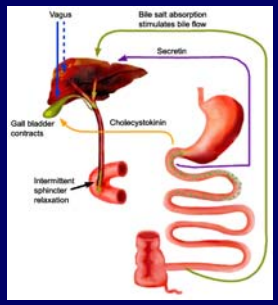




Important Anatomical Points

- RHD-LHD form CHD only 60%
- Duct of Luschka – 10%
- CBD diameter <7mm
- Rt Hep Art *usually* crosses behind CHD
- Cystic artery anatomy is highly variable
- Cystic vein(s)

Physiology



- Digestion & Excretion
- 500ml – 1000ml per day
- H_20, bile acids (cholic & chenodeoxycholic acid) & pigments (conjugated bilirubin), cholesterol, (plasma)
- EHC – several times per day
- Micelles

Pathophysiology

- Impaction of stone in Hartman's Pouch (colic or constant pain)
- Alteration of bile – 30% infected
- Empyema
- Gangrene
- Mucocele
- CBD stones – pain?

Stones

- Three types of stones are recognised
  - Cholesterol stones (15%)
  - Mixed stones (80%)
  - Pigment stones (5%)
- Mixed stones are probably a variant of cholesterol stones
- 10% of gallstones are radio-opaque
- Cholesterol stones result from a change in solubility of bile constituents
- Bile acids act as a detergent keeping cholesterol in solution
- Bile acids, lecithin and cholesterol result in the formation of micelles
- Bile is often supersaturated with cholesterol
- This favours the formation of cholesterol microcrystals
- Biliary infection, stasis and changes in gallbladder function can precipitate stone formation
- Bile is infected in 30% of patients with gallstones
- Gram-negative organisms are the most common isolated

Presentation

- Acute cholecystitis
- Empyema of the gallbladder
- Mucocele of the gallbladder
- Biliary colic
- Mirrizi's syndrome
- Obstructive jaundice
- Pancreatitis
- Acute cholangitis

Investigations 1

- LFT – selective p.o.c
  - 60% have an abnormality
- USS
  - Confirm stones
  - Wall thickness
  - CBD diameter

Investigation 2

- Functioning GB
- ? Biliary dyskinesia

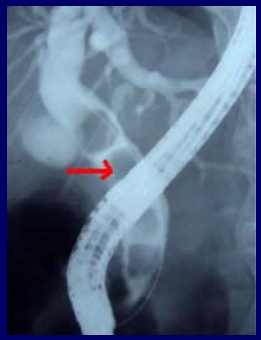
- 75% accuracy for CBD stones, crap for GB stones
  (cholesterol is isodense with bile on CT)

Investigations 3

- HIDA – excreted in bile
- Crap for stones
- Use in cholecystitis

Investigations 4

- NOT a diagnostic procedure
- 2% mortality, 10% major complications
- 80-95% duct clearance
- Pre-op clearance, but NO sig difference compared with open chole and exploration CBD



Management of Gallstones

- Remember >80% take them to the grave
- Dissolution (chenodeoxycholic acid) – functioning GB, multiple small stones, pure cholesterol & 50% recurrence at 10 yrs
- Lithotripsy - ?ductal stones at ERCP
- Operative – mainstay of treatment

Operative Management

- Open Cholecystectomy
- Mini Cholecystectomy
- Laparoscopic Cholecystectomy
- (cholecystotomy)

Open Cholecystectomy

- Technique
- Op Mortality <1%
- 12-14% complication rate
- CBD injury 1 per 300-1000 ops
- 34% still have pain 1-year after operation

Mini Cholecystectomy

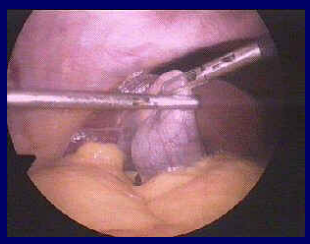
- Aims to reduce the trauma of surgery
- Few trials performed – debatable advantage over lap chole
- Retractors only, no hands
- ? Incidence of CBD injury

Laparoscopic Cholecystectomy

- Excellent views (usually!)
- 95% success rate
- Major duct injury 0.3 – 0.8%
  - ? Related to imaging rate (8%)

Technique

Technique

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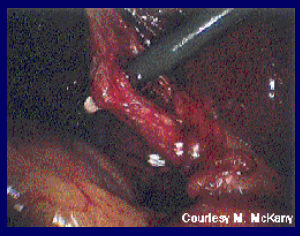

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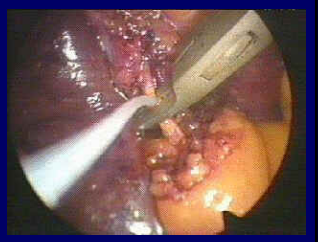

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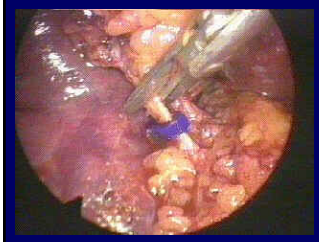
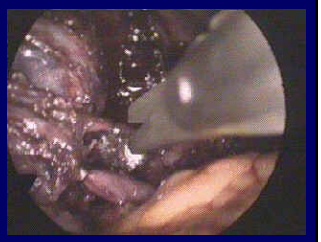

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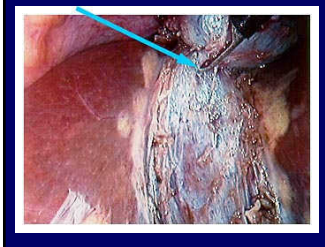


Technique


Cholecystostomy

- Used to be done in cases of unacceptable risk
- LA procedure
- *May* have a place in the very unfit and elderly

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