

# Management of CBD stones

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- Secondary calculi from Gall bladder
- Primary calculi – Usually brown pigment stones.
  - Infective aetiology
  - Biliary stasis
  - Parasitic infestations
  - FB – Clips, Stents, Sutures

# presentation

- Obstructive Jaundice – Typical / Atypical
- Cholangitis
- “Biliary colic”
- Pancreatitis
- Asymptomatic – 15-20%

# Confirmation and further assessment

- USS
- CT
- MRI / MRCP
- ERCP
- Per op cholangiogram

# Asymptomatic stone

- During routine intra op cholangiography or pre op imaging

- What is the significance ????

Traditionally many surgeons will recommend Pre/post op ERCP or CBD exploration at time of detection of stone

# Current evidence

## Asymptomatic/unsuspected stone

- Incidence 4-10% when using routine IOC
- Majority small floating calculi with normal caliber CBD
- Little known about spont. Passage of CBD stones – One study 3 / 4 calculi passed spont.

Spontaneous passage of bile duct stones: frequency of occurrence and relation to clinical presentation.

S. E. Tranter and M. H. Thompson. Annals of Surgery , May 2003

- One study showed after a 5 year follow up of conservative Mx – No complications occurred from CBD calculi.

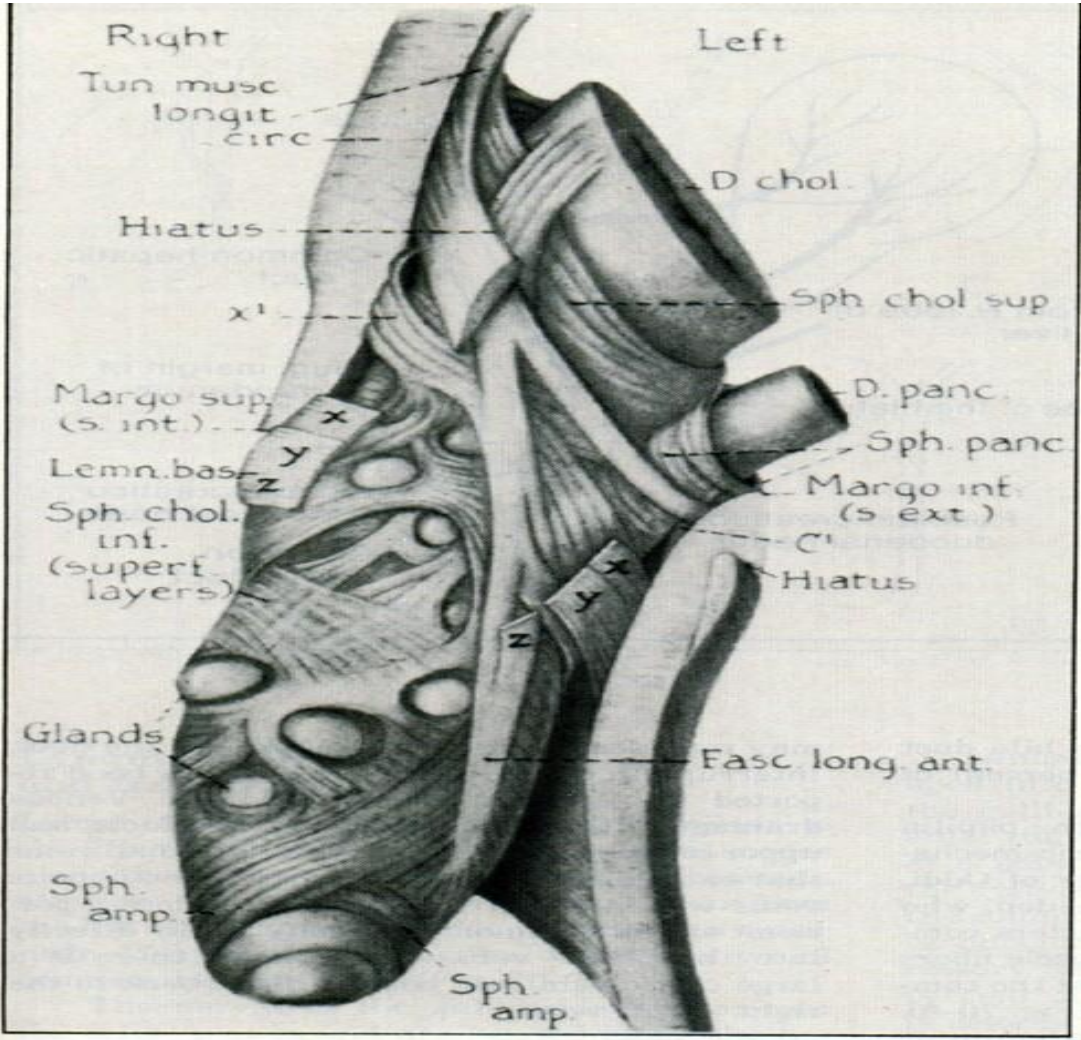
**Natural history of asymptomatic bile duct stones at time of cholecystectomy.**

[caddy GR](#), [Kirby J](#), [Kirk SJ](#), [Allen MJ](#), [Moorehead RJ](#), [Tham TC](#).

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# Management options CBD calculi

- ERCP - Sphincterotomy and stone extraction  
Traditionally performed prior to lap. Cole
- Short term morbidity 5-10%
- Median failure rate 10%
- Mortality 0.5%



# Long term issues of sphincterotomy

- Recurrent CBD stones
- Bacterial colonization of biliary tree – Varying degrees of biliary sepsis

- Where facilities and expertise available  
Laparoscopic stone retrieval at time of LC is superior to two staged approach with equal efficacy and safety with less overall morbidity.

Several RCT 's support the above view

- Ideally ERCP and stone extraction should be reserved for

High risk patient

Ongoing cholangitis or pancreatitis

In failed lap CBD exploration

Retained stones detected after cholecystectomy

- Leaving GB with calculi in situ in a high risk patient after sphincterotomy and stone extraction ?

Not the best choice. 30% will have significant morbidity/Mortality

Suggest open/Lap cholecystectomy unless surgery is absolutely contraindicated

# Laparoscopic CBD exploration

- Pre Op ERCP / MRCP diagnosis
- After Mandatory / Selective Per Op Cholangiogram

REFER advantages / Disadvantages Per op Cholangeo

# Techniques Lap CBD exp

- Trans Cystic

Under direct visual guidance of  
choledochoscope

Radiologically guided trawling technique



- Direct supra-duodenal CBD exploration  
Very similar to open CBD exploration  
Either choledochoscopic or wire basket clearance or Stone extraction under direct vision.

Completion cholangiogram

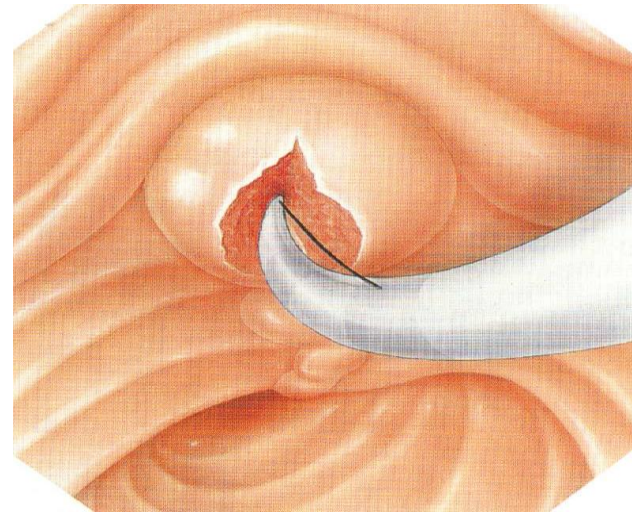
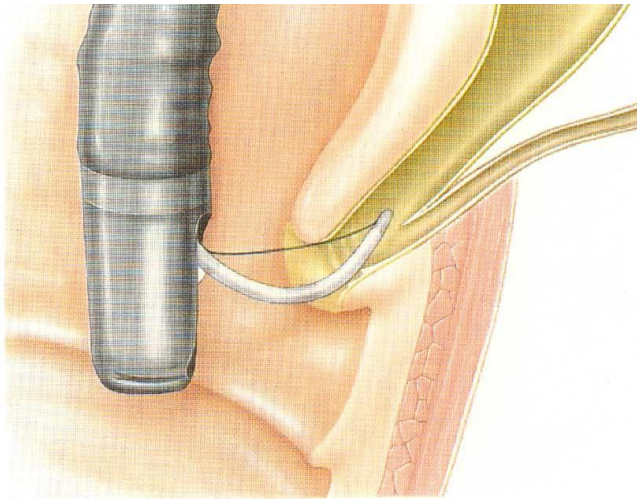
T tube placed as in open surgery

# ERCP - Technique

Cannulation and cholangiogram

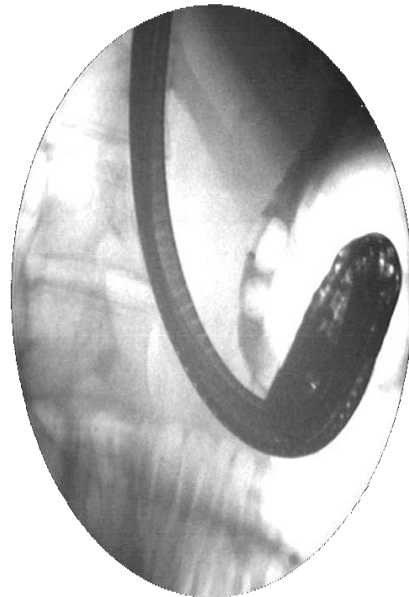
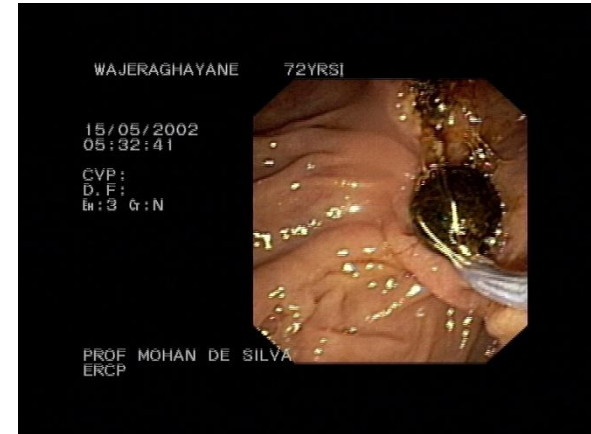


- Sphincterotomy – Issues



# Techniques used for stone clearance

- Balloon extraction
- Dormia Basket
- Mechanical lithotripsy



# Occlusion cholangiogram and place of stents

