LAPAROSCOPIC COMMON BILE DUCT EXPLORATION (L-CBDE)

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EASTERN ASSOCIATION FOR THE SURGERY OF TRAUMA
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NO DISCLOSURES

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GUIDELINES

American Society of Gastrointestinal Endoscopy does not comment on laparoscopic C.BDE

European Society of Gastrointestinal Endoscopy :
- LCBDE as safe & effective technique for removal of CBD stones

BMJ 2017 Updated Guidelines on CBD stones:[3]
- LCBDE is an appropriate technique for CBDS removal
- No evidence of a difference in efficacy, mortality or morbidity when compared with perioperative ERCP.
- LCBDE is associated with a shorter hospital stay

[3]Williams E, Beckingham I, El Sayed G, et al. Updated guideline on the management of common bile duct stones (CBDS). *Gut* 2017;**66**:765-782.

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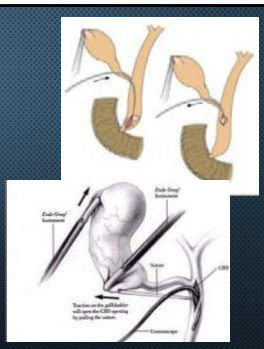
TWO APPROACHES

1. Laparoscopic transcystic CBDE
   - Generally attempted first
   - Typically successful
   - Less invasive
2. Laparoscopic choledochotomy



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SEEMS LIKE A HASSLE, WHY SHOULD I BOTHER?

Any laparoscopic cholecystectomy (LC) patient is suspect!
CBD stones present in 10-15% patients[1]

Single stage laparoscopic management of gallstones & CBD stones [1-4]
Equivalent extraction rate to pre/post ERCP
Similar morbidity & mortality to ERCP
Shorter hospital LOS
Fewer interventions = 1 time anesthetic
Lower cost

1.Verbeek JC, Birkett DH. Common bile duct exploration for choledocholithiasis. Surg Clin North Am 2008;88(6):1315-28, ix.
2.Martin DJ, Vernon DR, Toouli J. Surgical versus endoscopic treatment of bile duct stones. Cochrane Database Syst Rev 2006:CD003327. [PubMed]
3.Cuschieri A, Croce E, Faggioni A, et al. EAES ductal stone study. Preliminary findings of multi-center prospective randomized trial comparing two-stage vs single-stage management. Surg Endosc. 1995;9:1133-9. [Crossref] [PubMed]
4.Urbach DR, Khajanchee YS, Jobe BA, et al. Cost-effective management of common bile duct stones: a decision analysis of the use of endoscopic retrograde cholangiopancreatography (ERCP), intraoperative cholangiography, and laparoscopic bile duct exploration. Surg Endosc. 2001;15:4-13. [Crossref] [PubMed]

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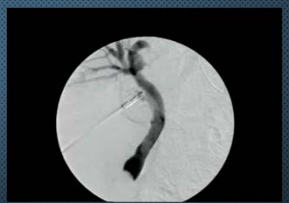
THE "SOAPBOX"



IOC is a fundamental requirement of LCBDE!

Routine use of IOC…
verifies bile duct anatomy
diagnoses choledocholithiasis (labs/US can be unreliable!)
good practice for everyone (surgeon, staff, residents, etc)

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WHO IS QUALIFIED?

Anyone can do this!

You do not need any special training...

If you know how to do a PEG/bronchoscopy + Seldinger technique then you can do a laparoscopic transcystic CBDE!

Laparoscopic common bile duct exploration - 2017 SAGES Official Publication

"Laparoscopic common bile duct exploration is a well-established procedure that has the potential to offer single-stage management of patients with choledocholithiasis. It has a safety profile that is comparable to ERCP plus laparoscopic cholecystectomy, while being associated with lower costs and shorter hospital stays. **Transcystic LCBDE is a safe procedure that should be within the realm of MOST GENERAL SURGEONS (emphasis added) who perform cholecystectomy on a frequent basis.**"

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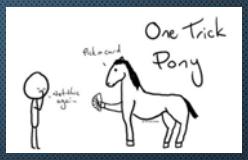
PICK THE RIGHT PATIENT!!!

Factor	Transcystic	Choledochotomy
One stone	+	+
Multiple stones	+	+
Stones < 6mm	+	+
Stones > 6mm	-	+
Intra-hepatic stones	-	+
Cystic duct < 4mm	-	+
Cystic duct > 4mm	+	+
CBD < 6mm	+	-
CBD > 6mm	+	+
CD entrance: lateral	+	+
Entrance: posterior	-	+
Entrance: distal	-	+
Mildly inflamed	+	+
Markedly inflamed	+	-
Suturing: poor	+	-
Suturing: good	+	+



Know your limitations!!

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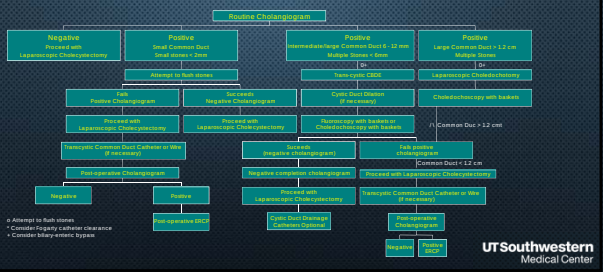
ALGORITHM FOR LAPAROSCOPIC MANAGEMENT OF COMMON DUCT STONES



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TRANSCYSTIC LAPAROSCOPIC CBDE

Indications:

- CBD diameter < 6 mm
- Stone location distal to cystic duct/CBD junction
- Cystic duct diameter > 4mm
- Less than 3-6 stones
- Stones < 6 mm
- Cystic duct entrance into CBD is straight & lateral

Contraindications:

- Stone diameter > 6mm
- Cystic duct < 4 mm
- Intrahepatic stones
- Cystic duct entrance –posterior or distal to CBD stones

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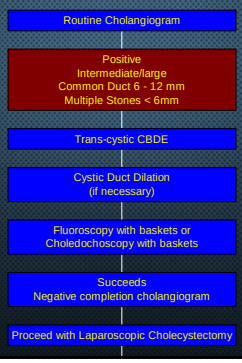

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TRANSCYSTIC LCBDE – EQUIPMENT

For IOC:

- Omnipaque – dilute* in10 cc syringe
- Normal saline in 20 cc syringe
- IV Extension tubing
- Cook Cholangiogram 5 French catheter system

For Transcystic CBDE

- Cook Common Duct Exploration Set
- Flexible Choledochoscope
- 1L NS with pressure bag and IV tubing
- Cook Cholangiogram Kit
  - Appel Berci Introducer set
  - ROAD Runner PC wire guide
  - PTA Dilation Cath
  - Multiport Adaptor
  - Nitinol Tipless Stone Extractor

*Dilute contrast – allows for better visualization.
Stones can hide in a column of contrast when it is full dose

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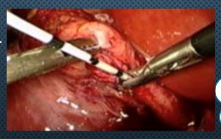
LAPAROSCOPIC CHOLECYSTECTOMY WITH IOC

1. Dissect the cystic duct & make ductotomy
2. Milk out any sludge or stones distally out through ductotomy
3. Place 5F Cholangiogram catheter
4. Cholangiography
   If lack of flow then...



Irrigation techniques usually successful for small stones (< 2mm) or sludge

Transcystic flushing of duct with saline to clear duct
Glucagon (1-2mg) administered IV to relax the sphincter of Oddi

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Choledochoscopy and stone retrieval techniques allow for greatest sense of safety and accuracy

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TRANSCYSTIC CBDE – STEP BY STEP PROCEDURE

1. Pass flexible .035 in. guide wire thru the Cholangiogram catheter.
2. Remove catheter, leaving guide wire in place.
3. Insert 12 fr flexible sheath for safe choledochoscope insertion through abdominal wall.

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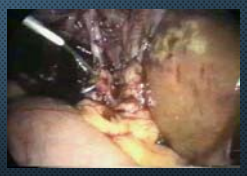
4. Place balloon dilator over the guide wire for cystic duct dilation

5. Dilate cystic duct with 4F balloon
   - Minimum starting cystic duct diameter 2.5 mm

6. Remove balloon, leaving wire in place



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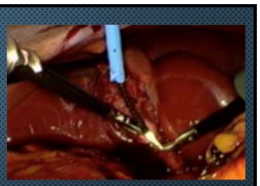
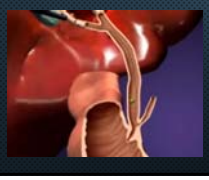
7. Place the choledochoscope over guide wire into cystic duct to the CBD
   - Advance scope with padded graspers
   - Use continuous saline irrigation
8. Once in CBD, remove guide wire





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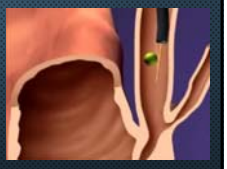
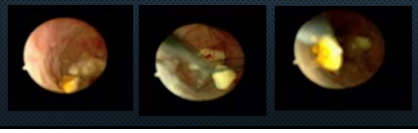
Basket Technique *

*preferred technique using scope

1. Pass the stone basket through choledocoscope
2. Remove the scope, basket, & stone, as one unit from cystic duct
3. Repeat process until duct cleared of stones
4. Including catheter and wire placement.
5. Repeat cholangiogram to confirm duct clearance





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Fogarty Balloon Catheter

1. Pass the catheter into the cystic duct then CBD along side the scope
   - Working channel on scope is too small for the catheter
2. Advance catheter beyond stone under direct visualization
3. Inflate balloon
4. Withdraw catheter enough to impact stone against scope
5. Remove entire ensemble

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AT THE END…

- Always perform a post intervention cholangiogram!
- After cystic duct dilatation consider using an endoloop

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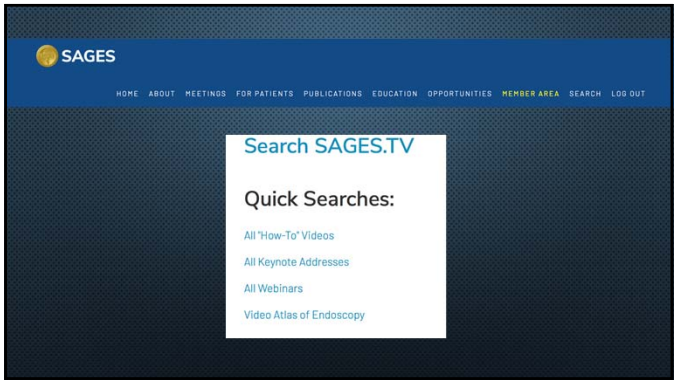

THANK YOU!