

## Choledocholithiasis

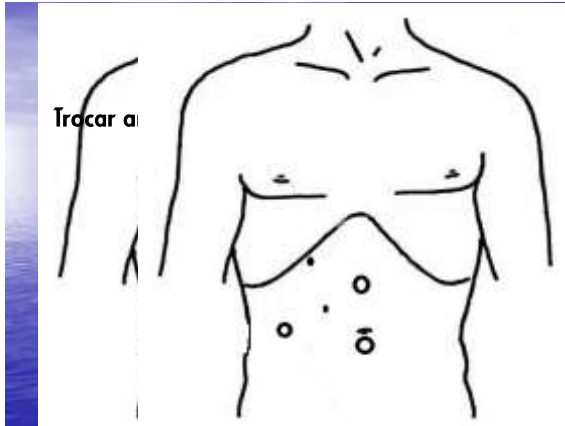
- Approximately **10%** of patients who undergo lap. chole. harbor common bile duct stones
- It is estimated that **5% to 12%** of patients with choledocholithiasis may be completely asymptomatic and have normal liver function tests.
- LCBDE** depends on several factors including surgical expertise, adequate equipment, the biliary anatomy, and the number and size of CBD stones.
- With advancing technology it has become safe, efficient, and cost effective.

*Scott Melvin et al; minimally invasive surgery. 2014*

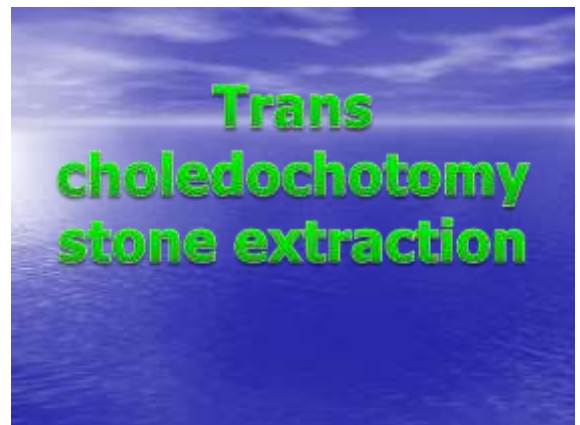
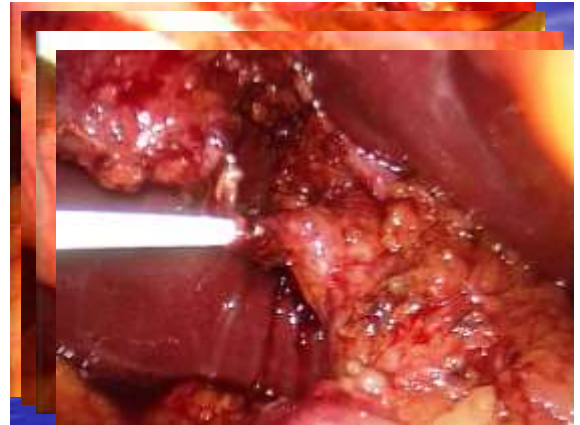
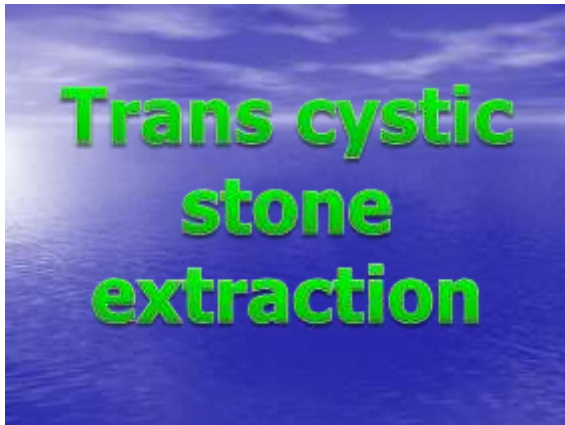
- Methods for stone retrieval:
  - 1) Graspers either regular or reticulated ones with CBD milking
  - 2) Irrigation/ suction techniques
  - 3) Through the scope techniques (Choledochoscopy basket and/ or balloon )
  - 4) Direct access techniques either basket and /or Balloon (or Fogarty catheter)
- Confirm ductal clearance:  
 By either cholangiogram assessment, or choledochoscopic inspection

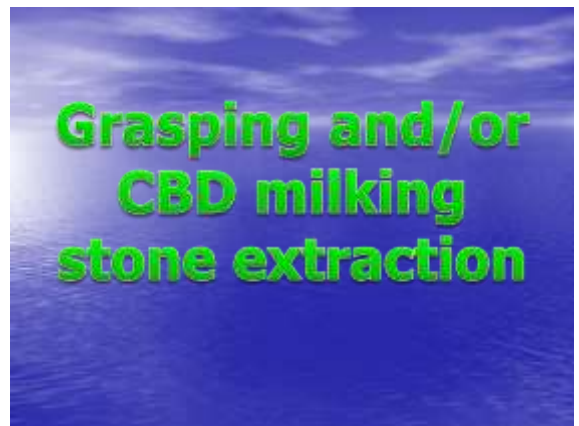
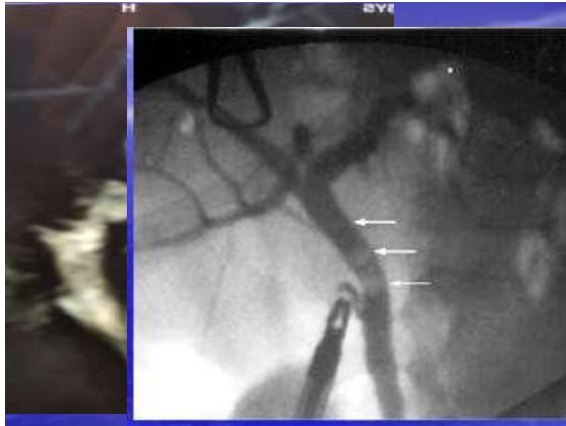


50 cases of chronic calcular cholecystitis, with CBD stone(s) were enrolled, and treated by laparoscopic cholecystectomy plus choledocholithotomy (LCBDE)

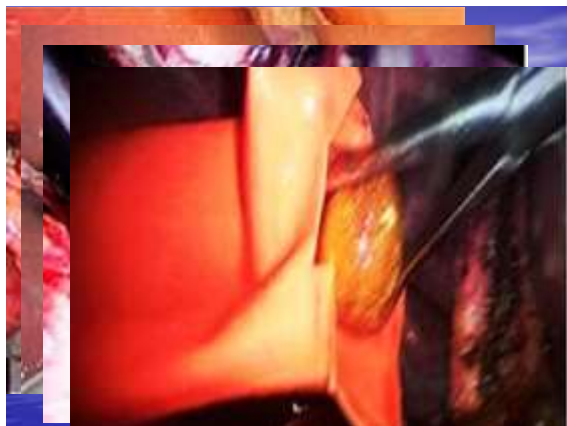


The item	Number	Percent
Transe-cystic approach	5	10%
Transe-choledochotomy approach	45	90%
Choledochoscopic technique	30	60%
Cholangiogram	15	30%
Converted to open technique (failed attempt)	1	2%
Total	50	100%









**Through the  
scope basket  
and/or balloon  
stone extraction**



**Irrigation/suction  
technique stone  
extraction**



**Direct access  
basket  
manipulation &  
stone extraction**



The item	Group I (surgery )	Group II (endoscopy)	Group III (laparoscopy)	P Value
*-Invasiveness	Invasive	Minimally invasive	Minimally invasive	-
*-Operative time (min *-Mean $\pm$ S.D	60-180 min. 90.81 $\pm$ 21.45	20-45 min. 30.24 $\pm$ 8.72	70-292 min 111.22 $\pm$ 41.5	0.000 H.signif.
*-Success rate of the attempted procedures *-Failed cases	100% -	96% 2	98% 1	0.245 Not signif.
*-CBD Clearance *-Missed stone(s)	93% 7	100% -	98% 2	-
*-Procedural mortality *-Post procedural morbidity	- 15%	- 9%	- 10%	- 0.425 Not signif.
*-Hospital stay (day) *-Mean $\pm$ S.D	(5-12 days) 8.3 $\pm$ 3.84	(1-2 days) 1.21 $\pm$ 0.27	(2-4 days) 3.2 $\pm$ 1.18	0.002 Significant
*-Return to work (day) *-Mean $\pm$ S.D	12-20 days 14.3 $\pm$ 3.71	2-5 days 3.2 $\pm$ 1.86	5-10 days 7.61 $\pm$ 3.9	0.030 Significant
*-Difficulty	Easy	Difficult	Difficult	-
*-Feasibility	Feasible	Not feasible	Not feasible	-

- ❖ Through scope basket and/or balloon techniques was feasible, somewhat easy, effective in CBD stones of average size (0.5–1.0 cm), and number (1–5).
- ❖ Direct access basket and/or balloon was feasible, slightly difficult, very effective techniques especially in non-impacted distal stone (1–3), of average size (0.5–1.0 cm) well recognized by MRCP night before operation with relatively low risk of missed stones.

- ❖ On the other hand, cholangiogram guided direct access basket and/or balloon extraction techniques was the techniques of choice for all stones sizes, numbers, either impacted or non, distal or proximal with marvelous results.

- ❖ Irrigation/suction method was feasible, easy, adjuvant techniques may be used in distal small non-impacted CBD stones (around 0.5 cm), and number (1-3).
- ❖ Direct use of graspers with CBD milking was also a feasible technique especially if CBD stone is visible or palpable in proximal CBD of average size (0.5-1.0 cm).

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- ❖ All techniques required skillful experienced team, up-to-date equipment's, and good selection of patients.
- ❖ Experience influence treatment and it is mandatory with other facility and equipment for management of such cases
- ❖ LCBDE approach was feasible, with some difficulties especially in non-dilated duct. It is advised to carry on its role on a greater scale of cases to gain a consensus.

