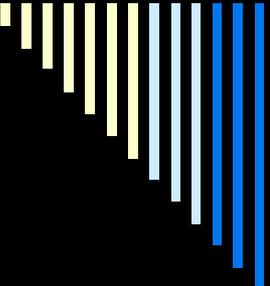


Complication of Laparoscopic Cholecystectomy

R.K.Mishra

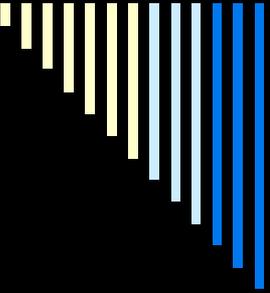




What to do if something goes wrong

**There is not a
single laparoscopic
surgeon in the
world who has not
damaged CBD**





Complications

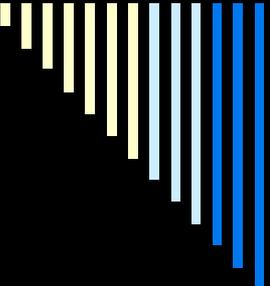
Early

- Common bile duct injury
- Bile leak
- Injury to viscera
- Hemorrhage
- Retained stones and abscess formation

Late

- Biliary strictures
- Cystic duct clip stones



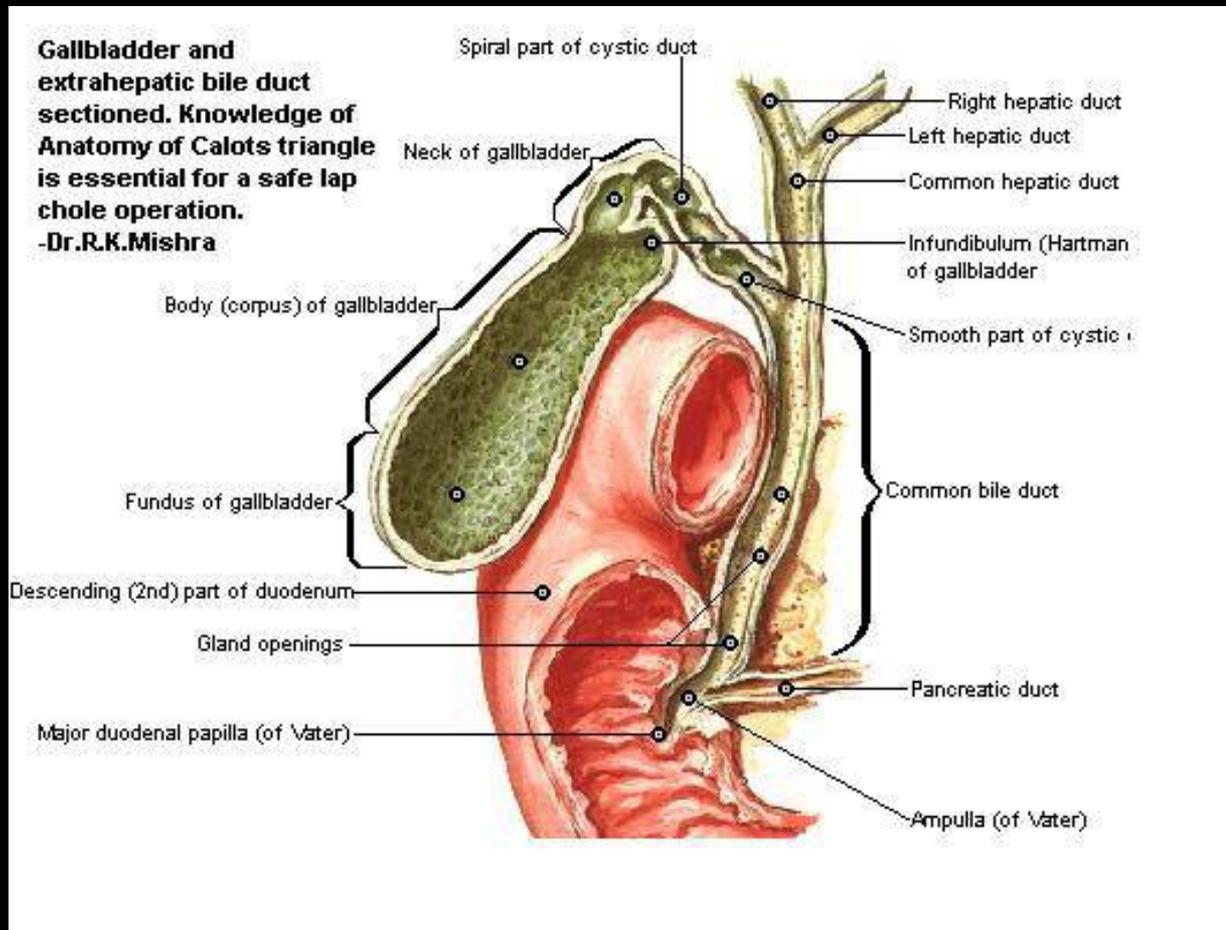


Lap Chole and CBD injury

- Incidence of Iatrogenic CBD injury is 0.12% & 0.55% during open and laparoscopic cholecystectomy respectively
- Most common cause of CBD injury is
 1. Misinterpretation of anatomy 70%
 2. Technical Errors
 3. Risk factors



Normal Anatomy

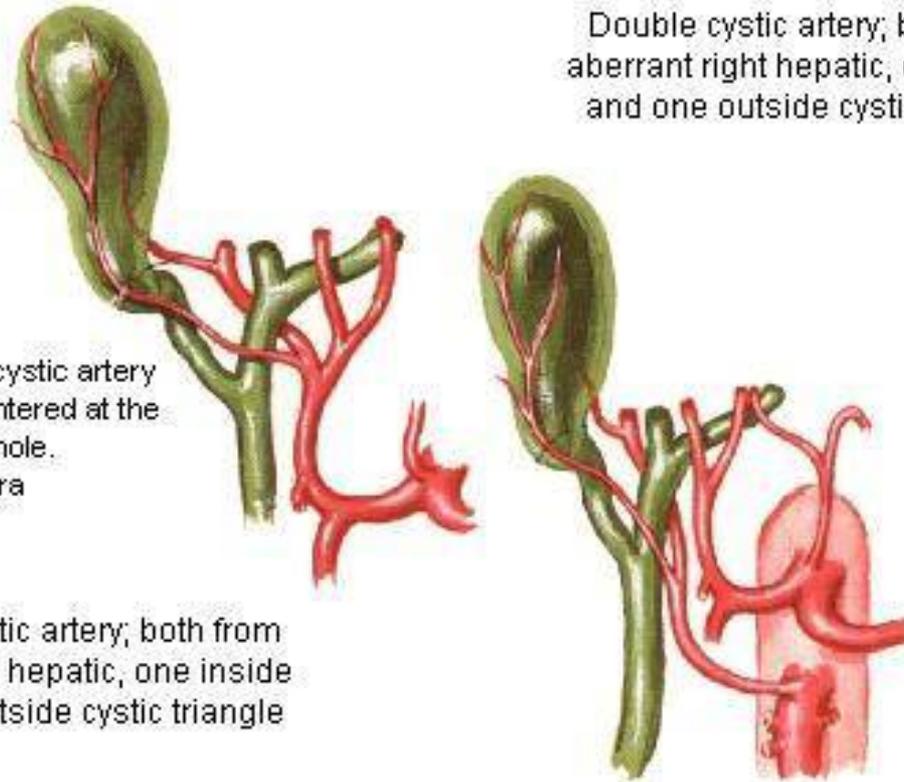


Variation in Cystic Artery I

Variation in cystic artery
often encountered at the
time of lap chole.
-Dr.R.K.Mishra

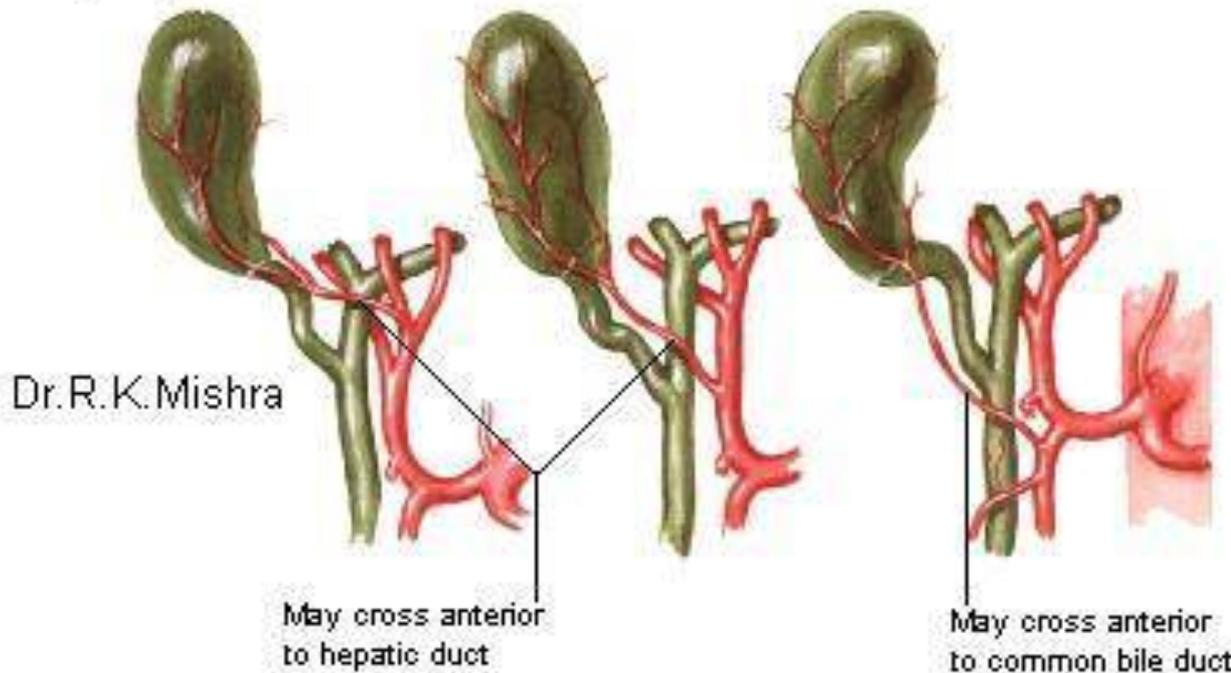
Double cystic artery; both from
normal right hepatic, one inside
and one outside cystic triangle

Double cystic artery; both from
aberrant right hepatic, one inside
and one outside cystic triangle



Variation in Cystic Artery II

Variation in cystic artery is often found at the time of lapchole
May originate from intermediate (or left) hepatic May originate from proper hepatic May originate from gastroduodenal

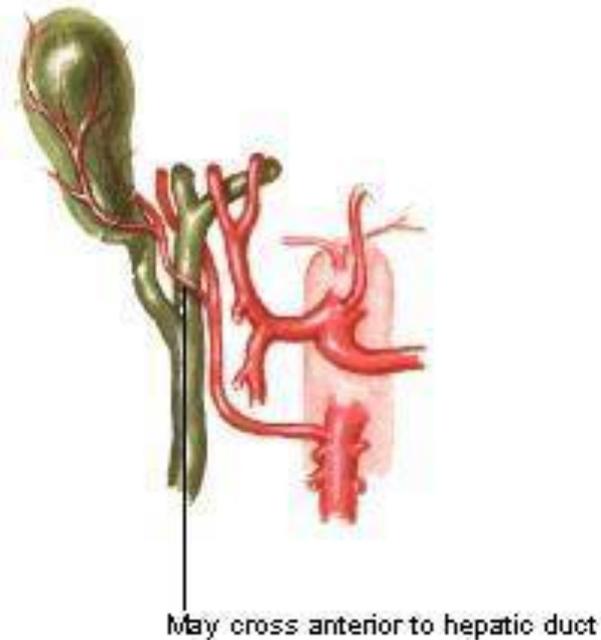
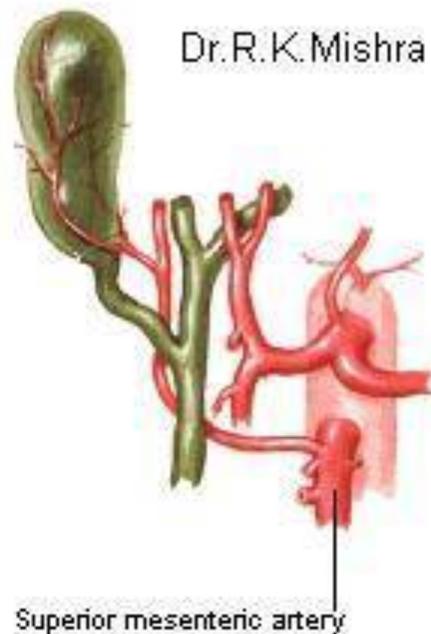


Variation in Cystic Artery III

Variation in cystic artery is many and often found

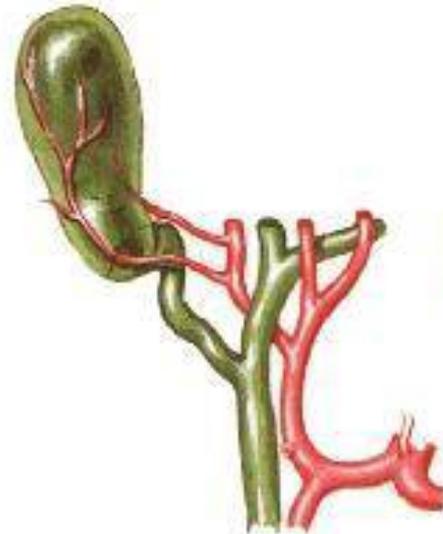
May originate in cystic triangle from aberrant right hepatic (from superior mesenteric)

May originate outside cystic triangle from aberrant right hepatic



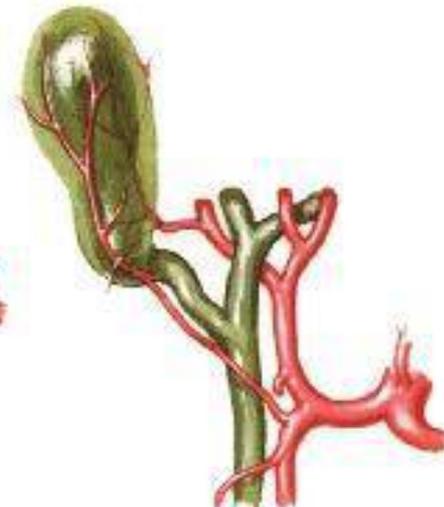
Variation in Cystic Artery IV

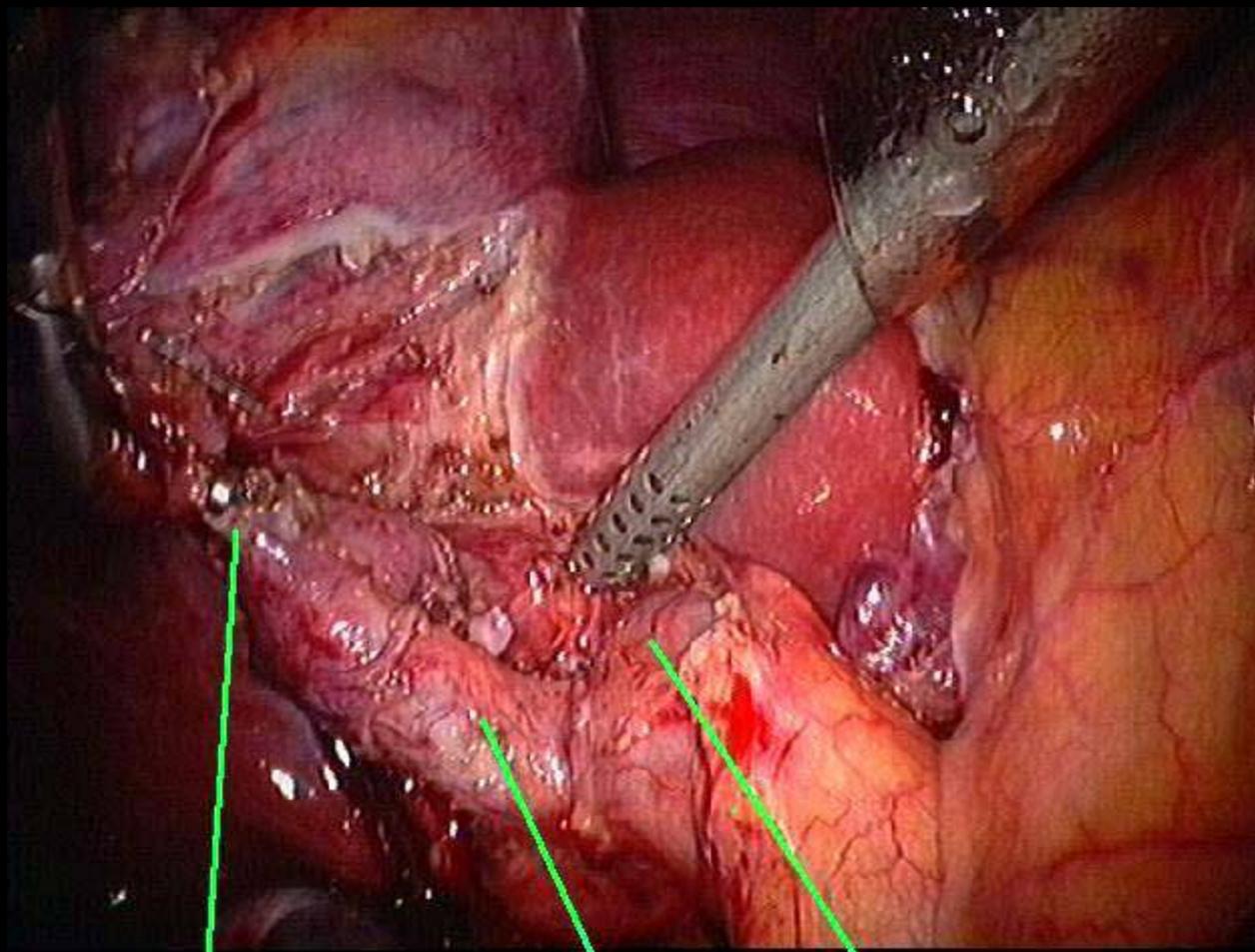
All these variation in cystic artery should must be remembered. Dr.R.K.Mishra.



Double cystic artery; both from normal right hepatic in cystic triangle

Double cystic artery; posterior from right hepatic, anterior from gastroduodenal





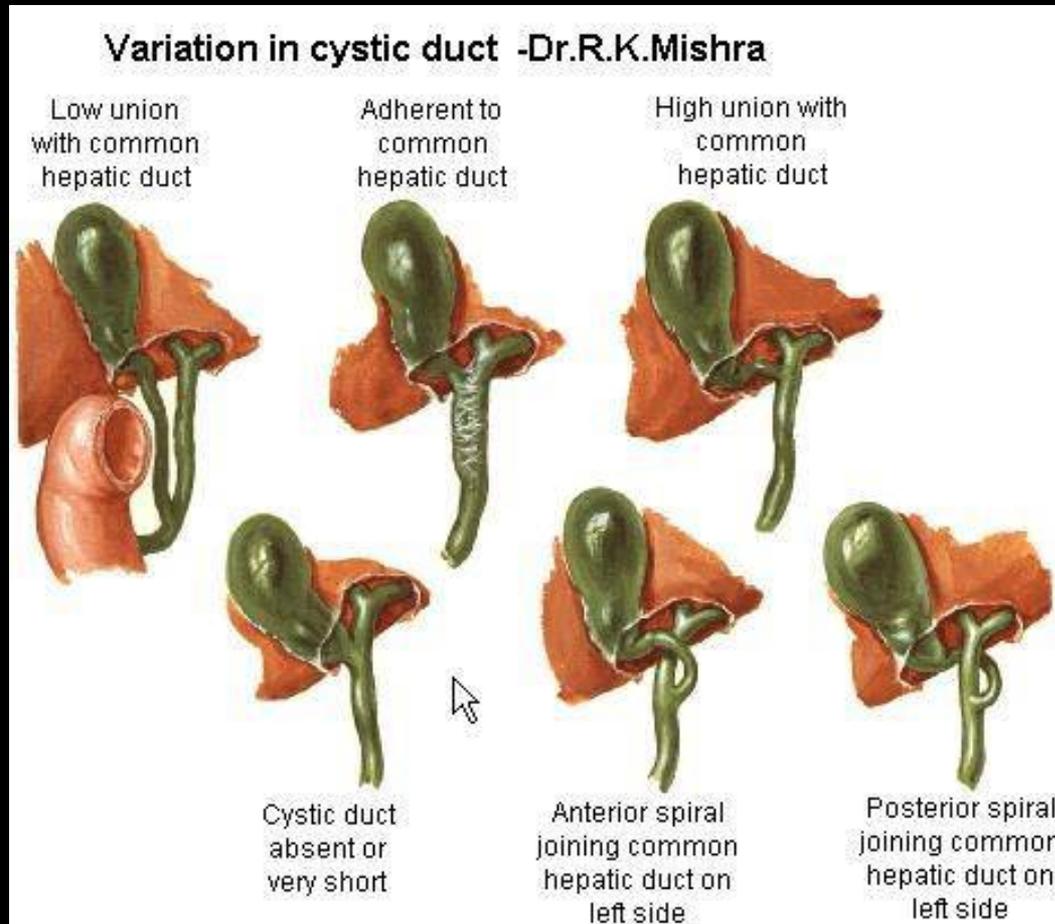
Cystic Duct with Ligaclips applied

Common Hepatic Duct

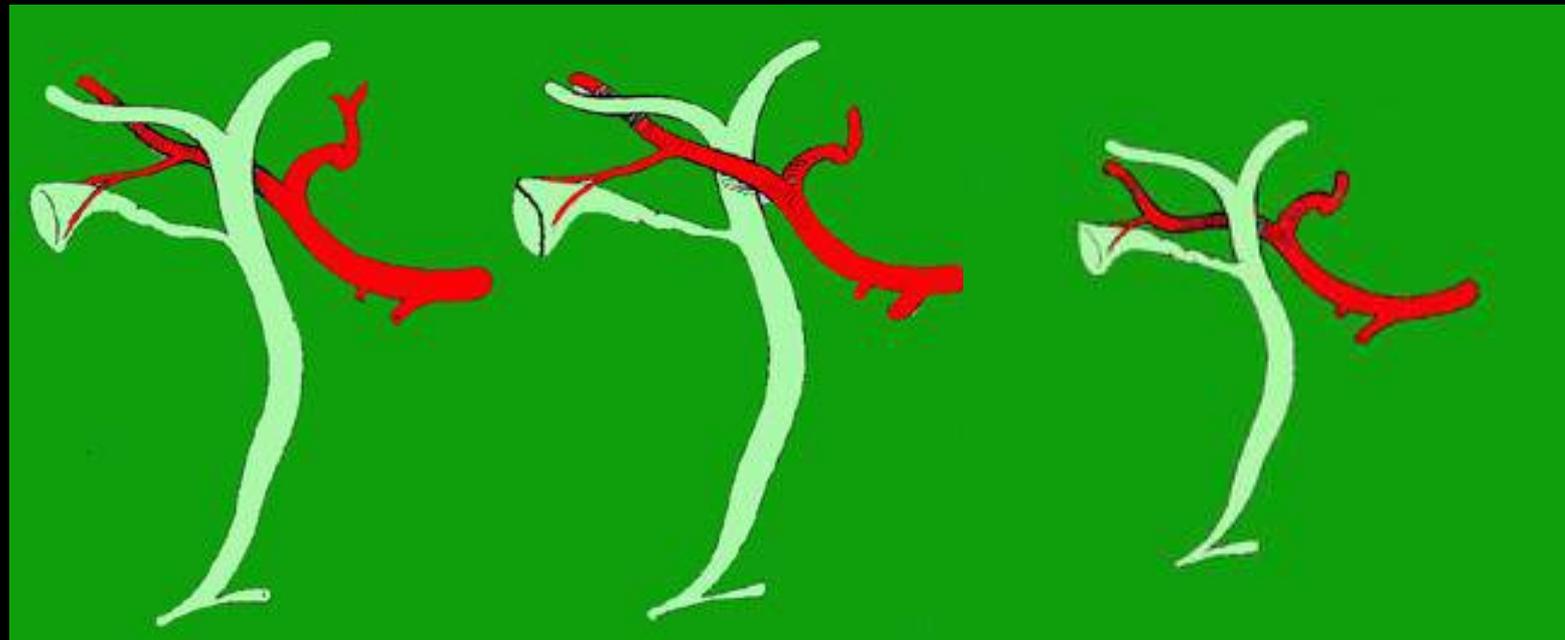
'Parallel' Common Hepatic Duct



Variation in Cystic Duct



Right hepatic variation

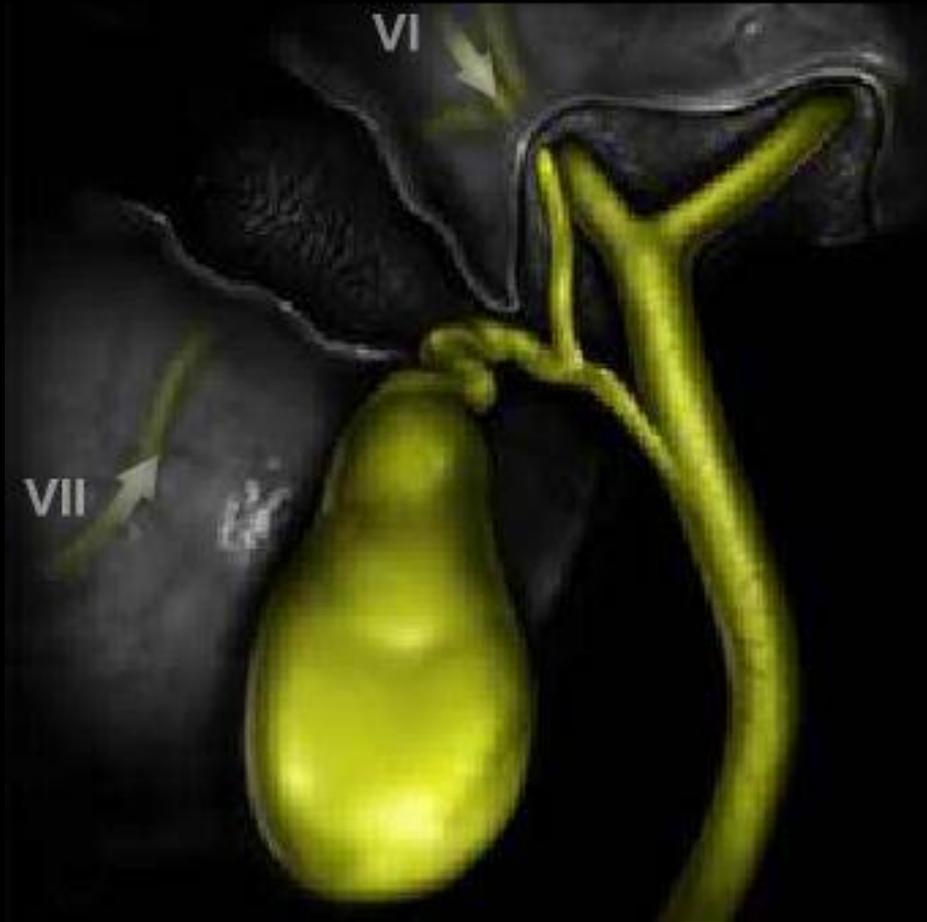


75%
Posterior

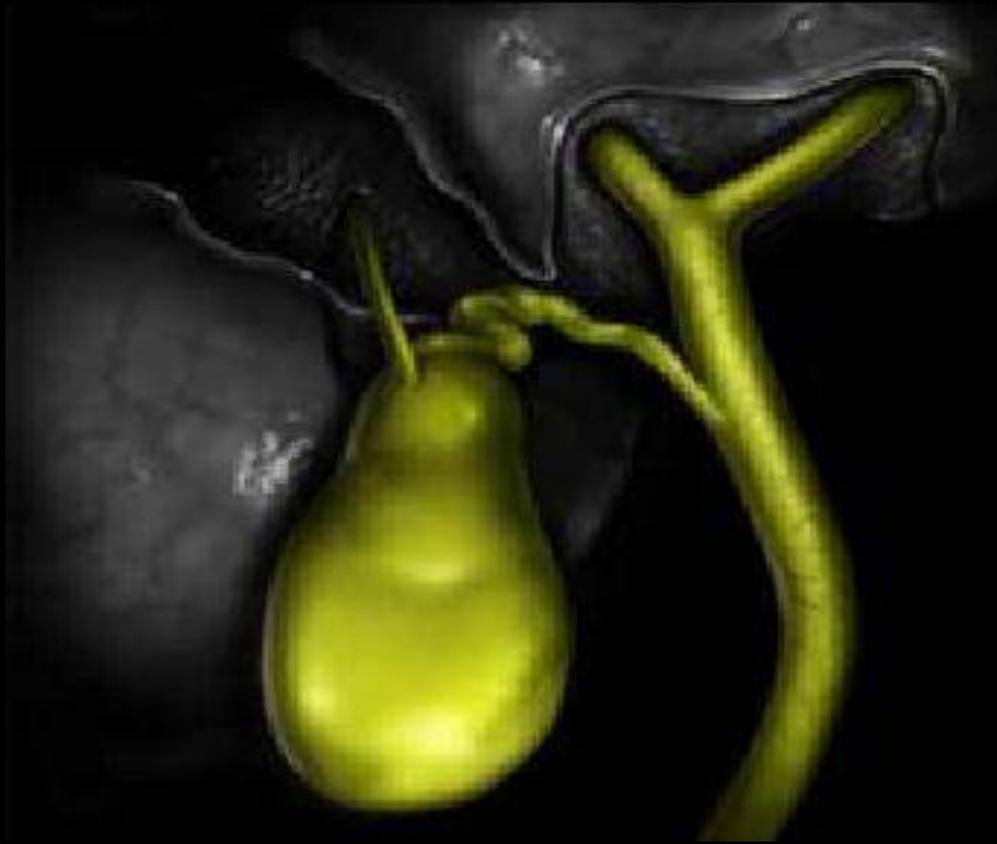
25%
Anterior



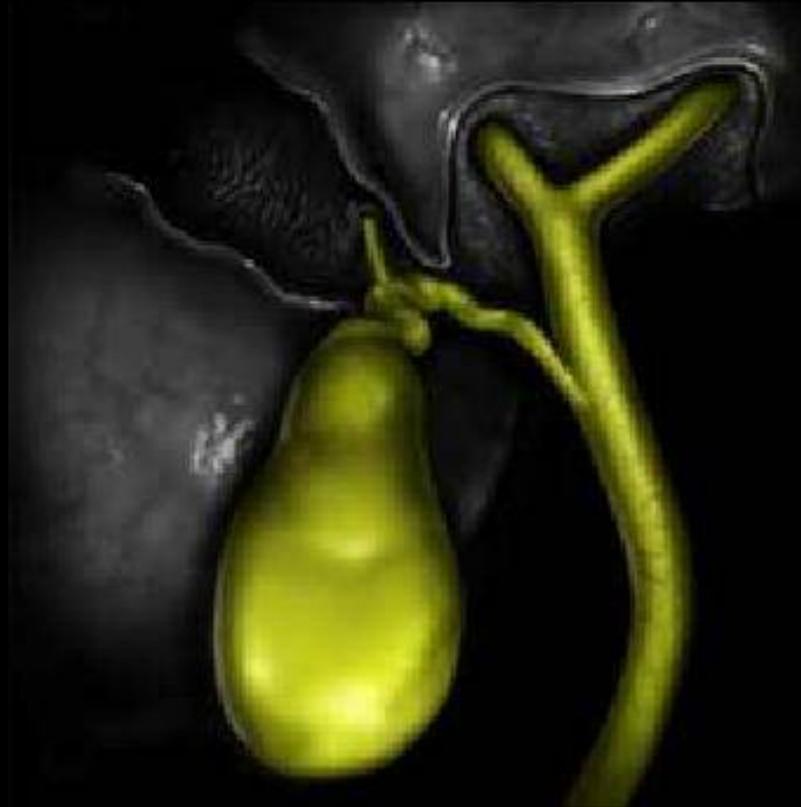
Accessory Cystic Ducts



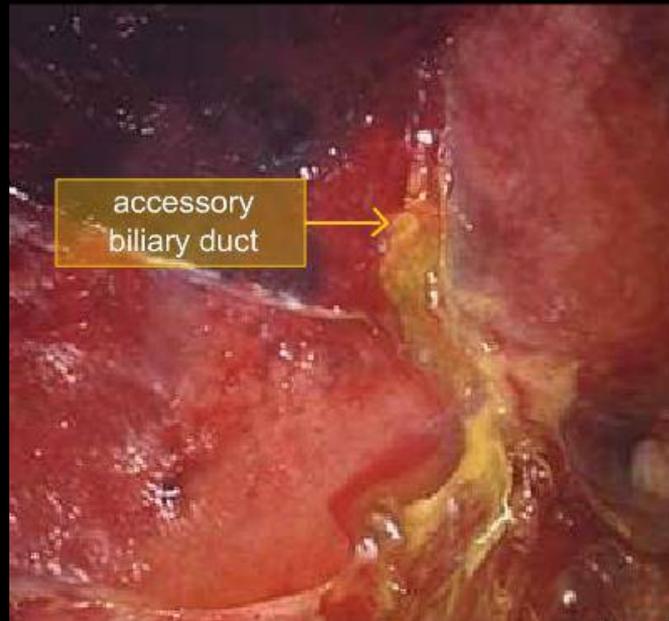
Accessory Cystic Ducts



Duct of Luschka



Duct of Luschka



The dissection of the gallbladder bed must be performed carefully to allow for the identification of any accessory biliary ducts draining directly into the gallbladder from the liver. Any such accessory ducts identified during the dissection of the gallbladder bed must be clipped.



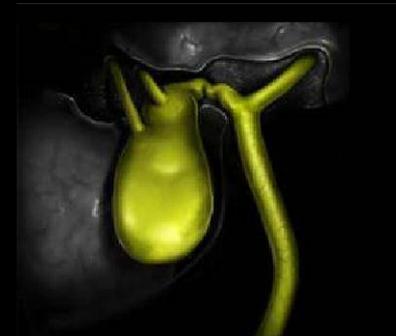
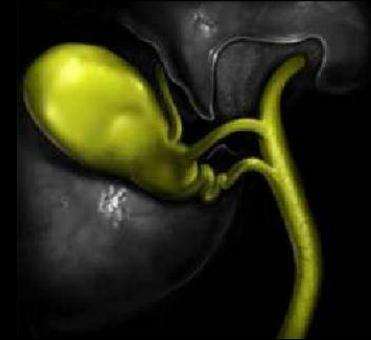
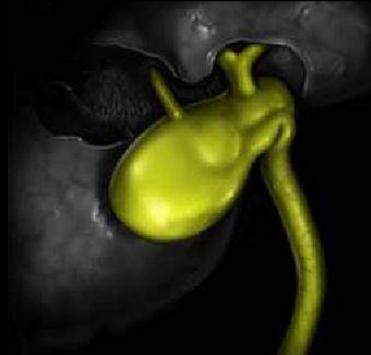
Most Dangerous Gallbladder

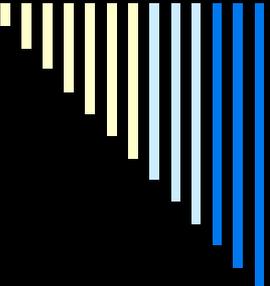


superior view



inferior view

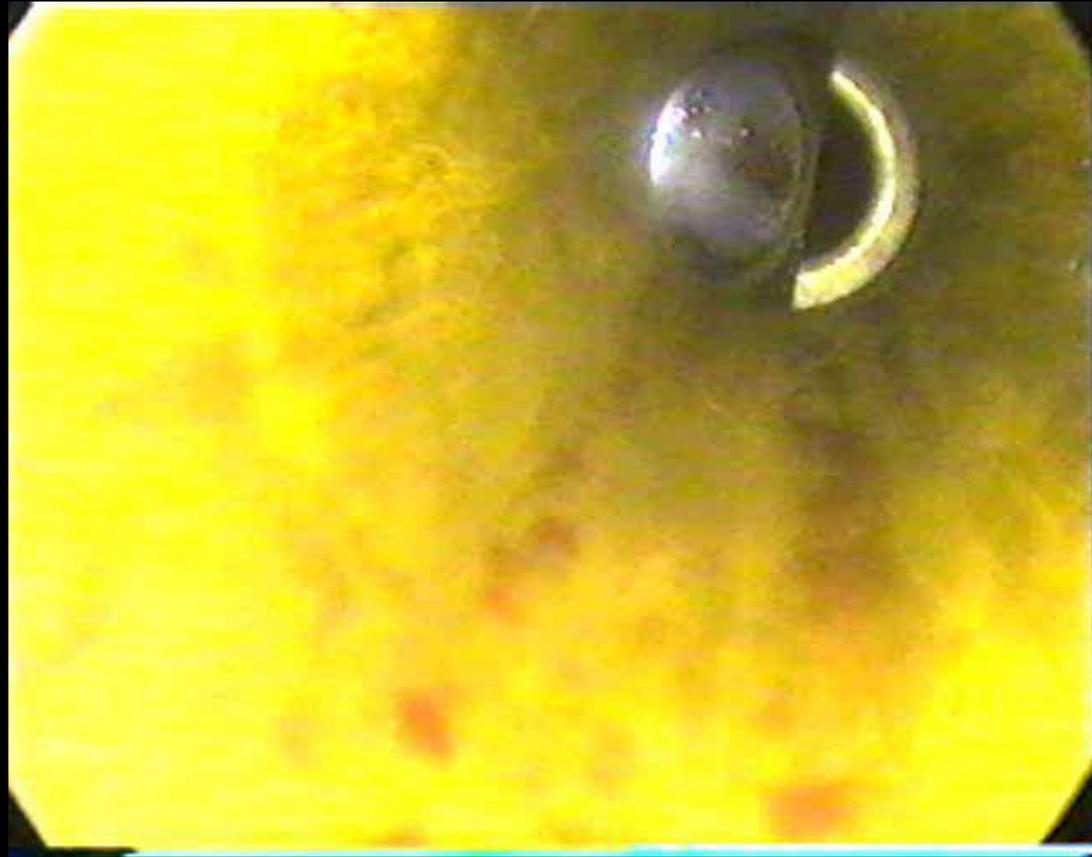




Fundus First

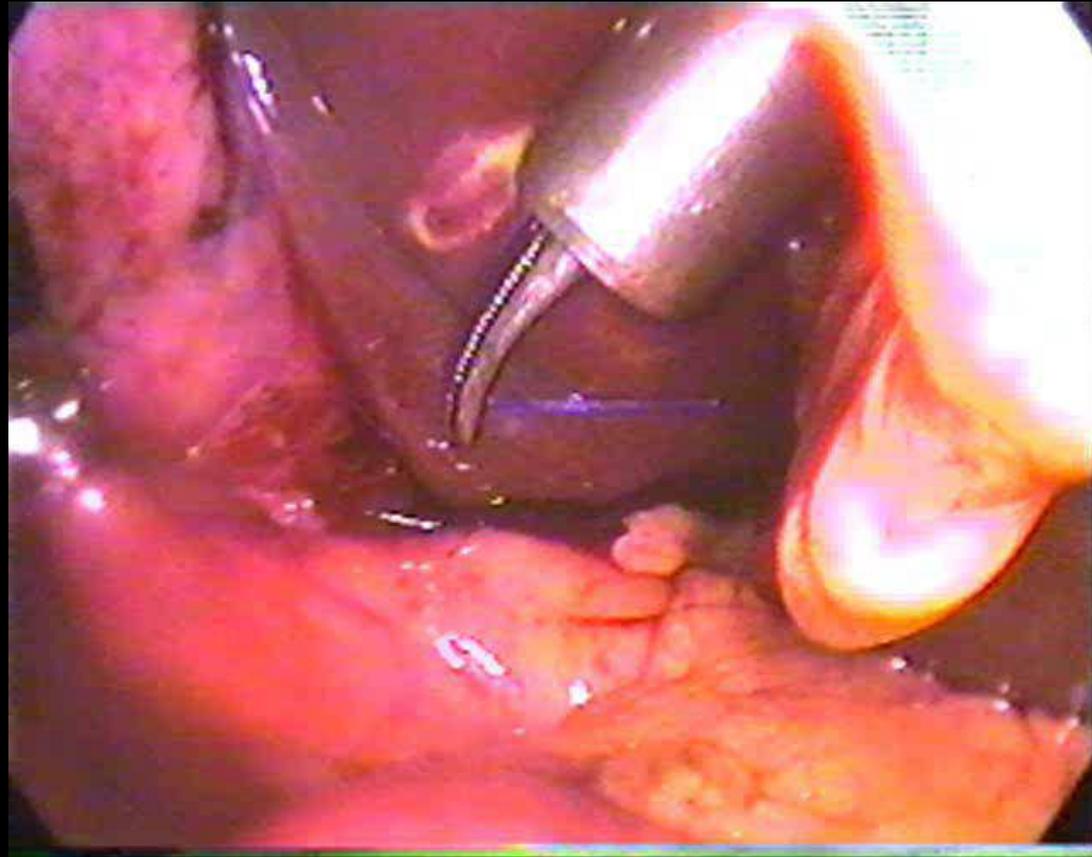


Difficult Cholecystectomy



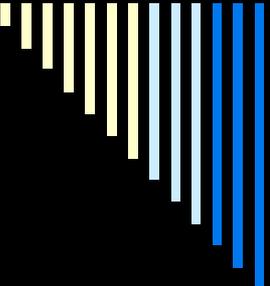


Knotting

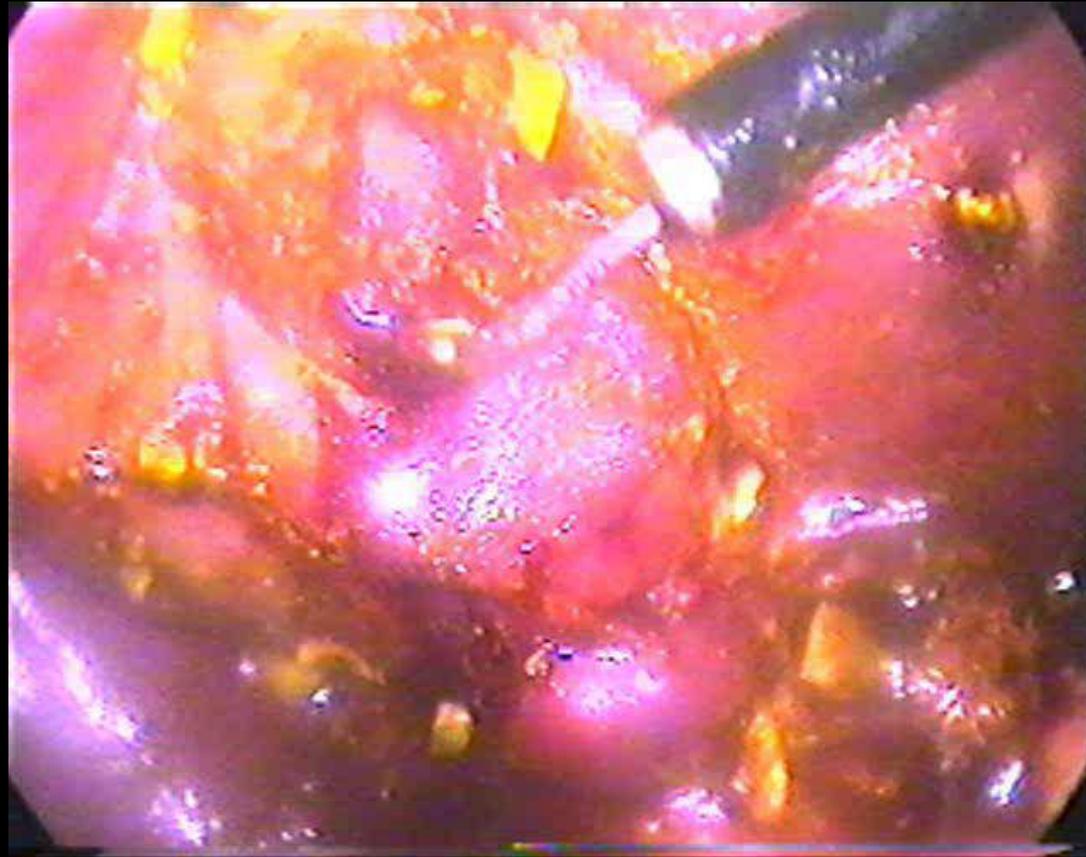


Extraction of Stones



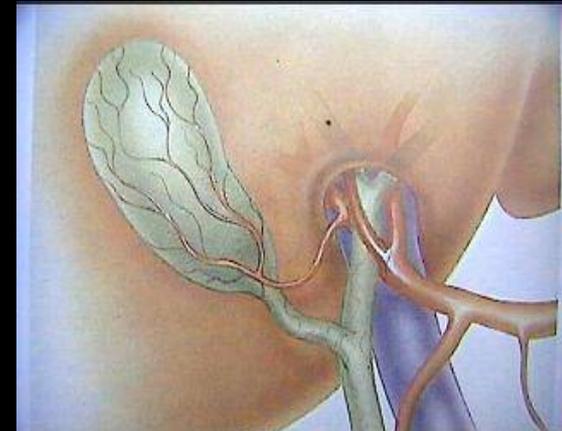


Separation from Liver

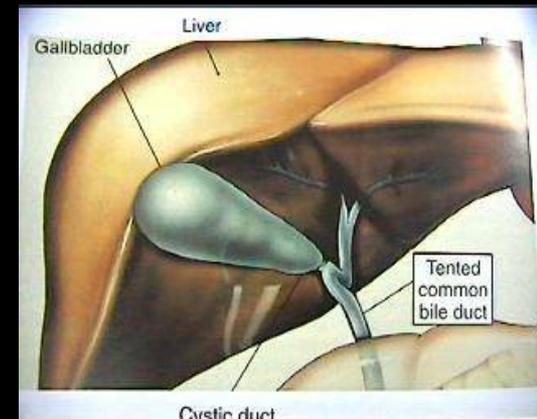
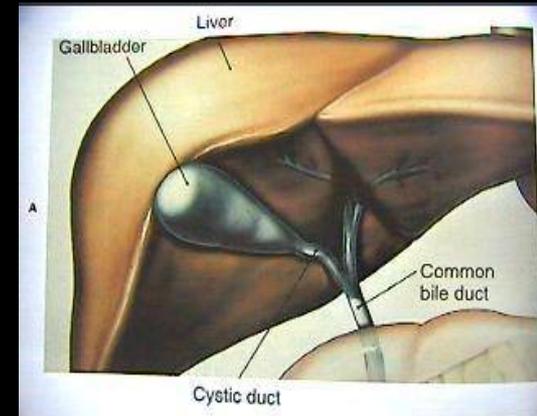
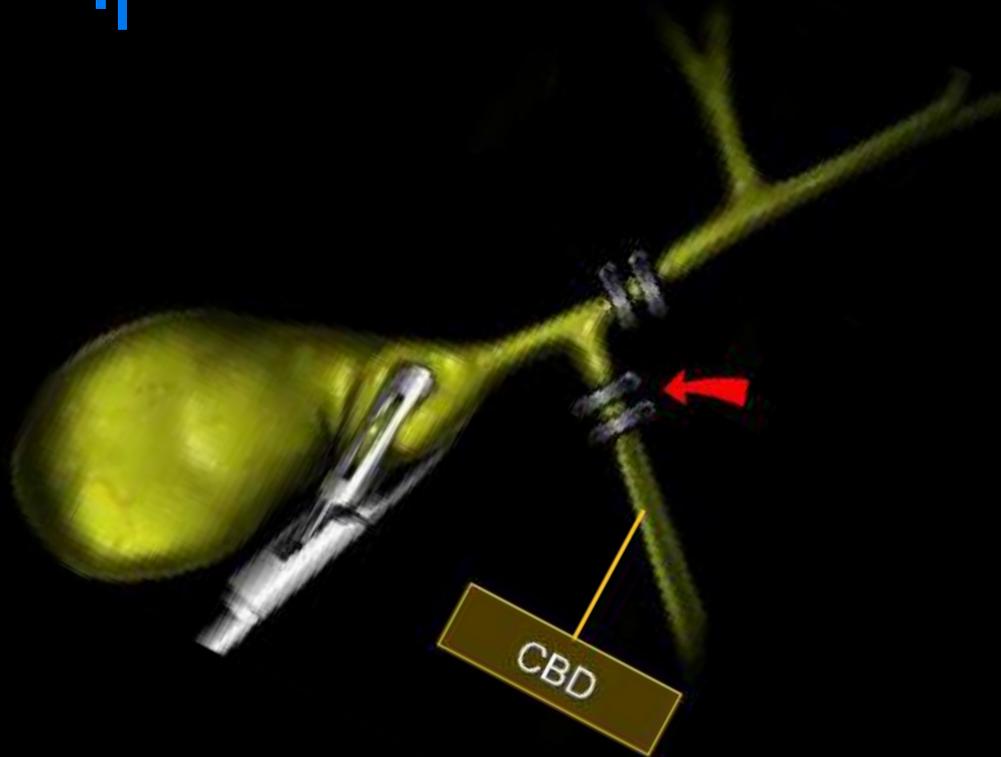


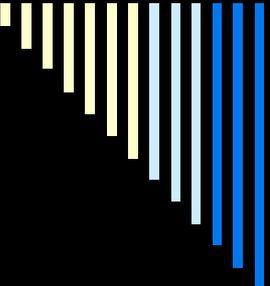
Complication

Injury to right hepatic artery

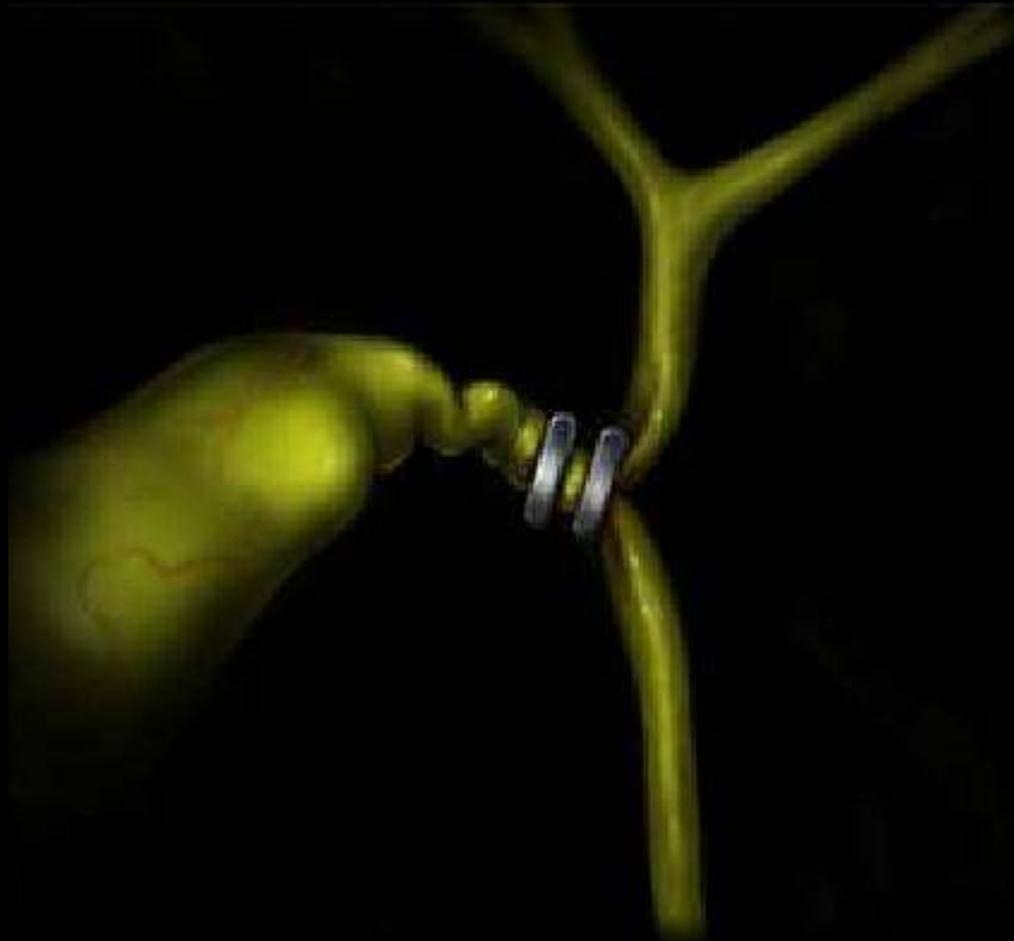


Injury to the CBD



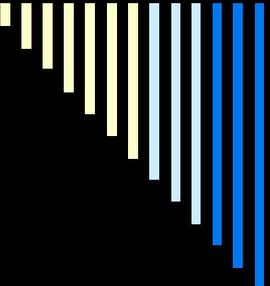


Lateral Clipping of CBD

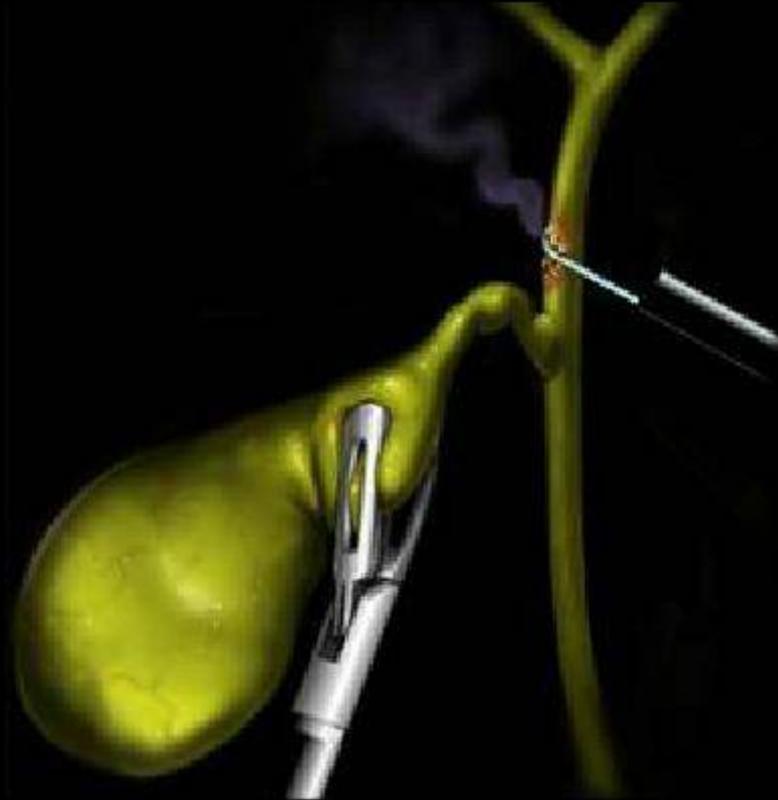


Traumatic Desinsertion of Cystic Duct Junction





Electrical Injury



Technical Errors

- Most important technical error is hilar bleeding & frantic attempts are made to control bleeding by electrocautery.
- In case of bleeding
 - First apply pressure
 - Take suction irrigation and atraumatic grasper
 - Use electrocautery only when bleeder point is identified



Injury by Instruments



The Maryland dissector has a convex border as the Cystic artery is just posterior to the Cystic duct the convex border can bite the Cystic Artery on complete closer.



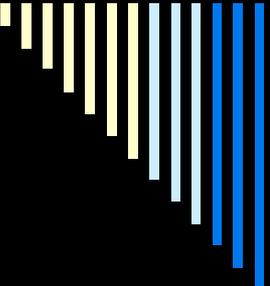
How to avoid injury ?

- Try to memorise initial anatomy of calots triangle
- A large distended Gall bladder should be aspirated
- Antero-lateral traction is better than fundus pull
- Avoid meticulous dissection by energized instrument
- Skeletanization through pledget is better
- During detachment of gallbladder from liver bed maintain plane of adipose tissue
- Use Suction Irrigation frequently



Bleeding Cystic Artery





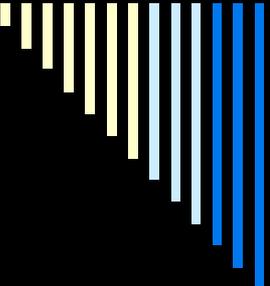
What to do if something goes wrong

□ Type of CBD Injury

■ BISMUTH CLASSIFICATION

- Type 1 - CHD stump > 2 cm.
- Type 2 - CHD stump < 2 cm.
- Type 3 - Hilar, Rt. & Lt. duct confluence intact
- Type 4 – Hilar, separation of Rt. and Lt. ducts
- Type 5 - Injury to aberrant Rt. duct ± CBD injury

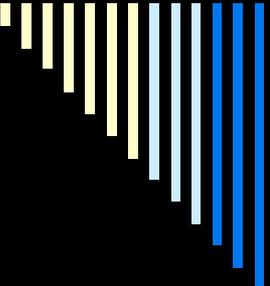




Strategy to handle complication recognized intra operatively

- For high complete transection Roux-en-Y hepaticojejunostomy
- For lower complete injuries primary suture repair over T tube
- Long end of T tube must not be exteriorized from same site
- For partial injuries Insertion of T tube & Roux-en-Y serosal patch

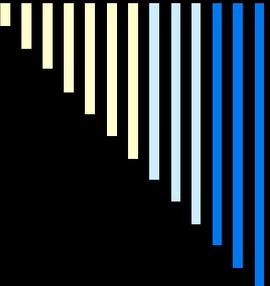




Strategy to handle complication recognised post operatively

- USG + ERCP + MRCP
- Fluid + Electrolyte + systemic antibiotic
- Conservative treatment & biliary drainage for 6 weeks by ERCP stent insertion or
- PTBD (Percutaneous trans hepatic biliary drainage) if Endoscopic stent application is not possible
- After Several weeks Reconstructive surgery
- Roux-en-Y Choledocoduodenostomy or Hepatojejunostomy





Mirizzi Syndrome

- Mirizzi syndrome is a rare benign cause of obstructive jaundice. This syndrome, first described by Pablo Mirizzi (Argentina) in 1948, is mainly caused by a stone impacted in either the Hartmann's pouch or the cystic duct, causing obstruction of the common hepatic duct by extrinsic compression.
- It occurs in 0.7% to 1.4% of the patients undergoing cholecystectomy



Lap Chole in Mirizzi Syndrome

- Type I is characterized by simple external compression of the common hepatic **duct**,
- Type II is defined by the presence of a cholecystocholedochal fistula.

Laparoscopic Cholecystectomy by Fundus first is possible for Mirizzi type I, Type II with fistula should better dealt with open technique.





Thank you



Advance Course February 2005

