SNS COLLEGE OF ALLIED HEALTH SCIENCES

SNS Kalvi Nagar, Coimbatore-35

Affiliated to The Dr.M.G.R Medical University, Chennai

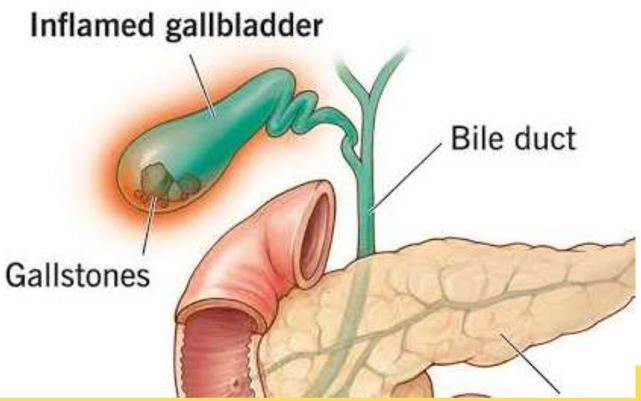
RADIOGRAPHY AND IMAGING TECHNOLOGY - II YEAR

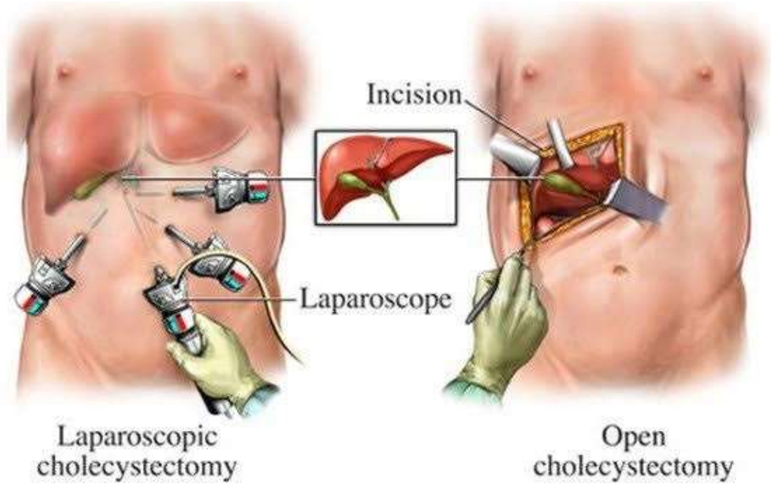
COURSE NAME : CONTRAST & SPECIAL RADIOGRAPHY PROCEDURES

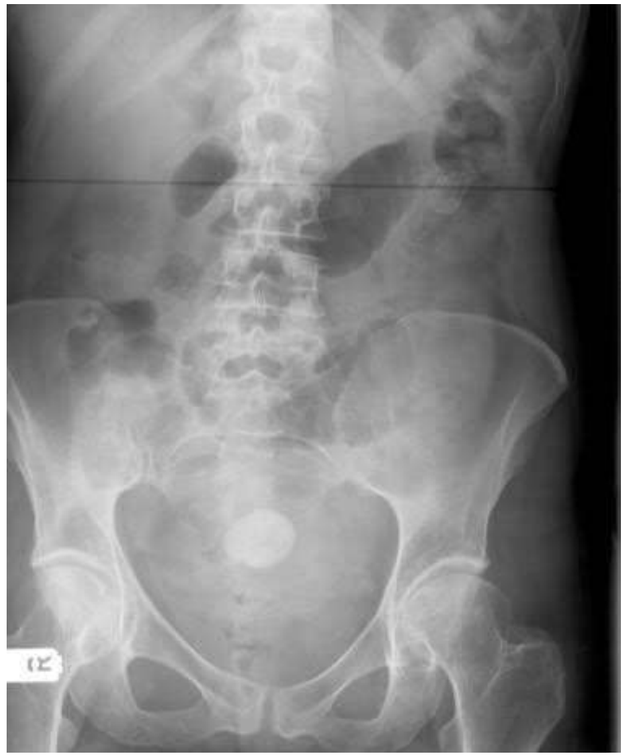
TOPIC : T-Tube cholangiography

T-Tube cholangiography

- T-Tube cholangiography, also known as delayed or post-operative cholangiography.
- Performed post-cholecystectomy to evaluate the biliary tract.
- Detects residual stones or ensures proper CBD healing.
- Conducted 7–10 days after surgery in the radiology department.





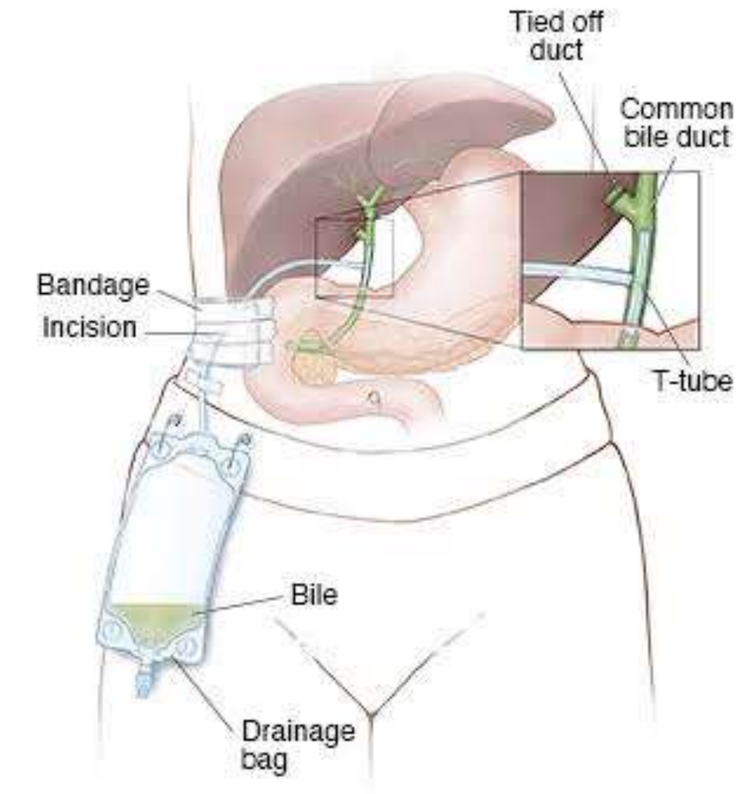


T-Tube Placement

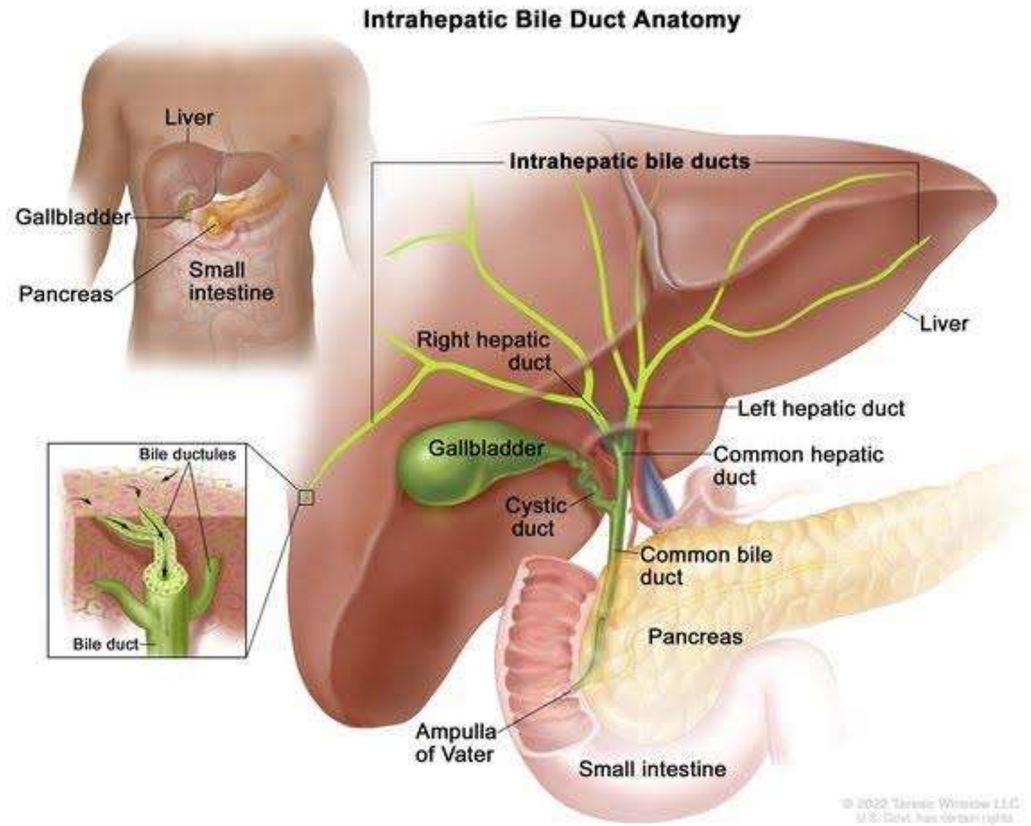
- Bile: Essential for fat digestion, produced by the liver, stored in the gallbladder.
- Flow: Liver → Gallbladder → Small Intestine via CBD.
- Gallstones in CBD may cause jaundice.

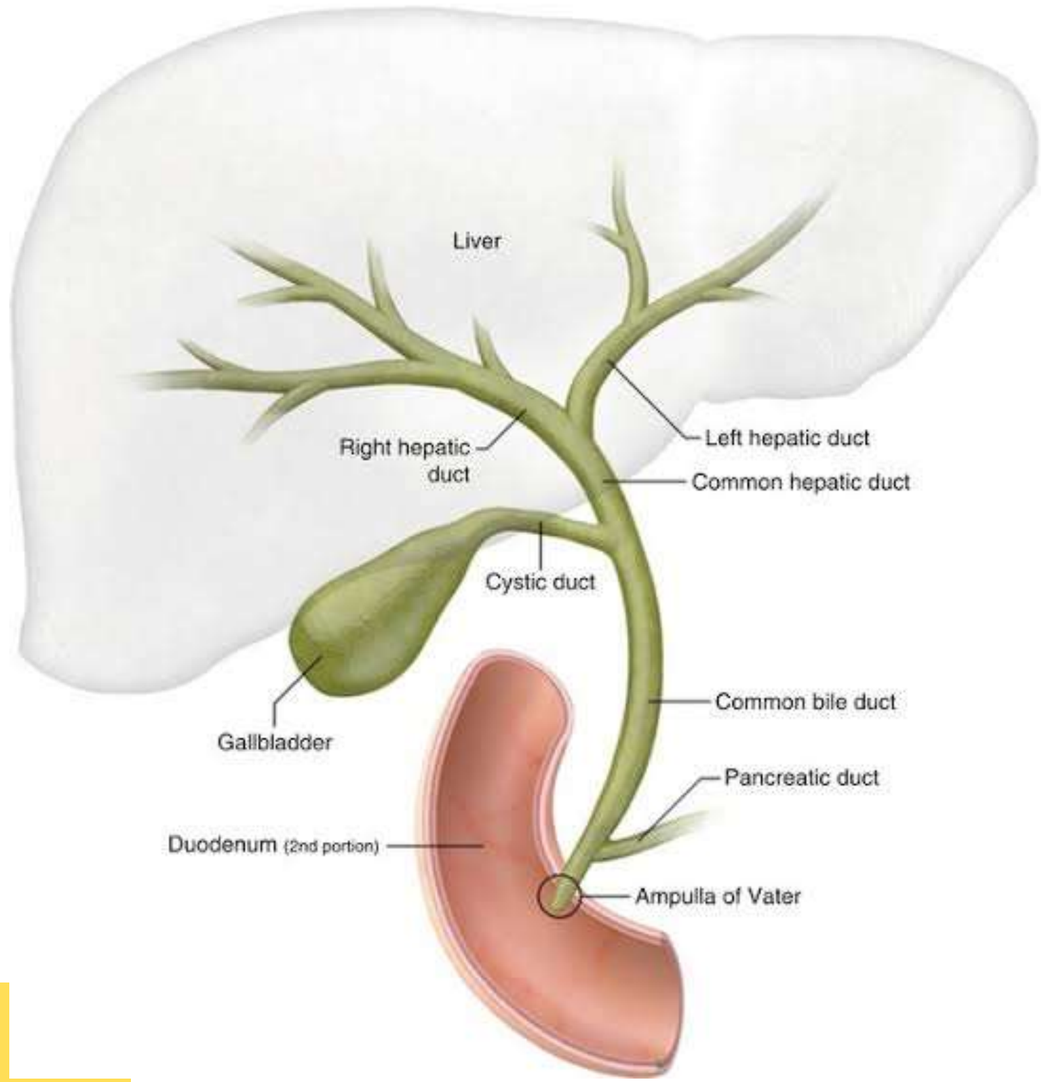
T-Tube Catheter:

- The T-tube resembles the letter “T”
- Top part inside CBD.
- End part extends outside for bile drainage.



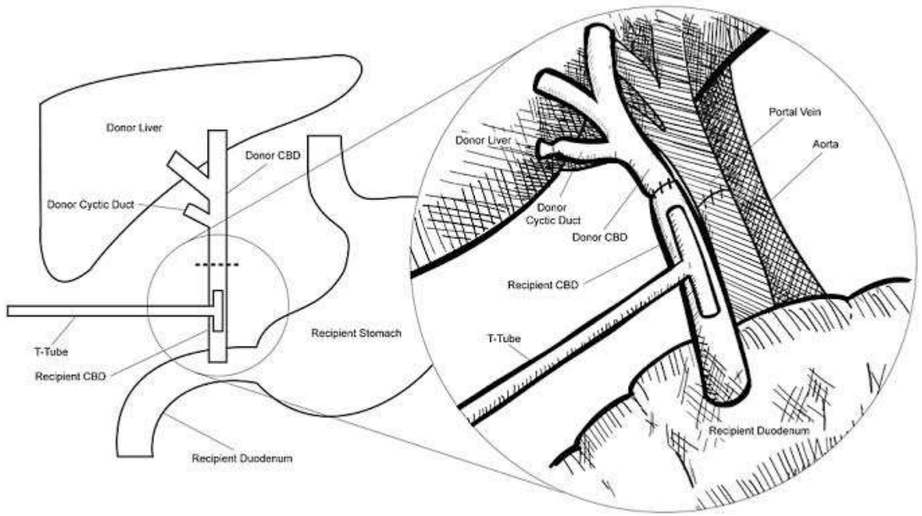
Biliary System Ducts



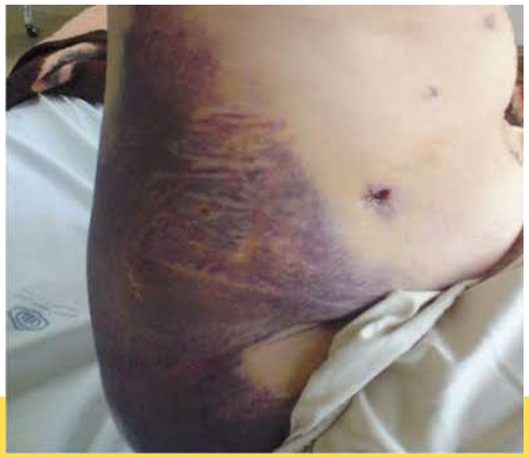


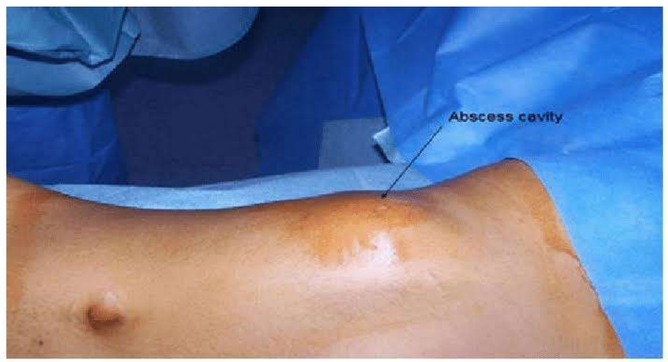
Indication

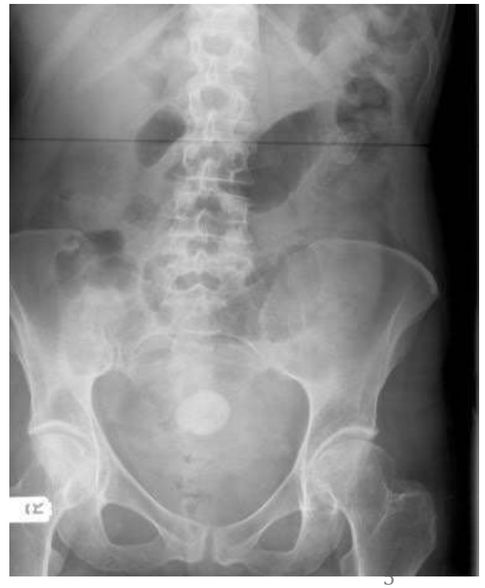
- Evaluate bile ducts post-surgery.
- Check for T-tube blockage.
- Detect post-operative hemorrhage.



- Identify residual hematoma or abscess formation.

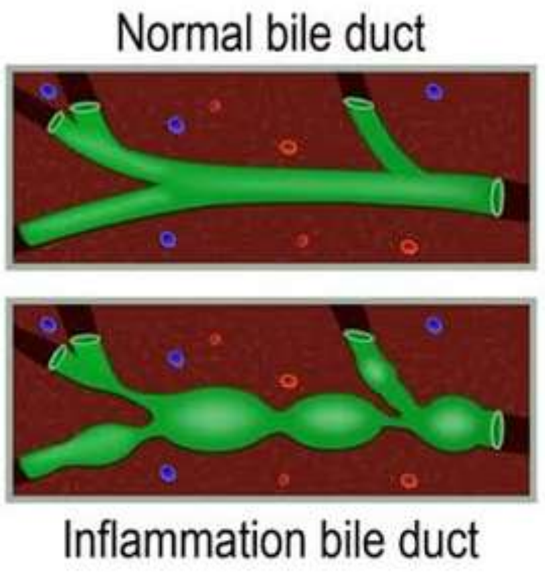


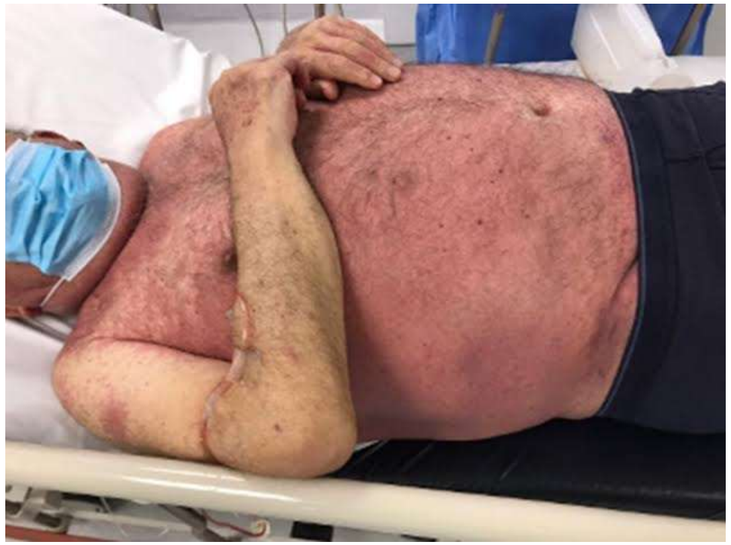




Contraindications

- Severe Biliary Tract Infections.





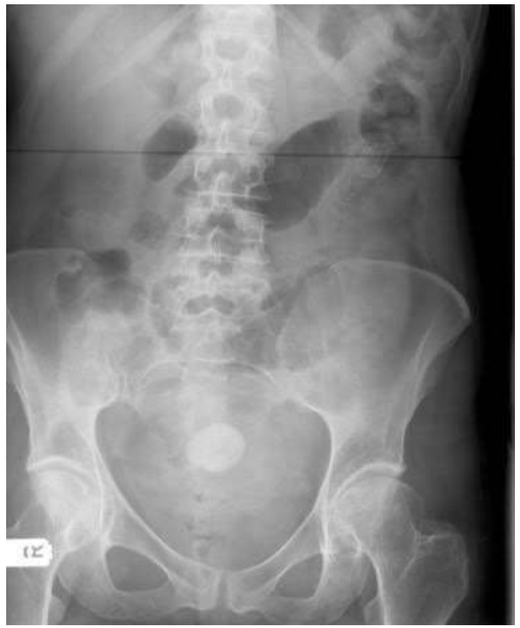
Equipment

- Fluoroscopy unit with spot film device.
- T-Tube Catheter.
- Contrast Media (10–20 mL water-soluble iodinated contrast).
- Normal Saline (1:3 dilution ratio).
- Syringe (10–20 mL), Sterile Gloves, Towels, Gauze.

Pre-Procedure Investigations

A radiologist must review the following:

- Abdominal X-ray report.
- Blood urea levels.
- Serum creatinine levels (to assess kidney function)
- Previous biliary tract imaging.
- Patient’s medical history & medications



* BUN
  * 7~18 mg/dl (32.0 mg/dl)
* Creatinine
  * male: 0.6~1.3 mg/dl (2.2 mg/dl→low GFR!)
  * female: 0.5~1.1 mg/dl
* BUN/Cr
  * 10~15: 1

Patient Preparation

Diet: No special diet or fasting required.

Procedure – Overview

1. Explain procedure & obtain written consent.

2. Positioning: Patient in supine position on the fluoroscopic table.

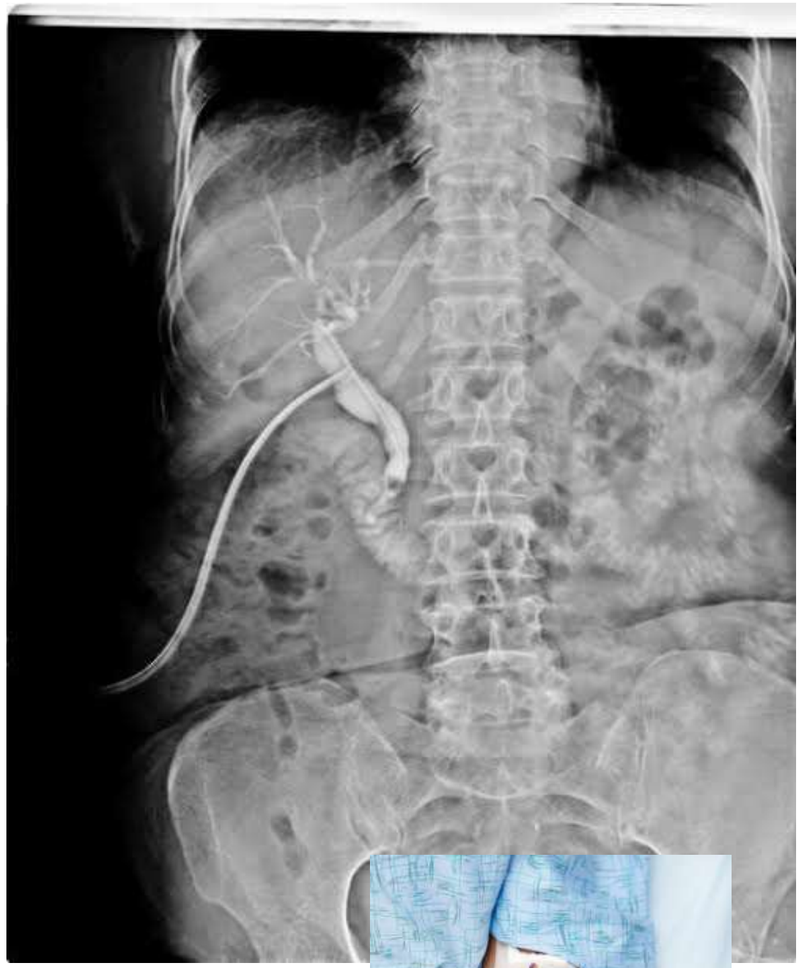
3. Scout Film: X-ray of the right upper quadrant,

- To confirm T-tube position.

- Detect air collections that may mimic stones

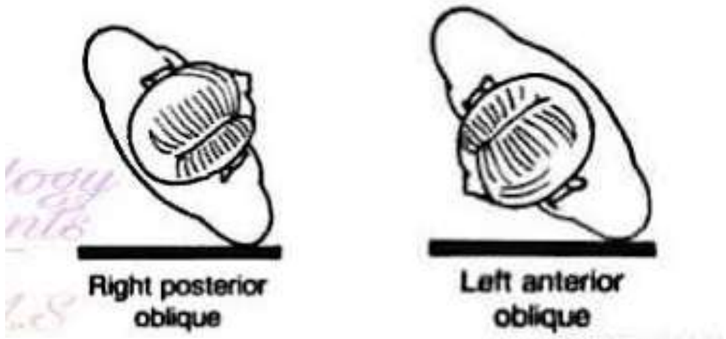
Contrast Preparation: Dilute 1:3 ratio (e.g., 10 mL contrast + 30 mL saline).

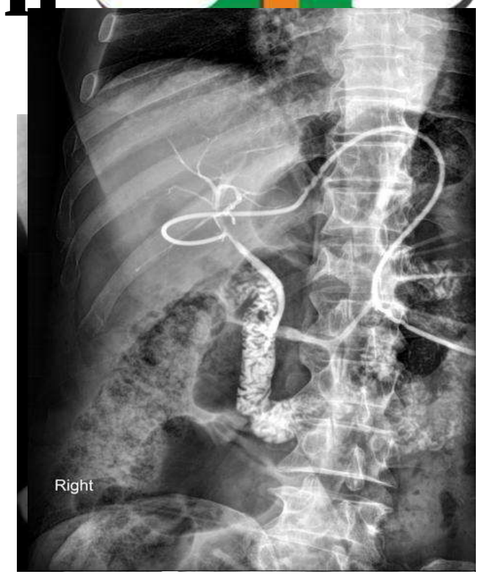
- Remove air bubbles to avoid misinterpretation.

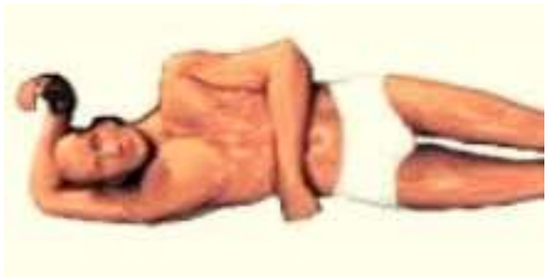


Procedure - Contrast Administration

- Remove T-tube clamp, Inject 5–10 mL contrast under fluoroscopy.
- Repeat for multiple views, X-ray Views Taken:
- AP View (Anterior-Posterior Projection).
- RPO (Right Posterior Oblique Position).
- LAO (Left Anterior Oblique Position).
- Standing PA (check stone movement).
- Final Injection: Right lateral film if needed.





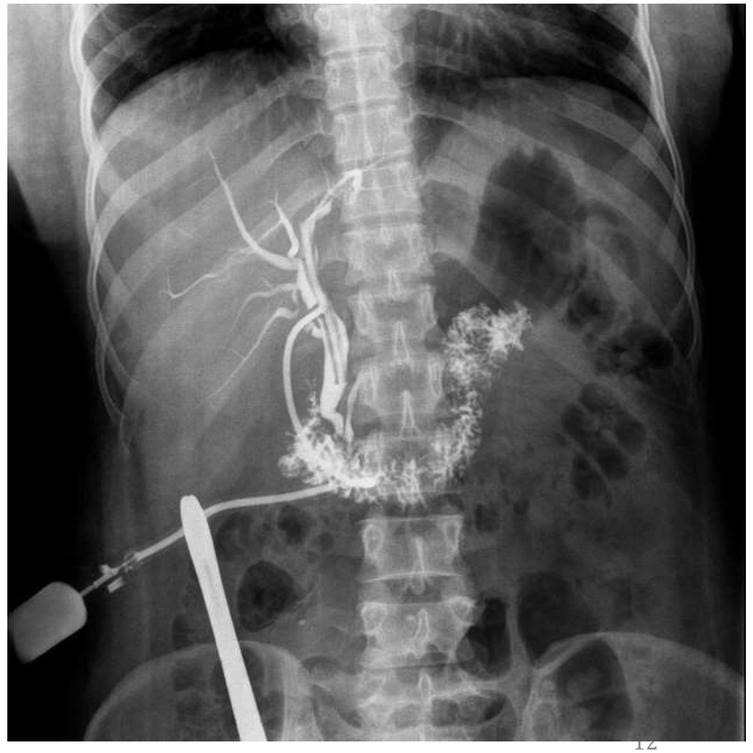


Post-Procedure care

- If normal, T-tube may be removed.
- If needed, take delayed images (15–30 mins) for drainage evaluation.

Interpretation – Normal Findings

1. Free contrast drainage into the duodenum.
2. Reflux into the pancreatic duct (normal variant).
3. No filling defects (stones) or leakage.



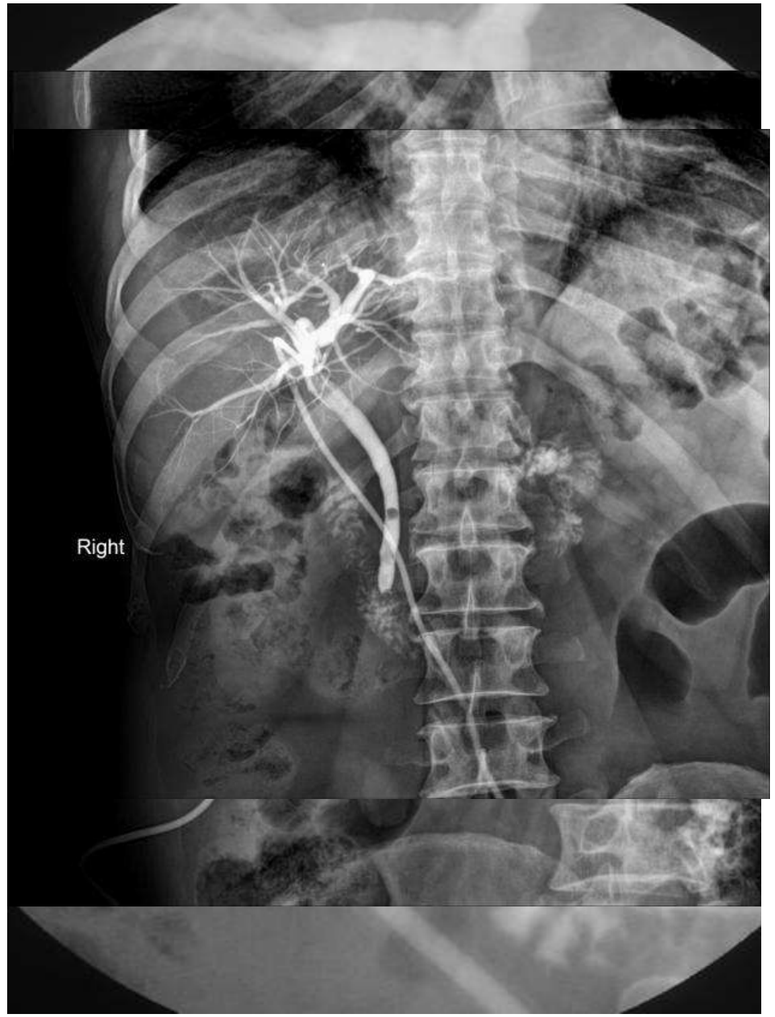
Interpretation – Abnormal Findings

1. Failure of contrast entry into the duodenum:

- Sphincter of Oddi spasm (due to rapid injection).
- Obstruction (tumor or stone).

2. Failure to enter intrahepatic ducts:

- Stone blocking hepatic duct opening.
- Contrast following the path of least resistance.



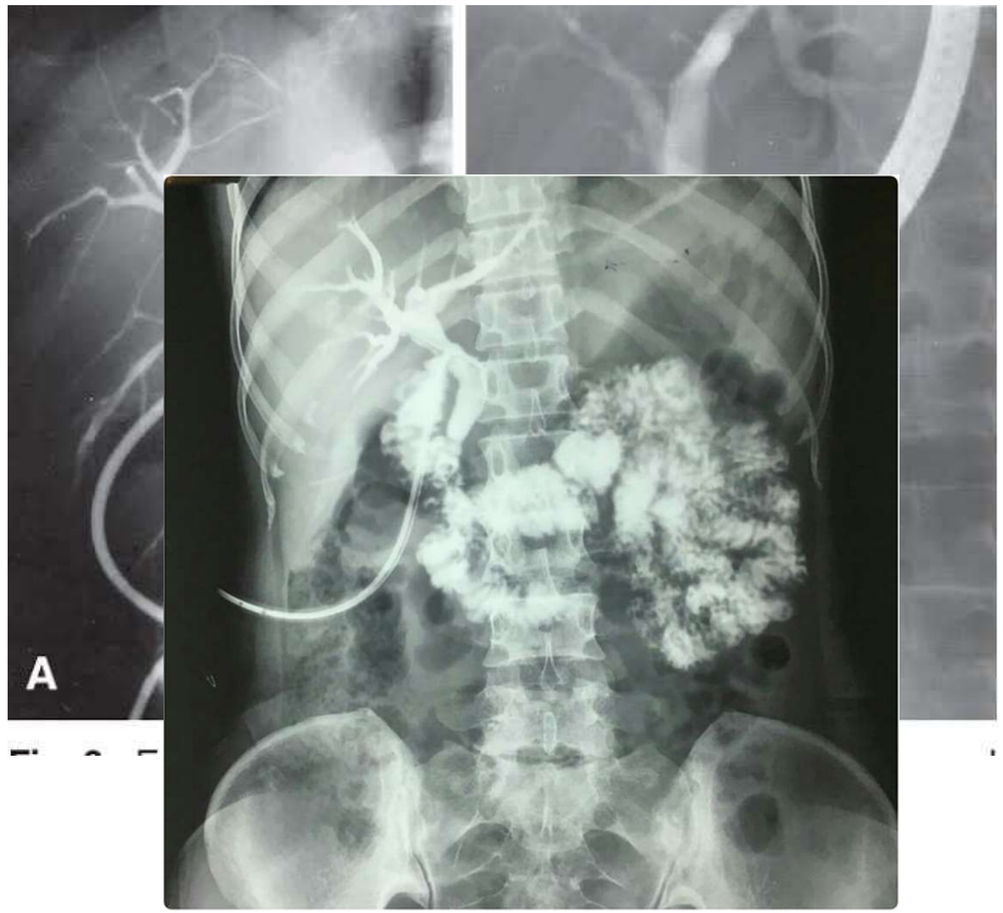
Interpretation – Abnormal Findings

3. T-Tube Drainage Failure:

- Tube occlusion by debris.
- Malposition/kinking of the tube.
- Tube outside CBD (suspect bile leakage).

4. Post-Operative Hemorrhage:

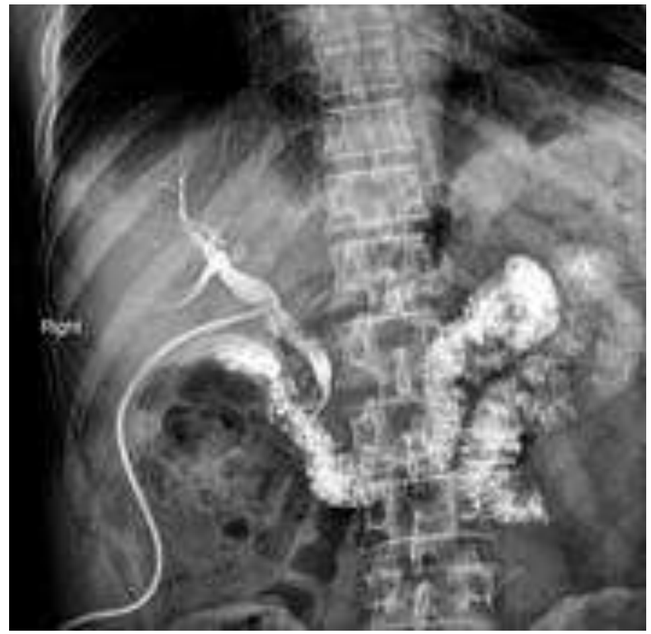
- Blood vessel erosion by T-tube.
- Vitamin K deficiency (seen in obstructive jaundice).



Interpretation – Abnormal Findings

5. Residual CBD Stones:

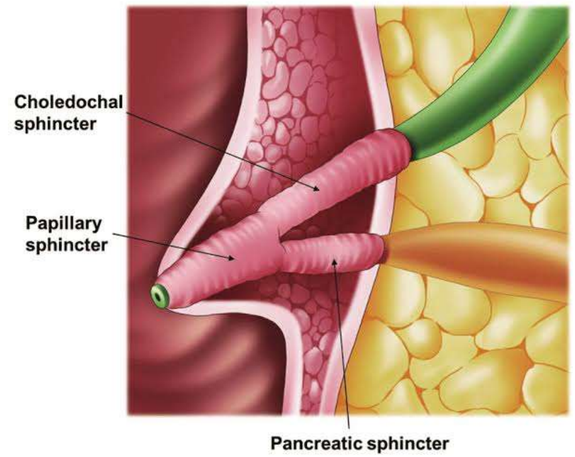
- Common in upper CBD (left hepatic duct origin).
- Less common in lower CBD.



6. Lower CBD Obstruction: Sphincter of Oddi spasm (rapid injection).

Causes:

- Pancreatic tumor, Chronic pancreatitis (fibrosis).
- Benign strictures (post-calculus passage).
- Ampullary carcinoma, Impacted stone at Sphincter of Oddi.



Pitfalls in T-Tube Cholangiography

- Air bubbles misinterpreted as stones (smooth, round, multiple).
- Over-distension of bile ducts → pain & artificial narrowing.
- Misplaced T-Tube limbs → obscured anatomy, false conclusions.

Aftercare

- T-tube is clamped off post-procedure.
- Patient observed before discharge.
- If abnormalities are found, further intervention (ERCP, surgery) may be needed..