The Biliary System

**Oral Cholecystography (OC)**

Indications:
1. To demonstrate suspected pathology in the gall-bladder.
2. The cystic duct and common bile duct may also be seen.

Contraindications:
1. Severe hepatorenal disease
2. Acute cholecysitis
3. Dehydration
4. An IV choledochogram within the previous week
5. Previous cholecystectomy

Contrast medium:
- Biloptin
- Telepaque
- Cholebrin
- Solu-Biloptin

Patient preparation:
- Prone 20° LAO preliminary film is taken when appointment is made.
- A laxative 2 days prior to the examination.
- A fat-containing evening meal on the evening prior to the examination.
- The CM is taken with water 14 hours prior to the patient’s appointment.
- Food is forbidden until the examination is completed.

Films
1. Prone 20° LAO
2. Supine 20° RPO
3. Erect 20° LAO
4. Fatty meal provided.
   - Prone 20° LAO 30 minutes after a fatty meal

Additional films:
- Tomography
- If the gall bladder is poorly seen in the first film, the patient is given a second dose of CM and the whole procedure is repeated once again.
After care:
None

Complications:
- Mild gastrointestinal disturbances
- Skin reactions
- Uricosuric action (尿酸排泄)
- Impaired renal function
- Psedoalbuminuria (假蛋白尿)
- Abnormal thyroid function tests
- Increased effect of protein-bound drugs because of shared binding with albumen (蛋白素)

**Pre-operative Cholangiography (IVC)**

**Indications:**
1. When the gall-bladder and ducts have not been visualised by OC
2. Suspected choledocholithiasis
3. In patients who have had a cholecystectomy but who present with symptoms of biliary tract disease

**Contraindications:**
1. Severe hepatorenal disease
2. OC within previous week

**CM:**
Biligram; Biligram for infusion

**Patient preparation:**
- The patient should be well hydrated
- Consent obtained prior to the examination

**Preliminary film:**
Supine 20° RPO

**Technique:**
- The patient lies supine
- A bolus injection of 30ml Biligram over at least 5 minutes
- A slow infusion of 100ml Biligram for infusion over 45-60 minutes
Films:
20° RPO or LAO
1. At the end of the infusion
2. Every 15 minutes thereafter until CM reaches the duodenum
3. Erect

After care: None

Complications:
- Impaired liver function
- Uricosuric action
- Precipitation of Bence Jones protein and IgM macroglobulin
- Renal impairment

**Operative Cholangiography**

Indication:
During cholecystectomy or bile duct surgery, to avoid surgical exploration of the common bile duct

Contraindication:
None

Patient preparation:
As for surgery

CM:
Non-ionic water soluble e.g. Omnipaque

Films:
AXR
1. After 5ml of CM have been injected
2. After 20ml of CM have been injected

**Post-operative Cholangiography (T-tube) (RC)**

Indications:
To exclude biliary tract calculi where operative cholangiography was not performed, or the results of operative cholangiography are not satisfactory or are suspect.
Contraindication:
None

CM:
Non-ionic water soluble e.g. Omnipaque

Patient preparation:
Consent obtained prior to the examination

Preliminary film:
20° RPO

Technique:
1. The examination is performed on or about the 10th postoperative day, prior to the pulling out the T-tube
2. The patient lies supine on the couch
3. A 23G needle is inserted into the tubing between the patient and the clamp.
4. The injection is made

Films:
1. PA
2. RPO
3. LPO
4. Erect

Aftercare:
None

**Endoscopic Retrograde Cholangiopancreatography (ERCP)**

Indications:
1. Investigation of extrahepatic biliary obstruction
2. Post-cholecystectomy syndrome
3. Investigation of diffuse biliary disease
4. Pancreatic disease

Contraindications:
1. AIDS-positive
2. Esophageal obstruction
3. Previous gastric surgery
4. Acute pancreatitis
5. Pancreatic pseudocyst
6. When glucagon or Buscopan are contraindicated
7. Severe cardio/respiratory disease

CM:
Ionic water soluble e.g. Urografin, Conray

Patient preparation:
- NPO 4 hours prior to the examination
- Antibiotic cover
- Consent obtained prior to the examination
- Premedication: Pethidine

Technique:
- The pharynx is anaesthetized
- The patient lies in a LAO position and the endoscope is introduced
- The ampulla of Vater is located
- A catheter is inserted into the ampulla and CM is then injected

Films (spot films):
1. LAO
2. LAO (after removal of the endoscope)
3. Supine (after removal of the endoscope)
4. RAO (after removal of the endoscope)

Aftercare:
- NPO until sensation has returned
- Pulse, temperature, and BP half-hourly for 6 hours

Complications:
- Allergic reactions
- Acute pancreatitis