



Endoscopic Retrograde Cholangiopancreatography (ERCP)

Procedure Guide

General Information

This DVD and its contents are intended to provide you with a tool for orientation to GI procedures, competency reinforcement, and team building within your facility, in terms of this procedure. SGNA recognizes that GI/endoscopy units may utilize different equipment for certain procedures and may define the roles of their team members differently.

Disclaimer

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Description

Endoscopic technique for radiologic visualization of the biliary and/or pancreatic ducts.

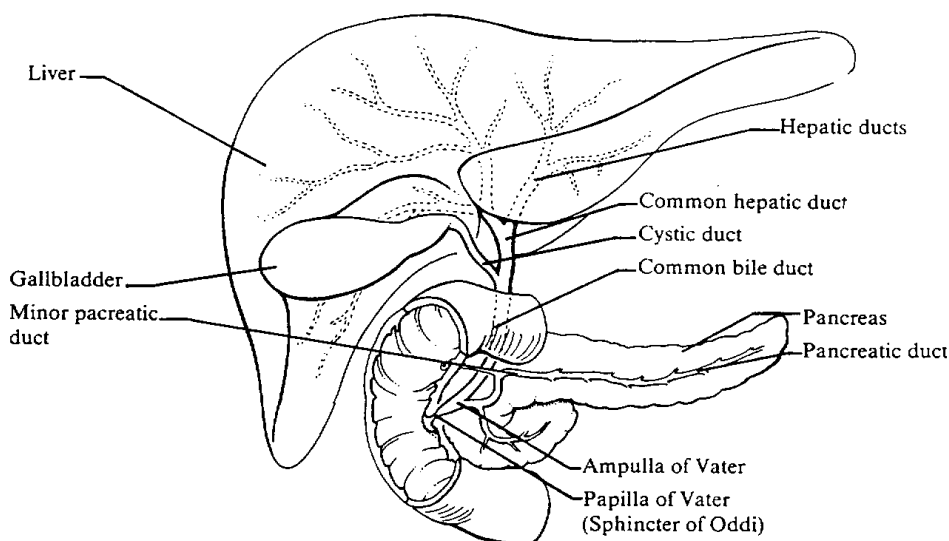


Figure 21: Anatomy of liver, biliary, pancreatic ductal systems

Indications

1. Jaundice of undetermined etiology.
2. Biliary obstruction, extrinsic or intrinsic (e.g., stones, tumor, stricture, sclerosing cholangitis, papillary stenosis).
3. Suspected or known pancreatic disease, including pancreas divisum.
4. Pancreatitis - acute, recurrent or chronic.
5. Suspected or known pseudocyst.
6. Pancreatic neoplasm.
7. Unexplained abdominal pain of suspected biliary or pancreatic origin.
8. Suspicion of disease in a non-jaundiced patient.
9. Preoperative evaluation.
10. Manometric evaluation of common biliary and pancreatic ducts.
11. Abnormal abdominal radiologic study (ultrasound, CT Scan, MRCP, endoscopic ultrasound, percutaneous transhepatic cholangiogram, biliary scintigraphy).
12. Persistent elevation in liver enzymes in patient predisposed to biliary disease.
13. Pancreatic duct obstruction.
14. Post operative complications (i.e. after liver transplantation).
15. Treatment of ampullary adenomas.

Contraindications

Contraindications describe circumstances in which a particular procedure is not usually performed. In some circumstances, however, the needs of the patient may require that a procedure proceed despite the presence of the condition. These decisions are made by the physician.

1. Uncooperative patient.
2. Patient physically unable to tolerate procedure.
3. Recent myocardial infarction, unless surgical intervention is required.
4. Noncompliance with NPO guidelines.
5. Coagulopathy is a relative contraindication (aspirin or non-steroidal anti-inflammatory use is not a contraindication).
6. Presence of barium or contrast in the GI tract (relative, not absolute contraindication).
7. Patient with severe pulmonary disease.

Especially for Children

In children, episodes of bradycardia with the introduction of the endoscope (with or without oxygen desaturation) may be an indication for aborting the procedure and consideration of the need for general anesthesia.

Pre-Procedure Assessment/Care

Refer to Standard Considerations.

1. Verify length of NPO status.

Especially for Children and Geriatric Patients

Length of NPO status will vary according to patient age and size. Due to the fragile nature of fluid and electrolyte balance in children and the elderly, dehydration can occur in a relatively short period of time. Both the American Academy of Pediatrics and the American Society of Anesthesiologists have recommended shorter fasting intervals for children undergoing sedation. For children undergoing sedation, the safety and efficacy of this practice has been studied in relation to gastrointestinal endoscopy. Current NPO guidelines for children are as follows:

- *Children of all ages are allowed to consume clear liquids until 2 hours prior to sedation.*
- *Solid food and full liquids are not allowed for a period of time prior to the procedure. This period of time is based on age.*
 - *< 6 months: 4 hours.*
 - *6 months to 36 months: 6 hours*
 - *> 36 months: 8 hours*

Allowing clear liquids until 2 hours prior to sedation can result in a well-hydrated pediatric patient who is comfortable.

3. If barium/contrast-enhanced studies have been done previous to the ERCP, verify that all barium or contrast is out of the GI tract (usually requires 72 hours to be expelled).

4. Remove dental appliances.

Especially for Children

Assess the child for loose teeth or orthodontic appliances which could become dislodged and potentially aspirated during the procedure.

5. Inspect airway for neck and jaw mobility.

6. Verify function of elevator on endoscope.

Especially for Children

A blanket, sheet, or pillow case may be used to "bundle" small children who are at risk for moving their extremities during the procedure. Commercially manufactured restraining devices are also available (i.e., "papoose boards").

Restraining devices must be applied by properly trained personnel in accordance with institutional policy in such a fashion that they will not interfere with observation of the child for over-distention of the abdomen, as over-distention can lead to respiratory compromise. Extremities must be visible in order to assess peripheral circulation.

Restraints must not interfere with monitoring devices.

Patient Teaching

1. Refer to Standard Considerations.
2. Explain specific positioning which will be required during the procedure: prone or left lateral position.
3. Explain symptoms of pancreatitis and sepsis (i.e. chills, low grade fever, pain, vomiting and tachycardia).
4. Explain that if pancreatitis occurs it usually occurs within 2-4 hours after the procedure.

Equipment

1. Refer to Standard Considerations.
2. Side-viewing endoscope of choice.
3. Radiocontrast material.
4. Reprocessed water bottle for each ERCP.

Equipment Prep

1. Prepare syringes with radiocontrast material with no air in syringes and properly label them with concentration of contrast material. The physician may request varying strengths (use 1/2 strength if stones are anticipated).
2. Prepare syringes with sterile saline to facilitate passage of wires.
3. Coordinate and confirm with radiology personnel the readiness of fluoroscopy.

Accessory Supplies

1. Refer to Standard Considerations.
2. Cannulas, guidewires, sphincterotomes, balloons, baskets, stents (plastic and metal), dilators, mechanical lithotripsy, short wire accessories, and other ERCP-specific accessories per physician preference.

Miscellaneous Supplies

1. Refer to Standard Considerations.
2. X-ray, fluoroscopy, lead aprons, thyroid shields and dosimeters.
3. Forward-viewing endoscope or colonoscope (optional)
4. Glucagon, atropine, cholecystokinin, hyoscyamine sulfate (Levsin r), Secretin.
5. Syringes, extension tubing, stopcock.

Responsibilities Pre Procedure

Refer to Standard Considerations.

Responsibilities During Procedure

1. Refer to Standard Considerations.
2. Prime cannula or physician preferred device with contrast before inserting into endoscope.
3. At the physician's request, inject contrast medium, stating aloud the amount injected. The injection should be done slowly to avoid overfilling of the pancreatic duct. Communicate effort level necessary to inject contrast. Do not use excessive injection pressure, which might cause sub-mucosal injection, especially with tapered-tip cannulae. The physician may choose to perform all injections.
4. Efforts should be made to maintain sterility of accessories used during ERCP.

Potential Complications

1. Pancreatitis is the most common complication of ERCP, and may develop in response to mechanical manipulation of the papilla or injection of contrast. Careful monitoring of the amount of contrast injected into the pancreatic duct is advised. If pancreatitis does result, it usually occurs within two to four hours of the procedure. The expected rate of ERCP-induced pancreatitis is generally between 1% and 7%.
2. Infection/cholangitis, rate of 1% or less.
3. Hemorrhage, primarily related to sphincterotomy.
4. Perforation, rate of 0.3%-0.6%
5. Sepsis may occur in patients with partial obstruction of common bile duct.
6. Aspiration.
7. Respiratory depression or arrest.
8. Medication reaction.
9. Cardiac dysrhythmias or arrest.
10. Cholecystitis, rate of 0.2% to 0.5%

Post-Procedure Assessment/Care

1. Refer to Standard Considerations.
2. NPO status is usually maintained for 2-4 hours and then a clear liquid diet for the first
24 hours.
3. Observe for abdominal distention and signs of possible pancreatitis including chills, low grade fever, pain, nausea, vomiting, tachycardia.
Especially for Children
In premature and small infants, over inflation of the stomach can cause respiratory compromise. Assess for abdominal distention following the procedure.
4. Administer medications as ordered.
Especially for Children
Instruct parent or caregiver to monitor child's head/neck position until fully awake to avoid airway obstruction post-procedure.

Special Considerations:

Use caution and consult physician for:

1. Pregnancy (prefer to do in second trimester). Consultation with an obstetrician is recommended. Reduction of radiation exposure to the fetus is an important consideration.
2. Severe pulmonary disease.
3. Allergy to contrast medium. Non-ionic contrast and pre-medication with steroids and Benadryl may be used. Inform physician and document.
4. Altered anatomy due to gastric surgery (Roux-en-Y; Bilioth II) – can decrease success rate. The use of pediatric colonoscope or gastroscope may be required to identify the appropriate loop of bowel that the common bile duct and pancreatic duct are located.
5. Coagulation studies may be ordered pre-procedure for patients with liver impairment or hepatic disease.

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