SNS COLLEGE OF ALLIED HEALTH SCIENCES

SNS Kalvi Nagar, Coimbatore-35

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

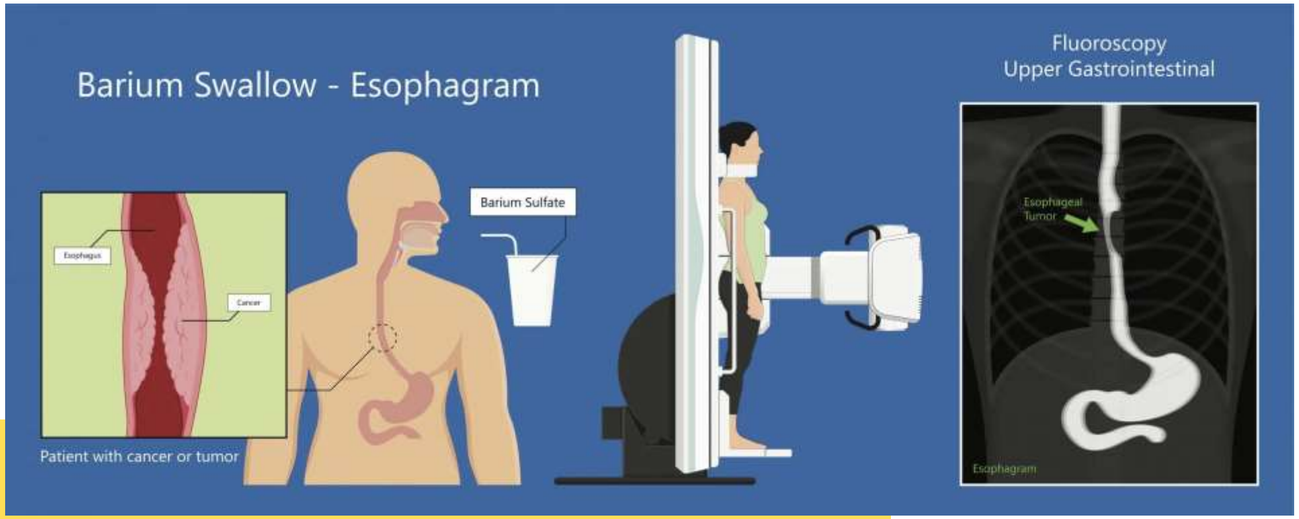
RADIOGRAPHY AND IMAGING TECHNOLOGY - II YEAR

COURSE NAME : CONTRAST & SPECIAL RADIOGRAPHY PROCEDURES

TOPIC : BARIUM SWALLOW

Barium Swallow

- Radiographic examination of the upper gastrointestinal tract.
- Performed to diagnose structural and functional abnormalities of the pharynx, esophagus, and proximal stomach using barium sulfate contrast media.
- Can be performed as a single or double contrast study in the radiology department.



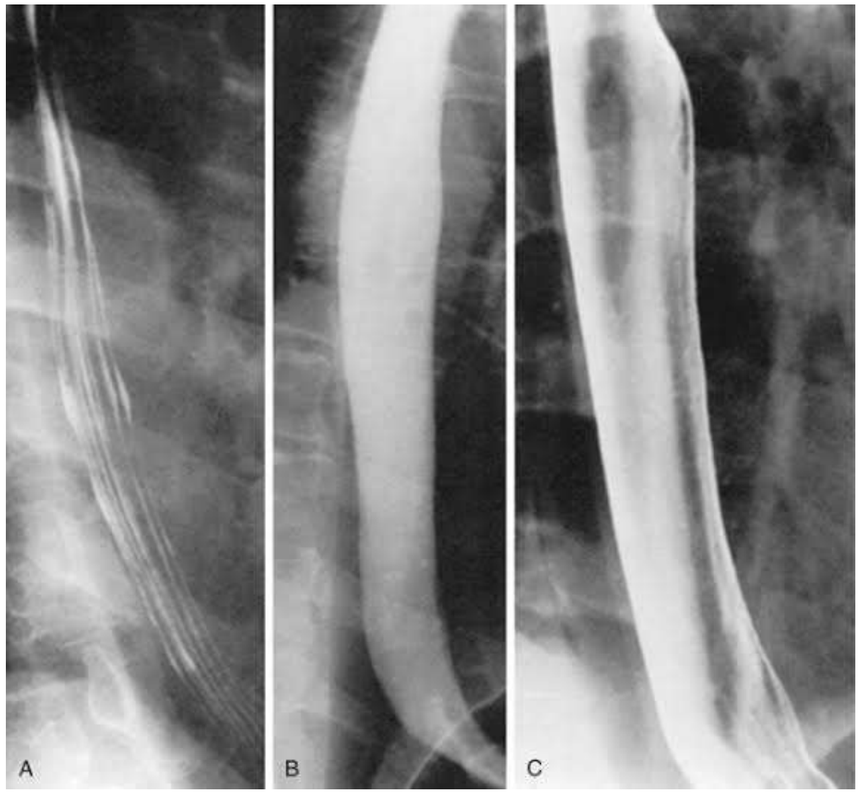
Types of Barium Swallow

- Single Contrast Study

Used for evaluating esophageal motility disorders and luminal abnormalities.

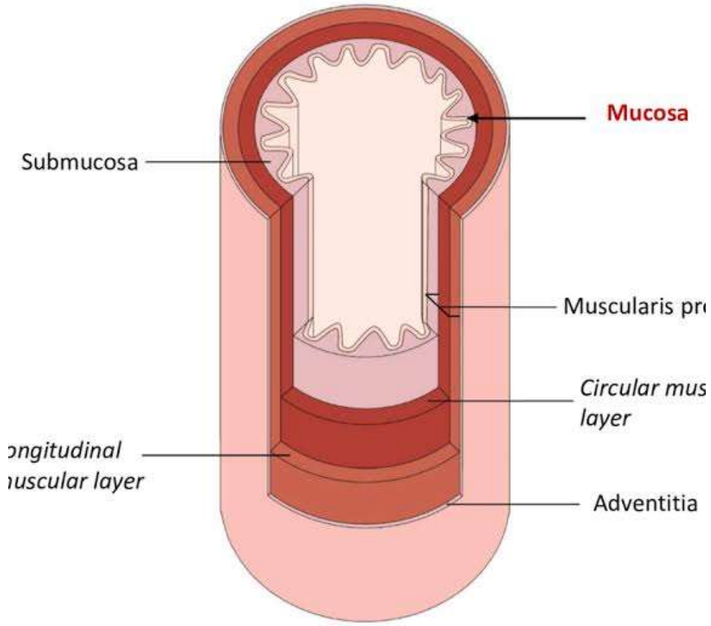
- Double Contrast Study

Used for evaluating mucosal details of the esophageal wall.



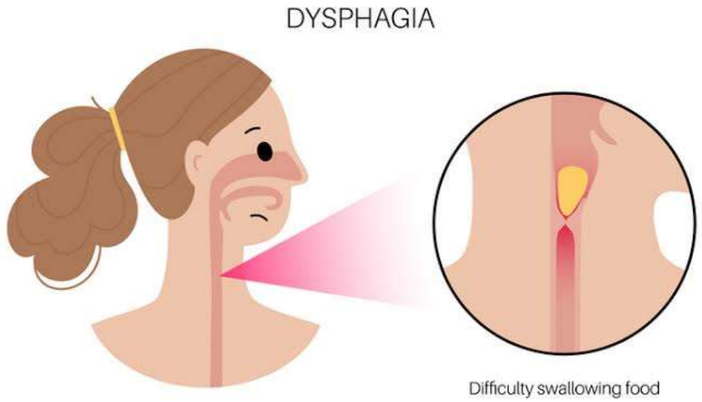
Anatomy of the Esophagus

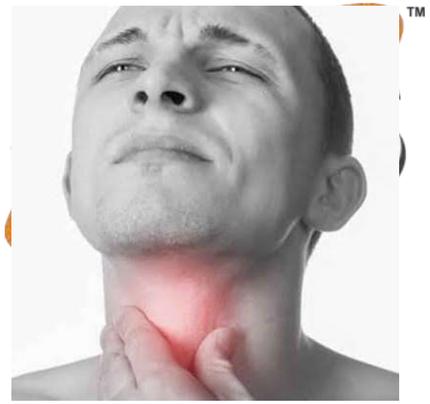
- The esophagus is a muscular tube that extends from the lower border of the cricoid cartilage to the cardiac orifice of the stomach.
- Located behind the trachea and the heart.
- Has two sphincters:
- Upper esophageal sphincter – Prevents air entry.
- Lower esophageal sphincter – Prevents reflux.
- The esophageal wall has four layers: Mucosa, Submucosa, Muscularis propria, Adventitia.

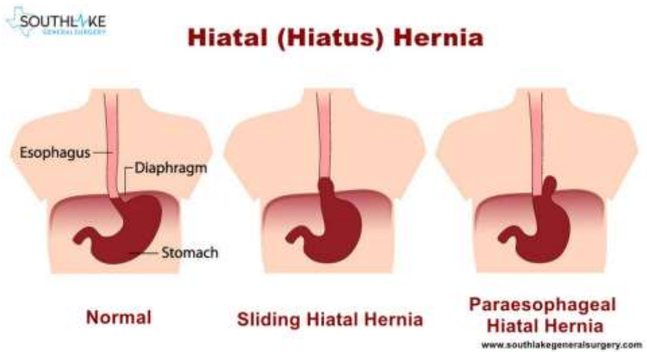


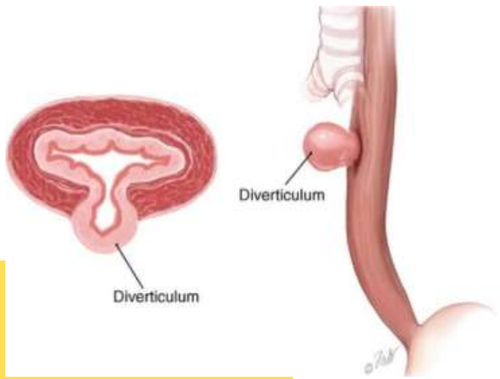
Indication

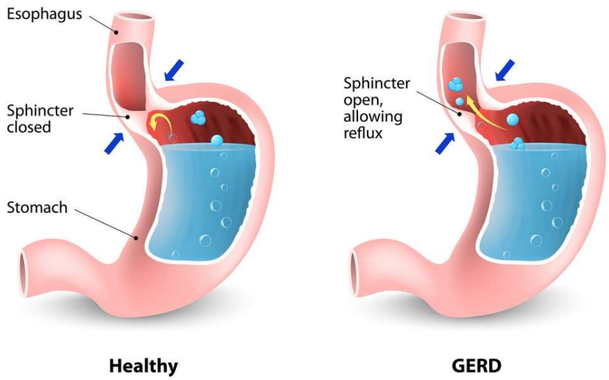
- Dysphagia, Odynophagia
- Abdominal pain
- Blood in vomitus (Hematemesis)
- Unexplained weight loss
- Hiatus hernia
- Esophageal carcinoma, ulcers or polyps
- Gastroesophageal reflux disease (GERD)
- Diverticulum (outpouching sac of the wall)





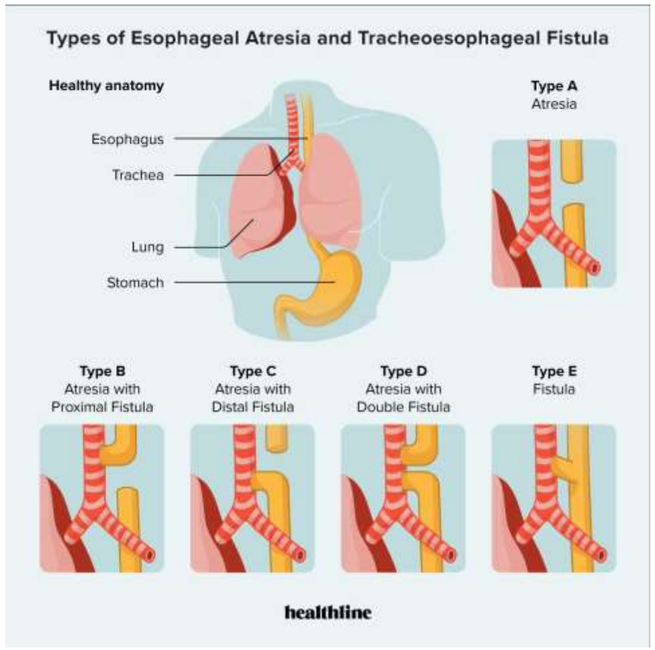


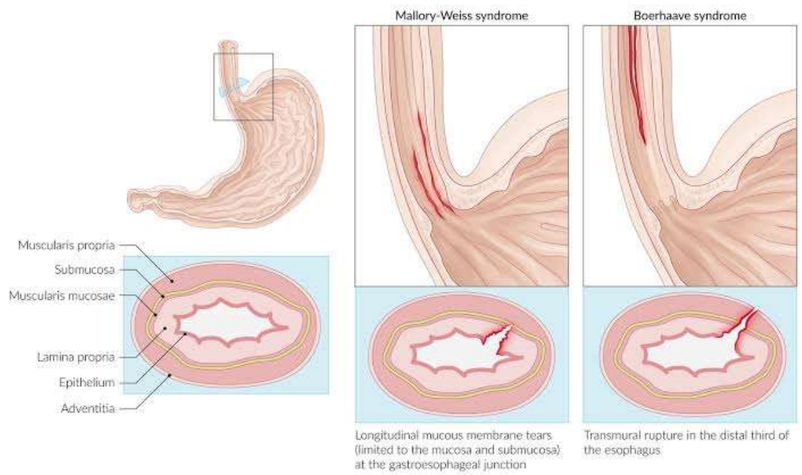


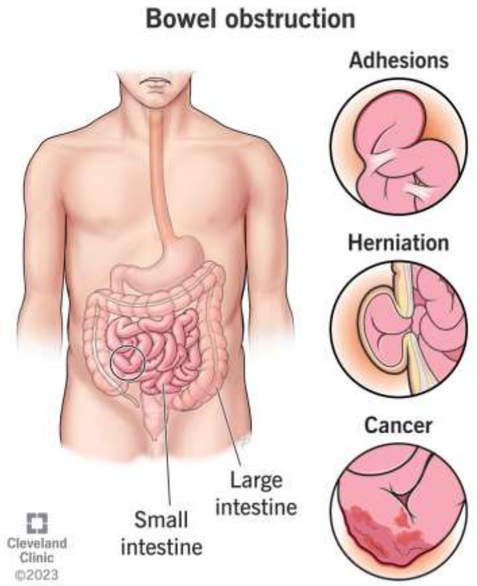


Contraindications

- Recent gastric or esophageal surgery
- Tracheoesophageal fistula (risk of contrast entering bronchial tree)
- Esophageal perforation (hole in the wall)
- Suspected pregnancy
- Complete bowel obstruction.
- Allergic reaction to contrast agents.
- Constipation







Equipment

- Fluoroscopy unit with spot film device

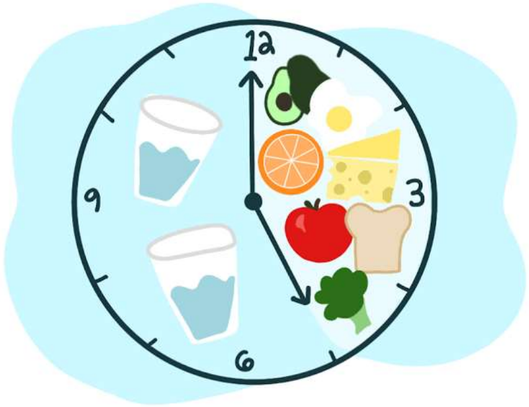
Barium sulfate suspension:

- Thin density – for single contrast study
- Thick density – for double contrast study
- Alternative Contrast:

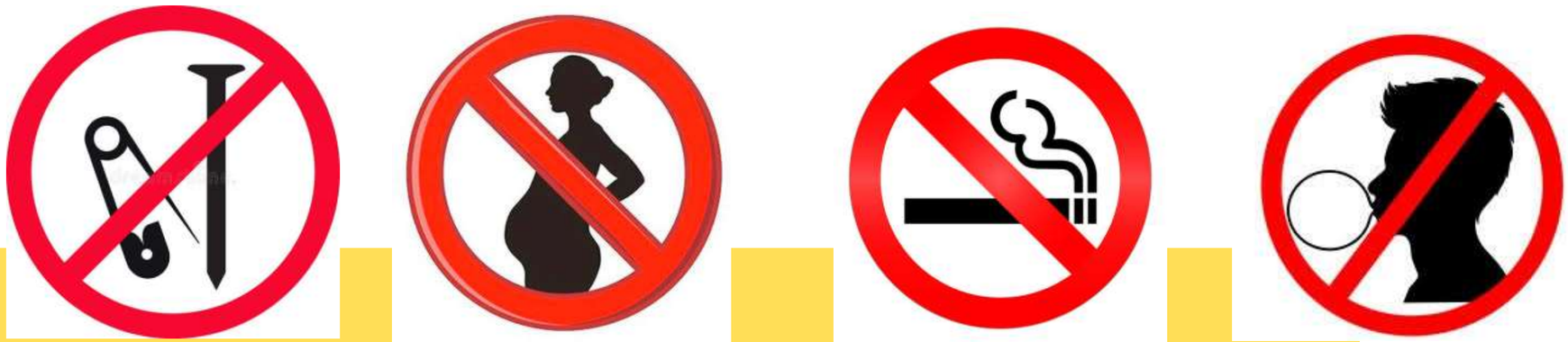
In case of perforation, an iodine-based contrast is used instead of barium.

- Effervescent powder (gas-producing agent) for double contrast study

Patient Preparation



- No special preparation require
- Remove all metallic objects.
- Fasting 2 hours before the procedure.
- Avoid smoking or chewing gum to ensure proper barium coating.
- Informed consent must be obtained



Procedure - Single Contrast Study

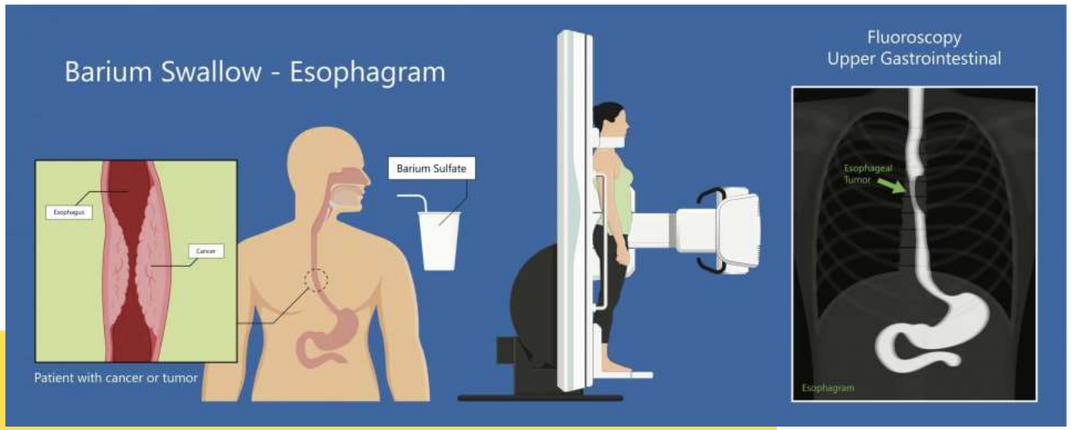
1. The patient is positioned upright.

2. The patient swallows 10-15 ml of barium sulfate, and its passage is examined under fluoroscopy.

3. Multiple mouthfuls are given, and spot films are taken in AP, RPO, and LPO positions.

4. Full-length films are taken from the pharynx to the cardiac orifice before esophageal emptying.

5. RAO position is best for demonstrating a barium-filled esophagus and gastric reflux.



Procedure – Double Contrast Study

1. Patient placed in upright position.

2. Injection of Buscopan or Glucagon is given.

3. High-density barium sulfate is swallowed and examined under fluoroscopy.

4. Effervescent powder is given with another mouthful of barium.

5. The patient is instructed not to burp to allow gas retention for esophageal distension.

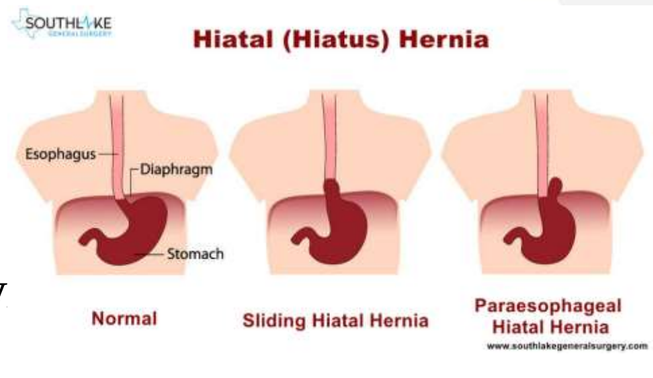
6. Spot films are taken in AP, RPO, and LPO positions.

Procedure – Special Conditions

1. Hiatus Hernia Evaluation

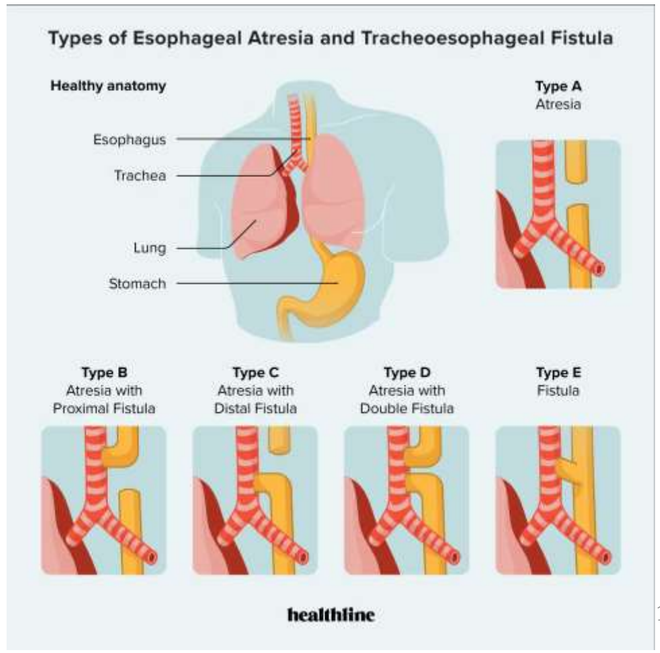
2. Trendelenburg position (head lower than feet, 15-30°).

3. Compression applied to the abdomen under fluoroscopy



2. Tracheoesophageal Fistula / Perforation / Obstruction

Gastrografin (iodinated contrast) is used instead of barium sulfate due to the risk of leakage into the bronchial tree.



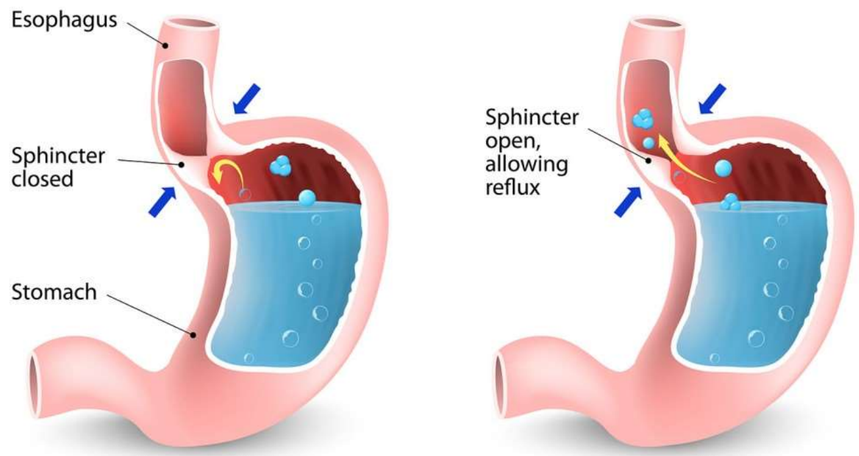
Procedure – Special Conditions

3. Gastroesophageal Reflux Disease (GERD)

1. 150 ml Barium sulfate administered.

2. The patient is placed in a supine position then rotated to right posterior oblique (RPO).

3. The patient drinks water in a prone position to promote reflux



Complications

- Aspiration (barium enters the lungs)
- Constipation (due to barium retention)
- Perforation risk in weak esophageal walls

Aftercare

- Increase fluid intake to prevent constipation.
- Laxatives may be required to clear residual barium.
- Inform the patient that stools may appear whitish for two days.
- The patient can leave after the procedure.