SNS COLLEGE OF ALLIED HEALTH SCIENCES

SNS Kalvi Nagar, Coimbatore-35

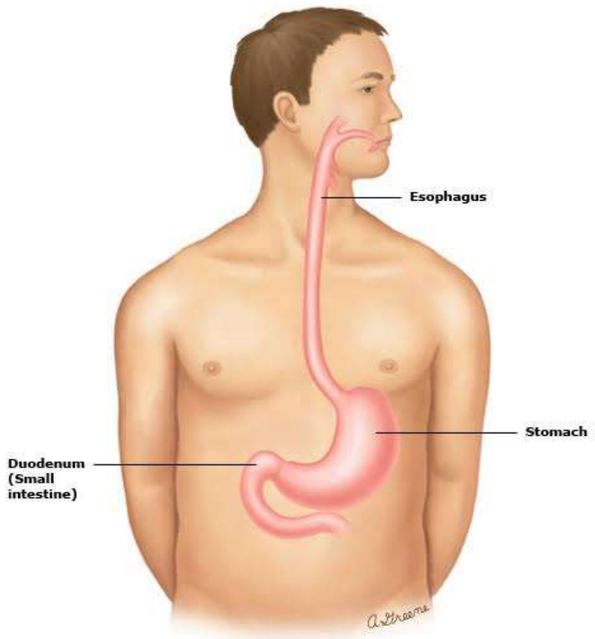
Affiliated to The Dr.M.G.R Medical University, Chennai

RADIOGRAPHY AND IMAGING TECHNOLOGY - II YEAR

COURSE NAME : CONTRAST & SPECIAL RADIOGRAPHY PROCEDURES

TOPIC : BARIUM MEAL

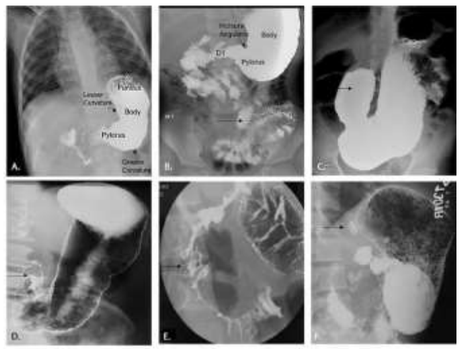
Barium Meal



A radiographic examination of the upper gastrointestinal tract (UGIT) and proximal small bowel using barium sulfate contrast media.

Purpose:

- Diagnoses structural or functional abnormalities of the esophagus, stomach, and duodenum.
- Can be performed as a single contrast study or double contrast study in the radiology department.



Types of Barium Meal

1. Single Contrast Study

- Evaluates stomach and duodenum abnormalities.
- Uses thin density barium sulfate suspension.

2. Double Contrast Study

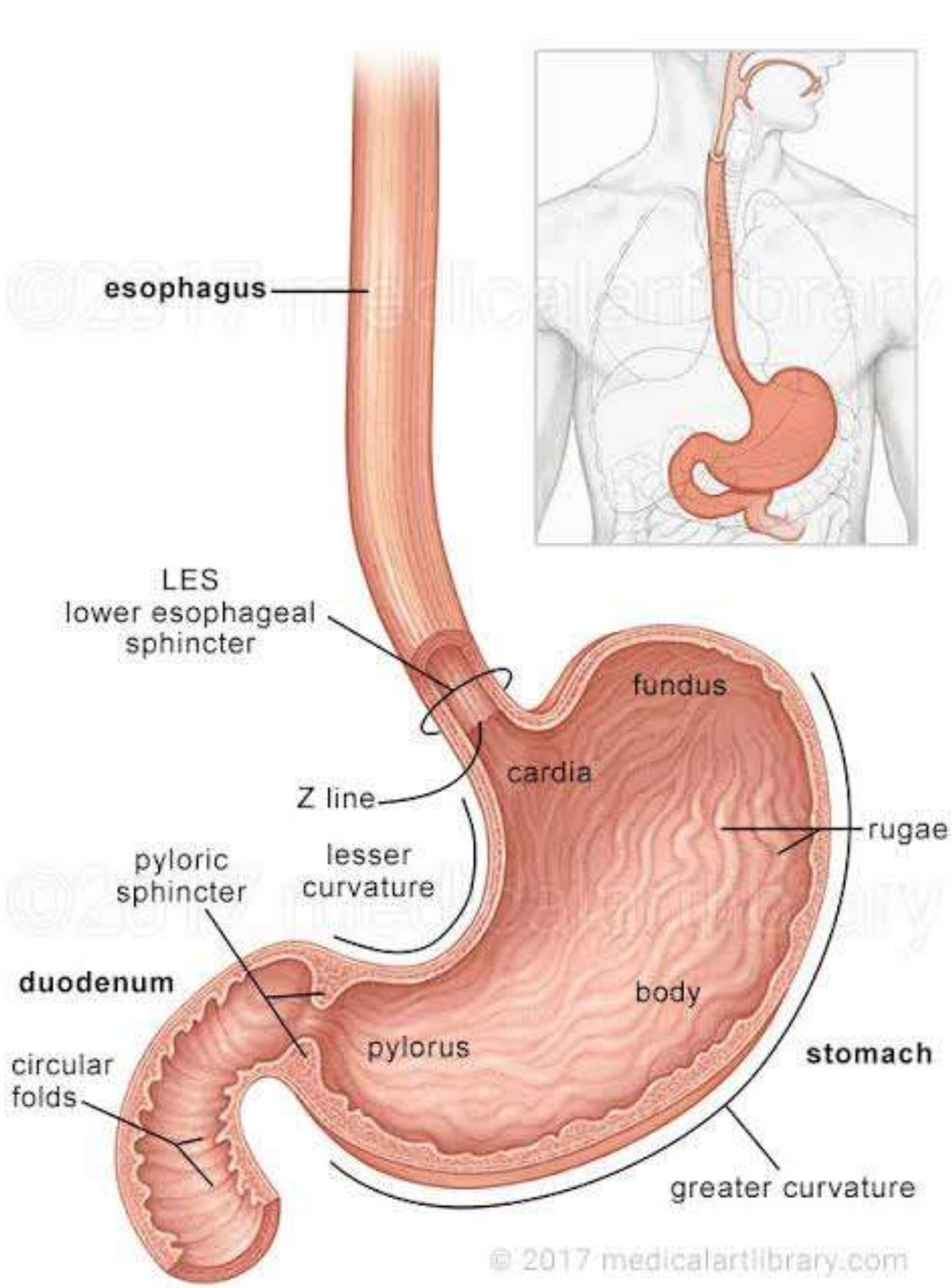
- Evaluates mucosal details.
- Uses thick density barium sulfate suspension and effervescent powder (gas-producing agent).

Anatomy

- Stomach - A J-shaped muscular organ in the left upper quad
- Located at T10 – L3 vertebral level.

Divided into four parts:

- Cardia: Connects the esophagus to the stomach (contains th
- Fundus: Upper part of the stomach.
- Body: Largest and central part.
- Pylorus: Connects to the duodenum.
- Antrum: Connects to the stomach body.
- Pyloric Canal: Contains the pyloric sphincter, regulating fo



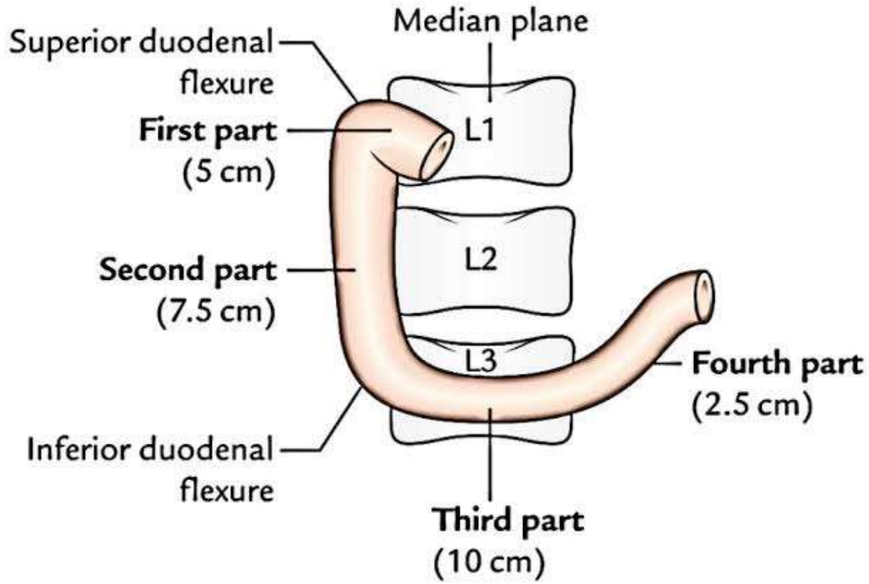
Anatomy

Duodenum

- First part of the small intestine (C-shaped).
- Located at L1 – L3 vertebral level.

Divided into four parts:

- D1: Connects the pylorus of the stomach.
- D2: Receives pancreatic duct and common bile duct.
- D3: Runs horizontally, connects to D4.
- D4: Joins the jejunum at the duodenojejunal flexure.



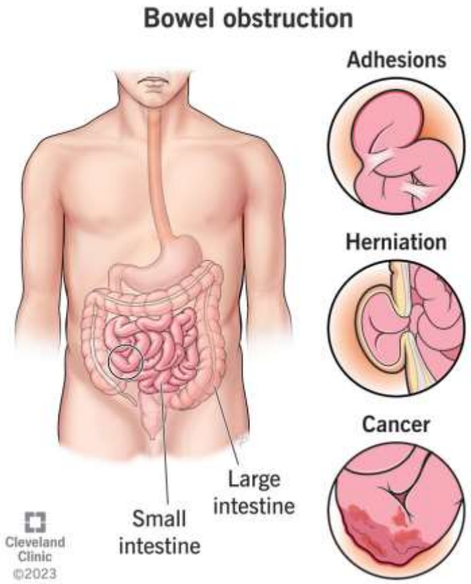
Indication

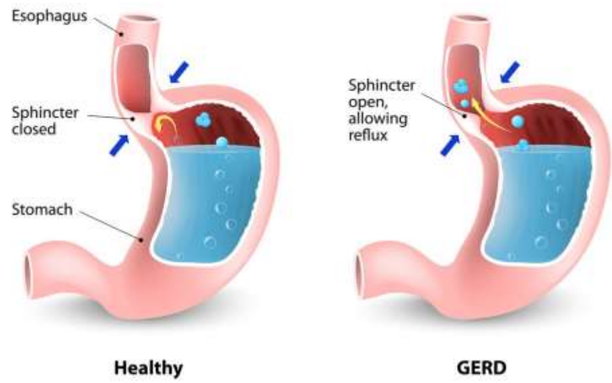
Gastrointestinal symptoms

- Lack of appetite (anorexia).
- Epigastric pain
- Heartburn
- Dyspepsia (upper abdominal discomfort).

Suspected conditions

- Gastric or duodenal obstruction.
- Gastroesophageal Reflux Disease (GERD).





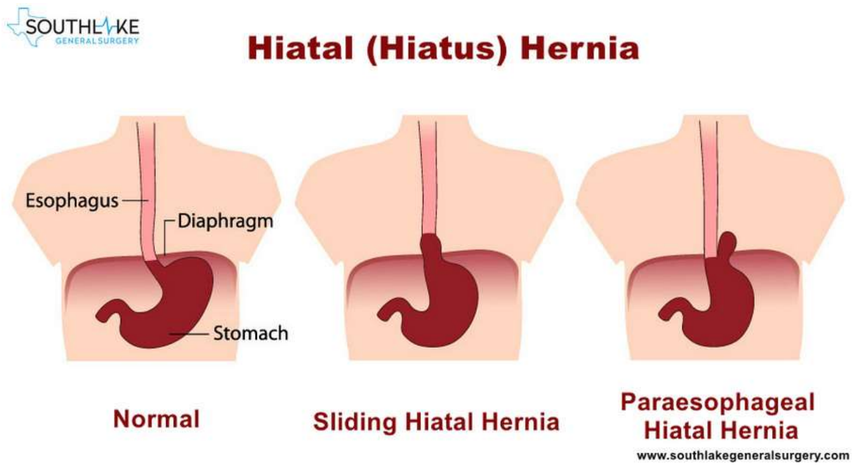
Indication

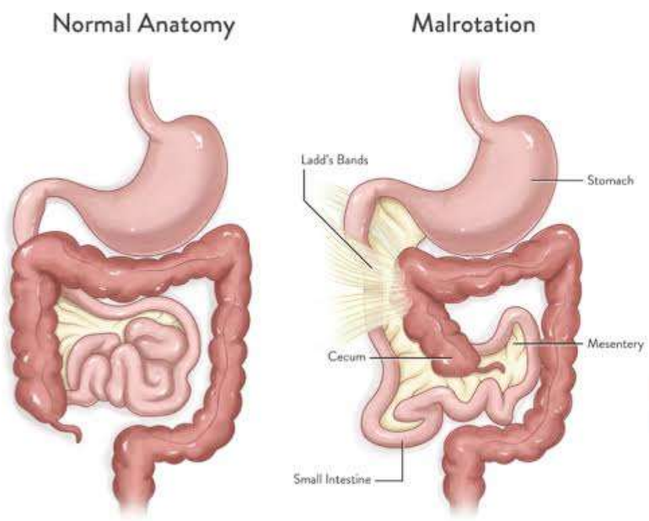
Suspected conditions

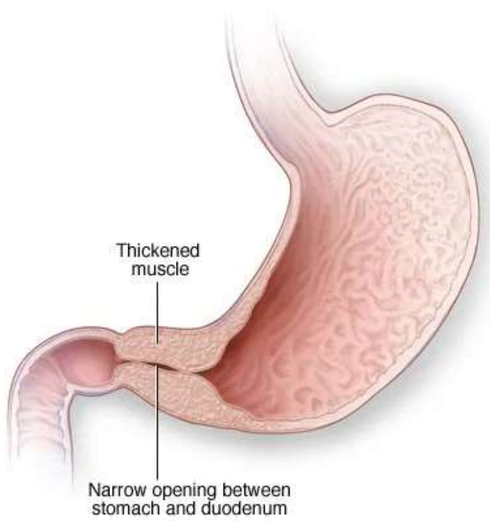
- Pyloric obstruction.
- Hiatus hernia.
- Malrotation (abnormal gut rotation).
- Upper abdominal mass.

Other concerns

- Weight loss, anemia.





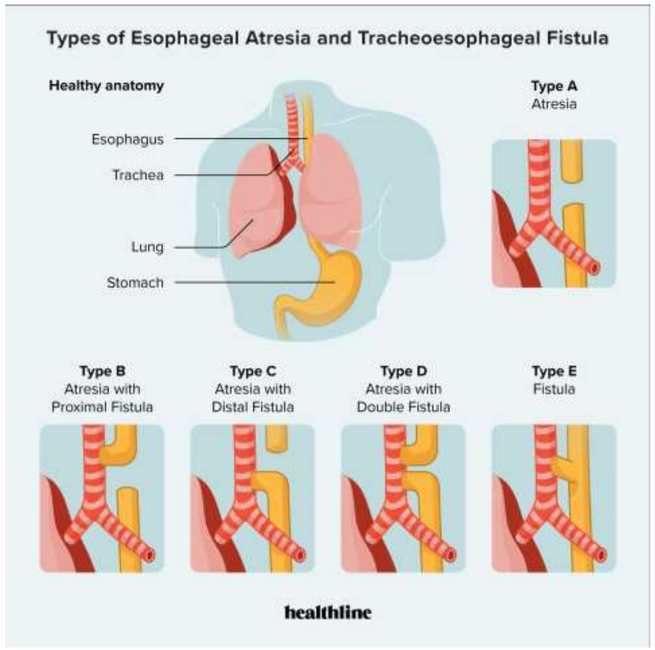


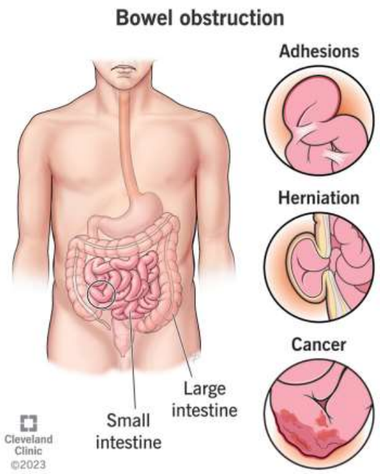
Contraindications

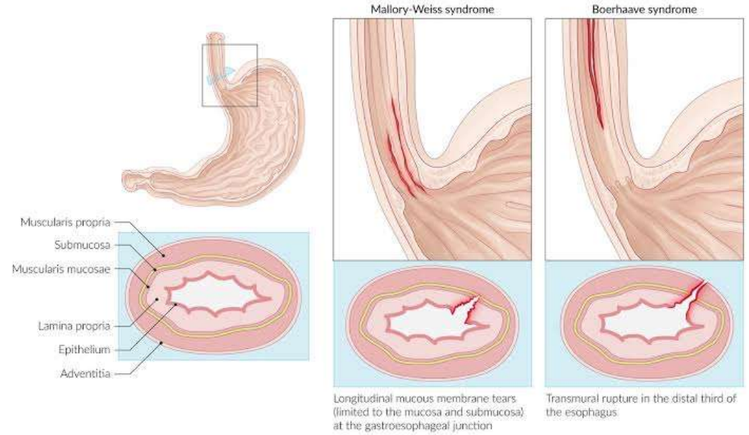
- Complete large bowel obstruction.
- Suspected perforation or fistula.
- Recent gastrointestinal biopsy.
- Suspected pregnancy (risk of radiation exposure).

(If perforation or fistula is suspected,

a non-ionic water-soluble iodinated contrast media.)







Equipment

- Fluoroscopy unit with spot film device

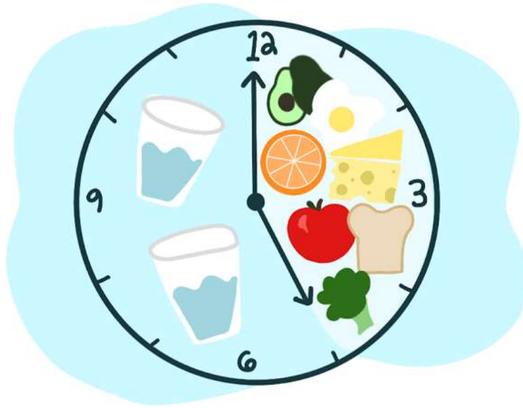
Barium sulfate suspension:

- 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



- A laxative may be given the night before.
- Fasting for 4-6 hours (no food/drink after midnight).
- Remove all metallic objects.
- Avoid smoking or chewing gum to ensure proper barium coating.
- Informed consent must be obtained

Procedure - Single Contrast Study

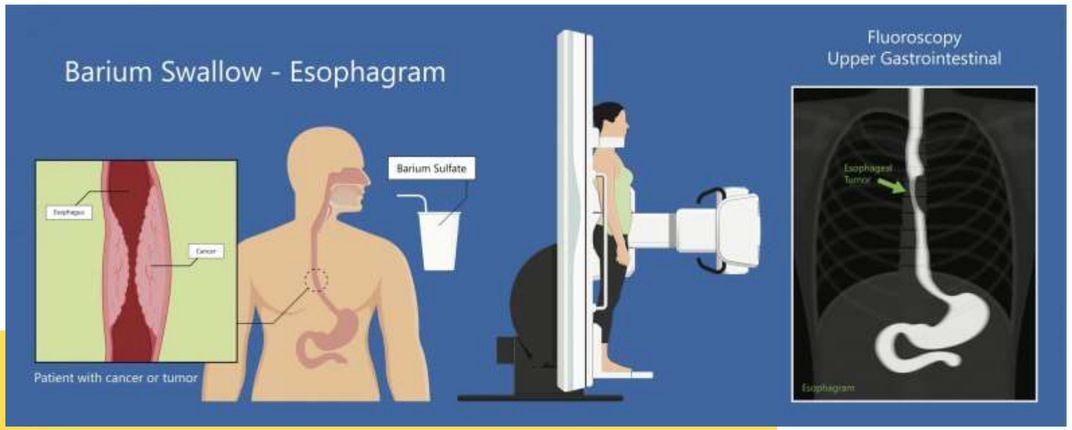
1. Upright position: Patient drinks 10-15 ml barium sulfate, observed under fluoroscopy.

2. Supine position: Patient drinks 150 ml thin barium sulfate.

3. Clockwise rotation to coat stomach mucosa.

4. Prone position: Barium enters the duodenum.

5. RAO position: Barium fills pylorus and duodenal bulb, spot film taken.



Procedure - Single Contrast Study

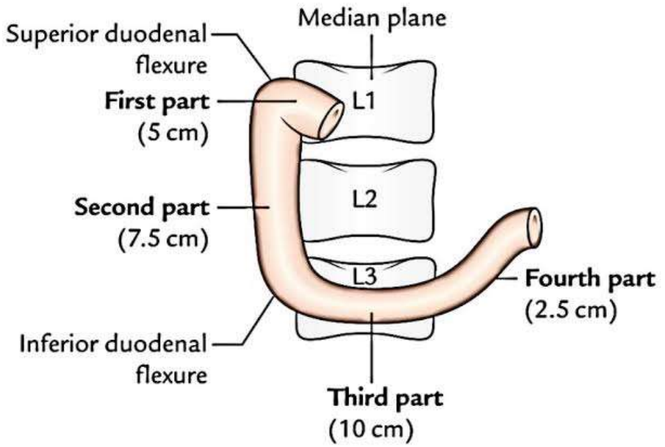
Additional Imaging:

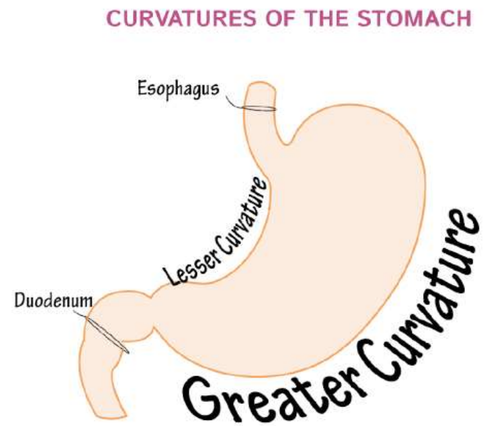
Fundus & Duodenum (D4): Supine AP position.

Hiatus Hernia: Trendelenburg position with abdominal compression.

Duodenal Bulb & Retro-gastric space: Right lateral position.

Greater & Lesser Curvature: Prone with 30° cephalic central ray.





Procedure – Double Contrast Study

1. Buscopan/Glucagon given to suspend peristalsis.

2. 100 ml high-density barium sulfate + effervescent powder swallowed.

3. Patient instructed not to burp.

4. Clockwise rotation (8-10 times) for even coating.

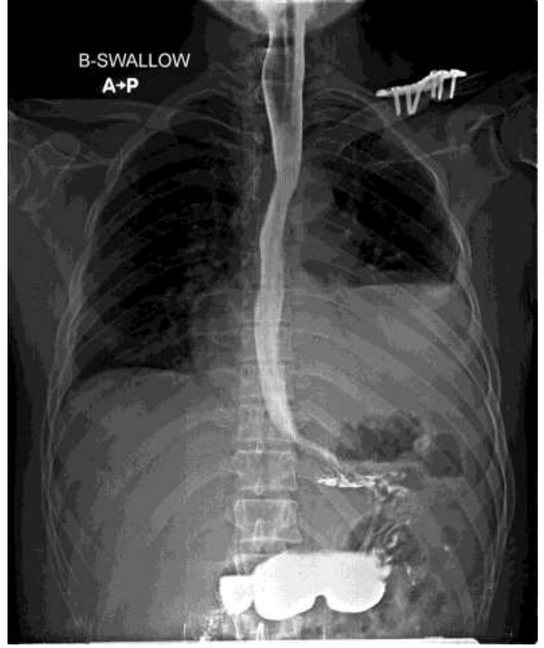
5. LPO position: Air fills pylorus & duodenal bulb, spot film taken.

Additional Imaging:

Duodenal Bulb: Left lateral position.

Upper Stomach Body: Supine with head-up tilt.


R
A→P
PLAIN


B-SWALLOW
A→P


OBL
B-SWALLOW


BARIUM MEAL
AFTER 5MINT


BARIUM MEAL
AFTER 15MINT


BARIUM MEAL
AFTER 1:30MINT

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.