

Esophageal and Gastric abnormalities

Lecturer DR Huda Hameed Salman
DUCOM

Esophageal web

- an esophageal constriction caused by a thin mucosal membrane projecting into the lumen.
- tend to affect middle-aged females.
- **Location:**
- More commonly occur in the cervical esophagus near cricopharyngeus muscle than in the thoracic esophagus.
- They typically arise from the anterior wall and never from the posterior wall
- **Associations**
- Plummer-Vinson syndrome
- graft-versus-host disease
- gastro-esophageal reflux disease (especially a distal esophagus web) ⁷
- external beam radiation.

Radiographic appearance

Fluoroscopy: barium swallow may be demonstrated on high-volume barium oesophagrams when the esophagus is fully distended

a "jet effect" of contrast passing distal to the web may be seen



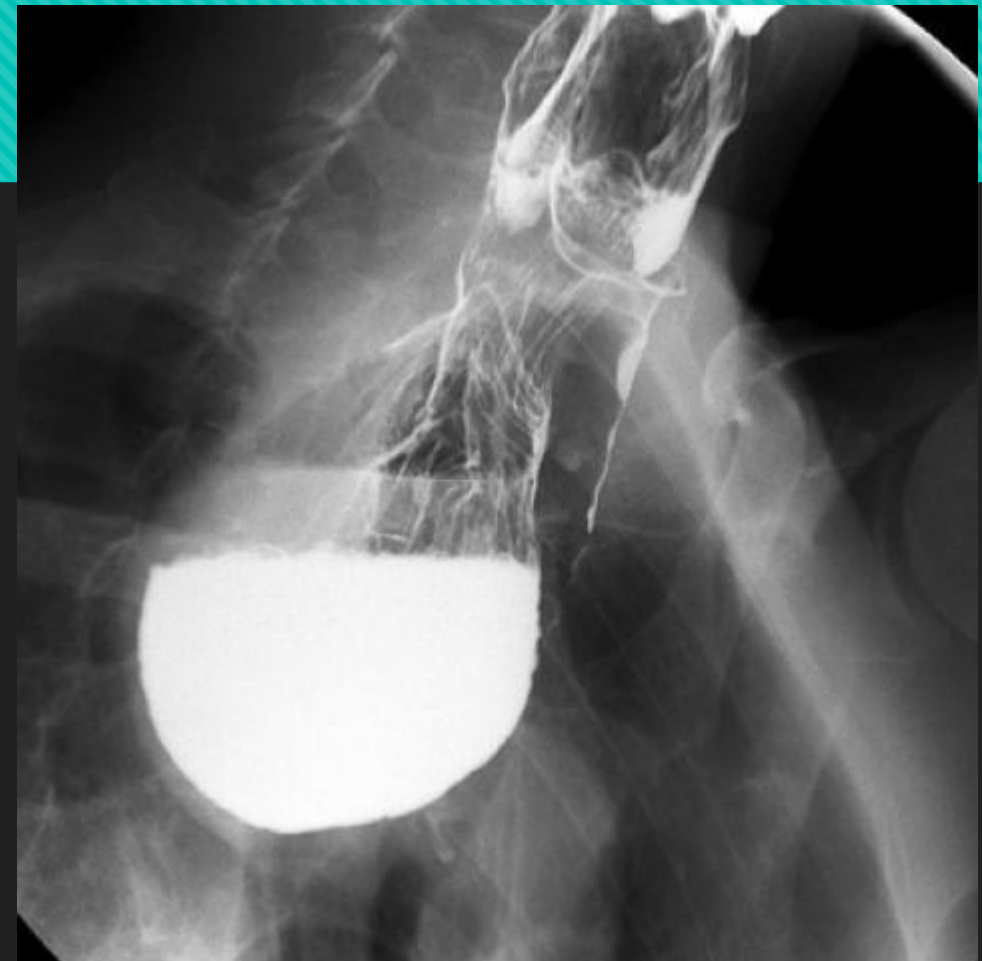
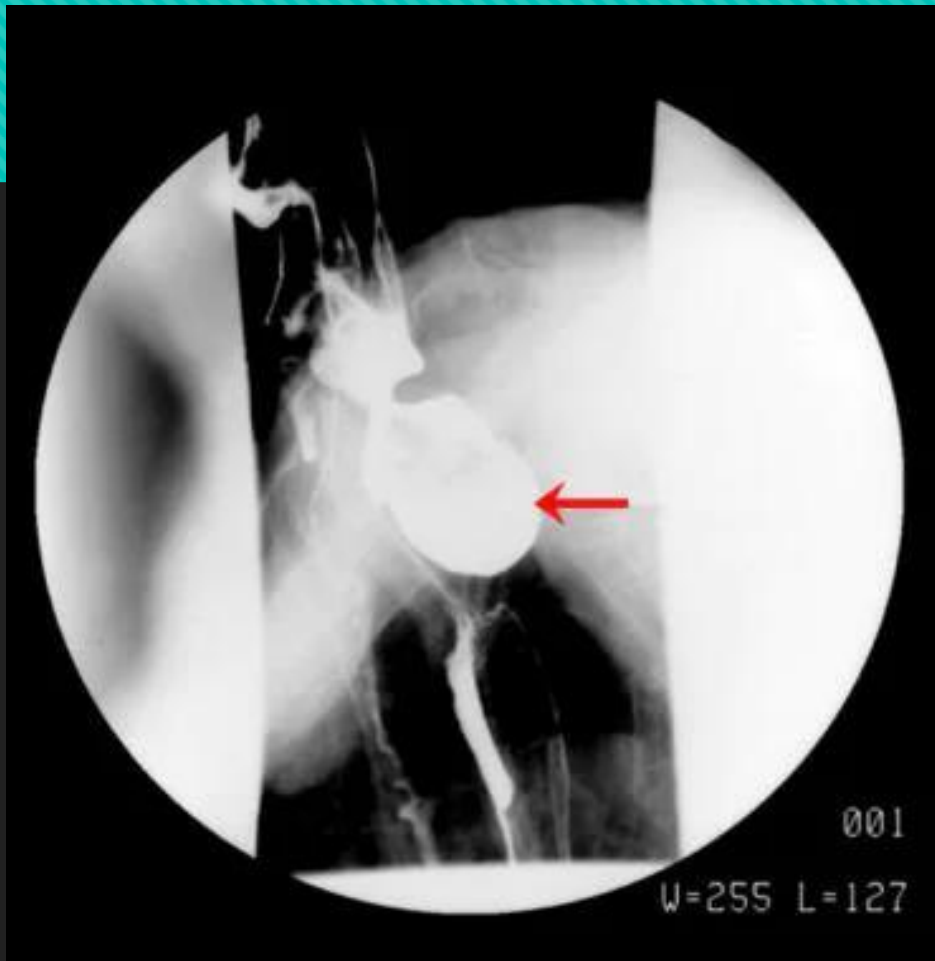
Esophageal carcinoma

- **Fluoroscopy:**
- **Contrast swallow**
- irregular stricture
- prestricture dilatation with 'hold up'
- shouldering of the stricture

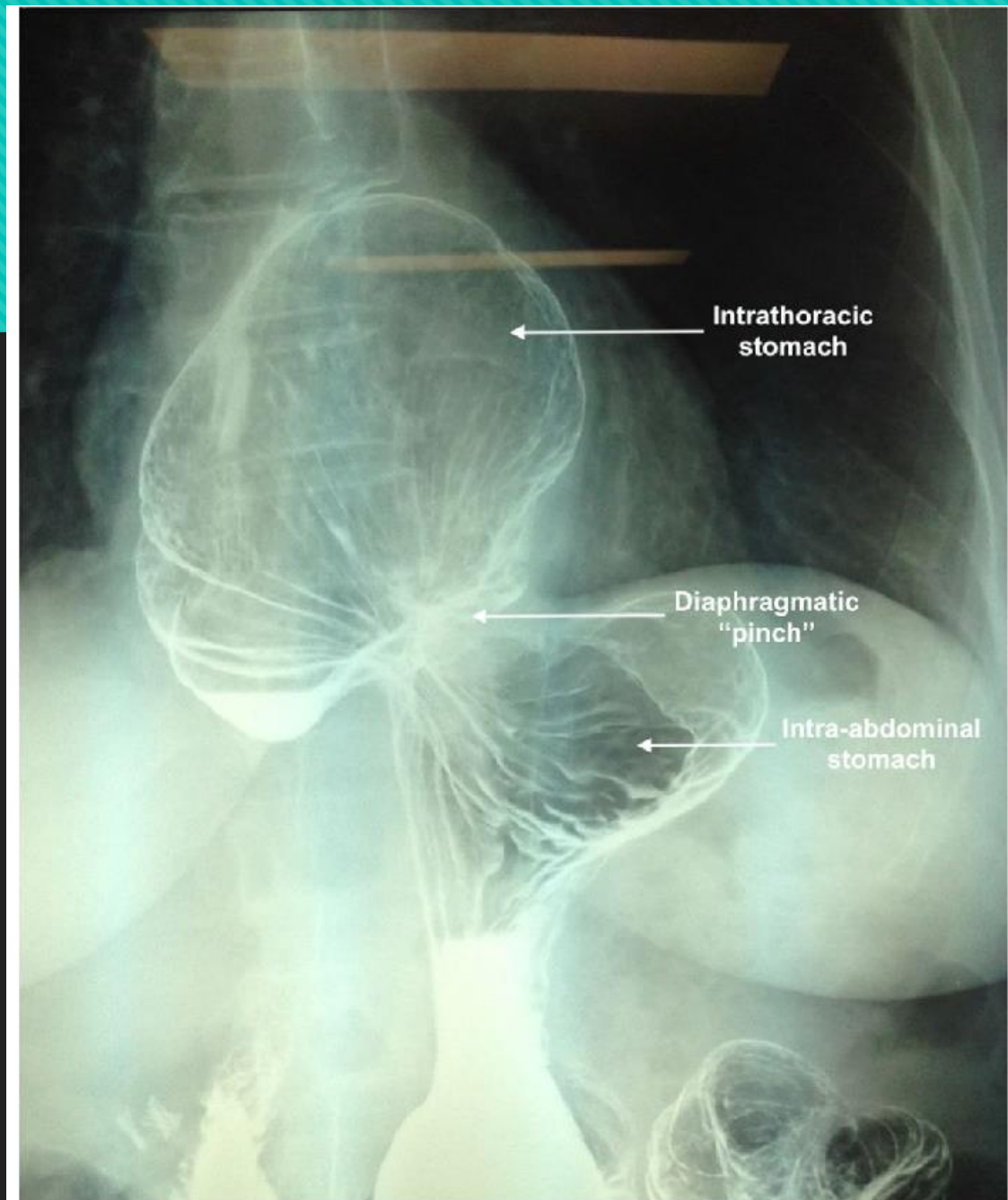


Zenker diverticulum

- known as a **pharyngeal pouch**, is a posterior outpouching of the hypopharynx, just proximal to the upper esophageal sphincter through a weakness in the muscle layer called the Killian dehiscence.
- **Radiographic features**
- **Fluoroscopy**
- Ideally, a barium swallow examination is performed, which may show:
- a diverticulum arising from the midline of the posterior wall of the distal pharynx near the pharyngoesophageal junction
 - the outpouching may be transient, and some refer to the transient variety as a "pharyngeal pouch"
- the pouch is best identified during swallowing and is best seen on the lateral view, on which the diverticulum is typically noted at the C5-6 level
- Since ~90% of patients with a Zenker diverticulum have a hiatal hernia and gastro-esophageal reflux, the distal esophagus should also be evaluated.



- **Hiatal Hernia** : Protrusion of part of stomach through esophageal hiatus of diaphragm
- Sliding (axial) hiatal hernia (HH): Gastroesophageal (GE) junction and gastric cardia pass through esophageal hiatus
- image Paraesophageal (rolling) hernia: Gastric fundus ± other parts of stomach herniate into chest
- • Surgical classification
- image Type I: Sliding HH (only cardia in chest); most common type
- image Type II Paraesophageal (PEH): GE junction in normal position under diaphragm, fundus in chest (very rare)
- image Type III PEH: GE junction in chest, along with fundus ± other portions of stomach (2nd most common HH)
- image Type IV PEH: Intrathoracic stomach ± volvulus



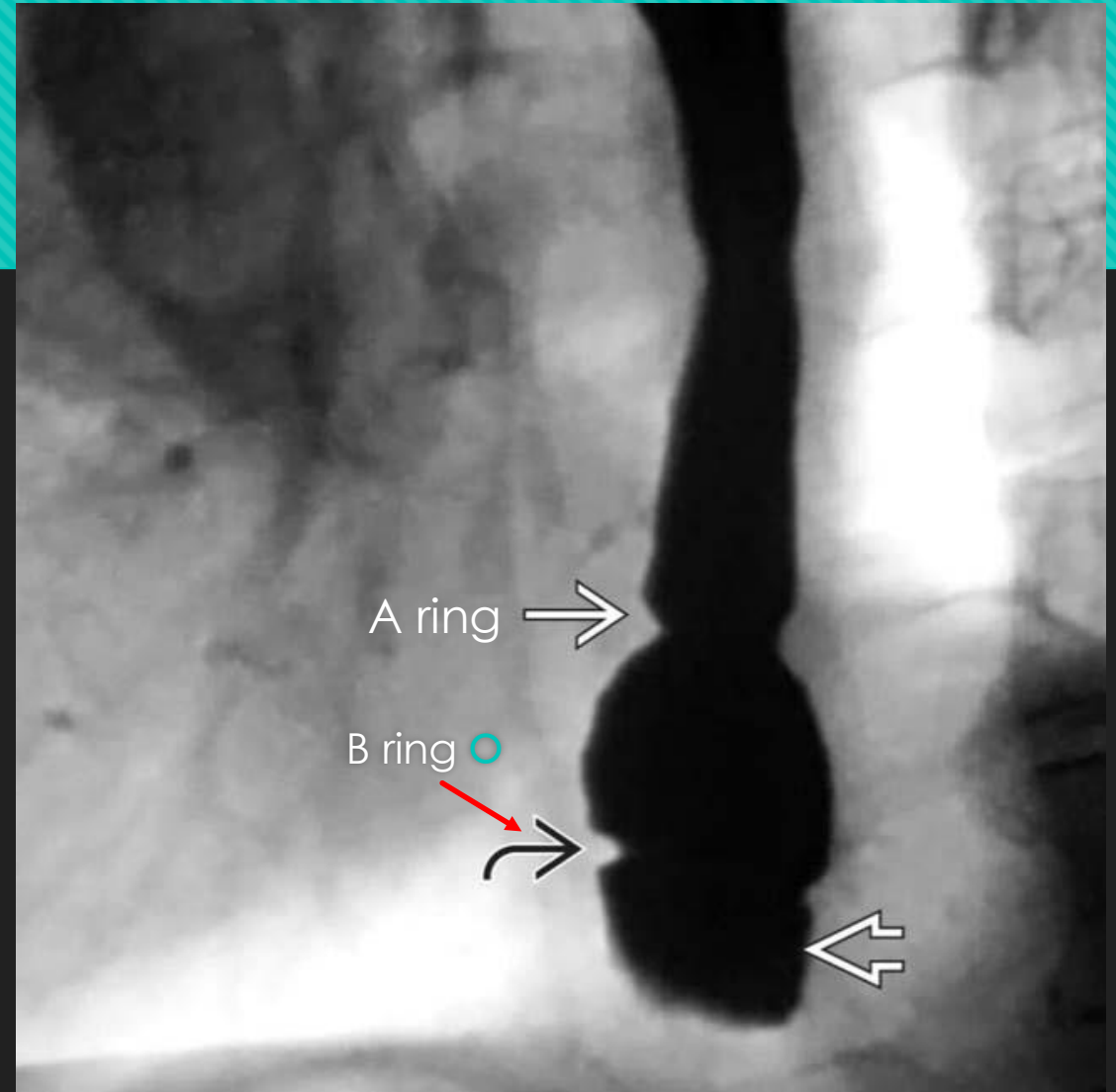
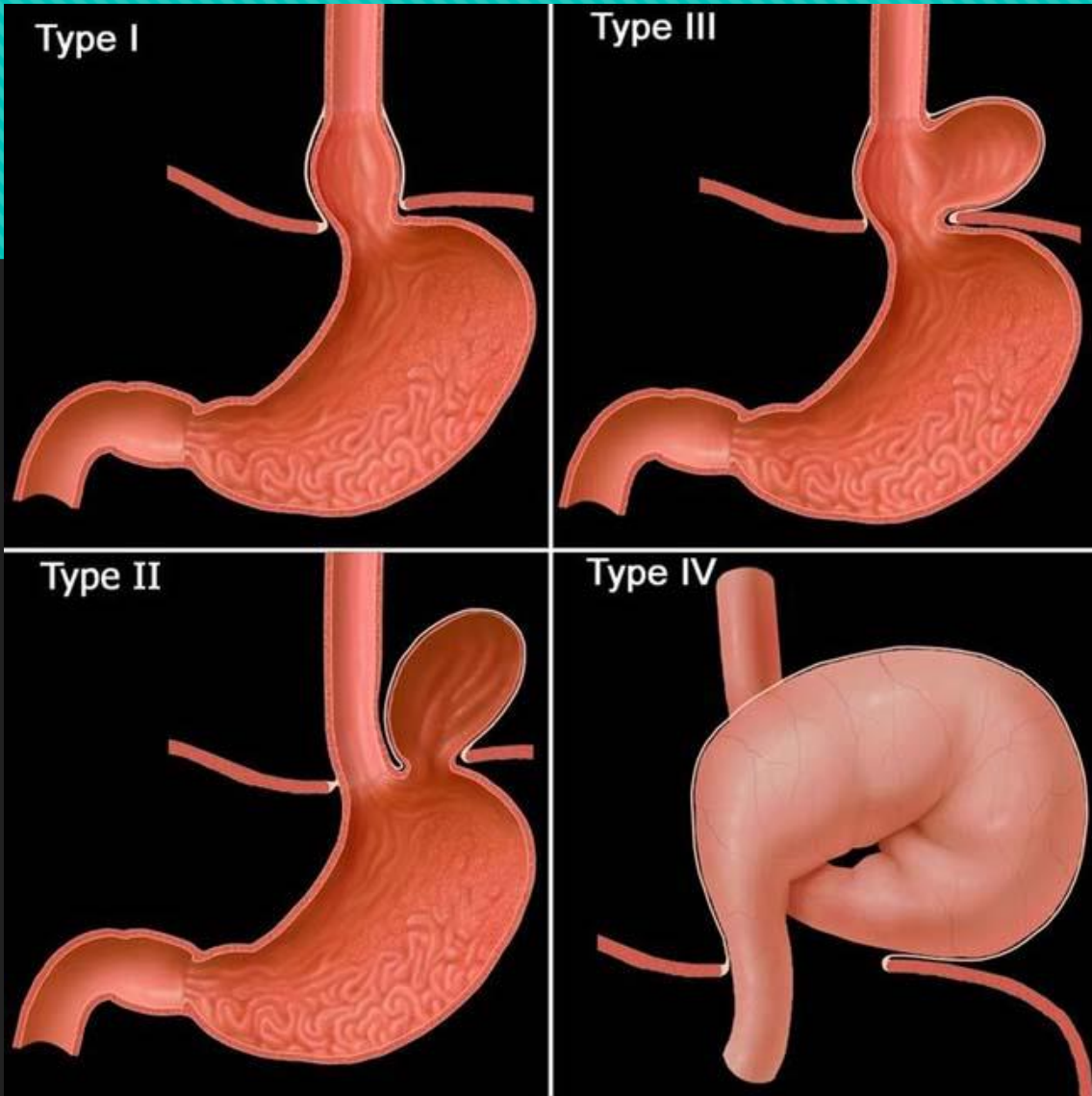
Type I (sliding HH):

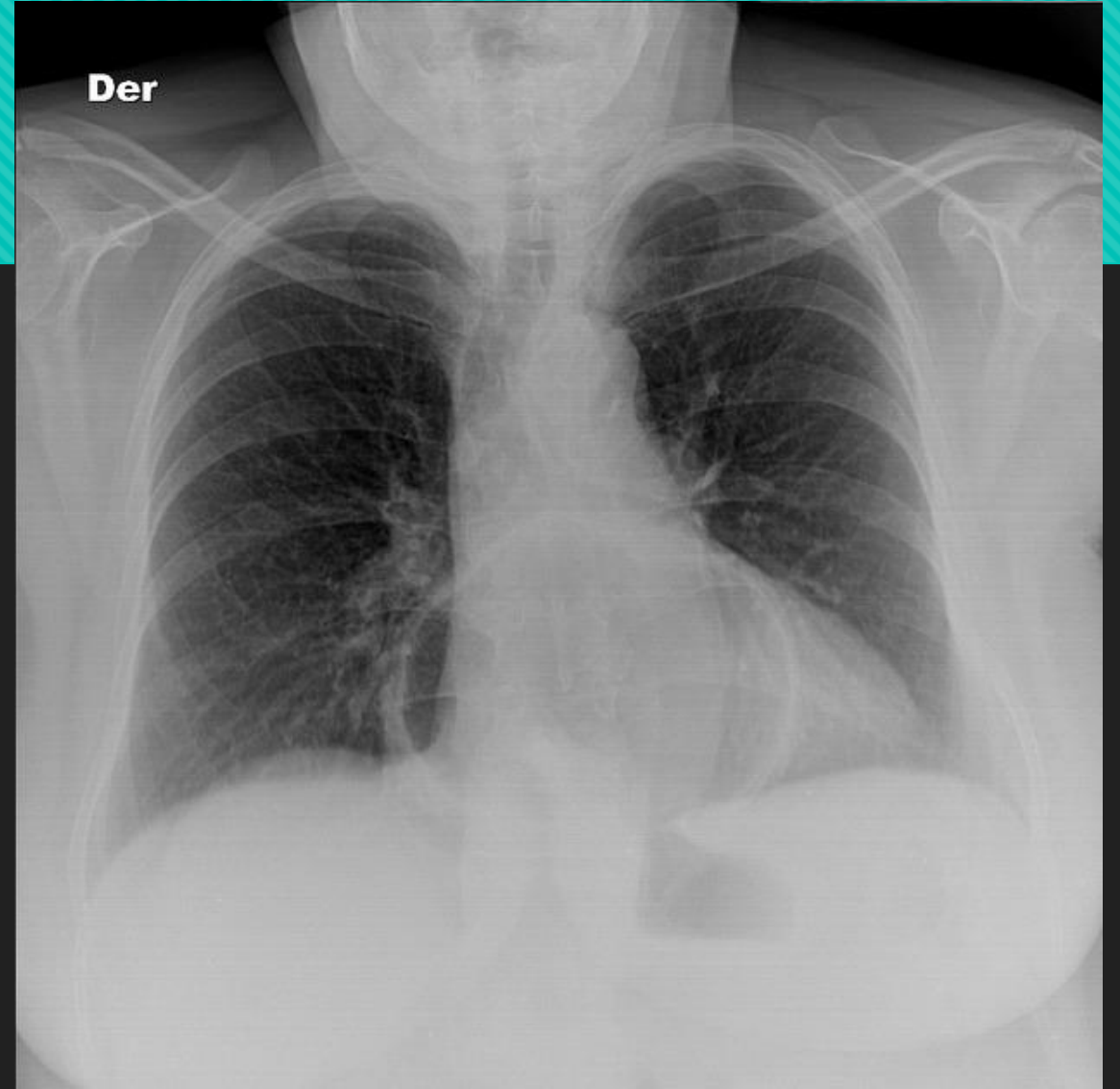
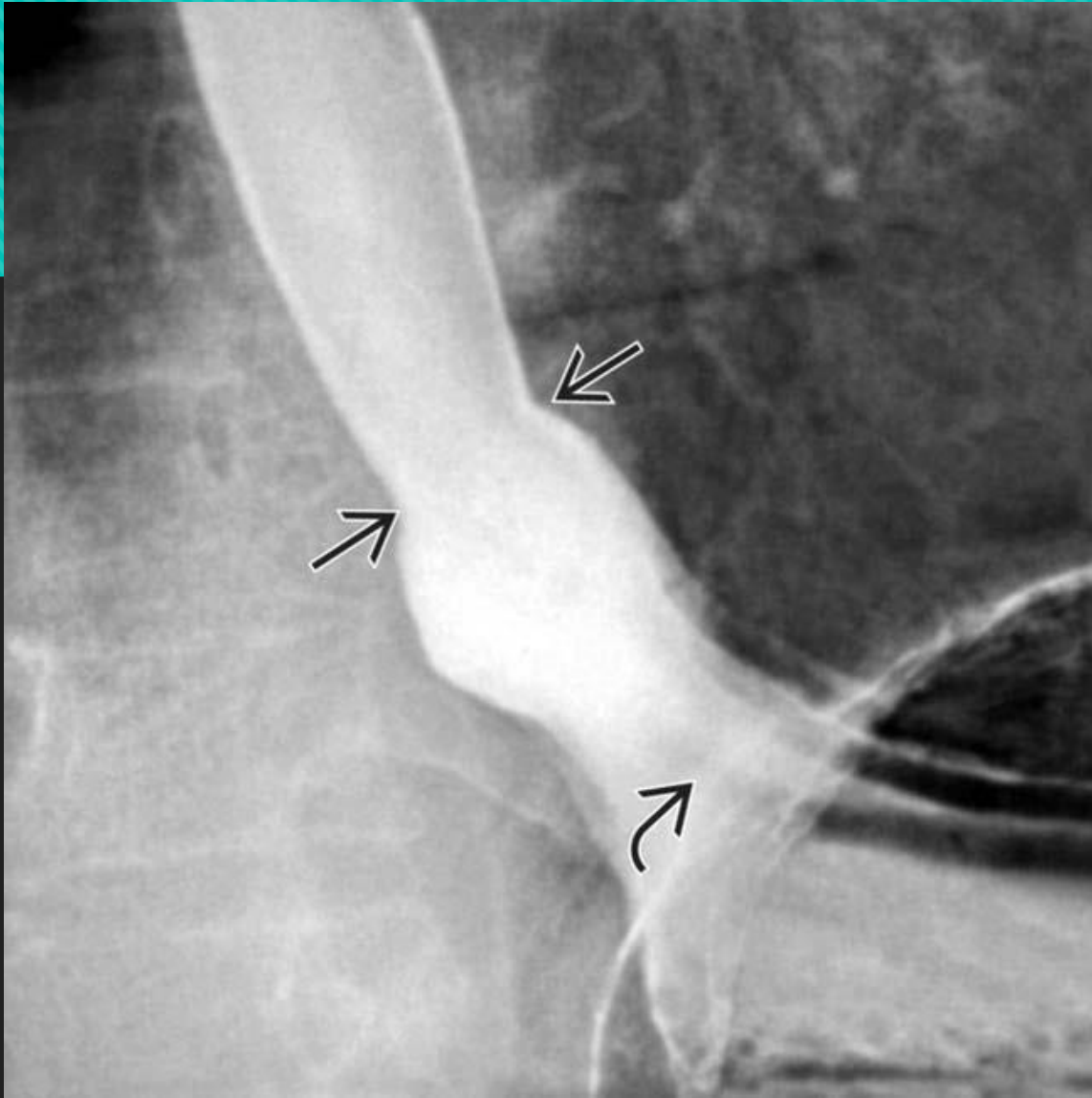
- **Signs on upper GI series**

- 1-image Lower esophageal mucosal (B) ring observed ≥ 2 cm above diaphragmatic hiatus
- 2-image Often reducible in erect position
- 3-image Numerous (> 6) longitudinal gastric folds within HH continue through hiatus into abdominal part of stomach
- 4-image Gastric folds converging superiorly toward a point several centimeters above diaphragm.

- **TOP DIFFERENTIAL DIAGNOSES**

- • Phrenic ampulla
- • Postoperative change
- • Pulsion diverticulum





Sliding hiatus hernia

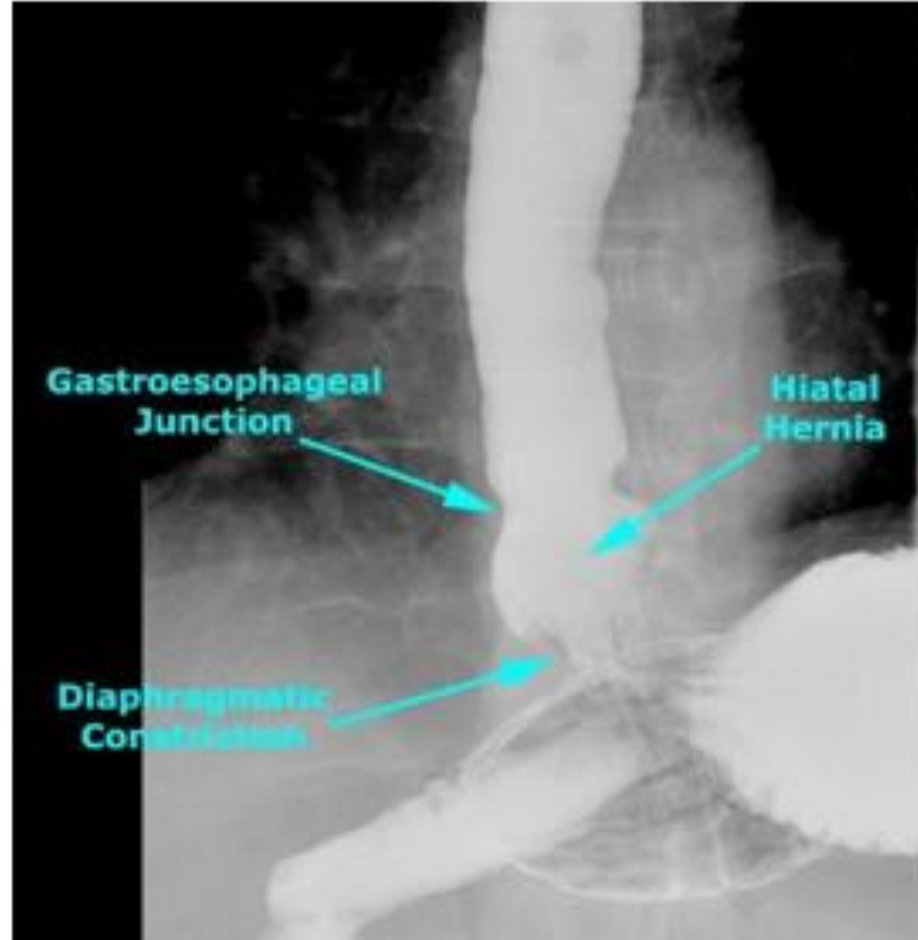
Image Paraesophageal hernia (types II to IV)

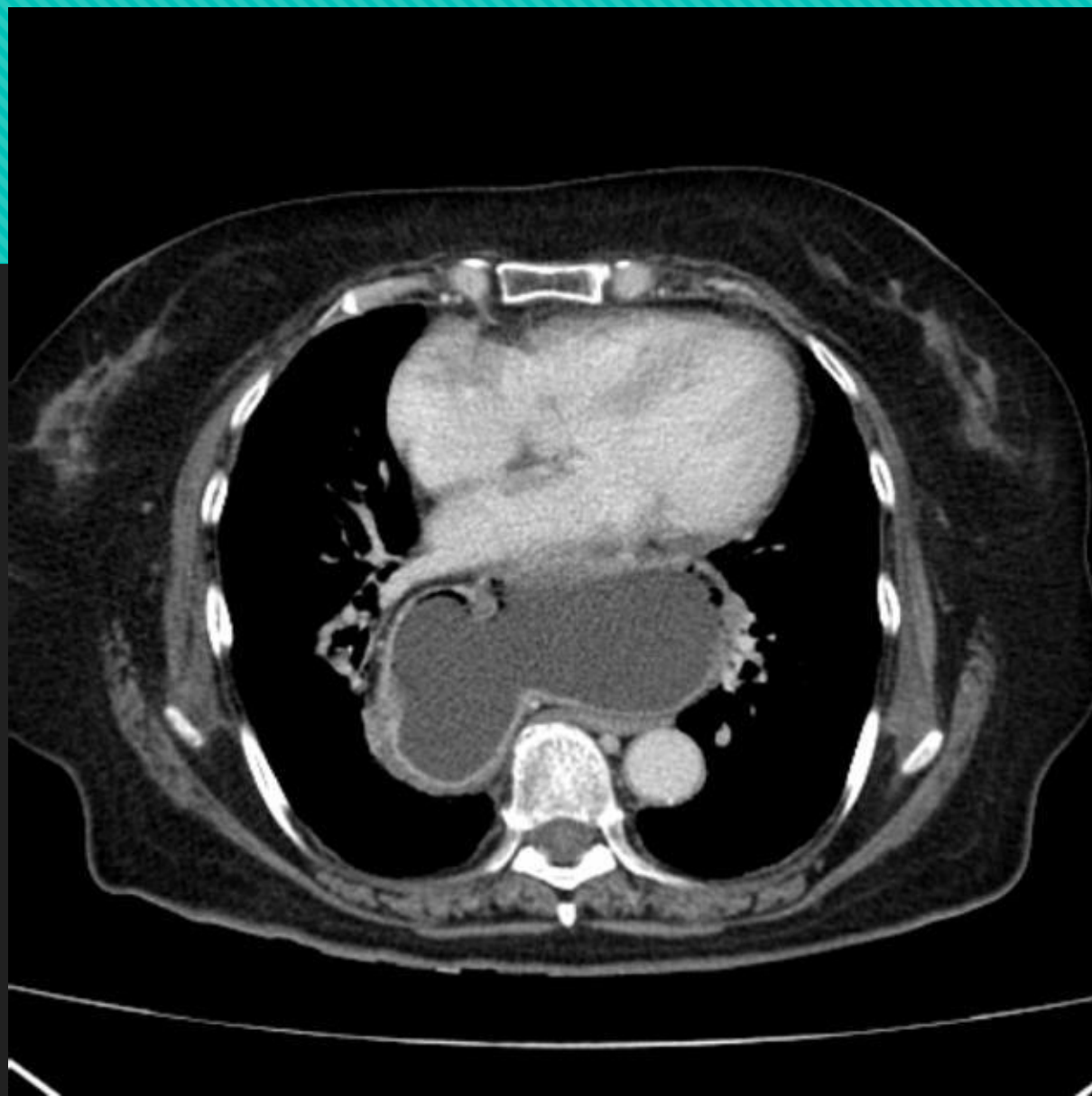
X ray findings(fluoroscopic findings)

- Portion of stomach anterior or lateral to esophagus in chest
- – Frequently nonreducible
- – \pm gastric ulcer of lesser curvature at level of diaphragmatic hiatus
- – Type III and IV: Prone to volvulus

CT Findings

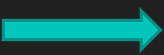
- • Widening of esophageal hiatus
- image Dehiscence of diaphragmatic crura (> 15 mm); increased distance between crura and esophageal wall
- • Focal fat collection in middle compartment of lower mediastinum
- image Omentum herniates through phrenicoesophageal ligament
- image May see \uparrow in fat surrounding distal esophagus
- • CT clearly demonstrates paraesophageal hernia through widened esophageal hiatus
- image Visualize size, contents, orientation of herniated stomach within lower thoracic cavity





Gastric abnormalities

○ Gastric ulcer

- the presence of mucosal ulceration secondary to the effects of gastric acid.
- 2 types  Benign and malignant gastric ulcer
- **Risk factors:**
- Risk factors include :
 - *Helicobacter pylori* infection
 - NSAIDs
 - corticosteroids
 - severe physiological stress/illness (e.g. admission to intensive care)
 - Zollinger-Ellison syndrome
 - Hypercalcemia

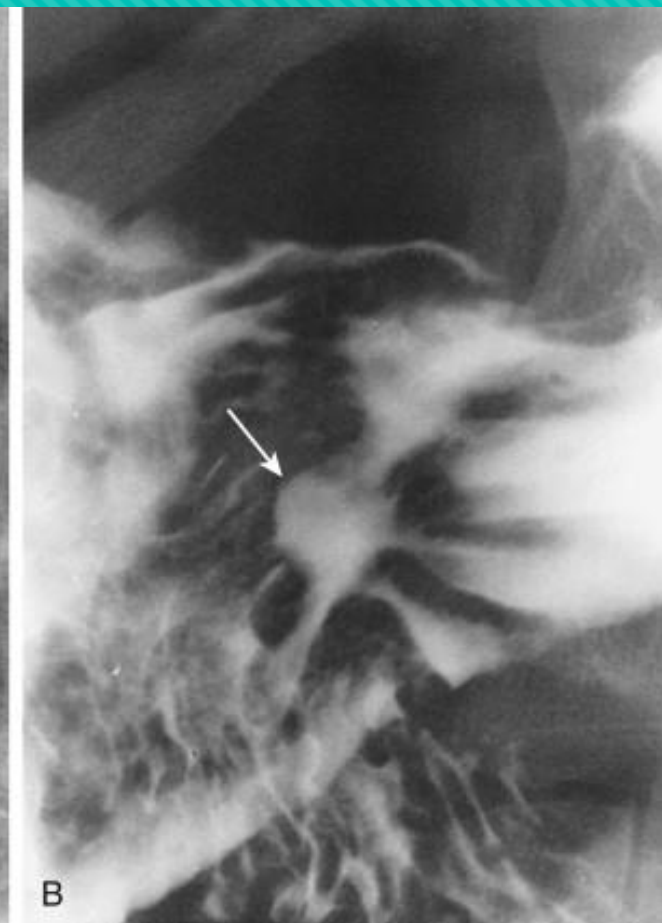
Radiological findings

Benign gastric ulcer

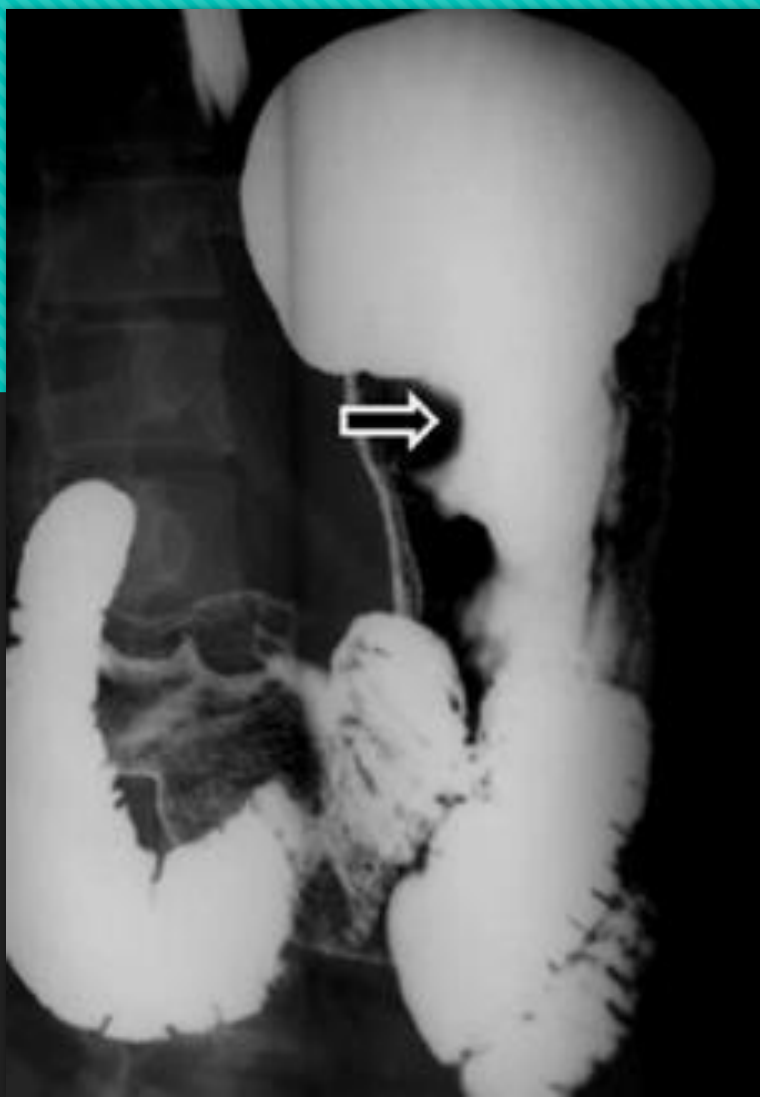
Barium meal show:

- 1-pocket of barium filling the ulcer crater
- 2-edematous collar of swollen mucosa (to be distinguished from the rolled edges of a malignant ulcer)
- 3-radiating folds of mucosa away from the ulcer
- 4-project beyond expected contour of stomach
- 5-usually on lesser curve ,posterior wall or antrum

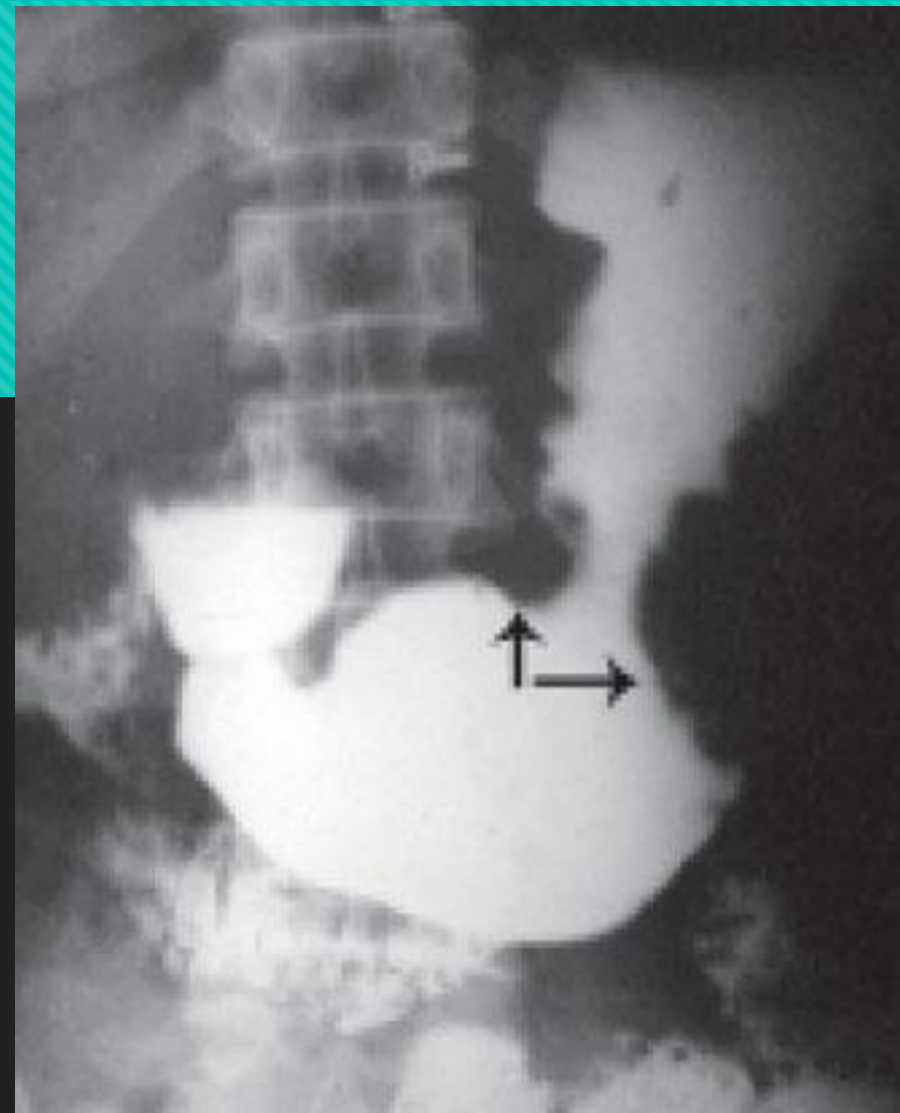
- Malignant gastric ulcer:
- image Uneven shape; irregular or asymmetric edges; interruption and clubbing of radiating folds
- image Does not project beyond contour of stomach
- image CT may show metastasis to nodes, peritoneum, liver



○ Benign gastric ulcer



Malignant ulcer of lesser curvature: Single contrast barium meal spot image shows irregular gastric ulcers (arrow) of lesser curvature of stomach which is not extending beyond the gastric contour.



BENIGN Vs MALIGNANT GASTRIC ULCER



Pyloric stenosis

- **Hypertrophic pyloric stenosis (HPS)** refers to the idiopathic thickening of gastric pyloric musculature which then results in progressive gastric outlet obstruction.
- male predilection (M:F ~4:1).
- **Risk factors**
- being firstborn
- maternal history of pyloric stenosis ¹⁰
- cesarean section delivery
- bottle feeding ¹²
- exposure to macrolide antibiotics

- Radiographic findings:
- Fluoroscopy
- delayed gastric emptying
- peristaltic waves (caterpillar sign)
- elongated pylorus with a narrow lumen (string sign) which may appear duplicated due to puckering of the mucosa
- Ultrasound : Ultrasound is the modality of choice
- pyloric muscle thickness, i.e. diameter of a single muscular wall (hypoechoic component) on a transverse image: >3 mm (most accurate)
- pyloric transverse diameter: >14 mm
- length, i.e. longitudinal measurement: >15-17 mm
- pyloric volume: >1.5 cm³



caterpillar sign
hypertrophic
pyloric stenosis

