

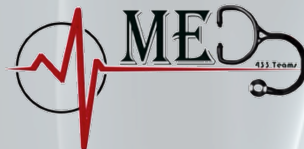


RADIOLOGY TEAM

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Lecture 1 :

# Radiology of the Abdomen



KSU | Collage of Medicine  
2nd Year | CNS BLOCK

## Radiological modalities of abdomen (GIT) :

### X – Ray

- Ionizing radiation.
- Useful in assessing the bones, bowel gases (obstruction) and calcification.

### Fluoroscopy

- Using a contrast material for better visualization of hollow organs, such as bowel loops and KUB (Kidney, Ureter and Bladder).
- Useful to assess the mucosal pathology.
- Either **oral** or **rectal** contrast.
- Rectal contrasts are either:
  1. **Single contrast barium enema.**
  2. **Double contrast barium enema.**

### CT scan

- Ionizing radiation.
- Cross-sectional imaging.
- Better anatomical visualization

- ✓ We also can use U/S (Ultrasound) & MRI.
- ✓ CT, US and MRI have essentially replaced conventional radiography in the assessment of organomegaly and soft tissue masses.

# X-Ray

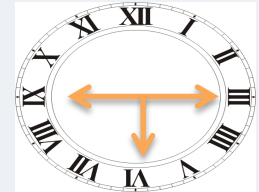
## ✧ Normal Gas pattern:

- 1- Stomach: Always air in stomach.
- 2- Small bowel: Small amount of air in 2 or 3 loops.
- 3- Large bowel: Always air in rectum and sigmoid.
  - Varying amount of gas in rest of large bowel.

## ✧ 3, 6, 9 RULE

Maximum Normal Diameter of bowel :

- 1- Small bowel 3 cm
- 2- Large bowel 6 cm
- 3- Caecum 9 cm



## Mechanical Small Bowel Obstruction (SBO):

1. Dilated small bowel
2. Fighting loops
3. Little gas in colon, especially rectum

## ✧ Special radiological signs in SBO :

1. Step ladder appearance (Loops arrange themselves from left upper to right lower quadrant in distal SBO)
2. Coil spring / stack of coins sign
3. Double Bubble Sign (Indicate Duodenal Atresia)

## Mechanical Large Bowel Obstruction (LBO):

1. Colon dilates from point of obstruction backwards
2. Little/no air fluid levels (colon reabsorbs water)
3. Little or no air in rectum/sigmoid

### ✧ **Causes:**

Tomers, Volvulus, Hernia, Diverticulitis, Intussusception.

### ✧ **Special radiological signs of LBO:**

1. Coffee Bean Sign -Massively dilated sigmoid loop- (Indicate Sigmoid volvulus).
2. Thumbprinting (The haustral folds are very thick).

### ✧ **Extraluminal air (TYPES):**

- 1- Pneumoperitoneum (Free Air /intraperitoneal air).  
(Remember in respiratory block : Pneumothorax was air in pleural cavity, now Pneumoperitoneum is air in peritoneal cavity)
- 2- Retroperitoneal air
- 3- Air in the bowel wall.
- 4- Air in the biliary system.

### ✧ **Causes of Free Air :**

- 1- Rupture of a hollow viscus
  - ✓ Perforated peptic ulcer
  - ✓ Trauma
  - ✓ Perforated diverticulitis.
  - ✓ Perforated carcinoma
- 2- Post-operative :  
5-7 days normal, then should get less  
**\*NOT ruptured appendix (seals off)\***

### ✧ Signs of free air :

1. Crescent sign (Free air under the diaphragm, best demonstrated on upright chest x-rays or left lateral decub)
2. Riglers sign (Bowel wall visualised on both sides due to intra and extraluminal air)
3. Football sign (massive pneumoperitoneum, most often in children with necrotizing enterocolitis, In supine position air collects anterior to abdominal viscera).
4. Falciform ligament sign (normally invisible)

✧ **Nephrocalcinosis** (Uncommonly the renal parenchyma can become calcified, usually with diseases like medullary sponge kidney or hyperparathyroidism.)

### ✧ In Flouroscopy:

1. Apple core sign (Indicate Colon Cancer)
2. Lead pipe colon (Shortening of colon secondary to fibrosis, loss of haustration, ulcerative colitis)

# Questions

**Q1- In The Large Bowel Almost Always Air In The :**

- A. Rectum
- B. 2 Or 3 Loops
- C. Sigmoid
- D. A&c

**Q2: Male Comes To You With Abdominal Distal Constipation Have Gastrostomy Recently What Do You Accept To See ?**

- A. Adhesion Small Bowel
- B. Low B12
- C. Not Enough Information
- D. A &B

**Q3: 2 Month Baby Not Eat,ing Vomiting , What Do You Accept To See ?**

- A. Obstruction In Esophagus
- B. Obstruction In Duodenum
- C. Dilated In The Lower Sphincter
- D. B & C

**Q4: Women Have Anemia And Have History Of Cancer Also She Notes Loss Her Weight What Do You Accept To See ?**

- A. Large Bowel Obstruction
- B. Esophagus Obstruction
- C. Dilation Of Intestine
- D. Non

**Q5: Intussusception Most Common In ?**

- A. In Pediatric
- B. In Adult Become Malegnant
- C. Cause Of Lbo
- D. All

**Q6: Pneumoperitoneum/Free Air/Intraperitoneal Air OBSTRUCTION Common IN :**

- A. Large Bowel
- B. Intestine
- C. Esophagus
- D. All Gut

**Q7: The Union Of Aorta At :**

- A. L4
- B. L5
- C. T12
- D. L2

**Q8: The Union Of IVC At :**

- A. L4
- B. L5
- C. T12
- D. L2

**Q9: Free Air Causes Of :**

- A. Perforated Peptic Ulcer
- B. Trauma
- C. Perforated Diverticulitis
- D. All

**Q 10 Football Sign Characteristic Are**

- A. Seen With Massive Pneumoperitoneum
- B. Most Often In Children With Necrotising Enterocolitis
- C. In Supine Position Air Collects Anterior To Abdominal Viscera
- D. All

Q1:D Q2:D Q3:D Q4:A Q5:D Q6:A Q7:A Q8:B Q9:D Q10:D

# Good Luck

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