

Republic of Iraq
Ministry of Higher Education
Al-Mustaqbal University
Radiology Techniques Department
Second Stage \ Special Radiological Procedures-1



Lecture No. (5)

Barium enema

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Barium Enema

A **barium enema** is a radiographic (X-ray) examination **large intestine** (colon).

Parts of large intestine:

1. Cecum
2. Ascending colon
3. Transverse colon
4. Descending colon
5. Sigmoid colon
6. Rectum
7. Anal canal.

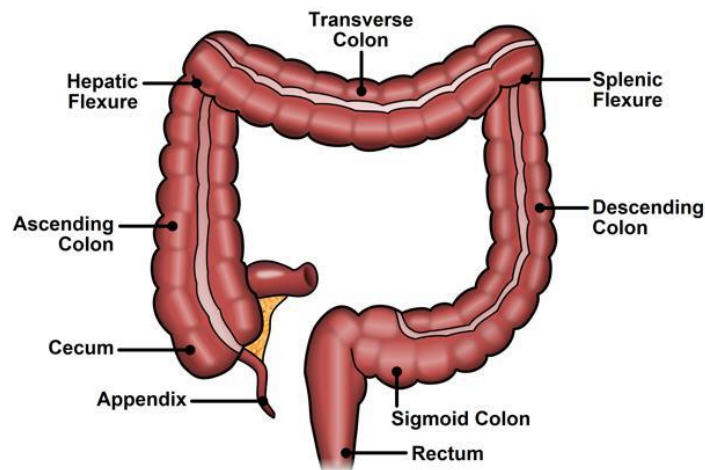


Figure (1). Parts of large intestine

Methods

1. **Double contrast**— (**mucosal lesions**).
2. **Single contrast**—uses:
 - (a) Localization of an **obstructing** colonic lesion (use water-soluble contrast)
 - (b) **Children**
 - (c) **Reduction of an intussusception**

Indication

1. Large bowel pathology
2. Chronic constipation (water soluble contrast)

Contraindications

Absolute

1. **Toxic megacolon** (It's a widening of the large intestine that develops within a few days and can be life-threatening examined by CT)
2. Pseudomembranous colitis (**inflammation of the large intestine**)
3. **Recent biopsy** via:
 - (a) **rigid endoscope** within previous **5 days** (the biopsy forceps used tend to be **larger**)
 - (b) **flexible endoscope** within previous **24 h** (as the **smaller** biopsy forceps only allow superficial mucosal biopsies)

Relative

1. **Incomplete bowel preparation**. Consider if the patient can have extra preparation to return later that day or the next day.
2. **Recent barium meal**. It is advised to wait for 7–10 days.
3. **Frail patient**.

Contrast Medium

1. Barium 115% w/v 500 mL (or more, as required)
2. Air or CO2 **double contrast**

Equipment

Disposable enema tube and pump.

Patient Preparation

For 3 days prior to examination

Low-residue diet.

On the day prior to examination

1. Fluids only
2. Picolax—at 08:00 and 18:00 h

On the day of the examination

It is advisable to place diabetics first on the list.

Preliminary Film

To ensure good preparation

Technique

The double-contrast method:

1. The patient lies on their left side; the catheter is inserted gently into the rectum. It is taped firmly in position. Connections are made to the barium reservoir and the hand pump for injecting air.
2. An **i.v.** injection of **Buscopan** (20 mg) or **glucagon** (1 mg) is given.
3. The **infusion of barium is commenced**. Intermittent screening is required to check the progress of the barium, with a **table tilt** of 10 degrees head down.
4. The **barium is run** to proximal sigmoid in the left lateral position.
5. Repositioning from **left lateral** to prone may be required to **examine** a tortuous sigmoid colon.

6. The patient is **returned** to the left lateral position to **fill the descending colon to the splenic flexure**.

7. **Contrast is run** through transverse colon to the hepatic flexure in the prone position **until it tips into the right colon** when barium administration should be **paused**. (**Gentle puffs** of air may be needed to encourage the barium to flow to the **caecum**.)

8. The patient rolls onto the **right** and quickly onto the **back**. An adequate amount of barium in the **right colon** is confirmed with fluoroscopy. *The column of barium within the distal colon is **run back out by either lowering the infusion bag to the floor or tilting the table to the erect position**.

9. **Air** is gently pumped into the bowel to produce the **double-contrast** effect. **CO₂** gas reduce the incidence of severe, postenema pain.

Exposures (Films)

There is a **great variation in views** recommended. Fewer films may be taken to reduce the radiation dose. The sequence of positioning enables the barium to flow proximally to reach the caecal pole. Air is pumped in as required to distend the colon.

A suggested positioning and images include the following:

- **Left lateral rectum**; then roll the patient halfway back.
- **RAO sigmoid**; then roll the patient prone and insufflate to distend transverse colon. The patient lifts left side up to obtain.
- **LPO sigmoid**; then turn the patient supine.
- **AP view(s) of whole colon**.

- Raise the patient to the erect position. Further drainage of barium and reinflation of the colon may improve views of the sigmoid colon if initial images were flooded with barium.

Obtain dedicated views of both flexures, with some **LAO positioning for splenic flexure** and **RAO positioning for hepatic flexure**. Return the patient to the supine position.

- Over couch views:

Left lateral decubitus and right lateral decubitus

Prone angled view of rectosigmoid

- Dedicated views of the caecum and right colon, often with some RAO positioning (sometimes prior to the decubitus films).

- Dedicated views of any pathology encountered.

Complications (All Are Rare)

1. **Cardiac arrhythmias** induced by Buscopan or the procedure itself (may cause death).
2. **Perforation of the bowel** often due to the rectal catheter balloon (may cause death)
3. Transient bacteraemia.
4. Side effects of the pharmacological agents (**drug**) used.

Aftercare (As for barium meal and follow through)

Antibiotic Prophylaxis in Barium Enema -especially used for patient with cardiac disease to **avoid endocarditis**.

1. **Barium swallow** is radiological examination of the esophagus
2. **Barium Meal** is radiological examination of the stomach.
3. **Barium follow-through** is radiological examination of the **small intestine (small bowel)**.
4. **Barium enema** is a radiographic (X-ray) examination **large intestine (large bowel) (colon)**.

