SAWA UNIVERSITY

SPECIAL RADIOLOGICAL PROCEDURES

CONTRAST MEDIA

Sawa University — جامعـــة ســـاوة الاهلية

College of health and medical techniques — كليـــة التقنيـــات الصحية والطبية

Department of Radiology Tech. — قسم تقنيات الاشعة والسونار

Stage second — المرحلـــــة الثانية

الجانب النظري محاضرة رقم 6

Theoretical Lecture No.6

تدريسي المادة : سهى رحيم هلال

BARIUM FOLLOW THROUGH

Methods

1. Single contrast
2. With the addition of an effervescent agent
3. With the addition of a pneumocolon technique

Indications

1. Pain with weight loss
2. Diarrhea
3. Transfusion dependent anaemia /gastrointestinal bleeding unexplained by colonic or gastric investigation
4. Partial obstruction
5. Malabsorption
6. Small bowel adhesive obstruction (water soluble contrast

Contrindications

1. Complete or high-grade obstruction is better evaluated by CT examination; without oral contrast, the intraluminal fluid caused by the obstruction functions as a natural contrast agent.

2. Suspected perforation is better evaluated by CT.

Contrast media

1- E-Z oPaque 100% w/v 300 mL usually given divided over 20 min.

2-The transit time through the small bowel is reduced by the addition of 10 mL of Gastrografin to the barium, improving distension and reducing flocculation.

3- Water-soluble small bowel contrast studies are rarely diagnostic, as contrast becomes diluted in small bowel

fluid resulting in poor mucosal and anatomic detail.

An exception is in adhesional small bowel obstruction, where conservative investigation and ‘treatment’ with water-soluble contrast agents (frequently Gastrografin) may reduce the need for surgical intervention.

Patient Preparation

1- Metoclopramide 20 mg orally may be given before or during the examination to enhance gastric emptying.

2- Preliminary Image

3- If vomiting, a plain abdominal film should be performed to exclude high-grade small bowel obstruction

Technique

1- The aim is to deliver a single continuous column of barium into the small bowel. This is achieved by the addition of 10 mL of Gastrografin to the barium solution and the patient lying on their right to enhance gastric emptying.

2- If a follow-through examination is combined with a barium meal, glucagon can be used for the duodenal cap views rather than Buscopan.

Images

1. Prone PA images of the abdomen are taken every 15–20 min during the first hour, and subsequently every 20–30 min until the colon is reached. The prone position is used because the pressure on the abdomen helps separate the loops of the small bowel.

2. Each image should be reviewed and spot supine fluoroscopic views, using a compression device or pad if appropriate, may be considered.

3. Dedicated spot views of the terminal ileum are routinely acquired

Additional images

1. To separate loops of the small bowel:

(a) compression with fluoroscopy

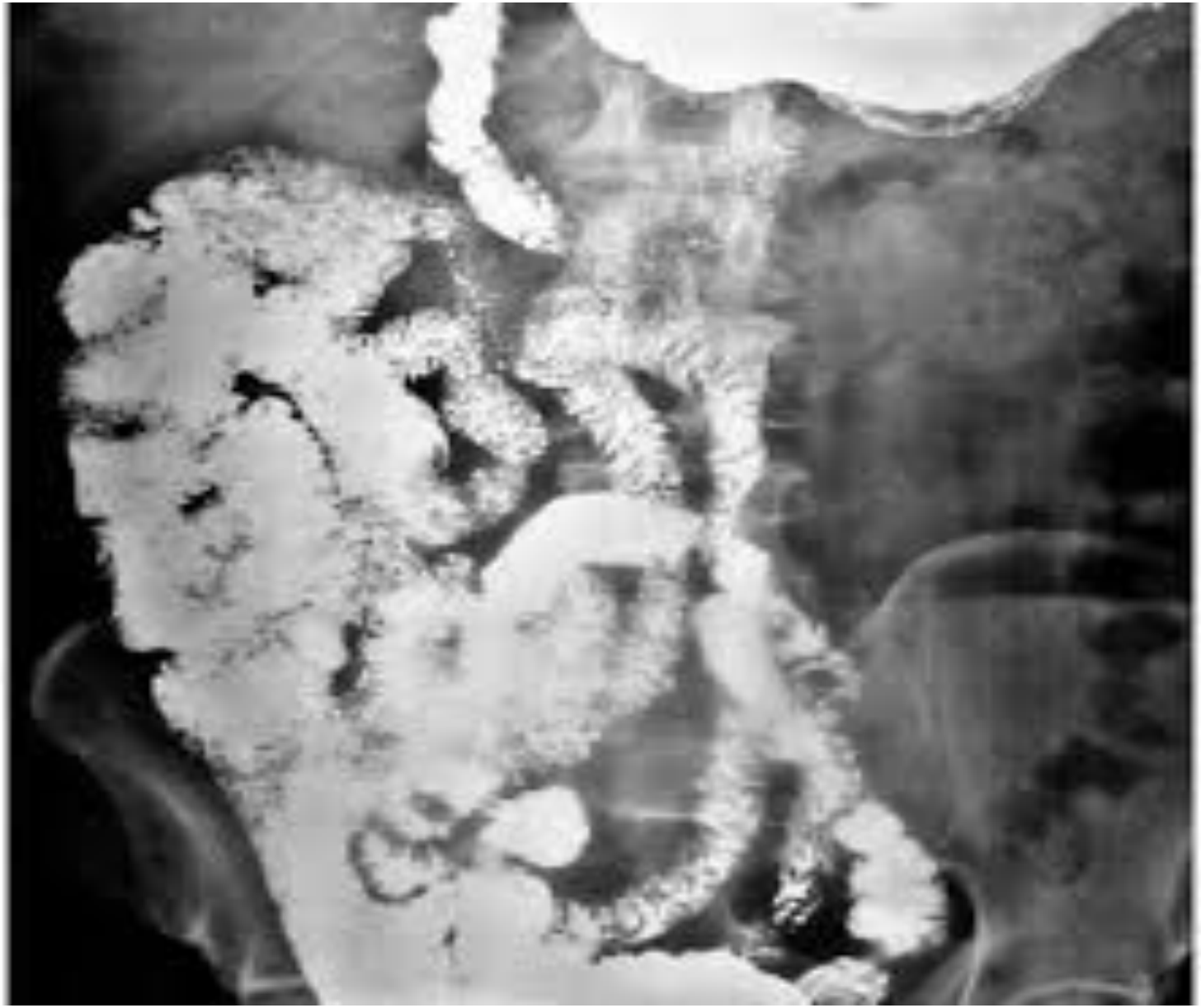
(b) with x-ray tube angled into the pelvis

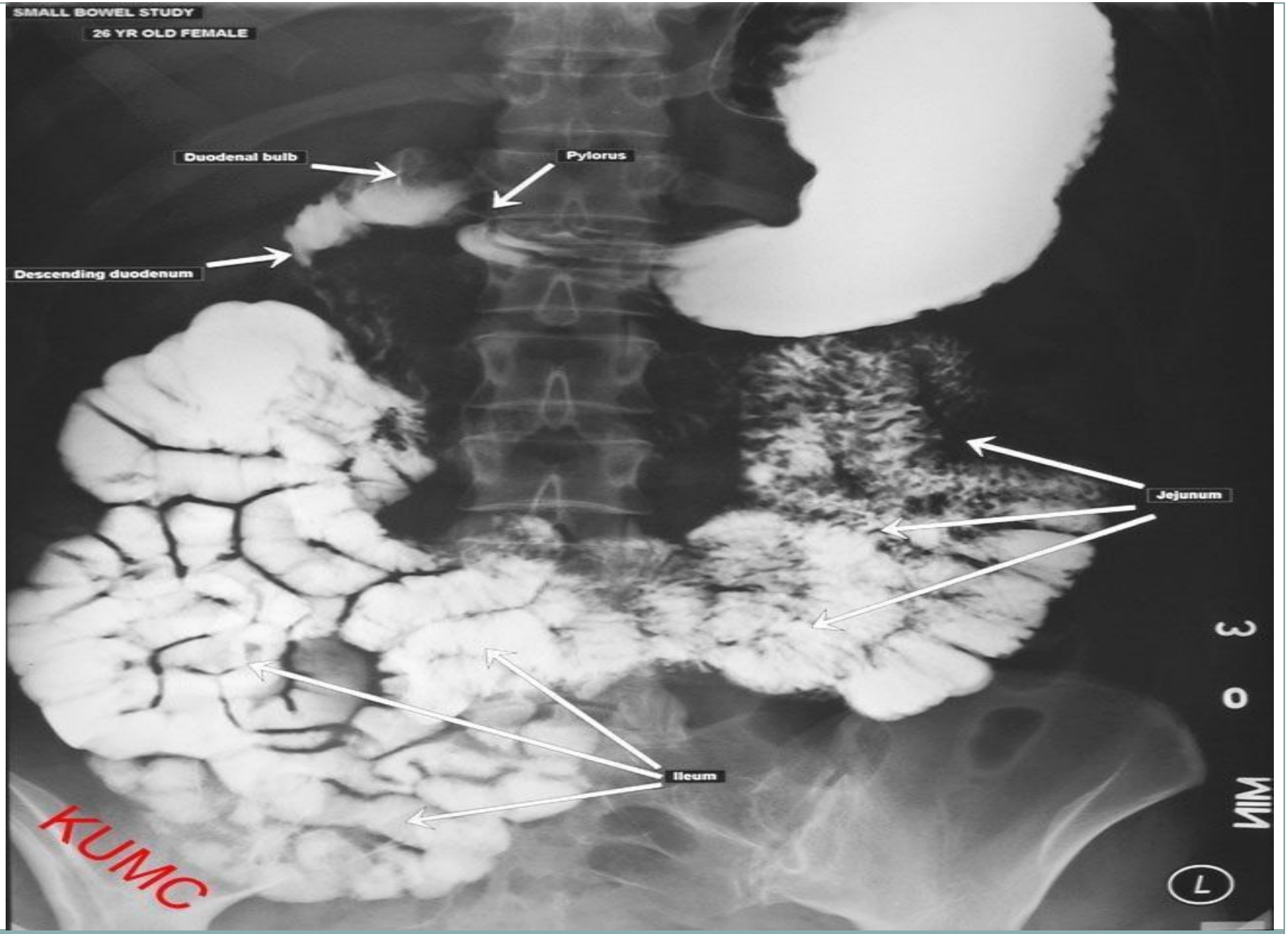
(c) obliques—in particular with the right side raised for terminal ileum views, or

(d) occasionally with the patient tilted head down

(e) pneumocolon1—gaseous insufflation of the colon via a rectal tube after barium arrives in the caecum, which often results in good-quality double-contrast views of the terminal ileum

2. Erect image—Occasionally used to reveal any fluid levels caused by contrast medium retained within diverticula.




SMALL BOWEL STUDY
26 YR OLD FEMALE
Duodenal bulb
Pylorus
Descending duodenum
Jejunum
Ileum
KUMC

After care

1. The patient must not drive until any blurring of vision produced by the Buscopan has resolved. This usually occurs within 30 minutes.

2. The patient should be warned that their bowel motions will be white for a few days after the examination and may be difficult to flush away.

3. The patient should be advised to eat and drink normally but with extra fluids to avoid barium impaction. Occasionally laxatives may also be required

Complications

- As for barium meal

Barium enema

It is the radiographic study of the large bowel by administration of the contrast medium through the rectum.

The purpose of the barium enema is to know the form and function of the large intestine and to detect any abnormal conditions.

Anatomy review

LARGE BOWEL

The large intestine, which is the terminal part of gastrointestinal (GI) tract.

It consist of :

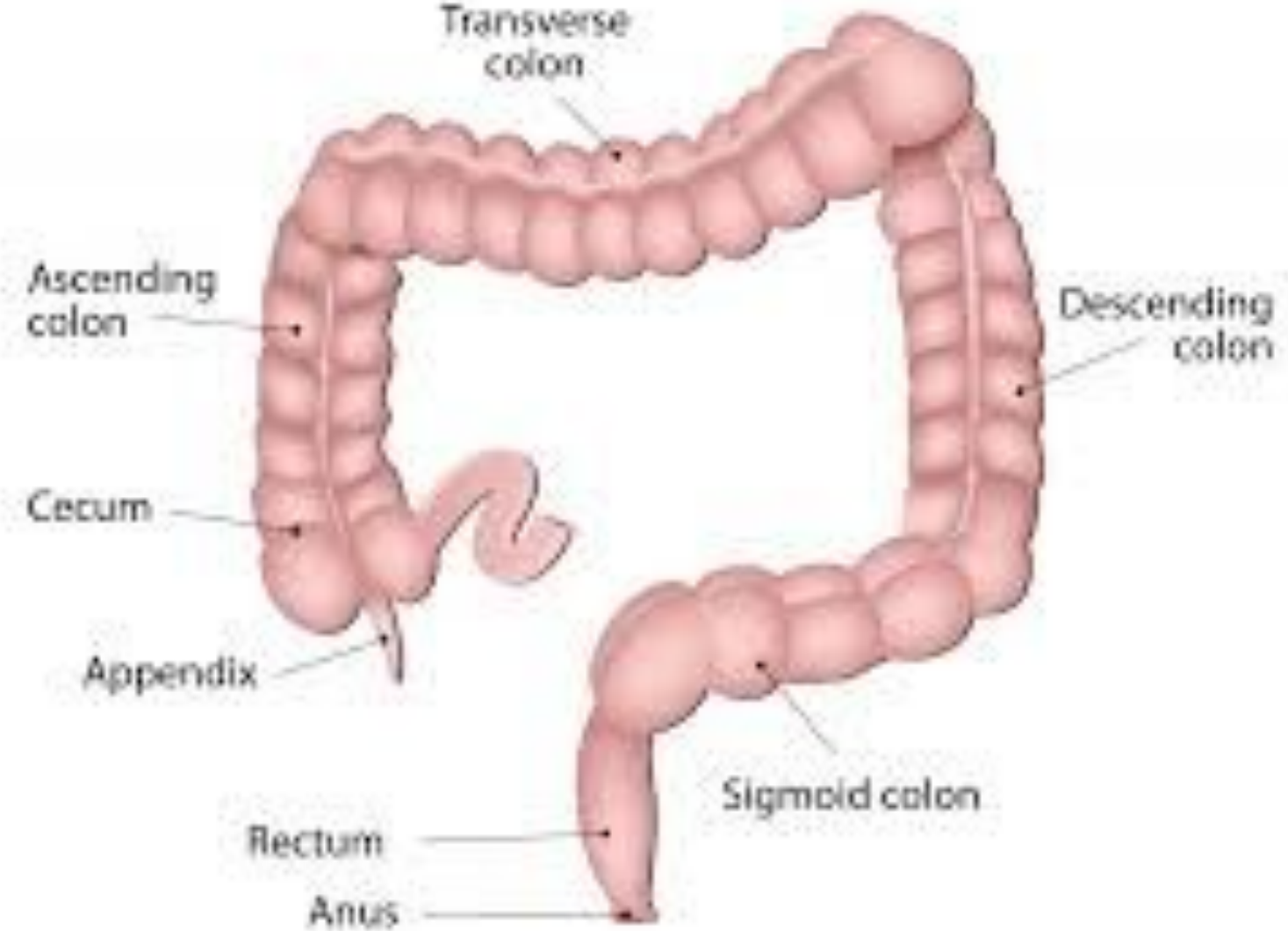
1- Cecum (the widest part of large intestine)
Ascending colon

2- Transverse colon

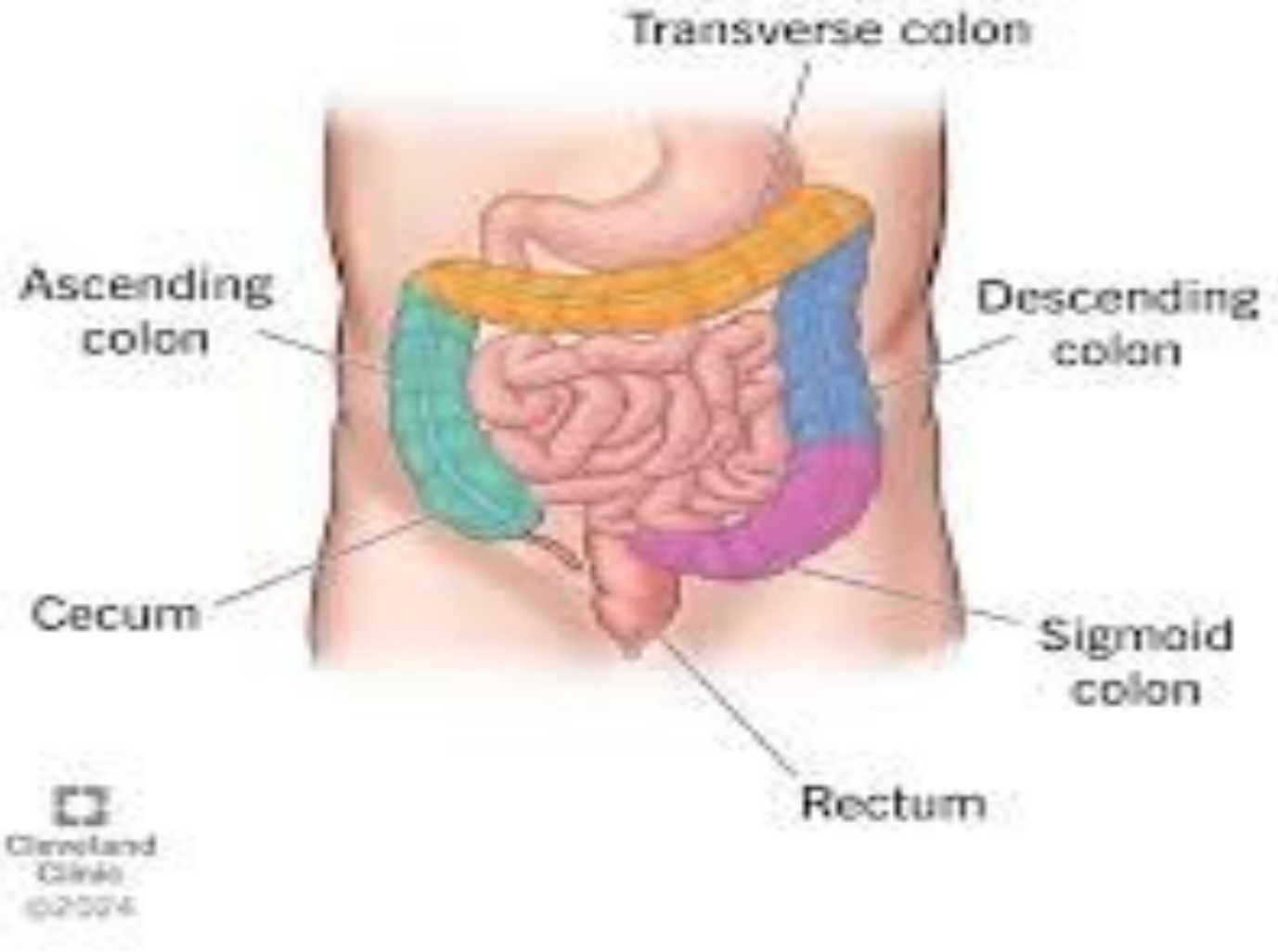
3- Descending colon

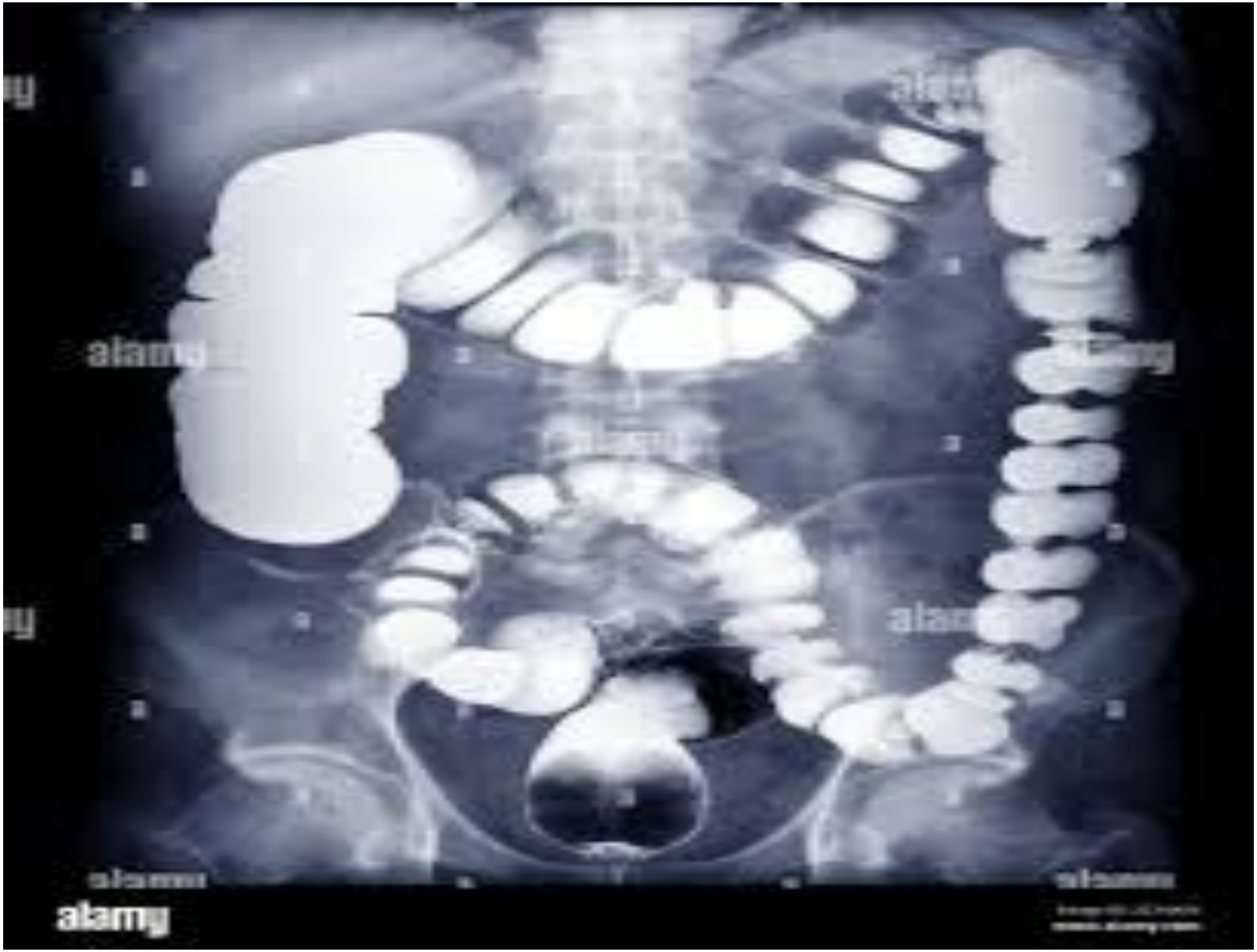
4- Sigmoid colon (the narrowest part of colon)

5- Rectum and anal Canal


Transverse colon
Ascending colon
Descending colon
Cecum
Appendix
Sigmoid colon
Rectum
Anus

Large intestine & colon





Methods

1. Double contrast—the method of choice to demonstrate mucosal pattern

2. Single contrast—uses:

(a) Localization of an obstructing colonic lesion (use water-soluble contrast, as surgery or stenting may be required shortly after the procedure)

(b) Children—since it is usually not necessary to demonstrate mucosal pattern

(c) Reduction of an intussusception

Indications

If a tight stricture is demonstrated, only run a small volume of barium proximally to define the upper margin,

Contraindications

Absolute

1-Toxic megacolon .

2-Pseudomembranous colitis.

3- Recent biopsy.

Relative

1- In complete 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- Patient frailty.

Contrast Medium

1-Polibar 115% w/v 500 mL (or more as required)

2. Air

Equipment

Disposable enema tube and pump.

Procedure

1- A Scot AP film for abdomen is taken– if retained stool is present consider rescheduling.

2- The patient lies on their left side with right leg flexed with SIM's position.

3- The catheter tip is lubricated and inserted into rectum, the insertion should not exceed

3-4cm and it is taped firmly in position

4- inflate the rectal balloon if necessary

Exposures

1- LT lateral rectum; then roll the patient halfway back.

2- RAO sigmoid; then roll the patient prone and insufflate to distend transverse colon. The patient lifts left side up to obtain.

3- LPO sigmoid; then turn the patient supine.

4-AP view(s) of whole colon.

The patient should be elevated, barium drained, and colon Rein flated to improve sigmoid colon views, using LAO and RAO positioning for splenic and hepatic flexures.

Over couch views

1- Left lateral decubitus

2- Right lateral decubitus

3- Prone angled view of recto sigmoid

5- RAO positioning .

4- Dedicated views of the caecum and right colon.

6- Dedicated views of any pathology encountered.

Spot films

Spot films for all areas of large bowel will be including:

1- Rectum : PA and left lateral view

2- Sigmoid : LPO and right lateral view

3- Splenic flexure : RPO view

4- Hepatic flexure : LPO view

5- Cecum : AP and LPO view

Complications (all are rare)

1- Cardiac arrhythmias induced by Buscopan or the Procedure itself. This is the most frequent cause of death after barium enema.

2- Perforation of the bowel (often related to manipulation of the rectal catheter balloon) is the second most common cause of death after barium enema.

3- Transient bacteraemia.

4- Intramural barium.

5- Venous intravasation.

6- Side effects of the pharmacological agents used.

After care

1- The patient must not drive until any blurring of vision produced by Buscopan has resolved, usually within 30 min.

2-Patients should be warned that their bowel motions will be white for a few days after the examination.

3- They may eat normally and should drink extra fluids to avoid barium impaction.

THE ‘INSTANT’ ENEMA

It is a single contrast technique barium enema used to identify/ confirm the level of suspected large bowel obstruction and to assess the degree of narrowing.

contraindications

Toxic Megacolon

Rectal biopsy (as for barium enema)

Chronic ulcerative colitis &

Crohn's disease

Indications

1- To confirm the suspected level of large bowel obstruction and assess the degree of narrowing, potentially aiding in stent planning.

2- Rarely, to show the extent and severity of mucosal lesions in active ulcerative colitis.

Contrast medium

- Water-soluble contrast (e.g. Urografin 150).

Preliminary Image

Plain abdominal film—to exclude:

Toxic Megacolon

Perforation

Techniques

1-The contrast medium is run until it flows into an obstructing lesion or dilated bowel loops.

2- Air insufflation is not required (i.e. single contrast technique).

Images

are obtained as needed, including views of pathology encountered:

1-Prone,

2-LT lateral decubitus

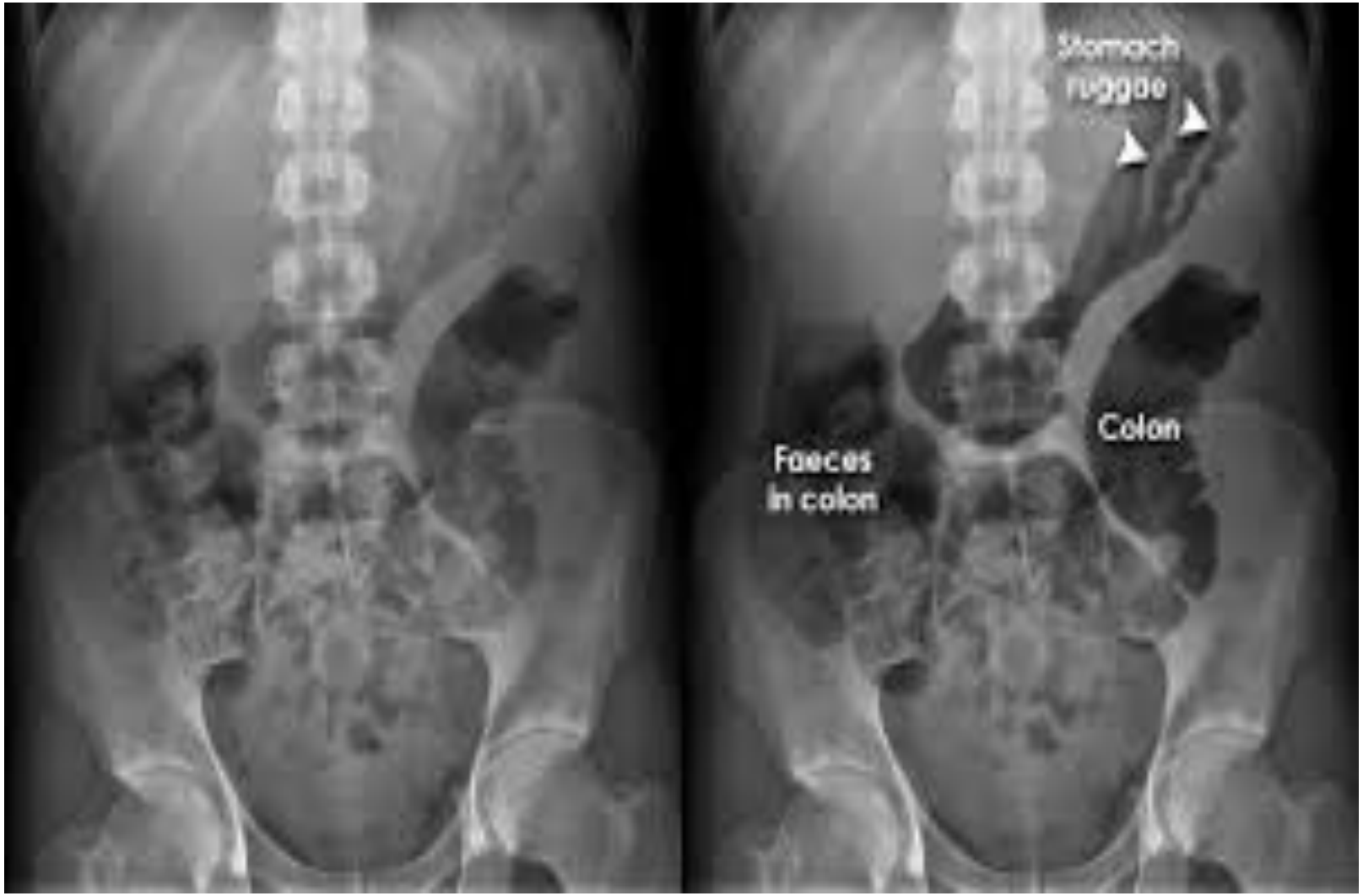
3-Erect films as needed.

AIR ENEMA

- Very rarely used.

Indications

Demonstrate extent of ulcerative colitis

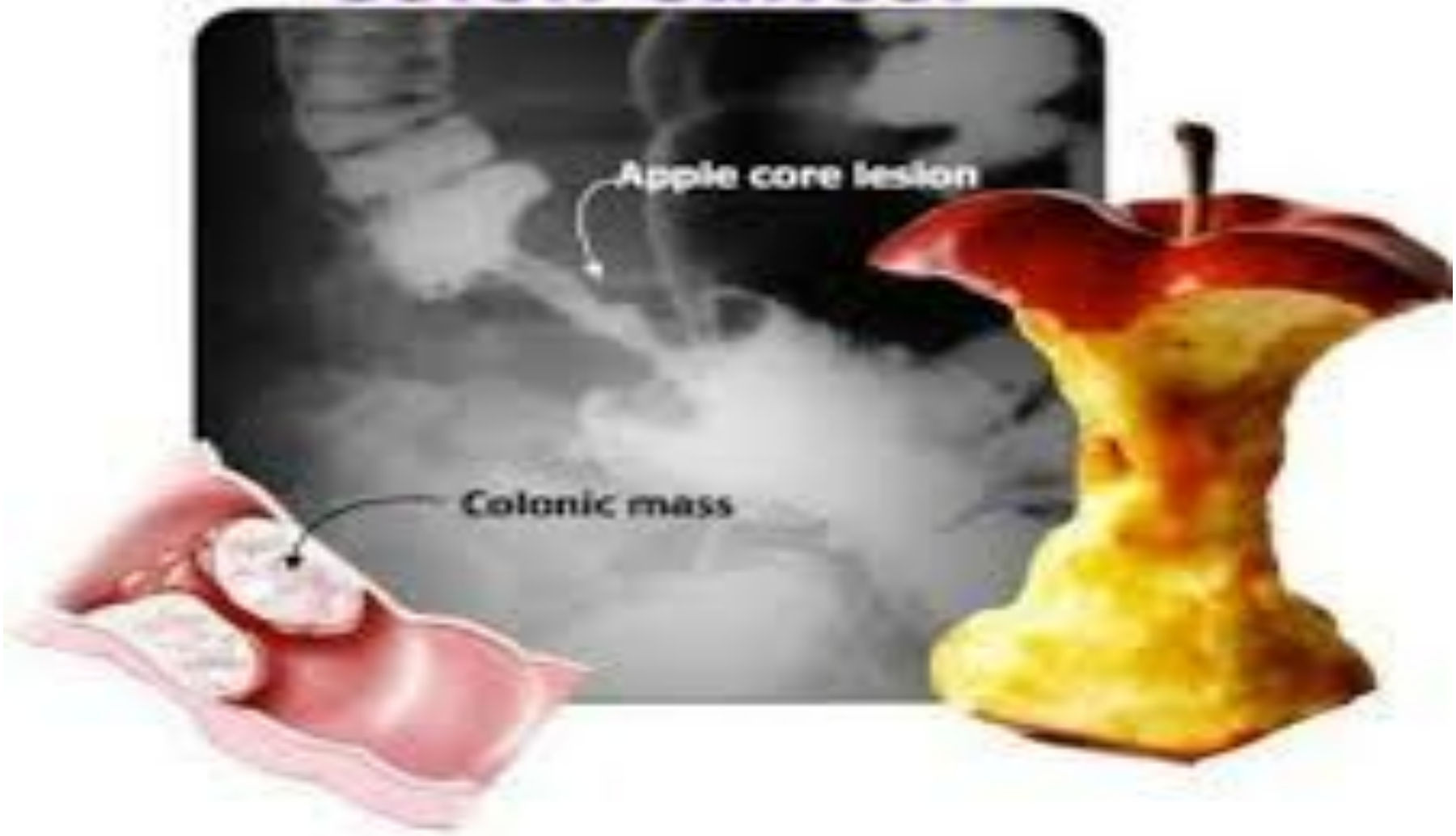

Stomach rugae
Colon
Faeces in colon


R
fine art
america

SIM'S POSITION


What to Expect During a Barium Enema
1.
24 hours before test: Laxatives and liquid diet clear colon
2.
Lubricated enema tube placed in rectum
3.
Mixture of barium sulfate and water fills colon
4.
X-rays taken for 15-20 minutes
5.
Barium solution is drained through tube
verywell

Colon Cancer




Thank
you