College of Health and Medical Technologies
Department of Radiology Technologies

Barium Follow Through
Small Bowel Anema

2 nd stage

LECTUER 4

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MSc Radiographic Imaging

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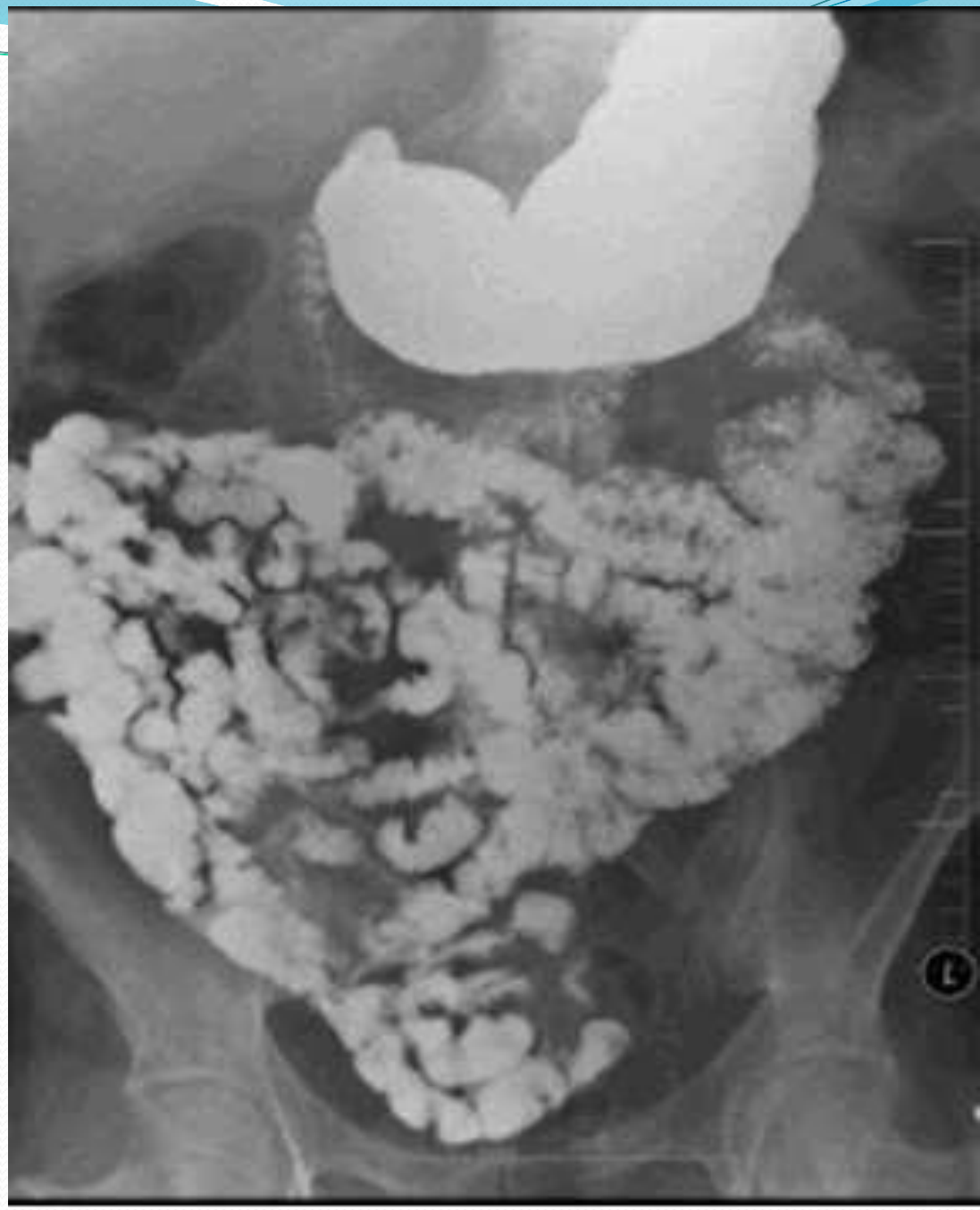
BARIUM FOLLOW THROUGH



Methods

- Single Contrast
- Double Contrast (with addition of an effervescent agent).
- Peroral Pneumocolon.

Note: Double contrast technique is normally adopted.

SMALL BOWEL FOLLOW-THROUGH

Indications

1. Pain with weight loss
2. Diarrhoea
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(

Contraindications

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 medium

- Barium sulphate solution 100% w/v 300 ml (150 ml if performed immediately after barium meal(
- Usually given in 10-15 min increments or full at once
- Transit time through small bowel has been shown to be reduced by the addition of 10 ml of gastrografin to barium.
- In children,3-4 ml/kg is suitable volume of contrast.
- In situations where barium is contraindicated, non-ionic water soluble solutions are used.

Patient preparation

- Accurate & clear history must be obtained from pt. for e.g., in the case of insulin- dependent diabetes, the best time for stopping eating can be arranged.
- A low residue- diet for 2 days prior to the examination.
- A laxative should be taken on the evening prior to the examination.
- NPO for 6 hrs prior to examination
- Metoclopramide 20 mg orally given 20 min before or during the examination to enhance gastric emptying.

•Pt's bladder must be empty before & during procedure to avoid displacing or compressing ileum.

- Pt must be informed that the barium may taste chalky.
- Pt must remove all the clothing & jewelry & wear a hospital gown.

Preliminary Image

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

Technique

- 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. If a follow-through examination is combined with a barium meal, glucagon can be used for the duodenal cap views rather than Buscopan, because it has a short length of action and does not interfere with the SBTT.

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

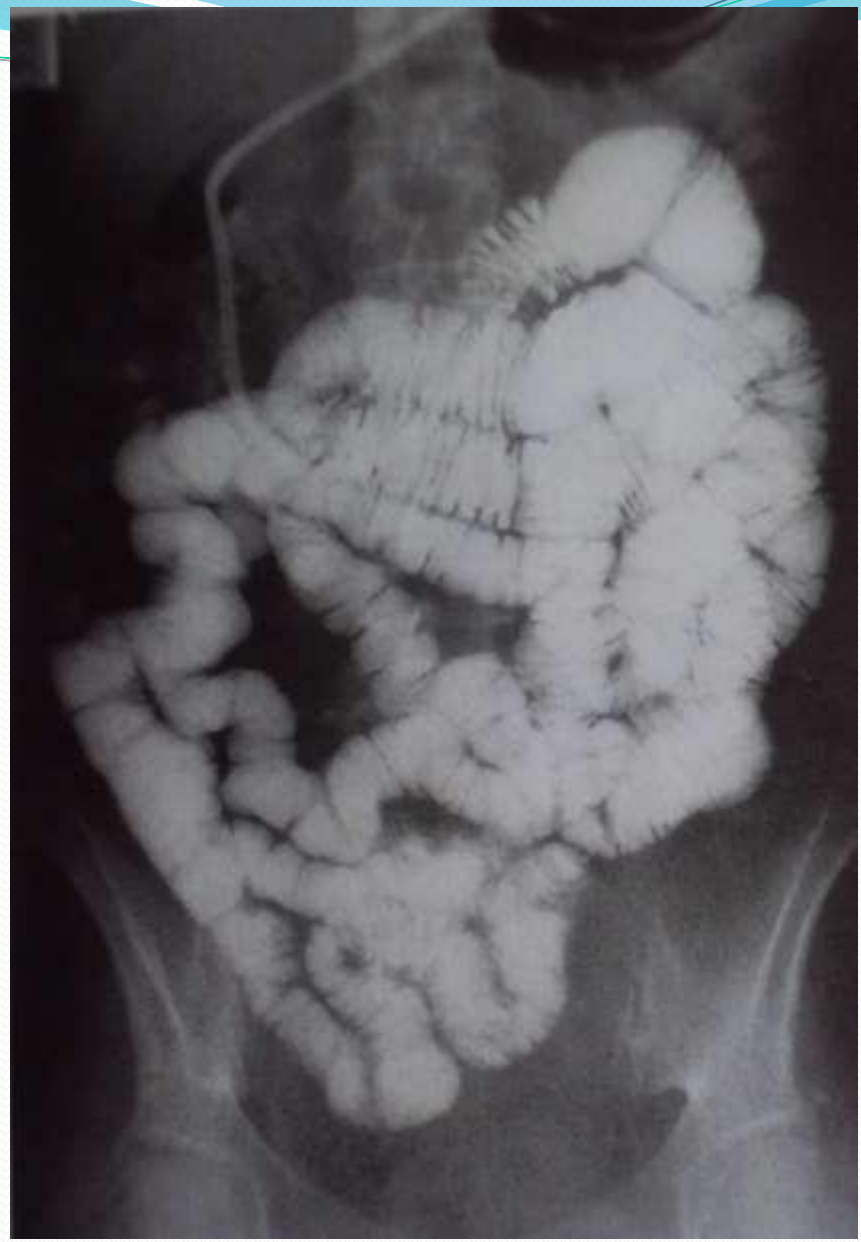
(e)pneumocolon—gaseous insufflation of the colon via a rectal tube after barium arrives in the caecum, which often results in good- quality double-contrast views of the terminal ileum

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

Aftercare As for barium meal.

Complications As for barium meal.

SMALL BOWEL ENEMA



Barium follow through & small bowel
enema

SMALL-BOWEL ENEMA

Advantages

This procedure gives better distension and visualization of the proximal small bowel than that achieved by a barium follow-through because rapid infusion of a large continuous column of contrast medium directly into the jejunum. However, the degree of distal small bowel distension by small bowel enema and small bowel follow- through methods is usually fairly similar.

Disadvantages

1. Per-nasal/oral intubation may be unpleasant for the patient, and may prove difficult.
2. Longer room time and greater staff resource required.
3. Potentially higher radiation dose to the patient (screening the tube into position.(

Indications and Contraindications

These are the same as for a barium follow-through. In some departments it is only performed in the case of an equivocal follow-through.

Methods

Single contrast- Enteroclysis.

Double contrast.

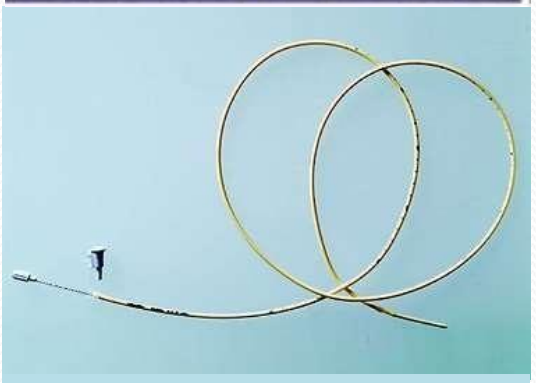
Contrast medium

- **Enteroclysis**: Barium sulphate solution 70 % w/v is diluted to give 1500 ml of 20 % solution.

- **Double contrast**: 600 ml of 0.5 % methylcellulose after 500 ml of 70 % w/v barium sulphate solution.

Equipment

- Same as barium follow through.
- For contrast administration, two types of tubes are available:
  - Bilbao- dotter tube with guide wire
  - Silk tube with tungsten filled guide-tip. It is made up of polyurethane & the stylet & internal lumen of the tube are coated with water- activated
- lubricant to facilitate the smooth removal of the stylet after insertion.



Silk tube

Patient preparation

- A low residue- diet for 2 days before the examination.
- A laxative should be taken on the evening prior to the examination.
- NPO for 6 hrs prior to examination
- If the patient is taking any antispasmodic drugs, they must be stopped 1 day prior to examination.
- Amethocaine lozenge 30 mg, 30 min before the examination.

Preliminary film

- Plain abdominal film if a small bowel obstruction is suspected.

Technique

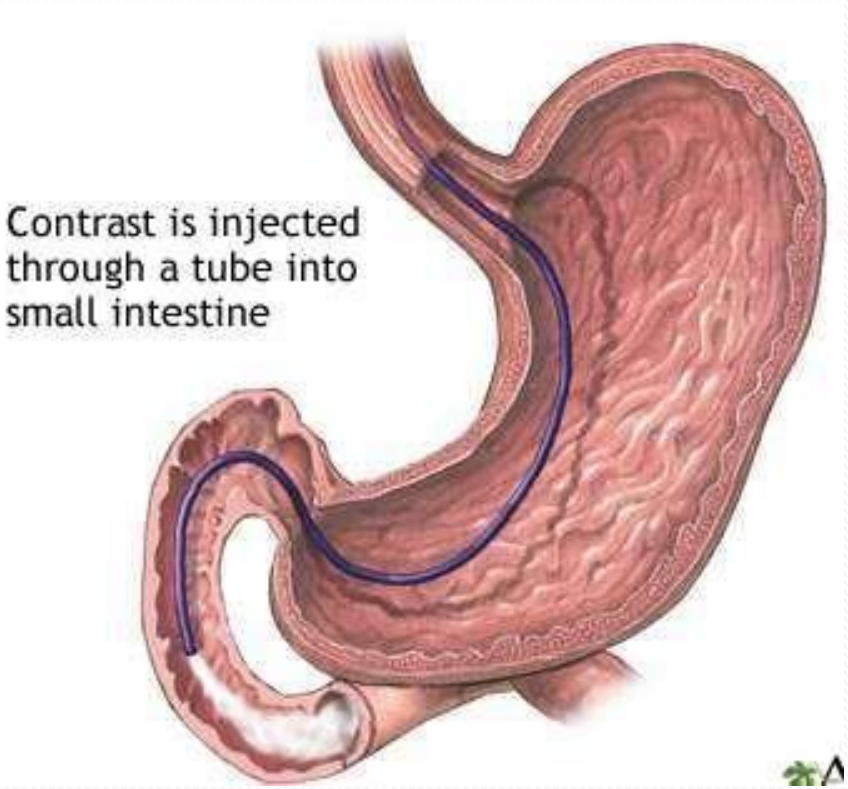
- The patient sits on the edge of x-ray table. The pharynx is anaesthetized with lignocaine spray.
- The tube is then passed through nose or mouth with brief lateral screening. If per nasal approach is planned the patency of the nasal passage is checked by asking the patient to sniff with one nostril occluded.
- The Silk tube should be passed with the guide wire pre- lubricated & fully within the tube.
- For Bilbao- dotter tube, the guide wire is usually introduced after the tube tip is in stomach.
- The patient is asked to swallow with neck flexed as the tube is passed through the pharynx. The tube is then advanced into the gastric antrum.

Technique

- The pt then lies down & the tube is passed into duodenum.
- Lie the pt on the left side so that the gastric air bubble rises to the antrum, thus straightening out the stomach.
- Advance the tube whilst applying clockwise rotational motion (as viewed from the head of the pt looking towards feet.(
- In the case of the Bilbao-Dotter tube, introduce the guide wire.
- In the case of the silk tube, lie the pt on right side, as the tube has a tungsten-weighted guide tip which will then tend to fall towards antrum.
- Get the pt to sit up to overcome the tendency of the tube to coil in the fundus of stomach.
- Metoclopramide (20 mg i.v.) can be used.

Technique

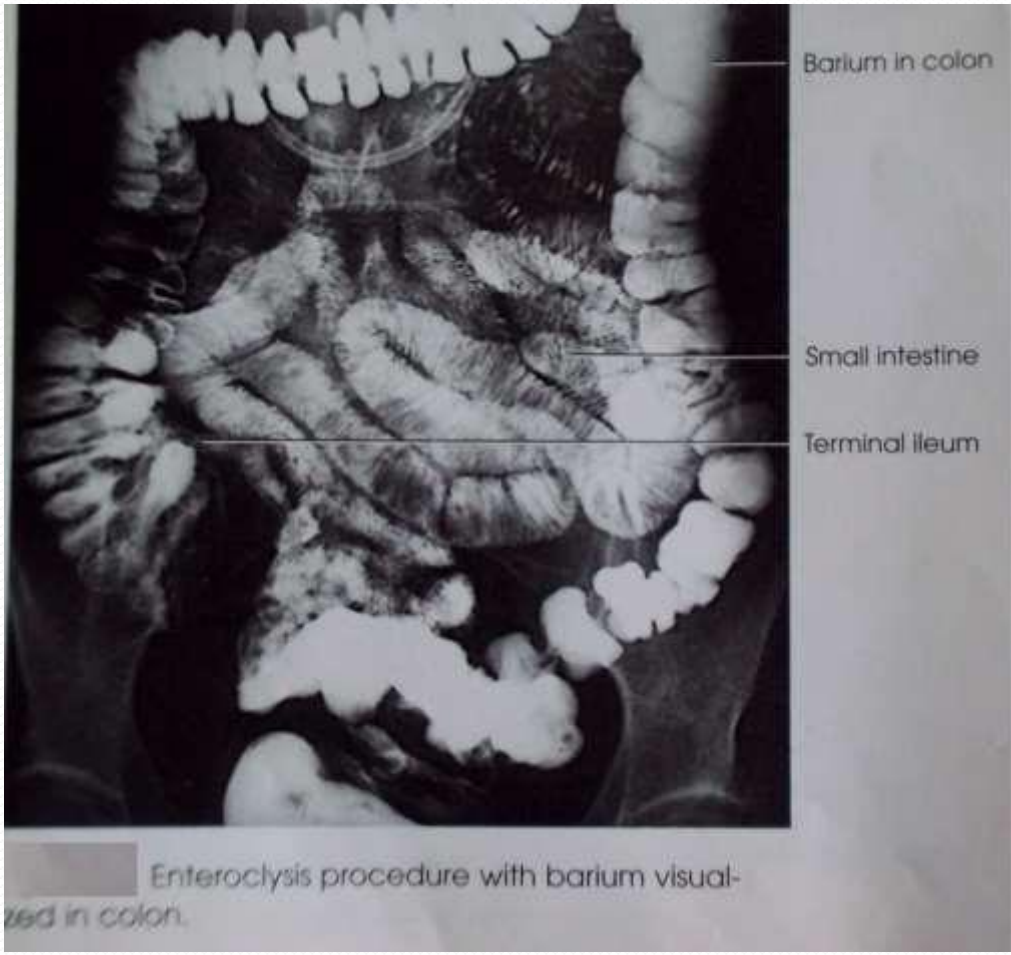
When the tip of the tube has been passed through pylorus, the guide wire tip is maintained at the pylorus & the tube is passed over it along the duodenum to the level of ligament of Treitz. The tube is passed as far as the duodenojejunal flexure to diminish the risk of aspiration due to reflux of barium into stomach.



Single contrast technique

•Barium is then run in quickly at the rate about 75 ml/min & spot films are taken of the barium column & its leading edge at the regions of interest until the colon is reached.

•Fluoroscopy is performed during infusion & images are recorded using digital acquisition, 100/105 mm film or full size radiographs as required.



Enteroclysis procedure with barium visualized in colon.

Double contrast:

•Methylcellulose is infused continuously(100 ml/min) after initial bolus of barium (100ml/min), until the barium has reached the colon.

•The tube is then withdrawn, aspirating any residual fluid in the stomach.

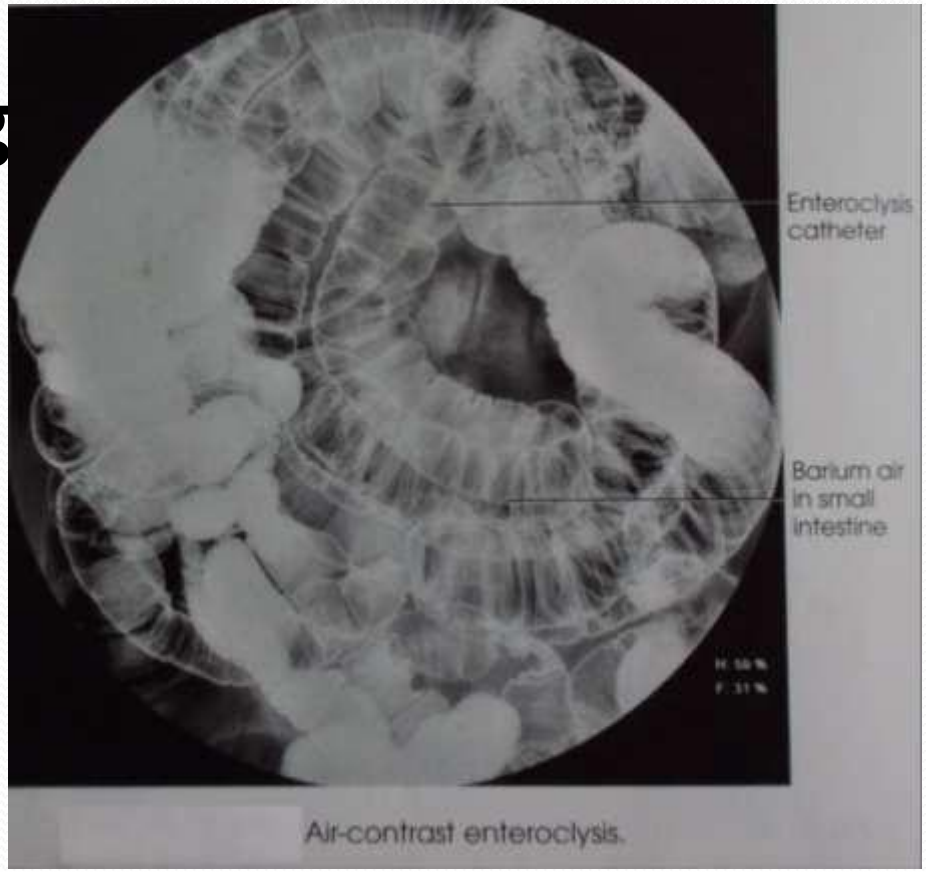
•Finally, prone & supine abdominal films are taken.

Normal double contrast small bowel enema

SMALL-BOWEL ENEMA

single contrast Following

method, air may be Introduced via catheter once barium has reached caecum to provide double contrast effect.



Air-contrast enteroclysis.

Modification of technique

- In patients with malabsorption, especially if an excess of fluid has been shown on the preliminary film،
  - The volume of barium should be increased (240-260 ml.(
  - Compression views of bowel loops should be obtained before obtaining double contrast.
  - It is important to obtain the images of duodenum & the catheter tip should be sited proximal to the ligament of Treitz.

Aftercare

- Nil orally for 5 hrs after the procedure

- The patient should be warned that diarrhoea may occur as a result of large volume of fluid given.

Complications

- Aspiration
- Perforation of the bowel owing to manipulation of the guide wire.

Questions???

- What are the dose of contrast medium for barium follow through & small bowel enema؟
- What are the indications for barium follow through & small bowel enema؟
- What are the contraindications for barium follow through & small bowel enema؟
- What are the main differences between barium follow through &small bowel enema؟
- What are the complications of barium follow through & small bowel enema؟
- Describe the film sequence for SBFT.
- What is the role of compression pad in SBFT؟


THANKS