Barium enema

is study that use to examination the large bowel morphology and disease by using barium contrast media .

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 .

Indication

Suspected large bowel pathology.
N.B. If a tight stricture is demonstrated, only run a small volume of barium proximally to define the upper margin, as otherwise the barium may impact. CTC avoids the risks of barium impaction.

Contraindications

Absolute

1. Toxic megacolon (CT is radiological investigation of choice)
2. Pseudomembranous colitis
3. Recent biopsy1 via:

(a) rigid endoscope within previous 5 days (the biopsy forceps used tend to be larger)
(b) flexible endoscope within previous 24 h (the smaller biopsy forceps only allows 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. Patient frailty.

Contrast medium

1. Polibar 115% w/v 500 ml (or more, as required)

2 Air.

Equipment

Disposable enema tube and pump.

Patient preparation

Many regimens for bowel preparation exist. A suggested regimen is as follows:

Guide to radiological procedures *For 3 days prior to examination*

Low-residue diet.

On the day prior to examination

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

Consider admitting the elderly and those with social problems.

On the day of the examination

It is advisable to place diabetics first on the list.

Technique

The double-contrast method:

1. The patient lies on their left side, and 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. Some radiologists choose to give the muscle relaxant half way through the procedure at the end of step (3).
3. The infusion of barium is commenced. Intermittent screening is required to check the progress of the barium. The barium is run to splenic flexure in the left lateral position and then the patient is turned prone. Contrast is then run to the hepatic flexure and is stopped when it tips into the right colon. Gentle puffs of air may be needed to encourage the barium to flow. The patient rolls onto their right and quickly onto their 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.
4. The catheter tube is occluded and air is gently pumped into the bowel to produce the double-contrast effect. CO_2 gas has been shown to reduce the incidence of severe, post enema pain.

Exposures

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 sequence of positioning and **films** in a standard over couch image intensifier include:

• **Left lateral rectum**; then roll patient half way back
• **RAO sigmoid**; then roll patient prone and insufflate to distend transverse colon. The patient lifts left side up to obtain Gastrointestinal tract
• **LPO sigmoid**, then turn supine
• **AP view(s)** of whole colon
• Raise patient to erect position with dedicated views of both **flexures** with some LAO positioning for splenic flexure and RAO positioning for hepatic flexure. Return patient to supine position
• Over couch views:

Left lateral decubitus
Right lateral decubitus
Prone angled view of rectosigmoid

• Dedicated views of **caecum** and right colon, often with some RAO positioning (sometimes prior to the decubitus films)
• Dedicated views of any pathology encountered.

Aftercare

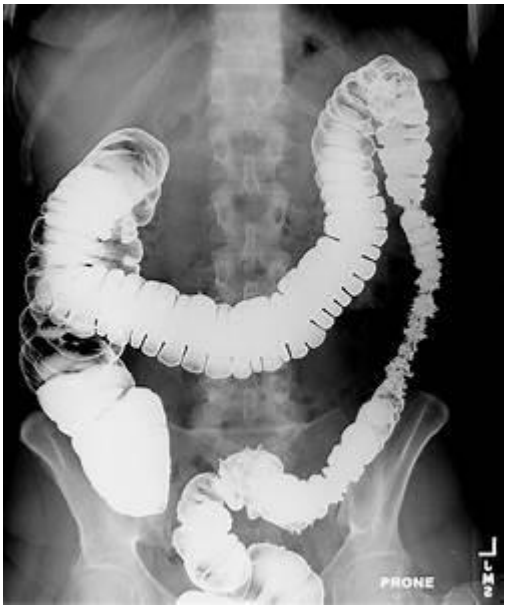
1. The patient must not drive until any blurring of vision produced by Buscopan has resolved; usually within 30 minutes.
2. Patients should be warned that their bowel motions will be white for a few days after the examination. They may eat normally and should drink extra fluids to avoid barium impaction.

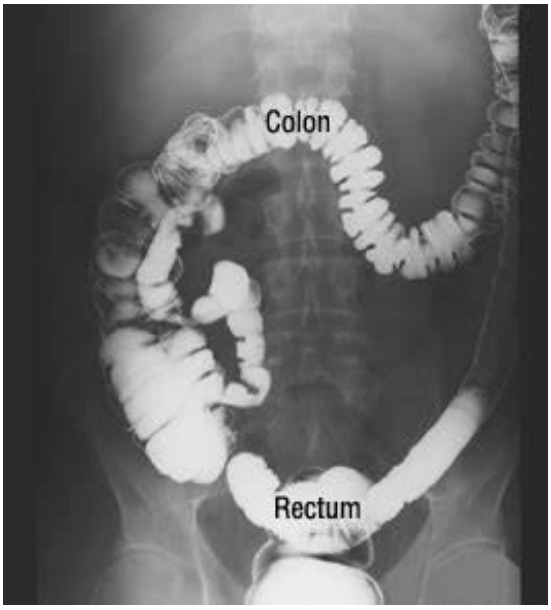
Antibiotic prophylaxis in barium enema
This is not routinely required, but barium enema is identified as the only lower GI intervention with a significant risk of endocarditis in those patients with specific risk factors.
Offer antibiotic prophylaxis to those with:

• previous infective endocarditis
• acquired valvular heart disease with stenosis or regurgitation
• valve replacement
• structural congenital heart disease (but excluding isolated atrial septal defect, fully repaired ventricular septal defect or fully

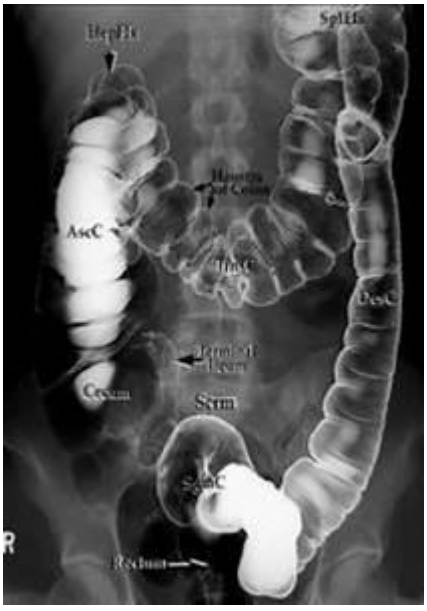
repaired patent ductus arteriosus)
• hypertrophic cardiomyopathy.

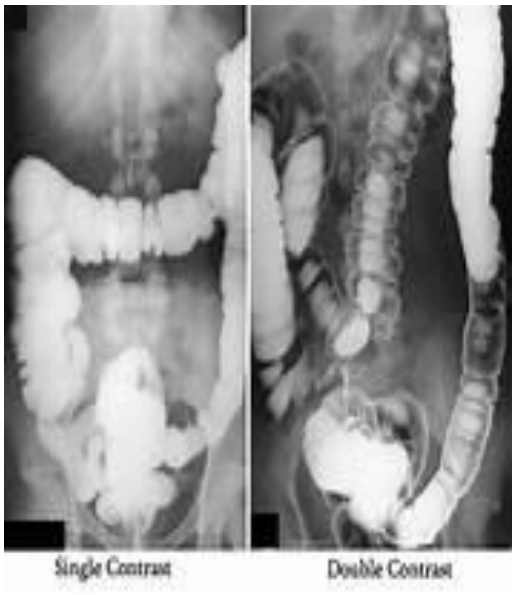
Complications(all are rare)
1. Cardiac arrhythmias induced by Buscopan or the procedure itself. This is the most frequent cause of death after barium enema.
2. Perforation of the bowel. The second most common cause of death after barium enema. Often associated with the rectal catheter balloon
3. Transient bacteraemia.
4. Side effects of the pharmacological agents used (see p. 51).
5. Intramural barium.
6. Venous intravasation. This may result in a barium pulmonary embolus, which carries an 80% mortality risk.





Normal barium enema





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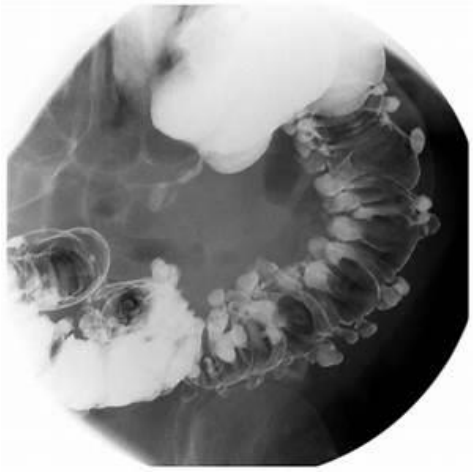
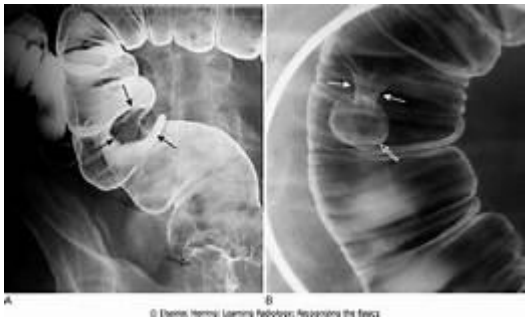


Colonic cancer

colonic diverticulm



Colonic polyp

Lead pipe colon
This patient with ulcerative colitis has a featureless segment of transverse colon with shows loss of the normal haustral markings.