Bowel obstruction

Introduction and Definitions

- Accounts for 5% of all acute surgical admissions
- Patients are often extremely ill requiring prompt assessment, resuscitation and intensive monitoring

- **Obstruction** A mechanical blockage arising from a structural abnormality that presents a physical barrier to the progression of gut contents.
- **Ileus** is a paralytic or functional variety of obstruction

Obstruction is: Partial or complete
Simple or strangulated

- INVESTIGATIONS

Plain abdominal film

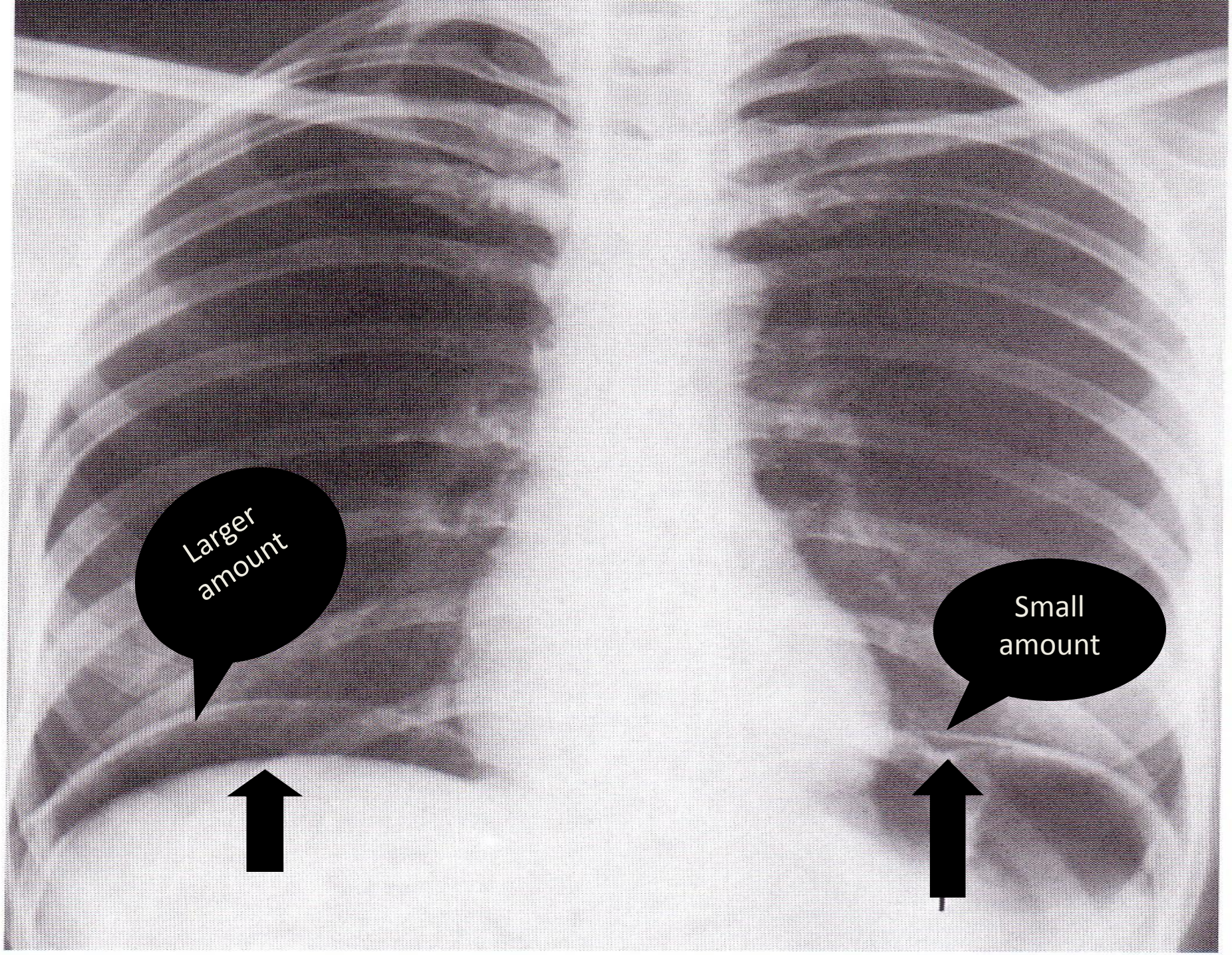
- Normal plain abdominal film does not exclude ileus or other pathology
- Plain abdominal film is useful for:
  - Kidney stone detection
  - Pneumoperitoneum detection
- All other indications: use Sonography or / and CT

LEFT: Plain abdominal film in a patient with an acute abdomen, showing no abnormalities. RIGHT: Subsequent CT shows distended small bowel loops (arrowheads) that are not seen on plain abdominal film because they are filled with fluid only and do not contain intraluminal air.

Chest X-ray

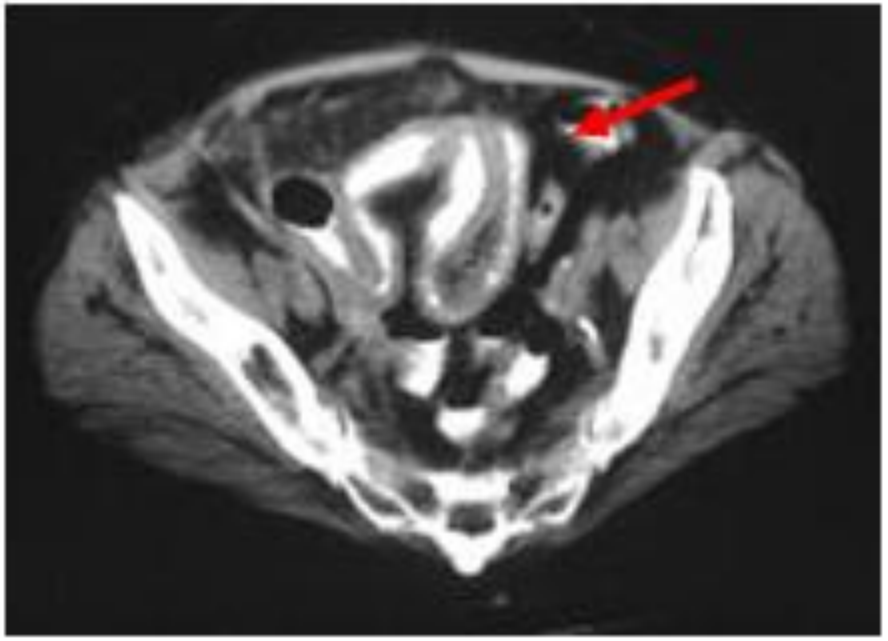
This is an essential examination in any patient with acute abdomen because:

1. **It is the best radiograph to show the presence of a small pneumoperitoneum.**
2. **A number of chest conditions may present as an acute abdominal pain : pneumonia (particularly lower lobe), MI, ...**
3. **Acute abdominal conditions may be complicated by chest pathology: pleural effusion frequently complicate acute pancreatitis.**
4. **Even when the chest radiograph is normal it acts as a valuable baseline.**


Larger amount
Small amount

Role of CT

- Used with iv contrast, oral and rectal contrast (triple contrast).
- Able to demonstrate abnormality in the bowel wall, mesentery, mesenteric vessels and peritoneum.
- It can define
  - the level of obstruction
  - The degree of obstruction
  - The cause: volvulus, hernia, luminal and mural causes
  - The degree of ischaemia
  - Free fluid and gas
- Ensure: patient vitally stable with no renal failure and no previous alergy to iodine



Causes of bowel obstruction

Luminal	Mural	Extraluminal
F. Body Bezoars Gall stone Food Particles A. lumbricoides	Neoplasims lipoma polyps leiyomayoma hematoma lymphoma carcimoid carinoma secondary Tumors Crohns TB Stricture Intussusception Congenital	Postoperative adhesions Congenital adhesions Hernia Volvulus

Radiological Evaluation

Normal Scout

Always request: Supine, Erect and CXR

Gas pattern:

- Gastric,
- Colonic and 1-2 small bowel

Fluid Levels:

- Gastric
- 1-2 small bowel

Check gasses in 4 areas:

1. Caecal
2. Hepatobiliary
3. Free gas under diaphragm
4. Rectum

Look for calcification

Look for soft tissue masses, psoas shadow

Look for fecal pattern

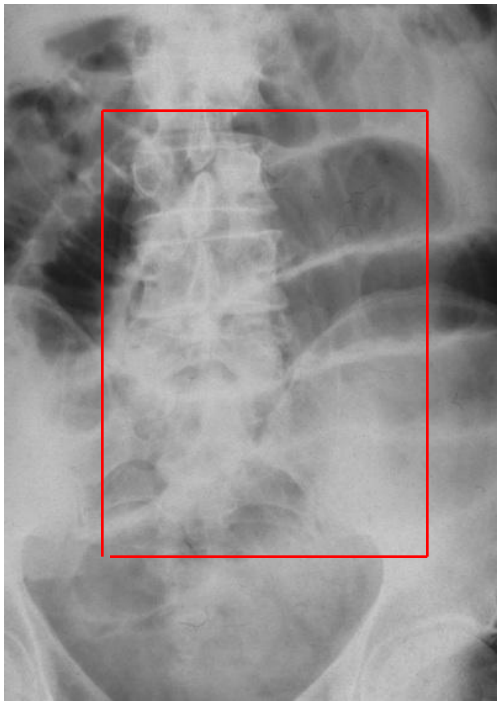
The distinction between small & large-bowel dilatation

	Small bowel	large bowel
1. vulvulae conniventes	present in jejunum	absent
2. number of loops	many	few
3. distribution of loops	central	peripheral
4. haustra	absent	present
5. diameter	3-5 cm	5 cm +
6. radius of curvature	small	large
7. solid feces	absent	*present

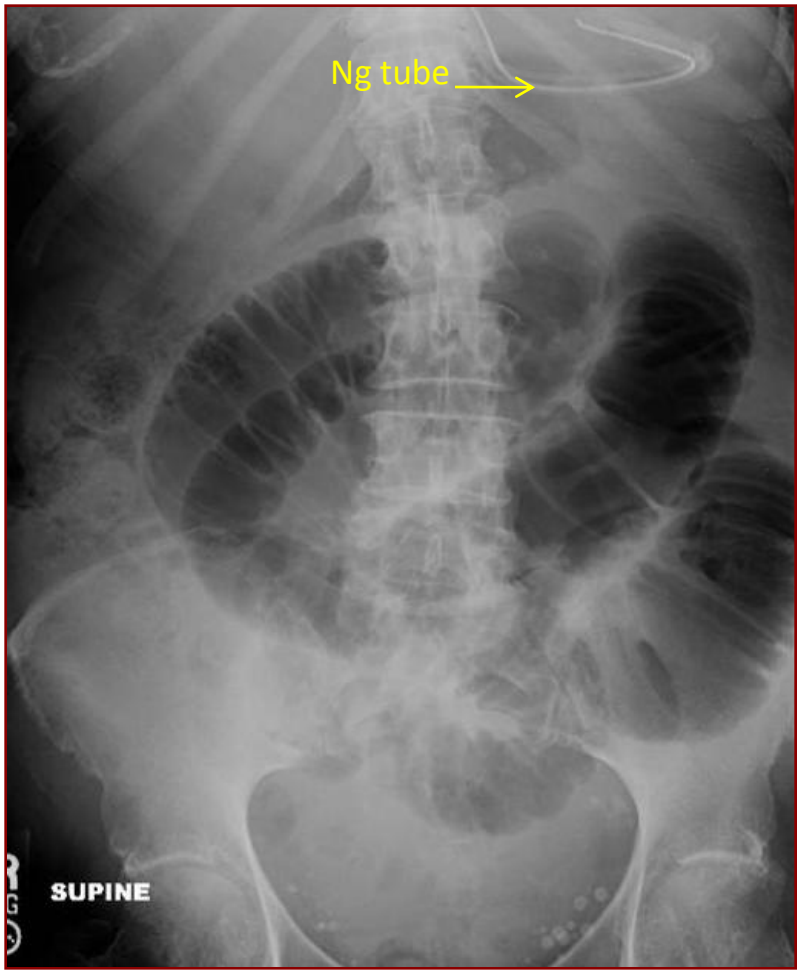
haustra may be completely absent from the descending & sigmoid colon.

The Difference between small and large bowel obstruction

Large bowel	Small Bowel
•Peripheral (diameter 8 cm max) •Presence of haustration	•Central (diameter 5 cm max) •Vulvulae coniventae •Ileum: may appear tubeless



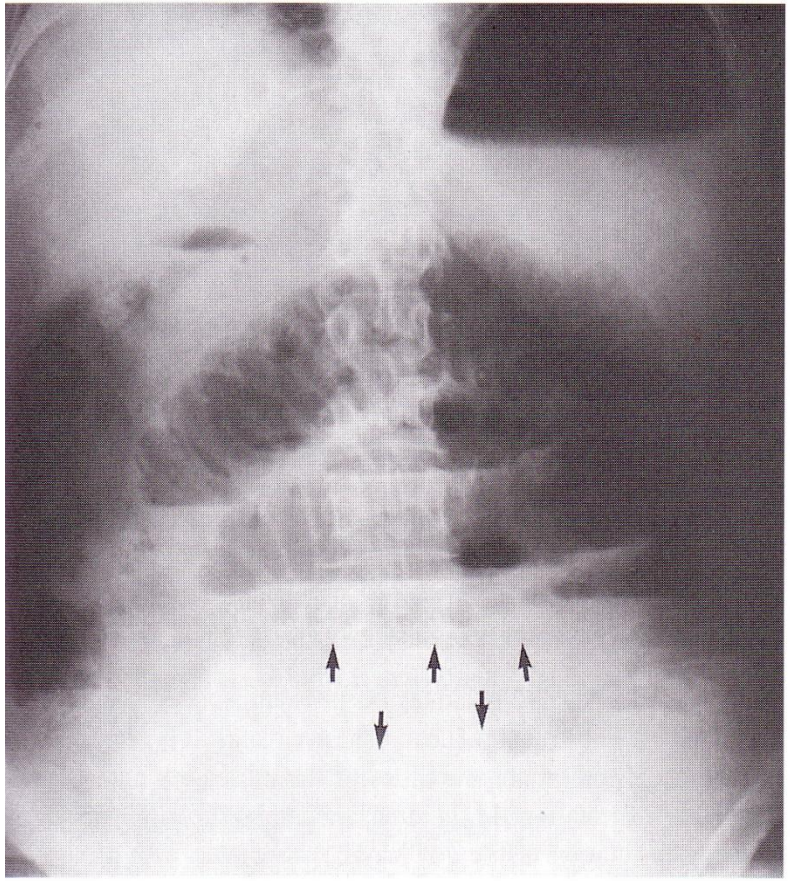
SMALL BOWEL OBSTRUCTION



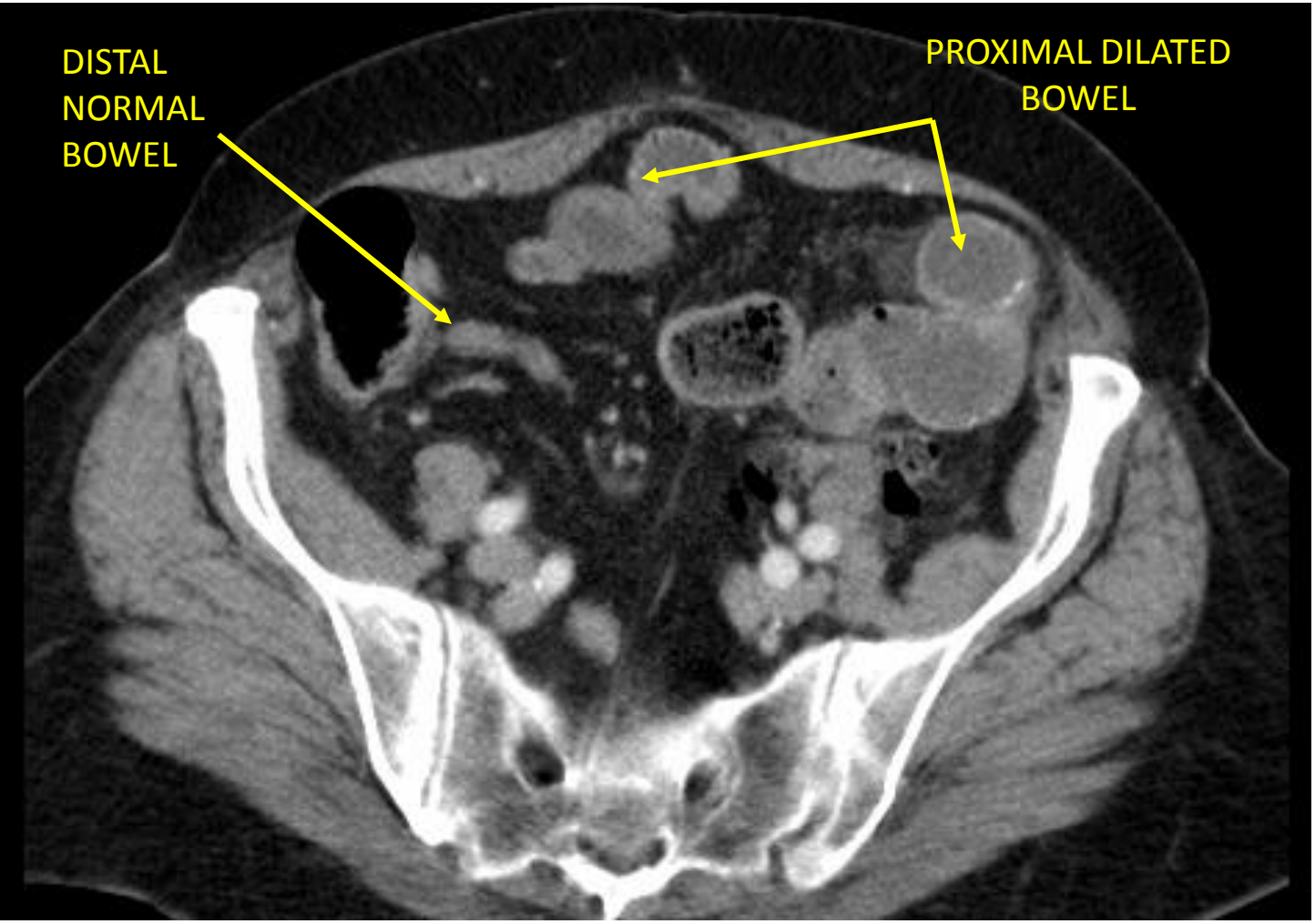
Note dilated small bowel centrally placed with air/fluid levels on upright exam.

if fluid filled loops

- **The dilated small bowel loops appears as a sausage, oval or round soft tissue densities that change in position in different views, sometime with small gas bubbles trapped in rows between the vulvulae conniventes on horizontal ray films; this is known as *'string of beads'* sign which is virtually diagnostic of small bowel obstruction and does not occur in normal people.**



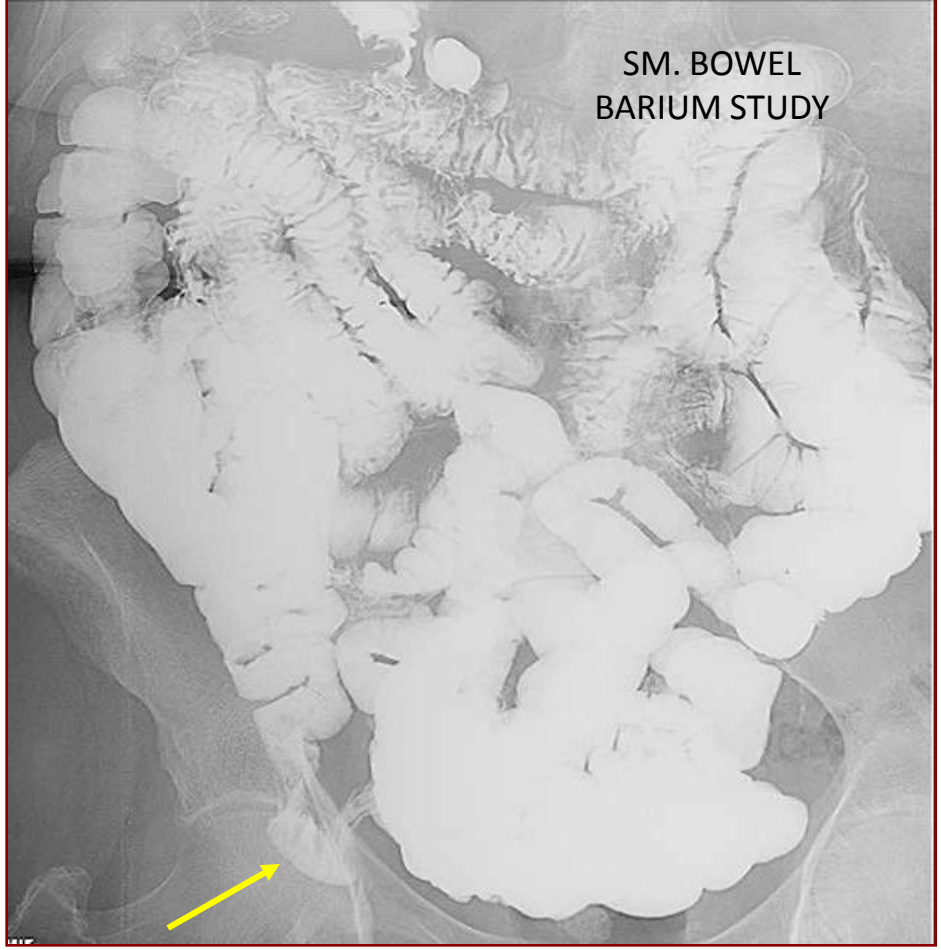
CT- SMALL BOWEL OBSTRUCTION

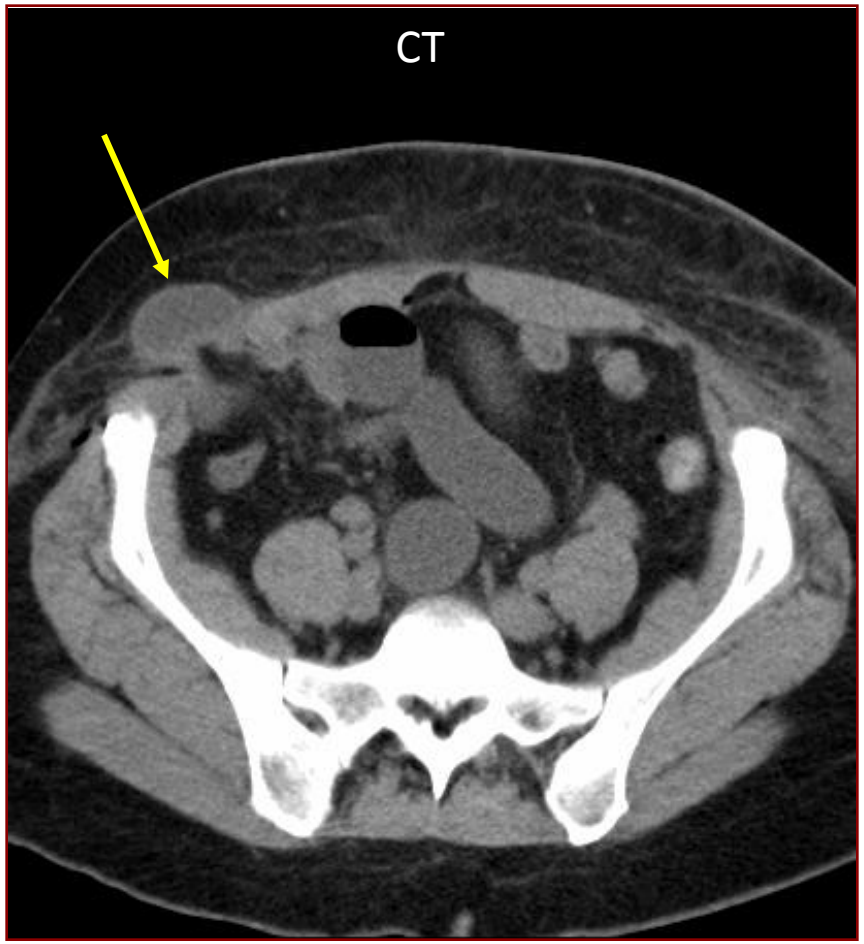


Proximal loops are dilated and distil loops are collapsed indicating an obstruction.

Obstruction most likely due to adhesions in a patient with history of abdominal surgery

HERNIA

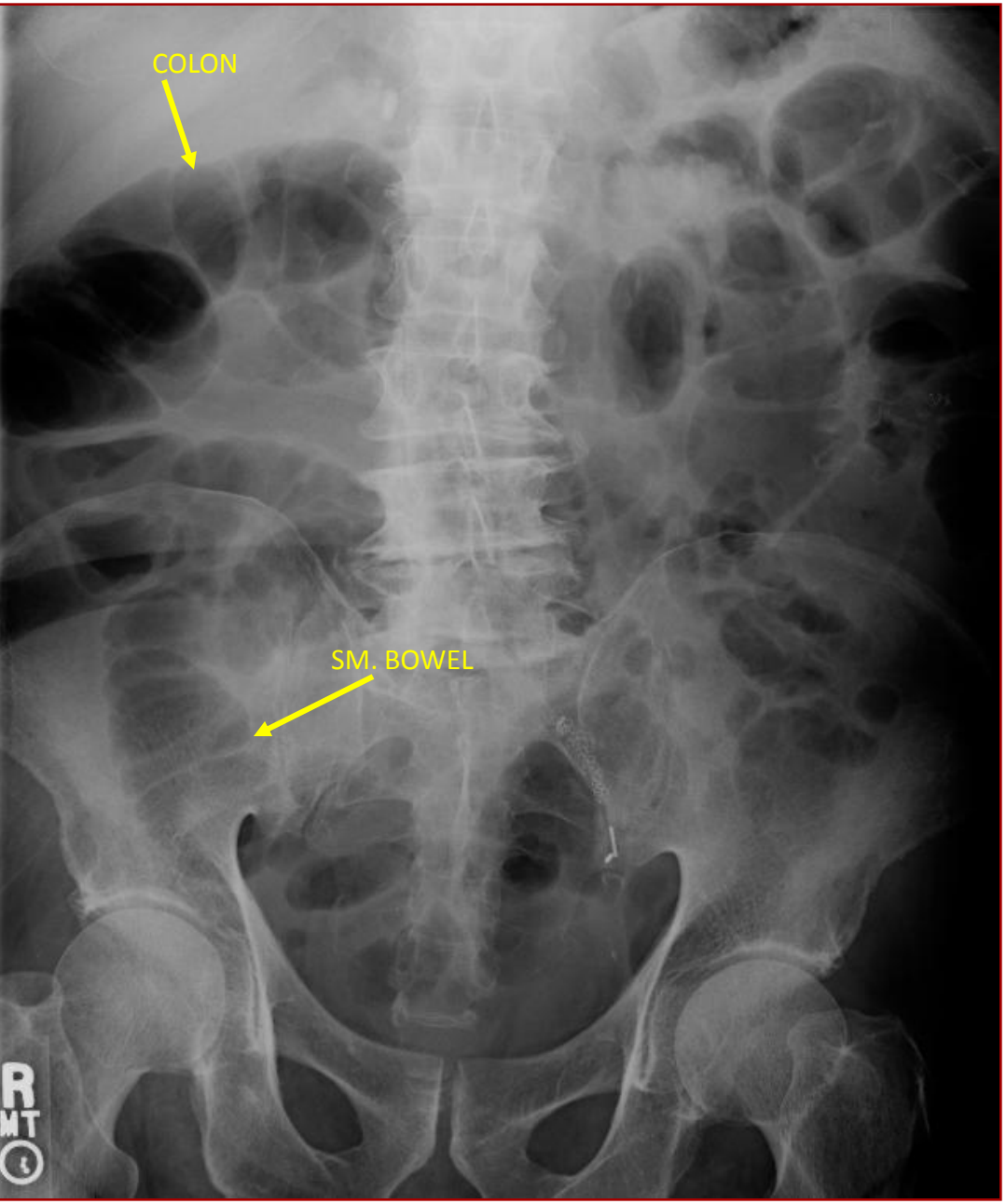




Note hernia in right lower quadrant on both exams accounting for obstruction.

Hernia is likely cause if there is no history of prior surgery.

Incarcerated Inguinal Hernia



POST – OP

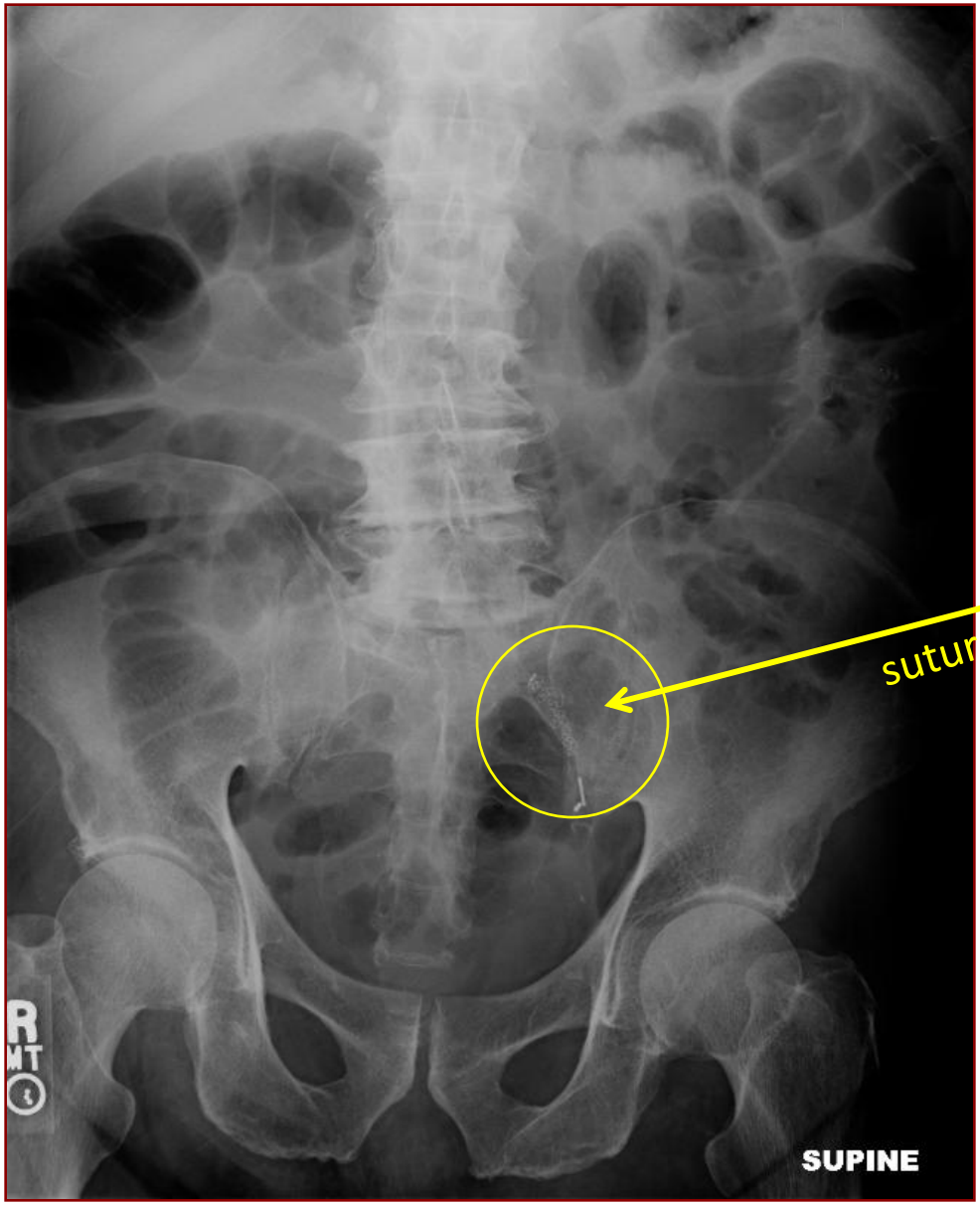
ADYNAMIC ILEUS

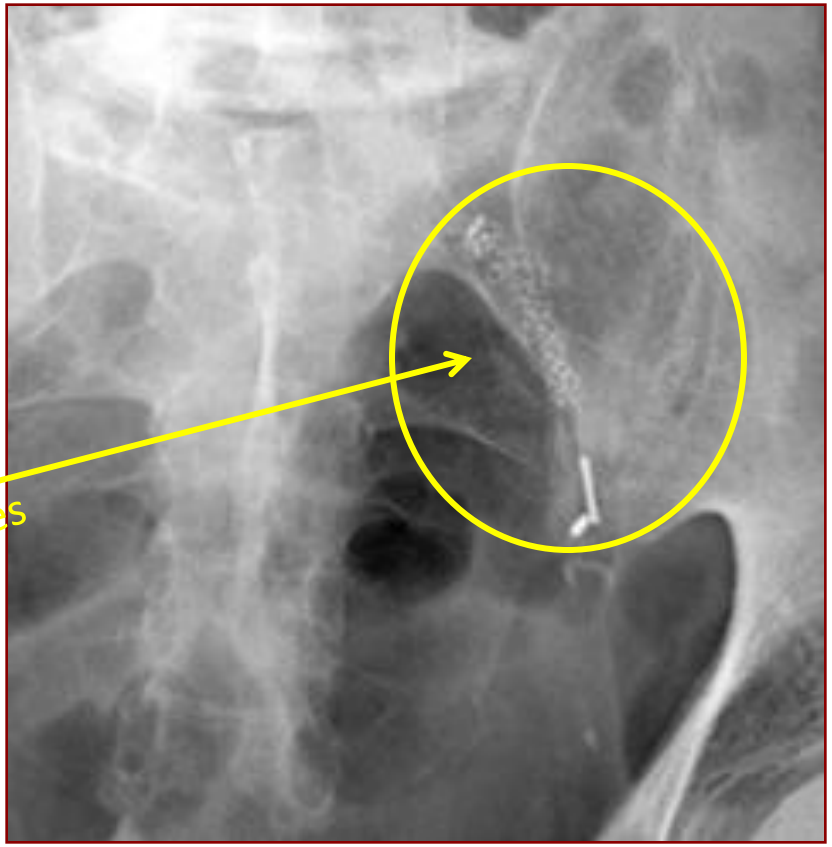
LARGE AND SMALL BOWEL

Symmetric dilation of large and small bowel is seen normally as a post operative ileus.

POST – OP

ADYNAMIC ILEUS

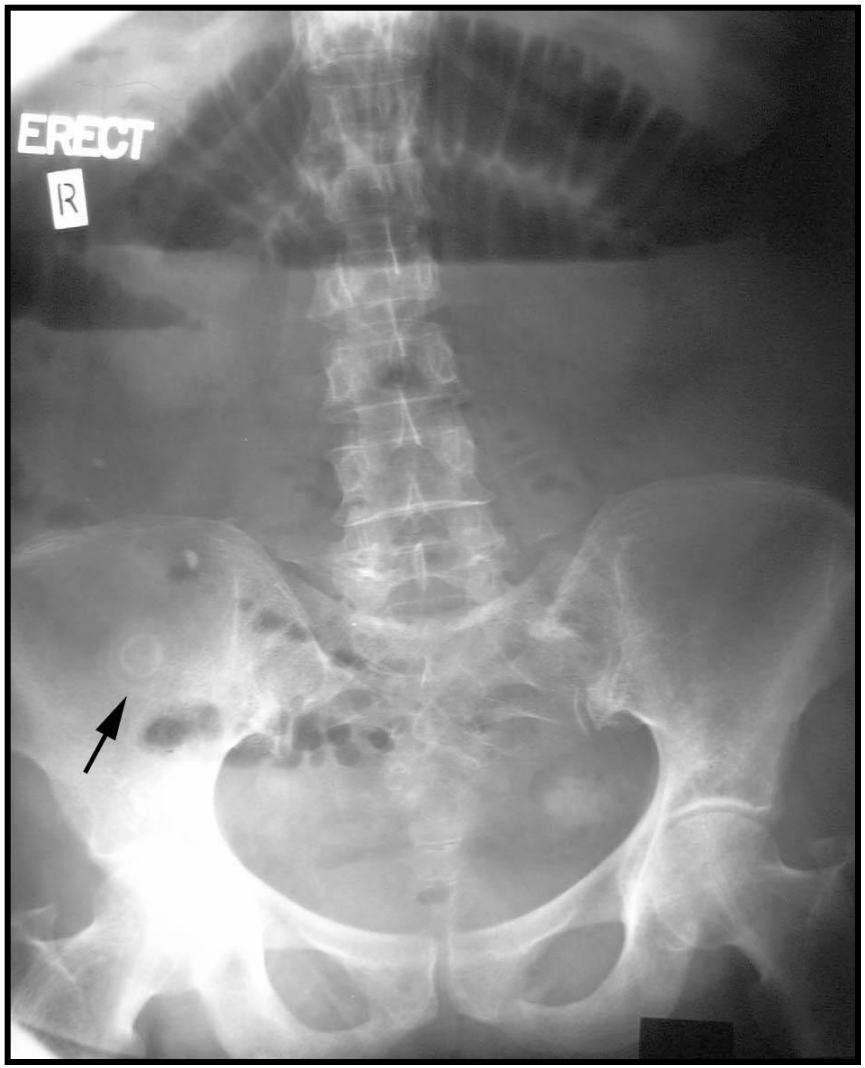




Colon resection

Gall stone ileus

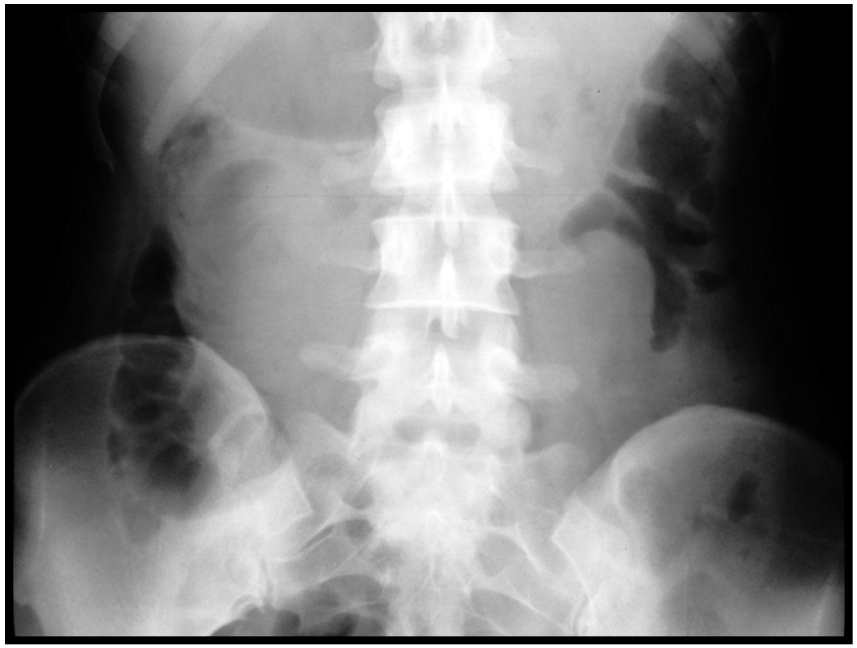
This is a mechanical obstruction caused by the impaction of one or more gall stones in the intestine, usually in the terminal ileum, but rarely in the duodenum or the colon.
The commonest radiological signs to be observed are :
1- A gas shadow within the bile ducts and/ or the gall bladder.
2- Complete or incomplete intestinal obstruction.
3- An abnormal location of an already observed gall stone.

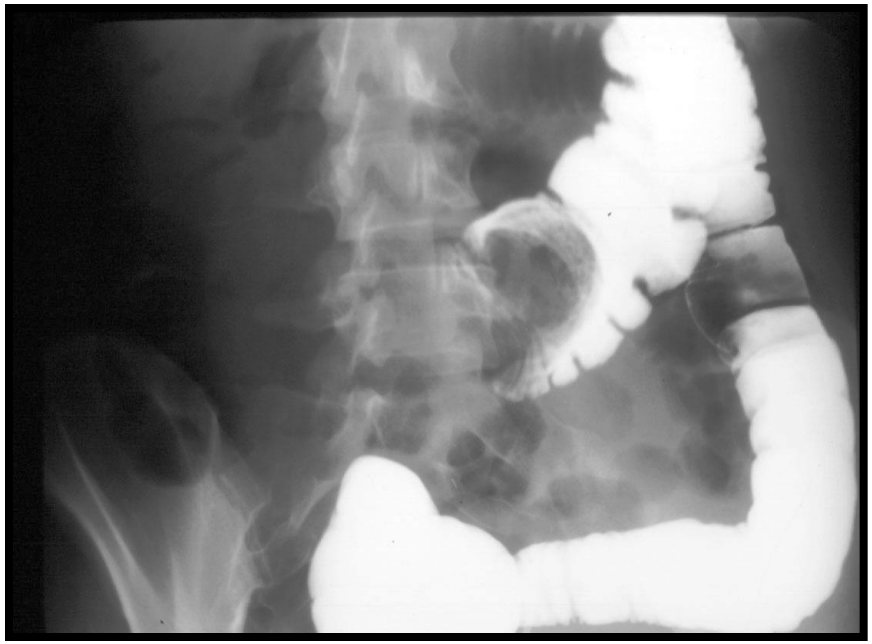


Gall stone ileus

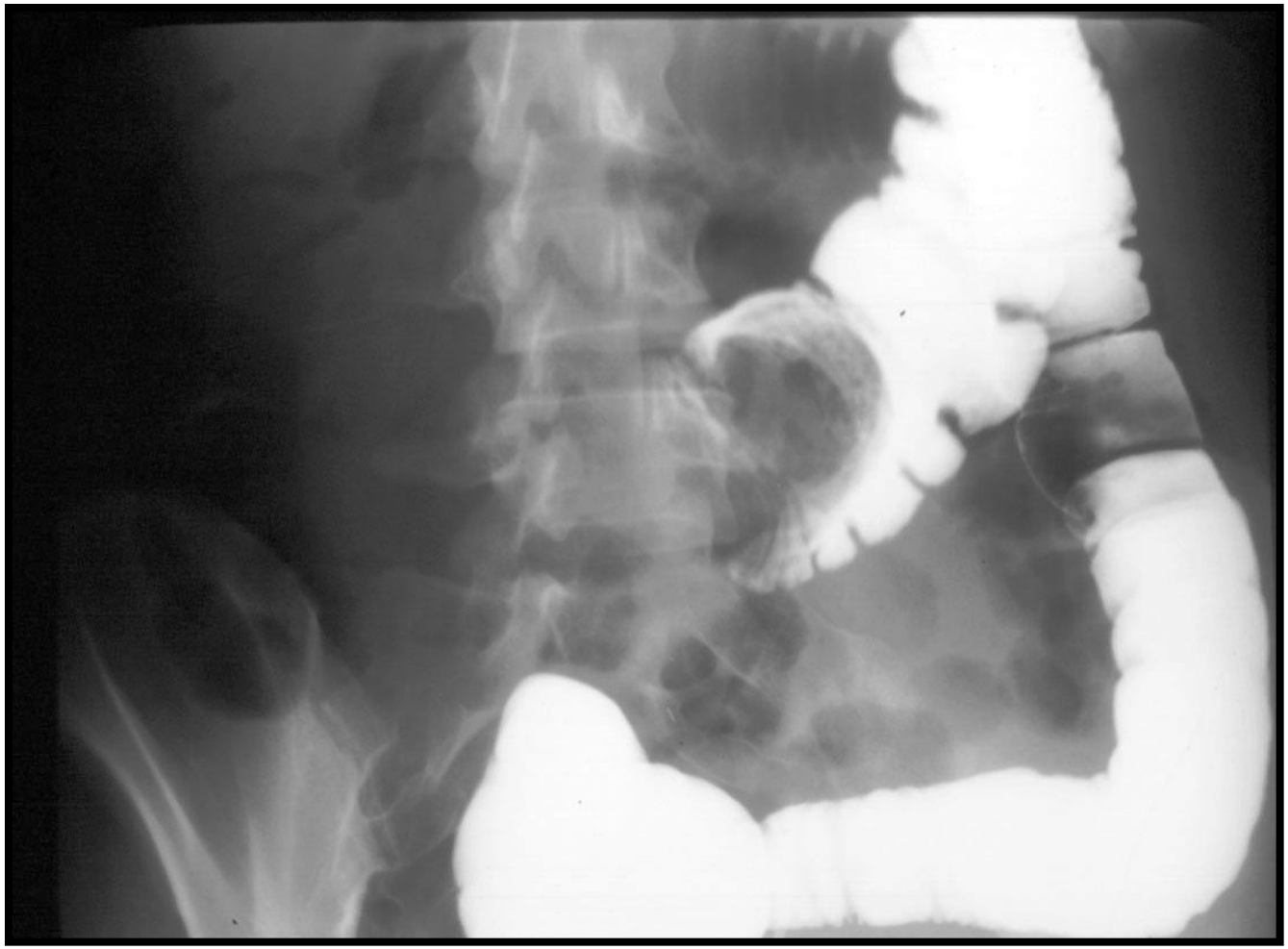
See also gall-bladder outlined by gas, recent passage of stone.

intussusception

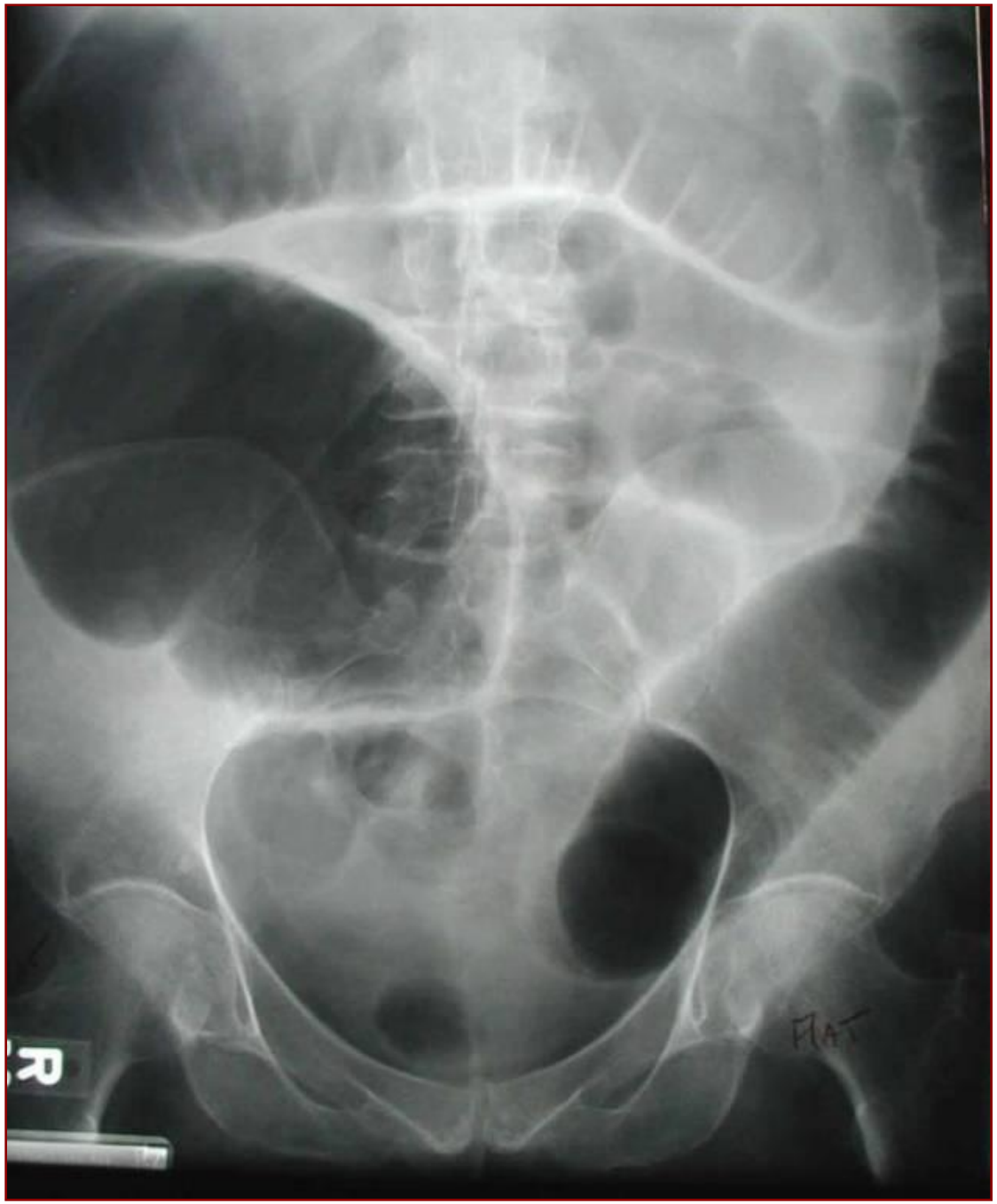




intussusception

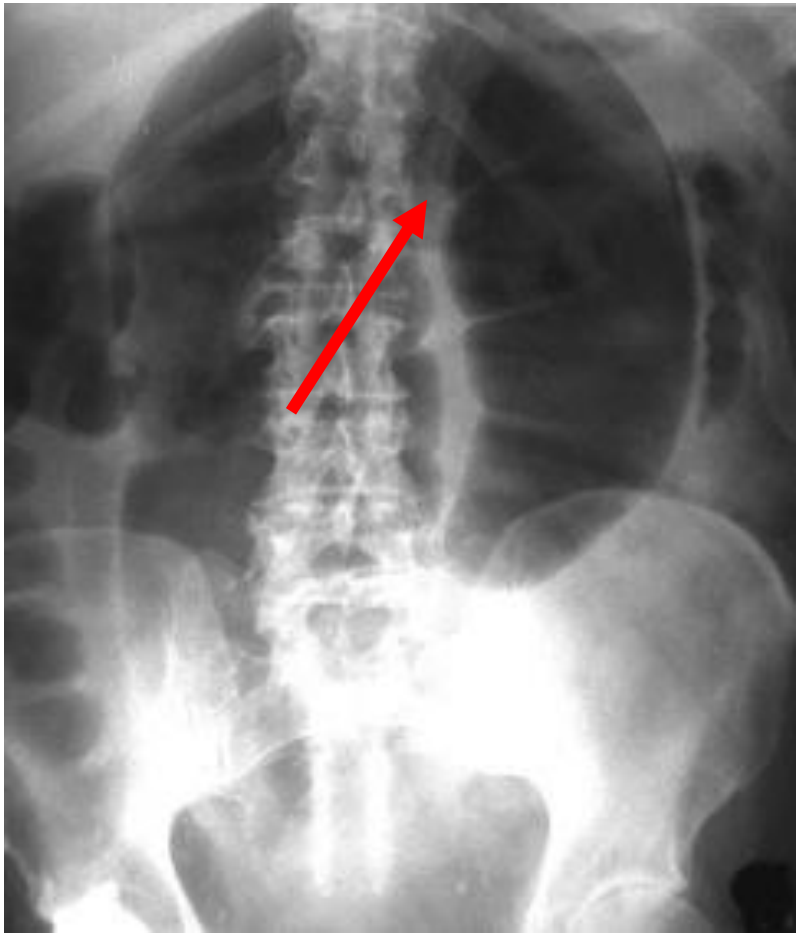


Ileo- caecal intussusception



COLON OBSTRUCTION

Distension extends to distil descending colon.



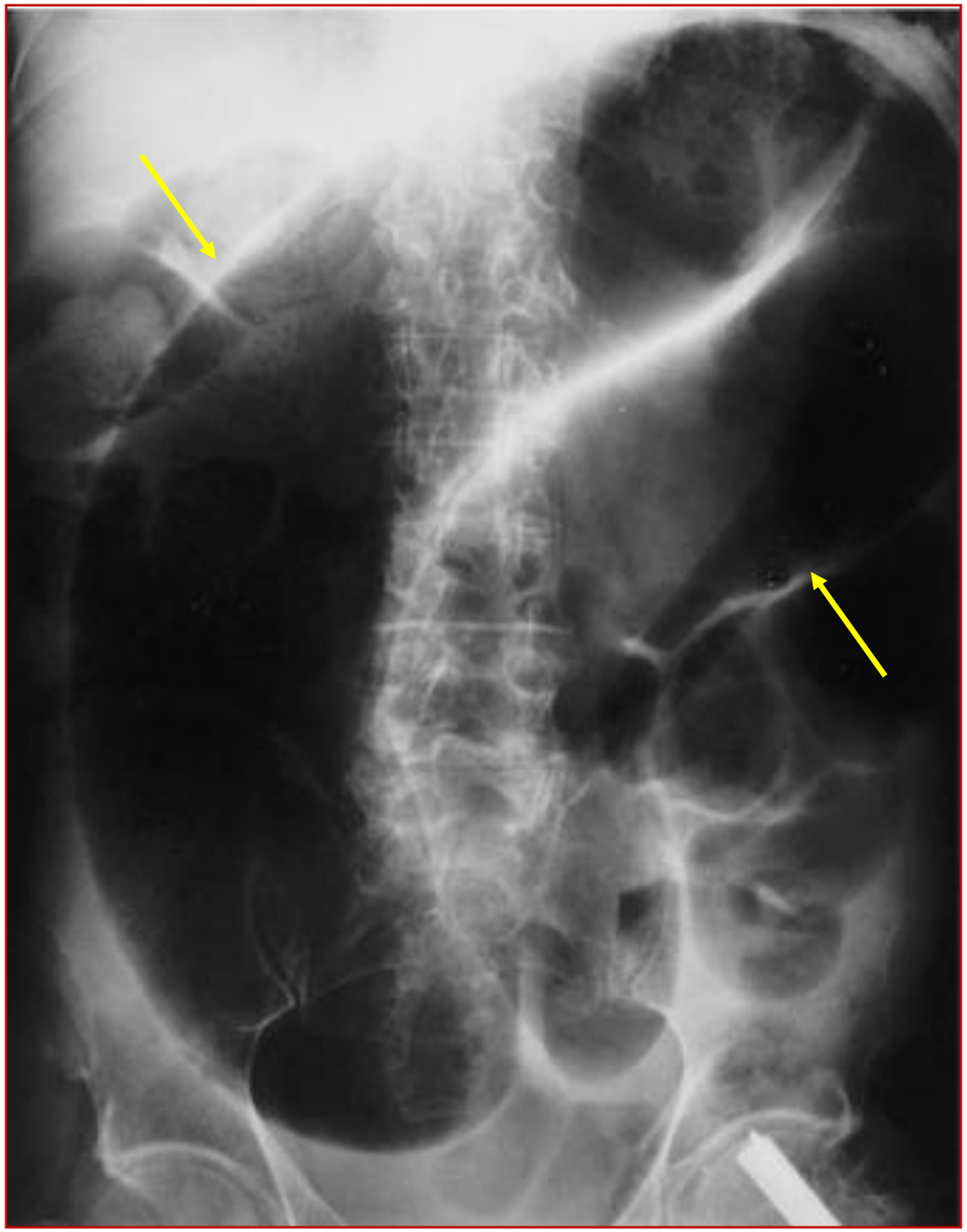
Sigmoid Volvulus

Colonic Obstruction

Sigmoid volvulus

This is the classic volvulus, occurring in old, mentally subnormal patients.
It is usually chronic with intermittent acute attacks.
Radiological signs :

- **inverted U shaped distended loop which is devoid of haustra (ahaustral).**
- **Liver or left flank overlap signs.**
- **Apex of the volvulus above T10.**
- **Air fluid ratio greater than 2:1.**



COLON

SIGMOID VOLVULUS

Dilated horse-shoe shaped sigmoid colon due to volvulus.

"COFFEE BEAN SIGN"

COLON VOLVULUS

"BEAK SIGN"

Barium fills to point of obstruction and twist of sigmoid colon

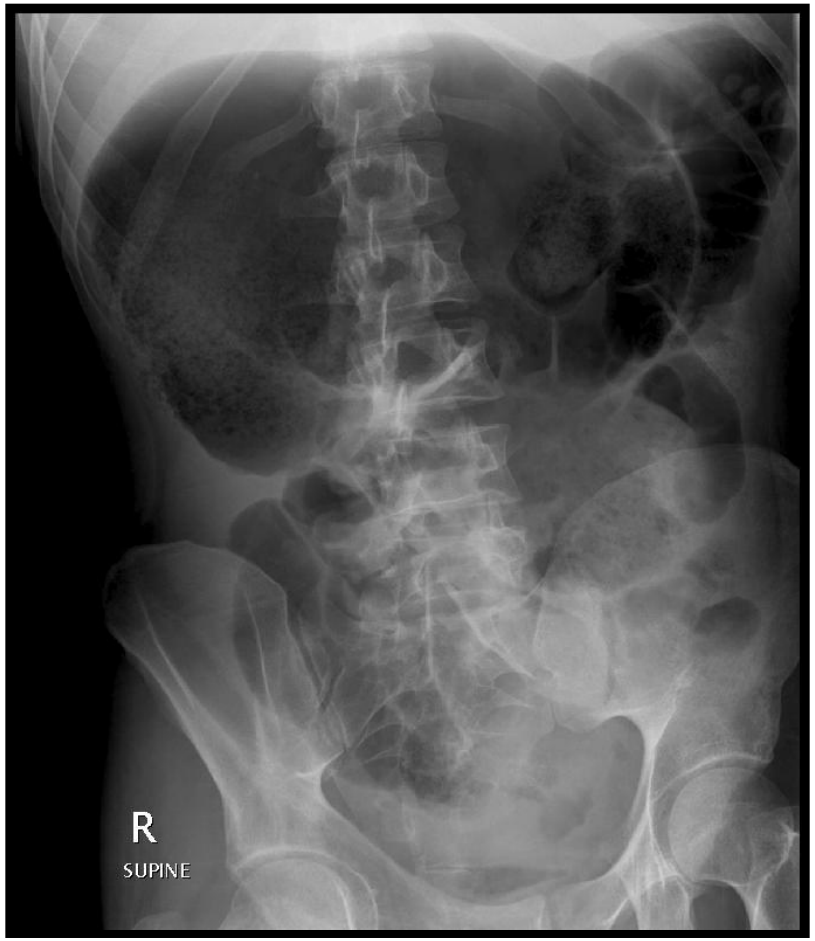
sigmoid volvulus

Cecal volvulus

(Right colon volvulus)

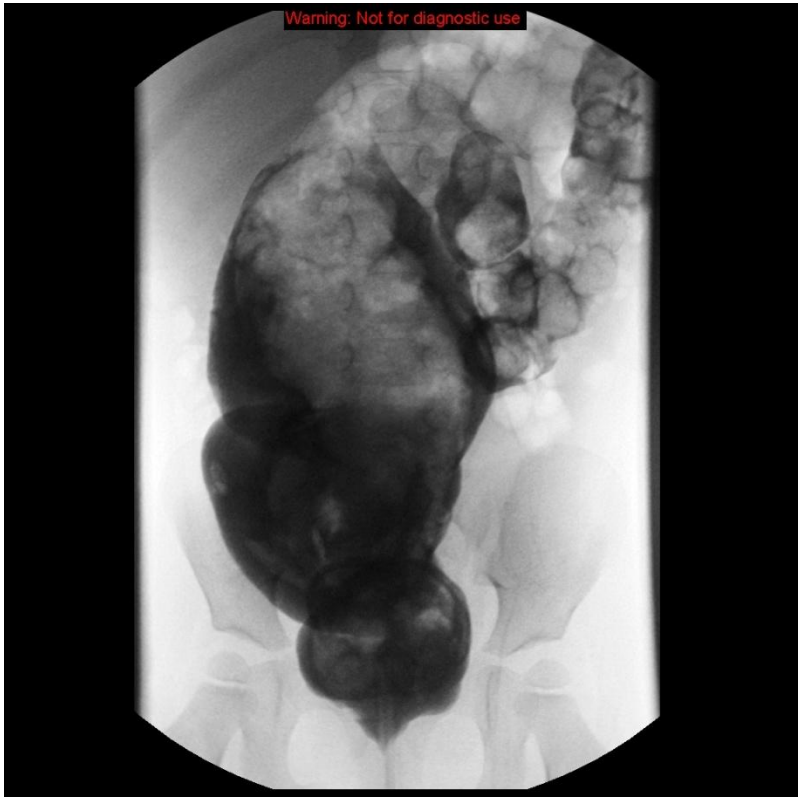
This account for less than 2% of adult intestinal obstruction
(young age group).
The diagnosis of acute cecal volvulus is rarely made on clinical ground alone, and so radiological diagnosis become much more important & it is usually comprises a distended lower abdominal viscus with one or two haustral markings, concomitant small bowel dilatation & a collapsed left half of the colon.

Caecal volvulus



Caecal volulus

Hirschsprungs disease




THANK YOU