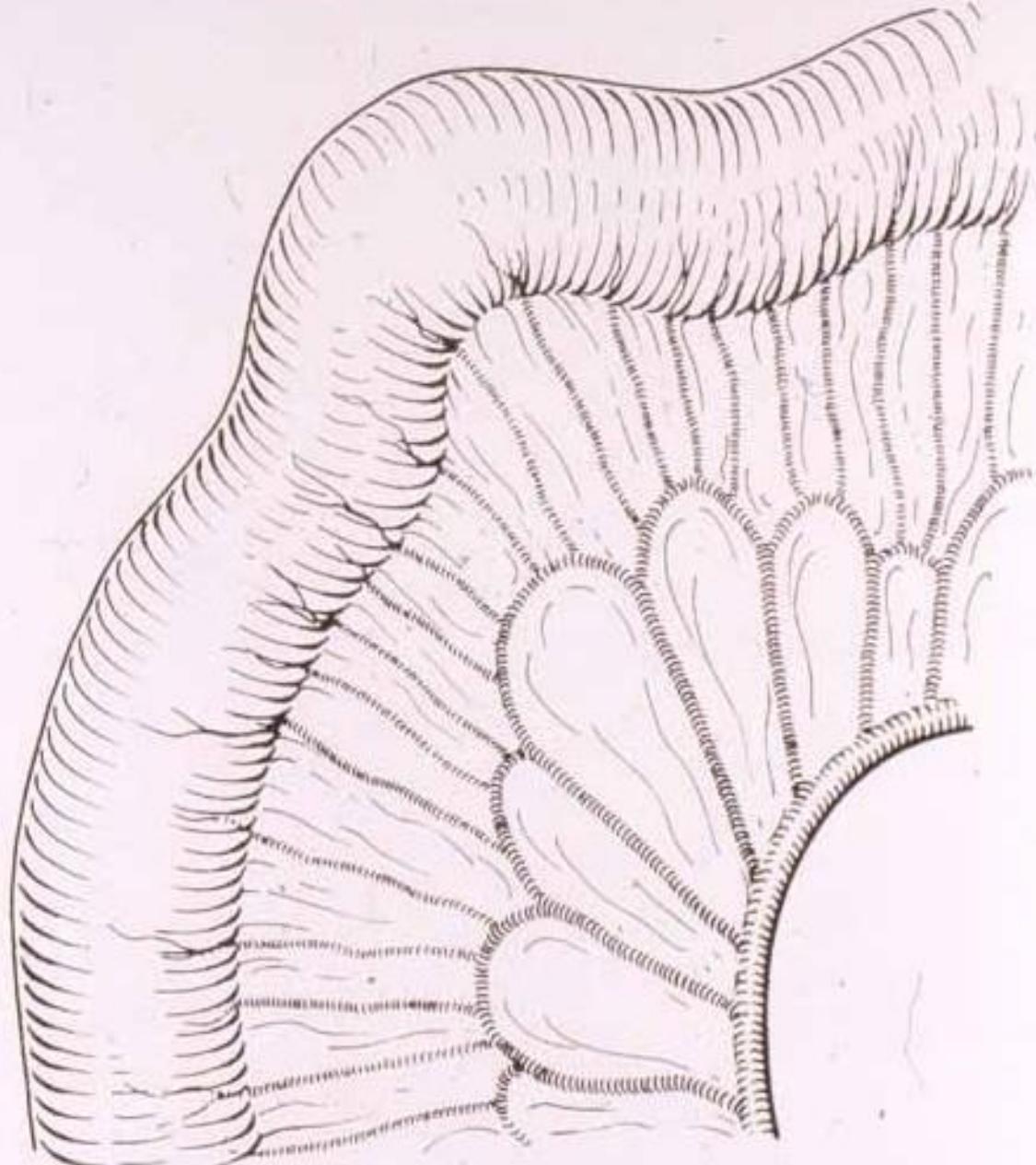


# Intestinal Obstruction

## Pathophysiology

- Distension of bowel with fluid and gas
- Excessive peristalsis
- Decreased absorption and extravasation of fluid into bowel lumen
- Impaired blood supply ( strangulation )
- Peritonitis



Arcades of superior  
mesenteric artery

# Intestinal Obstruction

## Symptoms

- Colicky abdominal pain
- Abdominal distension
- Constipation
- Vomiting

# Intestinal Obstruction

## Physical Findings

- Dehydration
- Distended abdomen
- Visible bowel loops
- Hernia
- Hyperactive bowel sounds



# Intestinal Obstruction

## Signs of Strangulation

- Constant abdominal pain
- Fever
- Shock
- Peritoneal signs
- Leucocytosis
- Metabolic acidosis
- Impaired liver functions

# Intestinal Obstruction

## General Management

- Nil by mouth
- Fluid replacement
- Nasogastric tube
- Correct electrolyte disturbance
- Monitor vital signs

# Small Bowel Obstruction

## Etiology:

Adhesion 60%

External hernia 20%

Virgin abdomen 20%

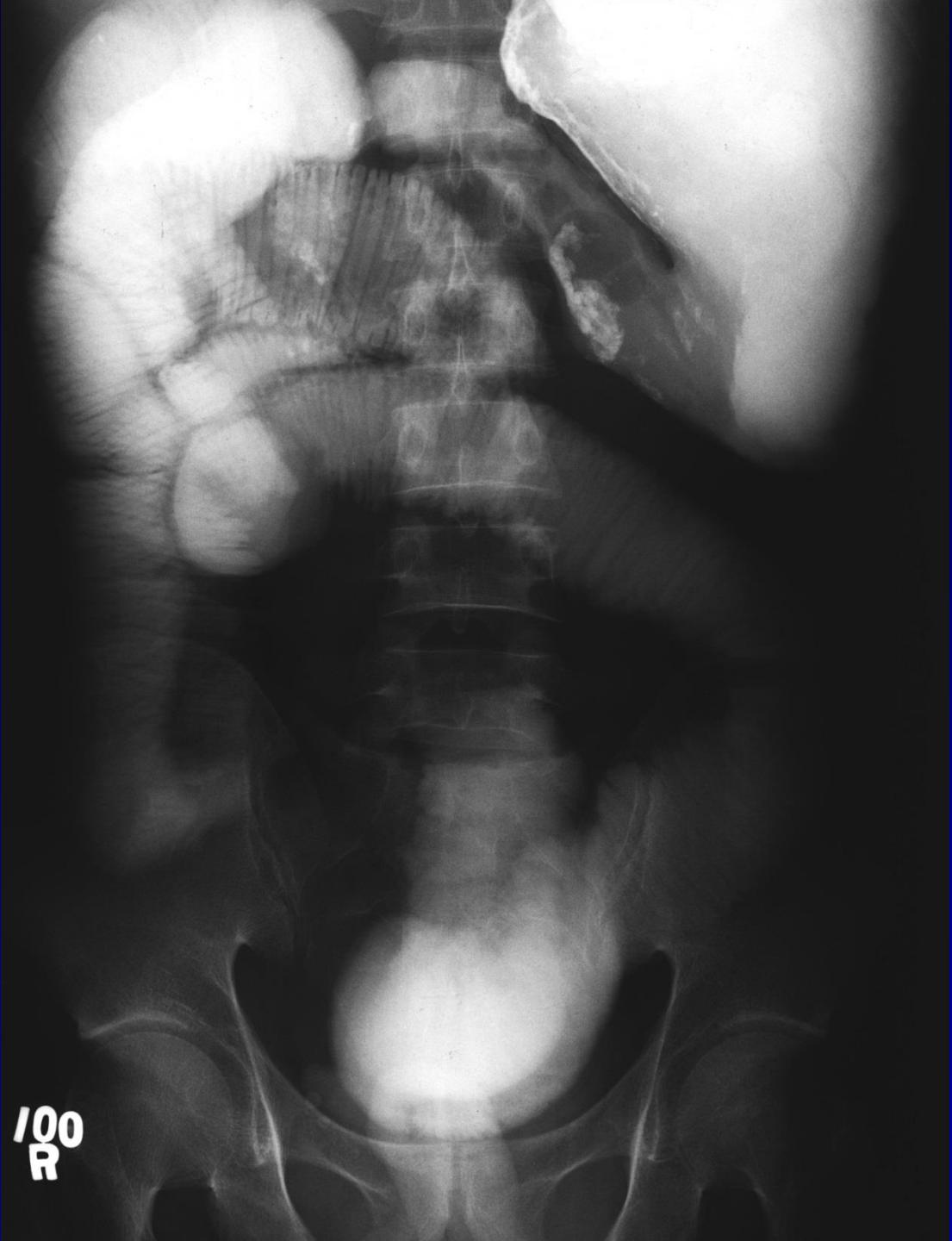
- intussusception
- volvulus
- gallstone ileus
- bezoar
- small bowel tumour
- internal hernia
- carcinoma of caecum



20  
8  
01  
A/1508634R

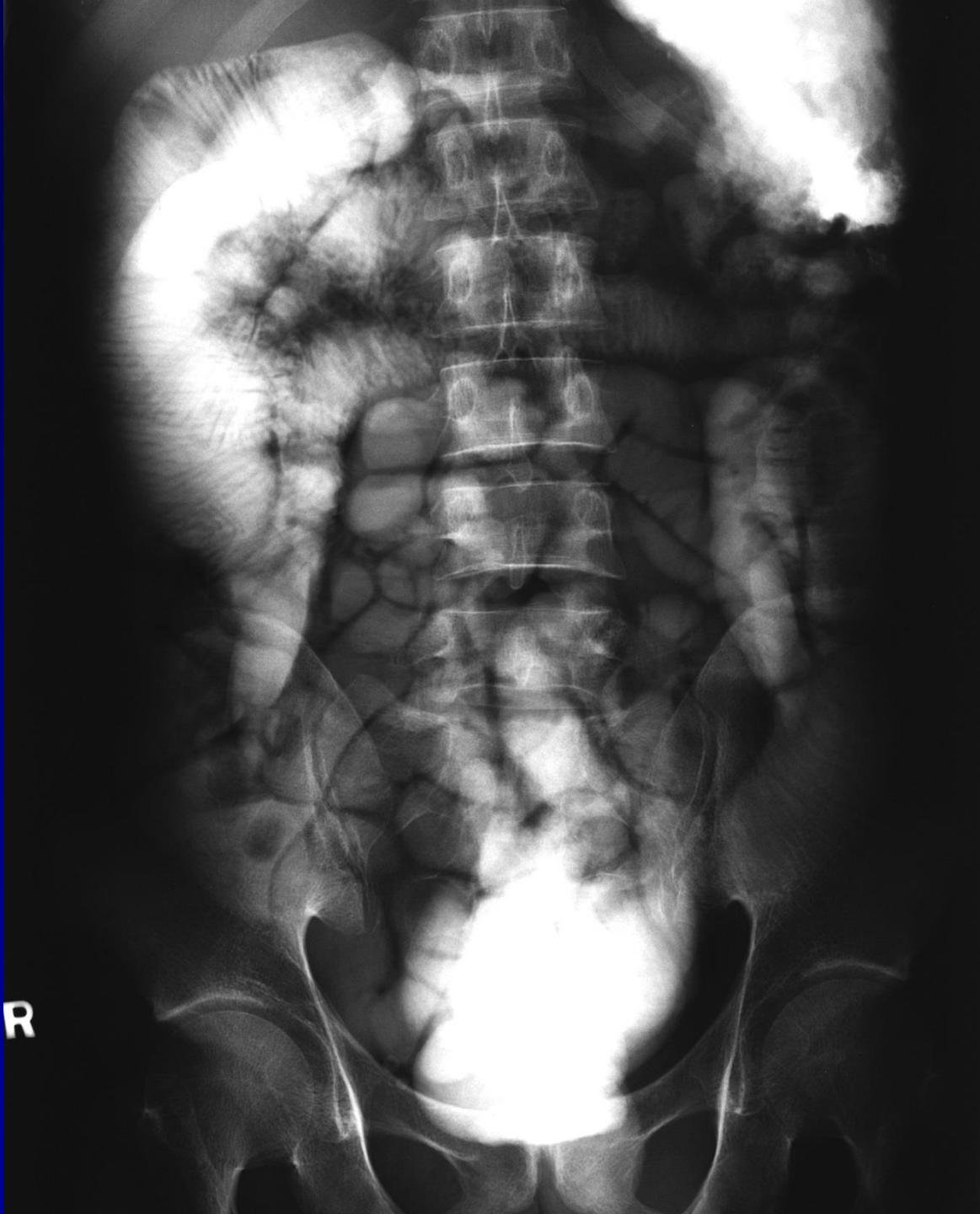
10:45AM





A black and white radiograph showing the anterior (front) view of a human skull and the upper portion of the thoracic cage. The skull is centered, displaying the facial bones, orbits, and the upper cervical spine. The thoracic cage is visible below, with the clavicles, scapulae, and the first few ribs clearly defined. The image has a high contrast, grainy texture typical of older medical film. The background is dark, making the bone structures stand out.

100  
R





R



# Small Bowel Obstruction

## Adhesive Obstruction

Adhesions between small bowels due to previous abdominal surgery

### Conservative treatment

- Success rate about 70%

Gastrografin meal and follow through for unsuccessful conservative treatment

### Surgery

- Persistent obstruction after gastrografin meal and follow through
- Enterolysis ± resection of nonviable small bowel



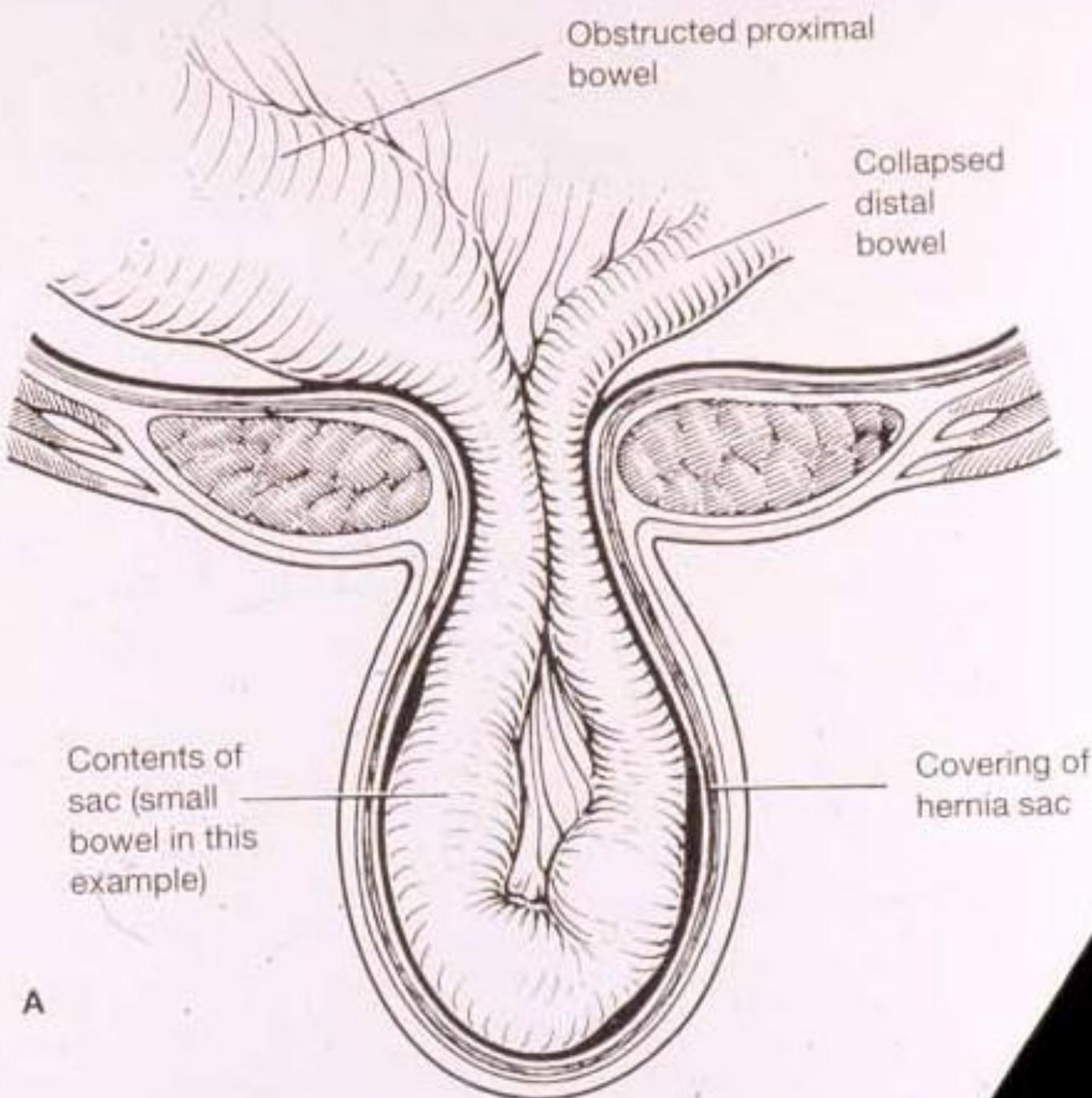
# Small Bowel Obstruction

## External Hernia

Definition - protrusion of whole or part of a viscus through an opening in the wall of its containing cavity

- Inguinal hernia
- Femoral hernia
- Incisional hernia
- Epigastric hernia
- Umbilical hernia
- Paraumbilical hernia
- Spigelian hernia
- Parastomal hernia

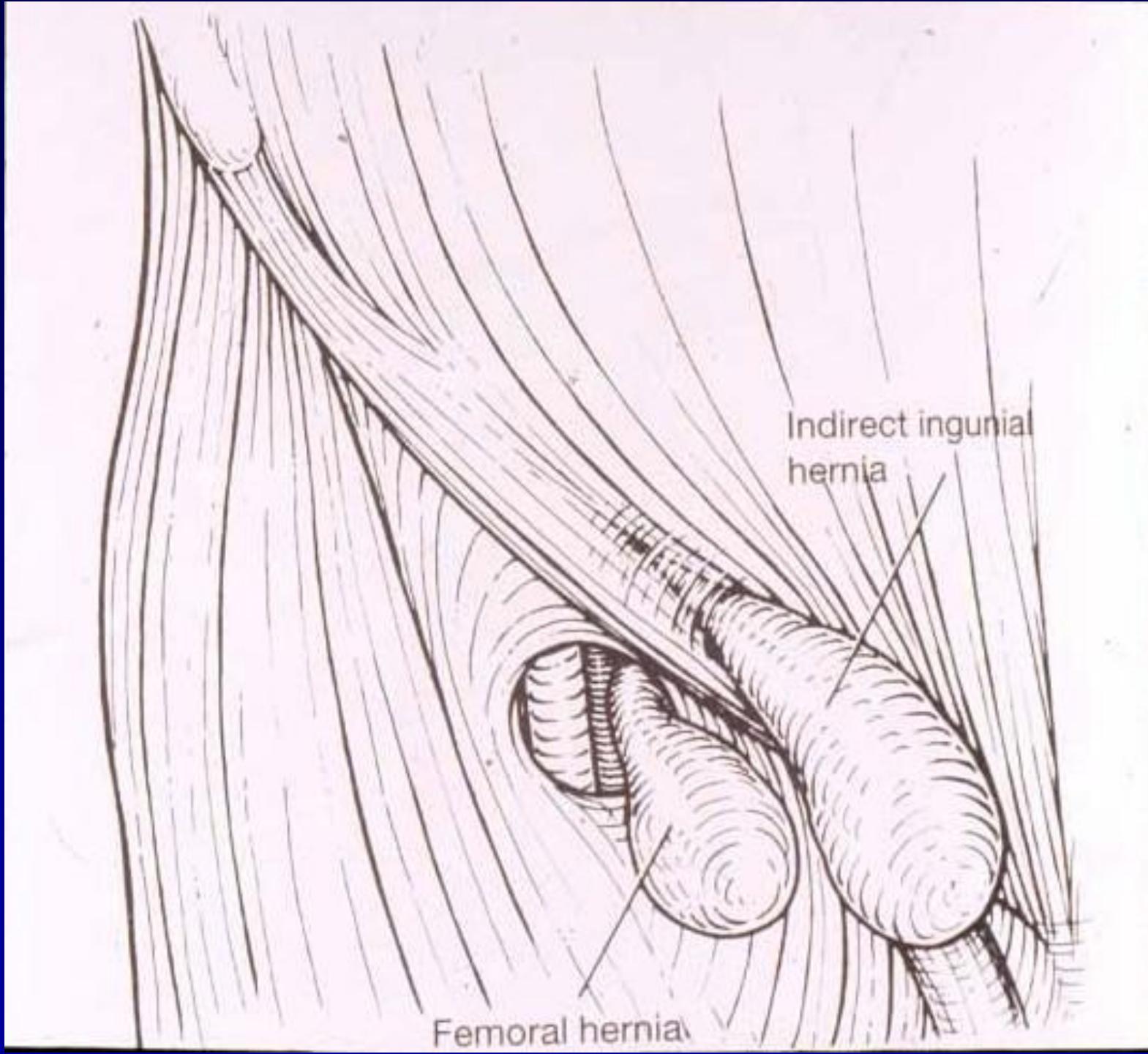
Treatment - repair of hernia ± resection of nonviable bowel







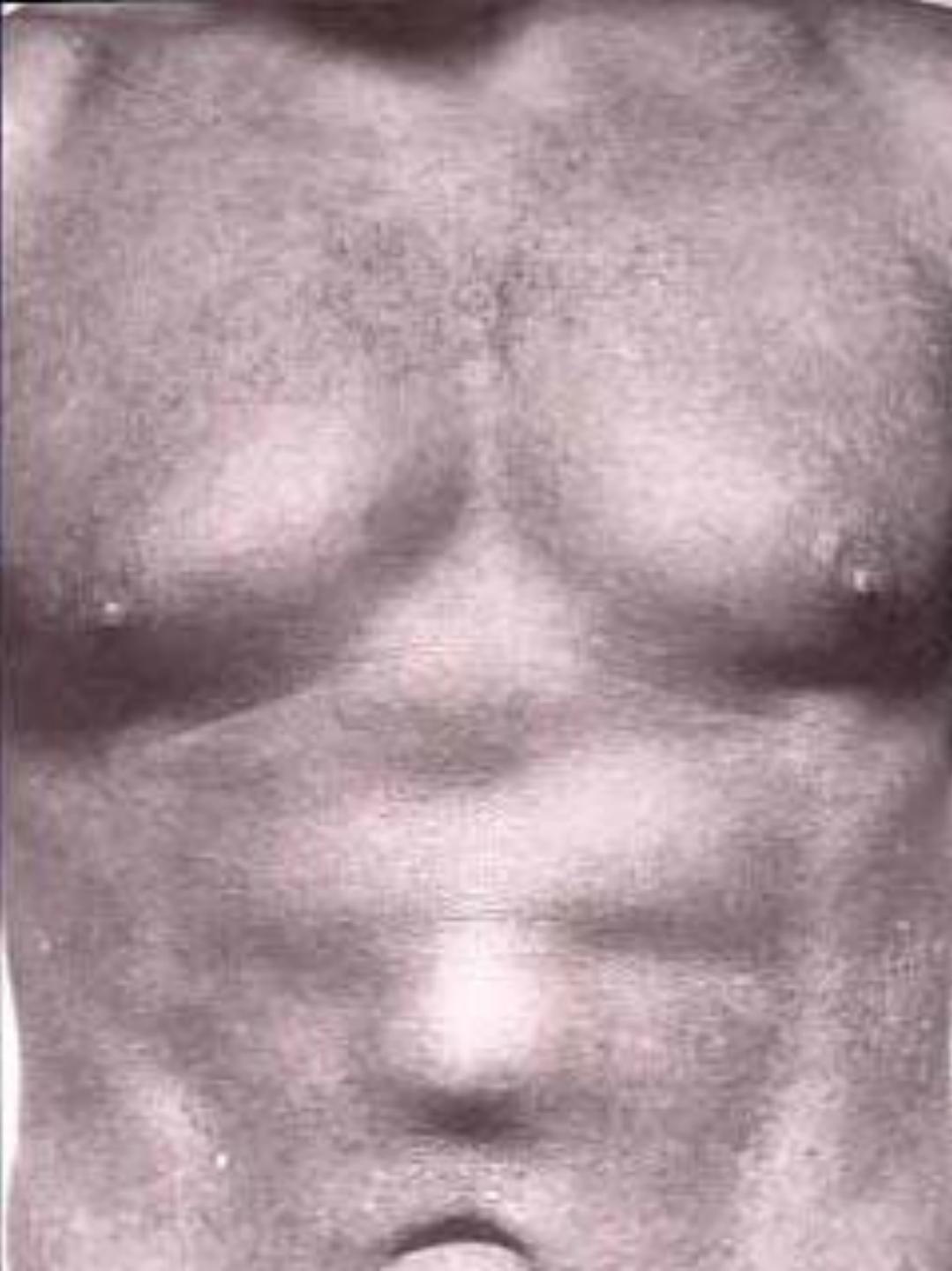




Indirect inguinal  
hernia

Femoral hernia



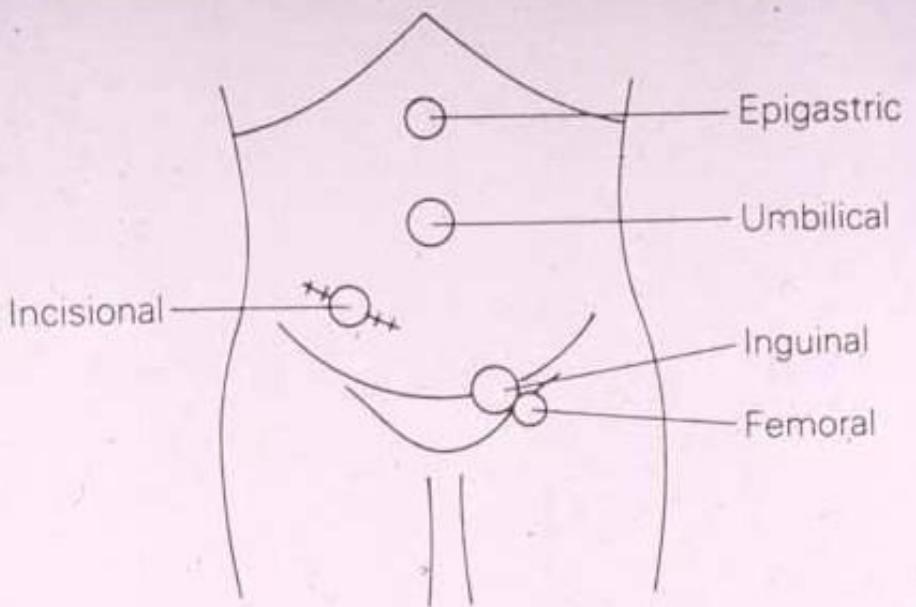




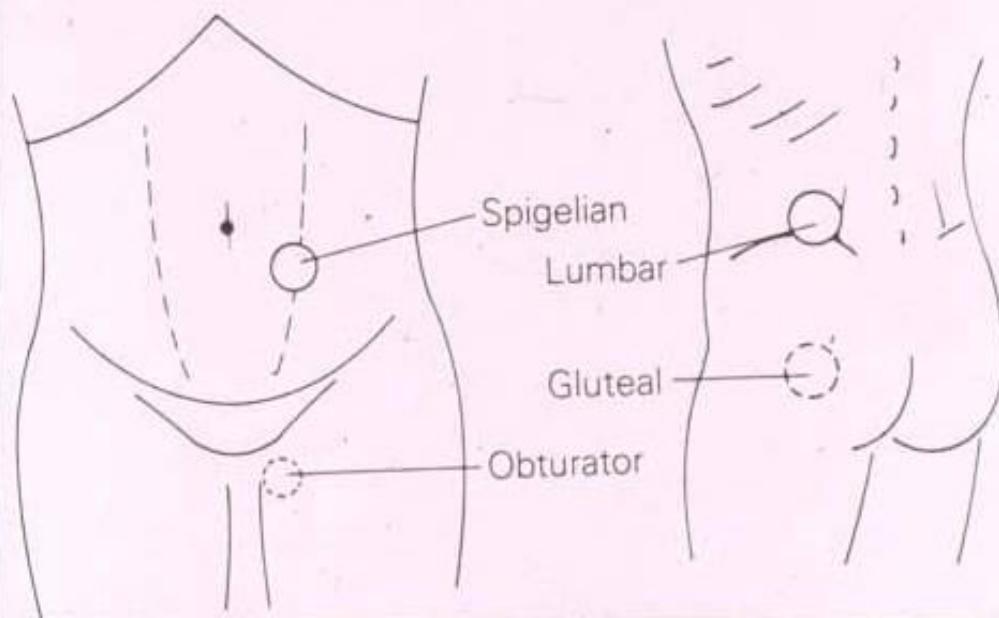




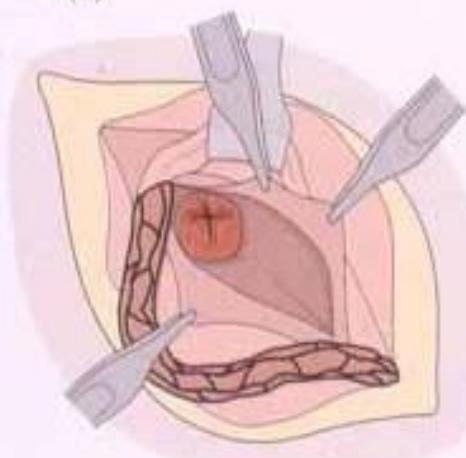
### A The common herniae



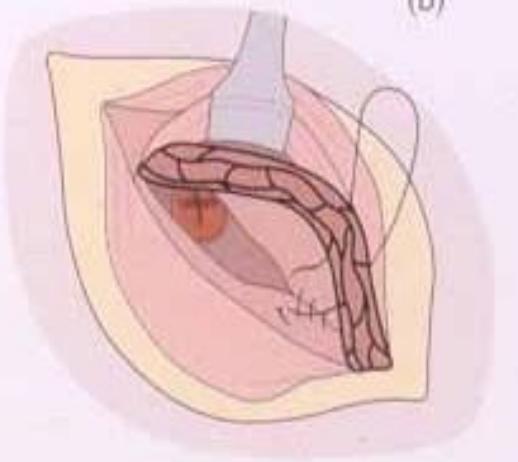
### B The rare herniae



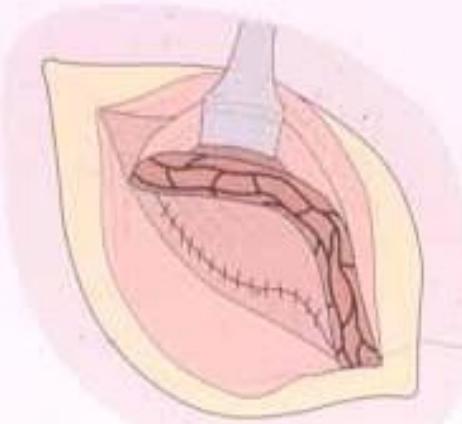
(a)



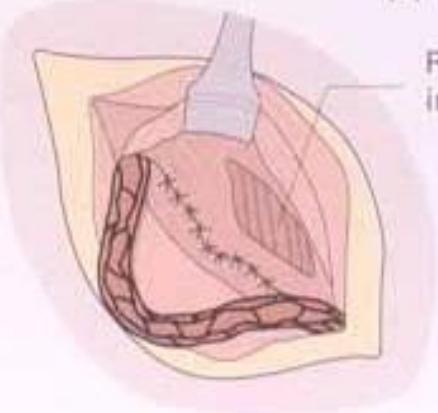
(b)



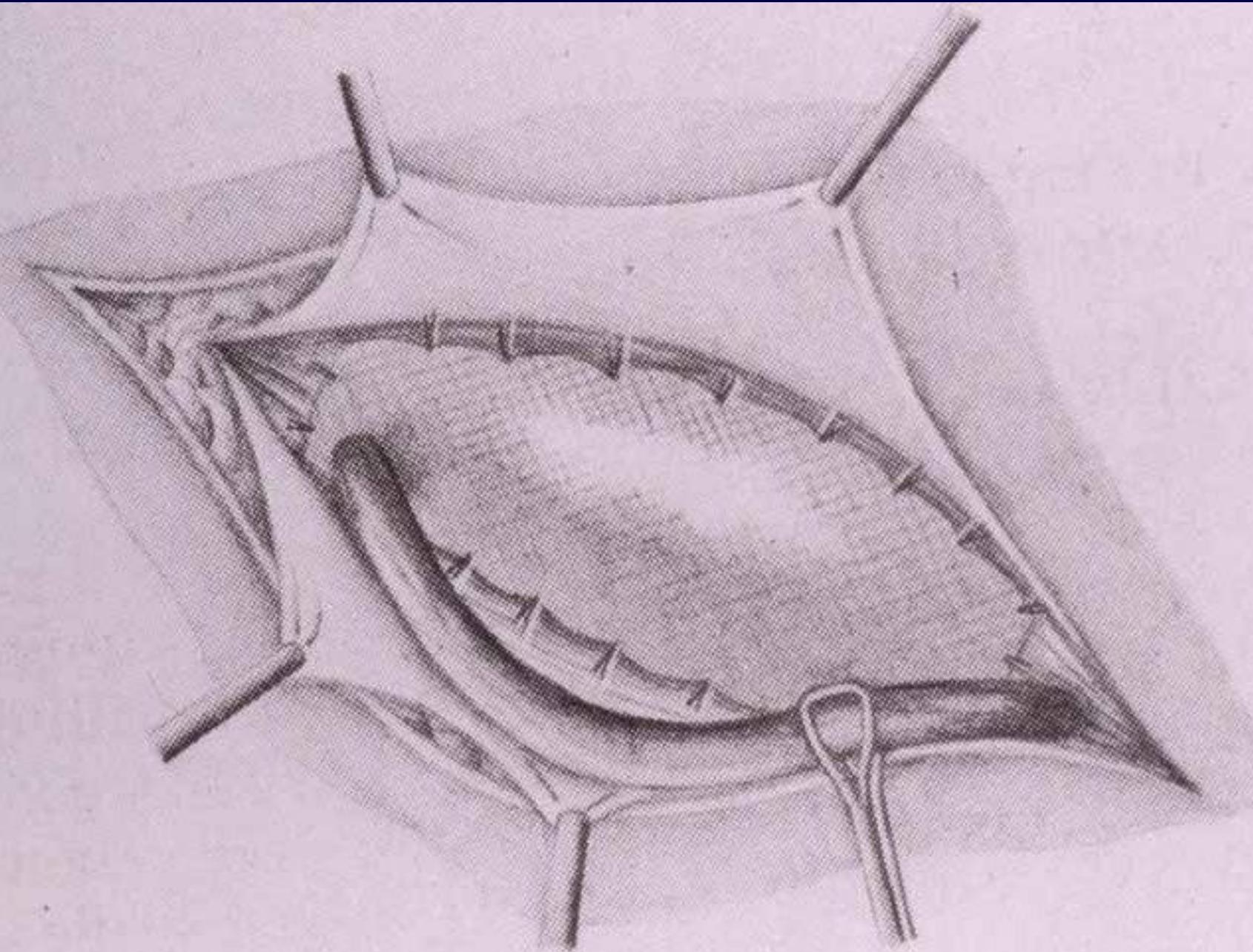
(c)



(d)



Relaxing  
incision



# Small Bowel Obstruction

## Virgin Abdomen

Intussusception - one portion of small bowel becomes invaginated into the adjacent segment of bowel

Volvulus - twisting of bowel

Gallstone ileus - obstruction of small bowel by gallstone

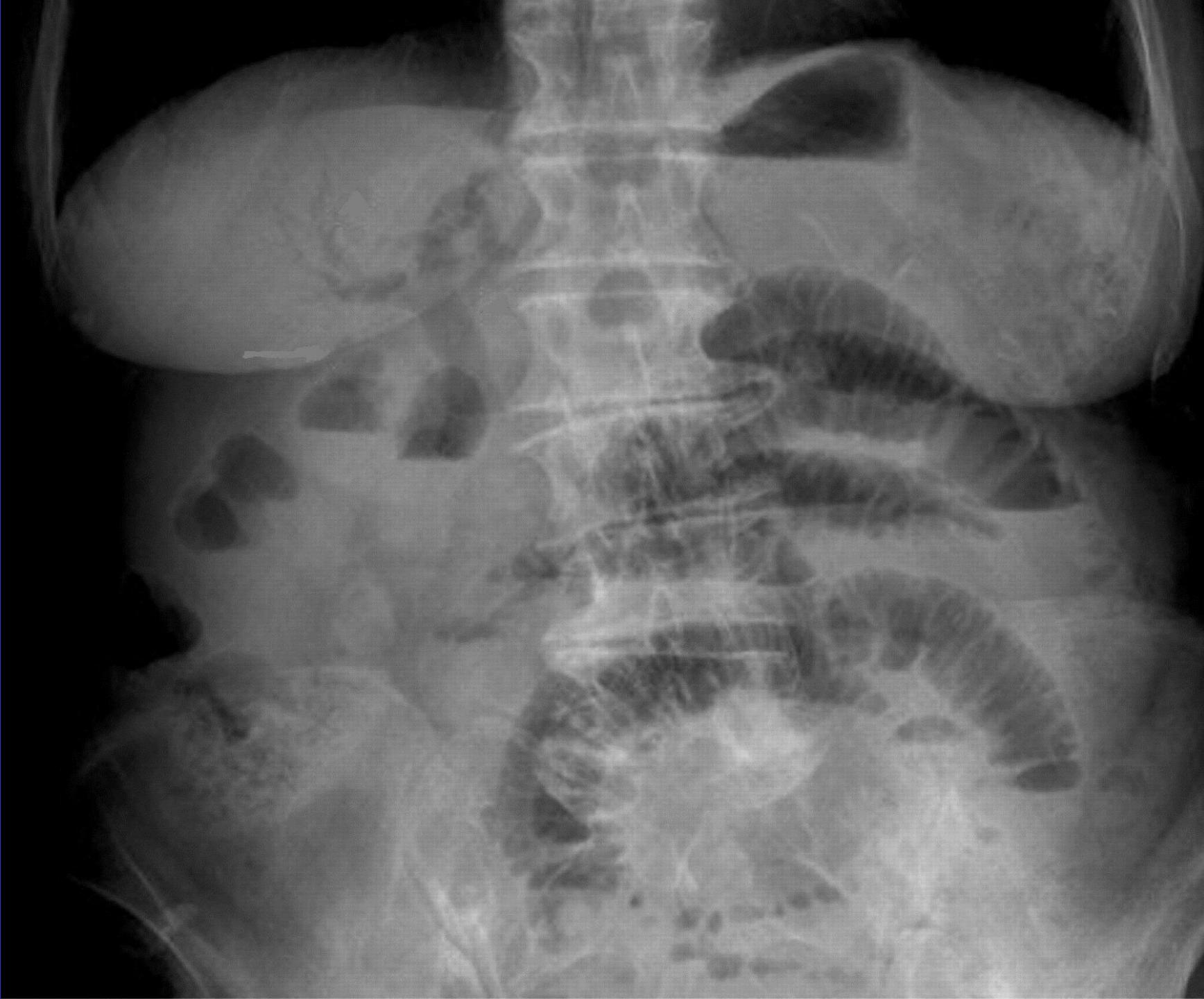
Bezoar - obstruction of small bowel by food bolus

Small bowel tumour

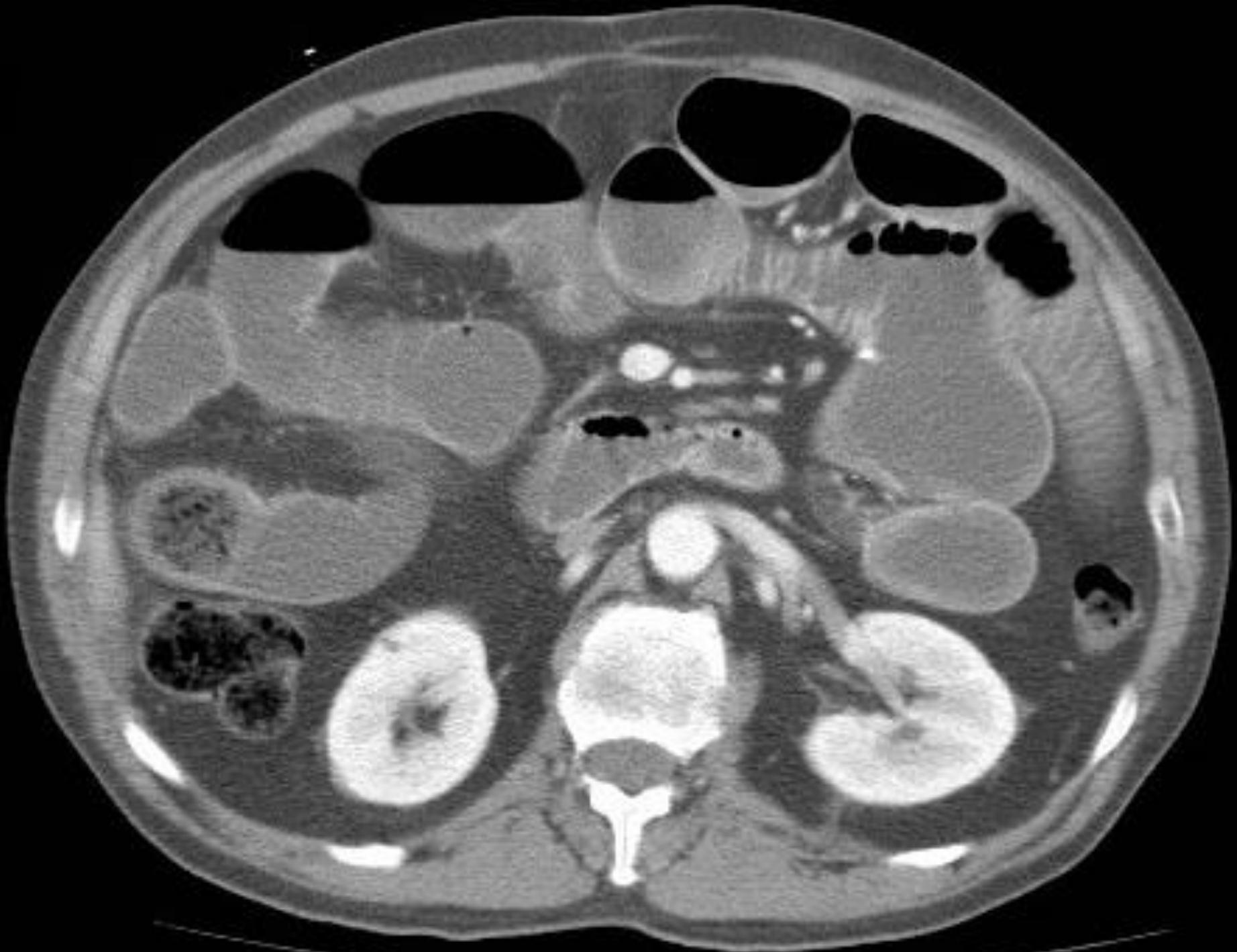
Internal hernia

Carcinoma of caecum

Treatment - laparotomy









Se:3  
Im:34

[A]

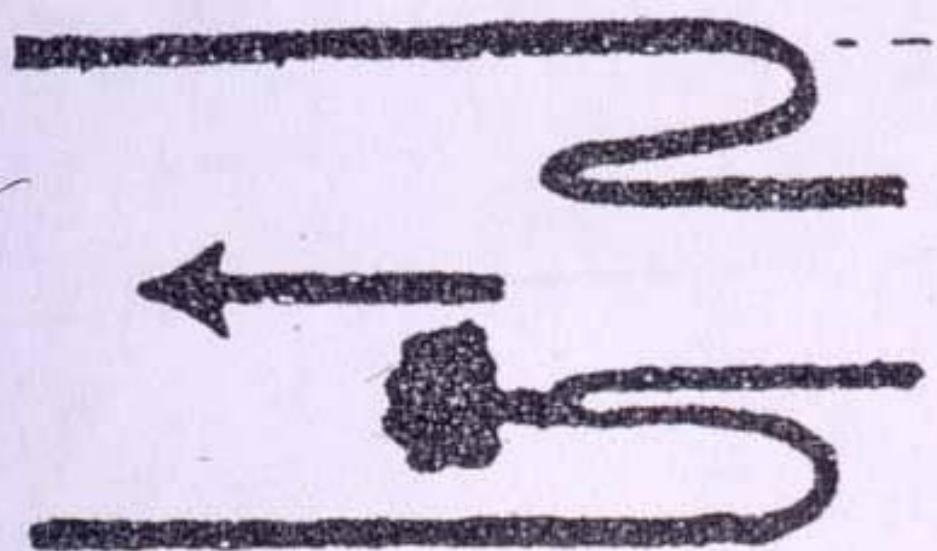
Study Date:17/12/2015  
Study Time:18:13:47  
MRN:



95ML OMNI.300

[P]

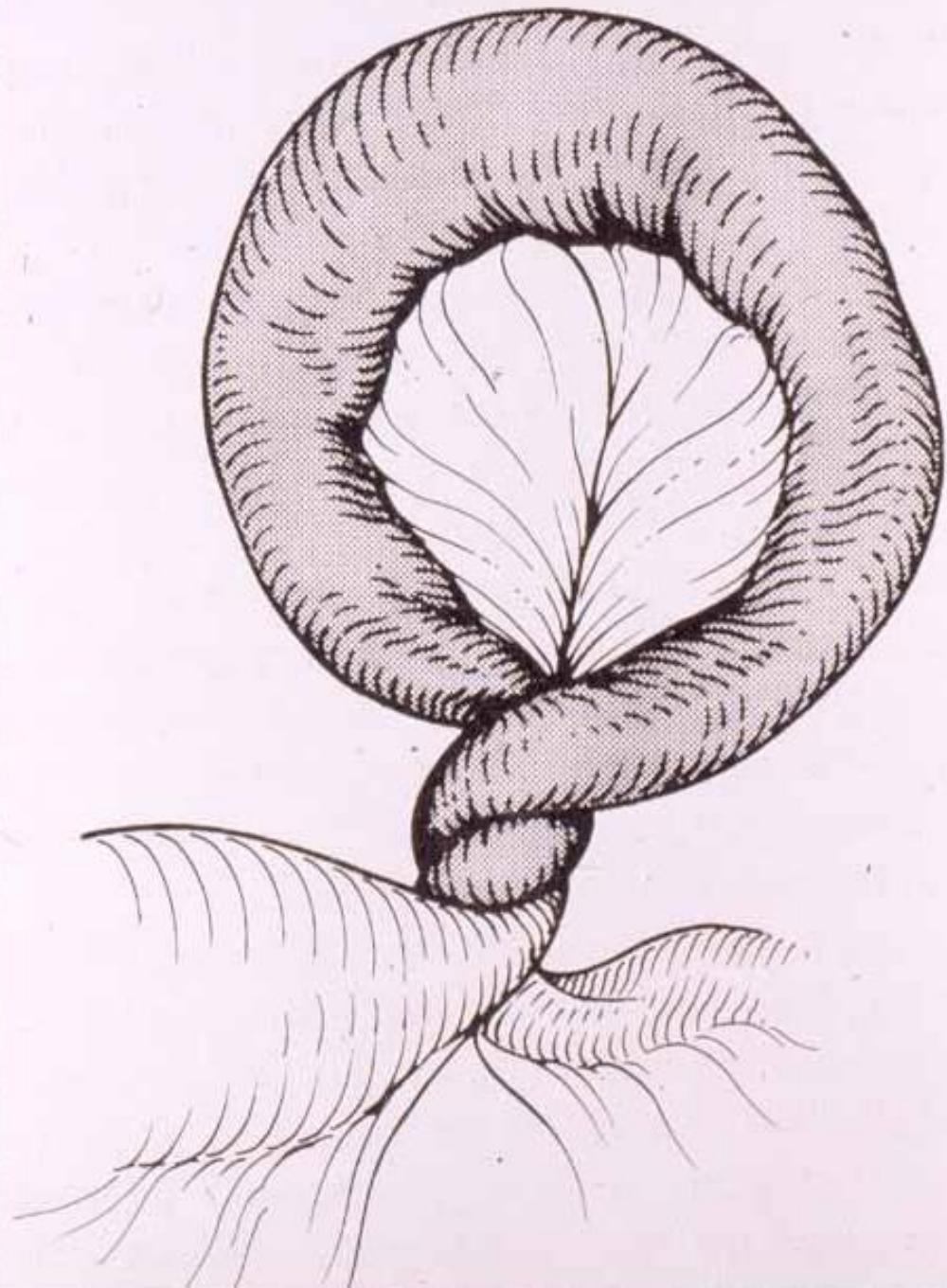
C50  
W350

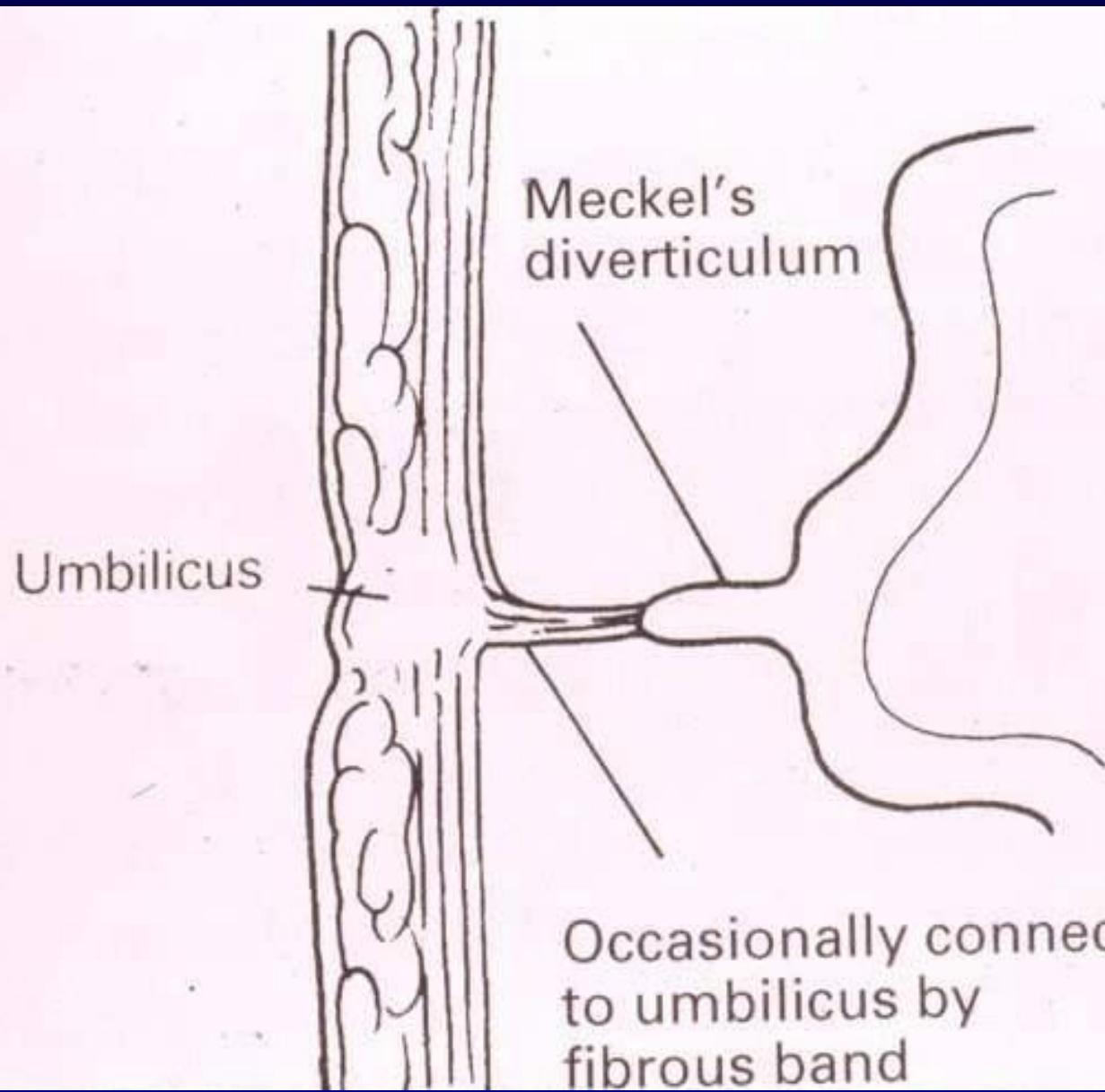


----- intussusciens  
} intussusceptum









Meckel's  
diverticulum

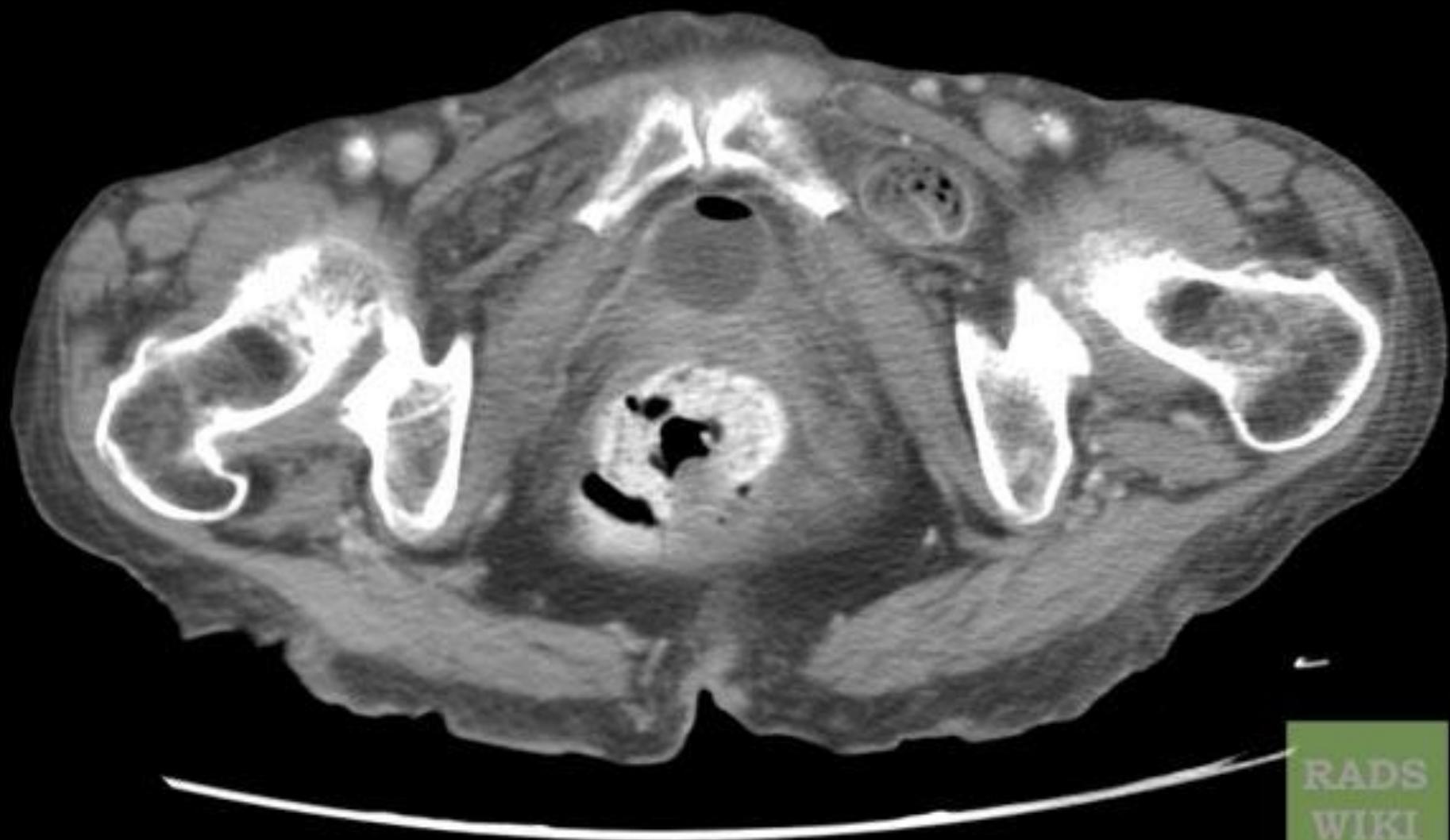
Umbilicus

Occasionally connected  
to umbilicus by  
fibrous band

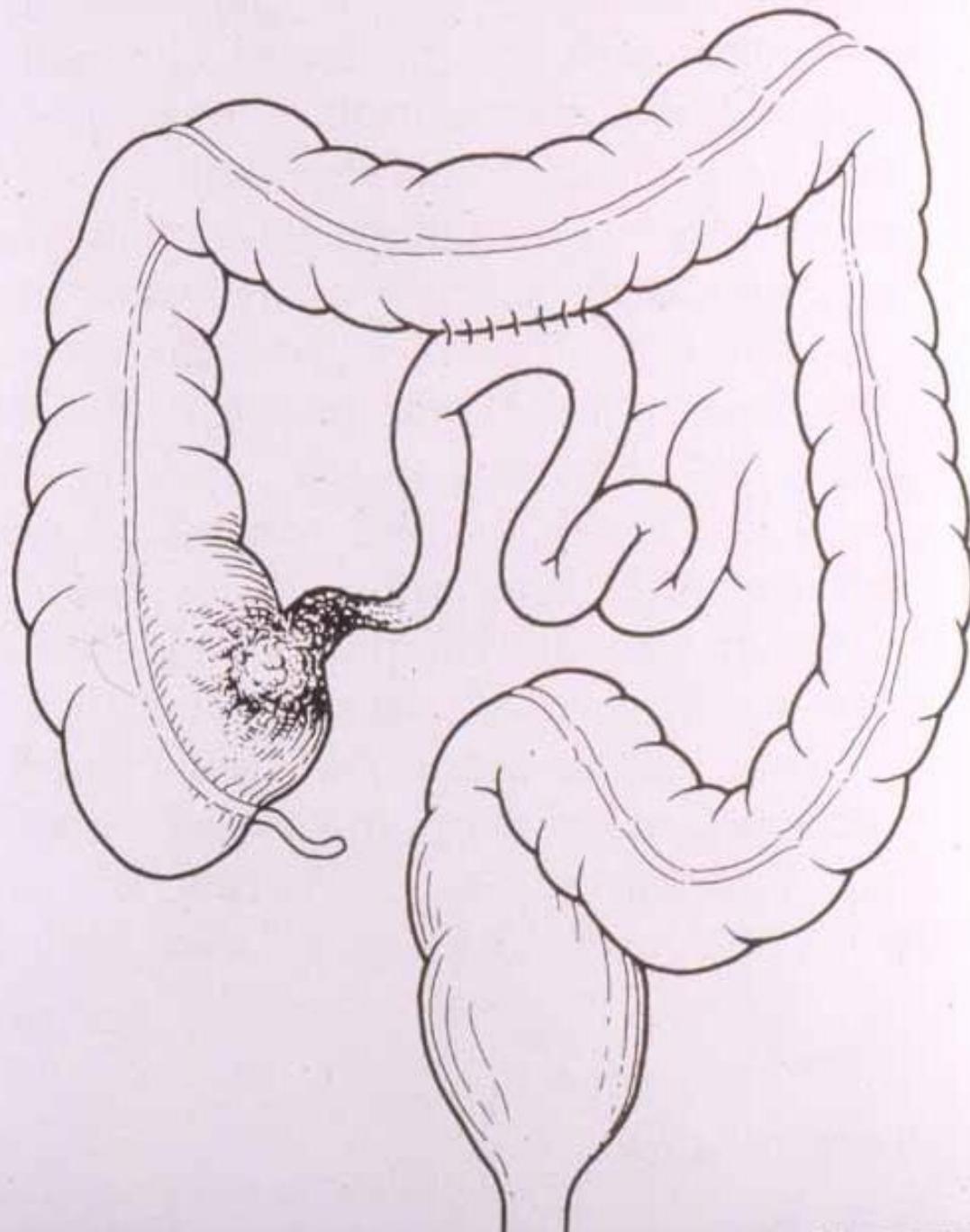






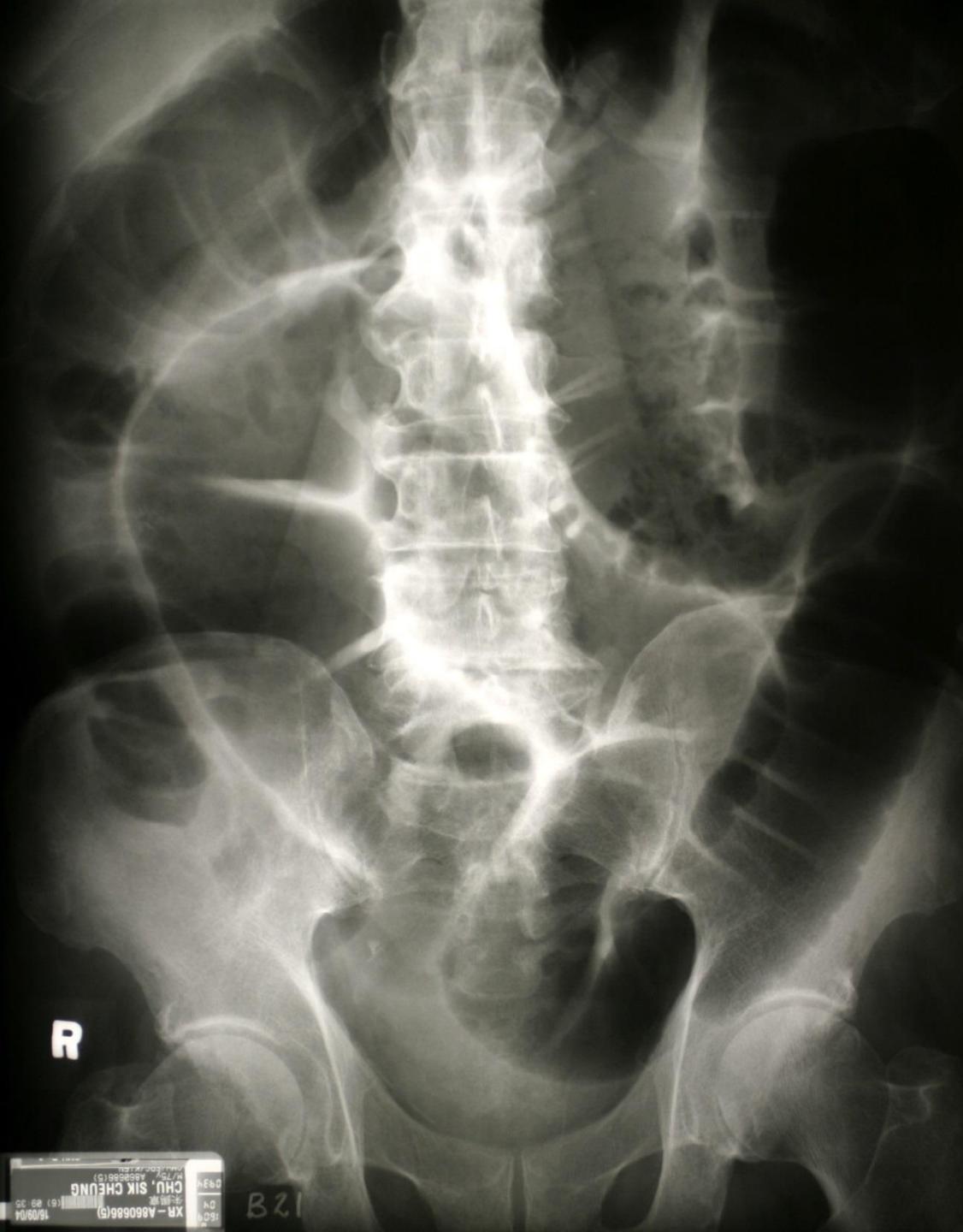


RADS  
WIKI



# Large Bowel Obstruction

Carcinoma	90%
Pseudo-obstruction	5%
Sigmoid volvulus	
Faecal impaction	
Diverticular disease	
Stricture due to irradiation	
Inflammatory bowel disease	

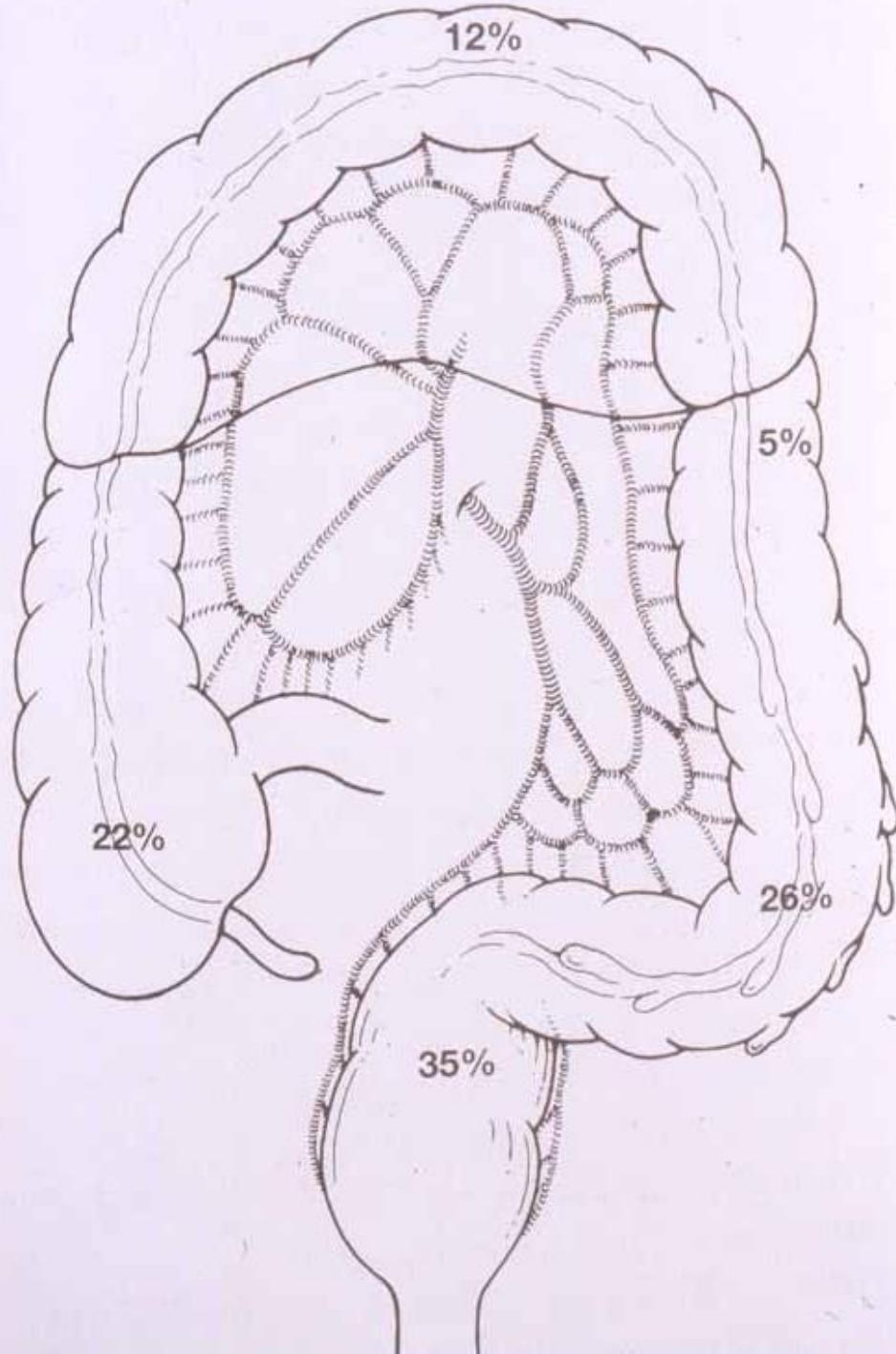




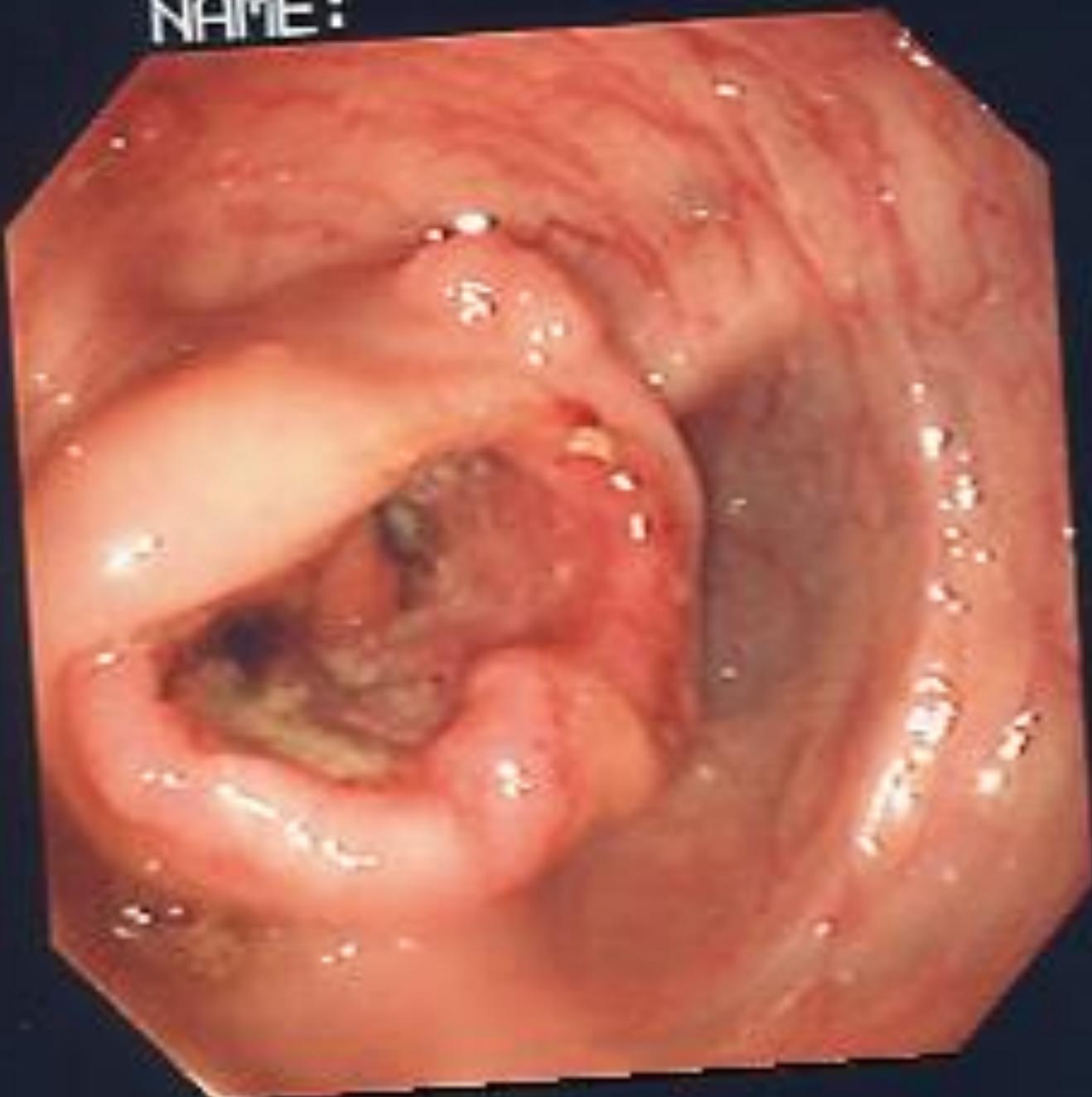


R

SUPINE



NAME:



Im: 30°C

DUB: Jan 01 1926  
Mar 08 2002  
512

DFUV 32.0cm

STND



Large

5.00mm/11.25 HQ

Tilt: 0.0

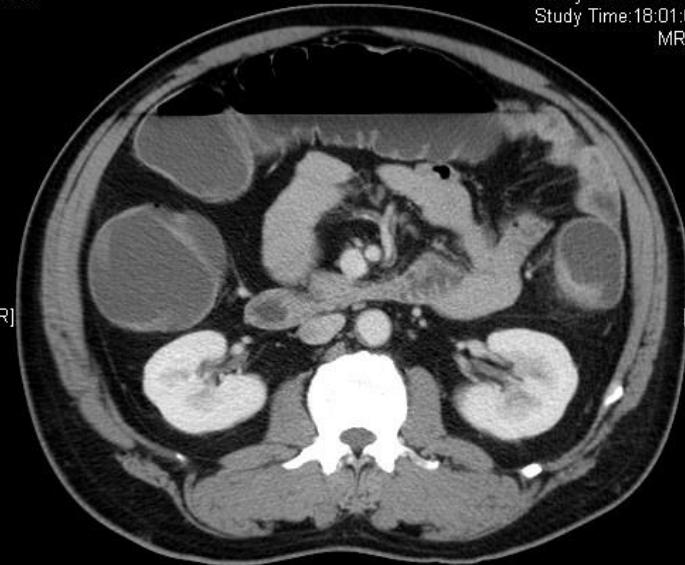
0.8s /HE 20:12:48/10-31

Se:3  
Im:34

[A]

Study Date:2/7/2013 Im:35  
Study Time:18:01:01  
MR#

[R]

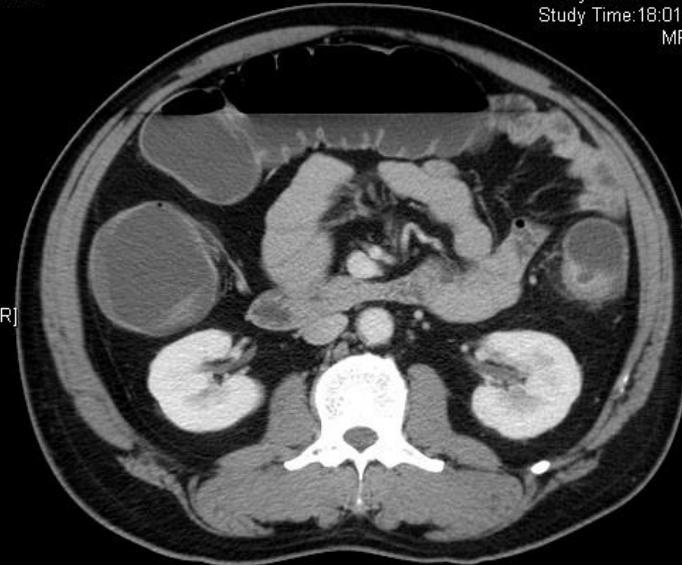


[A]

Study Date:2/7/2013  
Study Time:18:01:01  
MR#

C50  
W350

[R]

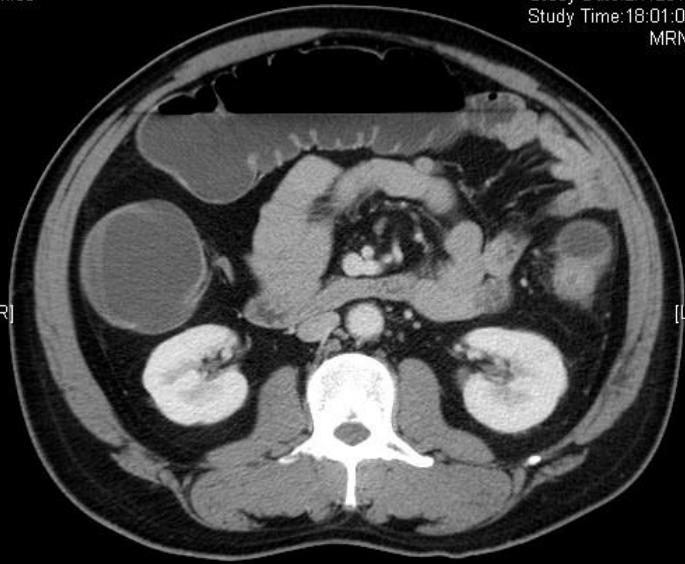


100ML OMNI 300  
Se:3  
Im:36

[P]  
[A]

C5  
W35 100ML OMNI 300  
Se:3  
Study Date:2/7/2013  
Study Time:18:01:01  
MR#

[R]



[P]  
[A]

Study Date:2/7/2013  
Study Time:18:01:01  
MR#

C50  
W350

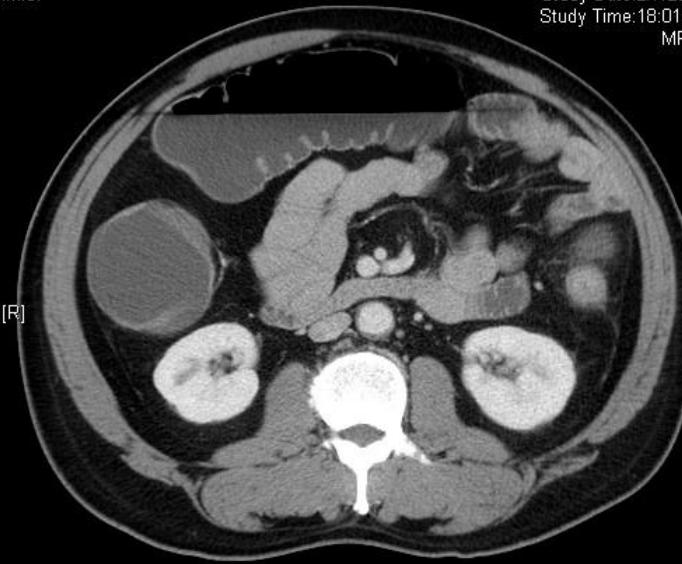
C50  
W350 100ML OMNI 300

100ML OMNI 300

[P]

[P]

C50  
W350



03 2001  
512  
= 0.9

Im: 8+0  
SN 1310.0  
DFOV 36.0cm  
STND

THO PING KEE L.  
M 56 CT62191-01  
Apr 03 2001  
512  
Screen Mag = 0.9

Ex: 2933  
Se: 3  
Im: 9+0  
SN 1320  
DFOV 36  
STND



kV 120  
mA 250  
Large  
10.0 mm/1.2:1

Tilt : 0.0

1.0 s/HF 12:12:33 PM 5.83

P 184

W = 260 L = 76

76

CHEM 0515

0430

ST. TERESA'S HOSPITAL

kV 120  
mA 250  
Large  
10.0 mm/1.2:1  
Tilt : 0.0  
1.0 s/HF 12:12:33 PM 5.83

SYS

Se:3

Im:110

[A]

Study Date:11/11/2015

Study Time:17:25:29

MRN:



114 ML OMNI. 300

[P]

C70  
W600

# Large Bowel Obstruction

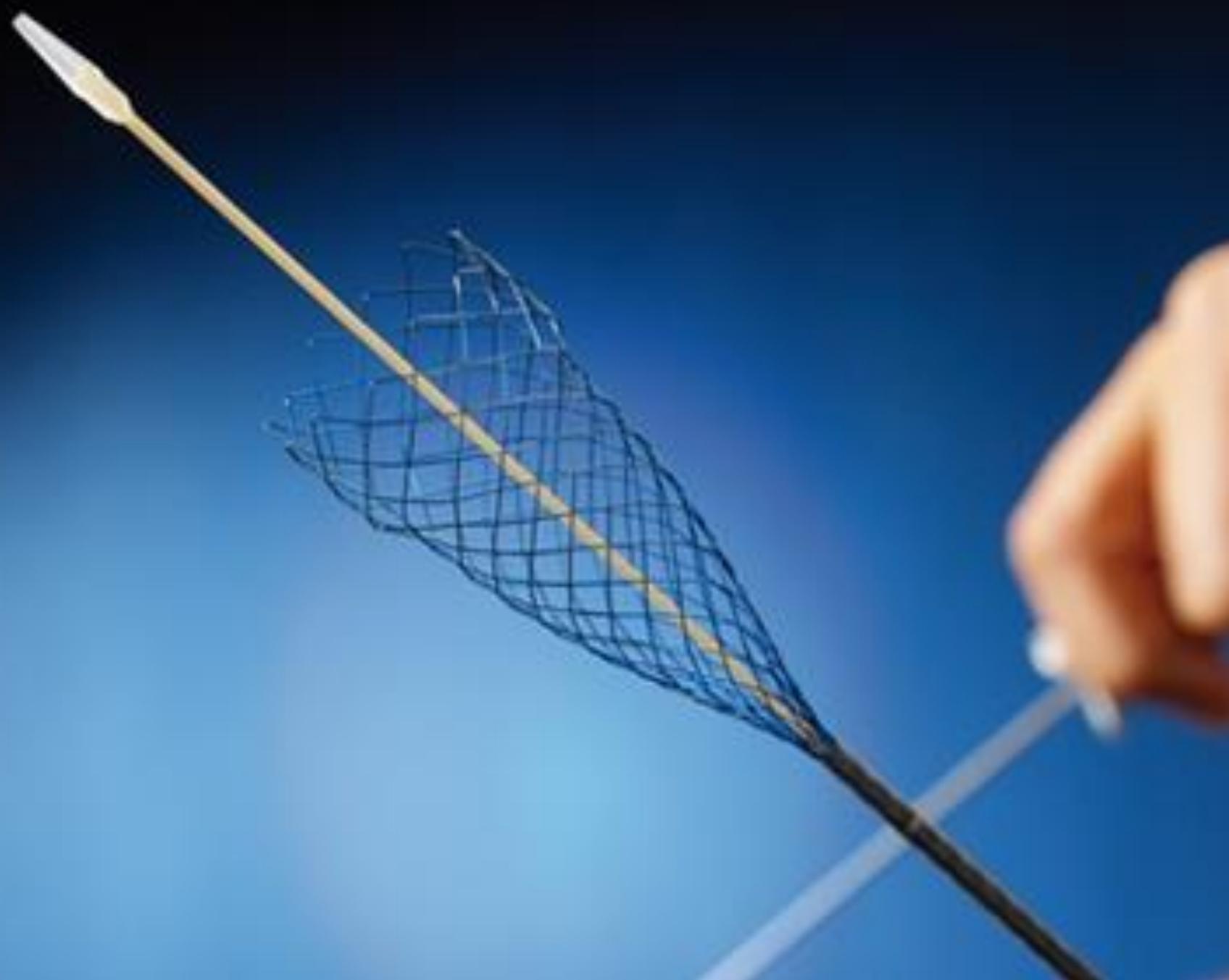
Treatment for malignant large bowel obstruction :

Stenting

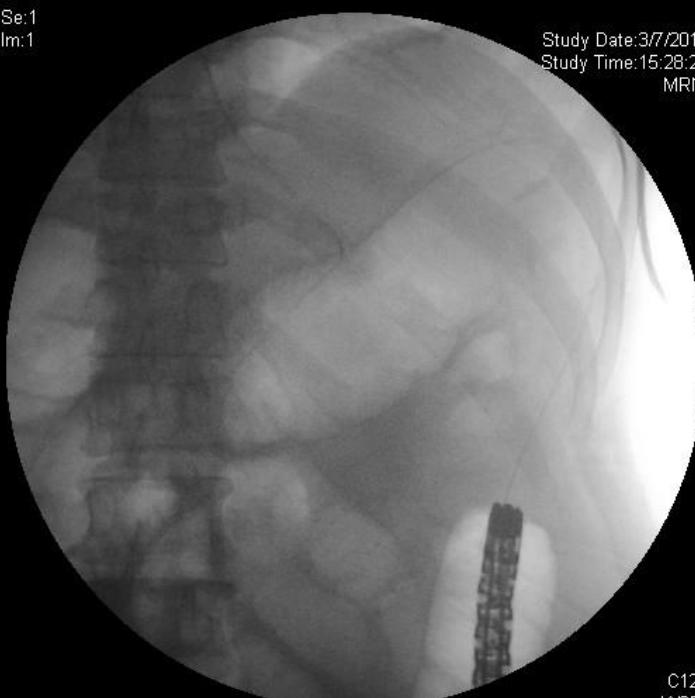
Emergency surgery - resection ± primary anastomosis

bypass

stoma



Se:1  
Im:1



Se:3  
Study Date:3/7/2013 Im:1  
Study Time:15:28:28  
MRN:

Study Date:3/7/2013  
Study Time:15:28:28  
MRN:

C128  
W256

Se:4  
Im:1

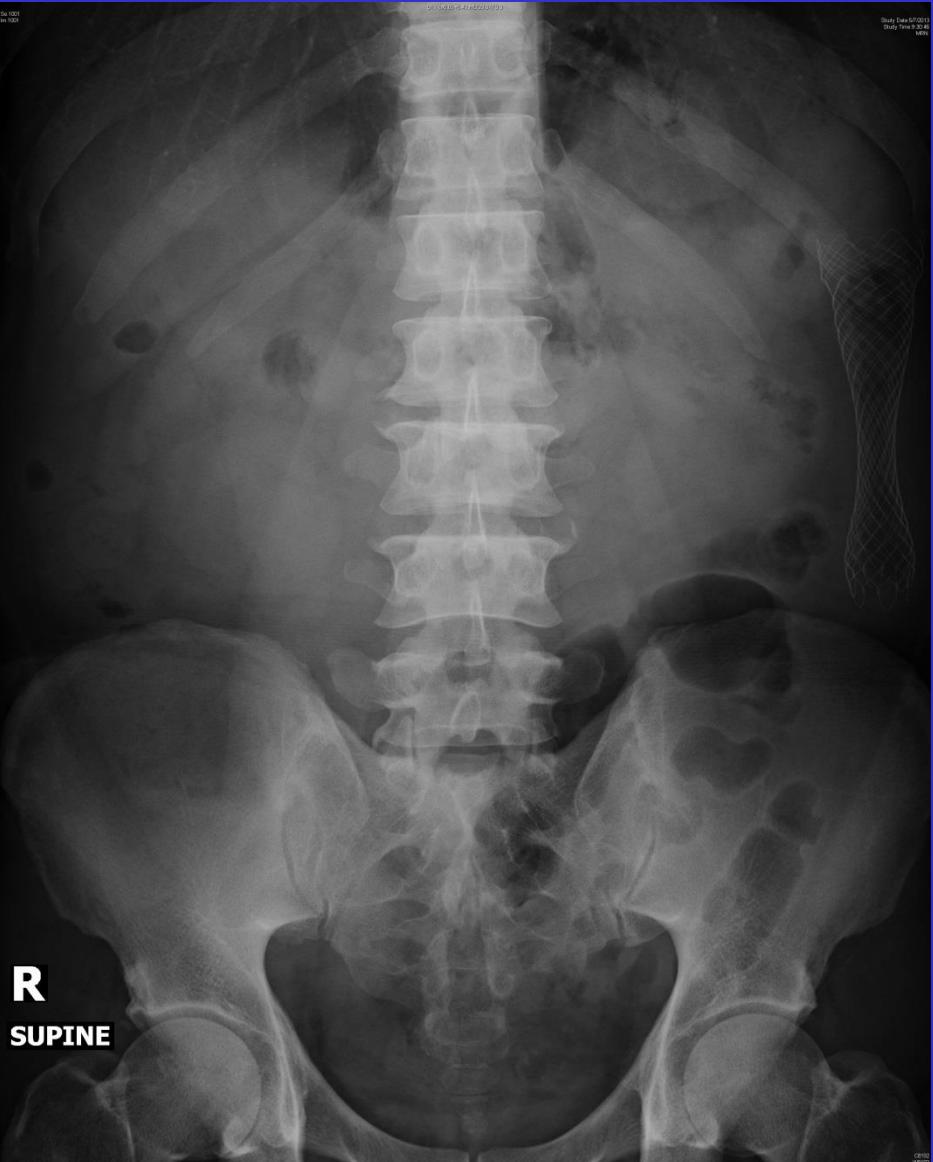


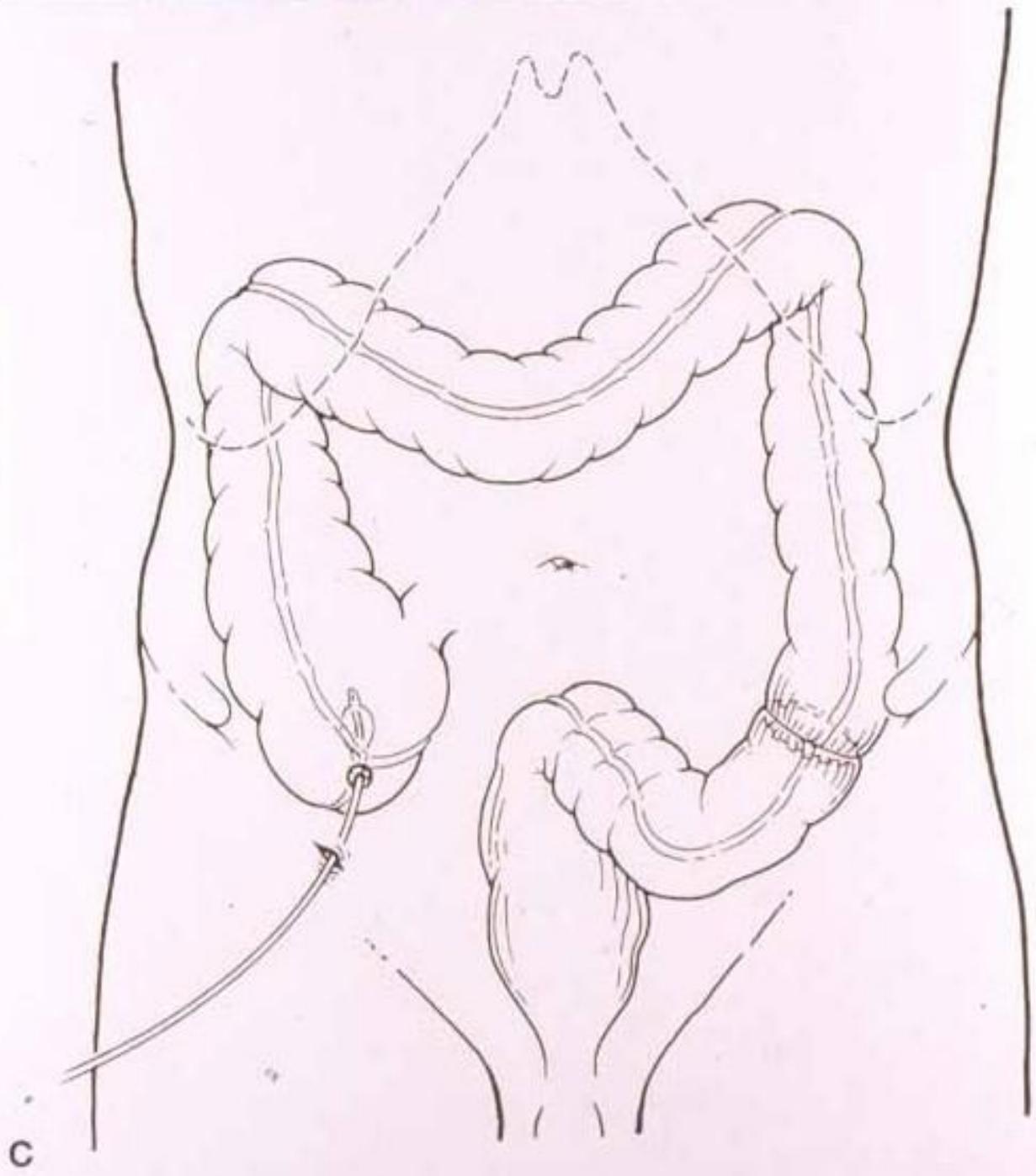
Se:5  
Study Date:3/7/2013 Im:1  
Study Time:15:28:28  
MRN:

Study Date:3/7/2013  
Study Time:15:28:28  
MRN:

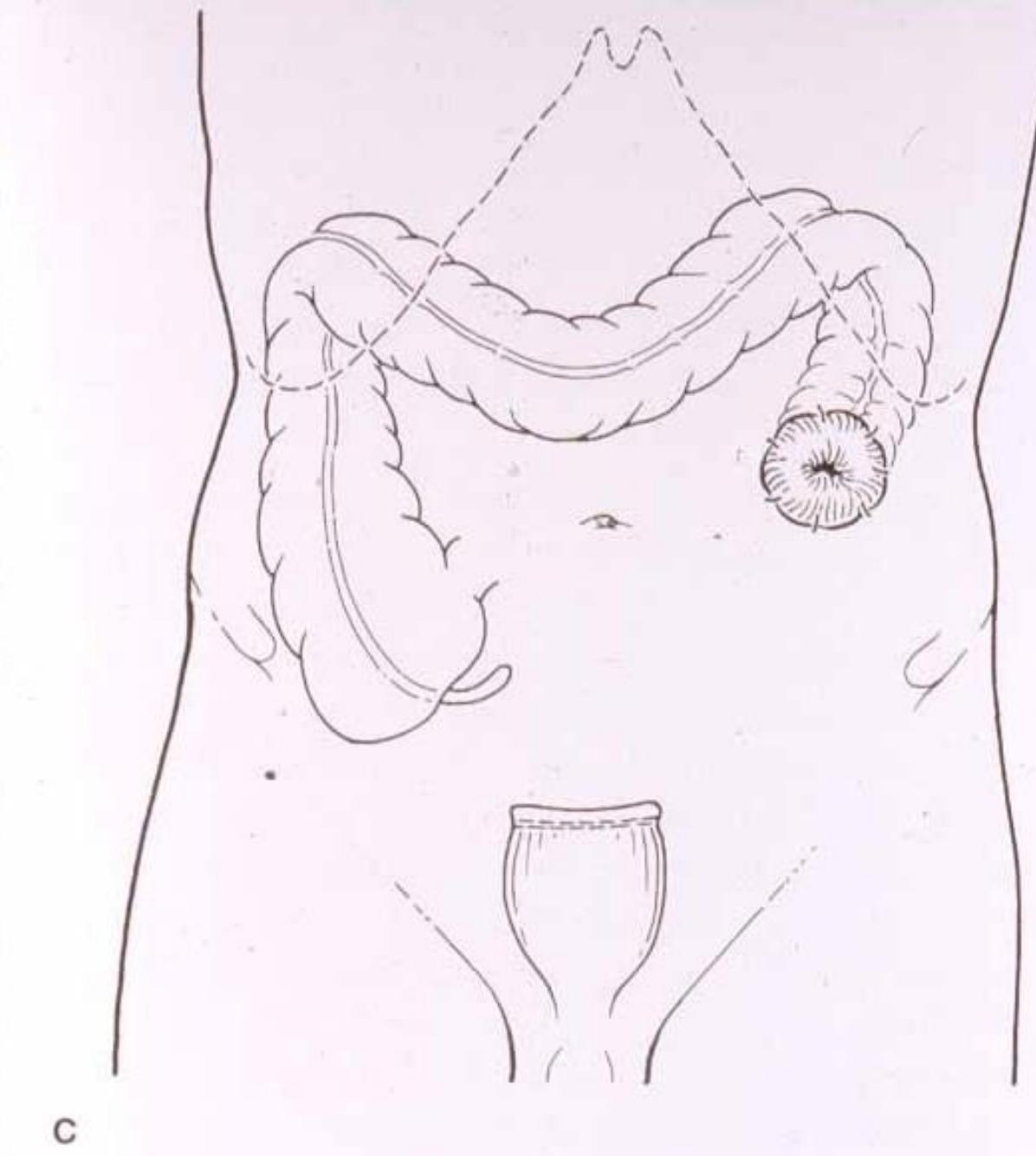
C128  
W256

C128  
W256

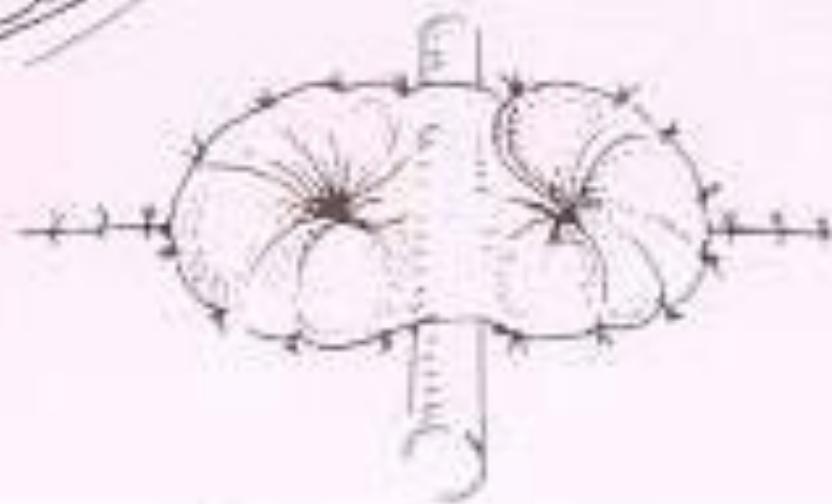
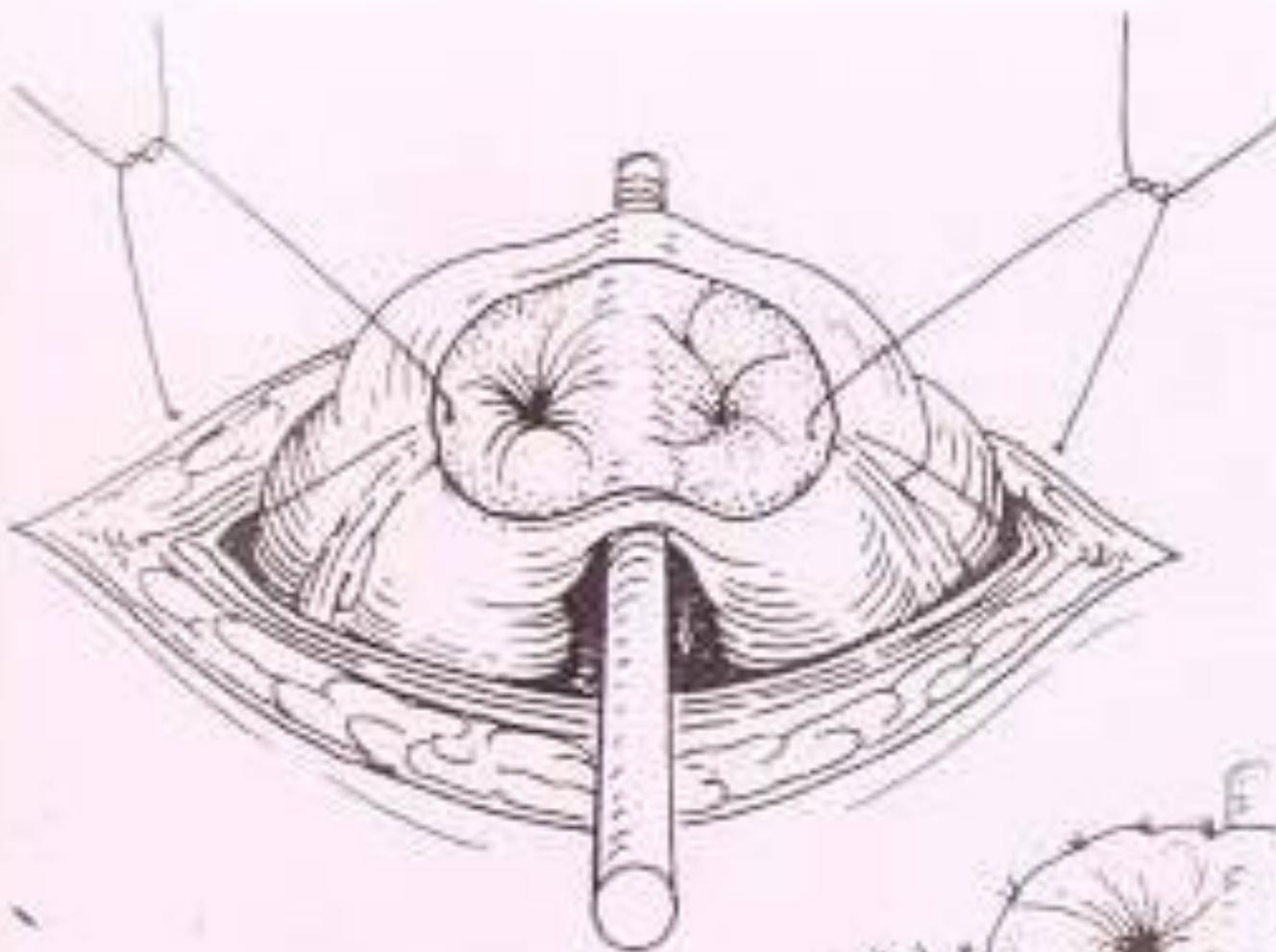




C



C



# Large Bowel Obstruction

## Volvulus

Most common at sigmoid colon

Predisposing factor - redundant sigmoid colon  
narrow mesenteric base  
loaded bowel



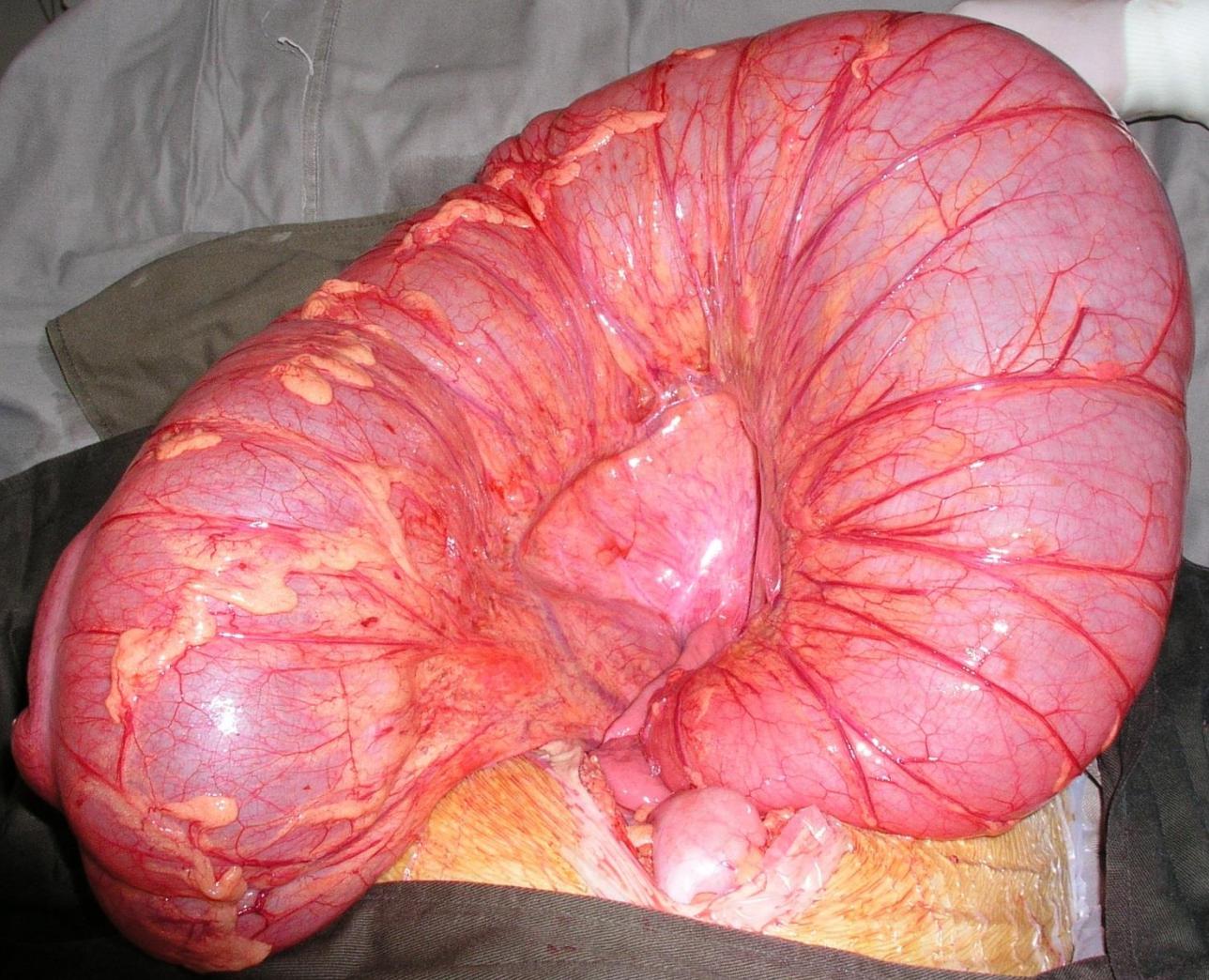
# Large Bowel Obstruction

Treatment :

Colonoscopic decompression, successful in 80%  
Sigmoid colectomy









# Large Bowel Obstruction

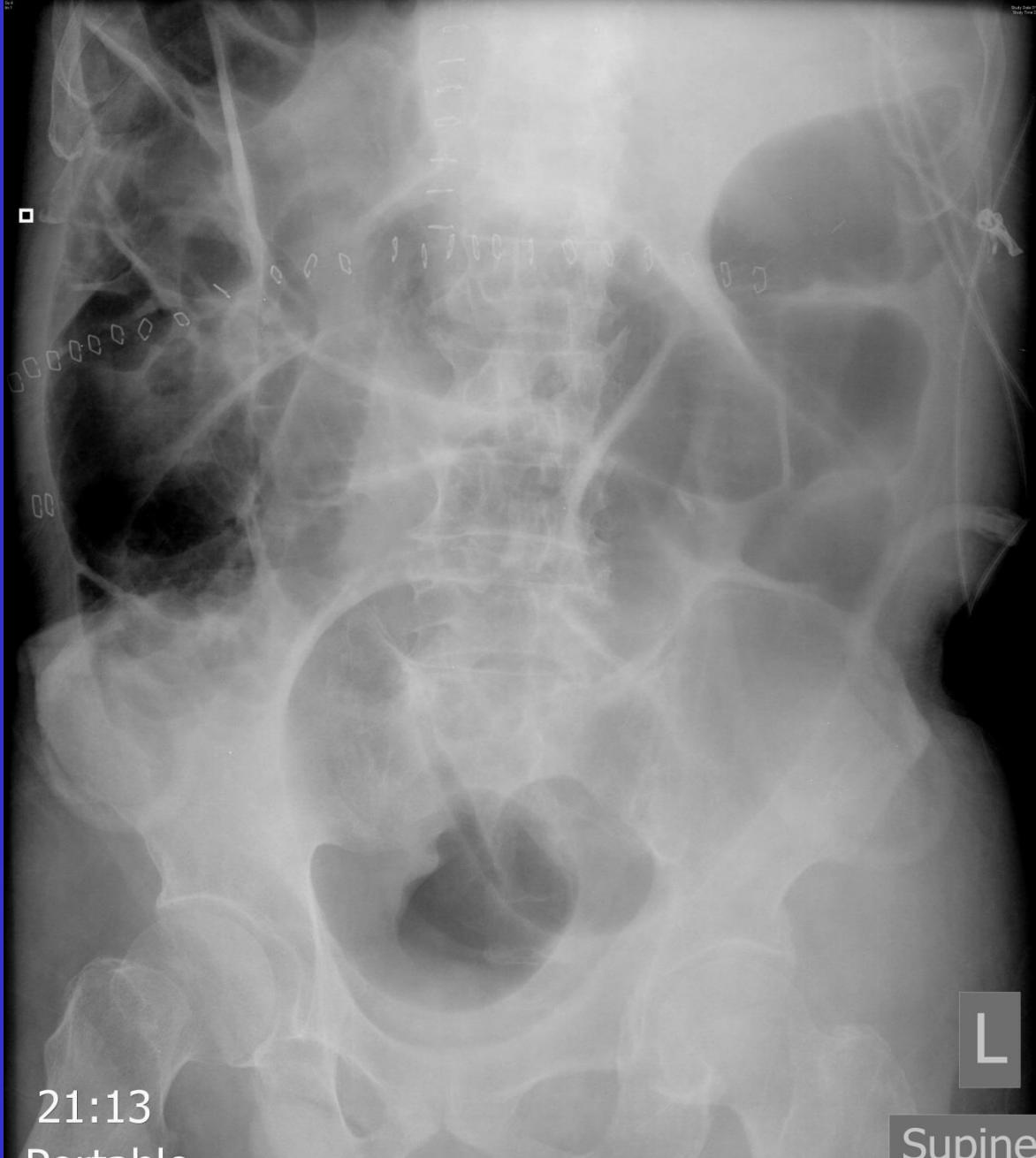
Pseudo-obstruction

Dilatation of bowel without mechanical obstruction

Treatment - colonoscopic decompression  
insertion of flatus tube  
caecostomy

21:13  
Portable

Supine





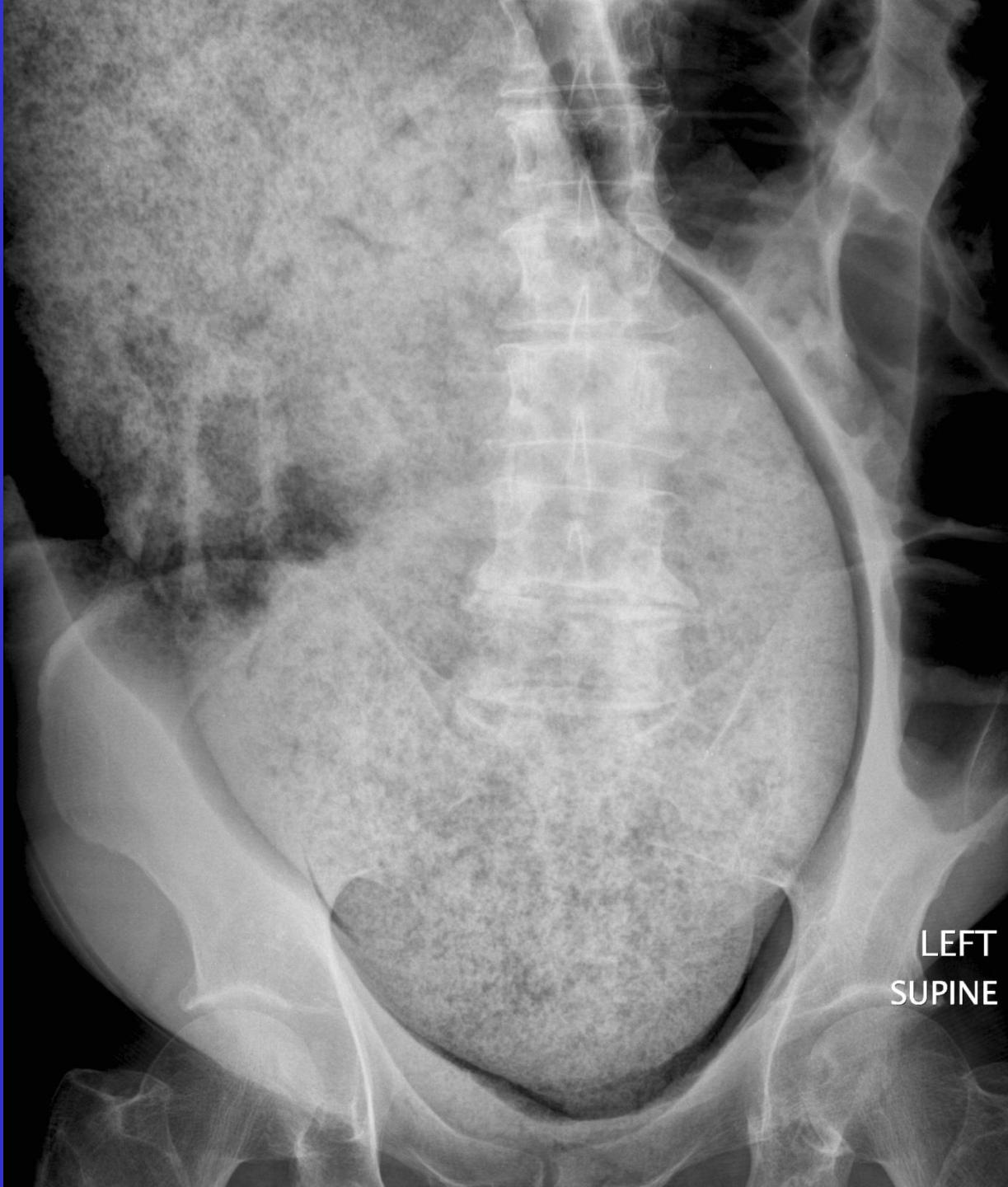
Portable  
21:36

Supine

(R)

SUPINE





LEFT  
SUPINE

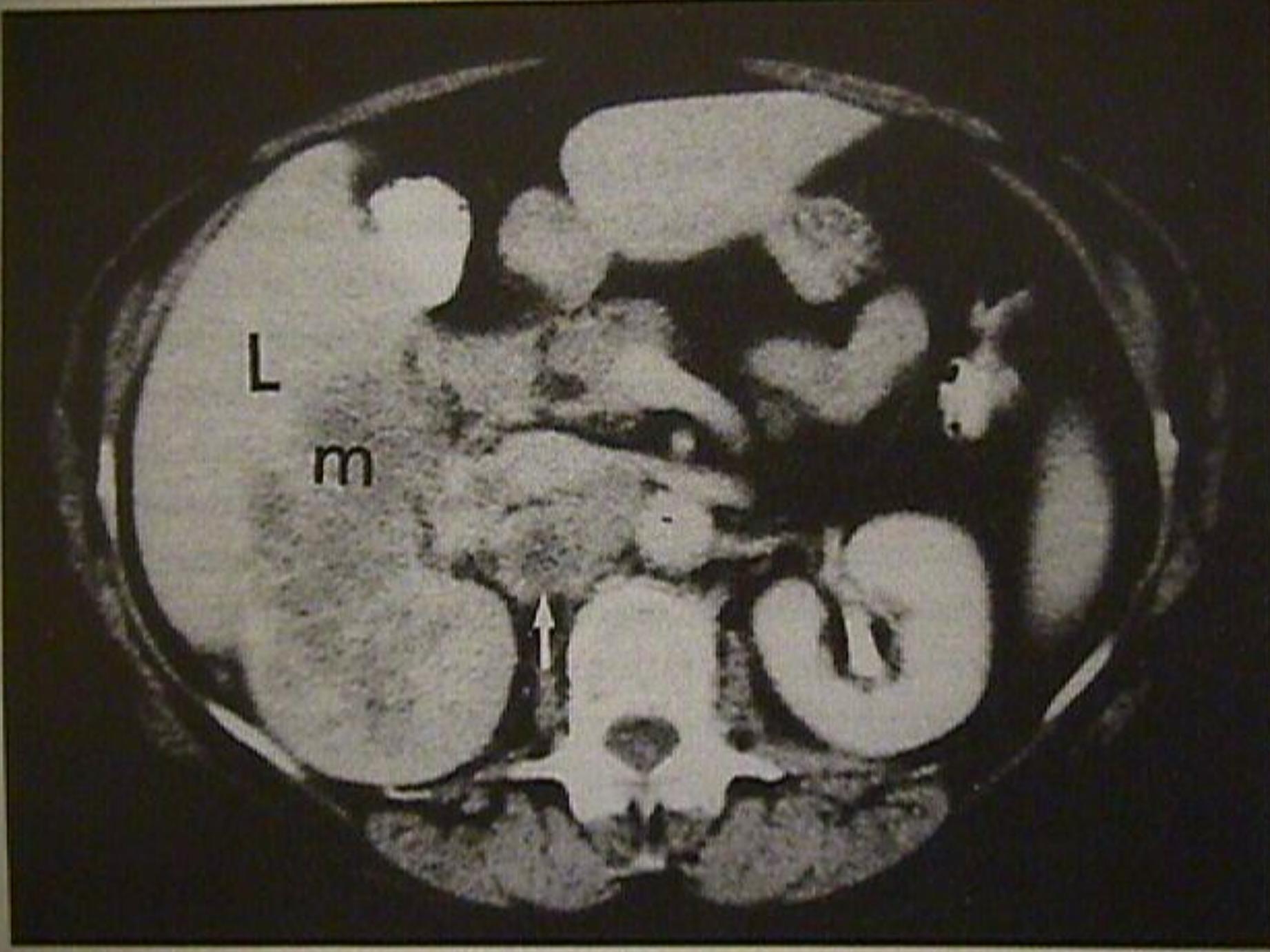
# Haematuria

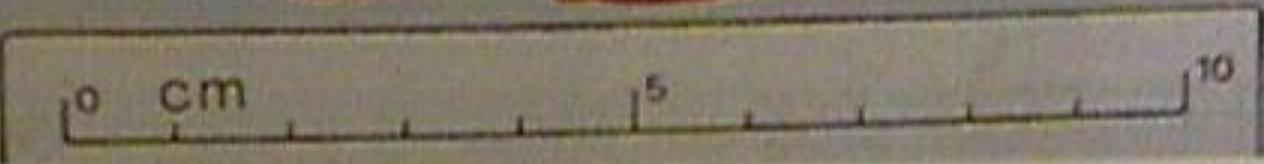
## Neoplasm

- Kidney - renal cell carcinoma  
nephroblastoma  
transitional cell carcinoma  
squamous cell carcinoma
- Ureter - transitional cell carcinoma
- Bladder - transitional cell carcinoma  
squamous cell carcinoma  
adenocarcinoma
- Prostate - adenocarcinoma
- Urethra - transitional cell carcinoma

L

m





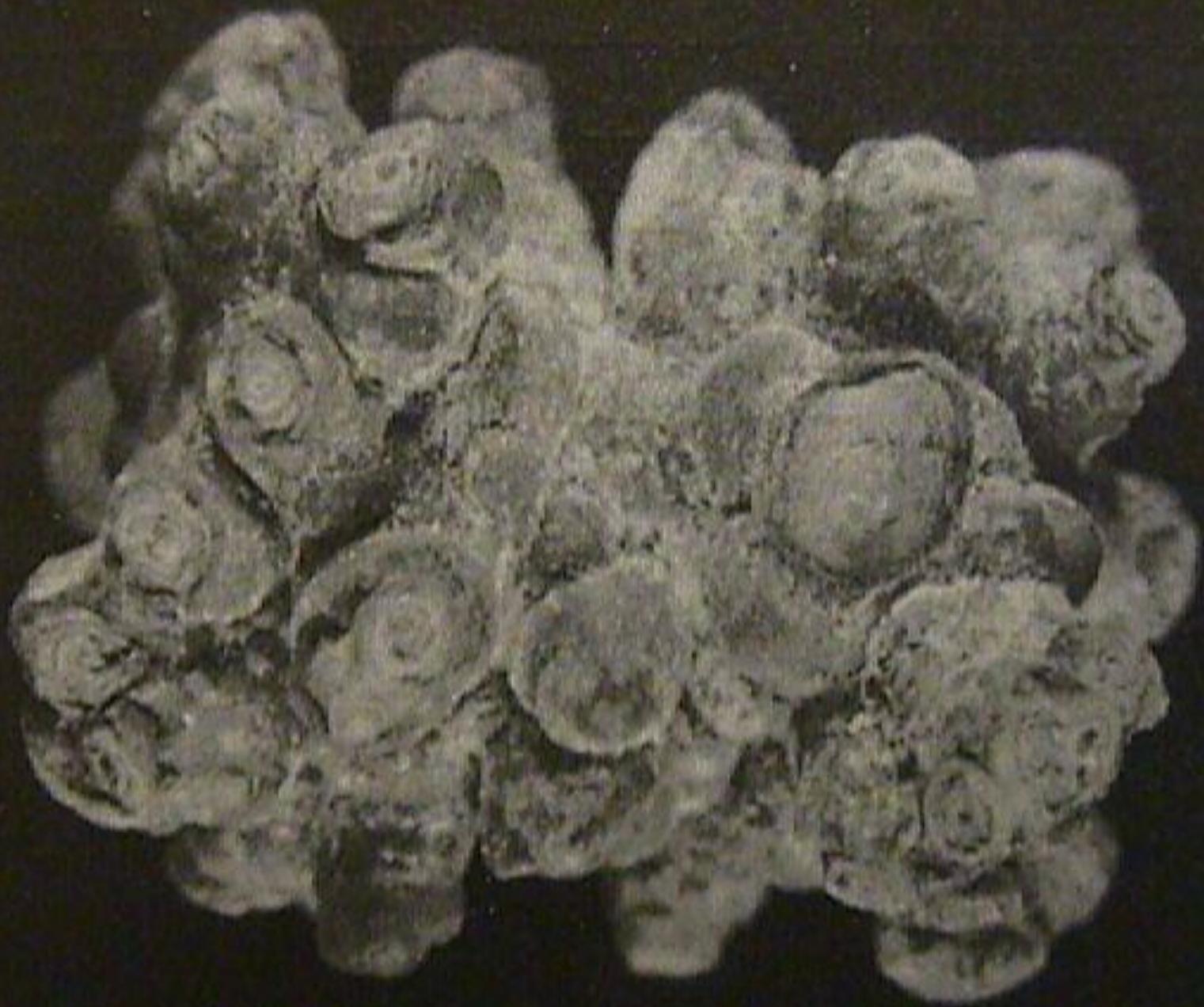


# Calculi

Composition - calcium oxalate  
magnesium ammonium phosphate  
uric acid  
calcium phosphate  
cysteine

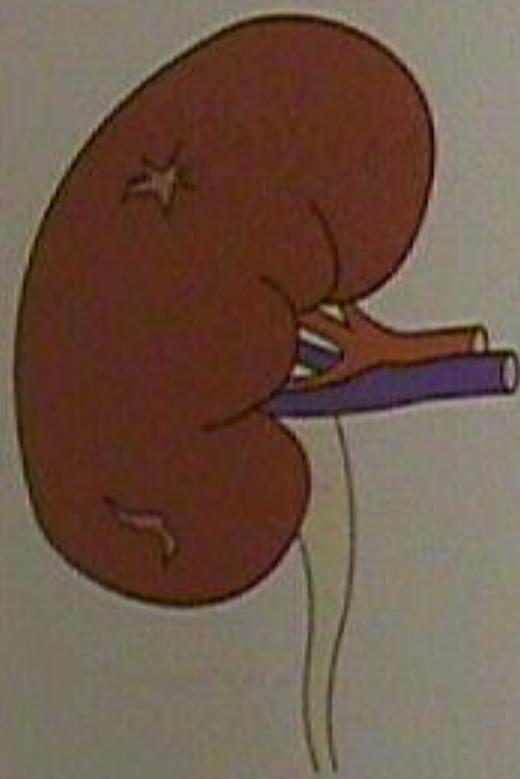
Presentations - loin pain  
iliac fossa pain  
perineal pain  
hydronephrosis  
hydroureter  
urinary tract infection



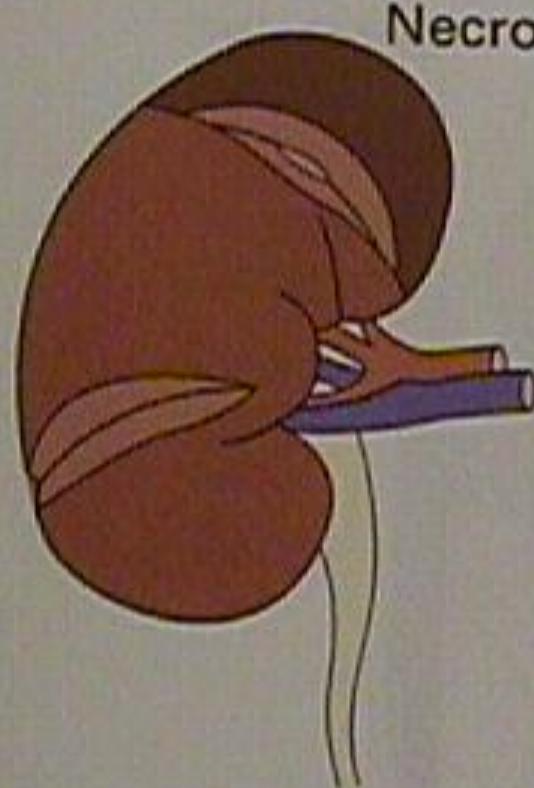


# Trauma

- Non-penetrating injury
  - blunt trauma
  - deceleration injury
- Penetrating injury
  - gun shot
  - stabbing
- Indirect injury
  - pelvic fracture
- Iatrogenic injury
  - transurethral surgery
  - abdominal or pelvic surgery
  - urethral catheterisation

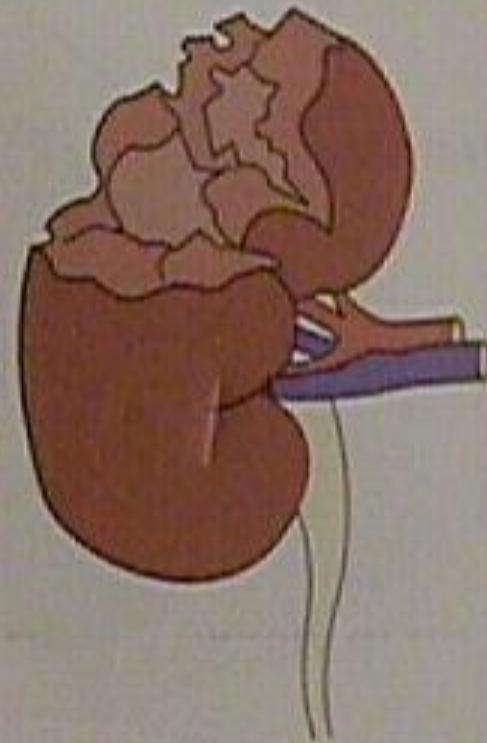


Perforating



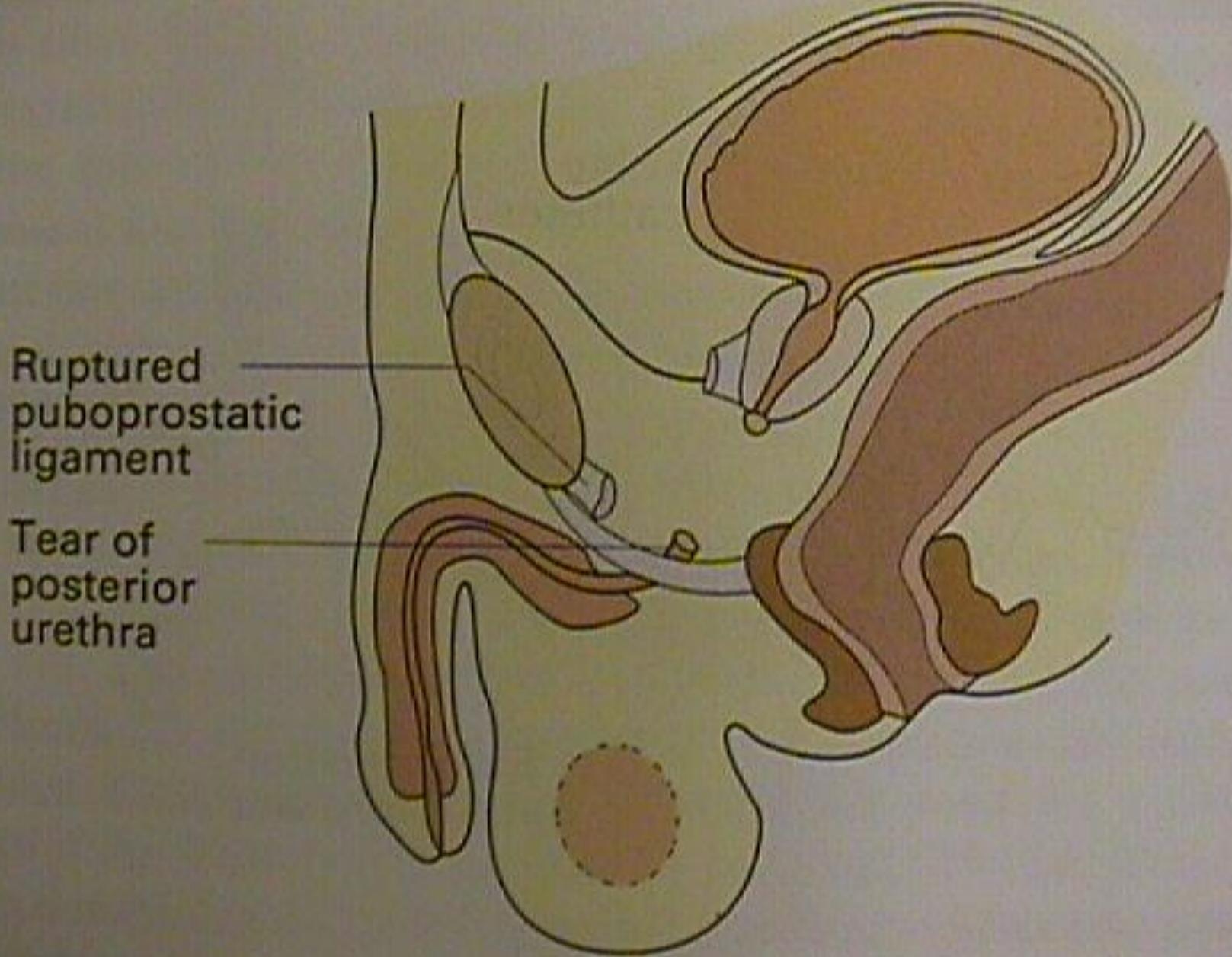
Lacerating

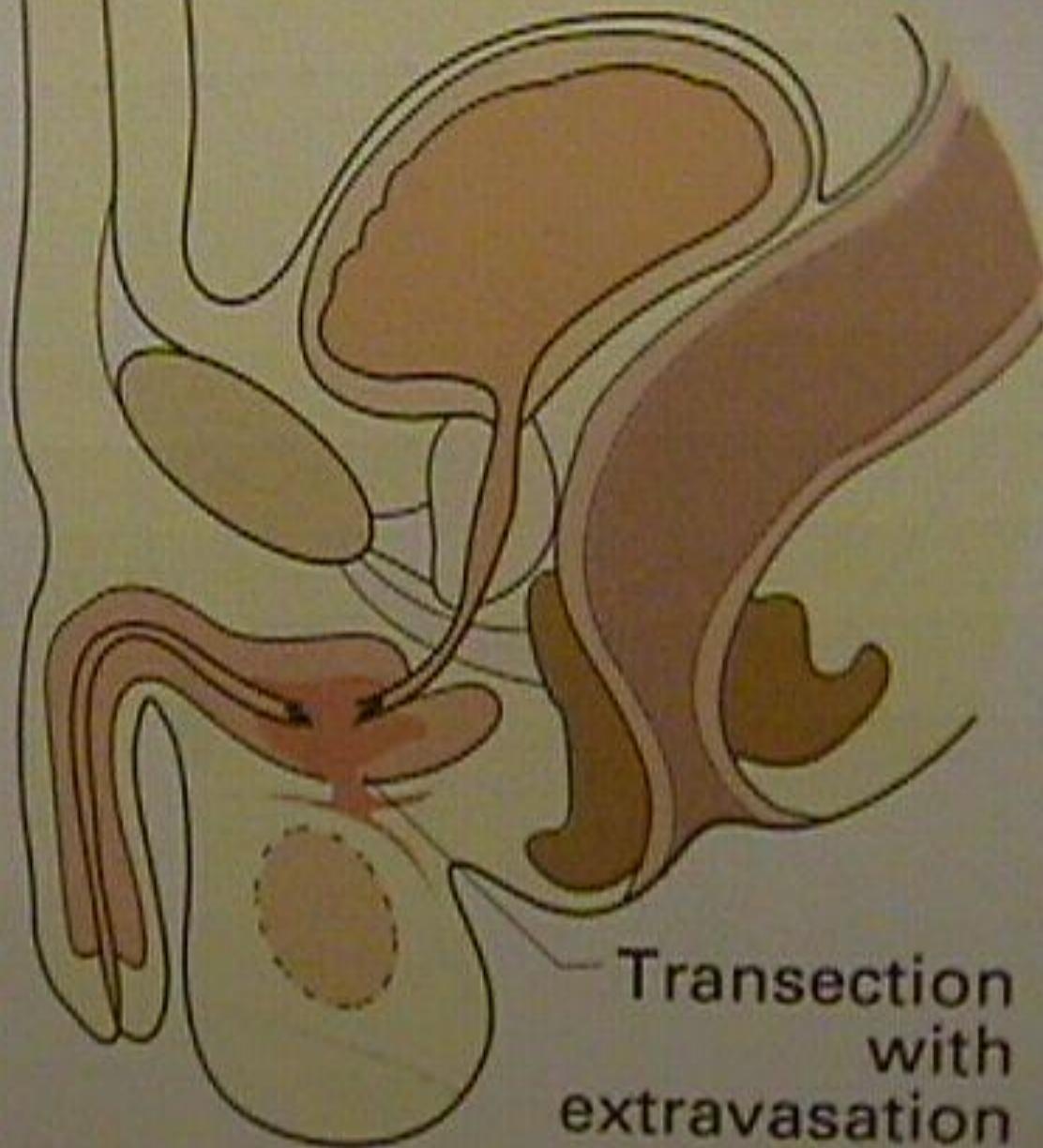
Necrotic



Explosive

**Fig. 1** Penetrating renal injury.





Transection  
with  
extravasation

# Infection

Acute

- E Coli
  - Klebsiella
  - Proteus
  - Pseudomonas
  - Streptococcus
  - Staphylococcus
  - Bacteroides
- Chronic
- Mycobacterium tuberculosis
- Predisposing factors
- obstruction
  - calculi
  - vesicoureteric reflux
  - systemic disorder e.g. DM
  - urethral catheterisation

# Miscellaneous

Benign prostatic hyperplasia

Polycystic kidney

Cyclophosphamide

Vascular malformation

Anticoagulation

Microinfarcts

Glomerulonephritis

IgA nephropathy