

Intestinal obstruction

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Normal bowel habit

Frequency-

- Varies from person to person.
- $< 3/\text{day}$ and $> 3 \text{ days / week}$ - normal.
- One hand there is constipation- < 3 in a week.
- On the other hand diarrhea- > 3 bowel movements in a day.

Quantity-



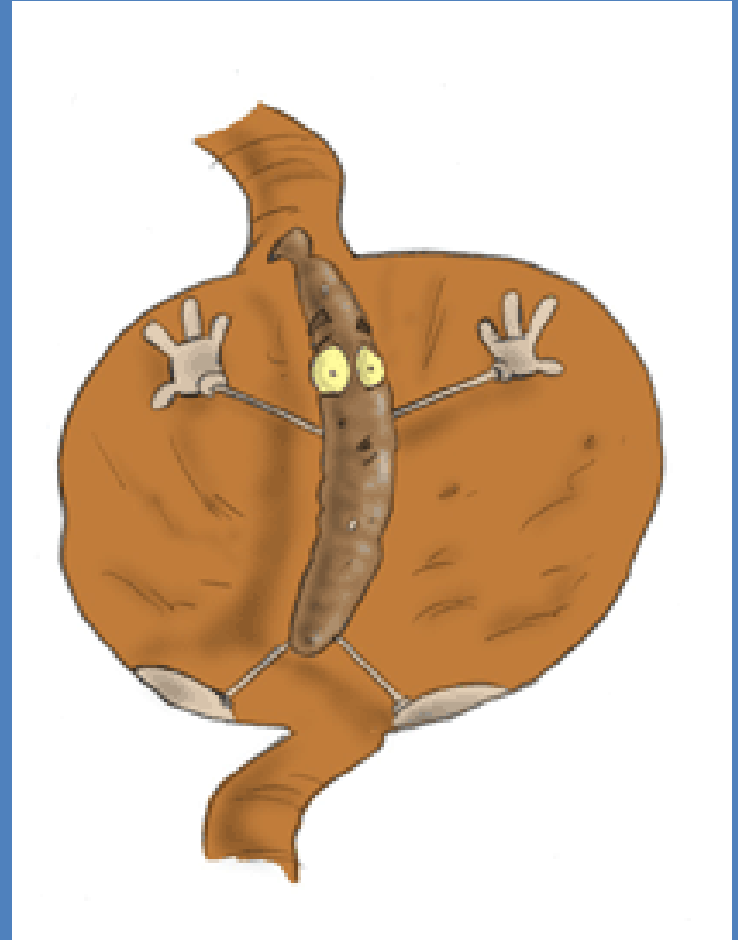
- Varies from person to person.
- Should be < 200 grams daily
- Diarrhea -passing >200 grams or ml/ day.
- Weight- usually not considered in bowel regularity.

What are irregular bowel movements?

Irregular bowel movements-

- usually used to describe **constipation**.
- Latin constipatio- crowding together.

At the extreme end of constipation is a complete lack of bowel movement- **Obstipation**.



Constipation

Rome III criteria (Rome Committee in 2006) for functional constipation

1. Must include ≥ 2 of the following a :
 - Straining during at least 25 % of defecations
 - Lumpy or hard stools in at least 25 % of defecations
 - Sense of incomplete evacuation for at least 25 % .
 - Sensation of anorectal obstruction/blockage for at least 25 % of defecations
 - Manual evacuation at least 25 % of defecations
 - < 3 defecations / week
 2. There are insufficient criteria for irritable bowel syndrome.
 3. Loose stools rarely without the use of laxatives
- a Criteria fulfilled for the last 3 months with symptom onset at least 6 months prior to diagnosis

Absolute constipation

- Complete absence of faeces & flatus.
- Early in large bowel obstruction.
- Late in small bowel obstruction.

What is Obstipation?

Latin obstipatio- Close pressure.

Intractable constipation that has become refractory to cure or control is referred to as **obstipation**.

Obstipation (obstructive constipation)-
loss of ability to pass stool or gas due to
blockage or obstruction in the
intestines.

Intestinal obstruction

- Absence of forward propulsive movement of intestinal contents due neuromuscular inco-ordination.

After birth-

- Atresia or agenesis (ARM, duodenum, ileum).
- Meconium ileus.
- Volvulous neonatorum.
- Hirschprung disease.

• 3 weeks-

- CHPS.
- Hirschprung's disease.

• 6-9 months-

- Intususception.
- Hirschprung's disease.
- Ascariasis.

• Adult-

- Postoperative.
- Obstructed hernia.
- Intestinal TB.
- Crohn's disease.

• Elderly-

- Volvulus.
- Malignancy
- Diverticulitis
- CD.
- Faecaloma.

Cardinal features

- Abdominal distension.
- Pain.
- Vomiting.
- Constipation.

| Small intestinal obstruction | Large intestinal obstruction |
|--|------------------------------------|
| Usually acute. | Usually chronic. |
| Upper or central abdominal distension. | Lower or peripheral. |
| Visible peristalsis- upper or central abdomen. | Peripheral. |
| Early profuse vomiting. | Usually constipation & distension. |
| Severe fluid & electrolyte imbalance. | Usually no. |
| Metabolic alkalosis. | Metabolic acidosis(not always). |

Causes of abdominal distension

The 6 F's-

- Flatus.
- Faeces.
- Fluid.
- Fat.
- Foetus.
- Fatal tumor.

Normal gas pattern

- Fundic gas.
- 1st part of duodenum.
- Terminal ileum.
- Rectum & sigmoid.
- Varying amount of gas in the rest of the large bowel.

Abdominal pain

Colicky pain due to-

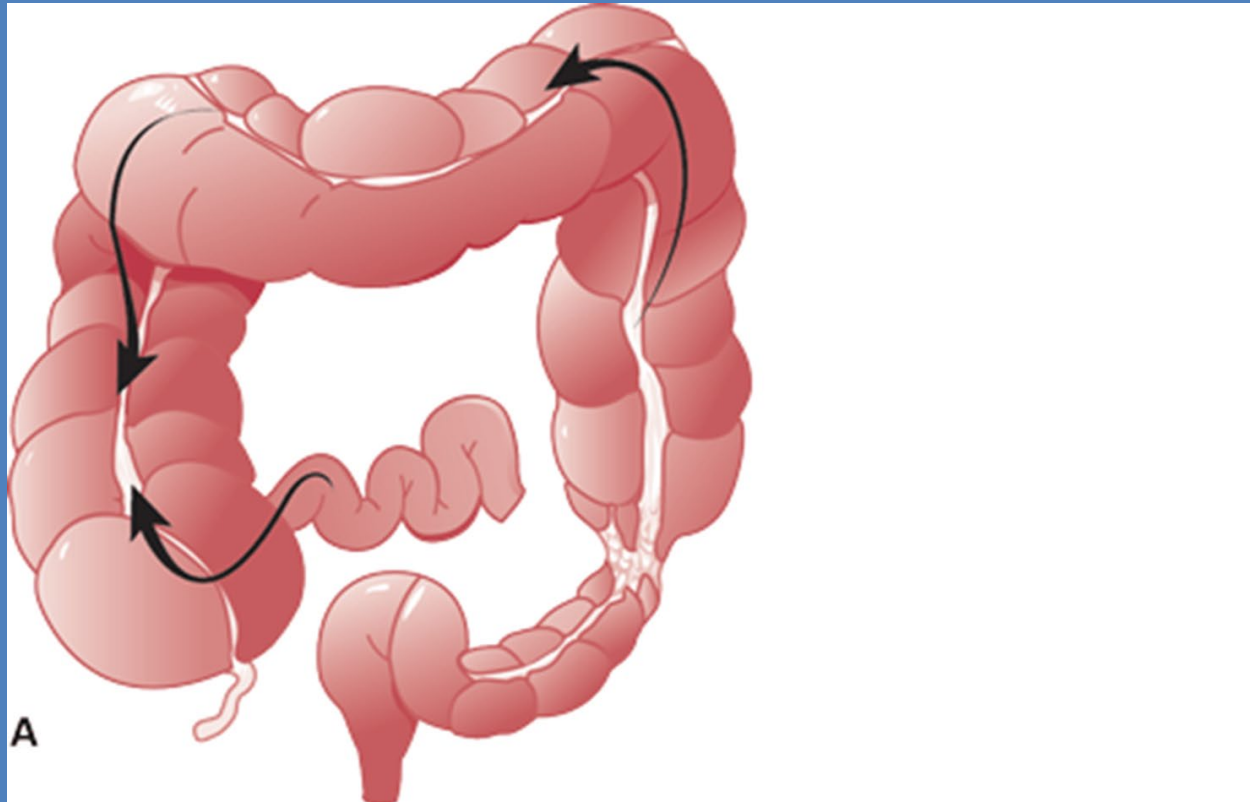
Distension-

- Swallowed air.
- Intestinal gas.
- Secreted fluid.
- Obstruction.

Peristalsis against
obstruction.



Closed loop obstruction



Source: Gerard M. Doherty: *CURRENT Diagnosis & Treatment: Surgery, 13th Edition*.
<http://www.accessmedicine.com>

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Rule of 3,6,9

The upper limit of normal diameter of the bowel is generally accepted as-

- 3cm for the small bowel,
- 6cm for the colon and
- 9cm for the caecum (3/6/9 rule).

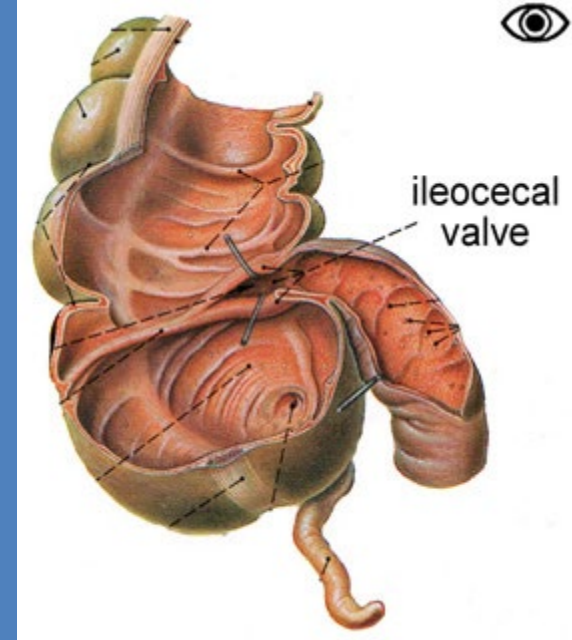
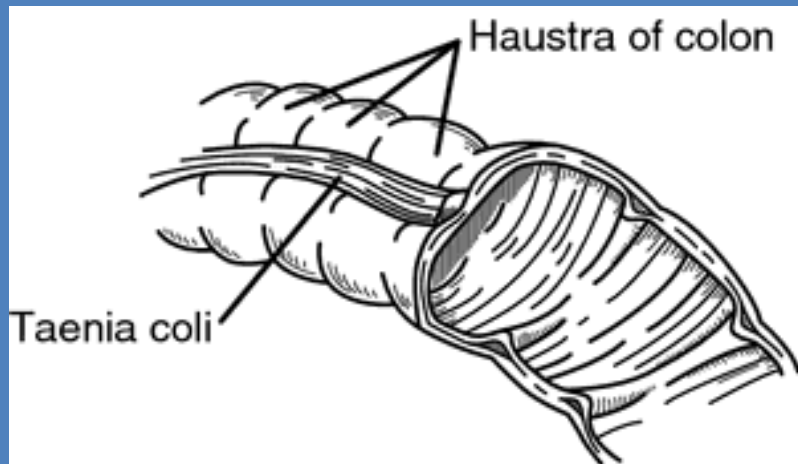
Radiological difference of small & large intestine

| | Small intestine | Large intestine |
|-----------------|-----------------------|-----------------------|
| Diameter | >3cm & <5cm. | >5cm & (caecum >9cm). |
| Position | Central | Peripheral. |
| Loops | Many | Few |
| Air fluid level | Many, short. | Few, long. |
| Bowel markings | Valvulae conniventes. | Haustra. |

Valvulae conniventes-

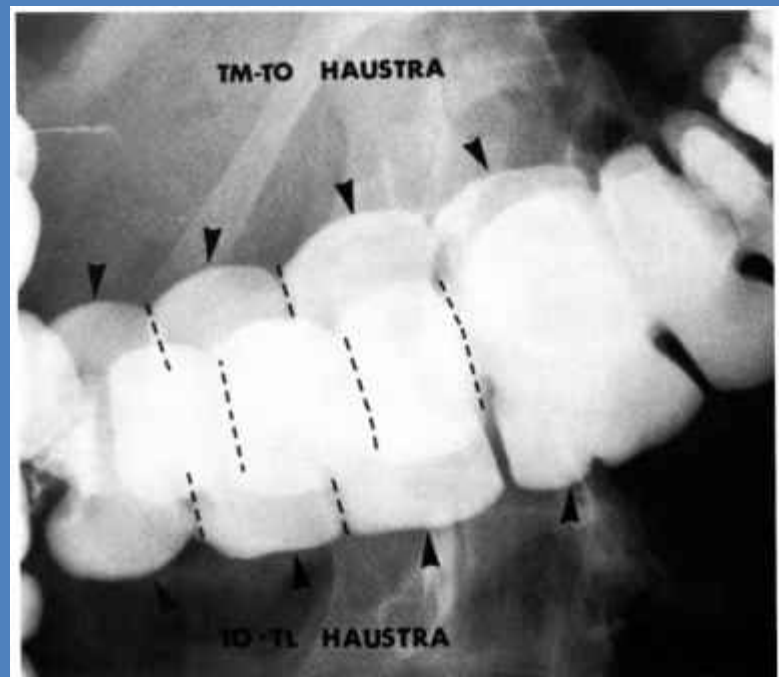
- Kerkcring folds/plicae circulares.
- Circular mucosal folds.
- Complete.
- Closely set.
- Uniform distance.
- Starts from 2nd part of duodenum.
- Maximum in jejunum.
- Reduce considerably in ileum.
- Completely disappear in terminal ileum

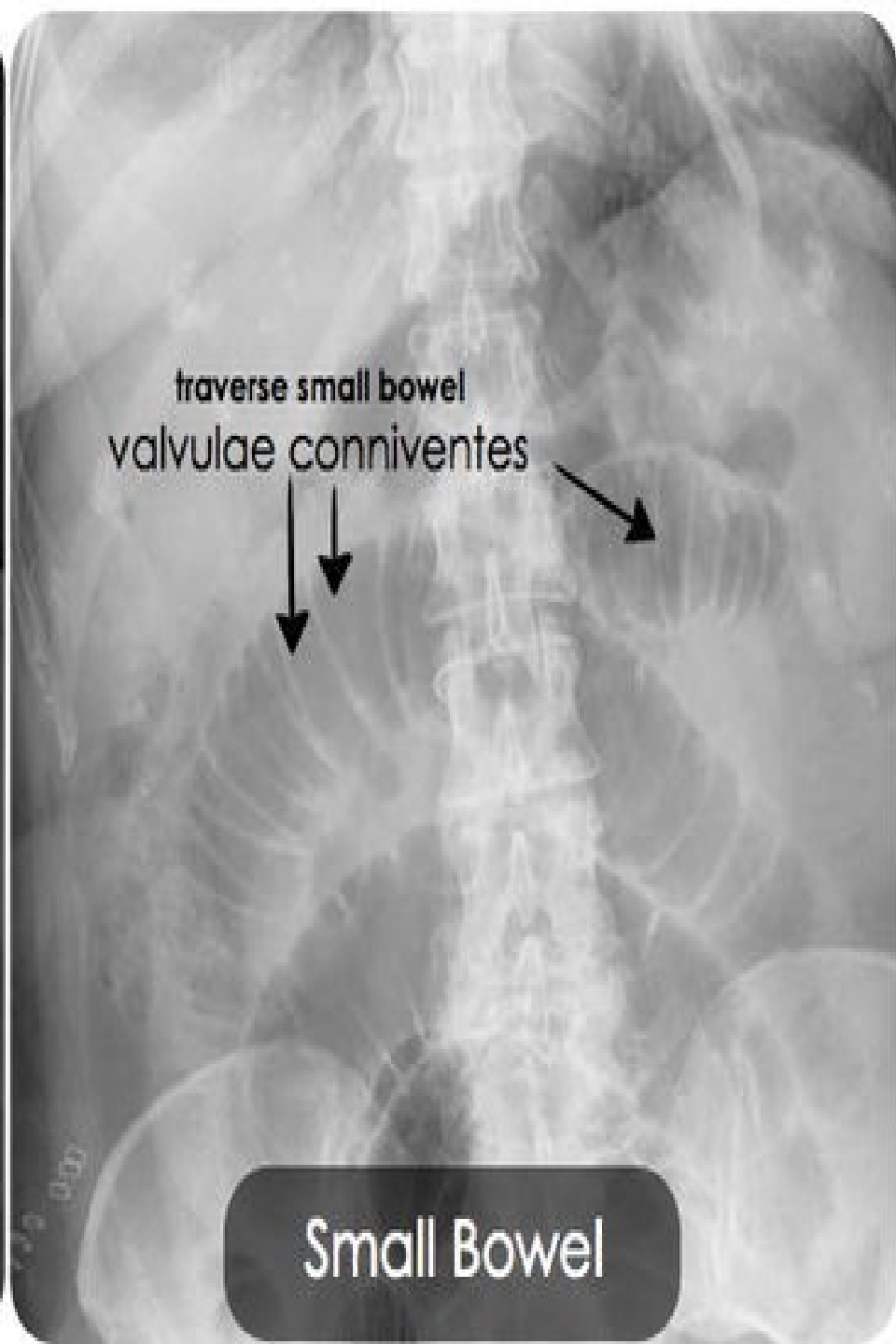
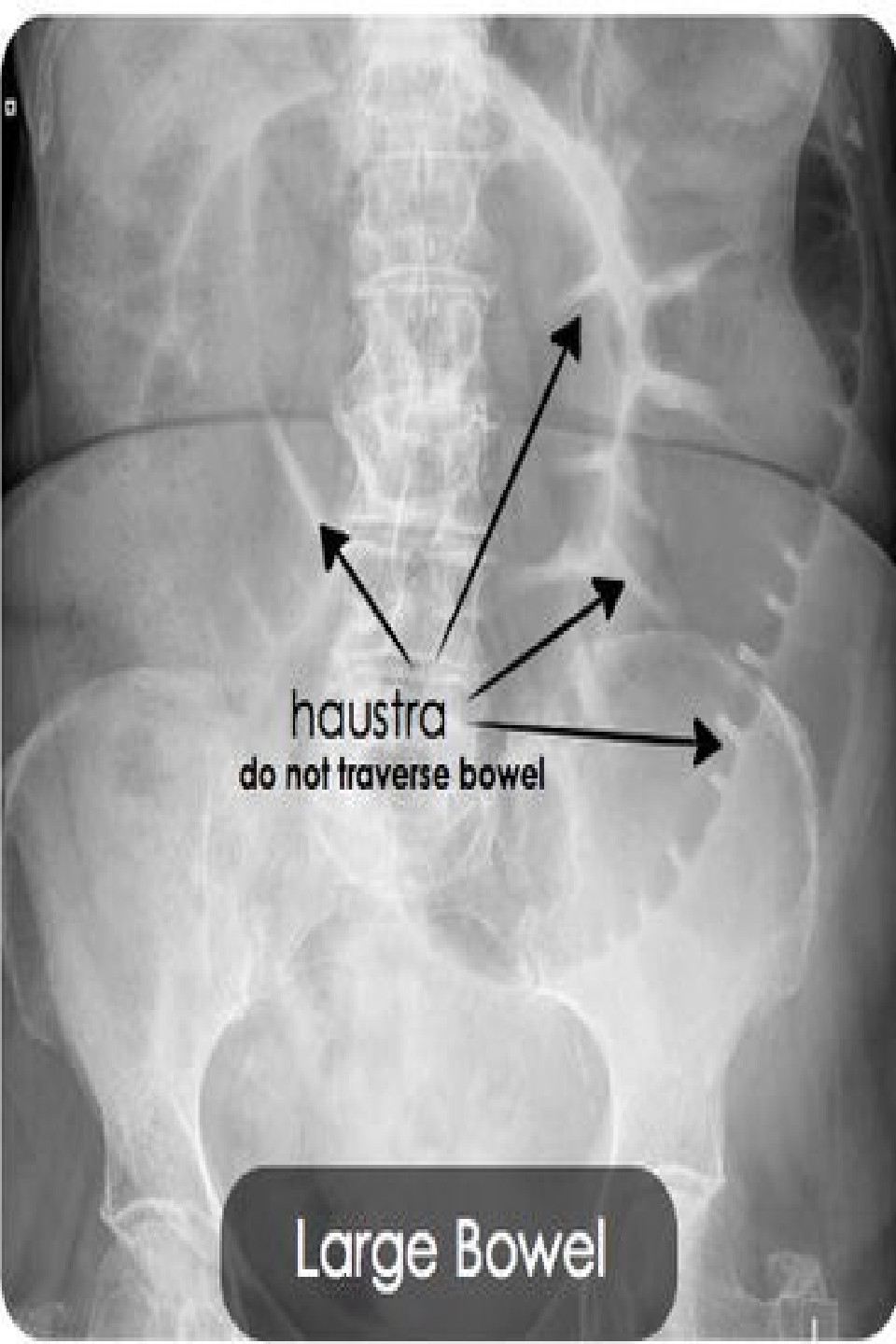




Haustra--

- Circular mucosal folds.
- Incomplete.
- Sparsely set.
- Not Uniform distance.





Name the image.

Write down the radiological findings.

What is your radiological diagnosis?

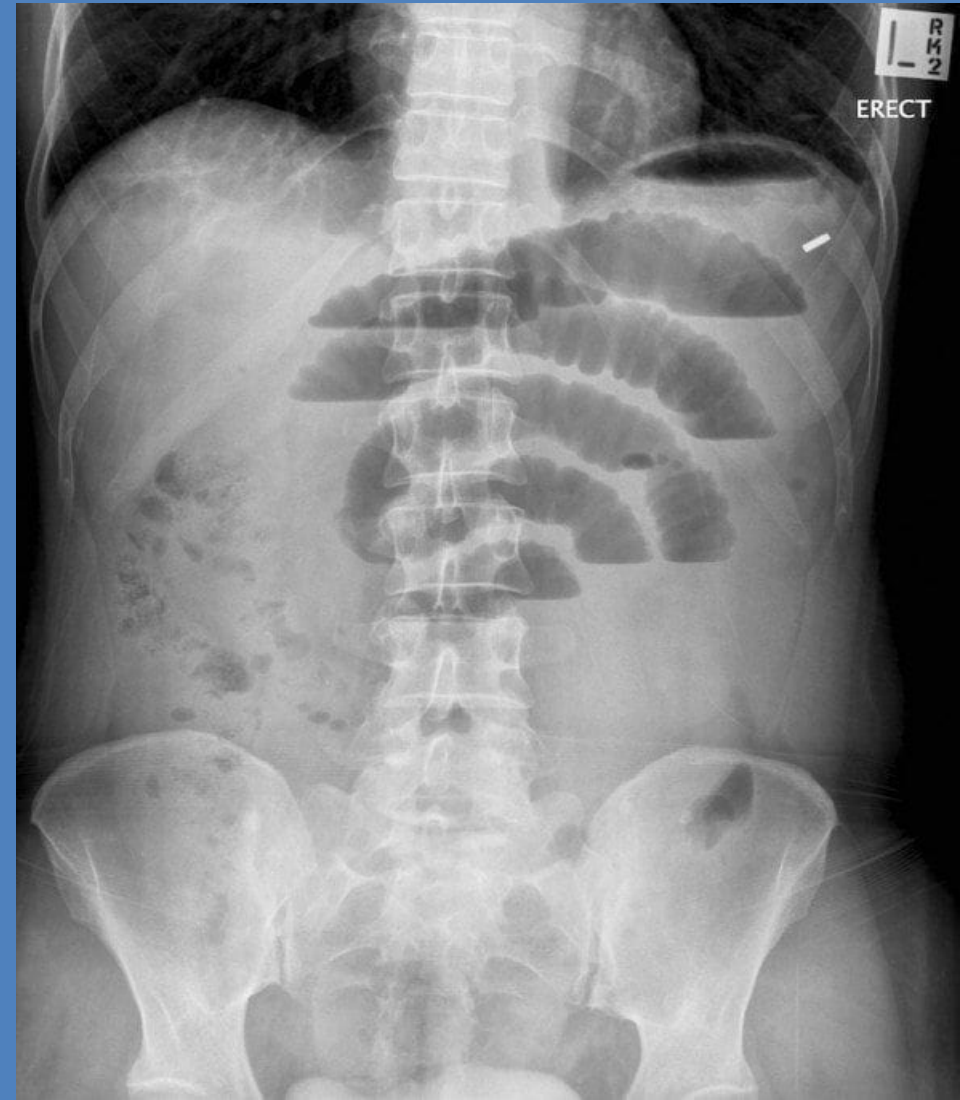
Write down the cardinal features of this condition.

How will you treat the patient?

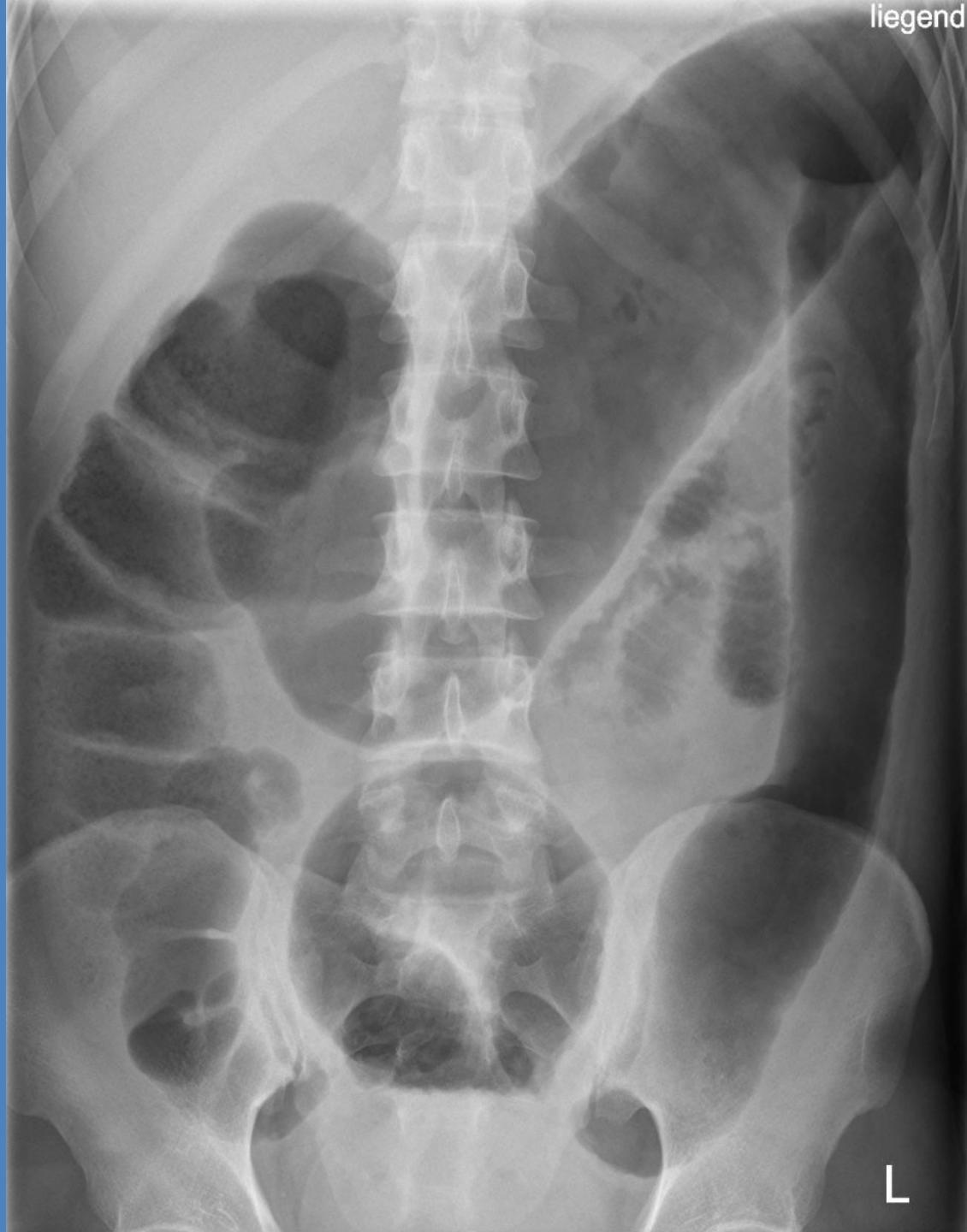
- Distended small bowel loops.
- Transverse lie.
- Multiple air-fluid level.
- Centrally placed.
- Step ladder pattern.

Normal air-fluid level-

- Fundic gas.
- 1st part duodenum.
- Terminal ileum.
- SI (children).



- Distended bowel loop.
- Presence of haustra.
- Wider diameter.
- Peripherally placed.
- Horizontal & vertical arrangement of loop.
- Air-fluid level-
 - Longer length
 - Small number.



- Large pneumatic tyre like shadow.
- Without haustra or septa.
- arising from pelvis.
- Inverted U or Coffee bean sign.
- 2 lumen, 3 walls (Dahl Froment sign).

--Sigmoid volvulus.



Coffee Bean Sign

Sigmoid volvulus

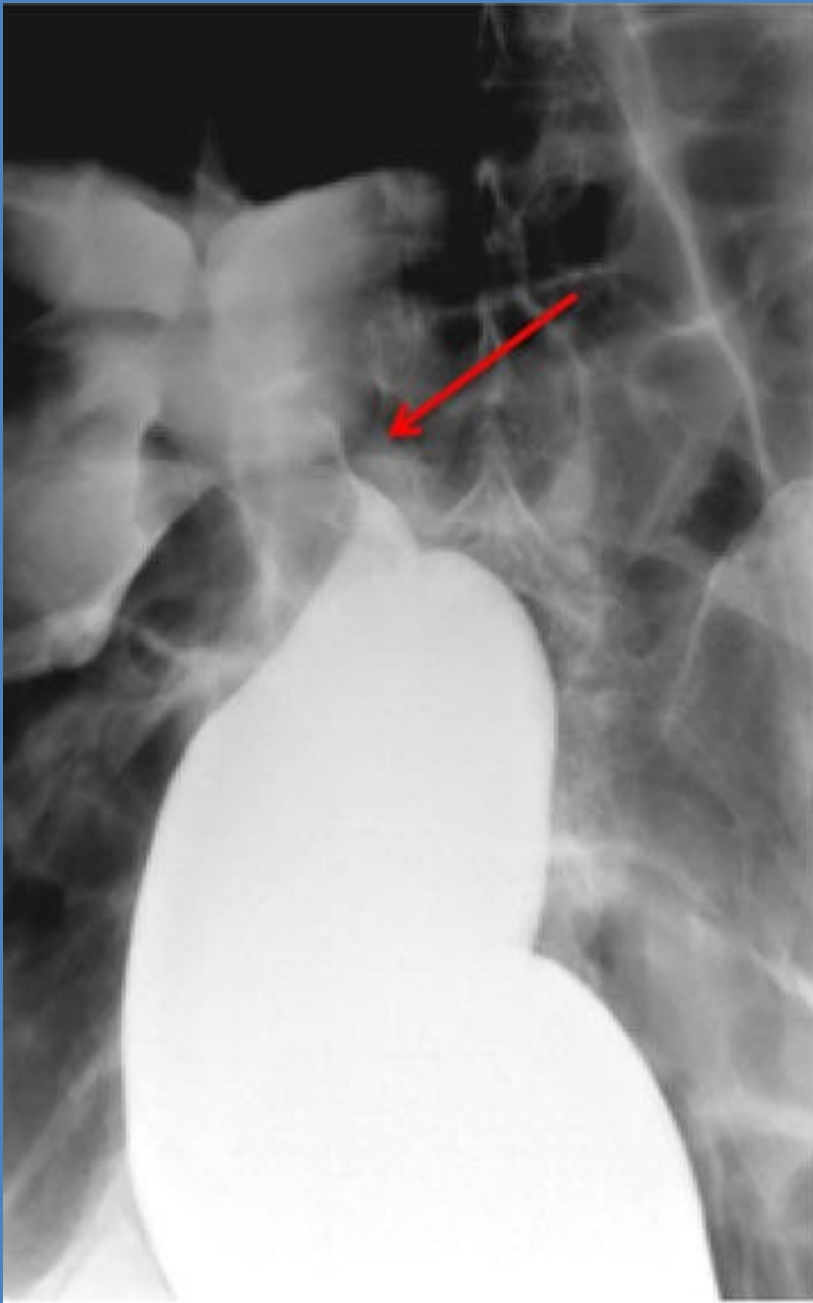
- 2 twisted loop.
- Central double walled component.

Massively
dilated
sigmoid loop



Barium enema X-ray-

- Bird beak appearance



A



B

Predisposing factors-

- Long sigmoid mesocolon.
- Narrow attachment.
- Long, redundant, & pendulous sigmoid.
- Loaded colon.



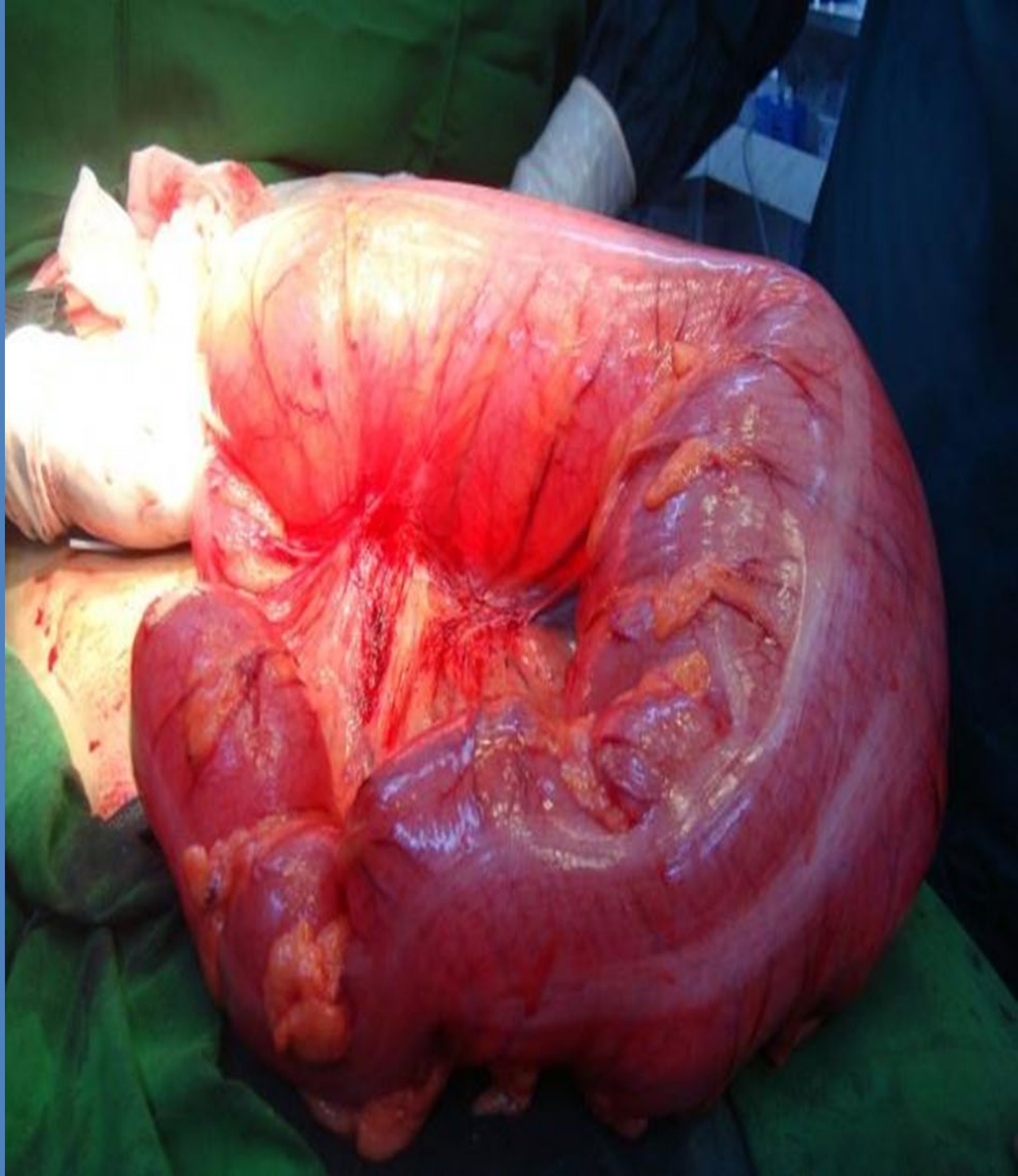
Per operative findings-

- Gut is hugely distended & twisted.
- Blackish discoloration.
- No peristalsis.
- No bleeding on pin prick.
- No colour change on hot mop compression.



Options-

- Sigmoidopexy.
- Primary Resection & anastomosis.
- Resection anastomosis With proximal ileostomy.
- Hartmann's procedure.
- Paul Mikulicz operation.

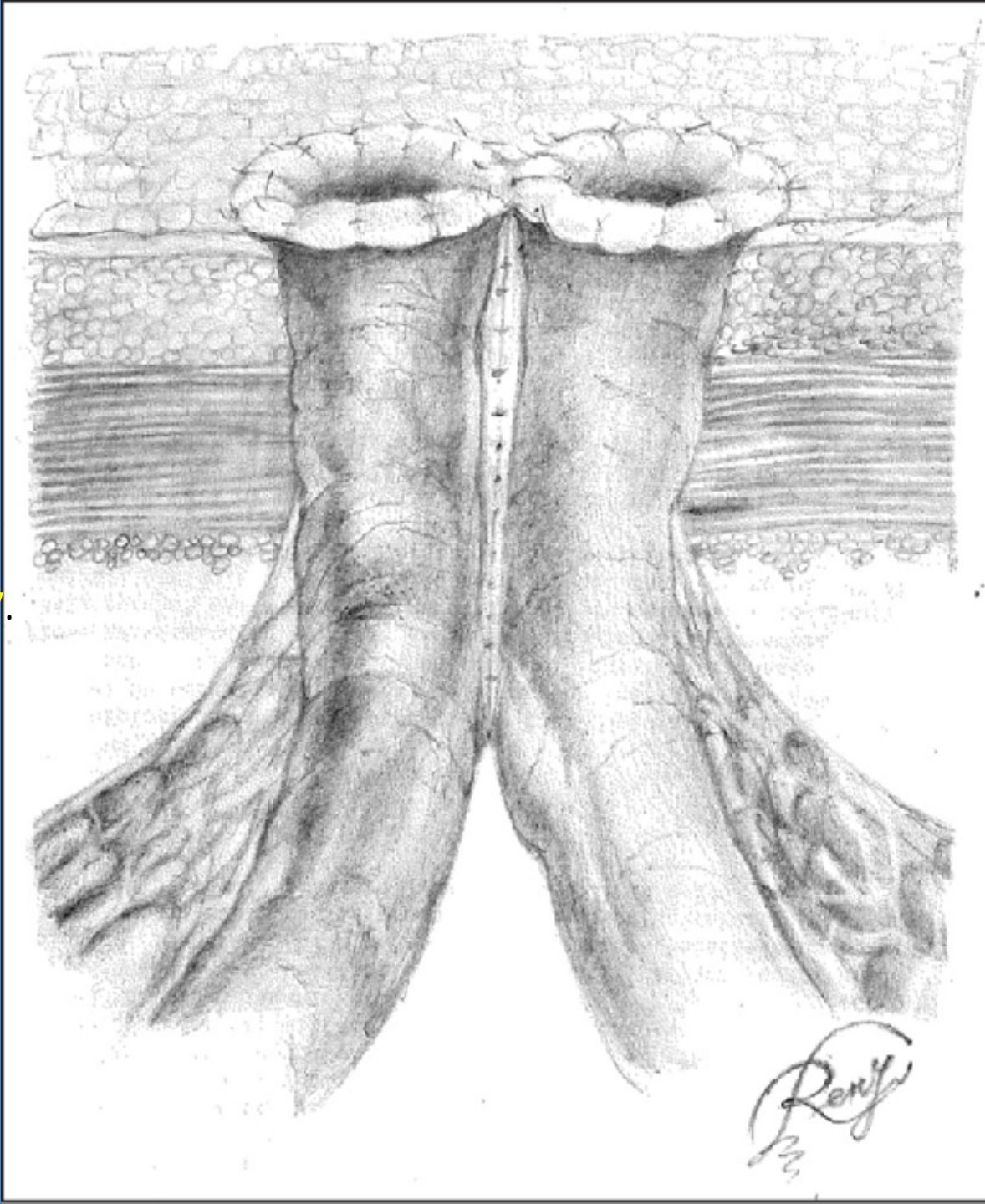


Assessment of gut viability-

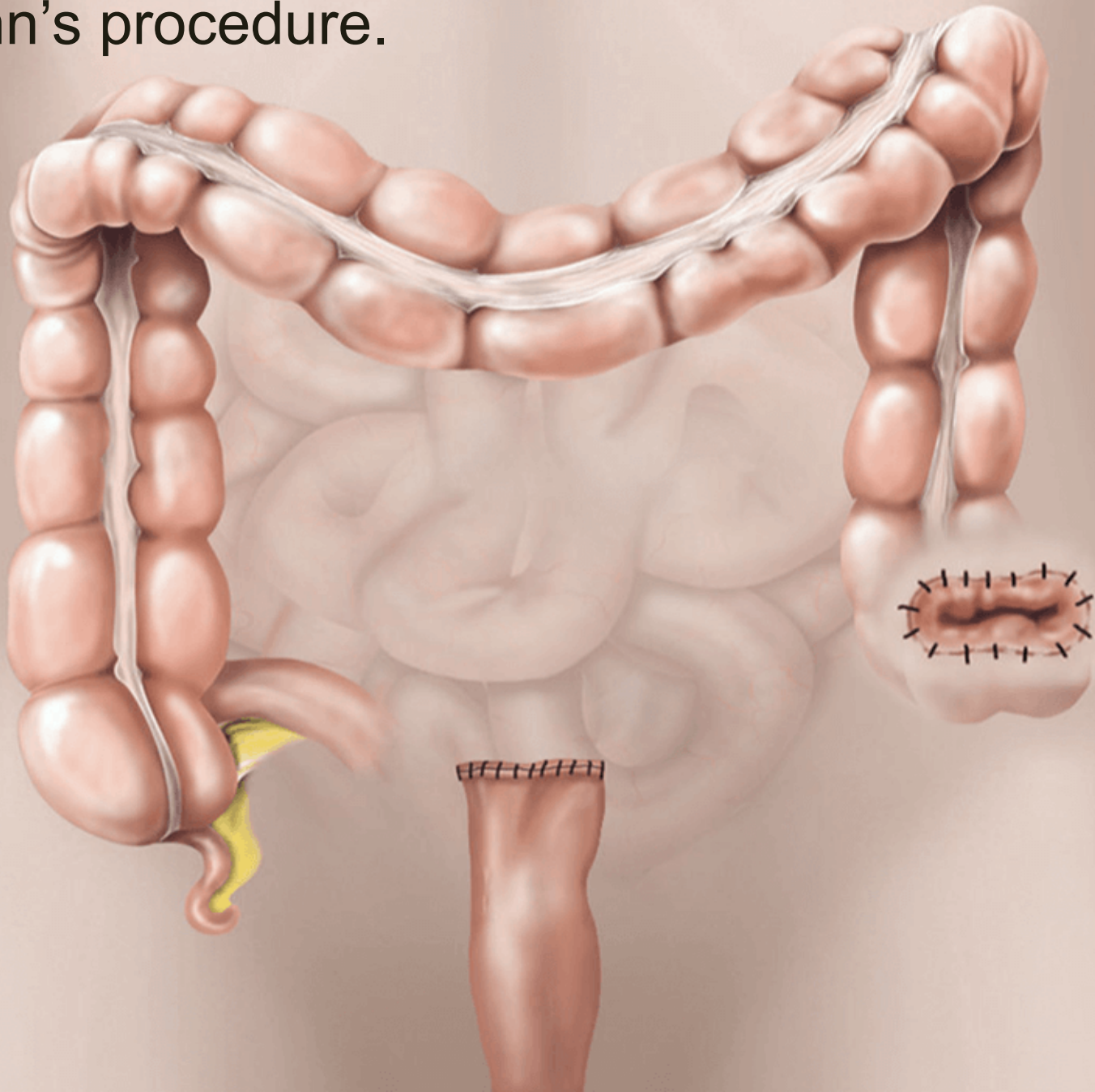
- Clinically-
 - Pink serosa.
 - Peristalsis.
 - Positive pulsation.
 - Bleeding on pin prick.
 - Color change on hot compression.
- Doppler USG- detects antimesenteric blood flow.
- Fluorescein dye test- IV 1 gm Na fluorescein.



Paul mikilicz operation.
Double ended colostomy.



Hartmann's procedure.



DCBE-

- Persistent irregular filling defect.
- Gross narrowing.
- Apple core appearance.
- Shouldering effect.



Fig. 5 Double contrast barium enema reveals an

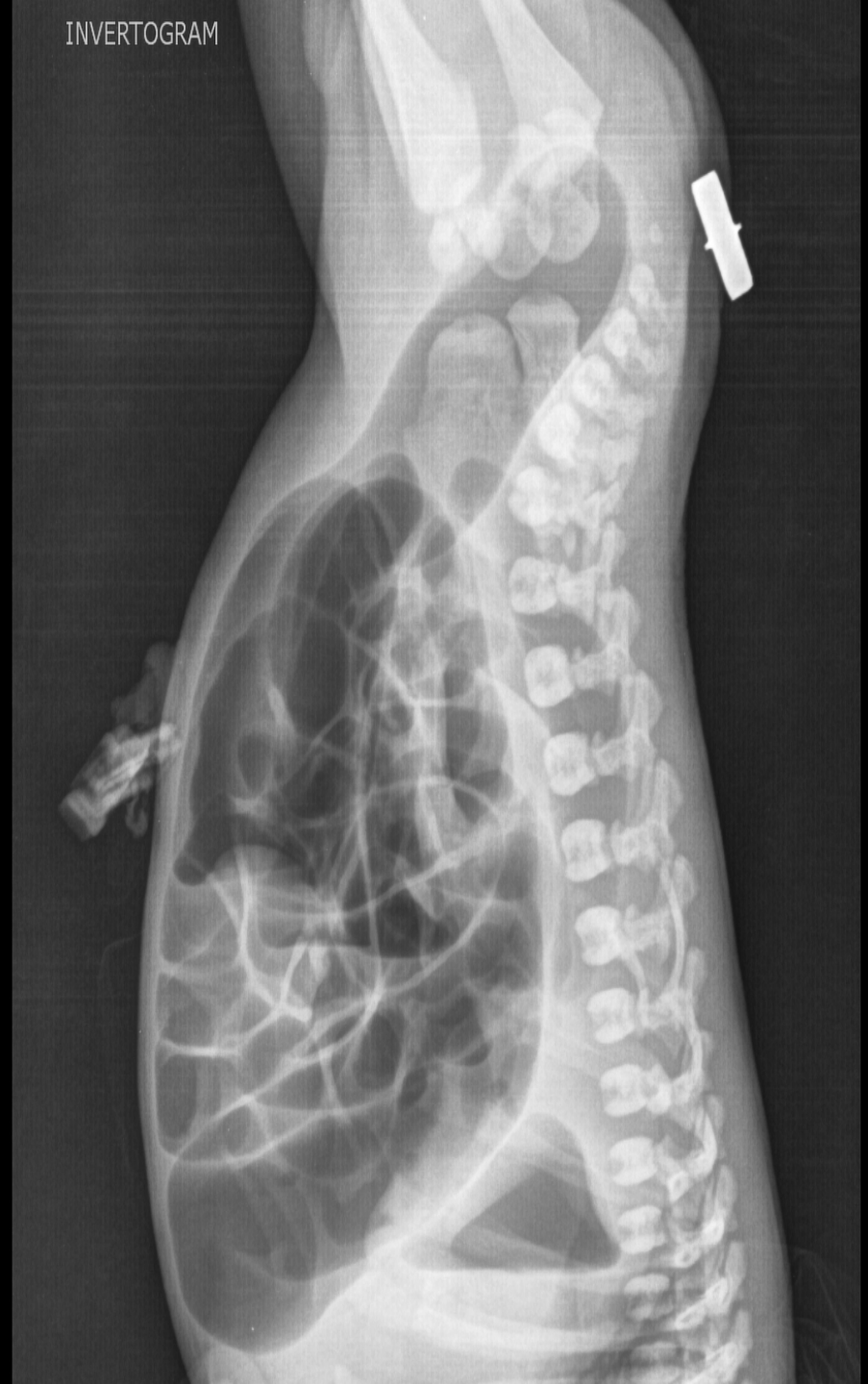


Invertogram-

- distance between the air-filled distal rectal pouch and the anal dimple.
- classify ARM.
- 24 hours after birth.

Patient position-

- Inverted.
- no rotation of hips and shoulders
- remove any radiopaque items.
- in full inspiration
- a radio-opaque marker (i.e. a coin) is placed over the expected anus using radiolucent tape.



X-Table

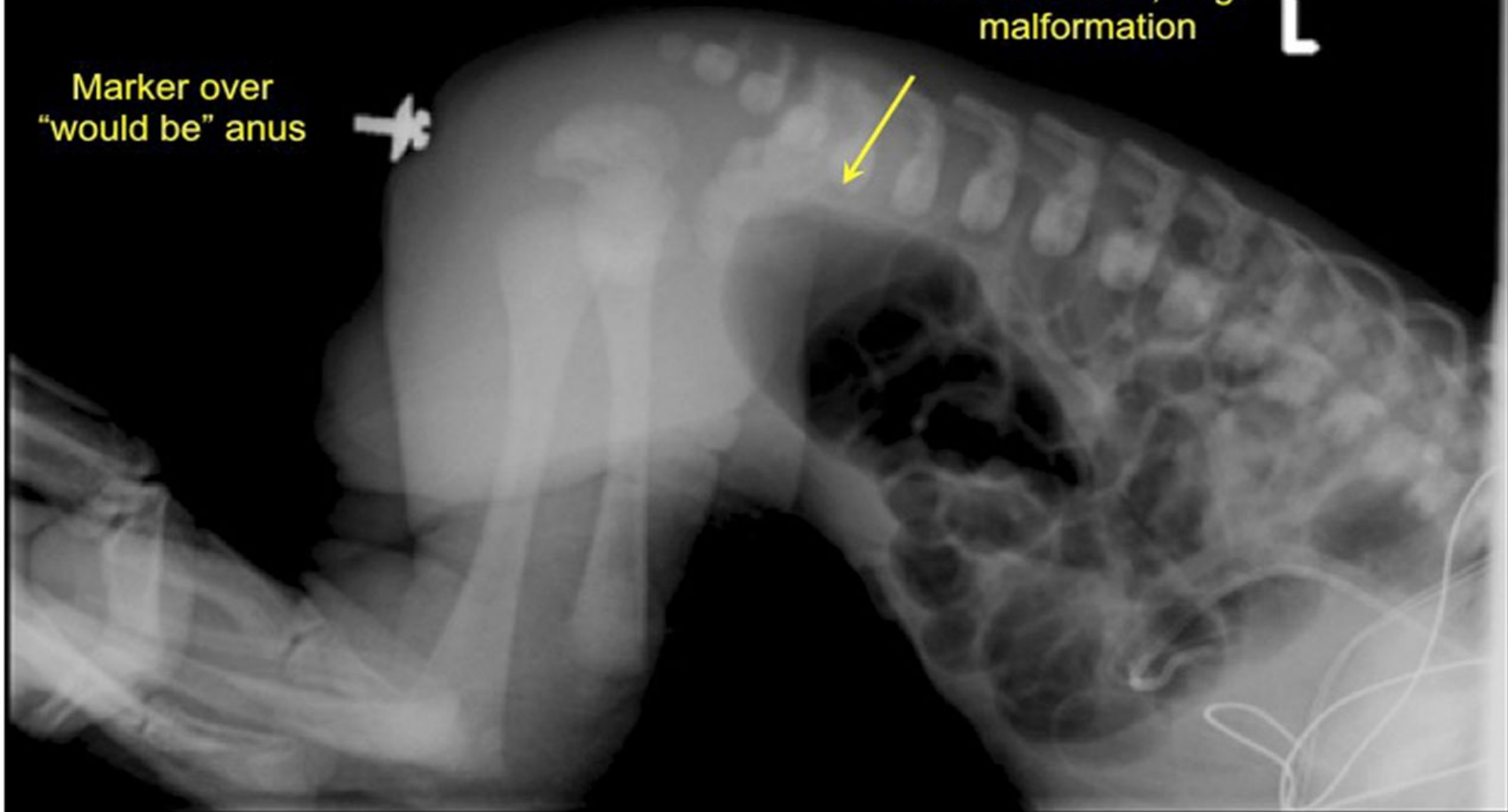
PRONE

Portable

Marker over
"would be" anus

Dilated rectum, "high"
malformation

L



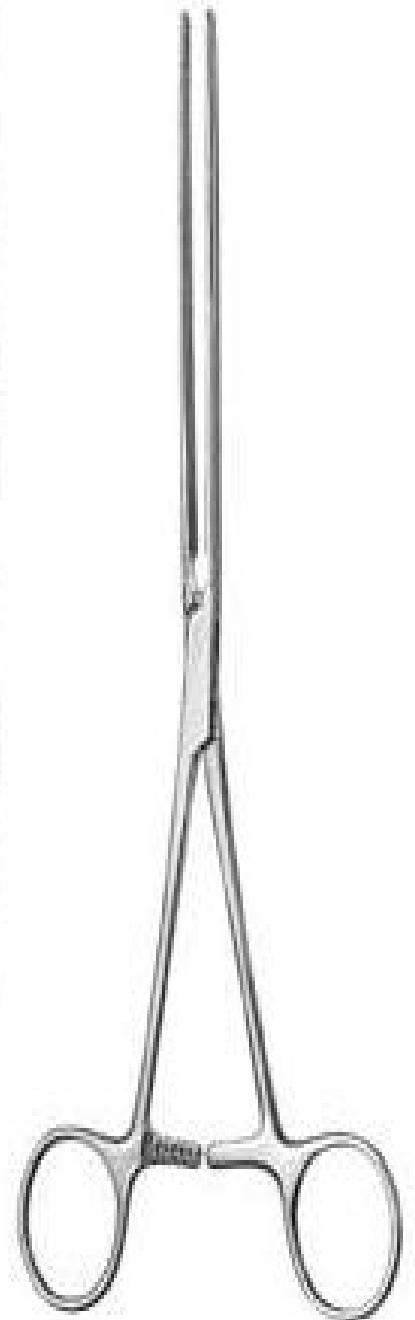
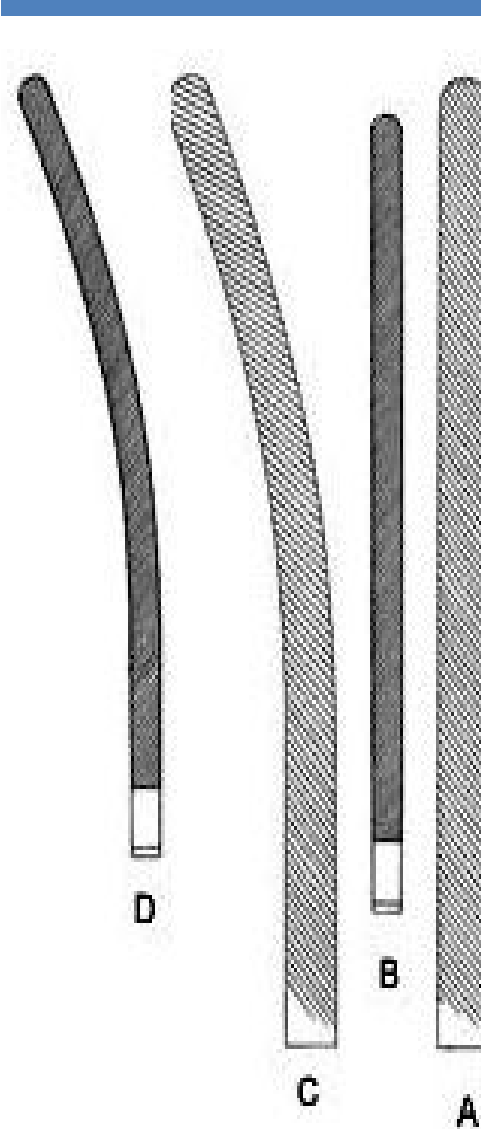
Prone cross table lateral view

Low variety- MECS (<2.5 cm)

- Membranous
- Ectopic
- Covered.
- Stenosed.

• High variety-

- Agenesis.
- Atresia.
- Cloaca.



Occlusive variety.
Crushing variety.

Straight.
Curved.

Functions-

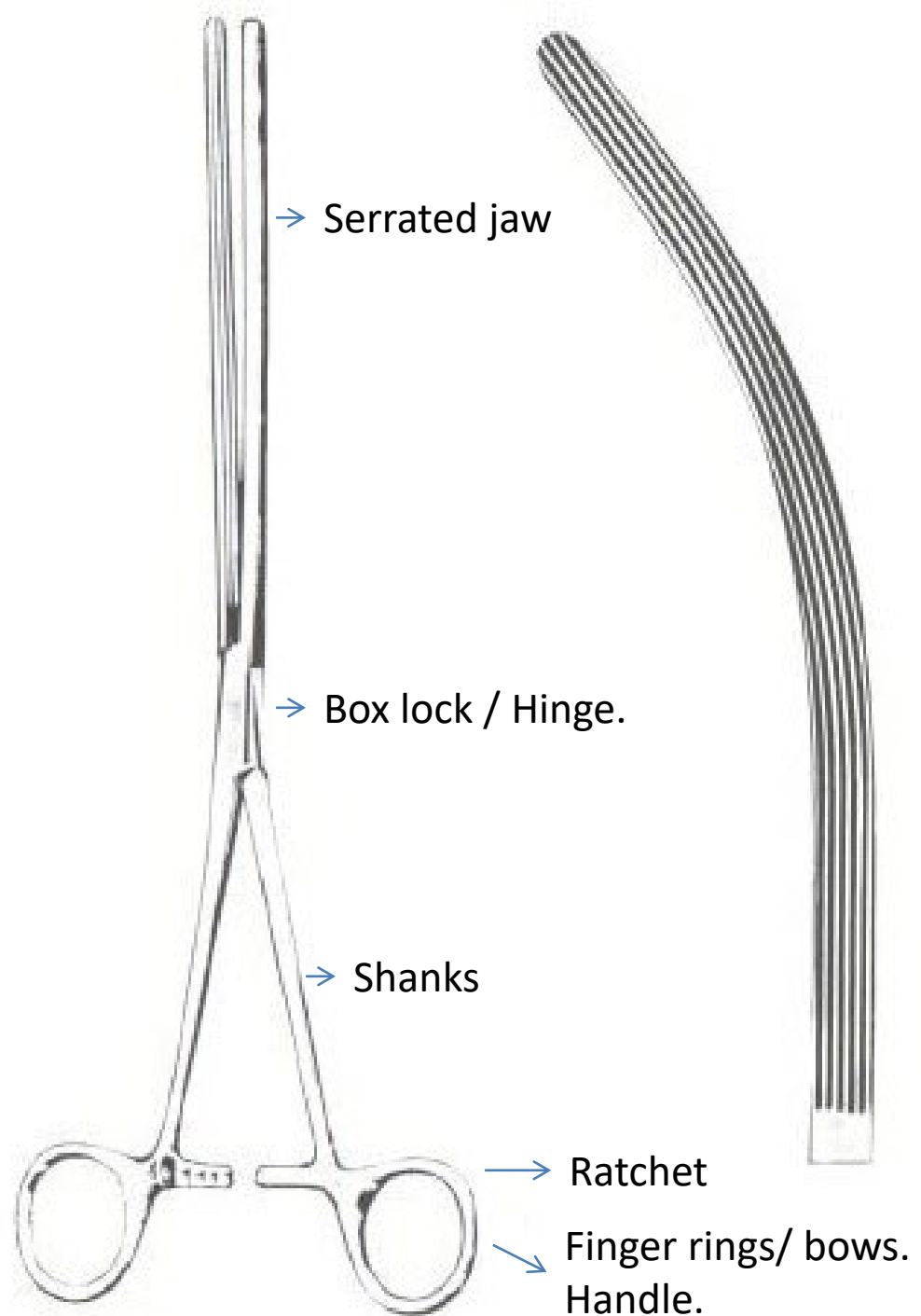
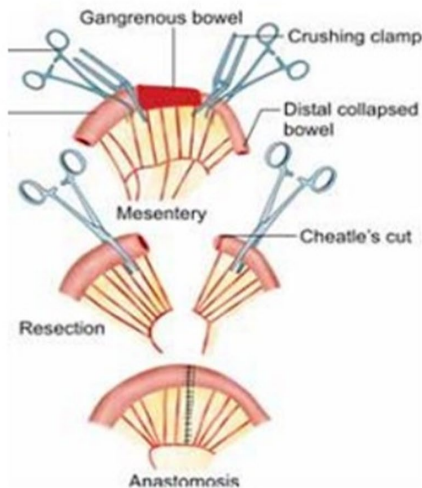
- Occlusion.
- Haemostasis.
- Apposition.

Sterilization-

- Autoclaving.



Resected end- Crushing variety.
Remaining segment- Occlusive.





I



II



III



IV

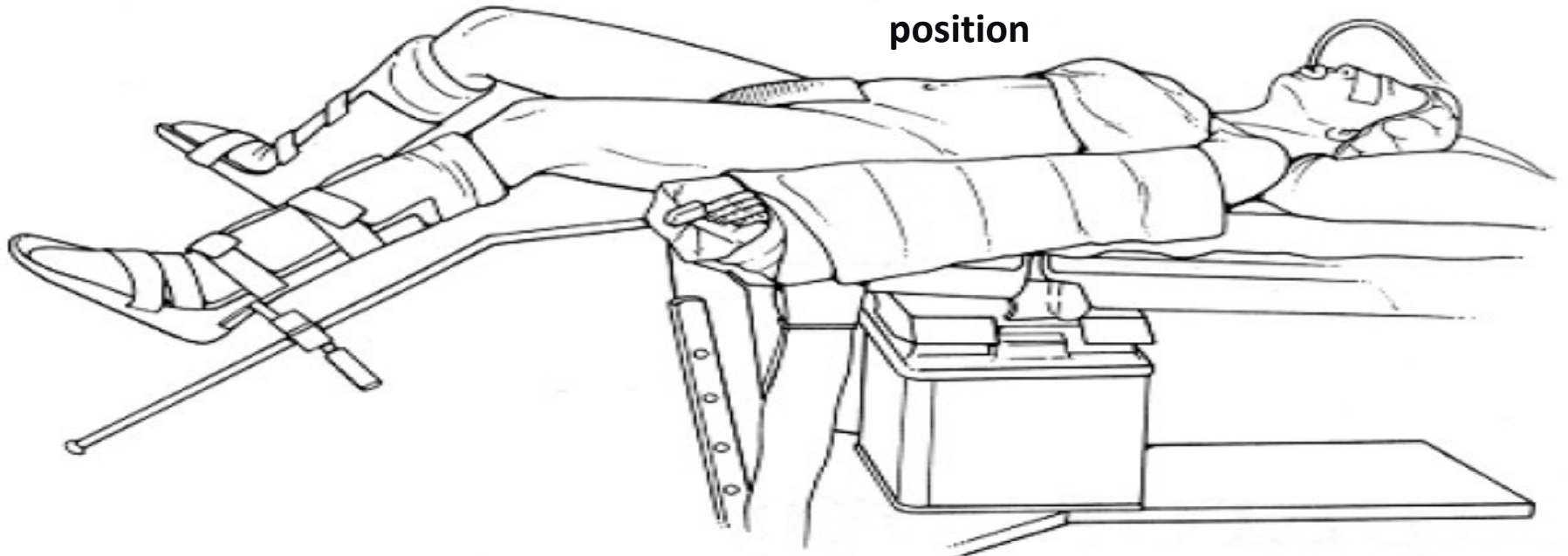
Positions of DRE-

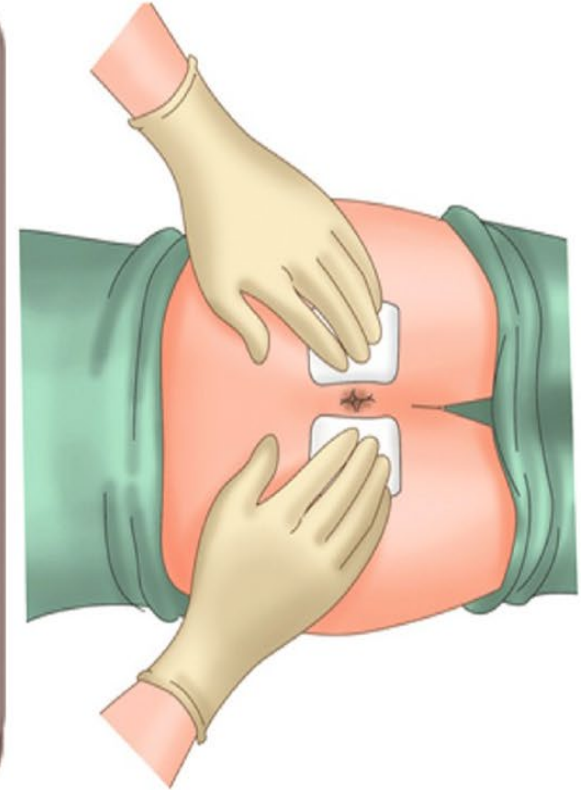
- Left lateral.
- Right lateral.
- Dorsal position.
- Knee-elbow.
- Lithotomy.
- Standing.

Lithotomy position



Modified Lithotomy position





Left lateral position-

- Sim's position.
- Knee flexed, hip flexed.
- Buttock at the corner of the bed.
- Right index finger.
- Push over postanal region.
- Relaxes puborectalis, straightens rectum & anal canal.



Proctoscope



Proctoscope:



Length

- Depends upon the length of proctoscope.
- Upto 12 cm.



Proctoscope

Parts-

- Outer sheath with a handle.
- Inner obturator.

Types-

- Illuminating.
- Non illuminating.

Proctoscope:



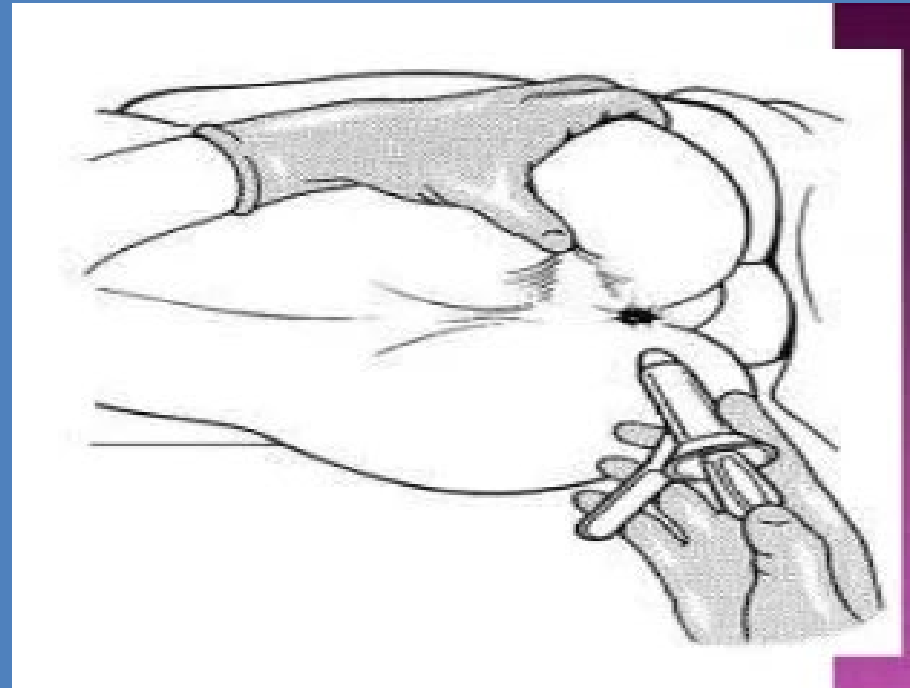
Indications

Diagnostic-

- Haemorrhoids.
- Fissure.
- Fistula.
- Polyp.
- Biopsy.
- Stricture.

Therapeutic-

- Sclerotherapy.
- Polypectomy.
- RBL.



Complications

- Pain.
- Bleeding.
- Thrombosis.
- Prolapse.
- Ulceration.
- Abscess formation.
- Portal pyemia (rare).

Contraindication-

- Painful anal condition.

Preoperative preparation

- Assessment followed by resuscitation.
- Optimization of the condition.
- Bowel preparation?
- Prophylactic antibiotics.
- Counselling.

Assessment of gut viability-

- Clinically-
 - Pink serosa.
 - Peristalsis.
 - Positive pulsation.
 - Bleeding on pin prick.
 - Color change on hot compression.
- Doppler USG- detects antimesenteric blood flow.
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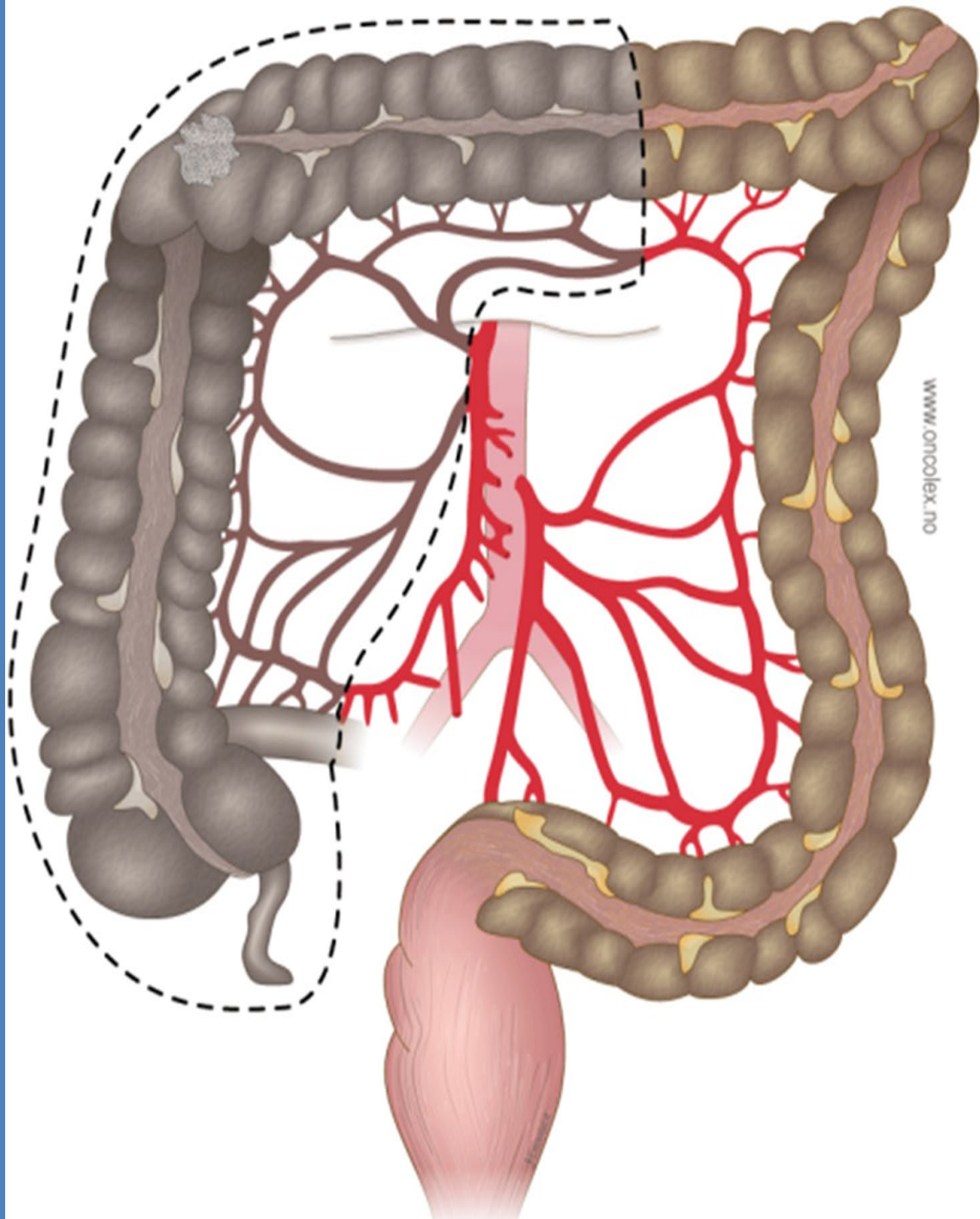
Right hemicolectomy

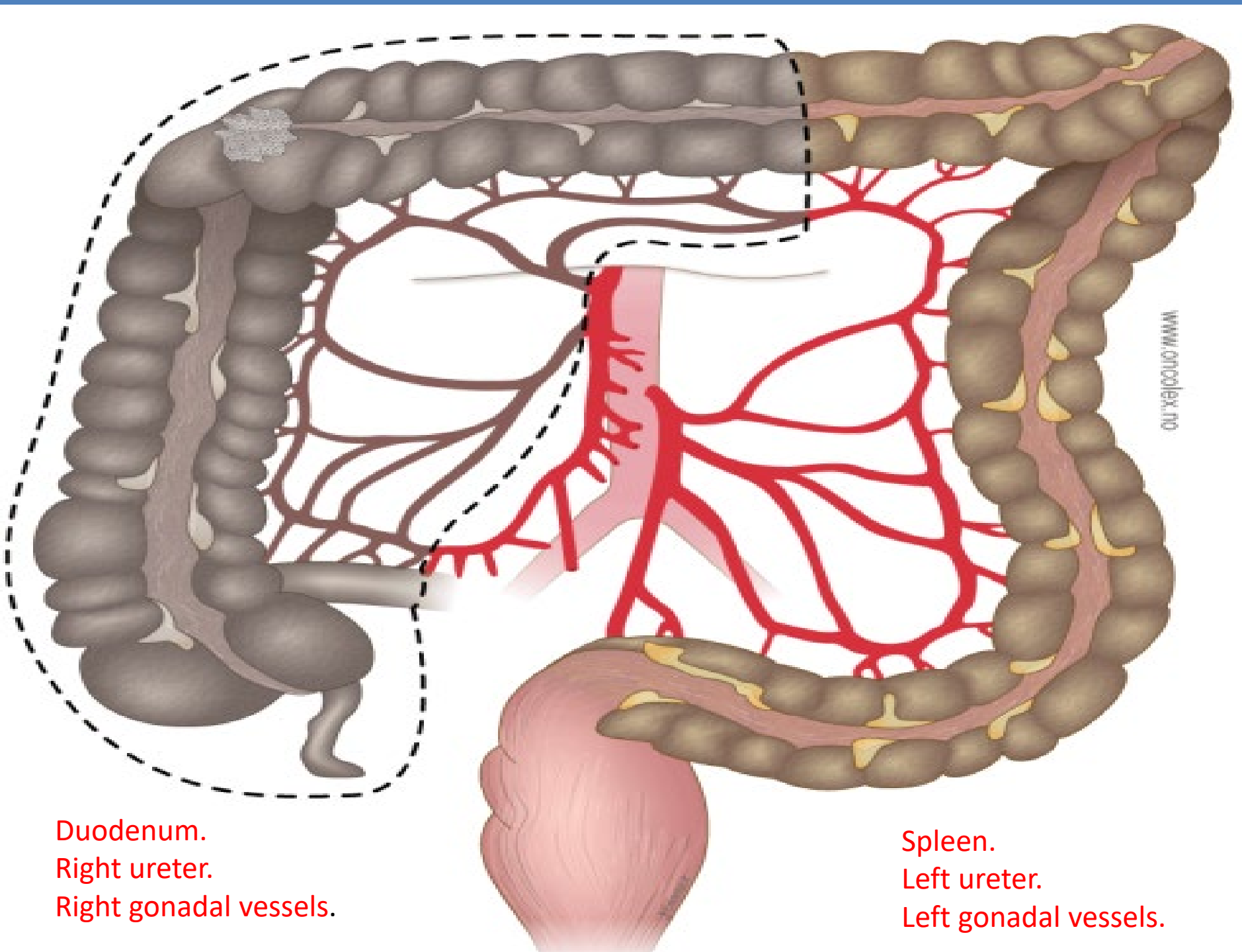
- Vessels-
 - Ileocolic.
 - Right colic.
 - Right branch of middle colic.
- Structures-
 - Terminal 15-20 cm of ileum.
 - Appendix.
 - Caecum.
 - Ascending colon.
 - Hepatic flexure.
 - Right 2/3rd of transverse colon.



PRM

- 10 cm tumor free resection margin is adequate.
- At least 5 cm should be resected.





Duodenum.
Right ureter.
Right gonadal vessels.

Spleen.
Left ureter.
Left gonadal vessels.

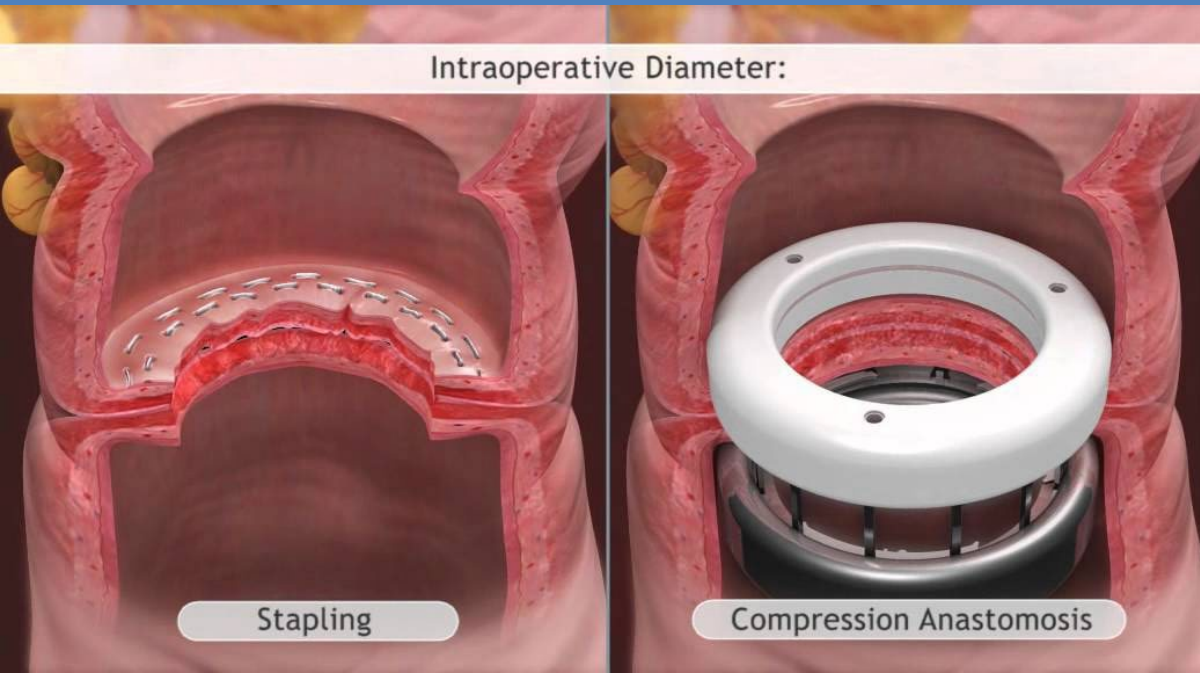
Principles of anastomosis

- Good blood supply.
- Tension free anastomosis.
- Air tight & water tight.
- Anastomosis with healthy, non diseased bowel ends.

- 3-0 R/B vicryl.
- Single layer seromuscular extramucosal.
- Single layer full thickness.



Intraoperative Diameter:



Stapling

Compression Anastomosis

Negotiating calibre during anastomosis

- Oblique division.
- Cheating.
- Side to side anastomosis.
- End to side anastomosis.
- Closer bites from narrow side & wider bites from wider side.
- Partial closure of wider side.

Two-Piece Ostomy Bag

One-Piece Ostomy Bag

Flange on Ostomy Bag

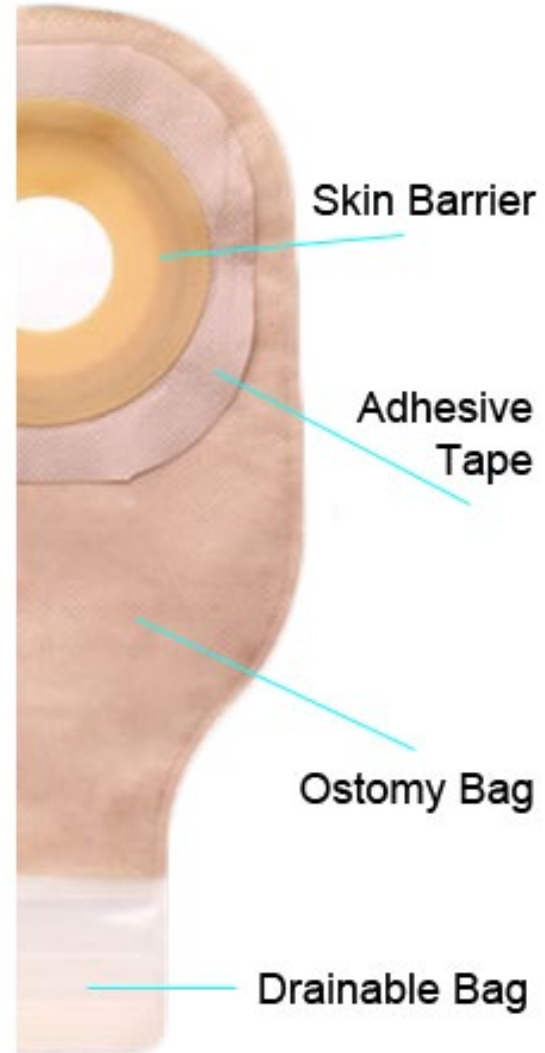


Skin Barrier

Adhesive
Tape

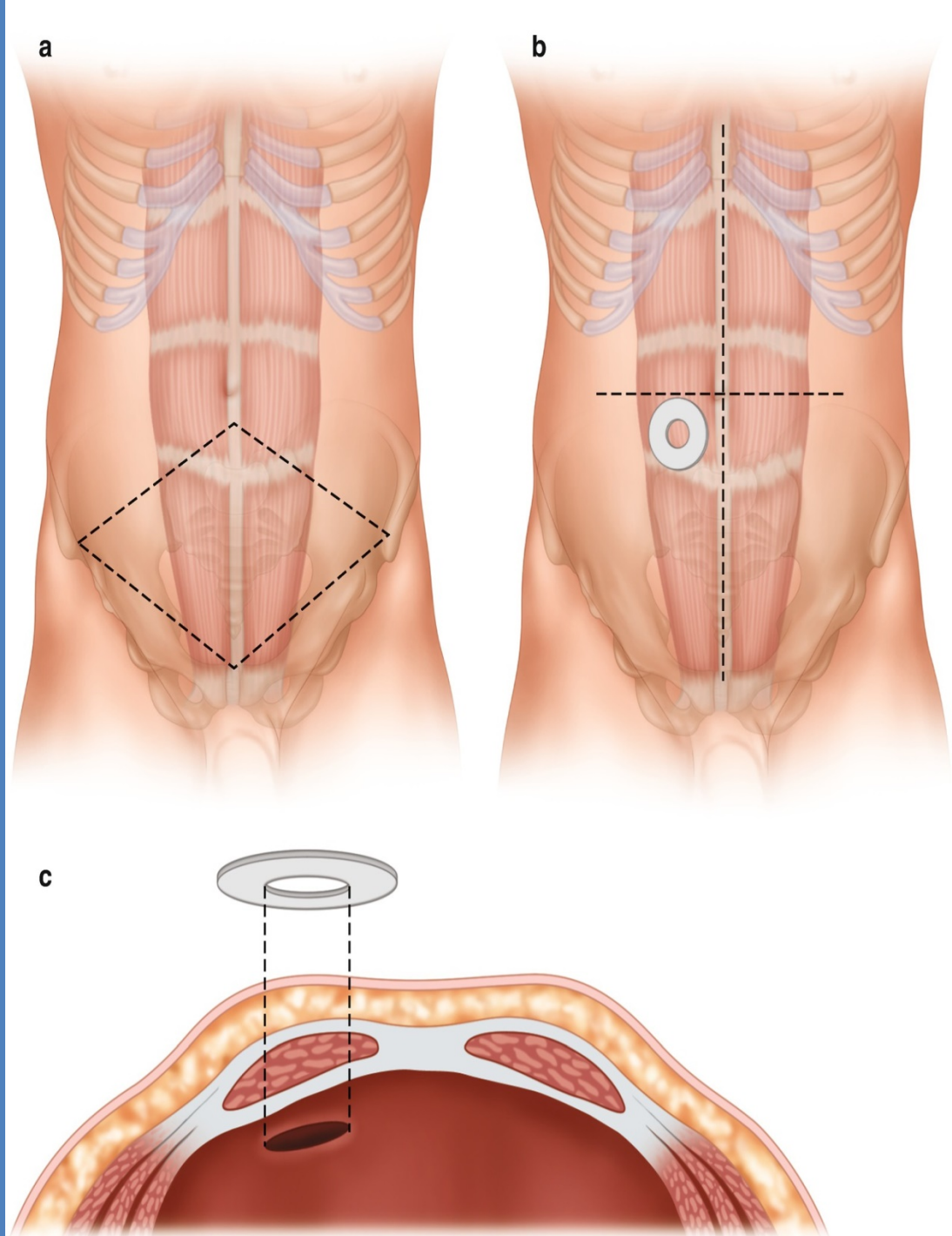
Ostomy Bag

Drainable Bag



Stoma triangle-

- Anterior superior iliac spine.
- Pubic tubercle.
- Umbilicus.



Indications of stoma

- Anastomosis below pertoneal reflection
- Obstruction
- Perforation
- Immunosupression
- Comorbidities
- Haemodynamic instability
- Peroperative severe blood loss
- Hypoalbuminemia-< 2.1 gm/dl
- Sepsis
- Long time steroid
-

www.Ferdauscolorectalcare.info

