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* Colorectal Carcinoma 55-60% of GIT tumors...
* Pancreuse Cancer 13% of GIT tumors...
* Stomach Cancer 8 % of GIT tumors...
* liver Cancer 7 % of GIT tumors...
* esophegous Cancer 6% of GIT tumors...
* gall Bladder Cancer and Pancreatic Cancer ⇒ Bad prognosis...

→ any common cancer has screening Program to diagnose the pt early...

Etiology

* The screening program of the colorectal cancer begin at 50 years old...

screening يبدأ عند 67 y/o عمر ← main age of colorect cancer هيبدأ من
50 y/o عمر ← 15 سنة قبل

- **Third** most common cancer over all in females and males...
  - * 1st mc cancer in Female : Breast Cancer
  - * 2nd mc cancer in Female : lung Cancer
  - * 1st mc cancer in males is :- prostate cancer
  - * 2nd mc cancer in males is :- colon cancer...
- **2nd** most common cause of cancer death
- 1 in 18 will be affected in the west
- 55 - 60 %
- Most common malignancy in GIT

* The Breast Cancer types → in situ ↑ / invasive ↓ → with screening programes...

[M : F = 1 : 8] → Breast Cancer

* The colon Cancer begin as colon polyp then become cancer..
  - ↳ we detect it by screening and treat it to reduce the risk of colon cancer...

→ 2/3 pt survive and 1/3 pt dieel [the 5 year survival rate: 70%]

Colorectal cancer

↳ begin as adenoma [polyp] then become carcinoma
size of polyps يتعدى 15-20 years

- **Rectal cancer** is tumor within **12cm** of anal verge.

↳ 16cm upper 1/3 rectum behave as sigmoid colon so if the tumor above 12cm is sigmoid cancer...

* The length of anal canal :- 4cm [1.5inch]
* The lenght of rectum :- 12cm [5inch]

- Tumor where two antimesenteric taenia unite.

- Tumor where sigmoid mesocolon ends.

* upper 1/3 rectal cancer is sigmoid cancer without tinea coli...

- Rectal Tumor at level of Anatomically **3rd sacral** vertebra.

* There is angle between the rectum and sigmoid act as:- False sphencter...
* The rectum has → mucosa and sub mucosa bulges [IP] → called:- valve of heister...

* what is the diff. between the colon cancer and rectal cancer:-

① The tina coli presented in colon but not in the rectum...
↳ end in the base of appendix

② in the colon there is haustration but not presented in the rectum...

③ The rectum has inner circular and outer longtuidinal ≅ SI
but the colon not has outer longtiudinal but there is tinn coli

④ The rectal cancer protected by pelvis ↳ narrow space.
So this ↑ risk of complication
[the most worried complication of rectal cancer is local recurrance]
↳ due to adhesion with presacral fascia or UB...
but the colon cancer not...
↙ unlikely lead to local recurrance
free ← margeins ~1 cm
[in Bad hands the rate of local recurrance in Rectal recurrance maybe 30%]
but in good hands may be reach 8% just...

→ we know if there is local recurrance of Rectal cancer:- ↳ we detect it by CT or MRI...

⑤ The rectal cancer we treat it by 3 modality of ttt
- radiotherapy
- surgery
- chemotherapy

* But the colon cancer treat by
- Chemotherapy
- surgery

* The Begining of Rectum in the Sacrm Promontary → rectal Cancer ← [surgically]

...[3cm تقريباً Anatomical and surgical rectum الفرق بين] .. S3 عند Anatomically

So from 3rd Sacral vertebrae to the rectum there is 12cm..

* from the sacral promontory to anus there is 15cm...

. The 5 lumber vertebrae resting on the lumbo-Sacral joint...

* The anal canal → Anatomical anal canal
→ Surgical Anal canal [longer by 1cm]

* if the Cancer in upper 1/3 of rectum we do anterior resection...
* if the Cancer in middle 1/3 of rectum we do low ant. resection... → proximal margin so we have 1-2cm Free [no need for persistant Colostomy]
* if the Cancer near the dentat line we do AP resection [abdomino perineal] → distal margin not has free margin [1-2cm]
↳ persistant Colostomy...

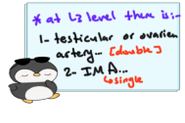
* The minimum clerance macroscopic margin from the rectal tumor at least 1-2cm distally...

* The Colon → TC and sigmoid colon:- intraperitoneal... [has mesentry]... ← inverted V shape has descending medial limb, ascending lateral limb...
→ the rest of colon:- retroperitoneal...

* if the organ has meso colon → become mobile...
↳ as:- transverse meso colon - sigmoid meso colon...

.. في Colostomy لازم نشيل ال sigmoid meso colon عشان نعمل ال ↵ بتقدر تظبطه

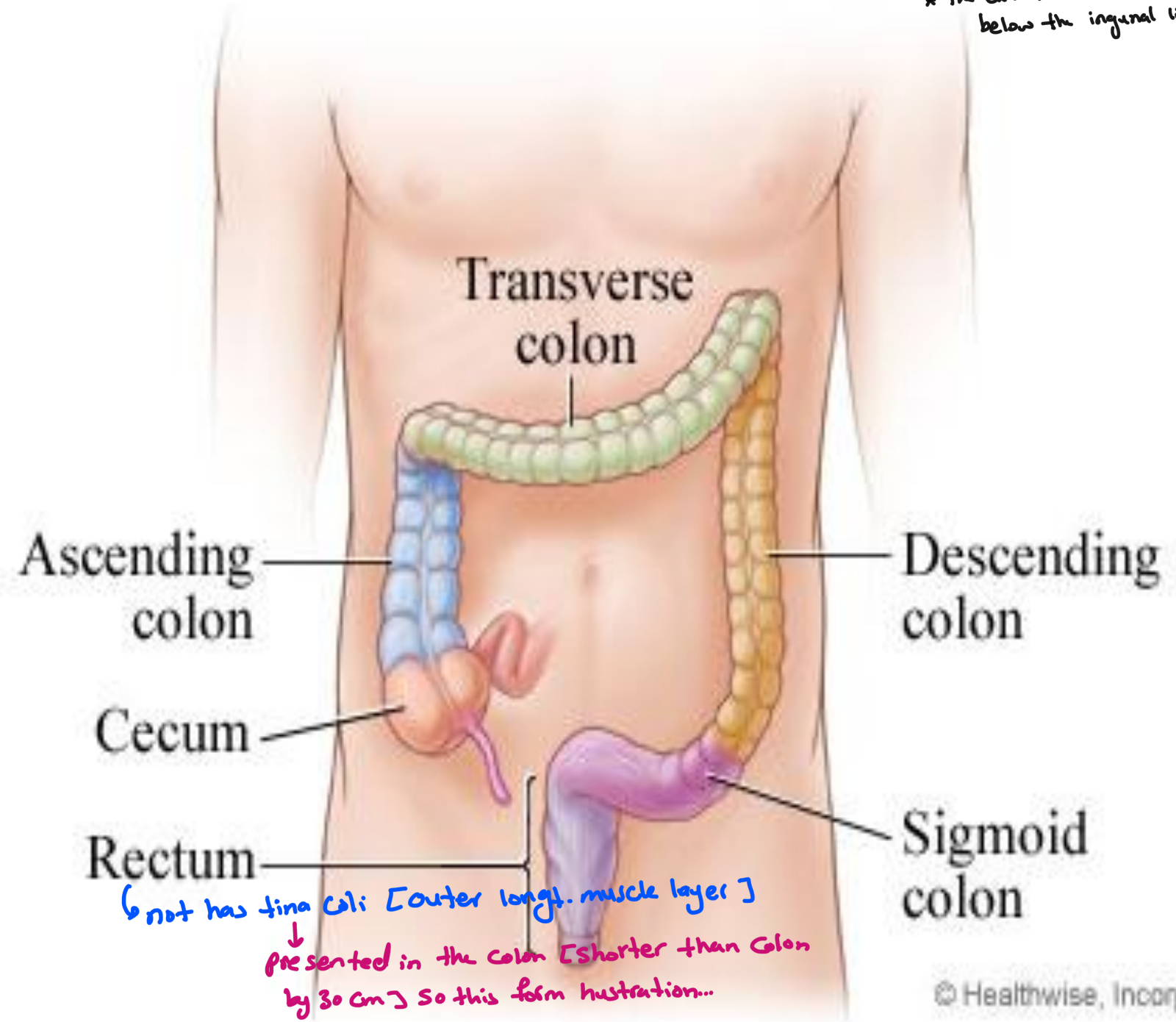
ال descending medial limb بيجيله ال superior rectal artery which is a continuation of IMA which arise from Abdominal aorta at level of L3]..



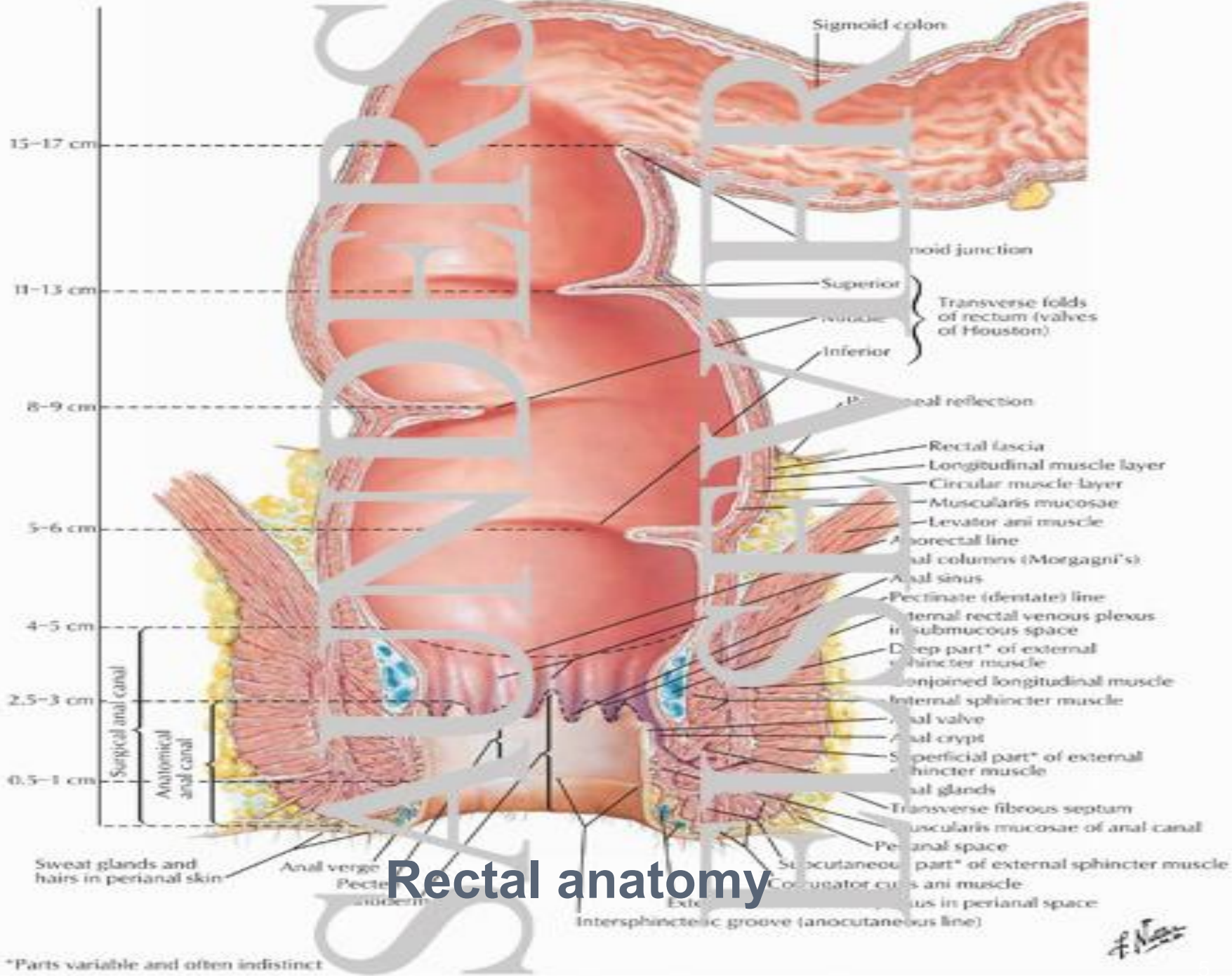
* in the apex of the sigmoid meso colon there is if ureter...

* The common iliac A is the A of the pelvis... → ext. int.

* The ext. iliac becomes femoral A. below the inguinal ligament...

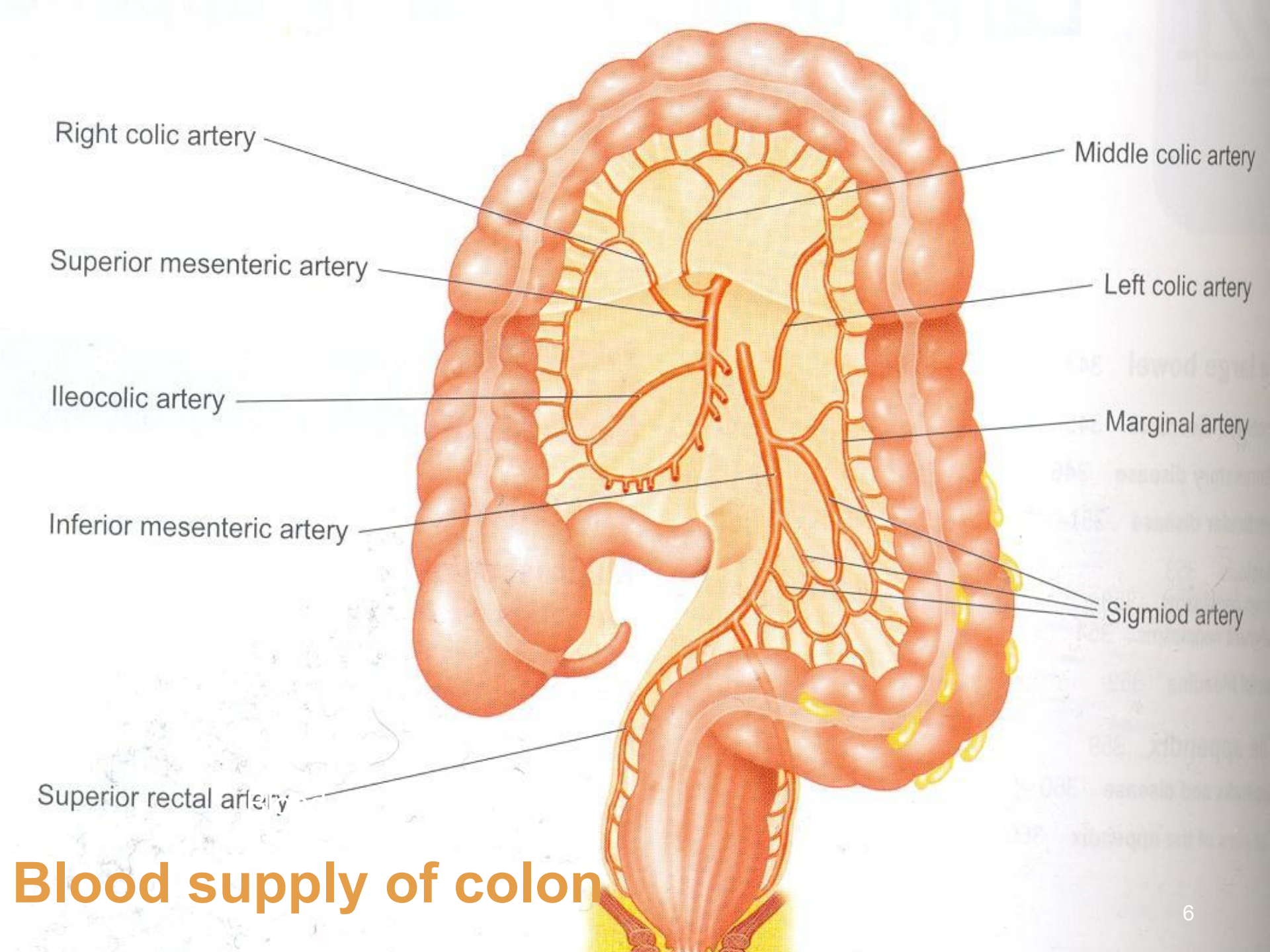


↳ not has tina coli [outer longt. muscle layer] presented in the colon [shorter than colon by 30 cm] so this form hustration...



Rectal anatomy

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Blood supply of colon

* The Blood supply of the colorectal area:-

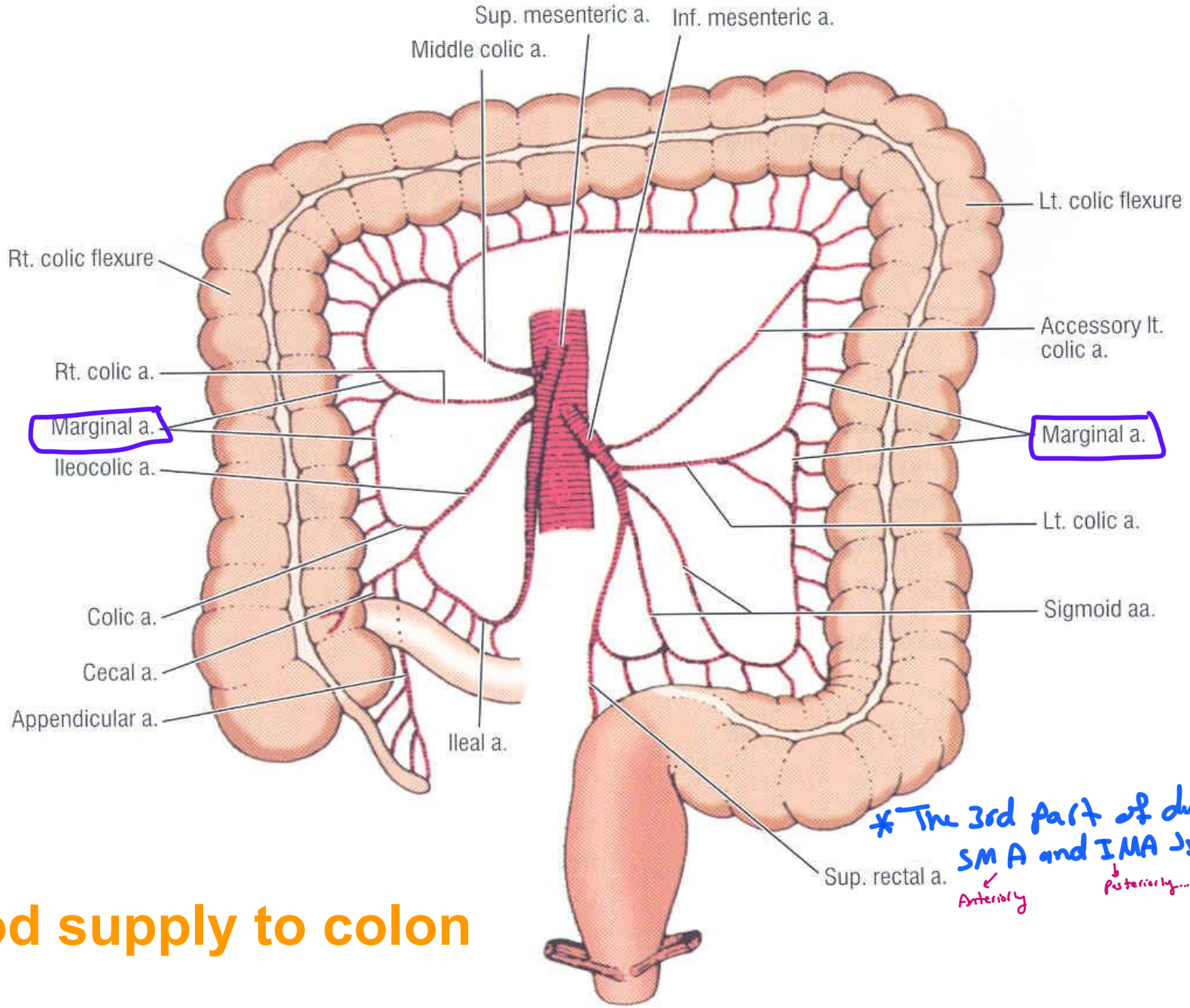
→ The colon supplied by:- SMA... up to the proximal 2/3 of the T. colon supplied by:- IMA.. [supply the distal 1/3 of TC + DC + sigmoid]...

→ The IMA give 2 branches
- If colic Artery.. [for DC - distal 1/3 of TC]
- Sigmoidal Artery.. [for sigmoid]

→ The SMA
- from lf side give :- jujenal and ileal branches
- from Rt side give:-
  1. middle colic A. [1st branch of SMA] → give Rt and lf middle colic A.
  2. Rt colic A. [supply the AC] → give descending and Ascending A.
  3. ilio Colic A. give appendicular A. and ant. + post. caecal arteries..

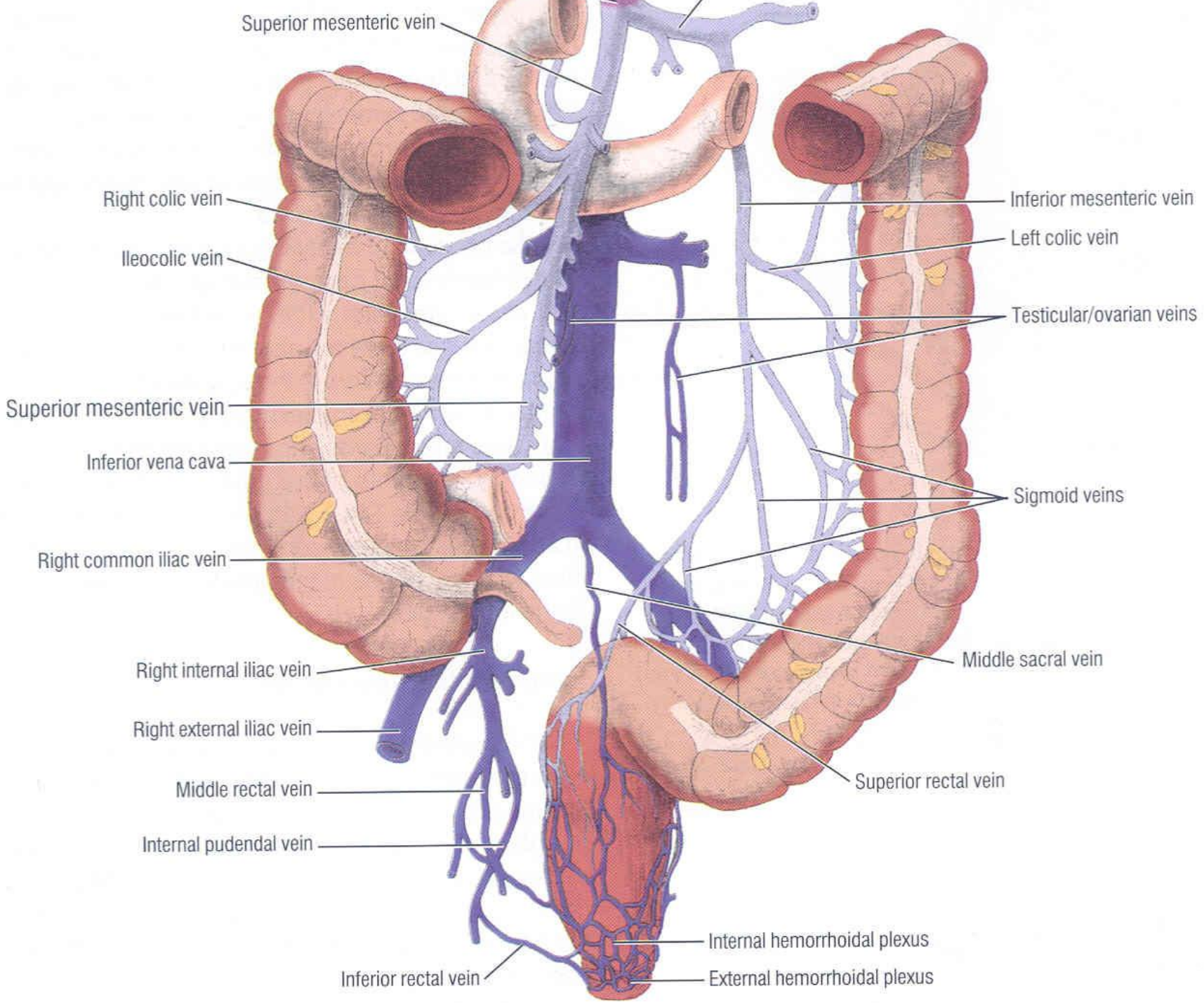
* There is anastomoses between the SMA and IMA called:- Marginal artery of drummond

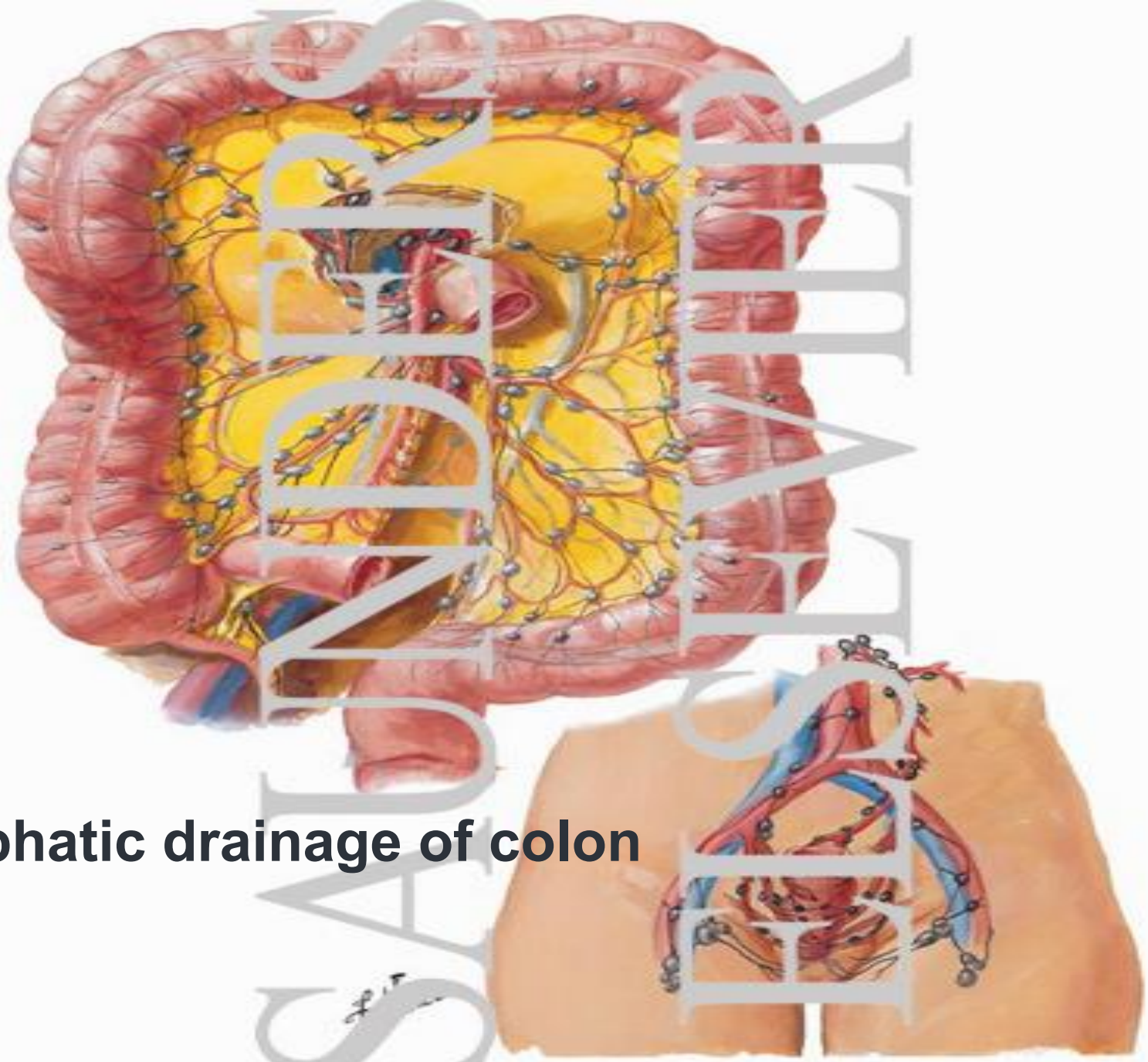
* There is area not has water shelt as:- 1- Recto sigmoid. 2- splenic flexure
lack marginal artery ← not good BS ← it's BV



Blood supply to colon

* The 3rd part of duodenum بيتغذى ما بين الـ SMA and IMA
SMA ← Anteriorly
IMA ↓ Posteriorly...


Superior mesenteric vein
Right colic vein
Ileocolic vein
Superior mesenteric vein
Inferior vena cava
Right common iliac vein
Right internal iliac vein
Right external iliac vein
Middle rectal vein
Internal pudendal vein
Inferior rectal vein
Inferior mesenteric vein
Left colic vein
Testicular/ovarian veins
Sigmoid veins
Middle sacral vein
Superior rectal vein
Internal hemorrhoidal plexus
External hemorrhoidal plexus



Lymphatic drainage of colon

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*The Lymph nodes of the Colorectal area:-

1. epi colic LN [على القولون]
2. para colic LN [جنب القولون]
3. intermediat LN [على الشريان]
4. main LN
   - SM LN
   - IM LN
   - para aortic LN

*the cancer spread from level I to II to III LN...
so the colorectal cancer spread from the epicolic → para colic ...main LN ← intermidate



*any colorectal cancer with LN it's stage III...
→ if it with meta become stage IV...



*There is 3 levels in the axillary LN:-

1. **level I** [ant. pectoral - post subscapular - lateral (PSL)] ← lymphedema يعني انتفاخ
   - ↳ below and lateral pectoralis minor muscle... ↳ from UL...
2. **level II** [central and inter pectoral LN]
   - ↳ behind the pectoralis minor muscle...
3. **level III** [Apical LN]
   - ↳ above and medial the pectoralis minor muscle...

* Stages of the colorectal cancer:-

① stage I
- T_1 : mucosa and submucosa
- T_2 : muscular layer invasion

② stage II
- T_3 : serosa or fat invasion
- T_4 : adjasent organs. adhesion

→ local without LN metz..

Not metz

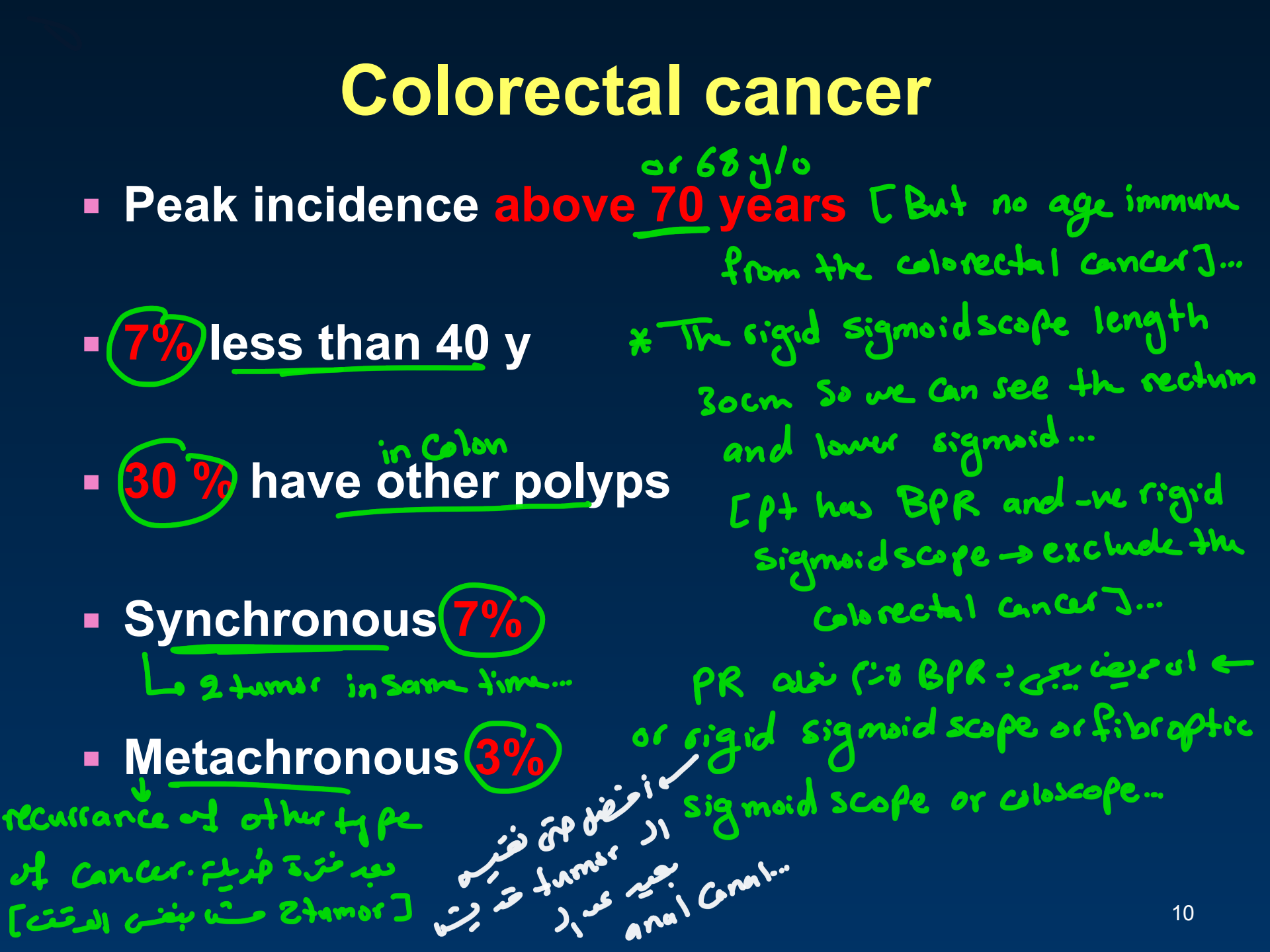
T_4
- intraperitoneal as: SI [most important structure]
- retro peritoneal depend on the site
  - Rt side spread to IVC - Rt kidney - Rt ureter head of pancreas-duodenum
  - → lf side spread to lf ureter - lf kidney..
  - upper 1/3 of rectum spread to IM or internal iliac [pelvic] lymph node...
  - lower 1/3 of rectum [as anal canal cancer] spread to inguinal LN... (from LL drainage)
    - vertical limb with long saphenous vein
    - transverse limb
      - medial part from rectum
      - lateral part from back
    - or
    - 12 superficial inguinal LN..
    - 8 deep inguinal LN..

③ stage III
④ stag IV

→ there is metz...

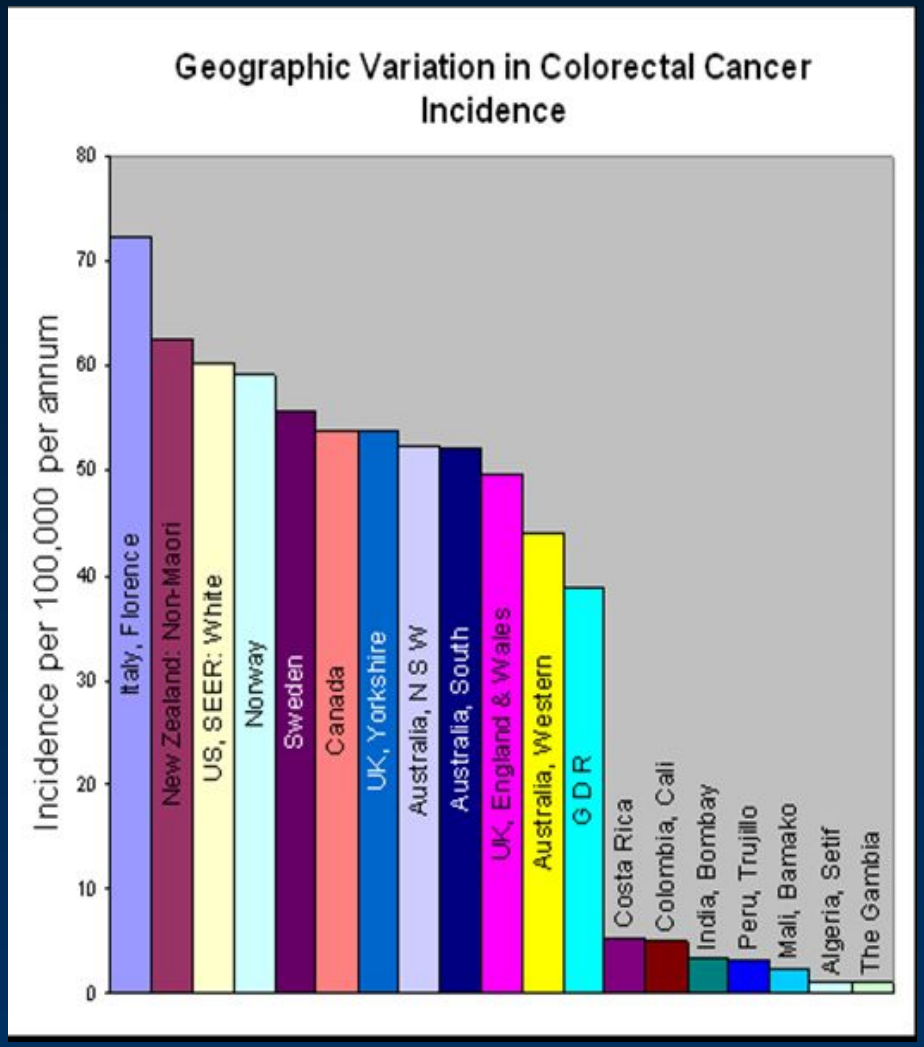
Colorectal cancer

- Peak incidence above 70 years
- 7% less than 40 y
- 30 % have other polyps
- Synchronous 7%
- Metachronous 3%



#The local recurrance:- happen within 2 years in same site..

Colorectal Cancer



A

Western

Disease

Etiology of colorectal cancer

- Hereditary 10% (Familial)
  - ① FAP — familial adenomatous polyposis… (most important [mc in lf colon])
  - ② HNPCC
    - hereditary non polypoid colon cancer
    - 60% may become colon cancer…
    - occur in 40 y lo.
- sporadic 90%
  - Environmental factors

* 3% of other genetic dz are cause of Familial colorectal Cancer…
  - jevunile polyposis [hamartoma - pre malignant]

* FAP types → 1% of hereditary colorectal carcinomas
  - familial [Autosomal dominant] ... 50% of offspring has cancer colon
  - Attenuated type ...

- if the pt has risk for FAP we should do total recto colectomy in 20 y/o.. لو سمح لأ to prevent the incidance of cancer colon...
- 100% lead to colon cancer in 30 y/o لو سمح غير

* FAP mc occur in lf colon

* HNPCC Types
  - Type I : just colon cancer..
  - Type II : occur with other cancers

commonly occur in Rt colon

as: endometrium cancer... [most important] → 80%
ovarian cancer...
gastric cancer...
periampullary cancer...

Risk factors

* polyps begin at age of 50 y/o...
* Cancer begin at age 68 y/o...

- Age 90 % over 50 years
- Previous polyps or bowel Ca
- Chronic inflammatory bowel disease [risk factor]
- Diet : fiber - fat ✓
- Obesity ✓
- Exercise ✓
- Smoking and alcohol ✓
- Family history 10% ✓
- Personal history

↳ UC > CD
2 : 1

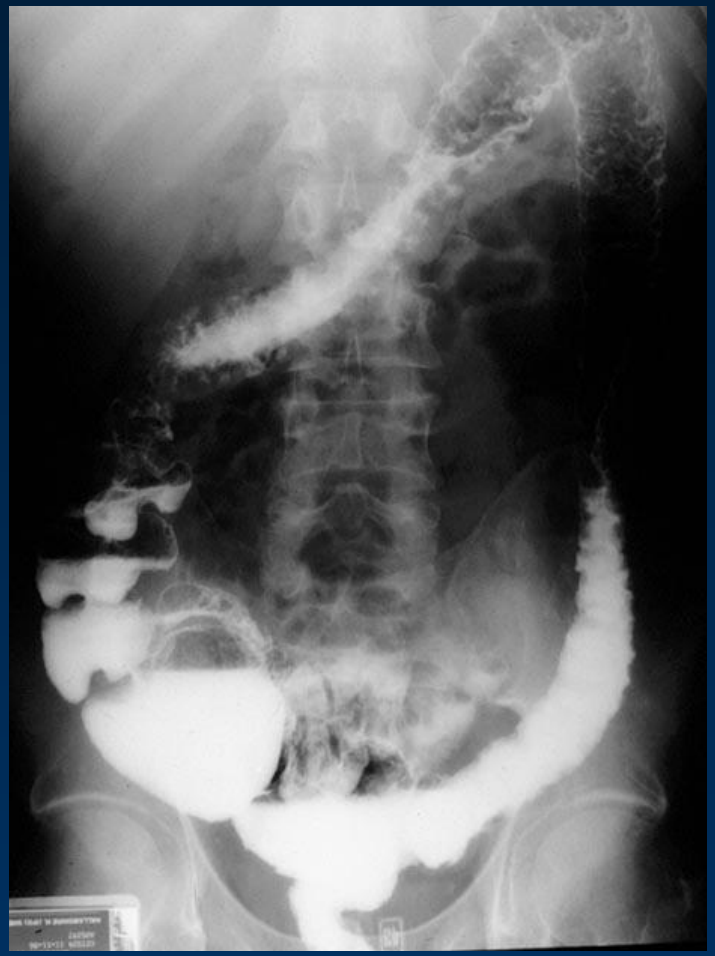
* any pt make colonscope above 50 y/o → we find it free he should make screening colonscope every 10 - 5 years...

Predisposing conditions

- Genetic factors
- Diet
- Lack of fiber in diet
- Increase animal fat consumptions
- Post gastrectomy,vagotomy?

Inflammatory Bowel Disease

- 1% per year over 10 yrs
- Extensive colitis
- UC or Crohn's
- Colonoscopy surveillance
- Proctocolectomy for
  - Cancer
  - Severe dysplasia



Inherited bowel cancer

- Hereditary non-polyposis colorectal cancer [6%]

Lynch syndrome I II

- Familial adenomatous polyposis — thousand of polyps.. [1%]
- Peutz-jeghers syndrome — pre malignant [20% risk of malignancy].. [Autosomal dominant]
  - there is mucocutaneous pigmentation + multiple polyps.
- Juvenile polyposis
  - more than 5 polyp...
- Inflammatory bowel disease. [15-25 y/o]
  - dx of young...

3%

every locm of colon we take Biopsy [Random Biopsy]

The duration of IBD is important in Colorectal cancer...

[has 1% risk from 8-10 years of diagnosis

...[0.5-1% كل سنة تزيد

Colon cancer احتمالية الإصابة بـ IBD آلما زاد فترة ← So need screening

here we should do ← [pre cancer] dysplasia * يمكن Biopsy لكشف

prophylactic colectomy...

* if the UC occur in young age (1) - involve whole colon (2) → Pan colitis - if the 1st attack was so bad (3) and need admission + Blood transfusion he will end by surgery

[we resect the colon ad rectum]...

→ in severe dysplasia we resect the colon...

↳ has high risk of cancer colon...

Natural history

- The prevalence of adenomas correlates with carcinomas.
- Adenomatous tissue accompanies cancer.
- Distribution of adenomas is similar to carcinomas.
- Large adenomas display cell atypia.
- Adenomas are found in one third of surgical specimens

Figure 3.1 *Frequency of anatomical locations of colorectal cancer. Based on data from the Royal College of Surgeons audit in Trent Region and Wales.*

- 1/4 colon cancer are ceccum and AC..

- The colon cancer increase in the ceccum more than it C. بسبب انه ال endoscope يكشف معظم الحالات في ال Rt C - ceccum

.. cancer بيروح يتغير ناحية ال Rt [shift to the Rt of colon cancer]...

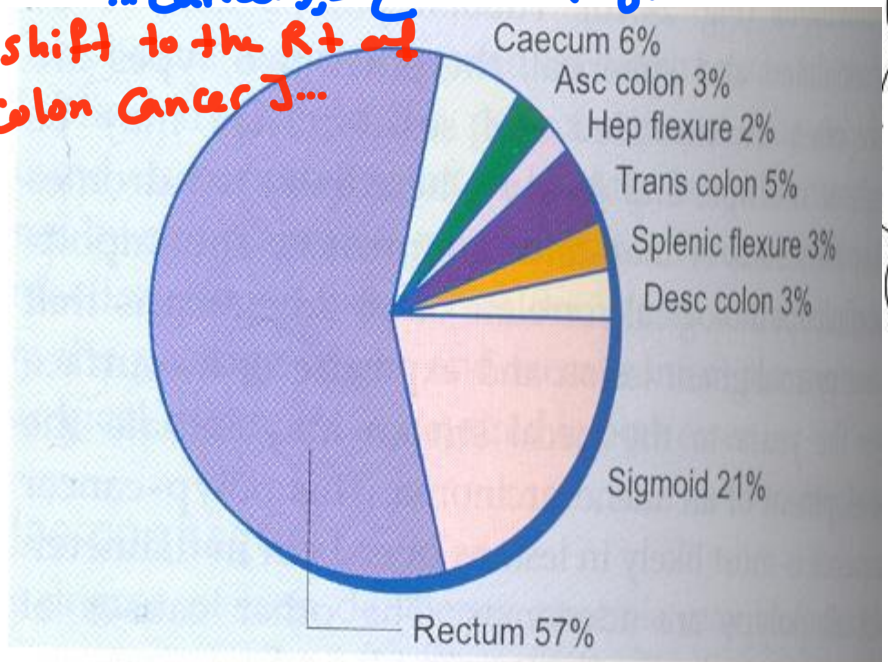
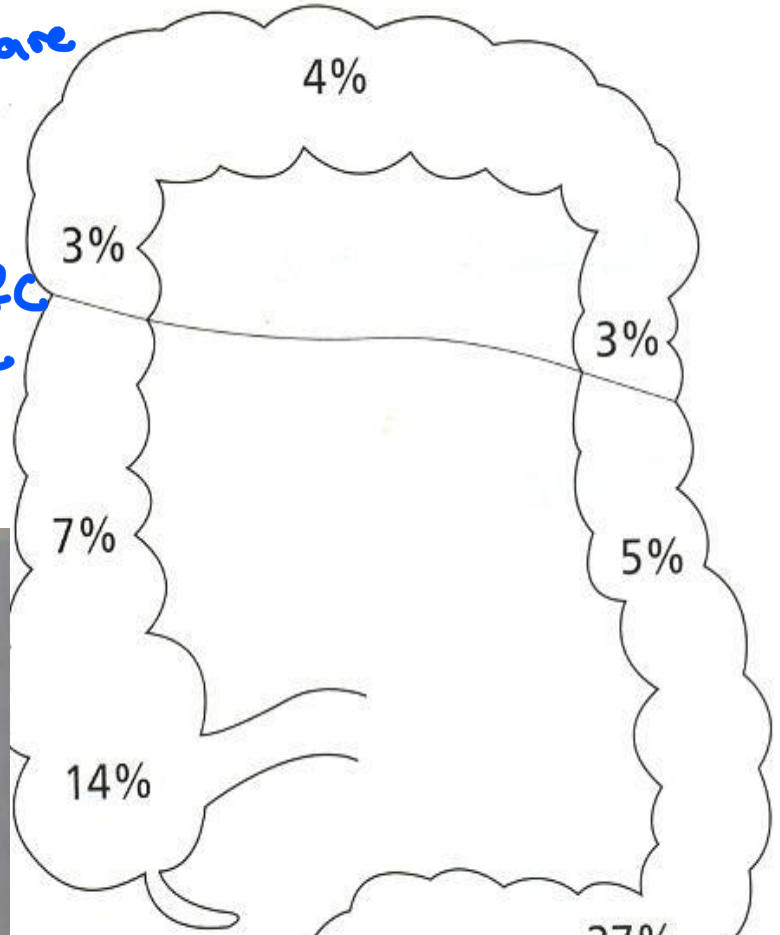


Fig 24.11 **Anatomical distribution of colonic carcinoma.**



- Rectum Cancer 20%.
- Recto sigmoid Cancer 10%.
- 2/3 colon cancer are 50cm above the anal canal ...

rectum + sigmoid

notes فارغ

* The O_2 dessociation curve :-

→ shift to the Rt :- ↓affinity of O_2 on Hb..

[↑O_2 that enter to the tissues]

↳ Acidosis - Shock - Pyrexia [hyper thermia] -

↑ Const. of 2-3 - Diphosphoglucerate...

→ shift to the lf :- ↑affinity of O_2 on Hb..

[↓O_2 that enter to the tissues]

↳ Co poisning - Alkalosis - hypo thermia -

↓ Const. of 2-3 - Diphosphoglucerate...

Polyps and Cancers
Adenoma - Carcinoma Sequence



- Most cancers begin as adenomatous polyps
  So we begin the screening at 50 y/o
- 25% of adults > age 50 have polyps
- 5-10% of polyps become cancers within 20 years (~2.5/1000/year)

Classification of colorectal polyps

- Metaplastic
- Hamartomatus
- Neoplastic
- Inflammatory

→ in gastric cancer and colorectal cancer..

* ↑ size of polyp → ↑ risk of cancer...
* The mc polyp is tubular polyp [adenometous]
* The most polyp becom malignant is: villous polyp...

→ The fundus gland polyp presented in gastric cancer just... occur with pt who take PPI for long time or FAP syndrome...

* Types of colorectal polyp:-

① Metaplastic → 0.1% become malignant
→ called Hyperplastic

② inflammatory → called: psudo polyp
→ occur with UC – CD

③ Neoplastic → adenomatus → tubular polyp [80%]
→ tubulo villous polyps [has neck] وسط بين
→ villous polyps [No neck] [5%]
↳ occur in lower 1/3 rectum...
↳ lead to mucus secretion instead of stool called spurious diarrhea...
↳ lead to hypo kalemia and hypo proteinima...
rich by protein and K+...

→ Flat polyps → occur with NPCC syndrome...

④ Hamartomatus:- occur in peutz-jeghers and juvenile polyposis...

Malignant polyp

Types of polyps

- Sessile → villous
- Pedunculated → tubulo villous

Prognostic factors for malignant transformation

- **Size of the polyp** the most important factor.

Less than1cm, ~~more than~~ 2cm → 10% - >3cm : 50-40%

1% ↵

- **Type of polyp** [serrated polyp in rectum]

Tubular 80%,tubulovillous 15%,villous 5%

- **Flat polyp** Localizing in the lower 1/3 of the rectum.
- **Number of polyps more than 3**
- **Poor differentiation**
- **Vascular, lymphatic invasion**
- **Site of polyp**

* The cancer with ulcerative lesion worse than polypoid lesion...
↳ more aggresive

* if the tumor presented in V4 the circumference of the Colon:-
[6month] 0.5 year...

* if the tumor presented in V2 the circumference of the Colon:-
[12month] 1year..

* if the tumor presented in 3/4 the circumference of the Colon:-
[18 month] 1.5 year...

Question:-

* pt 50 y/o male Complain from change in bowel habit + progressive constip.
→ what is the most likely diagnosis:-
↳ Cancer colon.

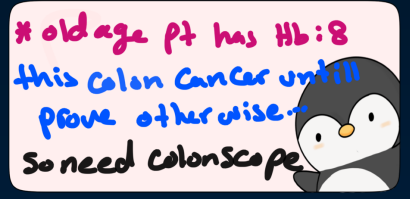
→ what is TNM staging of colon cancer:-

The skin disorders
-: [MCQ] يأتي
2 q. on maligant melanoma..
1 q. on squamous or Basal cell carcinoma..



Cancer spread

- **Direct spread**
  - Longitudinal,transverse, radial.
  - Retroperitoneal,intraperitoneal.
- **Lymphatic spread**
  - Epicolic,paracolic,para aortic lymph nodes.
- **Blood borne spread**
  - Liver 50%,lung10%.
- **Transcoelomic spread**



Presentation

- Emergency, chronic symptoms.

Right side lesions

- Anaemia,mass,diarrhoea,appendicitis like symptoms, and small bowel obstructions.

Left side lesions

- Change in bowel habbit,colicky abdominal pain, progressive constipation, and blood in stool.
- NB Non specific abdominal pain 50%.

* The Rt side lesion presentation :-

- how late presentation [worse than lt sided lesion]...
- come in middle-young age >30 ylo..
- presented with 1- chronic Blood loss → IDA..
  2- Rt iliac fossa mass..
  3- diarrhea..
  4- if it obstruct the appendix lead to appendicitis like symptoms...
  5- 20% emergency [presented with Colonic IO]
  6- Small bowel obst. unlikely due to → wide ceccum
  → wide AC
  → has watery stool...

* The lt side lesion presentation:-

↳ early presentation due to narrow lemun.

1- There is change in bowel habits...
2- Colicky abdominal Pain..
3- progressive constipation → due to narrow sigmoid colon
4- IO [most common in lt side lesion] and perforation...
6- come in old age...

* The commonest area of diverticular disease:- sigmoid colon
the narrowest area a'o ↵

→ perfusion pressure in the bowel lemmn. = $\frac{\text{tension}}{\text{radius of bowel}}$

[↑ narrow lemmn → ↑ tension]

* if there is sigmoid cancer → the antimesentric perforation happen in ceccum
wider a'o ↵

لـ ميتاتارد بـ تبع الـ colon ـ mesentric

* Any pt has tender ceccum + colonic IO → emergancy...

[He going to perforate].

* 50% of colon cancer has non specific abdominal pain...

* Tenesmus:- mucus discharge - incomplete evacuation - BPR
↳ indicate rectal cancer

* Narrowing decalebare of stool → alarming symptom for recto-sigmoid or sigmoid cancer...

* In abdominal exam usually we don't see any thing in colon cancer cases...

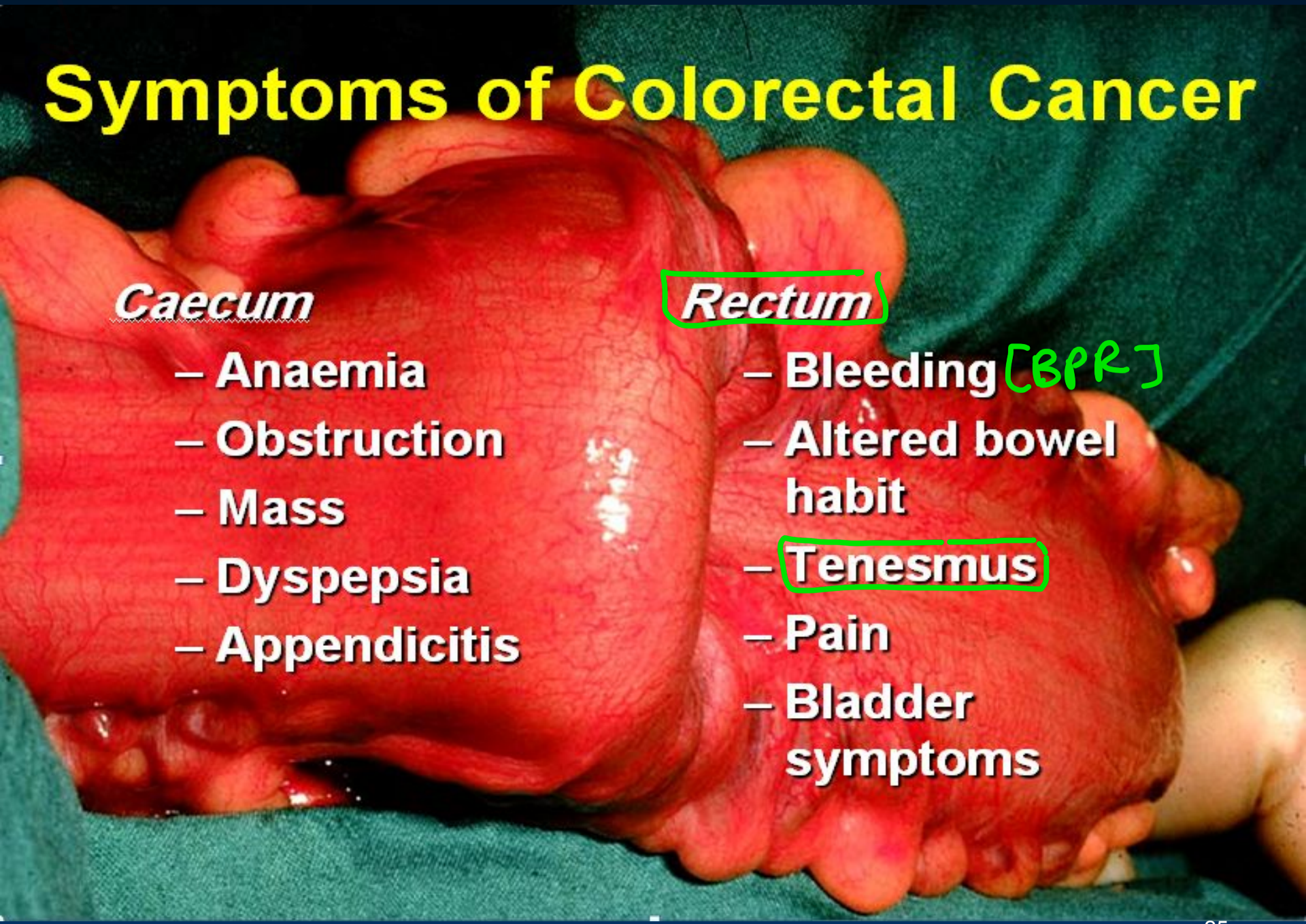
But in advance cases may be there is Asciteis - hard mass
↳ Bad...
felt in PR - nodule around the umblicus - supra clavicular LN
Called Blumer's Shelf ← ↳ sister mary joseph nodule. ↳ virchow LN

*Types of colon cancer:-

1. adenocarcinoma [mucus secreting cancer] 85%
2. mucinus cancer 15%
3. signetring cancer [too much mucus compress on the nucleus وبتخلي الخلية تاخد شكل الخاتم ..] 2%

* The tt method depend on the type of cancer - differentiation
- there is neurovascular invasion or not ... etc.

Symptoms of Colorectal Cancer



Caecum

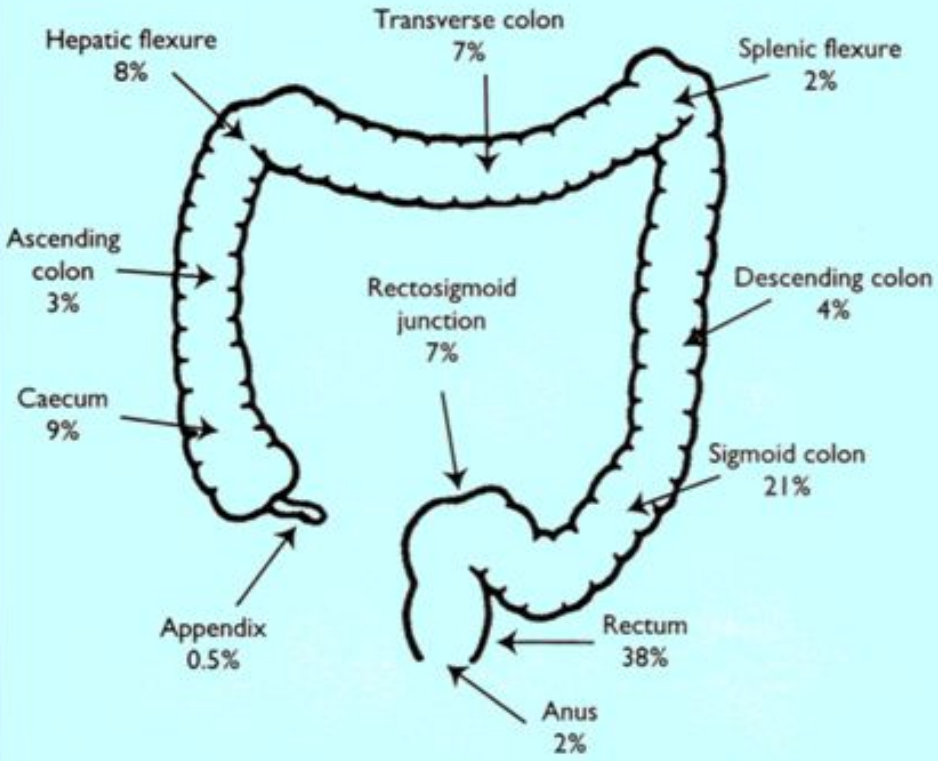
- Anaemia
- Obstruction
- Mass
- Dyspepsia
- Appendicitis

Rectum

- Bleeding [BPR]
- Altered bowel habit
- Tenesmus
- Pain
- Bladder symptoms



TOPOGRAPHY AND MORPHOLOGY OF COLORECTAL CANCER



The subdivisions of the large intestine, showing the percentage of all intestinal tumours that occur at each site

Most colorectal malignancies arise in the membrane lining the bowel wall. As this is glandular tissue the majority of tumours are:

- **ADENOCARCINOMAS**
  - **Mucin secreting >80%**
  - **Mucinous 15%**
  - **Signet ring cell 2%**
- **CARCINOIDS (<1%)**
  Arising from neuroendocrine cells
- **MALIGNANT LYMPHOMA (<1%)**

Tumours may also arise in the muscle wall of the intestine. They may be described as:

- **Gastrointestinal stromal tumours (GIST), which may be of uncertain malignancy (borderline), or invasive.**
- **Leiomyosarcoma, a malignant tumour of smooth muscle.**

Investigations and Staging

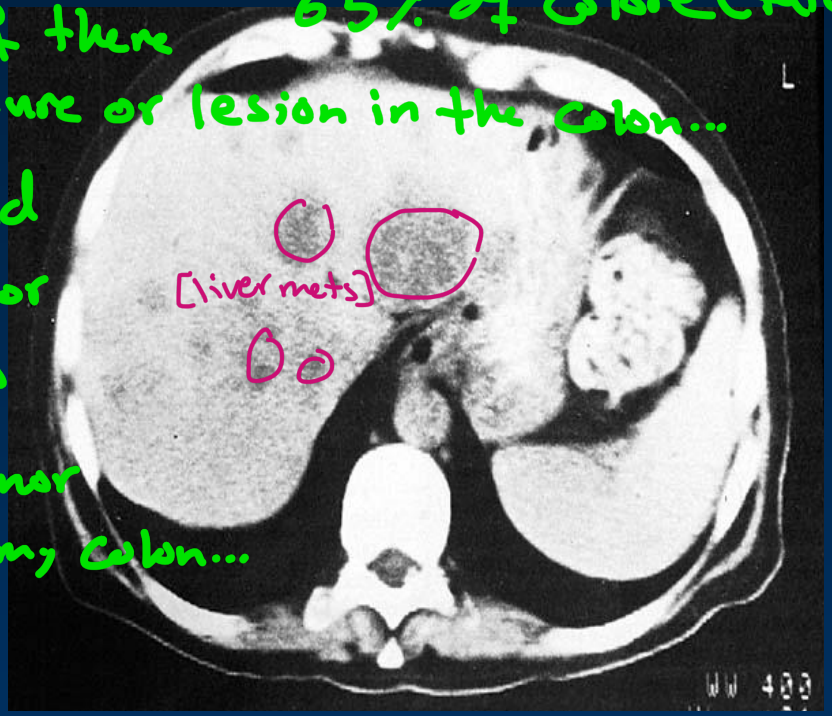
- Sigmoidoscopy + biopsy — if there is BPR
- Bloods
- CXR for metz
- Barium enema — to see if there is stricture or lesion in the colon...
- Colonoscopy [full] → the gold standard for diagnosis
- US +EUS — for liver mets
- CT
- MRI

→ to see the tumor depth in rectum, colon...

- LFt.
- Blood picture
- tumor markers
- CTC → CT colonography + contrast [for accuracy] ...

to see the rectum and sigmoid.

65% of Colorectal Cancer




FIRE
EXIT

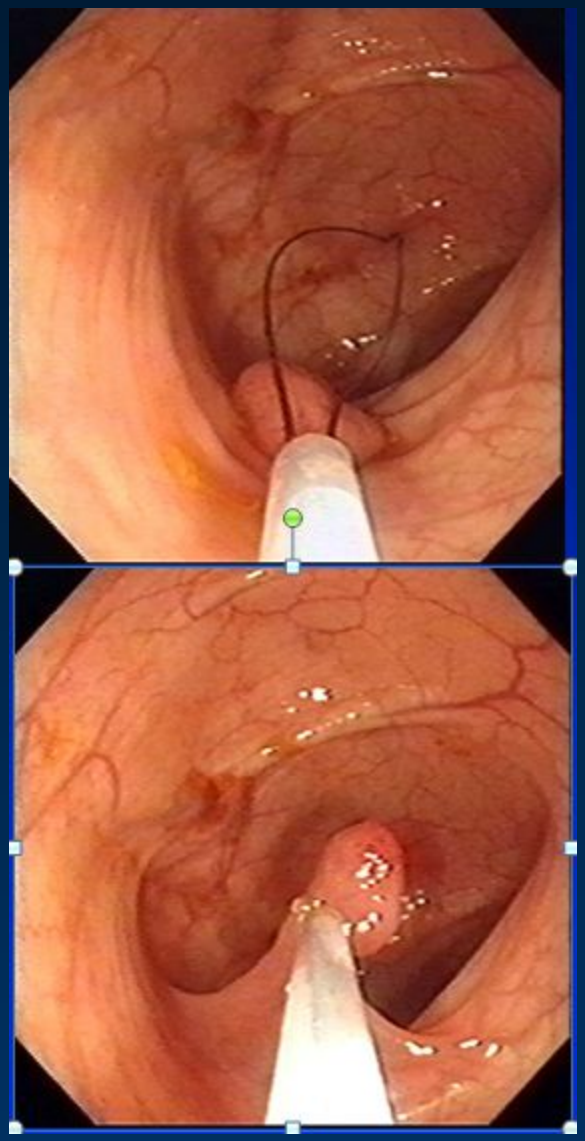


[polypoidal lesion]

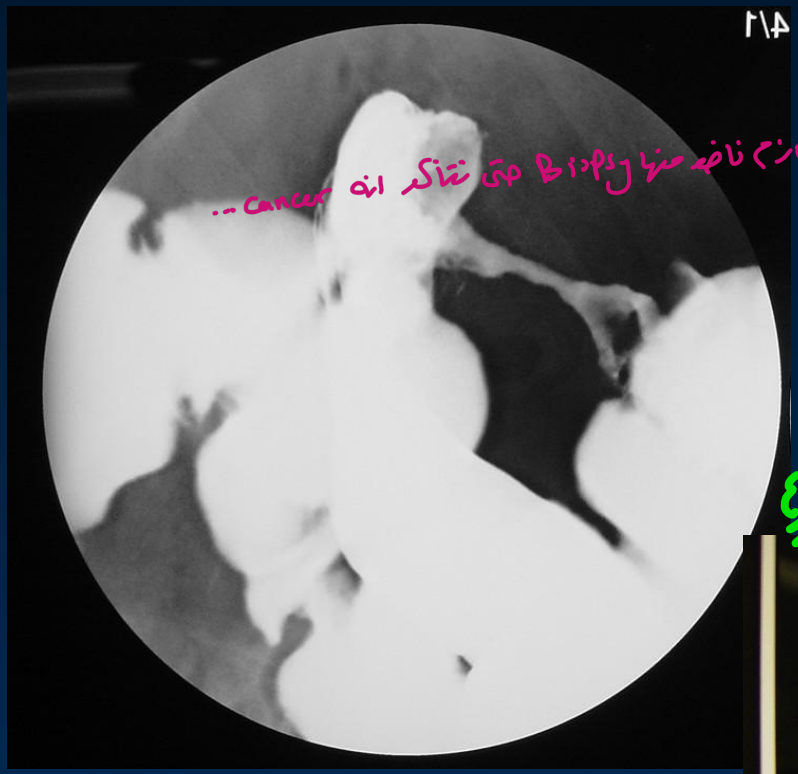
↓

excision it





→ if there is tumor we take Biopsy.

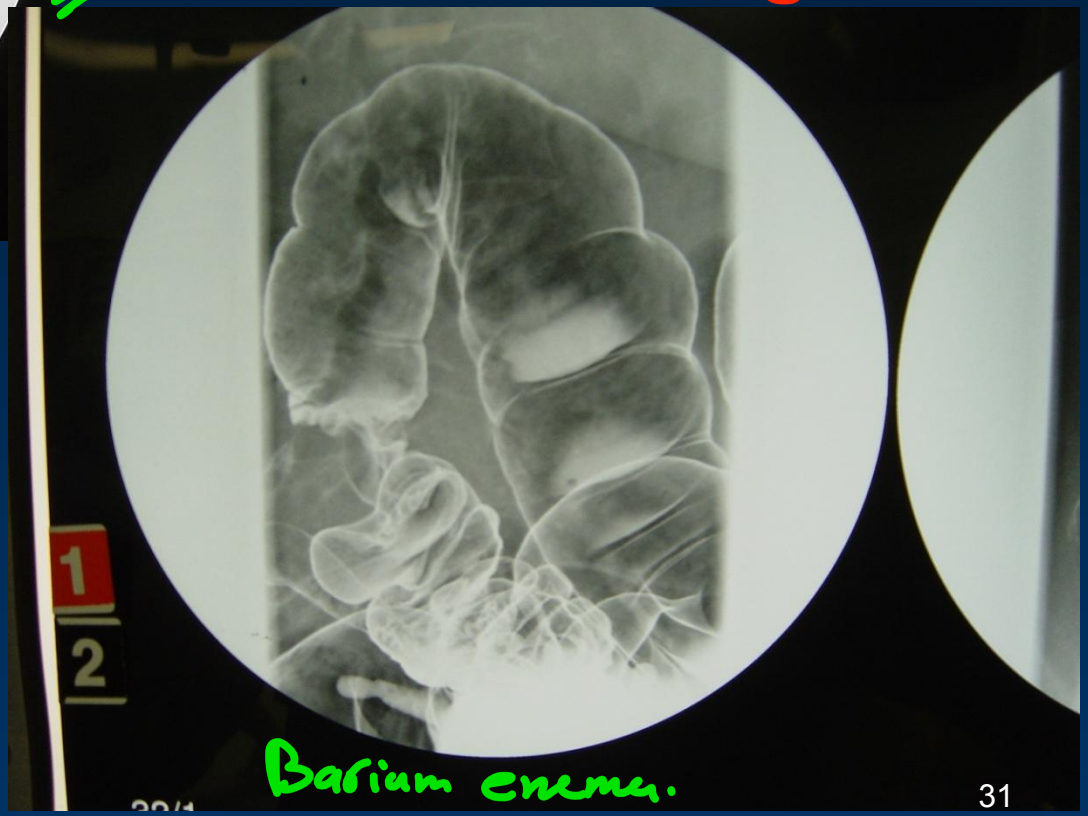


..cancer الا بتاكد حتى Biopsy وبنعمل ناضج جزء ← apple core lesion

* In Barium enema the apple core lesion indicate:-
  - Colon Cancer..
  - or Diverticular disease..
    - ↳ not pre malignant dz

⇐ [the IBD are premalignant dz]

* The stricture of CD:-
  - long
* The stricture of Cancer:-
  - short



Barium enema.


Lower GI Cancer
Peter Goodfellow

* The CT show the liver state...

Endoscopic Ultrasound

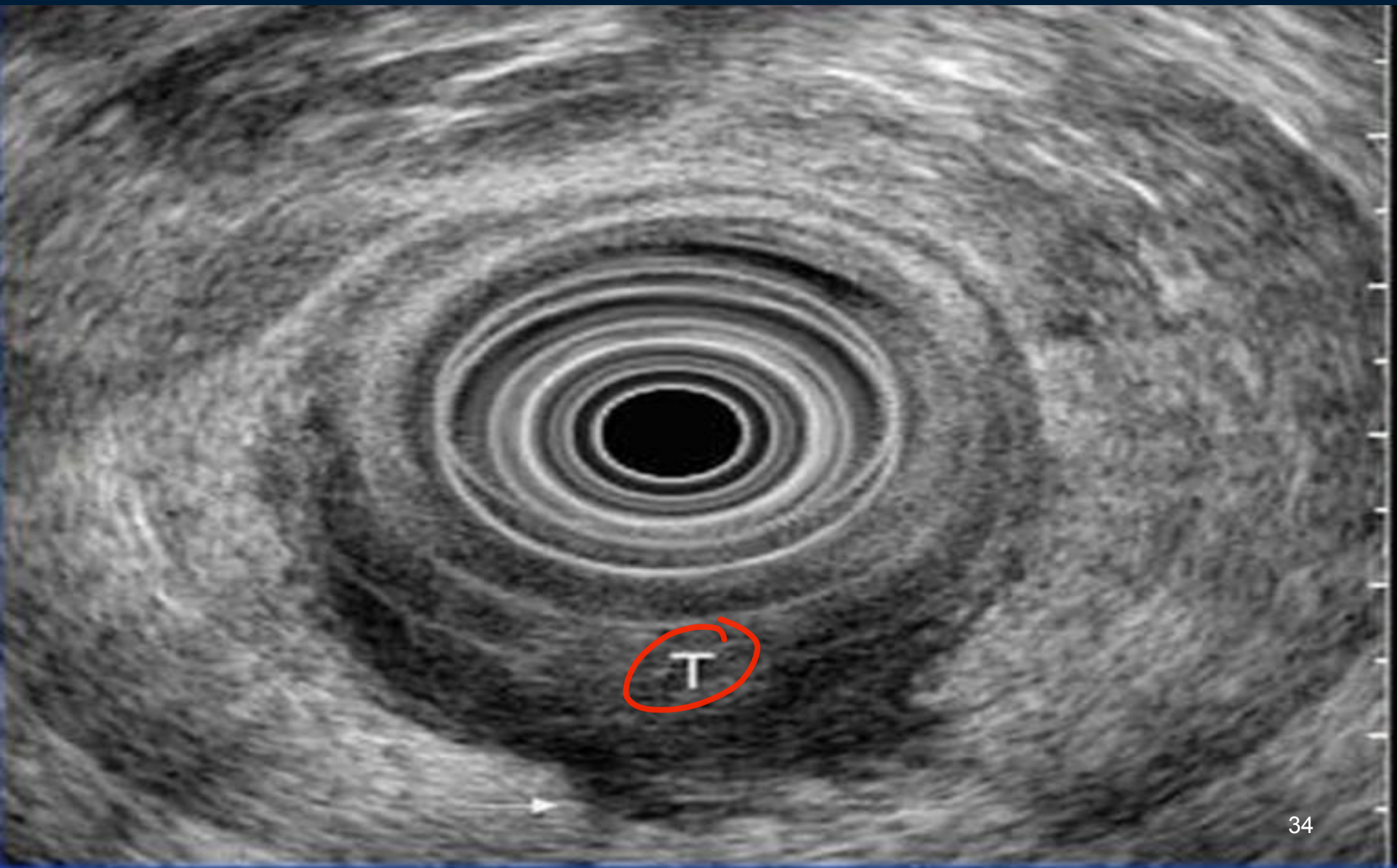
Is to see the depth of lesion + mets.

- An ultrasound transducer rotates at the tip of the instrument creating a cross-sectional image
- A water-filled balloon improves acoustic coupling
- Orientation is facilitated by the endoscopic view

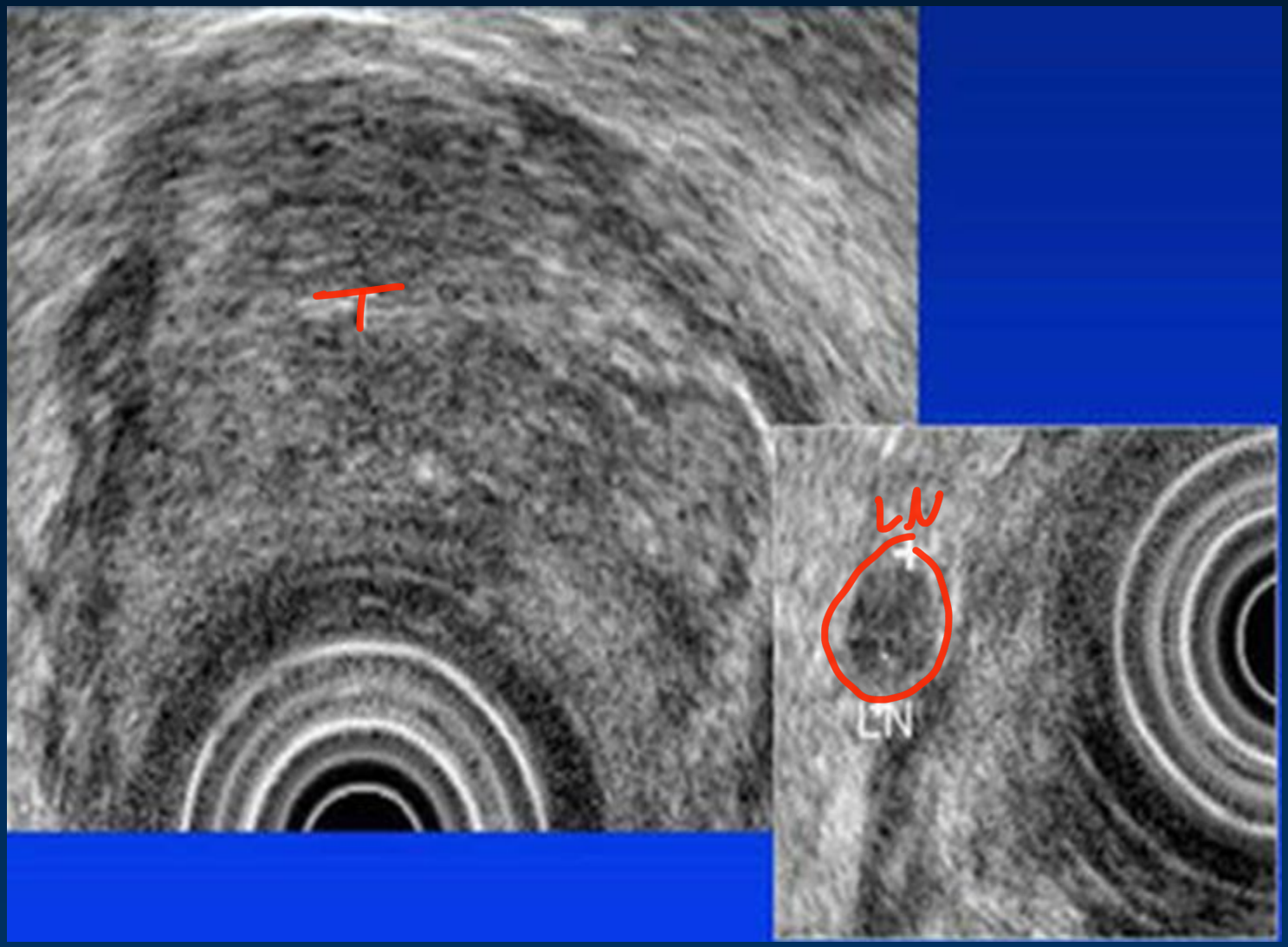


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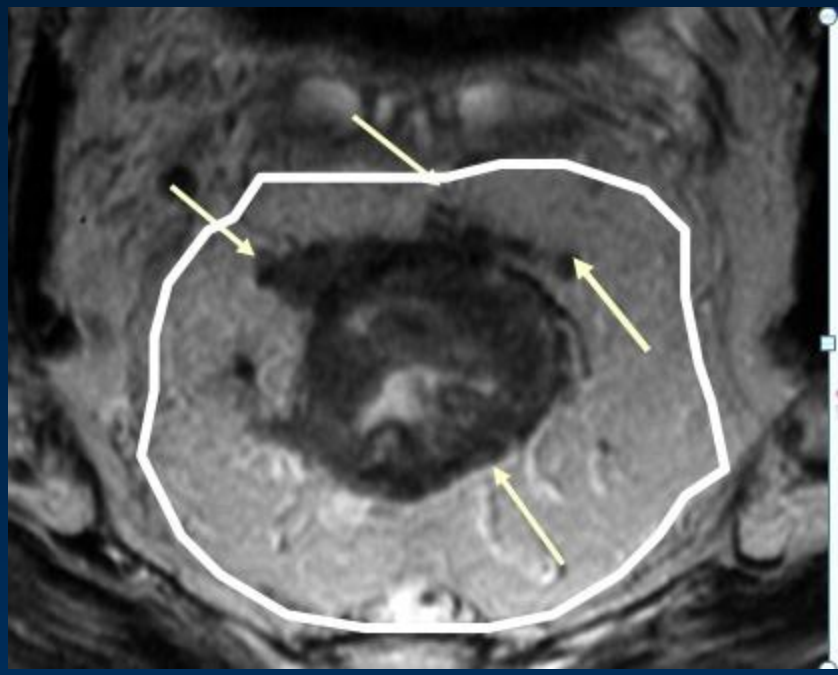
Rectal cancer T3 MKI

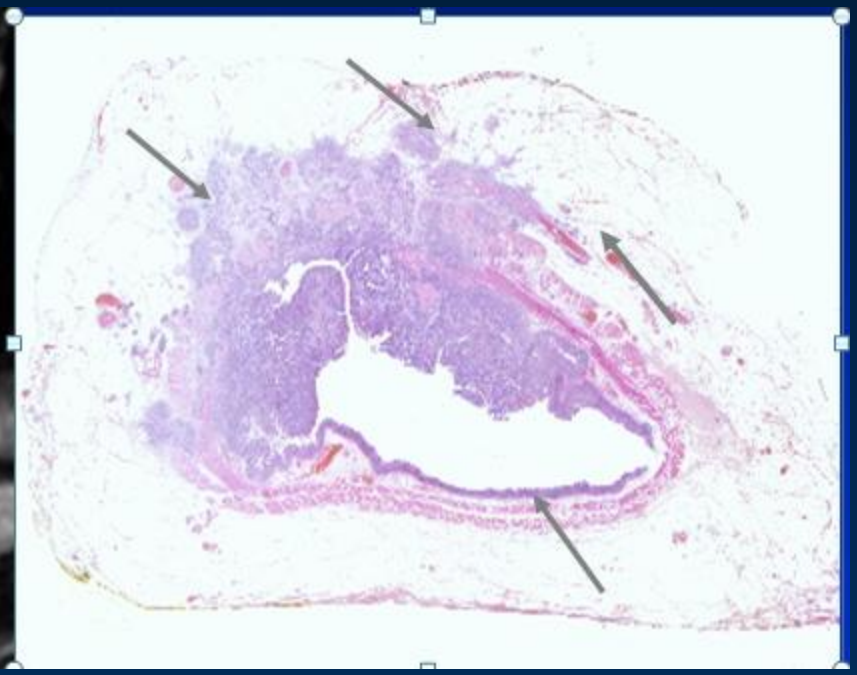


Rectal cancer T3N1 (MRI)



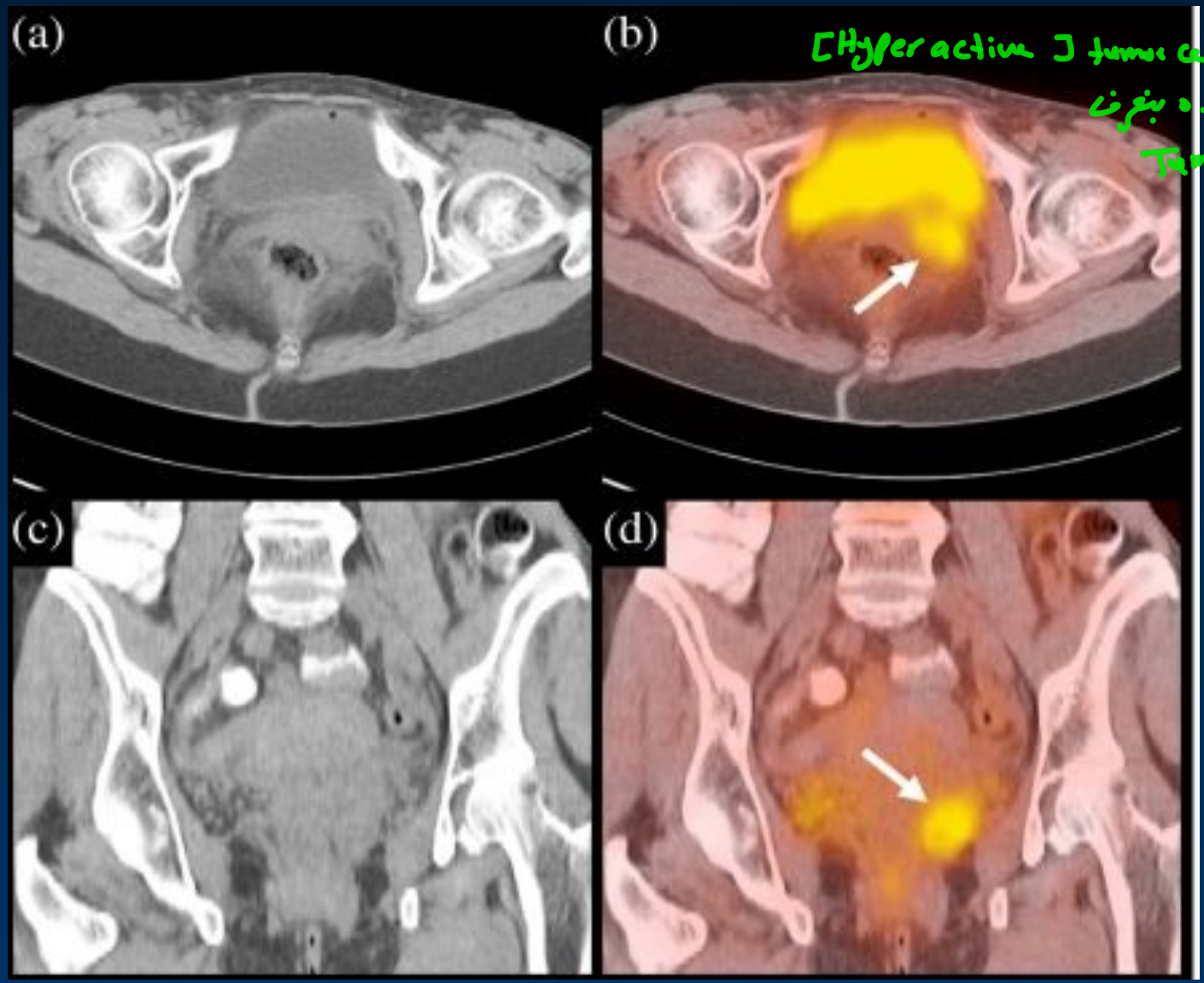
MRI scan for pre-operative staging

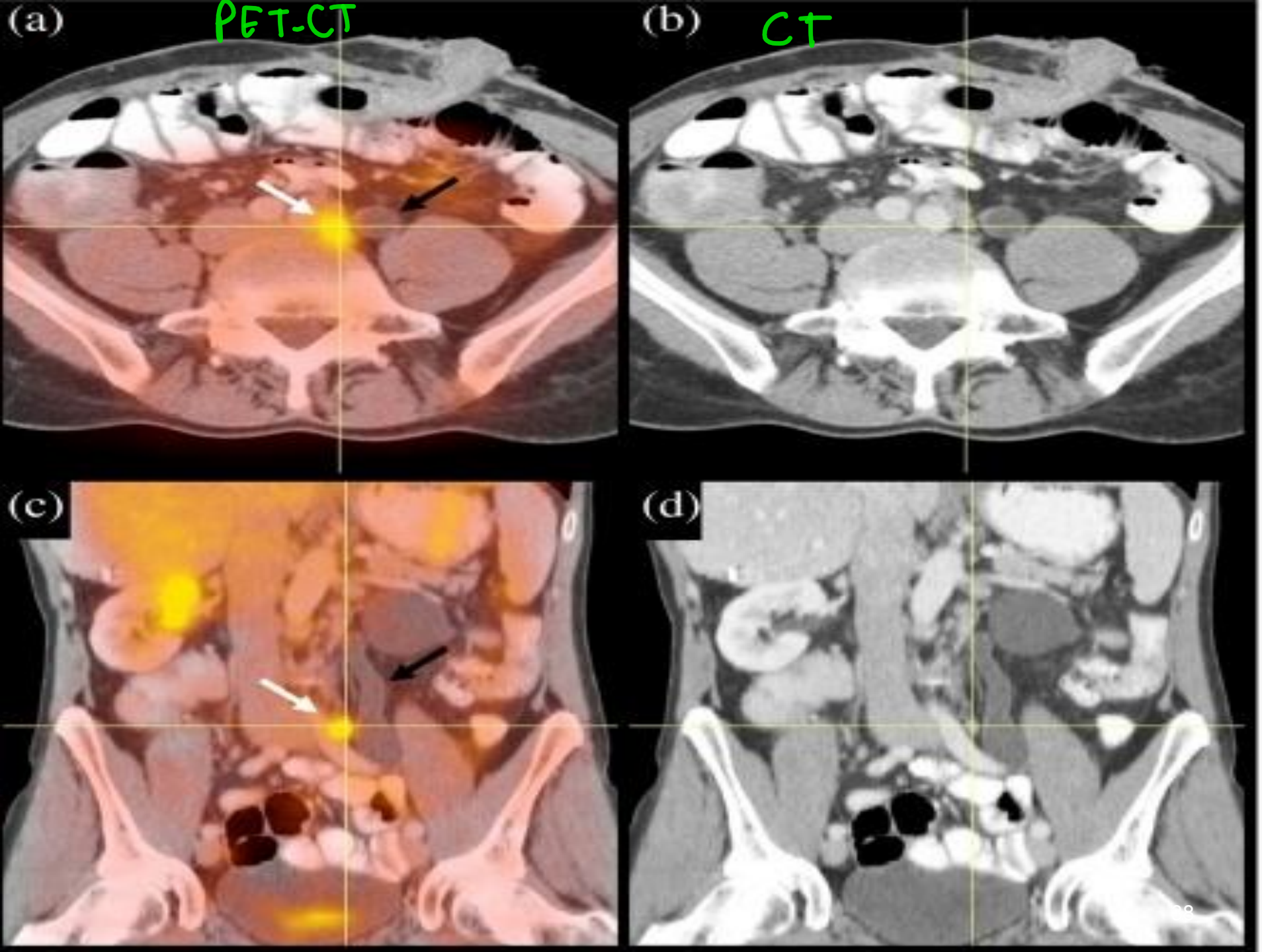




*CT Colonography:- high sensitivity for Cancer and large Polyps...
↳ Pain less [not need sedation]

CT- PET




(a)
PET-CT
(b)
CT
(c)
(d)

TNM staging of colorectal cancer

- Primary tumor T
- Tis carcinoma in situ
- T1 tumor invade sub mucosa
- T2 tumor invade muscle layer
- T3 tumor to serosa and peri colic fat
- T4 tumors invades organs or structures adhesion
- Regional LN N
- N0 No LN metz
- N1 Metz 1-3 lymph nodes
- N2 Metz 4 or more LN

Staging of colorectal cancer

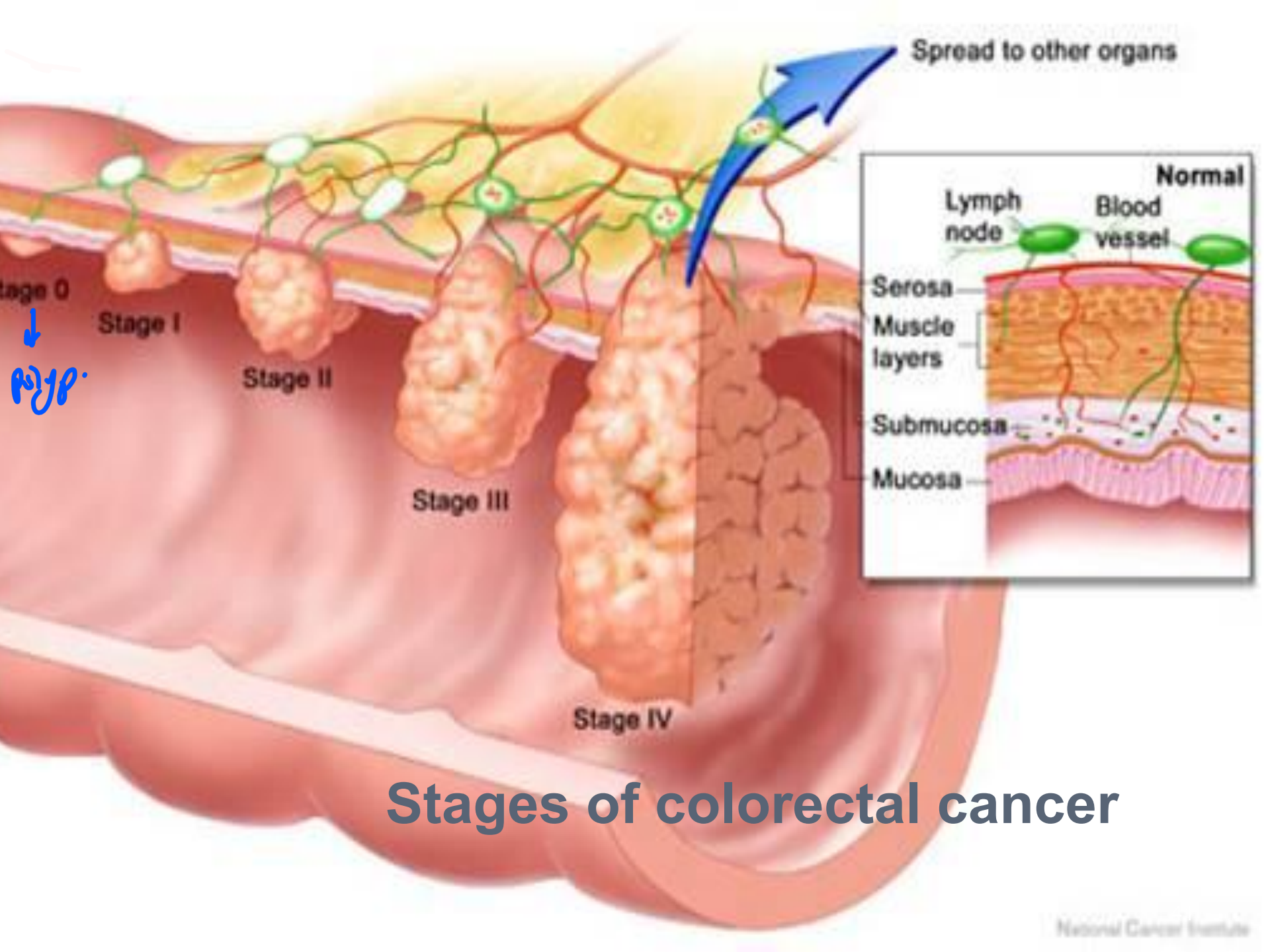
5year Survival rate:-

- **Stage I** T1,T2 N0 — **85%**
  - ↳ from mucosa → muscle
- **Stage II** T3,T4 N0 — **65%**
  - ↳ from serosa → invade other organs [adhesion]
- **Stage III** T1-T4 N1,N2 — **45%**
  - ↳ there is LN mets [distally]
- **Stage IV** anyT,anyN,M1 — **8%**
  - ↳ there is systemic mets [distally]

local dz

regional dz

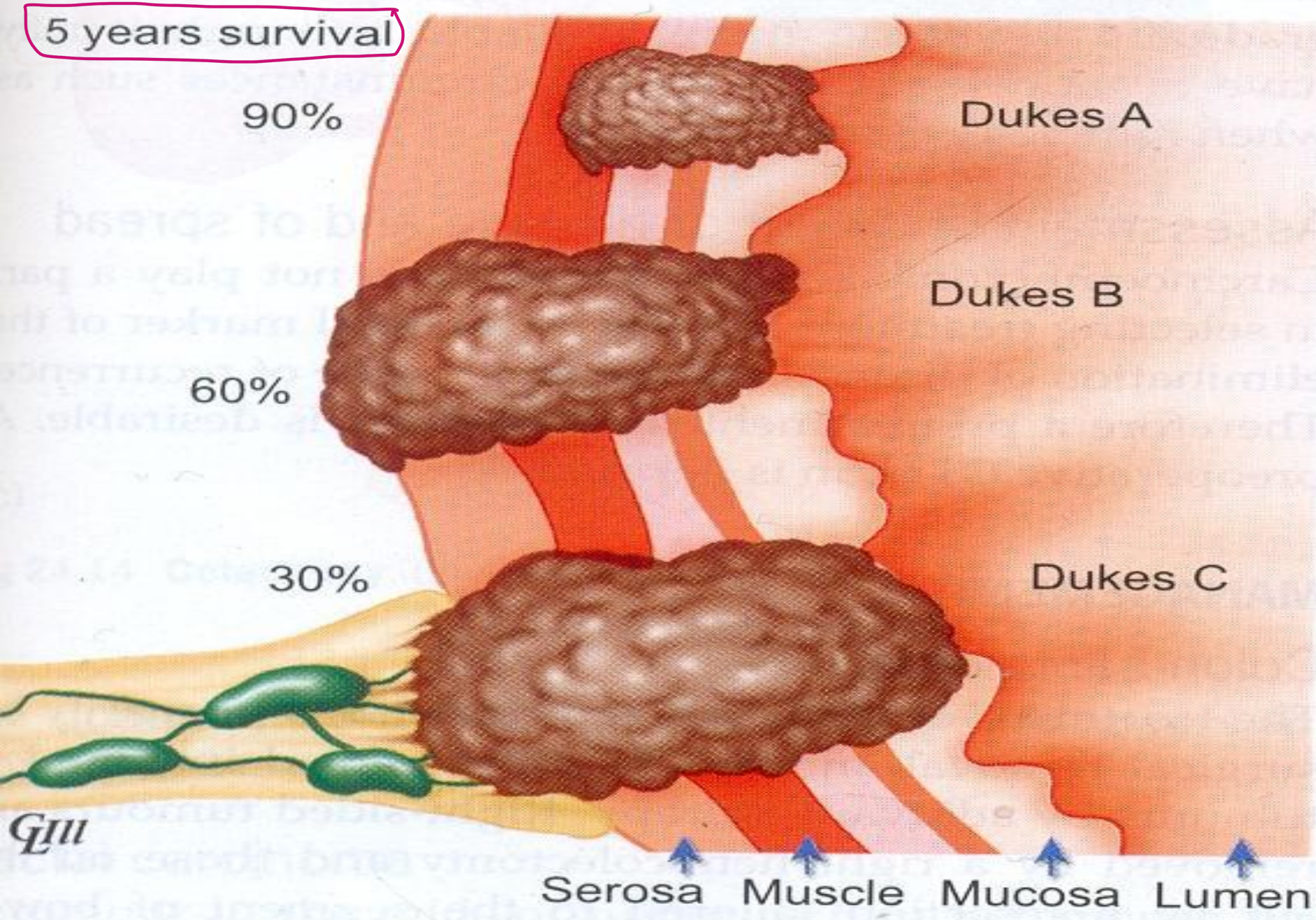
systemic dz



Stages of colorectal cancer

Clinicopathological staging of colorectal cancer

- Dukes' staging
- A ic not breaching muscularis propria
- B ic breaching muscularis propria
- C ic involving lymph nodes
- D ic with distant metastasis
- Five year survival
- A 90% B65% C35%

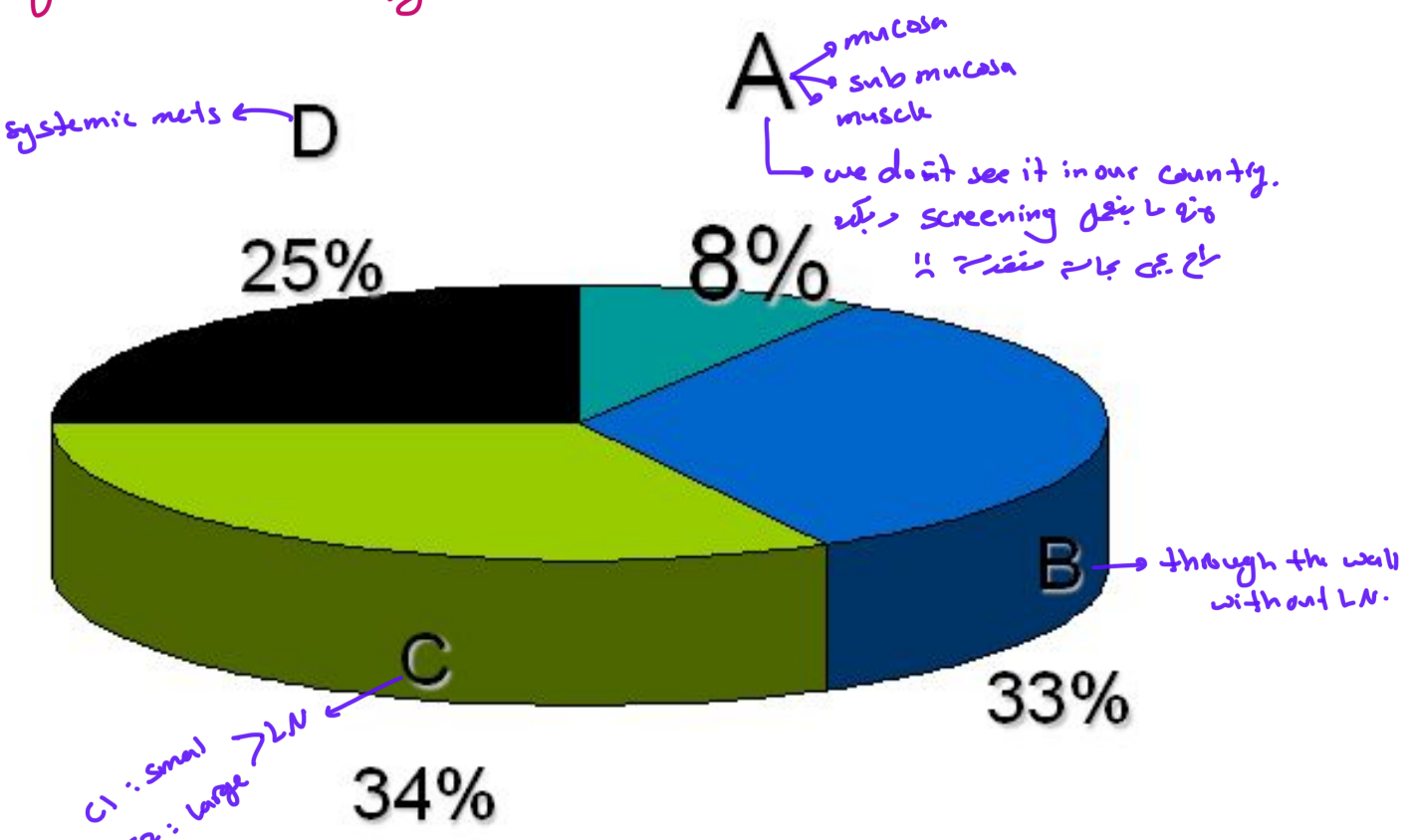


g 24.12 **Duke's staging of colonic carcinoma**

Stage Distribution of Symptomatic Colorectal Cancer

* C and D stages need chemotherapy.

* A and B stages not need chemotherapy.



Elective surgery

Preparation for surgery

- Bowel preparation

Presence of obstruction?

- Thromboembolic prophylaxis

- Heparin, low molecular wt heparin(clexane)

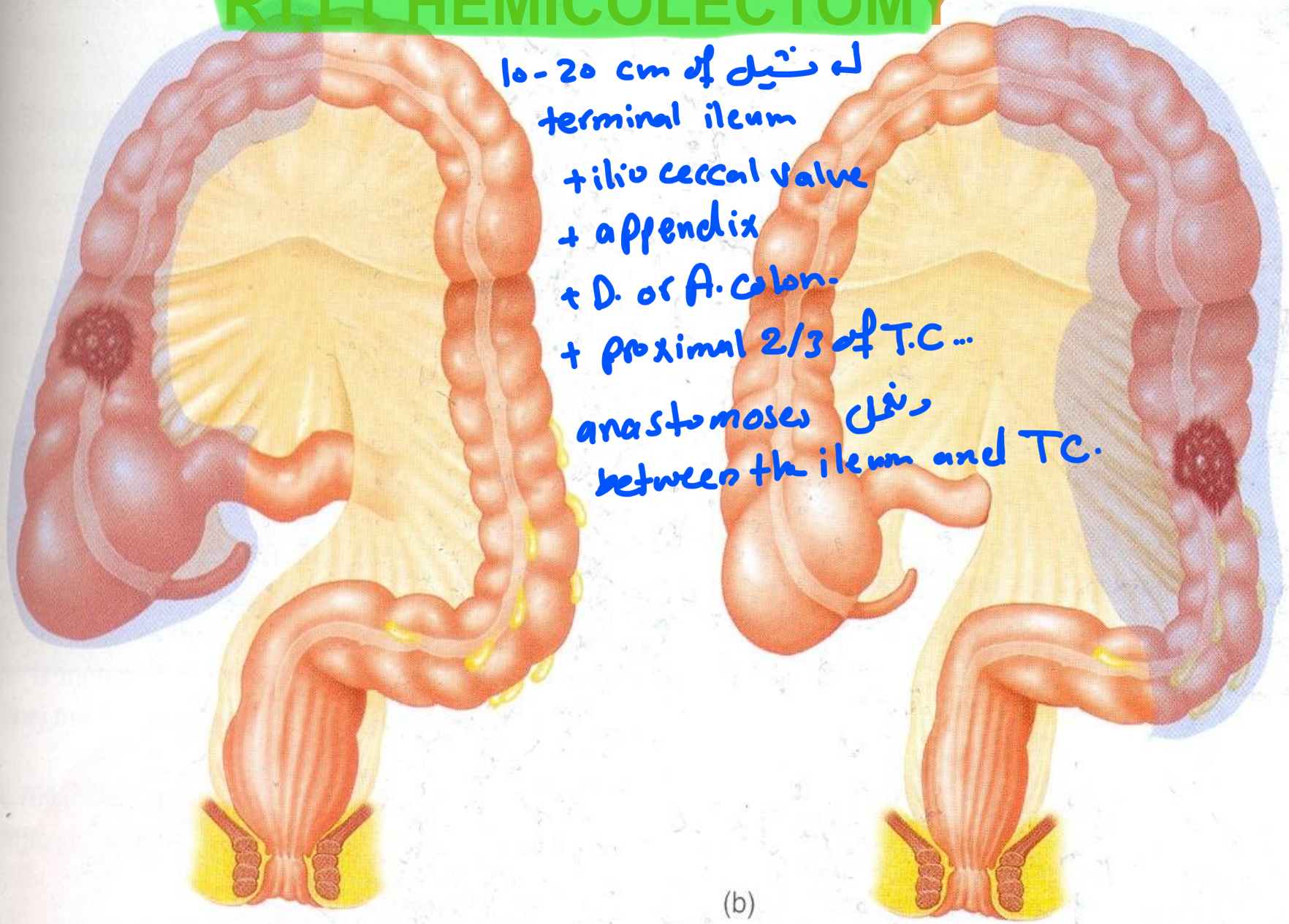
- Graduated elastic stockings.

- Antibiotic prophylaxis

Operative technique

- Right hemicolectomy
- Extended right hemicolectomy
- Lt hemicolectomy
- Sigmoid colectomy
- Anterior resection
- Low anterior resection
- Abdomino-perineal resection

RT, LT HEMICOLECTOMY



10-20 cm of terminal ileum

+ ileocecal valve

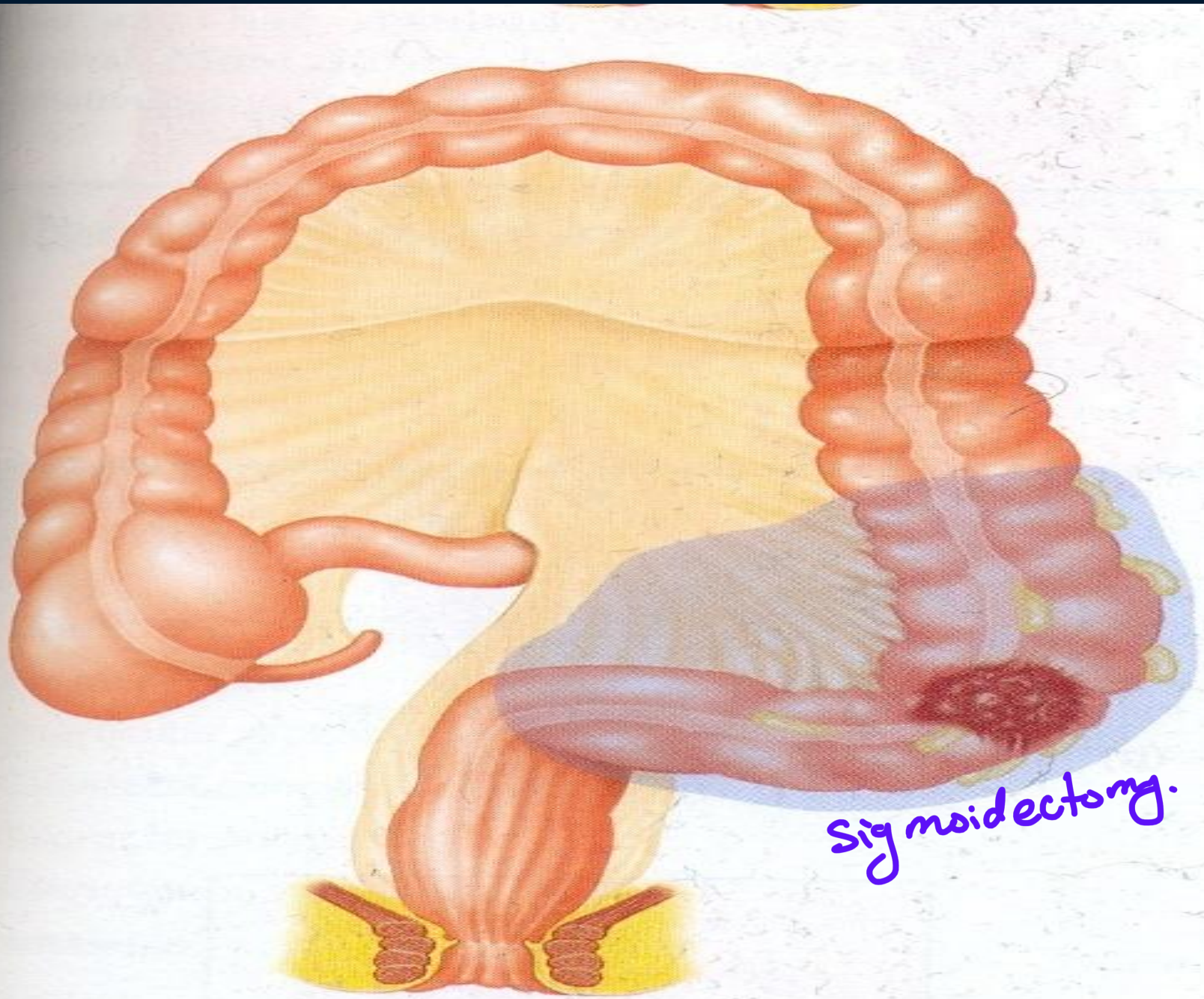
+ appendix

+ D. or A. colon.

+ proximal 2/3 of T.C...

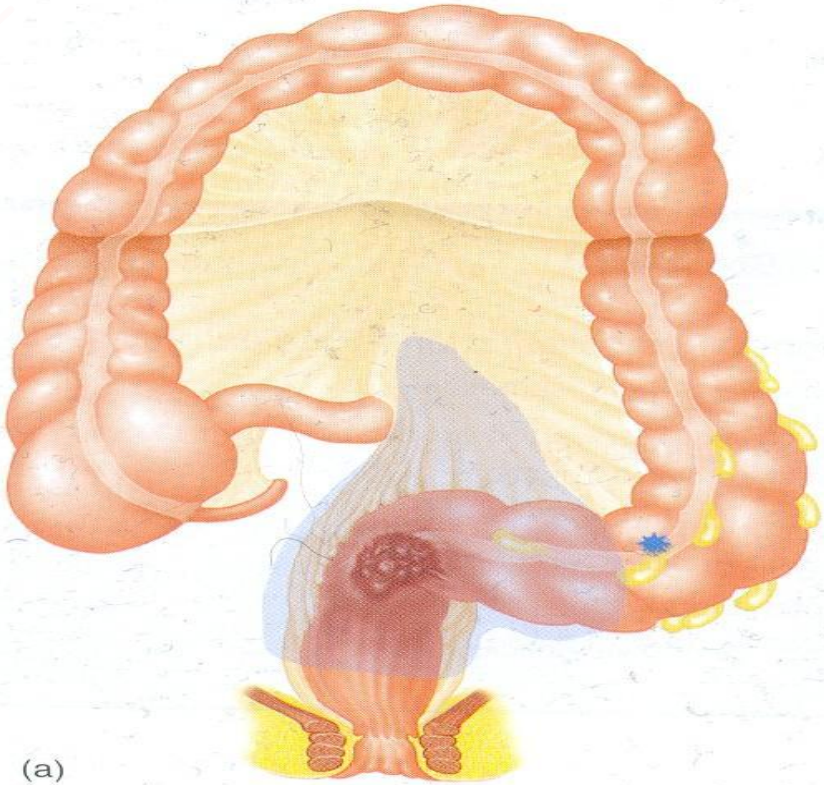
anastomoses between the ileum and TC.

(b)



c)

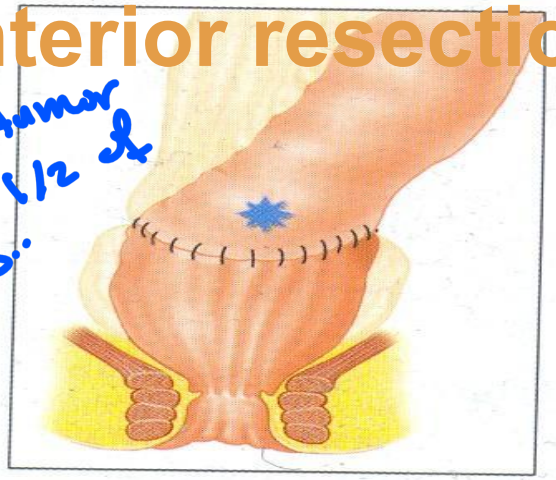
g 24.14 **Colectomy.** (Shaded areas resected)





Anterior resection, A-P RESECTION

when the tumor is lower 1/2 of Anus.



(with Colostomy [persistent]

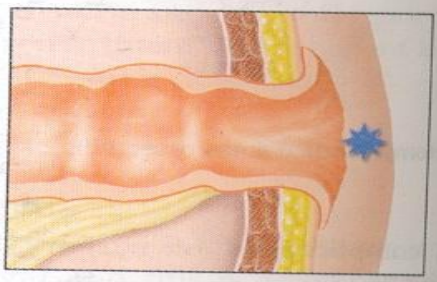
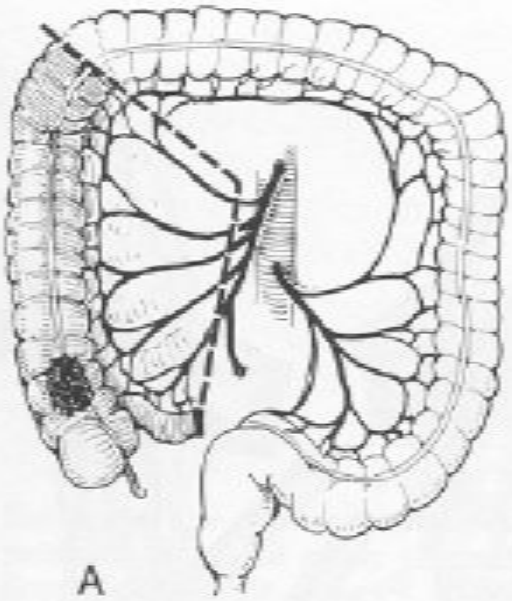
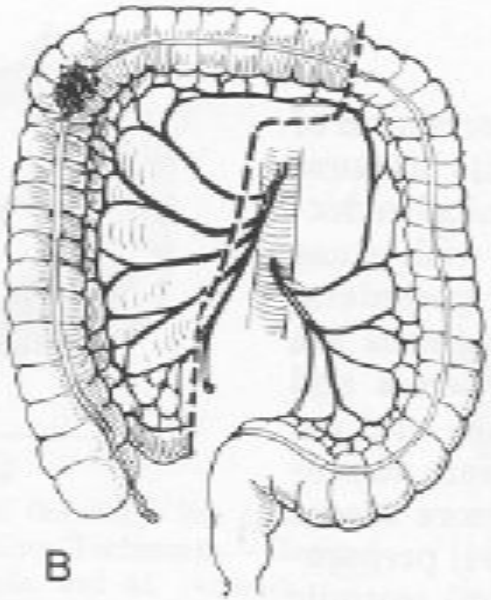


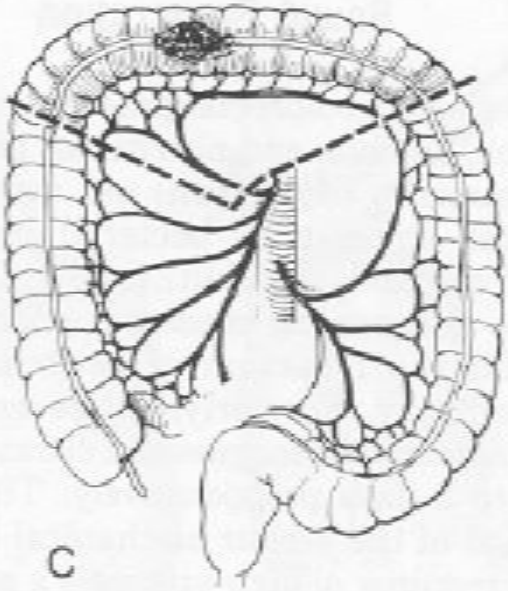
Fig 24.15 **Surgical management of rectal carcinoma.** (**a**) Anterior resection of the rectum. (Shaded area resected). (**b**) Abdominoperineal excision of the rectum and anus (shaded area resected).



Limited Rt hemi

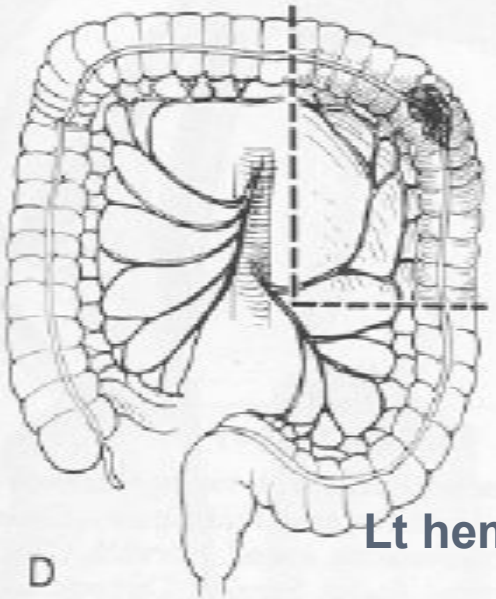


Rt hemi

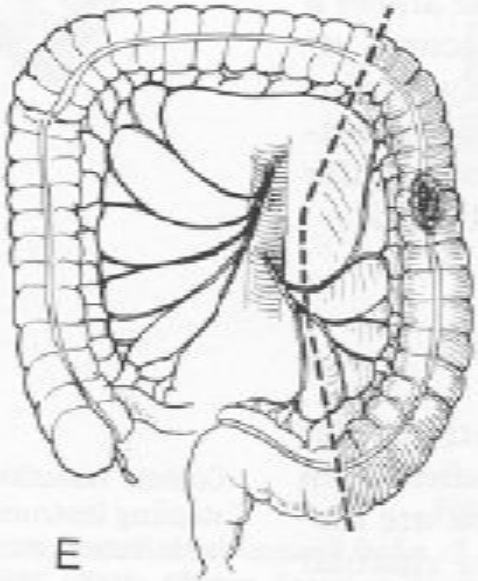


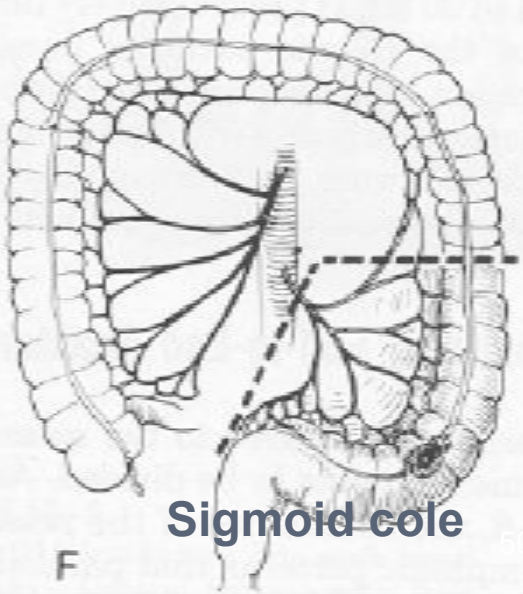
Transverse cole

splenic flexure بال T.C لـ مخيحبذة كتنا نفرول الـ
Le poor Blood suply + water shelt area..



Lt hemi





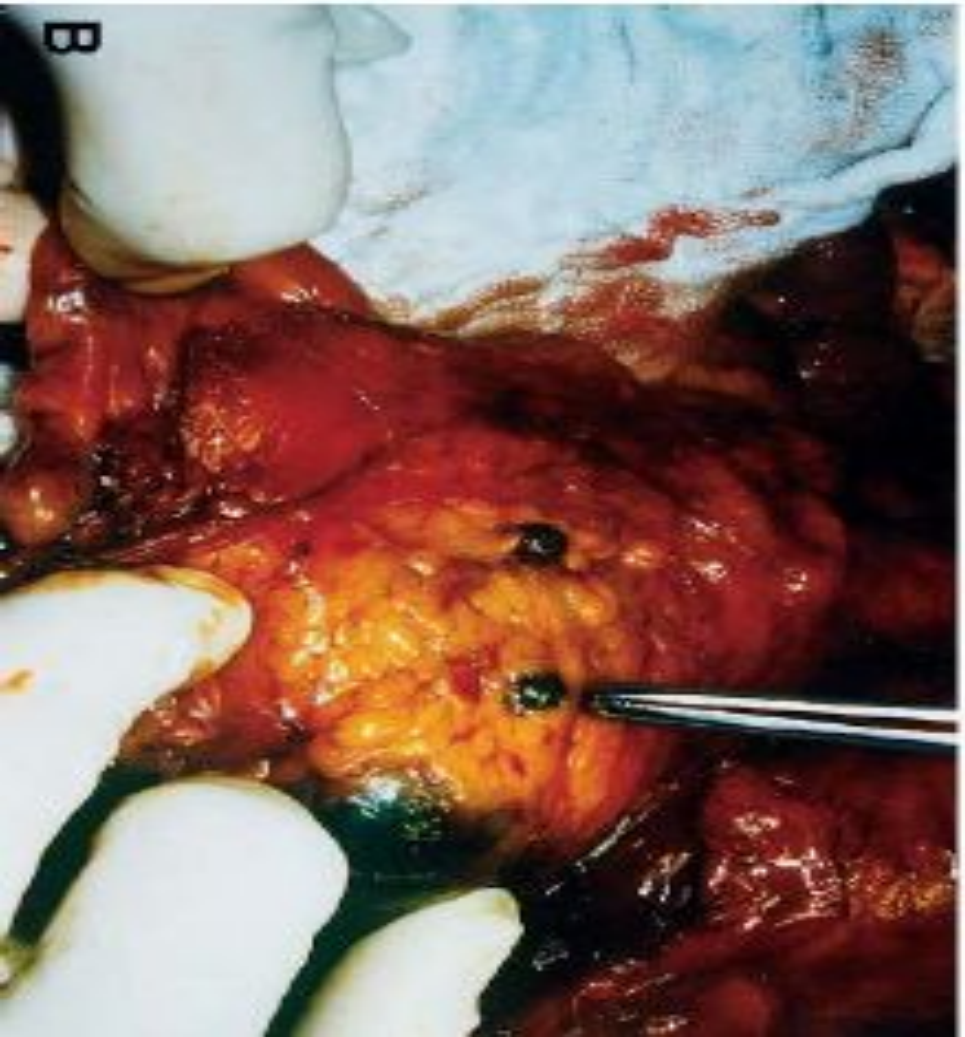
Sigmoid cole

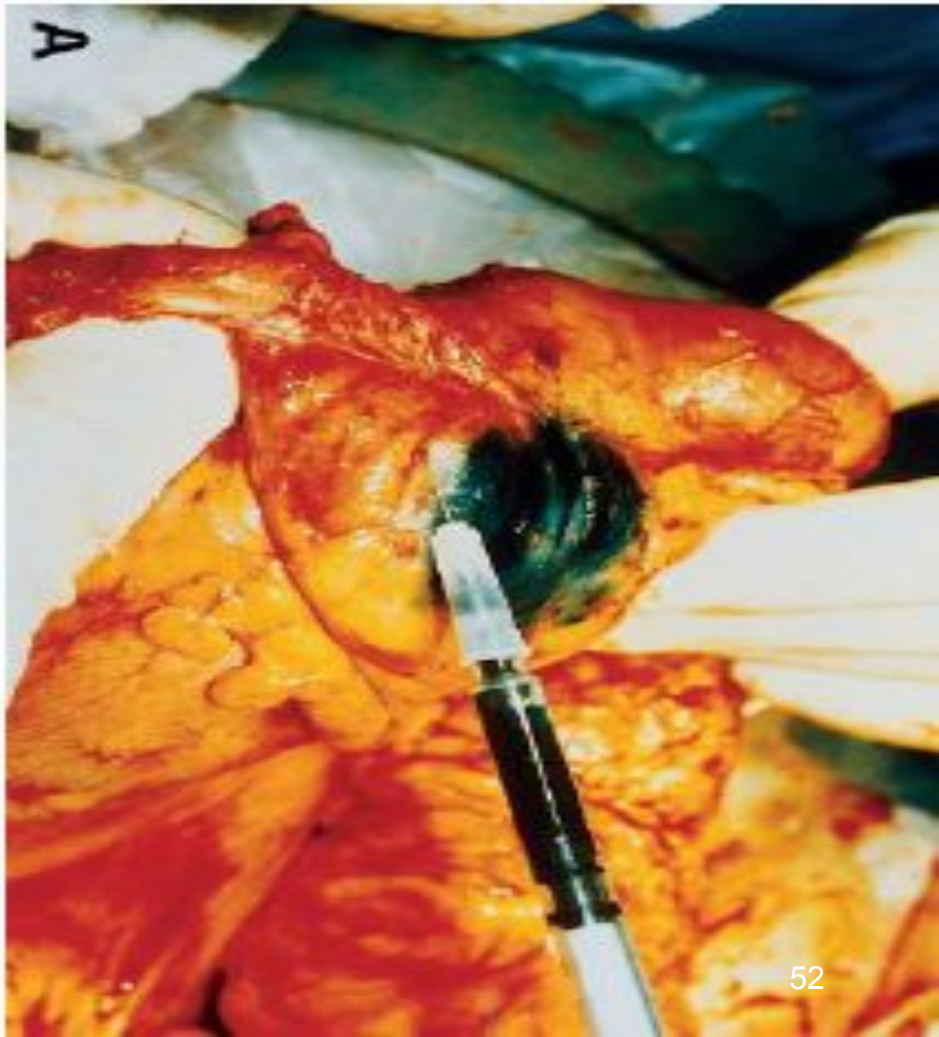
Sentinel LN biopsy

- Up staging node –ve to node +ve patients
- Help to identify small pericolic nodes
- Need at least 12 nodes for adequate staging
- SLN is present in 98%
- SLN if –ve no other +ve nodes are present

In 95%

Sentinel LN biopsy





تعقيم منظارة الكتمرة فلاز) ينتبه
انه يشيل كل
(١٢) لـ ١٥
at least..

Laparoscopic colectomy

- **Are there benefit for patient?**
- *Pain*
- *Quality of life*

- **Should we be doing this for cancer?**
- *Port site recurrences*
- *Cancer related survival*

Better in post operative period..

Laparoscopic Resection

عم بيكون orally بيأكل - جرح أصغر - ألم أقل - لـ

[But same as open surgery technique]..

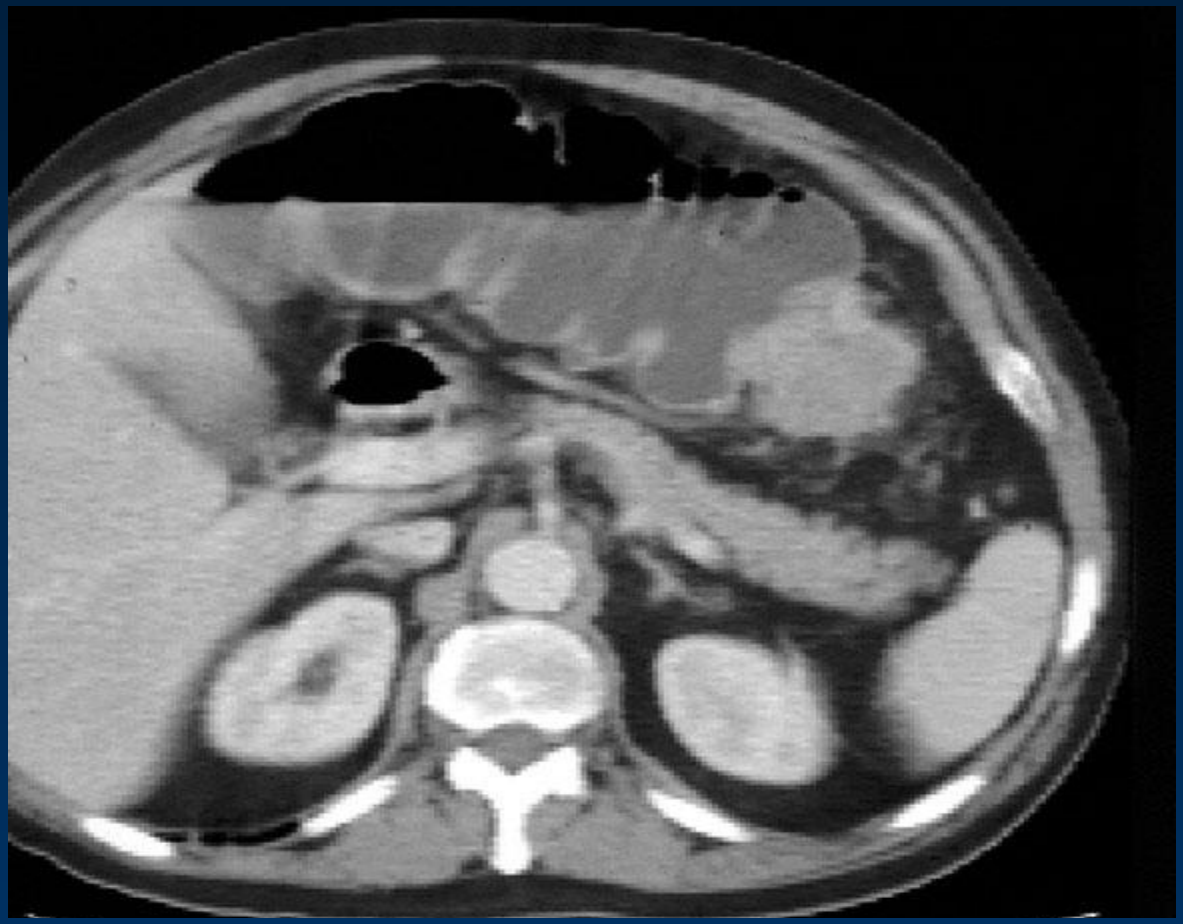




Emergency management

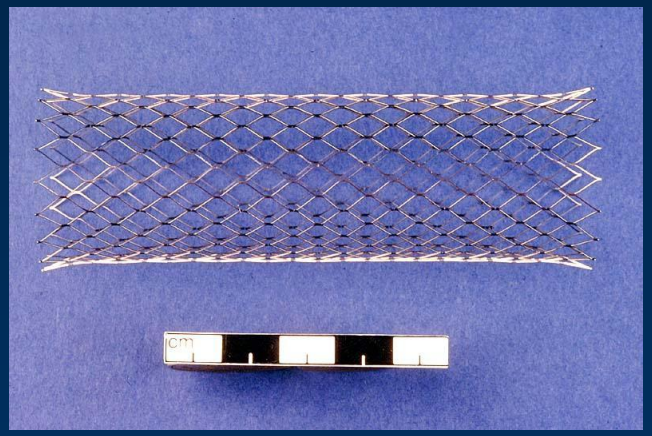
- 20% of cancer colon will present this way.
  - come with liver metz... [stage 4] OR IO
- Obstruction, bleeding ,perforation.
- Caecal size in PFA.
- Colonoscopy.
- Water soluble enema
- CT

Obstructing Cancer



Obstructing Colorectal Cancer

- Operate in day-time hours
  - Manpower
  - Resourse
- Exclude pseudo-obstruction
  - Gastrografin enema
  - CT scan
- Avoid stoma if possible
  - Single stage operation
- Overall mortality <20%

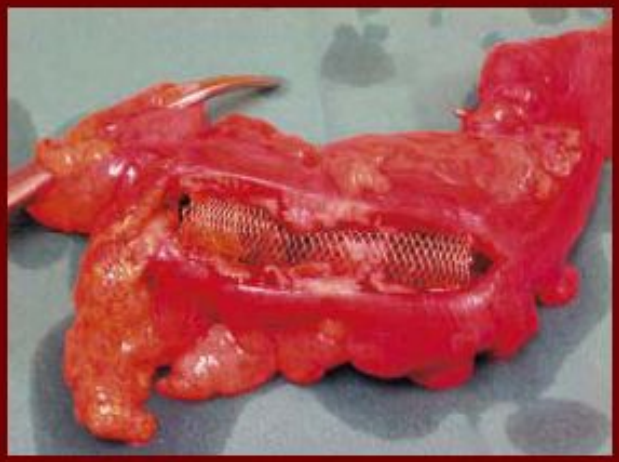


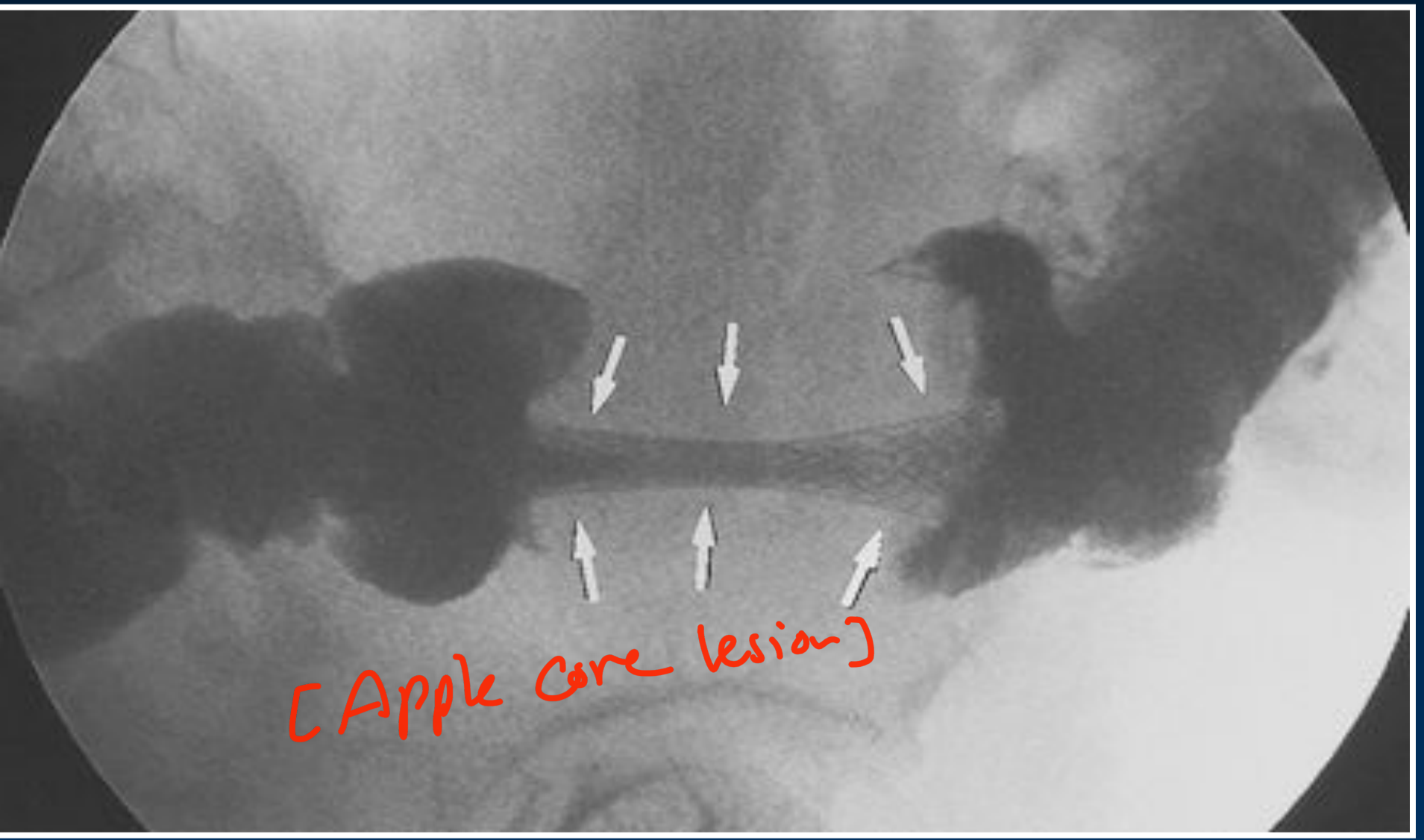
SEMS –Bridge to Surgery





Figure 1 Endoscopic view of partially expanded stent immediately after the stent placement.




[Apple core lesion]

Operative management

- Three stage operation

(Colostomy first)

- Two stage operation

(Hartmanns' procedure).

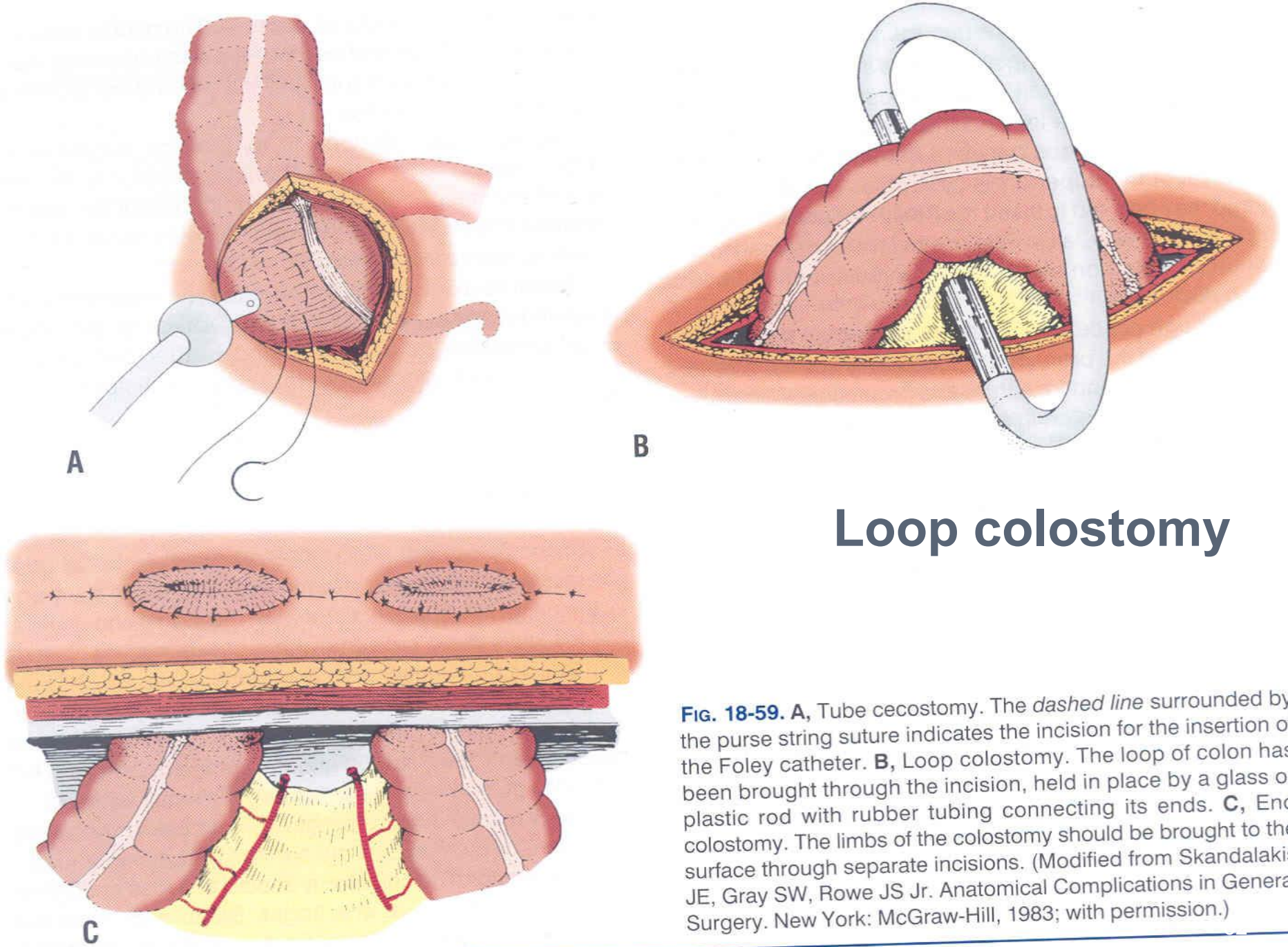
- One stage operation

(Resection anastomosis).

Treatment: Surgery

- 3-stage procedure
  - Proximal diversion, then resection, then reversal
  - Of historic interest only
  - High cumulative mortality (up to 31%)
  - Worse long-term survival due to delay in resection



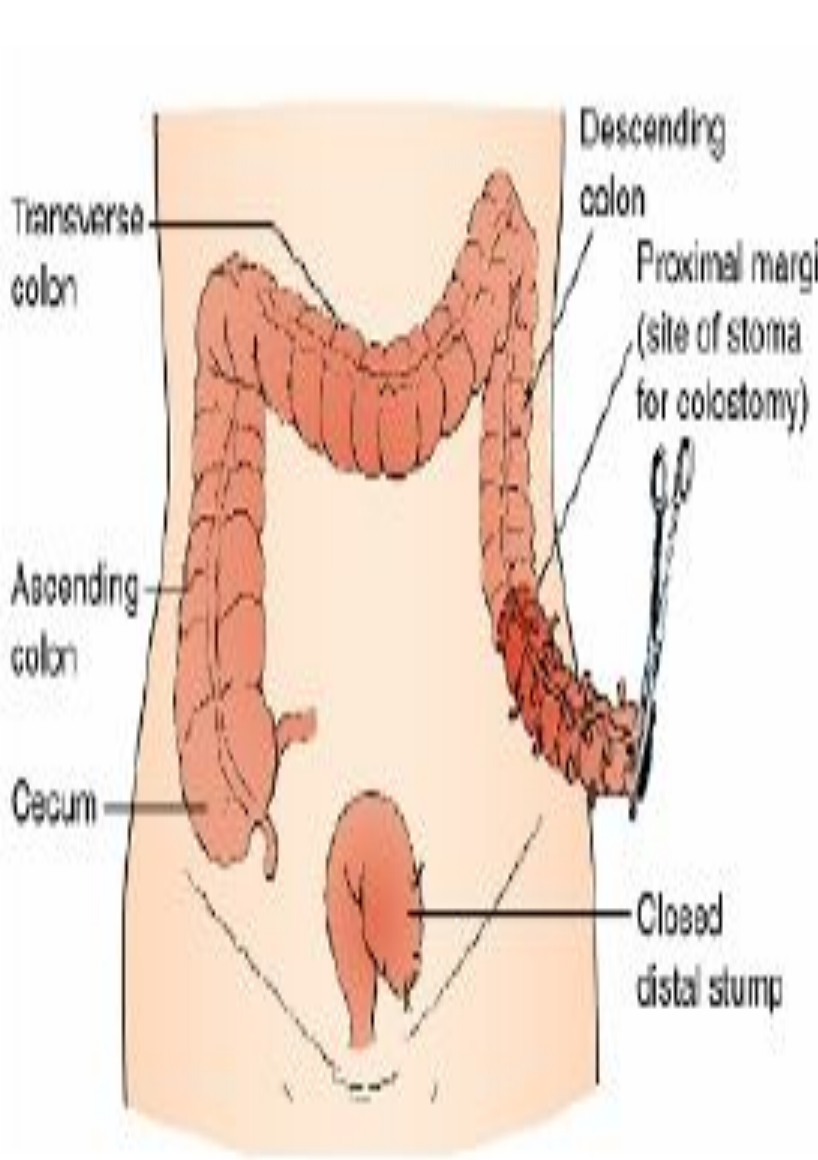


Loop colostomy

FIG. 18-59. A, Tube cecostomy. The *dashed line* surrounded by the purse string suture indicates the incision for the insertion of the Foley catheter. **B,** Loop colostomy. The loop of colon has been brought through the incision, held in place by a glass or plastic rod with rubber tubing connecting its ends. **C,** End colostomy. The limbs of the colostomy should be brought to the surface through separate incisions. (Modified from Skandalakis JE, Gray SW, Rowe JS Jr. Anatomical Complications in General Surgery. New York: McGraw-Hill, 1983; with permission.)

Treatment: Surgery

- 2-stage procedure
  - Advantage:
    - No risk of anastomotic leak at initial operation
  - Disadvantages:
    - 2 stages
    - Restoration of intestinal continuity inconsistent (17 to 70%)
    - Complications of colostomy

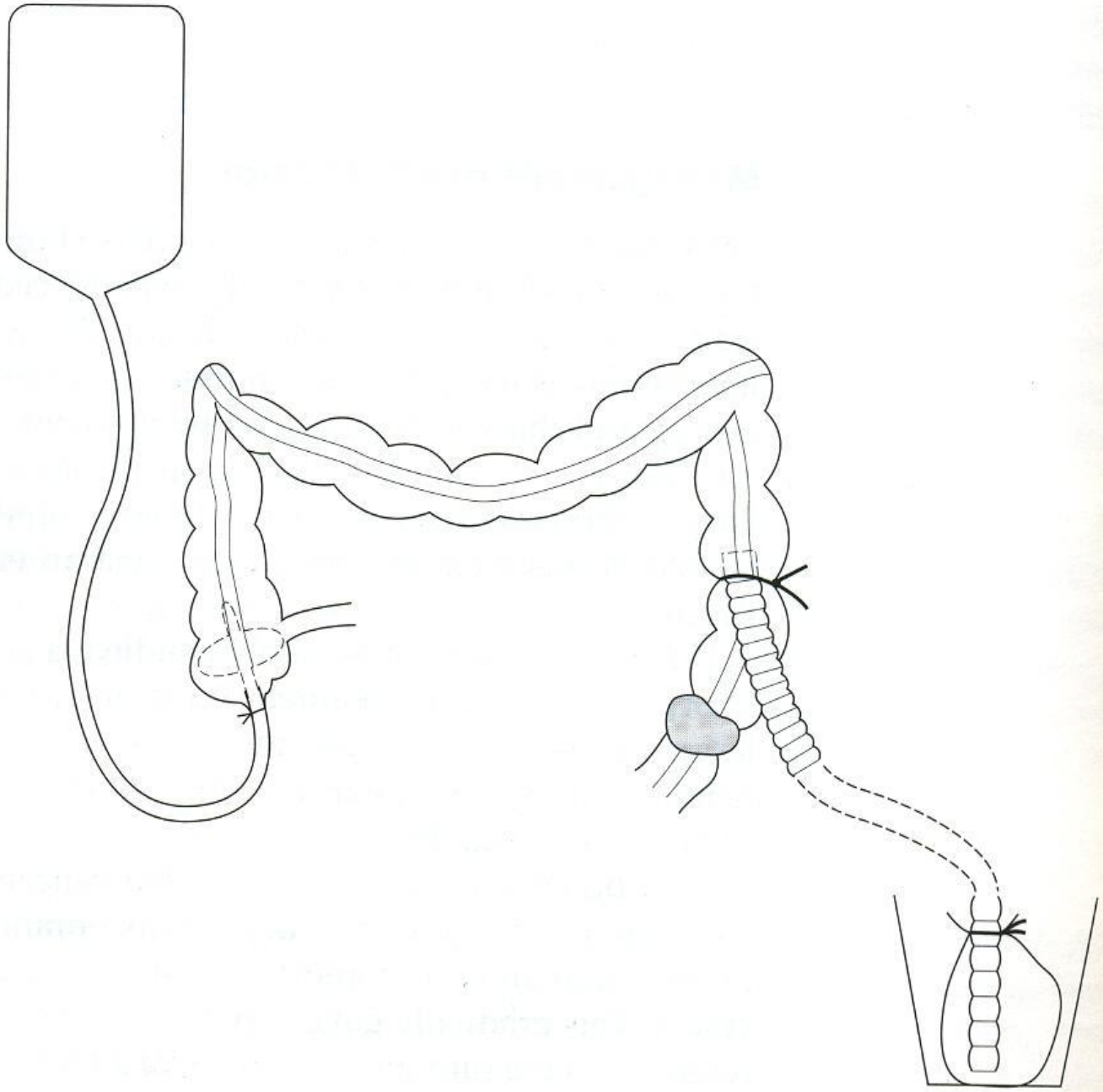


Treatment: Surgery

- 1-stage: Subtotal colectomy
  - Advantages:
    - Remove synchronous tumors
    - Prevent metachronous tumors
    - Good results (mortality 3 to 11%; leak rate 5%)
  - Disadvantages:
    - Increased bowel dysfunction (diarrhea)

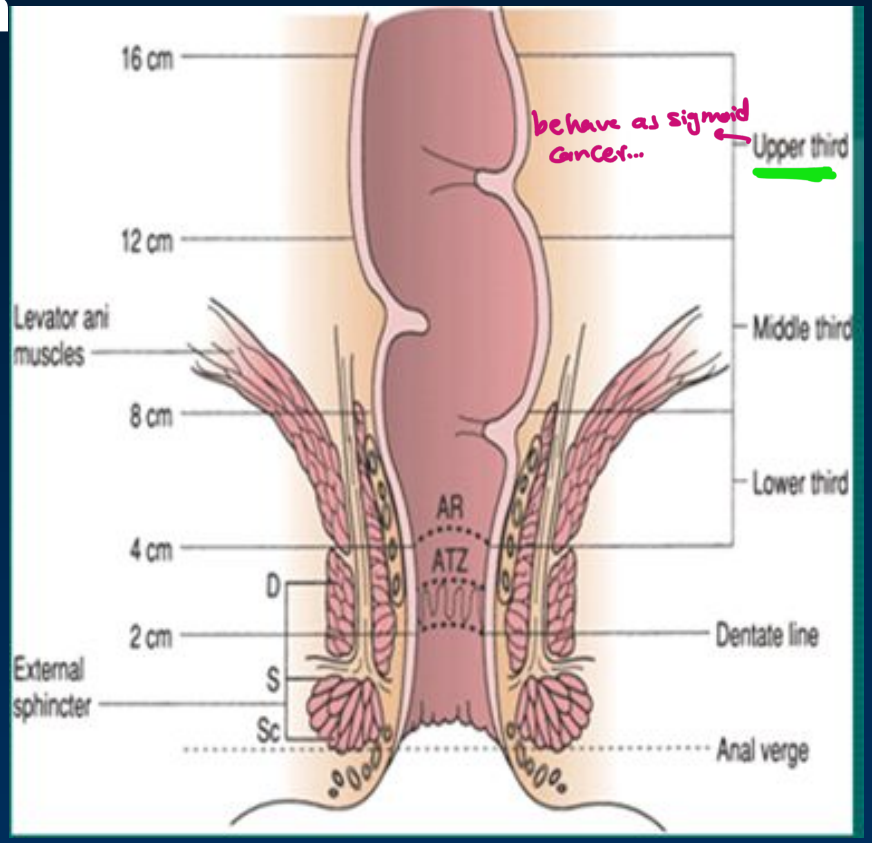


Figure 3.10 *On-table colonic irrigation.*



Rectal cancer

- Rectal cancer is tumor within 12cm of anal verge.
- Tumor where two antimesenteric taenia unite.
- Tumor where sigmoid mesocolon ends.
- Tumor at level of 3rd sacral vertebra.



Rectal cancer staging

- CT good for liver disease, peritoneal disease, chest.
- MRI good LN status, staging and local recurrence...
- TRUS early rectal cancer, depth of invasion
- CT -PET

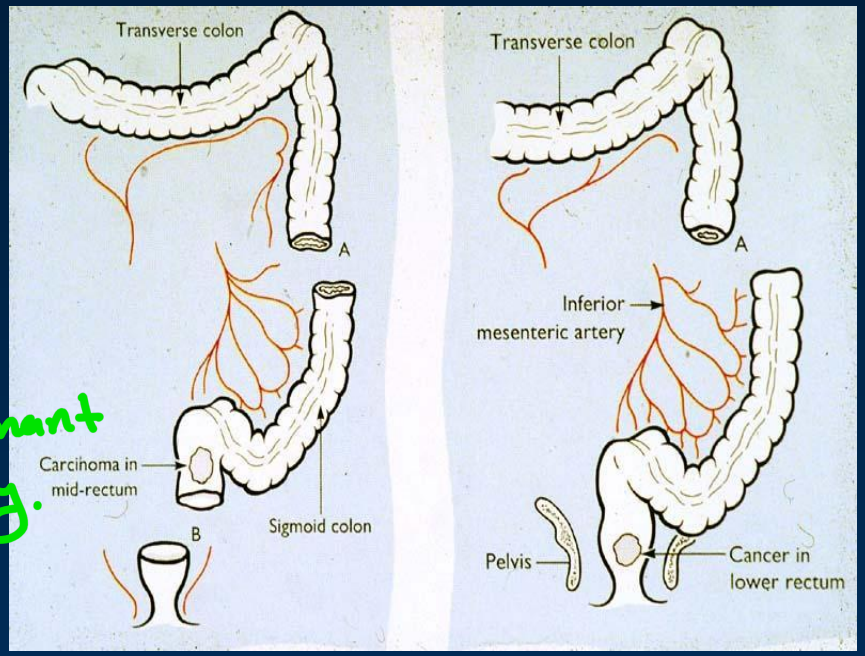
Criteria for Identifying Rectal Neoplasms Suitable for Trans-Anal Excision

Gross	Imaging	Histology
Less than 3-4 cm	ERUS: T1 or T2, NO	Well differentiated
Less than one quadrant		No lymphovascular invasion
Within 6-8 cm from anal verge	CT: no metastases	No perineural invasion
Mobile		
Exophytic		

K. Gotttlieb, MD www.gi-guy.com

Rectal Cancer Treatment

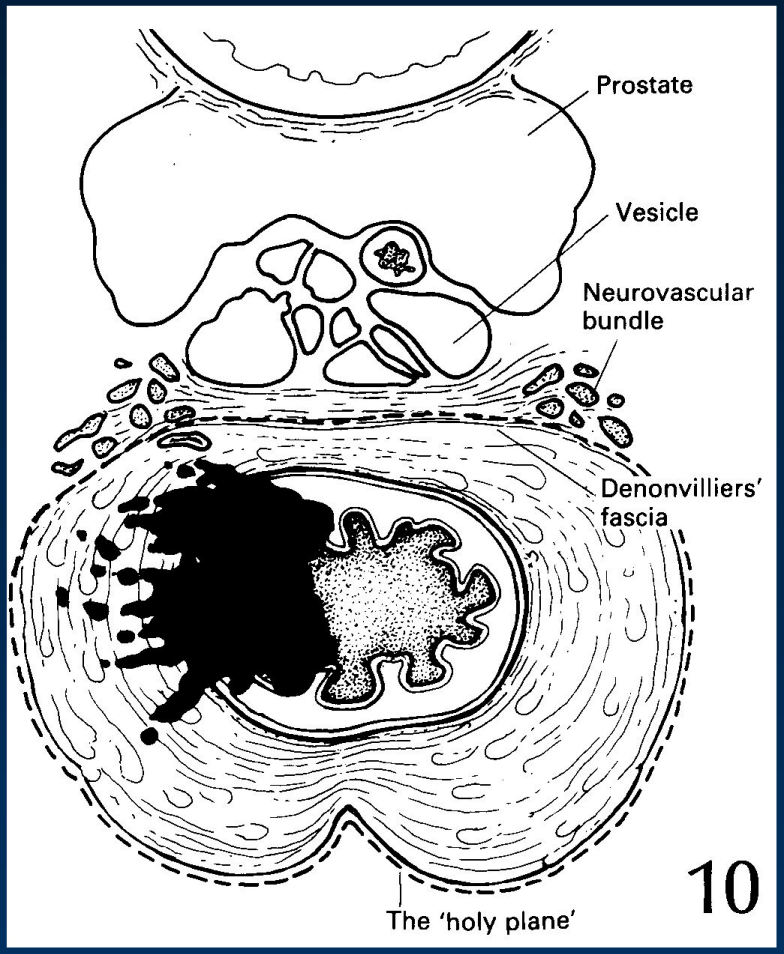
- Anterior resection + anastomosis
- Low anterior resection
- Abdomino-perineal resection (<40%) + permanent colostomy.
- Local excision
- Palliation



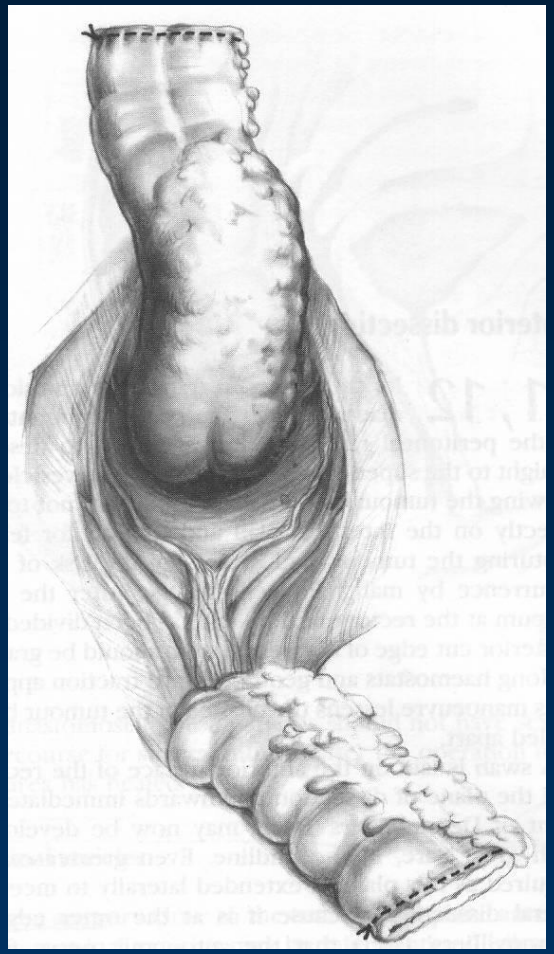
Total Mesorectal Excision(TME)

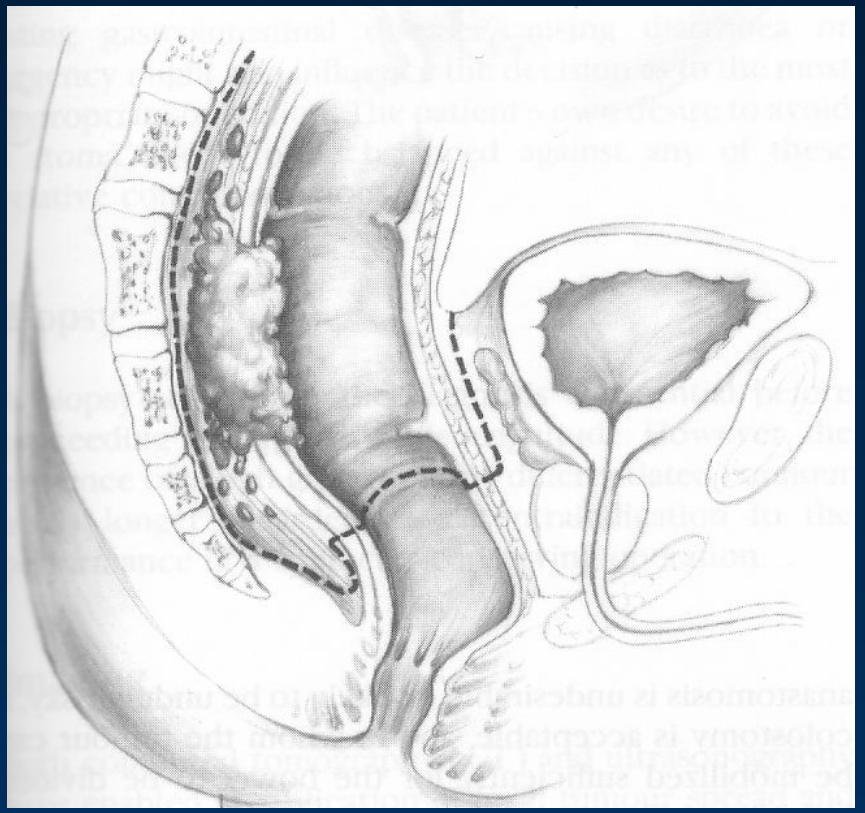
- **? Introduced** by RJ Heald in 1979
- Use of sharp dissection, no conventional blunt finger dissection
- **Local recurrence:**
  - Conventional surgery: 30%
  - TME surgery: 8%
- **Higher leaks rates reported possibly due to:**
  - Devascularisation of distal rectal stump
  - Lower anastomosis
  - Other factors: stomas, drains

The fascial envelope

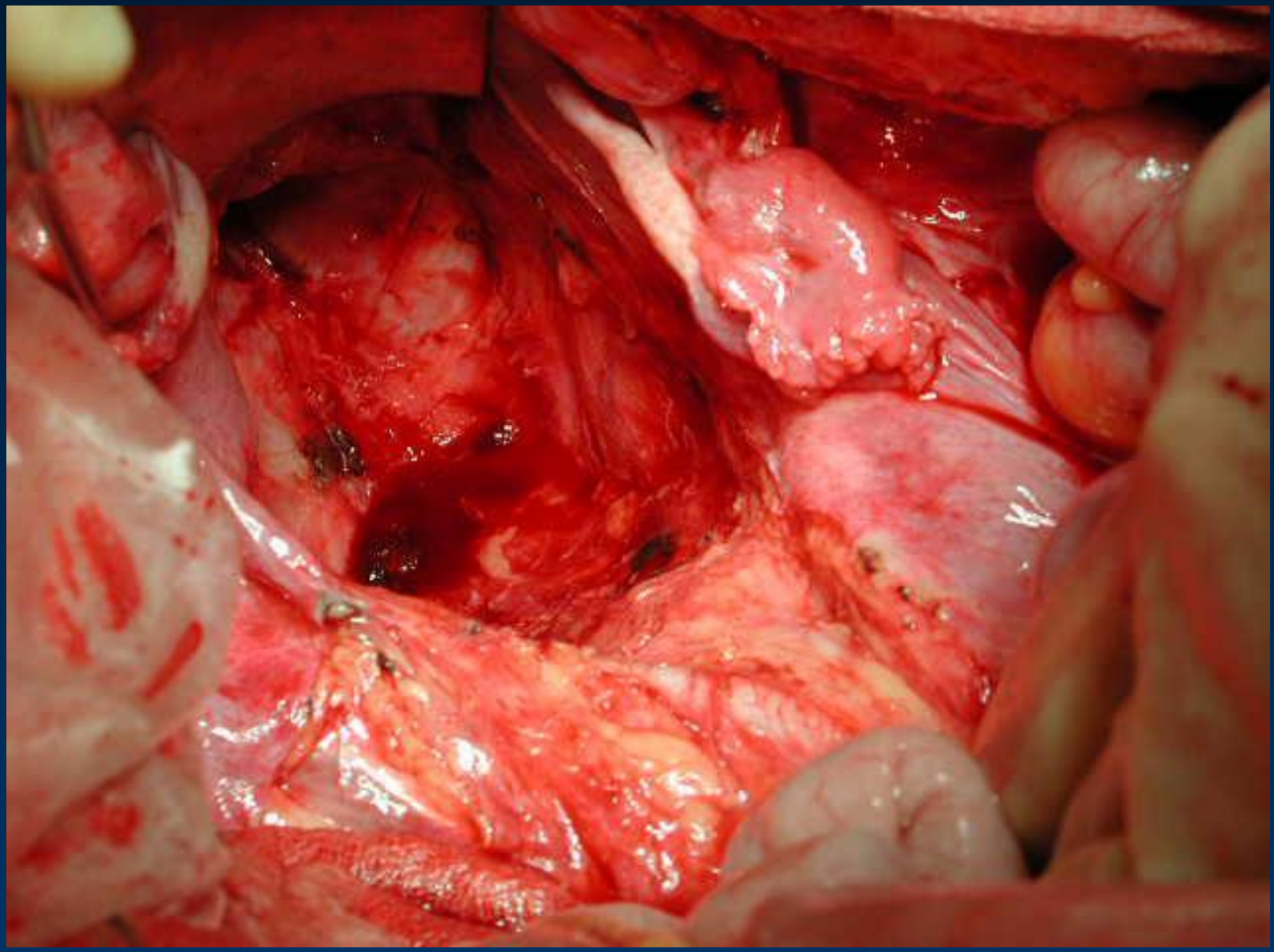


TME





TME



Controversies: lower third cancers

- **Which lower third tumours need pre-op RT?**
  Full thickness T2, all T3, T4 (need EUS + MRI)

- **Should patients have long or short course?**

Long course

- **When do you operate post RT ?**

44 days post RT

- **When do you give post op RT ?**

Not less one month post op, and not more than 2 month post op

Role of radiotherapy in rectal cancer

Dutch colorectal cancer group

- Decrease rate of local recurrence for T3 lesions if five days radiotherapy prior to surgery

Swedish trial

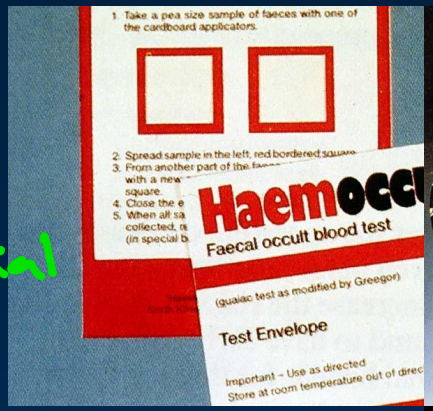
- Survival benefit
- Decrease local recurrence
- All T3,N1 rectal cancer

Surveillance for local and distant metastasis

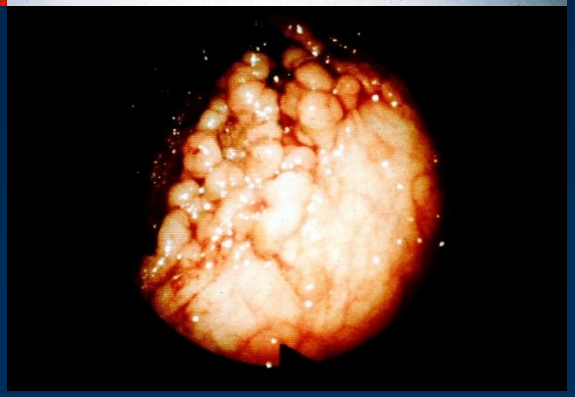
- CEA, every three months, in the first two years, then every 6 month for 5 years.
- CT scan abdomen and pelvis annually.
- In colonic lesions colonoscopy after one year, if normal repeats every 2-3 years
- Rectal lesions Flexible Sigmoidoscopy every 6 month.

Screening in colorectal cancer for many reasons → 1- very common cancer 2- early diagnose in early stages...

- Population ✓
- Group
- High risk ✓
  - Positive FH (familial)
  - FAP
  - UC
  - Adenomas







* The colon cancer is 3rd common cancer overall...
* The colon cancer is 3rd cause of death overall...

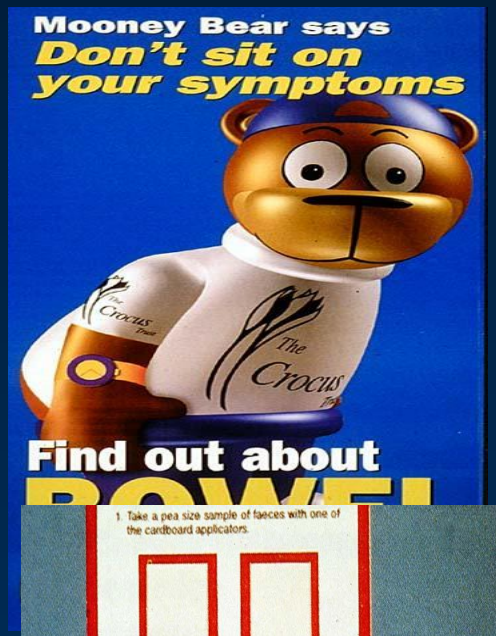
Fecal occult Blood [FOB]
1- if it +ve twice
[98% specific - 50% sensitive]
(detect the normal) (detect the dz)

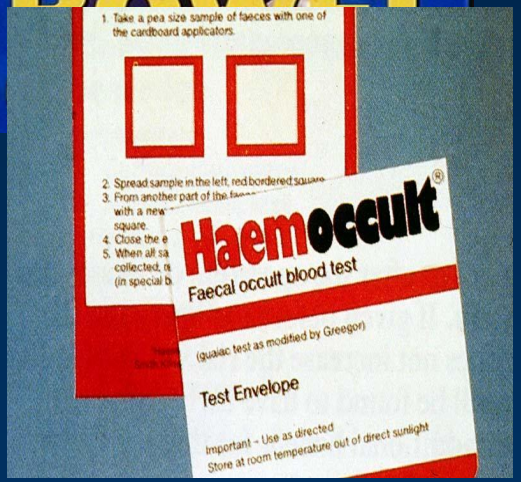
* when the FOB +ve we should do colonscope..

Population Screening

- Simple
- Cheap
- Reliable
- Safe
- Acceptable







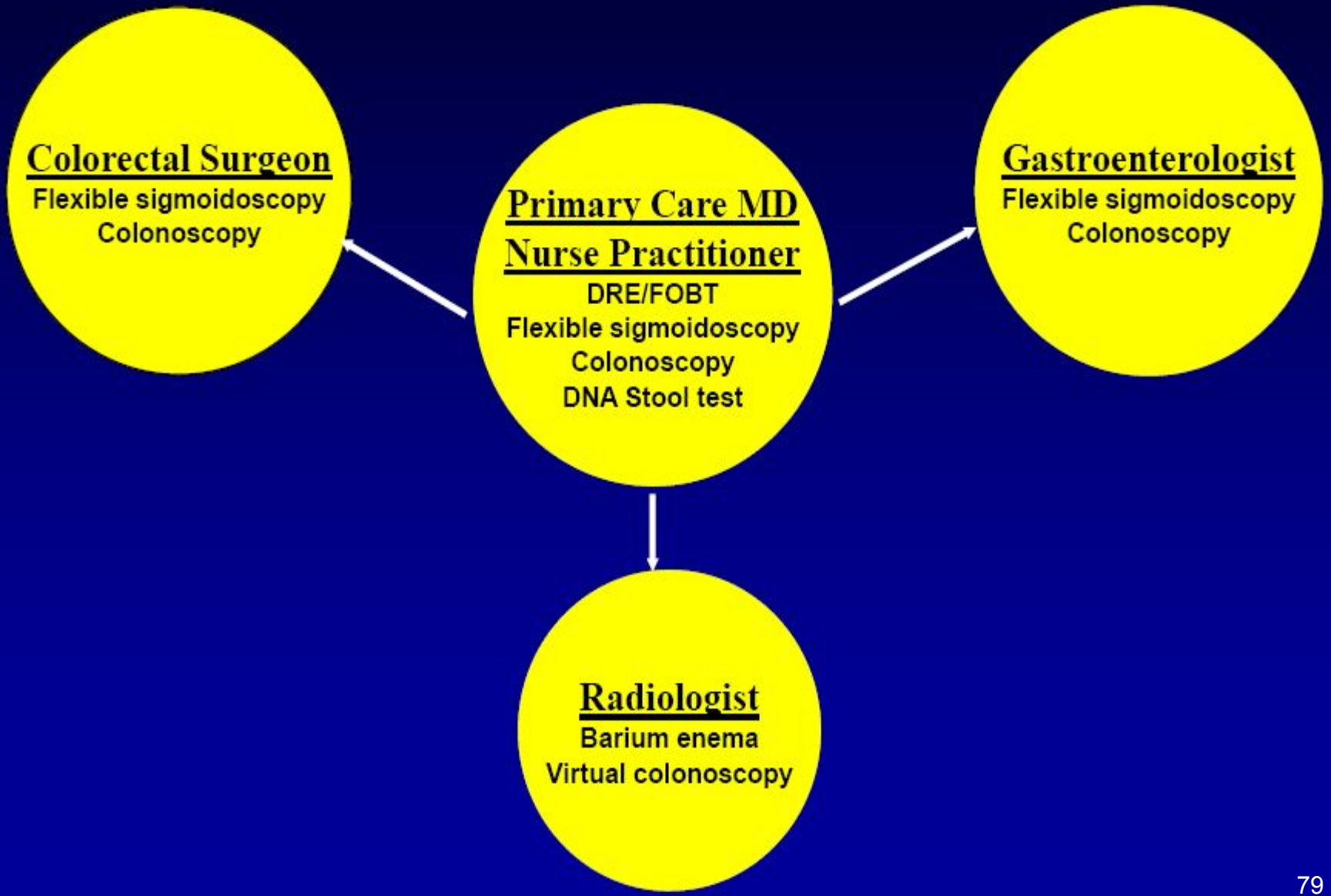
CRC fulfils many of these criteria for effective screening

* The hereditary colon cancer:-

2 members in the family ① with colon cancer

2 generation ② one of them < 50 y/o + 3 ③ 1st degree

Who Performs Screening?



Management of advanced disease

Operable disease

- Hepatic resection timing, criteria for resection
- Test of time 3-6 month then surgery
- RFA
- Pulmonary resection ?

Inoperable disseminated disease

Chemotherapy 5FU+Folinic acids

Treatment

- Chemo-radiation.
- Re-exploration en block resection.

Liver metastasis

- Up to 6 of eight liver segments can be resected (75% of liver volume)
- No role for palliative liver resection
- Without resection all patient are dead in 3 y
- With resection 25% are alive in 3 y.

Local recurrence

- Tumor recurrence at pelvic wall 30%
- Distal margin at rectal anastomosis
- At surgical wounds
- 5-10% of colonic cancers
- 10-25% of rectal cancer

Continue

- 60-80% of recurrence occur in first 18 month
- 25% of patients will develop liver metz.
- 20% of them can be resected only.
- Without resection mean survival period is 6 month