

Polyps in Morphology either sessile or pedunculated

- sessile polyps :- more to be malignant
- pedunculated polyps :- less to be malignant (But more to cause obstruction)



(ماي صورة الور اخذناه بالباهني)

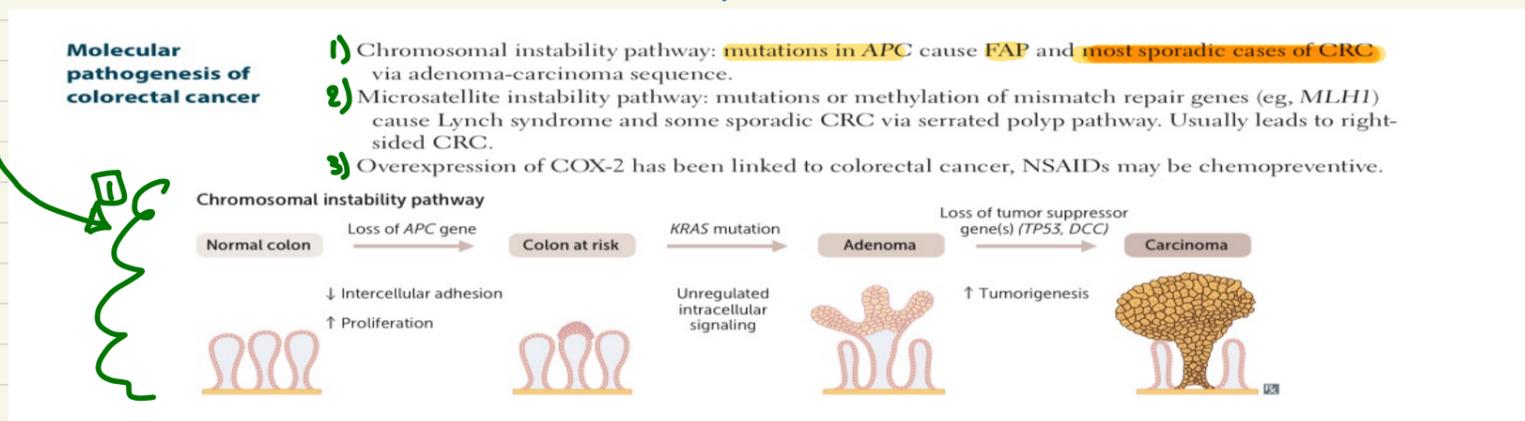
Polyps nonneoplastic

- 1] inflammatory polyps :- due to IBD (mostly UC)
- 2] Mucosal polyps :- Clinical insignificant
- 3] submucosal polyps
- 4] Hamartomatous polyp :- Solitary, Growth of Normal colonic tissue & Ass with 1] Peutz-Jeghers 2] Juvenile polyposis
- 5] Hyperplastic polyps: most common, smaller, located mostly in Rectosigmoid

Polyps Neoplastic

- 1] Adenoma
 - ↳ Tubular (85% most common, least to be malignant)
 - ↳ Tub villous (intermediate malignant transformation)
 - ↳ Villous (Highest malignant transformation)

its follow chromosomal instability pathway with APC and KRAS mutation :-



- 2] Adenocarcinoma
- 3] Carcinoid

Risk of Malignant transformation Depends on :-

- ① Histopathology
 - ↳ Tubular (less)
 - ↳ Tubovillous (intermediate)
 - ↳ villous (more risk of malignancy)
- ② size (↑ in size → more malignant) eg:-
 - Tubular Adenoma 1cm → 10% Risk of malignancy
 - Villous Adenoma 2cm → 15% Risk of malignancy
- ③ Duration (more time more to be malignant)
- ④ Morphology of polyps
 - ↳ sessile → (more to be malignant)
 - ↳ pedunculate → (less to be malignant)
- ⑤ Associated with polyposis syndrome or Not

work up for polyps :- All Adenomas must be removed to avoid cancerous changes

- All pt must go colonoscopy to determine further polyps occur or Not
- most polyps can be removed by endoscope but sometime surgery is required (سurgery باليد في اخر احي الاكتر بخطر و توجب في اخر احي الاكتر عولت surgery)

polyposis syndrome

① Familial Adenomatous polyposis (FAP) :-

- Autosomal Dominant
- mutation of APC tumor suppressor gene on ch 5q21-q22

- 100% progress to Colorectal ca ^{بجهد}
- ↳ once diagnose it Do prophylactic colectomy

- more than 100 Adenoma present
- 1% or less of All Colorectal ca

- 50% have Congenital hypertrophy of Retinal pigment epithelium (this point useful in screening for affected family if genetic testing is unavailable)
- Best for diagnosis of FAP → genetic study

- investigation :-
 - ① Barium enema (multiple filling defect)
 - ② colonoscopy and Biopsy
 - ③ genetic testing (Best for Diagnosis)

Extracolonic manifestations of familial adenomatous polyposis

- Endodermal derivatives
 - Adenomas and carcinomas of the duodenum, stomach, small intestine, thyroid and biliary tree
 - Fundic gland polyps
 - Hepatoblastoma
- Ectodermal derivatives
 - Epidermoid cysts
 - Pilomatrixoma
 - Congenital hypertrophy of the retinal pigment epithelium (CHRPE)
 - Brain tumours
- Mesodermal derivatives
 - Desmoid tumours
 - Osteomas
 - Dental problems




Tx:- Surgery → Total procolectomy and illial pouch anal Anastomosis

Familial adenomatous polyposis	Autosomal dominant mutation of APC tumor suppressor gene on chromosome 5q21-q22. 2-hit hypothesis. Thousands of polyps arise starting after puberty; pancolonic; always involves rectum. Prophylactic colectomy or else 100% progress to CRC.
Gardner syndrome	FAP + osseous and soft tissue tumors (eg, osteomas of skull or mandible), congenital hypertrophy of retinal pigment epithelium, impacted/supernumerary teeth.
Turcot syndrome	FAP or Lynch syndrome + malignant CNS tumor (eg, medulloblastoma, glioma). Turcot = Turban.

FAP

ileal Pouch anal anastomosis

Total proctocolectomy and IPAA

Various designs of ileal pouches

② Hereditary nonpolyposis colorectal cancer (HNPCC) (Lynch syndrome)

- Autosomal Dominant
- Mismatch Repair on Gene {MLH1, MSH2}
- 80% progress to Colorectal Ca
- Accounts for 5-10% of All Colon Ca
- Mean Age of Diagnosis 45
- Most Ca Develop in proximal colon (More common in R. Colon)
- 30% - 50% Develop Endometrial Ca
- Associated with ↑ Risk of CEOS → Colon, Endometrial, ovarian, skin Cancer
- Diagnosis By \int genetic testing
↳ Amsterdam II criteria
- every 1 or 2 year Do colonoscopy surveillance



"Amsterdam" Criteria for HNPCC Diagnosis

- 3 relatives with colorectal cancer, endometrial, small bowel, uterine / Renal pelvis where one is 1st degree relative of other two
- 2 generations of colorectal cancer
- 1 colorectal cancer before age 50
- FAP is excluded

• Tumor verified by pathological Examination

Lynch syndrome

Formerly called hereditary nonpolyposis colorectal cancer (HNPCC). Autosomal dominant mutation of mismatch repair genes (eg, MLH1, MSH2) with subsequent microsatellite instability. ~ 80% progress to CRC. Proximal colon is always involved. Associated with endometrial, ovarian, and skin cancers.

③ IBD :-

- Risk of cancer ↑ in UC with ↑ Duration of Disease.
- 10 years UC → 1% Risk of cancer
- 20 years UC → 10-15% Risk of cancer
- 30 years UC → 20% Risk of cancer

Colorectal CA

Etiology:- Multifactorial

① Male sex, 50 years old

② +ve Family Hx

③ +ve self Hx of endometrial, ovarian, Breast, Colorectal cancer

④ Low Fiber Diet

⑤ Low Folate

⑥ Red Meat, Smoking, Alcohol

⑦ ↑ BMI

⑧ Neoplastic polypis

⑨ IBD → UC (most common)

⑩ FAP, HNPCC

⑪ cholecystectomy

⑫ heterosigmoidostomy (Bladder cancer)

⑬ Adenoma - Carcinoma sequence

high Risk of CA

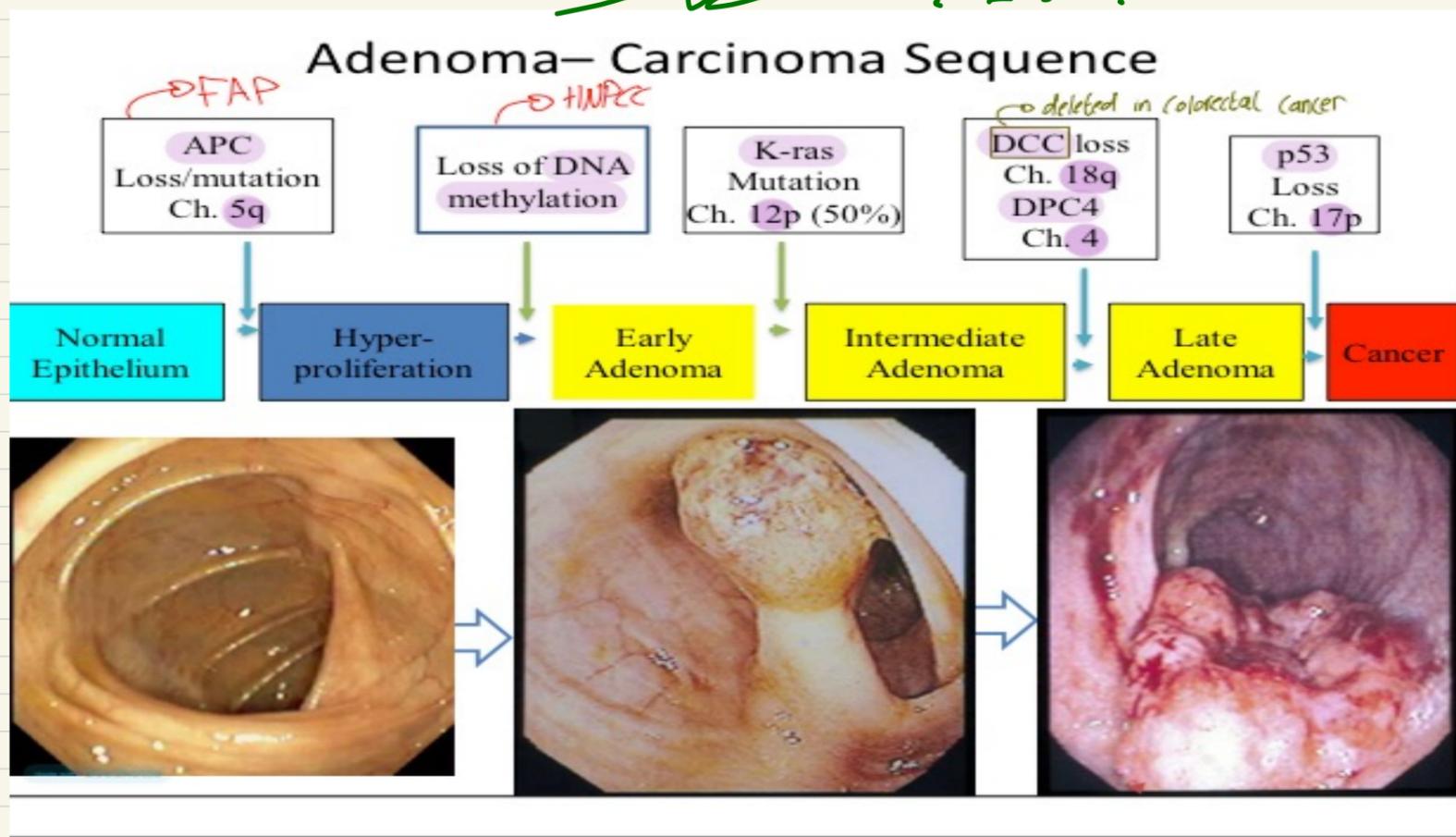
↳ early Diagnosed on young Age + Disease

↳ Long standing disease

↳ pancolitis

Adenoma-Carcinoma Sequence

امفظة بالترتيب



Clinical feature

- occur in Male 50 year Age
- Most common in 8th Decade
- 20% presents in ER due to obstruction or peritonitis
- Left colon tumor symptoms :- Rectal Bleeding, obstruction, Hematochezia, tenesmus, Abdominal distension, change stool caliber, mucus discharge
- Right Colon tumor symptoms :- occult Blood, Iron Deficiency Anemia, mass
- p.t may present at first time with Metabolic Disease

Signs:-

- 1) pallor
- 2) Abdominal Mass
- 3) jaundice
- 4) Ascitis
- 5) Nodules liver

- Colon Cancer Most commonly occur in Rectosigmoid junction Then cecum then Decending
- Recto sigmoid > Ascending > Decending

Diagnosis

- The Gold standard is Colonoscopy and Biopsy
- staging workup
 - Barium enema → Apple Core sign (CT & MRI)
 - CT Abdomin - pelvis
 - MRI
- CEA (Not useful for Diagnosis / used for follow up)
- FOBI (Fecal occult Blood test) → سنيو باي تيس

Note!:- Never tell p.t he have cancer until Biopsy performed

Screening

- For Asymptomatic Male or Female at age of 50
- By screening found Mortality is Declined

Recommended colorectal cancer screening test :-

- 1] Colonoscopy without Biopsy (Best for screen) every 10 yrs
- 2] Annual FOBT
- 3] Double Contrast Barium Enema (every 5 yrs)
- 4] Flexible sigmoidoscopy (every 5 yrs)
- 5] CT colonography (every 5 yrs)
- 6] Stool DNA testing

Spread

- 1] Direct spread
- 2] Lymphatic spread
- 3] Hematogenous spread
- 4] Transcoelomic spread

اکثری کا لاء
gastric CA

Tx

- surgery is Gold standard for Iry and NonMetics Ca Colon Then Give 1] Radiotherapy to Avoid Recurance (control local Tumor)
- excise Iry lesion with 5CM margin

2] post op Chemotherapy to control Micromets

curative surgery

زما باار
Hartman's
استیجیاتی
؟
stoma
کین ان لیسٹا لیسٹا
Continuity of bowel
→ (it can be reversed later)

5cm
safety margin
Tumor
Locoregional lymphadenectomy
Principle main vessels
at least intermediate L.N

resume the continuity of the bowel

Palliative

* The Patient with left sided colon cancer stage 4
cardiacly or hemodynamically unstable

The operations described are designed to remove the primary tumour and its draining locoregional lymph nodes.

* Operable Patient → cardiac Respiratory

I. Operable cases (curable):

1. Preoperative preparation:
2. Elective radical resection: → remove the tumor with healthy margin

Operations (according to the site): - - -

* Inoperable Patient → cardiopulmonary compromised

II. Inoperable cases:

- Resectable: resection is preferred as it is adenocarcinoma (insensitive to radiotherapy or chemotherapy)
- Irresectable: operation is done to avoid obstruction
 - Right colon → side-to-side ileo-transverse anastomosis.
 - Left colon and rectum → proximal colostomy.

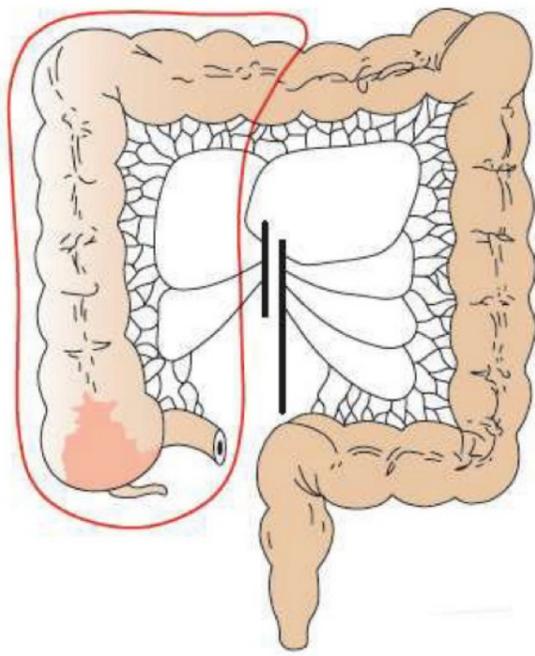


Figure 69.28 Schematic showing a right hemicolectomy.

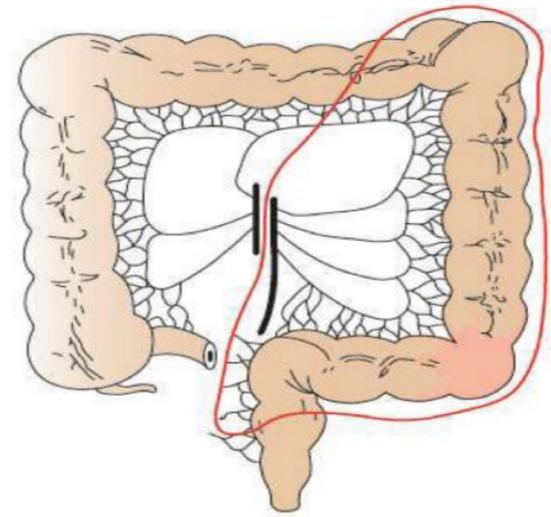


Figure 69.29 Schematic showing left hemicolectomy.

Emergency surgery

- 20 % of patients with colonic cancer will present as an emergency, the majority with obstruction, but occasionally with haemorrhage or perforation.
- If the lesion is right sided, it is usually possible to perform a right hemicolectomy and anastomosis in the usual manner; this can be facilitated by decompressing the bowel at the start of the operation
- Perforation with substantial contamination or if the patient is unstable, it may be advisable to bring out an ileo/colostomy rather than anastomosing bowel in these circumstances.
- For a left-sided lesion, the decision-making process is similar to that in diverticular disease between a Hartmann's procedure and resection and anastomosis

~~proctosigmoidectomy~~ proctosigmoidectomy

proctosigmoidectomy

سنگ راولد

important

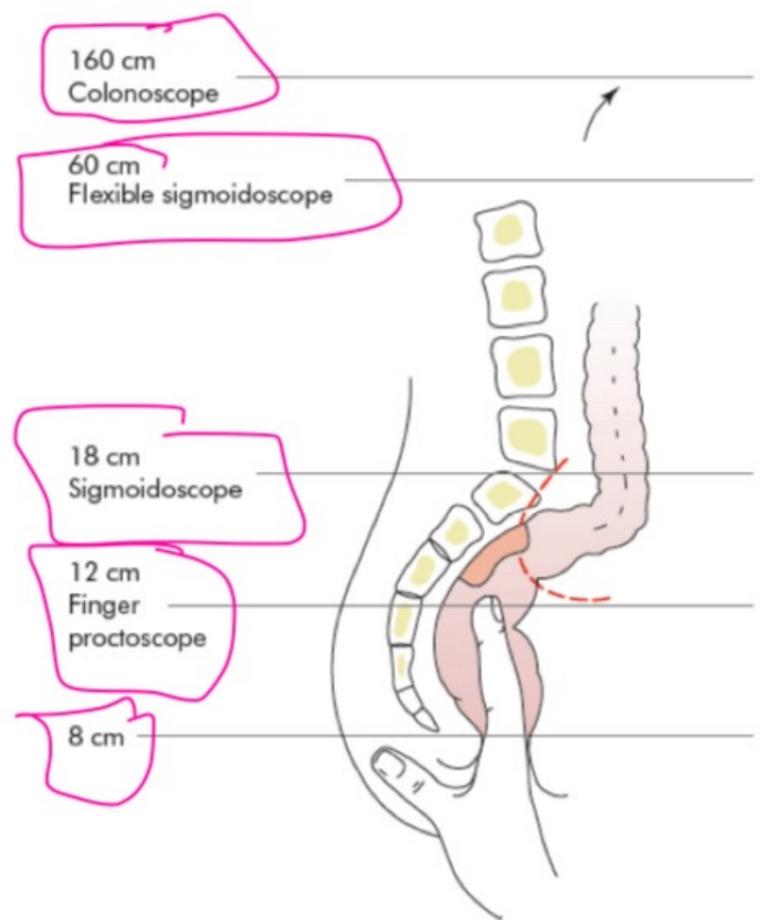
- The most important determinant of prognosis is tumour stage and, in particular, lymph node status.
- Overall five-year survival for colorectal cancer is approximately 50 %.
- Follow up aims to identify synchronous bowel tumours that were not picked up at original diagnosis due to emergency presentation or incomplete assessment

Note

Small Bowel → 6 Meter
Large Bowel → 1.5 Meter

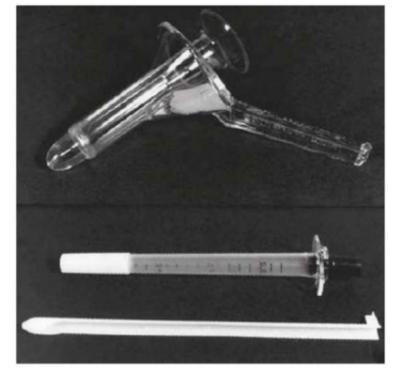
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anoscope → 10-12 cm

Figure 72.4 Illustration showing how the various methods of examining the rectum reach different levels. Note that even cancers in the upper part of the rectum can be felt with the index finger, especially if the patient is asked to 'strain down' (courtesy of CV Mann).



Rectum

Rectum

- The rectum measures approximately 15 cm in length
- It is divided into lower, middle and upper thirds
 - from Pubic → middle third → from sigmoid
 - Superior Mesenteric artery from SMA
- The blood supply consists of superior, middle and inferior rectal vessels
- Although the lymphatic drainage follows the blood supply, the principal route is upwards along the superior rectal vessels to the para-aortic nodes

Rectum safety margin : 2cm

- Main symptoms of rectal disease**
 - Bleeding per rectum *most common*
 - Altered bowel habit
 - Mucus discharge
 - Tenesmus
 - Prolapse

Management

- Management of rectal cancer has become increasingly complex, because of the various surgical, neoadjuvant and adjuvant options available, and is best delivered in a multidisciplinary setting.
- Before treatment can be planned, it is necessary to assess:
 - Fitness of the patient
 - Extent of spread

- Radical excision of the rectum, together with the mesorectum and associated lymph nodes, should be the aim in most cases.
- When a tumour appears to be locally advanced, the administration of a course of neoadjuvant chemoradiotherapy over approximately 6 weeks may reduce its size and make curative surgery

Rectal polyps

- Either single or multiple
- Adenomas are the most frequent histological type
- Villous adenomas may be extensive and undergo malignant changes
- All adenomas must be removed to avoid carcinomatous change
- All patients must undergo colonoscopy to determine whether further polyps are present
- Most polyps can be removed by endoscopic techniques, but sometimes major surgery is required

- For patients who are unfit for radical surgery, who have very early tumours or who have widespread metastases, a local procedure such as transanal excision, laser destruction or interstitial radiation should be considered
- Sphincter-saving operation (anterior resection) is usually possible for tumours whose lower margin is 2 cm above the anal canal.

Workup

- CT of the chest and abdomen to exclude distant metastases
- PET scanning can be helpful in identifying metastases if imaging is otherwise equivocal
- Endoluminal ultrasound, performed using a probe placed in the rectal lumen, can be used to assess the local spread of the tumour
- MRI

Operative Position



Transrectal ultrasound –EUS

- use for clinical staging.
- 80-95% accurate in tumor staging
- 70-75% accurate in mesorectal lymph node staging
- Very good at demonstrating layers of rectal wall
- Use is limited to lesion < 14 cm from anus, not applicable for upper rectum, for stenosing tumor
- Very useful in determining extension of disease into anal canal (clinical important for planning sphincter preserving surgery)

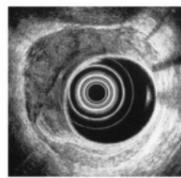
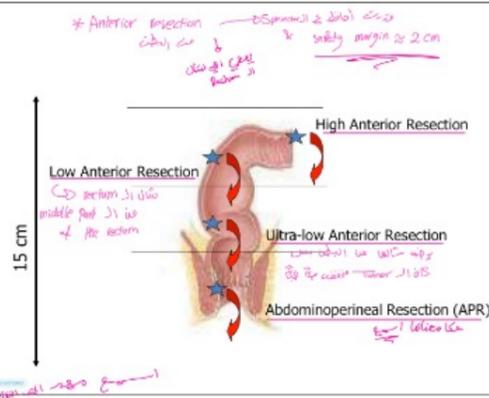
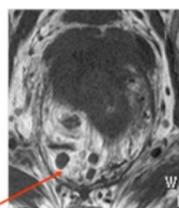


Figure. Endorectal ultrasound of a T3 tumor of the rectum, extension through the muscularis propria, and into perirectal fat.



MRI



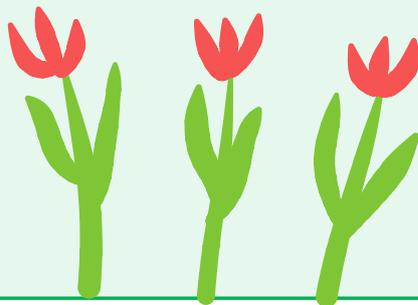
Circumferential Resection Margin (CRM)

تبييض صحافة

Colon cancer

د. عماد أبو جوح

Done by :

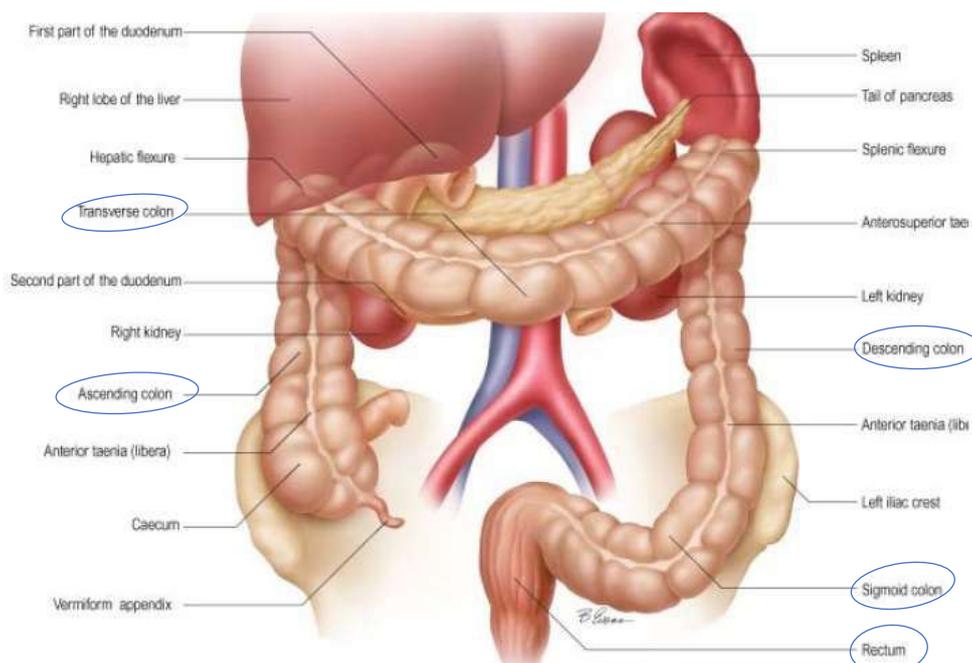


COLON CANCER

ABORAJOOH EMAD AREF
MD, General Surgery
GI and Minimally Invasive Surgery
IMRCS
JB and AB1

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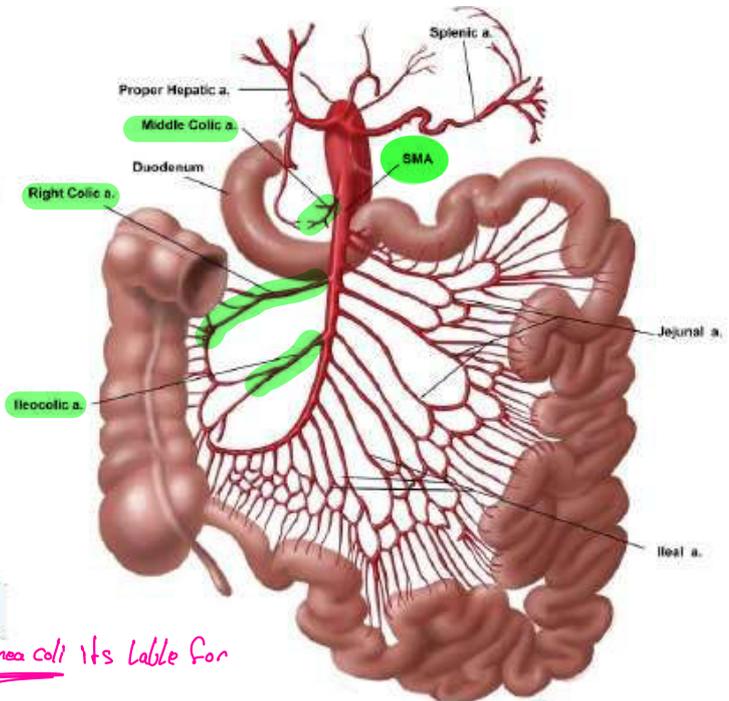
* Large bowel → 1.5 M (5 feet) } → length
* small bowel → 6 M (20 feet)



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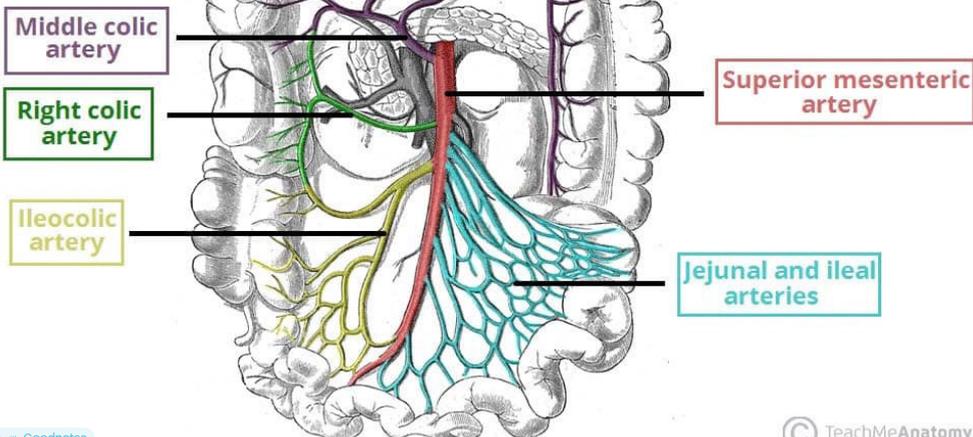
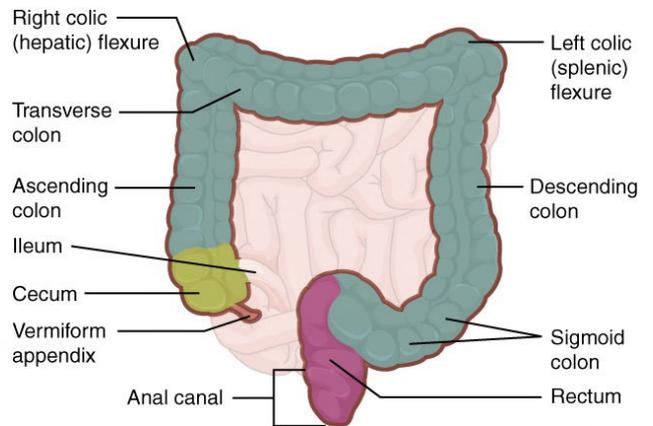
Blood Supply

- The **Superior Mesenteric Artery (SMA)**:
 - Supplies blood to the duodenum, pancreas, jejunum, ileum, and the right and transverse colon.
 - The **ileocolic artery** provides blood supply to the ileocolic region, cecum and appendix.
 - The **right colic artery** provides blood supply to the ascending colon and the hepatic flexure.
 - The **middle-colic (mid-colic) artery** provides blood supply to the transverse colon and the hepatic and splenic flexures.



Confluence of 3 linea coli its table for Appendix

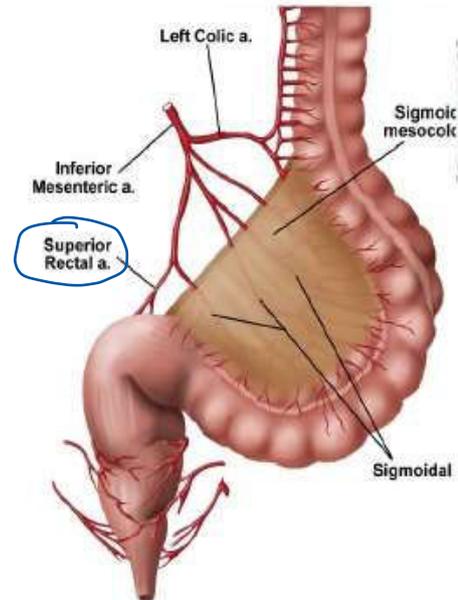
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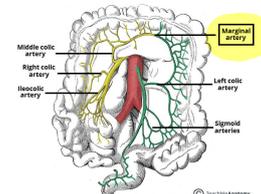
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Blood Supply

- The **Inferior Mesenteric Artery (IMA)**
 - Supplies blood to the left colon, rectosigmoid and the superior 2/3 of the rectum.
 - The **left colic artery** supplies blood to the descending colon.
 - The **sigmoidal arteries** traverse the mesosigmoid and supply blood to the sigmoid colon.
- After supplying the sigmoidal arteries, the inferior mesenteric artery becomes the **superior rectal artery**.
- This artery divides to **left and right superior rectal arteries**, and supplies the upper rectum.



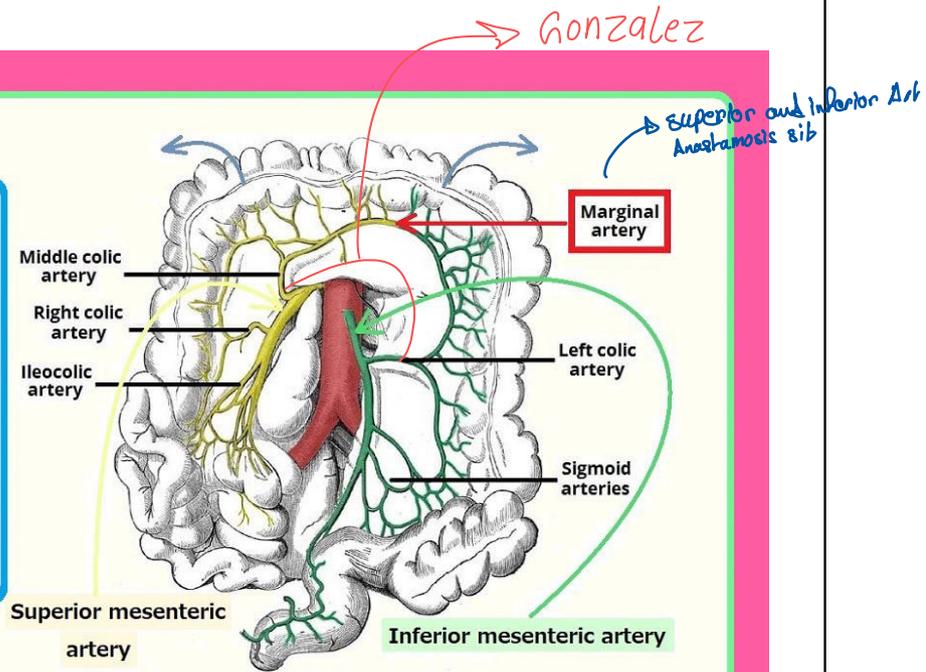
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- Adjacent branches of the **superior and inferior mesenteric arteries** anastomose so there is usually a complete vascular supply along the colon named the **'marginal artery of Drummond'**
- Venous and lymphatic drainage of the colon **follows the arterial supply** and as for the small intestine system, **venous drainage is into the portal system**.
- The **parasympathetic nerve supply to the right and transverse colon** is through the **vagus nerve**.
- While the **distal colon** and the **rectum** are supplied by the **nervi erigentes** (the pelvic splanchnic nerves) **from S2,3,4**.
- The **sympathetic system** supplies the blood vessels through the **greater and lesser splanchnic nerves**.

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Marginal artery of Drummond

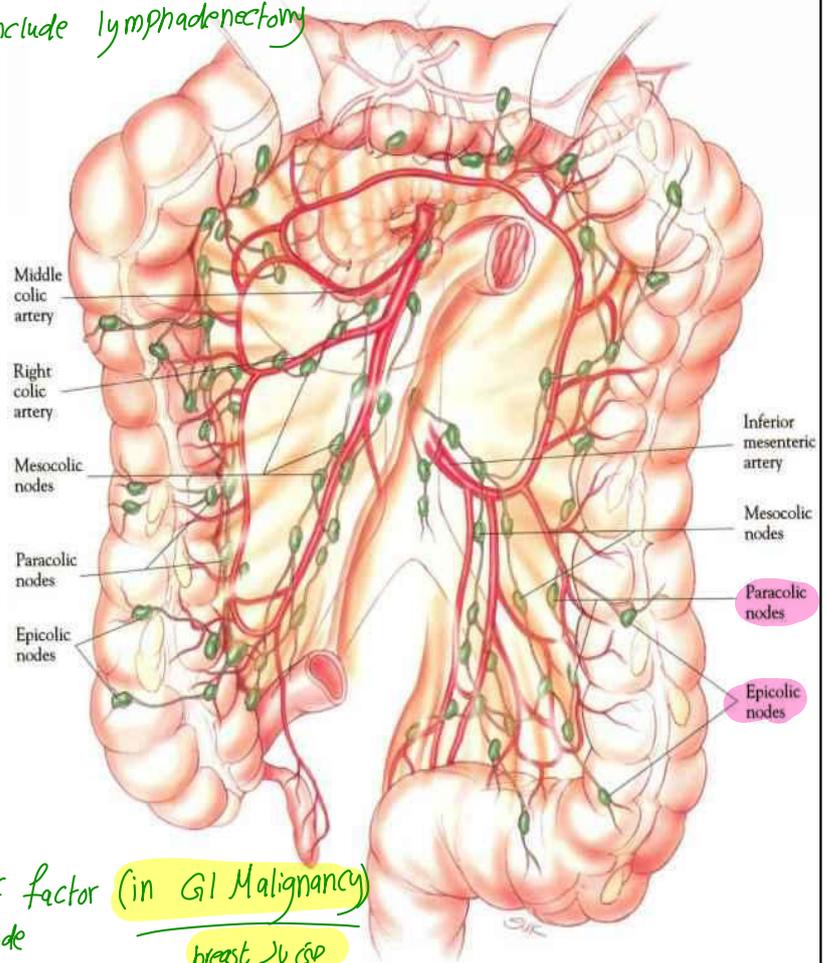


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* Principle of colonic surgery include lymphadenectomy

Lymphatic Drainage

- 1-Epicolic nodes on the bowel wall
- 2-paracolic nodes between the marginal artery and the bowel
- 3-Intermediate nodes on the main vessels
- 4-Principal nodes alongside the superior and inferior mesenteric vessels.



* The most important prognostic factor (in GI Malignancy) is status of the lymph node
breast vs iso

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Rectum

Arterial supply

- Superior rectal A – fr. IMA; supplies **upper** and **middle** rectum
- Middle rectal A- fr. Internal iliac A. (supplies **lower** rectum)
- Inferior rectal A- fr. Internal pudendal A.

Venous drainage

- Superior rectal V- **upper & middle** third rectum

Middle rectal V- **lower** rectum and **upper** anal canal

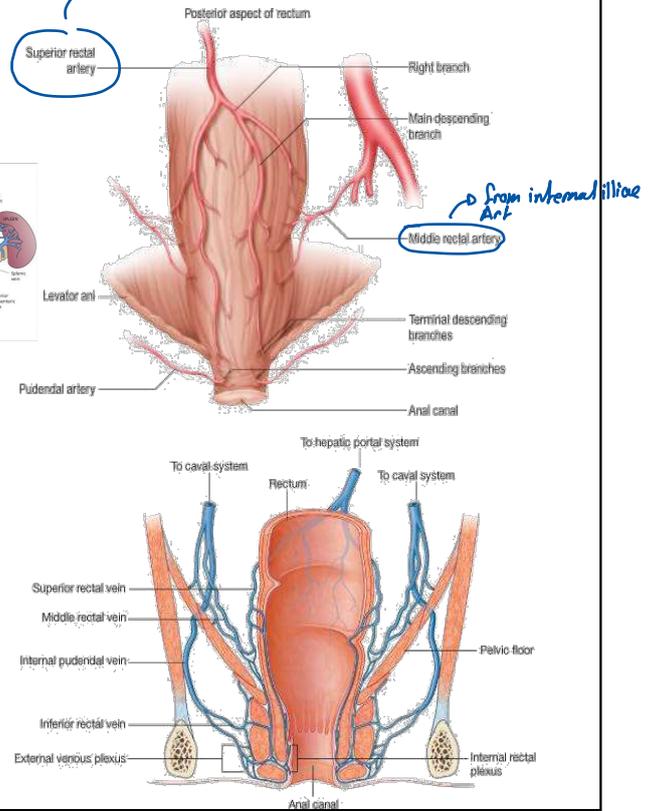
Inferior rectal vein- **lower** anal canal

IMV Part of Portal circulation unit with splenic vein

Innervations

- Sympathetic: **L1-L3**, Hypogastric nerve
- ParaSympathetic: **S2-S4**

most common example for Portal hypertension
 Made with Goodnotes → in esophagus / **Not** anal canal



second part

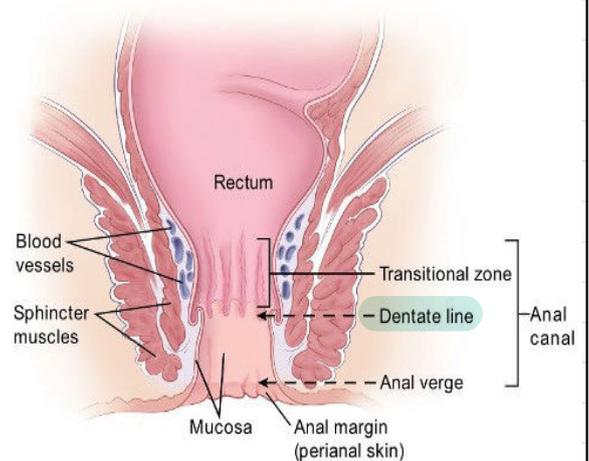
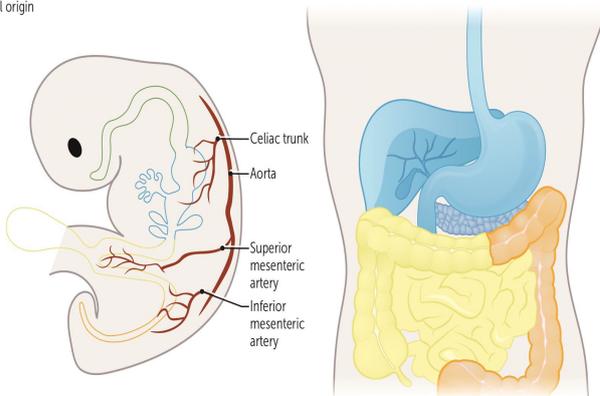
Foregut—esophagus to duodenum at level of pancreatic duct and common bile duct insertion (ampulla of Vater).

Midgut—lower duodenum to proximal 2/3 of transverse colon.

Hindgut—distal 1/3 of transverse colon to anal canal above pectinate line.

→ mucosa of the GI
 Colomnar epi. & 1) 2) 3) 4) 5) 6) 7) 8) 9) 10) 11) 12) 13) 14) 15) 16) 17) 18) 19) 20) 21) 22) 23) 24) 25) 26) 27) 28) 29) 30) 31) 32) 33) 34) 35) 36) 37) 38) 39) 40) 41) 42) 43) 44) 45) 46) 47) 48) 49) 50) 51) 52) 53) 54) 55) 56) 57) 58) 59) 60) 61) 62) 63) 64) 65) 66) 67) 68) 69) 70) 71) 72) 73) 74) 75) 76) 77) 78) 79) 80) 81) 82) 83) 84) 85) 86) 87) 88) 89) 90) 91) 92) 93) 94) 95) 96) 97) 98) 99) 100)
 → squamous epi.
 → skin

- Pharyngeal origin
- Foregut
- Midgut
- Hindgut



Lymphatic drainage

- **Upper and middle rectum**

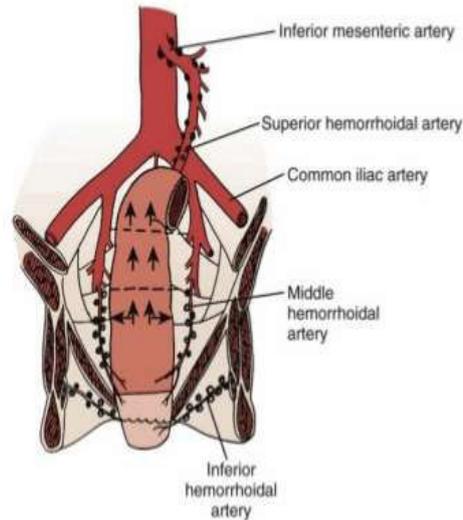
- **Pararectal** lymph nodes, located directly on the muscle layer of the rectum
- **Inferior mesenteric** lymph nodes, via the nodes along the superior rectal vessels

- **Lower rectum**

- **Sacral group** of lymph nodes or **Internal iliac** lymph nodes

- **Below the dentate line**

- **Inguinal nodes** and **external iliac chain**



* Lymphatic drainage of the rectum below the dentate line → go to inguinal LN

* " " " above the dentate line → iliac upper to caval LN

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Function of The Colon

- Absorption of water; 1000 mL of ileal contents enter the caecum every 24 hours of which only about 150–250 mL is excreted as faeces.
- Sodium absorption is efficiently accomplished by an active transport system, while chloride and water are absorbed passively following gradients established by the sodium pump
- Fermentation of dietary fibre in the colon by the normal colonic microflora leads to the generation of short chain fatty acids.
- Some absorption of nutrients including glucose, fatty acids, amino acids and vitamins can also take place in the colon.
- In general, faecal residue reaches the caecum 4 hours after a meal and the rectum after 24 hours.
- Passage of stool is not orderly, however, because of mixing within the colon. It is thus common for residue from a single meal to still be passed 4 days later.

Constipation is No stool For 3 days

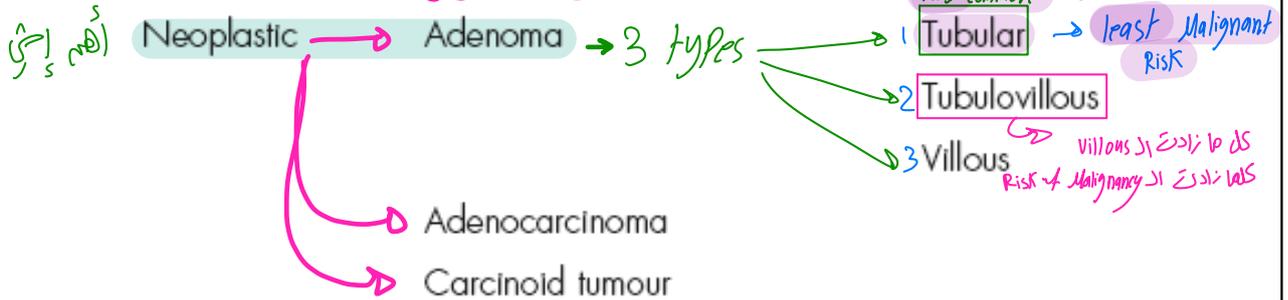
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Classification of intestinal polyps

Inflammatory → Inflammatory polyps (pseudopolyps in ulcerative colitis)

Metaplastic → Metaplastic or hyperplastic polyps

Harmartomatous → Peutz-Jeghers polyp
Juvenile polyp

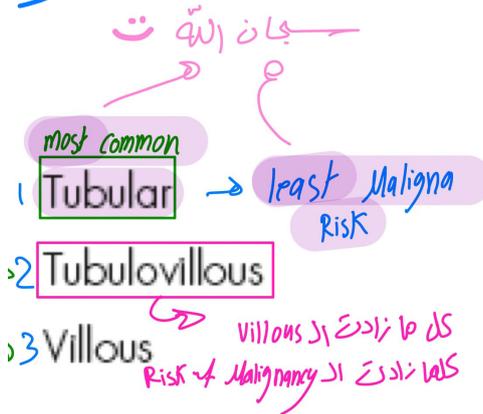


- Tubular adenoma: "strawberry on a stick" → Pre-malignant "Size determines malignant potential" esp. > 2 cm.
- Villous adenoma → "dangerous" Pre-malignant • Sessile "Villous is a villain" 😡 Rectal & sigmoid areas. looks like the villi of the small intestine (finger-like) → lots of mucus → coat the stool → mucus-secreting villous

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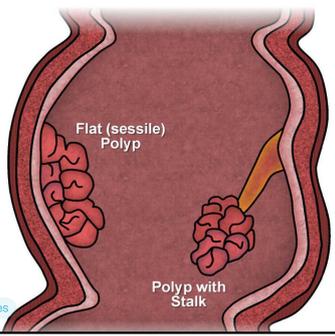
hypokalemia (metabolic disorder)

Tubular villous histology ال بيك ال least Risk of Malignancy ال Polyps ال بيك ال *



2 (Psize → PRisk) size ال بيك

The risk of malignancy developing in an adenoma increases with their size; there is a 10% risk of cancer in a 1-cm diameter tubular adenoma, whereas with villous adenomas over 2 cm in diameter, there may be a 15% chance of carcinoma. Almost one-third of large (>3 cm) colonic adenomas will have an area of invasive malignancy within them at the time of resection. Adenomas larger than 5 mm in diameter are usually excised because of their malignant potential.



3 (high risk) sessile flat (low risk) pediculated with stalk Morphology ال بيك ال

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بالسائل
سجور

Colonic polyps

Growths of tissue within the colon **A**. Grossly characterized as flat, sessile, or pedunculated on the basis of protrusion into colonic lumen. Generally classified by histologic type.

HISTOLOGIC TYPE

CHARACTERISTICS

Generally nonneoplastic

Hamartomatous polyps

Solitary lesions do not have significant risk of transformation. Growths of normal colonic tissue with distorted architecture. Associated with Peutz-Jeghers syndrome and juvenile polyposis.

Hyperplastic polyps

Most common; generally smaller and predominantly located in rectosigmoid region. Occasionally evolves into serrated polyps and more advanced lesions.

Inflammatory pseudopolyps

Due to mucosal erosion in inflammatory bowel disease.

Potentially malignant

Adenomatous polyps

Neoplastic, via chromosomal instability pathway with mutations in APC and KRAS. Tubular **B** histology has less malignant potential than villous **C** ("villous histology is villainous"); tubulovillous has intermediate malignant potential. Usually asymptomatic; may present with occult bleeding.

سجور

Risk of Malignancy

- A 10 % risk of cancer in a 1-cm diameter **tubular adenoma**, whereas with **villous adenomas** over 2 cm in diameter, there may be a 15 % chance of carcinoma.
- Almost one-third of **large** (>3 cm) colonic adenomas will have an area of invasive malignancy within them at the time of resection.
- Adenomas larger than 5 mm in diameter are usually excised because of their malignant potential.
- Colonoscopic snare polypectomy is usually possible for colonic polyps, but larger sessile polyps can require endoscopic mucosal resection (EMR)
- Larger rectal adenomas may require transanal resection or, where the adenoma is too high for safe conventional access, transanal endoscopic microsurgery (TEMS)

Colorectal Cancer

- colorectal cancer is the **second most common cause of cancer death**.
- Globally 800,000 new CRCs occur each year, accounting for 10% of all incident cancers with 450,000 deaths/year
- Incidence : 35.8/100,000 (USA)

Most patients are > 50 years old. ~ 25% have a family history.

CRC can be hereditary , but most common one is sporadic

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Jordan Cancer Registry

Web site: www.moh.gov.jo

Registry Email: jcr@moh.gov.jo

Department: Department of Cancer Prevention - Jordan Cancer Registry

Institution: Ministry of Health

P.O. Box: P.O Box 870

City: Amman

Zip Code: 11947

Country: Jordan

Phone #: (962) 6 5662067

Contact: Dr. Omar Nimri

Email: onimri@gmail.com

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Ten most common cancers among Jordanians both genders, 2018

Rank	Cancer	No	%
1	Breast	1474	20.8
2	Colorectal	750	10.6
3	Lymphoma	477	6.7
4	Lung	458	6.5
5	Thyroid	359	5.1
6	Bladder	349	4.9
7	Leukemia	299	4.2
8	Prostate	253	3.6
9	Stomach	214	3.0
10	Brain, Nervous System	198	2.8

N.B: The total of the top Ten cancers accounted, 4831 (68.1%)

Table 8: Ten most common cancers among Jordanian Males, 2018



Rank	Site	Frequency	Percent
1	Colorectal	435	13.1
2	Trachea, bronchus, lung	365	11.0
3	Bladder	308	9.2
4	Prostate	253	7.6
5	NHL	179	5.4
6	Leukemia	164	4.9
7	Stomach	136	4.1
8	Brain, Nervous system	125	3.8
9	Kidney	122	3.7
10	Hodgkin disease	106	3.2

N.B: The total of the top Ten male cancers accounted, 2193(65.8%)

- * Colorectal cancer overall is the second most common cancer in Jordan.
- * breast cancer overall is the Most Common Cancer in Jordan

Table 9: Ten most common cancers among Jordanian Females, 2018



Rank	Site	Frequency	Percent
1	Breast	1463	38.9
2	Colorectal	315	8.4
3	Thyroid	272	7.2
4	Corpus Uteri	186	4.9
5	Leukemia	135	3.6
6	NHL	102	2.7
7	Ovary	101	2.7
8	Trachea, Bronchus, Lung	93	2.5
9	Hodgkin Disease	90	2.4
10	Stomach	78	2.1

N.B: Total top ten female cancers accounted for 2835 (75.4%)

Table 10: Number of cancer cases and crude incidence rates, by governorates and sex, 2018.

Governorate	Male		Female		Total		
	N	CR*	N	CR	N	CR	%
Ammian	1971	140.9	2125	156.4	4096	148.5	57.7
Zarka	330	64.6	421	86.7	751	75.4	10.6
Balqa	185	85.2	201	95.3	386	90.2	5.4
Madaba	48	55.6	89	107.6	137	81.0	1.9
Central Region -CR	2534	114.5	2836	132.7	5370	123.4	75.7
Irbid	392	54.0	448	64.6	840	59.2	11.8
Jarash	61	65.7	73	83.0	134	74.1	1.9
Ajloun	64	74.1	67	80.6	131	77.3	1.8
Mafraq	84	48.4	91	55.1	175	51.7	2.5
North Region CR	601	55.7	679	65.9	1280	60.7	18.0
Karak	93	62.7	115	79.0	208	70.8	2.9
Aqaba	38	50.6	50	70.9	88	60.4	1.2
Maan	34	48.3	25	30.8	59	38.9	0.8
Tafiela	22	44.3	42	88.6	64	65.9	0.9
South Region- CR	187	54.4	232	67.3	419	60.9	5.9
Not Resident	11		14		25		0.4
Total- CR	3333	91.7	3761	107.4	7094	99.4	100.0

*(CR, crude rate)

مركز التسجيل
السرطان
بعمان
السرطان

الساح

Aetiology (multifactorial)

- Environmental & dietary factors
- Male sex
- **Family history** of colorectal cancer
- **Personal history** of colorectal cancer, ovary, endometrial, breast
- Excessive BMI **Genetic**: genetic mutation in mucosa → dysplasia → adenoma → carcinoma .
- Red meat , animal fat, smoking and alcohol
- Protective effect of dietary fibre
- Low folate consumption *high risk of colon CA if*
- Neoplastic polyps.
- IBD *UC (most common)* *Crohn's (can cause)*
 - ① early diagnosis during young age
 - ② long standing disease
 - ③ Pancolitis
- Cholecystectomy
- Ureterosigmoidostomy. → *bladder cancer في حالاته*
- **Adenoma– carcinoma sequence**
- **Hereditary Conditions (FAP, HNPCC)**

→ *Aspirin* في دراسات سابقة انه قد *is a protective factor for cancer*

Adenoma– Carcinoma Sequence

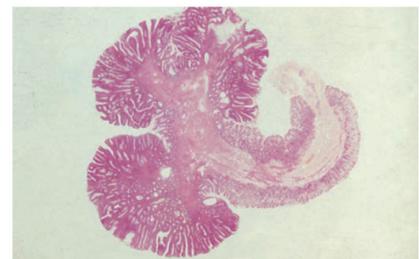
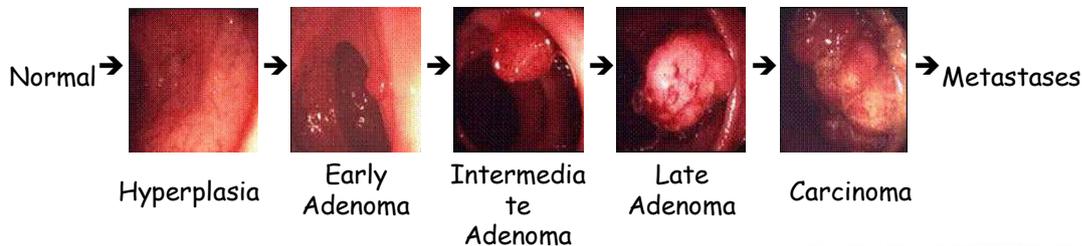
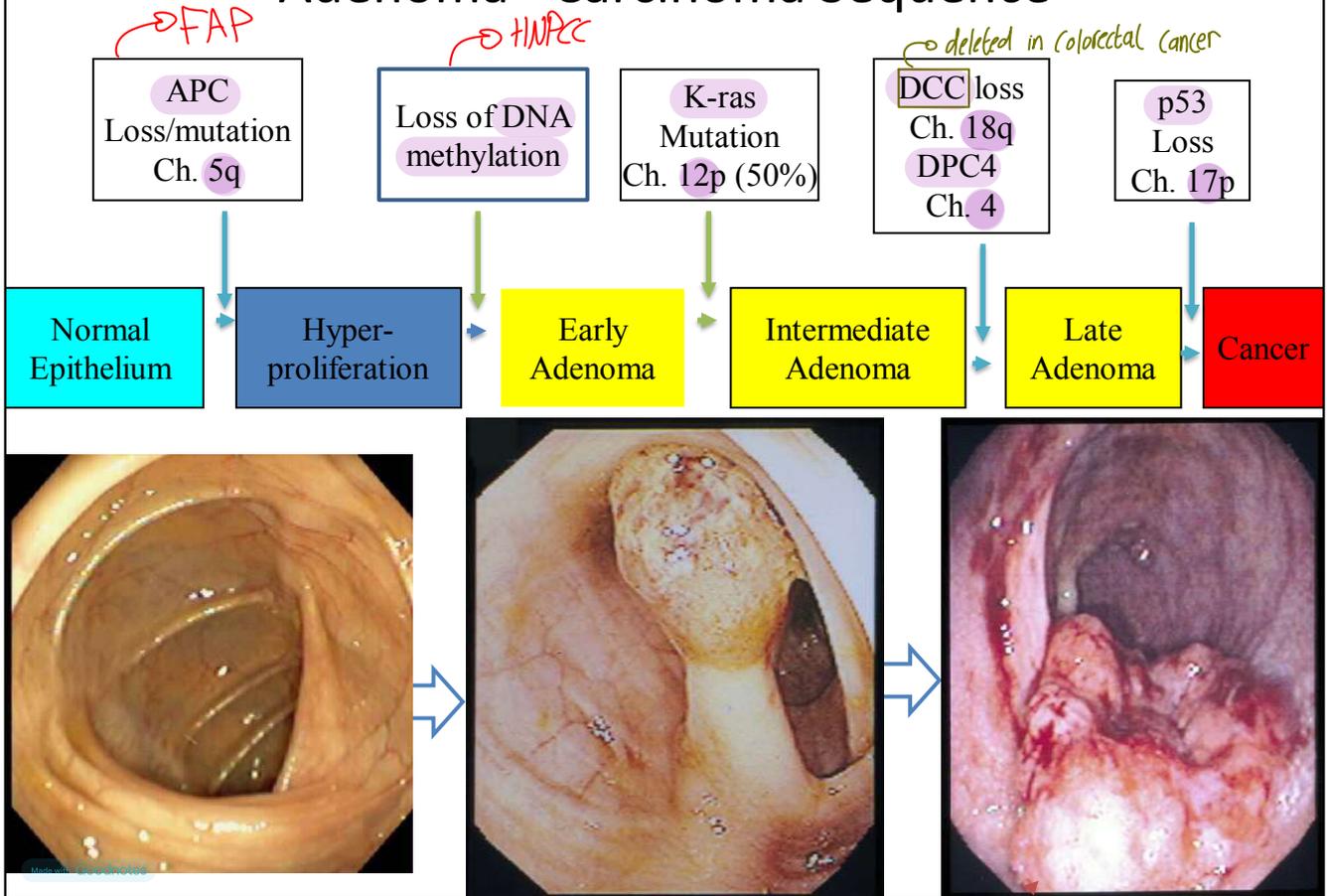


Figure 69.20 Pedunculated adenomatous polyp of the large intestine, longitudinal section [courtesy of Dr P Millard, John Radcliffe Hospital, Oxford, UK].

Adenoma– Carcinoma Sequence



difference ⇒ Proto-oncogene ← **KRAS** 'is to' Tumor suppressor genes (deletion to this gene lead to cancer) * (activation of this gene lead to cancer)

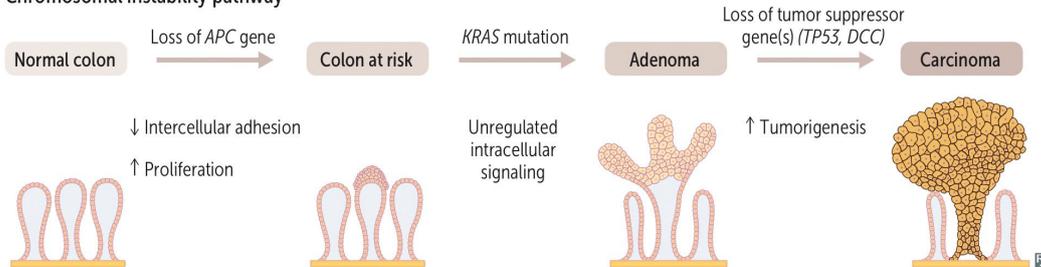
Molecular pathogenesis of colorectal cancer

Chromosomal instability pathway: mutations in APC cause FAP and most sporadic cases of CRC via adenoma-carcinoma sequence.

Microsatellite instability pathway: mutations or methylation of mismatch repair genes (eg, *MLH1*) cause Lynch syndrome and some sporadic CRC via serrated polyp pathway. Usually leads to right-sided CRC.

Overexpression of COX-2 has been linked to colorectal cancer, NSAIDs may be chemopreventive.

Chromosomal instability pathway



FAP



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أحياناً
التهمة زرع
السرطان

80% with Positive family history

Familial Adenomatous Polyposis (FAP)

Only individuals with **polyps** transmit the disease. ←

- Inherited as an autosomal dominant
- Mutations in the adenomatous polyposis coli (*APC*) gene
- Presence of **more than 100 colorectal adenomas**
- Characterised by duodenal adenomas and multiple extraintestinal manifestations.
- Accounts for 1 % or less of all colon cancer
- The risk of colorectal cancer is 100 %
- Associated with benign mesodermal tumours such as desmoid tumours and osteomas
- 50 % of patients have congenital hypertrophy of the retinal pigment epithelium (CHRPE), which can be used to screen affected families if genetic testing is unavailable.

imp. ←

- The risk is **100 %** in untreated cases .
- Carcinoma develops particularly in **villous adenomas larger than 2 cm** .

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Extracolonic manifestations of familial adenomatous polyposis

- Endodermal derivatives
 - Adenomas and carcinomas of the duodenum, stomach, small intestine, thyroid and biliary tree
 - Fundic gland polyps
 - Hepatoblastoma
- Ectodermal derivatives
 - Epidermoid cysts
 - Pilomatrixoma
 - Congenital hypertrophy of the retinal pigment epithelium (CHRPE)
 - Brain tumours
- Mesodermal derivatives
 - Desmoid tumours
 - Osteomas
 - Dental problems



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* Investigations :

- 1) **Barium enema** : show multiple rounded filling defects in the colon and rectum .



3) genetic

Best test for diagnosis

fap :: genetic study

- 2) **Colonoscopy** and **biopsy** are diagnostic .



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دیا مہرے سے شروع

→ epidermoid cyst

Gardner's syndrome : is a type of familial polyposis coli with polyps in GIT, osteomas of mandible & skull and desmoid tumors of the abdominal wall .

*** Clinical picture :**

- The polyps appears at the age of 10-15 years .
- The commonest symptoms are diarrhoea , tenesmus , mild bleeding per rectum and abdominal pain .

Summary box 69.10

Features of familial adenomatous polyposis

- Autosomal dominant inherited disease due to mutation of the APC gene
- More than 100 colonic adenomas are **diagnostic**
- Prophylactic surgery is indicated to prevent colorectal cancer
- Polyps and malignant tumours can develop in the duodenum and small bowel

- ▶ **Etiology:** AD (♂=♀), Gardner's \$
- ▶ **Path.:** affects mainly rectum & sigmoid colon
- ▶ **C/P:** at puberty, +ve family history, diarrhea, BPR, abdominal pain, IO
- ▶ **Comp.:** 100% precancerous
- ▶ **Invest.:** Ba enema, colonoscopy & biopsy
- ▶ **TTT:** panproctocolectomy + ileal reservoir

Hereditary non-polyposis colorectal cancer (Lynch syndrome) *good prognosis*

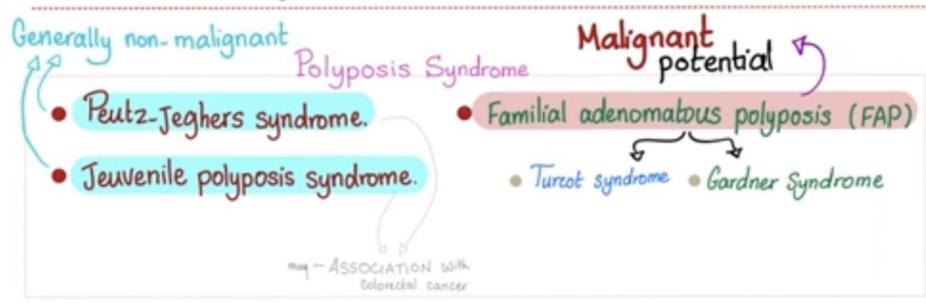
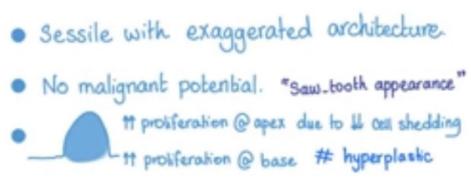
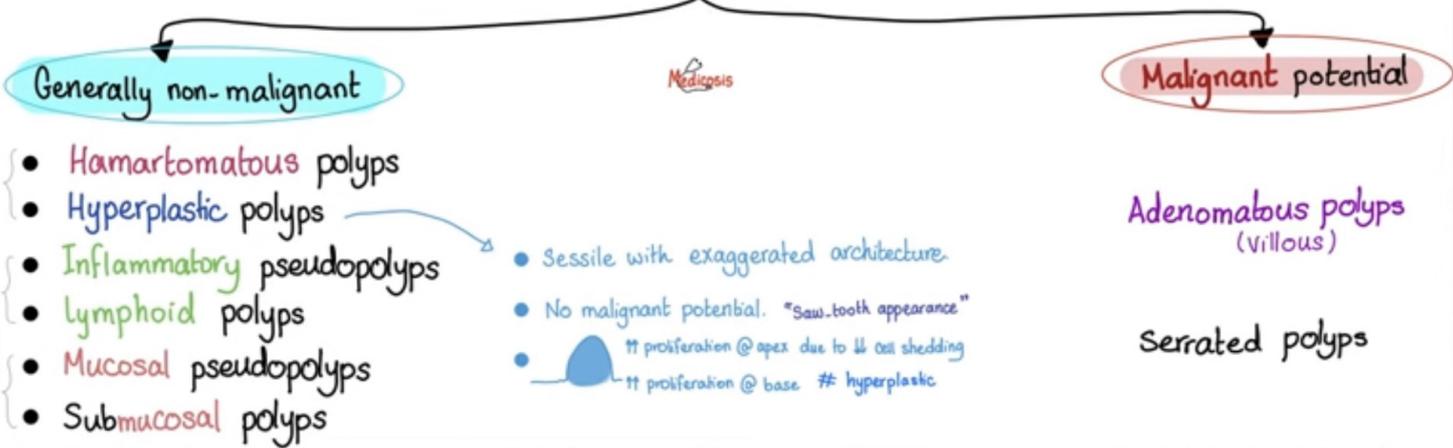
- Characterised by increased risk of colorectal cancer and also cancers of the endometrium, ovary, stomach and small intestines.
- Accounts for about 5 – 10 % of all colon cancers .
- **Autosomal dominant** condition caused by a mutation in one of the DNA mismatch repair genes(**MLH1 , MSH2**). *میل / مسج*
- The lifetime risk of developing colorectal cancer 80 %, and the mean age of diagnosis is **45 years**. *younger than 50 (not sporadic)*
- Most cancers develop in the proximal colon. *(more common in Rt colon)*
- **30–50 % lifetime risk of developing endometrial cancer.**
- Diagnosed by genetic testing or the Amsterdam II criteria.
- Patients with HNPCC are subjected to regular (every one to two years) colonoscopic surveillance.

} sporadic if >50 years old

Lynch 1 → colon cancer

Lynch 2 → colon cancer associated tumors

Colonic polyps



- Cancer Risk in descending order:**
- Familial adenomatous polyposis (FAP)
 - Turcot syndrome
 - Gardner Syndrome
 - Familial multiple Inflammatory polyps
 - Villous / Adenomatous polyps.

Others: Cowden Syndrome, Cronkhite-Canada Syndrome,

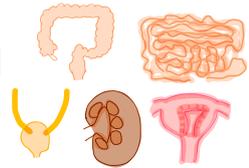
No polyps: Hereditary non-polyposis colorectal cancer (HNPCC), Lynch syndrome

FAP VS. HNPCC

1% of all CRCs	5%
AD, 100% penetrate	AD, 80% penetrate
>100 Polyps	few
APC mutation	MLH1, MSH2 (DNA MMR)
APC "tumor suppressor gene" mutation chromosome Five "5"	
onset at age 16 years	at age 44 years

Amsterdam II criteria

Amsterdam II criteria



- Three or more family members with an HNPCC-related cancer (colorectal, endometrial, small bowel, ureter, renal pelvis), one of whom is a first-degree relative of the other two
- Two successive affected generations
- At least one colorectal cancer diagnosed before the age of 50 years
- FAP excluded
- Tumours verified by pathological examination.

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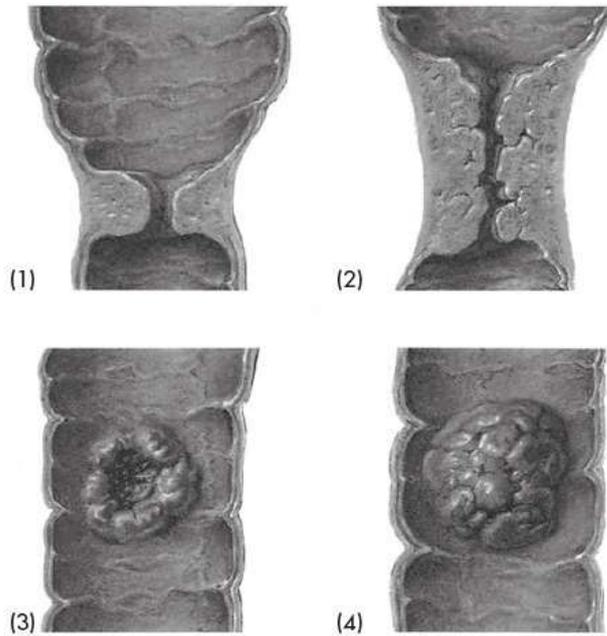
IBD

IBD

- The risk of cancer in ulcerative colitis increases with duration of disease.
- At ten years from diagnosis, it is around 1 %. This increases to 10–15 % at 20 years and may be as high as 20 % at 30 years.

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Pathology

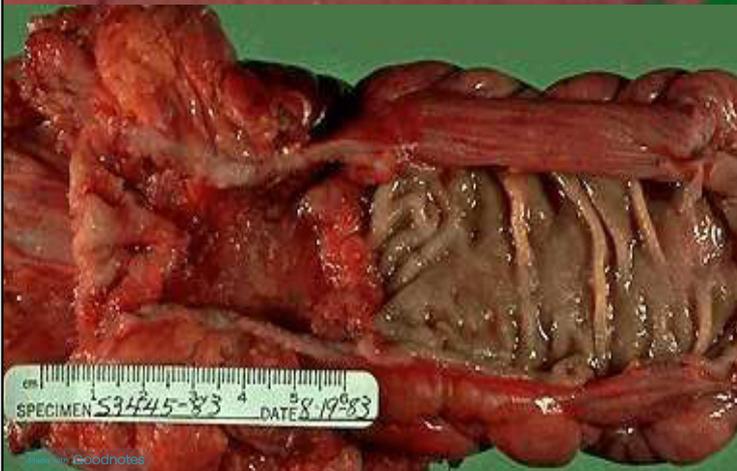
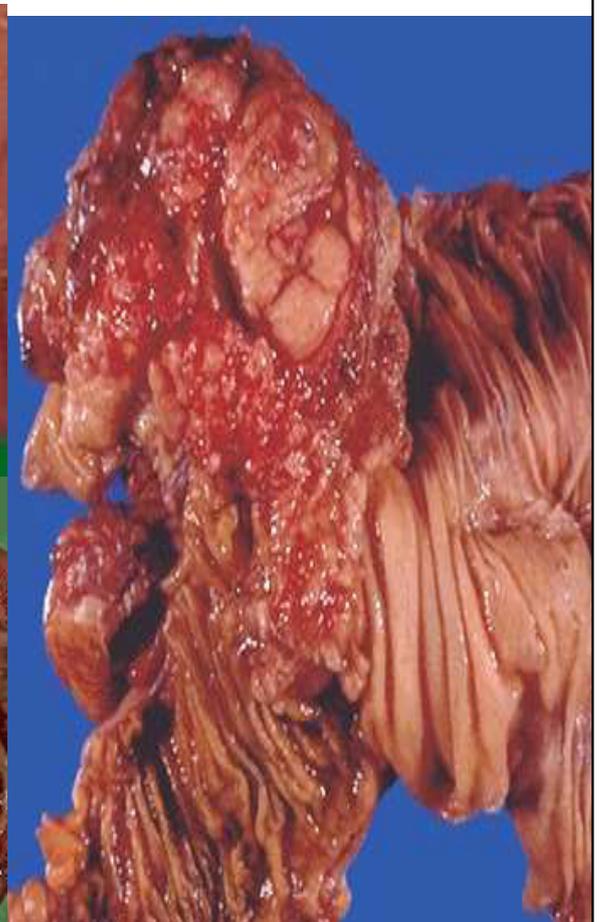


Macroscopically, the tumour may take one of four forms :

The annular variety tends to give rise to obstructive symptoms, whereas the others will present more commonly with bleeding

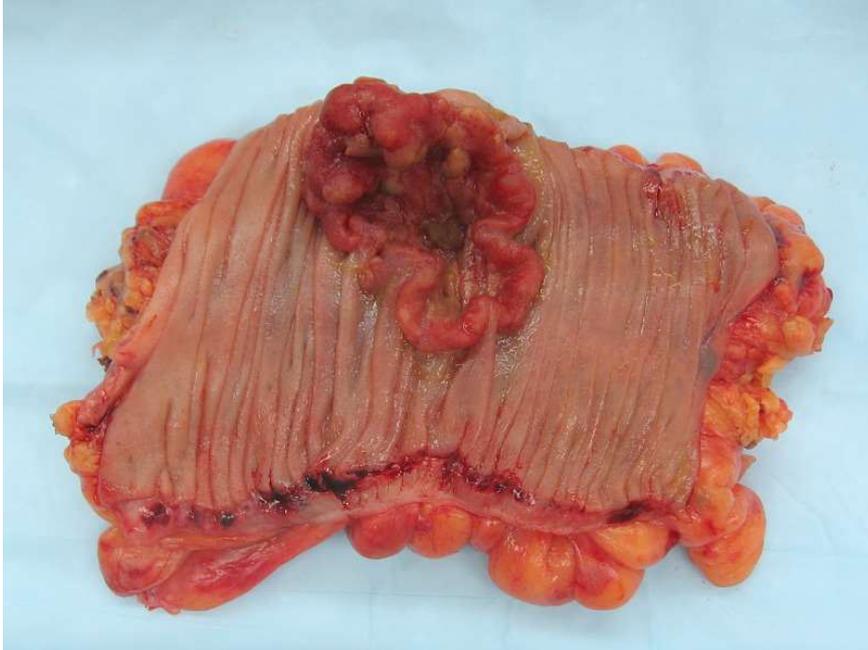
Figure 69.22 The four common macroscopic varieties of carcinoma of the colon. (1) Annular; (2) tubular; (3) ulcer; (4) cauliflower. (path, postnatal)

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Ulcerative colonic carcinoma



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Clinical features

High Fiber Diet
+
Aspirin

are protective
Against colorectal CA

low fiber diet is a risk of malignancy

- Occurs in patients over 50 years of age and is most common in the eighth decade of life
- 20% of cases present as an emergency with intestinal obstruction or peritonitis.
- **left sided** colonic tumors which are far more common usually present with a change in bowel habit or rectal bleeding
- While more **proximal lesions** typically present **later with iron deficiency anaemia** or a mass.
- Patients may present for the first time with metastatic disease.
- Lesions of the flexures may present with vague upper abdominal symptoms for many months before other, more specific symptoms suggestive of colonic disease appear.

→ if Right sided colonic tumors → **anemia cause of occult bleeding**

in Left sided → obstruction and change Bowel habit and Abdominal distention and mucus discharge and change stool caliber, Hematochezia

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- Signs

- Pallor
- Abdominal mass
- PR mass
- Jaundice
- Nodular liver
- Ascites
- Tenosmas

classmate 2020/10/10 10:10

* most common in the left side & rectum }
* Right side doī

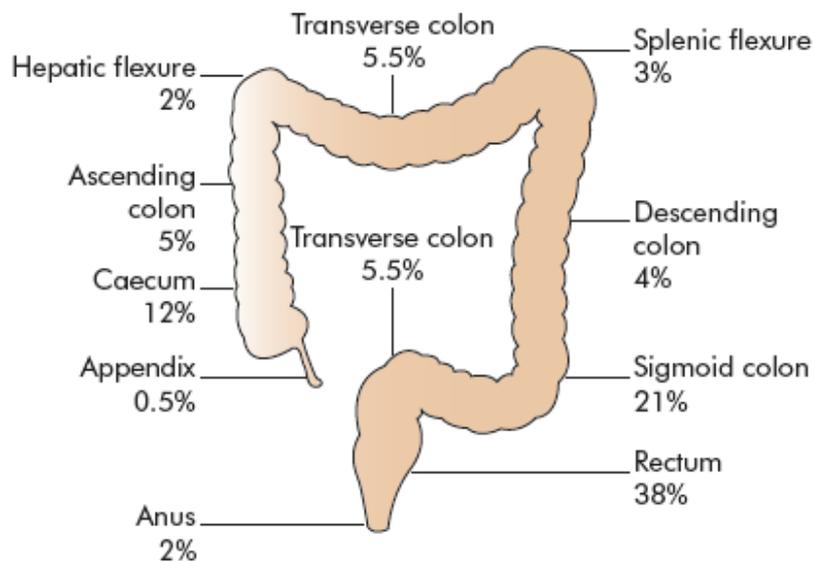


Figure 69.23 Distribution of colorectal cancer by site.

Most common site : rectosigmoidal junction

Tumor marker for follow up , not diagnostic

Diagnosis

- Complete history
- Physical examination /DRE
- Routine investigations
- Confirmatory- Biopsy
- Staging workup
 - CXR
 - Barium enema → *مع CT ال*
 - Colonoscopy
 - CT abdomen- pelvis
 - Virtual colonoscopy
 - MRI
 - PET
- Gold standard- Colonoscopy+ Biopsy *important*
- Others
- FOBT → *سنوي*
- Stool cytology
- CEA
- IHC markers
- Molecular markers- oncogenes

** never ever tell the patient that he has colon cancer without histopathology*

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Screening Guidelines

- Screening for asymptomatic men and women at age 50, using a menu of screening options.
- Mortality rates have been declining for the past 2 decades, largely attributable to the contribution of screening to prevention and early detection.

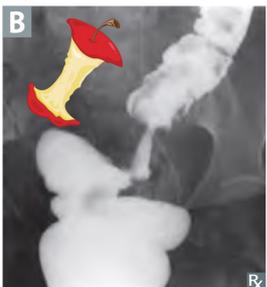


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Radiological studies; air contrast Barium enema has similar diagnostic accuracy to colonoscopy. It shows a filling defect sometimes with an **applecore** lesion (in annular lesions, Computed tomography and other radiographic studies (e.g. ultrasonography for liver metastasis) are usually used to assess metastatic spread.



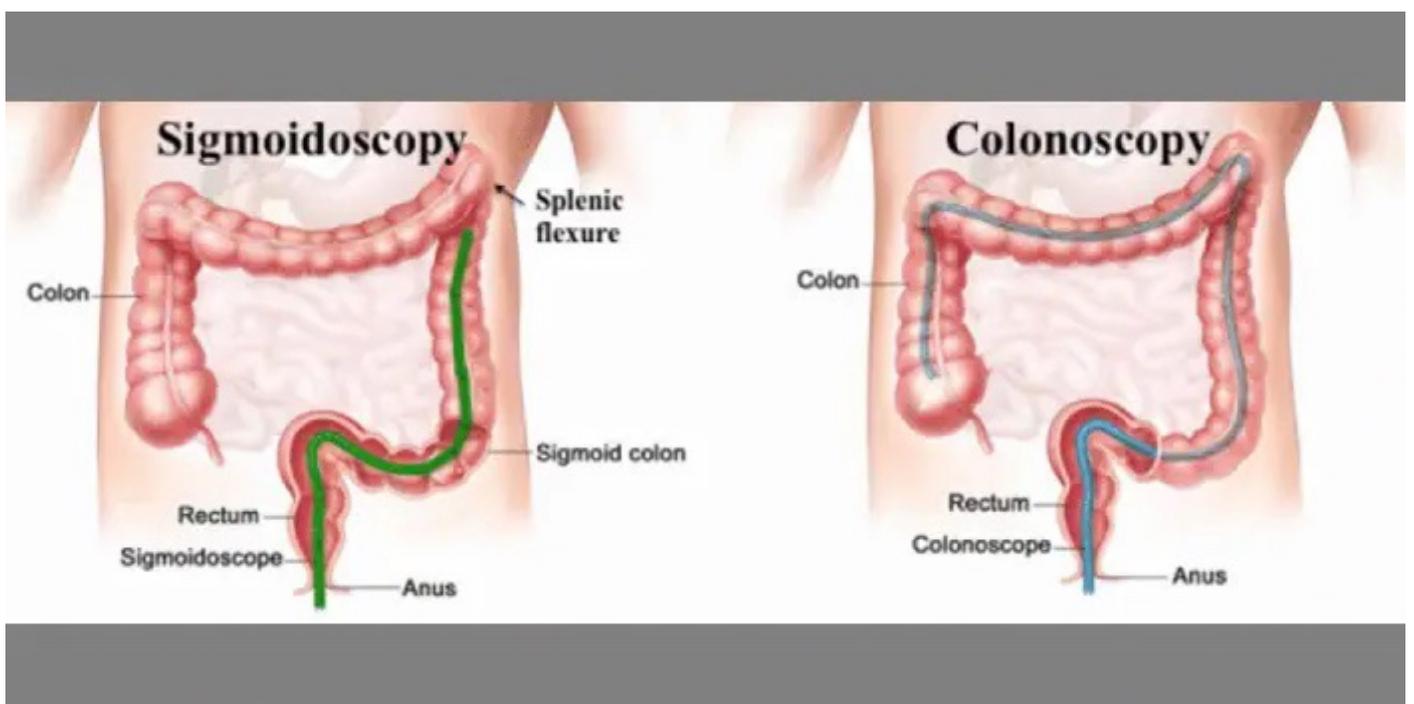
Figure 167 barium enema showing a filling defect with shouldering effect (apple core lesion).



“Apple core” lesion seen on barium enema x-ray **B**.

CEA tumor marker: good for monitoring recurrence, should not be used for screening.

Proctosigmoidoscopy or Colonoscopy is the investigation of choice and is effective in identifying tumors throughout the colon and rectum. colonoscopy has the advantage of allowing diagnostic biopsy and snaring of any adenomas proximal to the cancer.



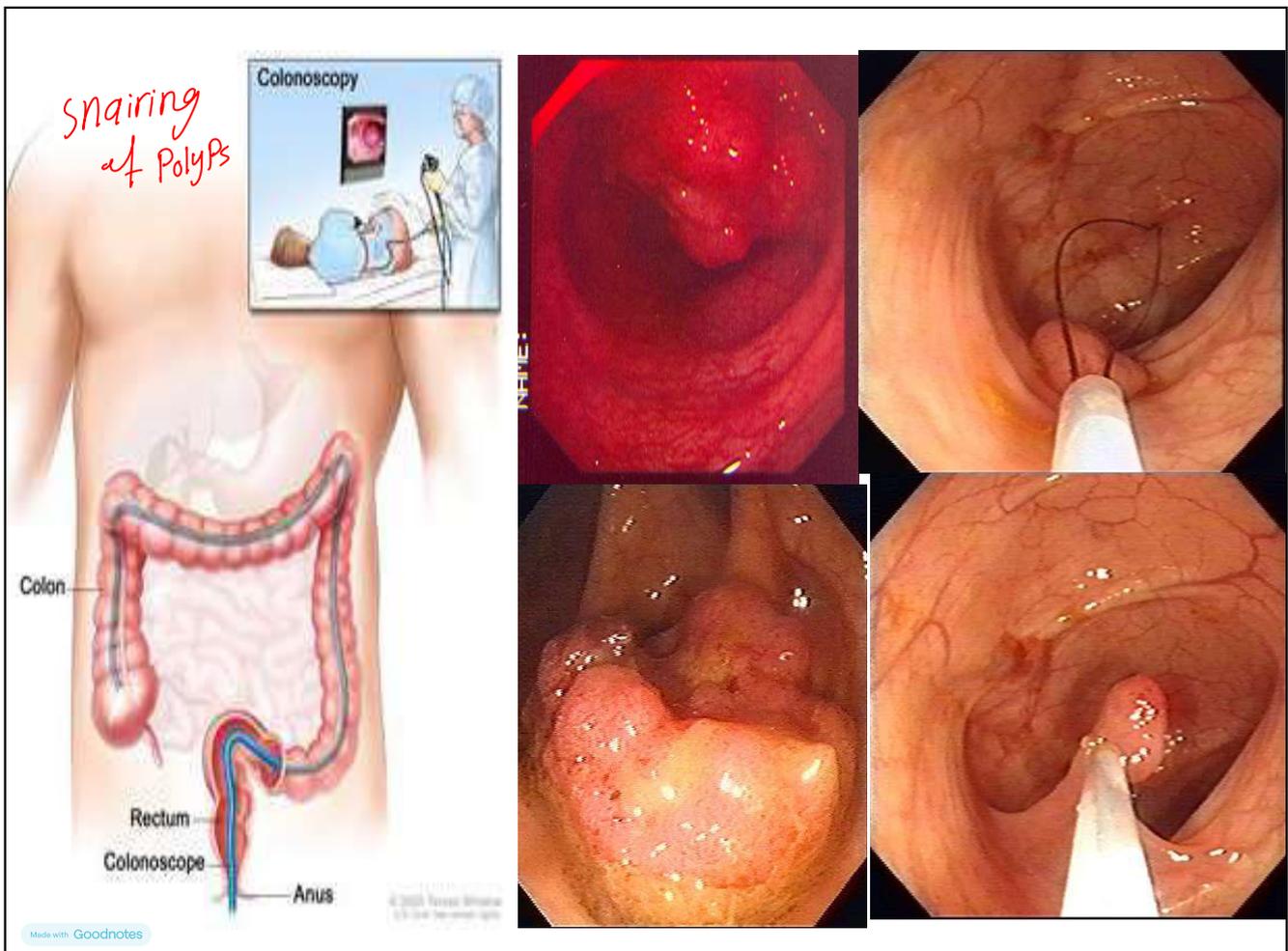
Recommended CRC screening tests

Best screening is colonoscopy without biopsy

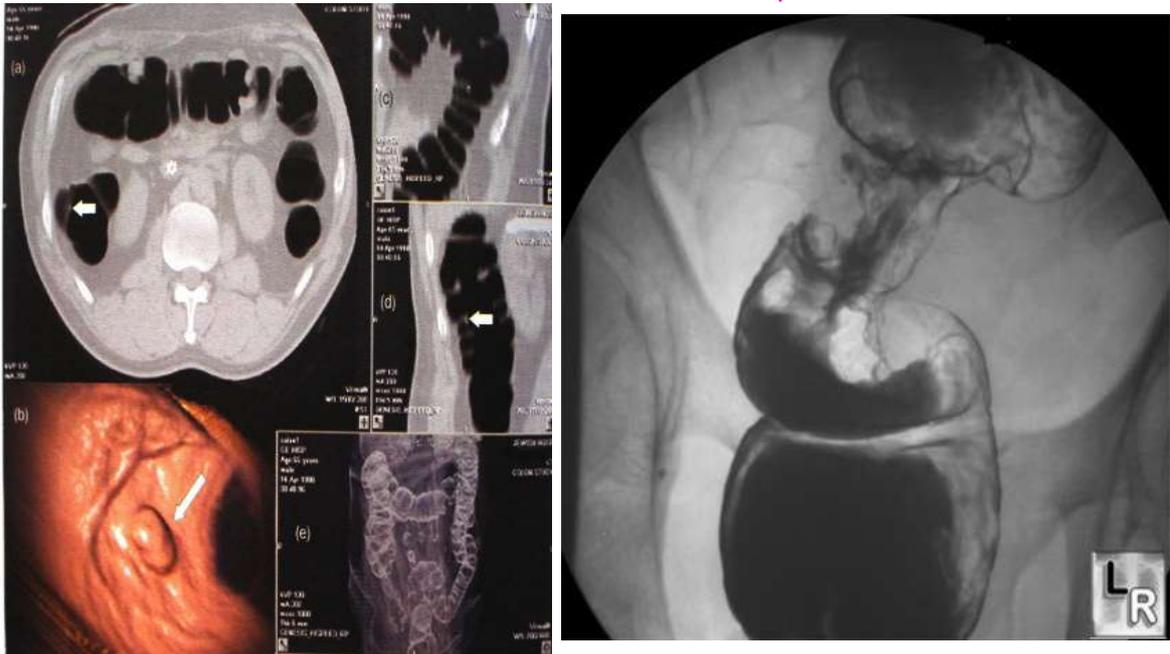
1. Annual high-sensitivity gFOBT or FIT, following the manufacturer's recommendations for specimen collection
2. FSIG every 5 years
3. Colonoscopy every 10 years
4. Double-contrast barium enema every 5 years *— لا يملك*
5. CT colonography every 5 years. *Biopsy في Polyps*

Stool DNA testing, which also was among the recommended options in the 2008 update, is no longer commercially available for screening.

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Apple Core



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SPREAD OF CARCINOMA OF THE COLON

- ↳ locally
- **Direct spread** longitudinal, transverse or radial
- **Lymphatic spread**
- **Haematogenous spread**
- **Transcoelomic spread**
across body cavity
(around Peritonium)

↳ gastric cancer

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1- Direct spread:

First in the colonic wall itself, then to the neighboring organs.

2- Lymphatic spread:

- ➔ In the right and transverse colon: into epicolic, paracolic and then into superior mesenteric L.Ns.
- ➔ In left colon: into epicolic, paracolic and then into inferior mesenteric L.Ns
- ➔ Nodal involvement is found in 40% of case coming to operation.

3- Blood spread:

- ➔ mainly to the liver (hepatic metastases is found in 20% of cases coming to surgery).

4- Transperitoneal spread.

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فقط

من مطوبين ال staging

X

TNM classification for colonic cancer

- T, Tumour stage
 - T1, Into submucosa
 - T2, Into muscularis propria
 - T3, Into pericolic fat or sub-serosa but not breaching serosa
 - T4, Breaches serosa or directly involving another organ
- N, Nodal stage
 - N0, No nodes involved
 - N1, 1-3 nodes involved
 - N2, Four or more nodes involved
- M, Metastases
 - M0, No metastases
 - M1, Metastases

Dukes' staging for colorectal cancer

- A, Invasion of but not breaching the muscularis propria
- B, Breaching the muscularis propria but not involving lymph nodes
- C, Lymph nodes involved

Dukes himself never described a stage D, but this is often used to describe metastatic disease

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Dukes classification-

Dukes A: Invasion into but not through the bowel wall.

Dukes B: Invasion through the bowel wall but not involving lymph nodes.

Dukes C: Involvement of lymph nodes

Dukes D: Widespread metastases

Modified astler coller classification-

Stage A : Limited to mucosa.

Stage B1 : Extending into muscularis propria but not penetrating through it; nodes not involved.

Stage B2 : Penetrating through muscularis propria; nodes not involved

Stage C1 : Extending into muscularis propria but not penetrating through it. Nodes involved

Stage C2 : Penetrating through muscularis propria. Nodes involved

Stage D: Distant metastatic spread

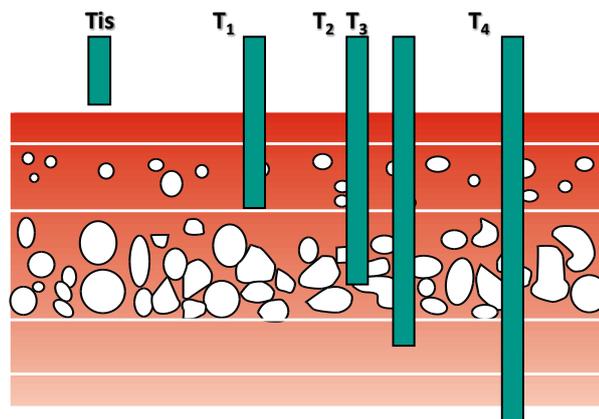


TNM Classification

T _x	Primary tumor cannot be assessed
T ₀	No evidence of primary tumor
T _{is}	Carcinoma <i>in situ</i> : intraepithelial or invasion of lamina propria
T ₁	Tumor invades submucosa
T ₂	Tumor invades muscularis propria
T ₃	Tumor invades through the muscularis propria into pericolorectal tissues
T _{4a}	Tumor penetrates to the surface of the visceral peritoneum
T _{4b}	Tumor directly invades or is adherent to other organs or structures

المریجن ما بپس 4 stage
إلا وهو جال distal metastases

Mucosa
Muscularis mucosae
Submucosa
Muscularis propria
Subserosa
Serosa



Extension to an adjacent organ

مکي الی بدو اباس

مطلوب ~~✗~~

TNM Classification

Regional Lymph Nodes (N)

NX	Regional lymph nodes cannot be assessed
N0	No regional lymph node metastasis
N1	Metastasis in 1 to 3 regional lymph nodes
N1a	Metastasis in 1 regional lymph node
N1b	Metastasis in 2-3 regional lymph nodes
N1c	Tumor deposit(s) in the subserosa, mesentery, or non-peritonealized pericolic or perirectal tissues without regional nodal metastasis
N2	Metastasis in 4 or more regional lymph nodes
N2a	Metastasis in 4 to 6 regional lymph nodes
N2b	Metastasis in 7 or more regional lymph nodes

Distant Metastasis (M) *Stage 4 Distant Metastasis*

M0	No distant metastasis (no pathologic M0; use clinical M to complete stage group)
M1	Distant metastasis
M1a	Metastasis confined to one organ or site (e.g. liver, lung, ovary, non-regional node).
M1b	Metastases in more than one organ/site or the peritoneum

Goodnotes

Stage Grouping

✗

Clinical					
Group	T	N	M	Dukes*	MAC*
0	Tis	N0	M0		-
I	T1	N0	M0	A	A
	T2	N0	M0	A	B1
IIA	T3	N0	M0	B	B2
IIB	T4a	N0	M0	B	B2
IIC	T4b	N0	M0	B	B3
IIIA	T1-T2	N1/N1c	M0	C	C1
	T1	N2a	M0	C	C1
IIIB	T3-T4a	N1/N1c	M0	C	C2
	T2-T3	N2a	M0	C	C1/C2
	T1-T2	N2b	M0	C	C1
IIIC	T4a	N2a	M0	C	C2
	T3-T4a	N2b	M0	C	C2
	T4b	N1-N2	M0	C	C3
IVA	Any T	Any N	M1a	-	-
IVB	Any T	Any N	M1b	-	-

*Dukes B is a composite of better (T3 N0 M0) and worse (T4 N0 M0) prognostic groups, as is Dukes C (Any TN1 M0 and Any T N2 M0). MAC is the modified Astler-Coller classification.

Stage unknown

Goodnotes

CEA for follow up and detection of Recurrence only

SURGERY

- SURGERY is the GOLD STANDARD and principle therapy of primary and non metastatic ca colon
 - Curative
 - Palliative
 - Accurate disease staging
 - Guides adjuvant treatment
 - * Radiotherapy to control local tumor
Total recurrence ↓ 50% to 15%
 - * Post-op chemotherapy to control Micrometastasis
& ↑ five-year survival
- Likelihood of cure is greater when disease is detected at early stage
- AIM
 - To excise the primary lesion with adequate margin ~5 cm of normal bowel proximal and distal to the tumor
 - To reconstitute bowel continuity

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Curative surgery

5cm safety margin \approx 5cm
 Tumor \rightarrow local regional lymphadenectomy
 Principle main vessels \rightarrow at least intermediate L.N
 resume the continuity of the bowel
 Harthman's \rightarrow stoma
 (it can be reversed later)
 continuity of bowel

Palliative

* The patient with left sided colon cancer stage 4 or 8
 cardiaclly or hemodynamically unstable

- The operations described are designed to remove the primary tumour and its draining locoregional lymph nodes.

* Operable patient → *المريض القابل للعمليات* → cardiac *قلبي*
Respiratory *تنفسي*

المرضى

I. Operable cases (curable):

1. Preoperative preparation:

2. Elective radical resection: → remove the tumor with healthy margin

- Operations (according to the site): - - -

* Inoperable Patient → *المريض غير القابل للعمليات* → cardiopulmonary compromised *ضعف في القلب والرئتين*
لا يُعالج بالعمليات

المرضى

II. Inoperable cases:

- Resectable: resection is preferred as it is adenocarcinoma (insensitive to radiotherapy or chemotherapy)
- Irresectable: operation is done to avoid obstruction
 - Right colon → side-to-side ileo-transverse anastomosis.
 - Left colon and rectum → proximal colostomy.

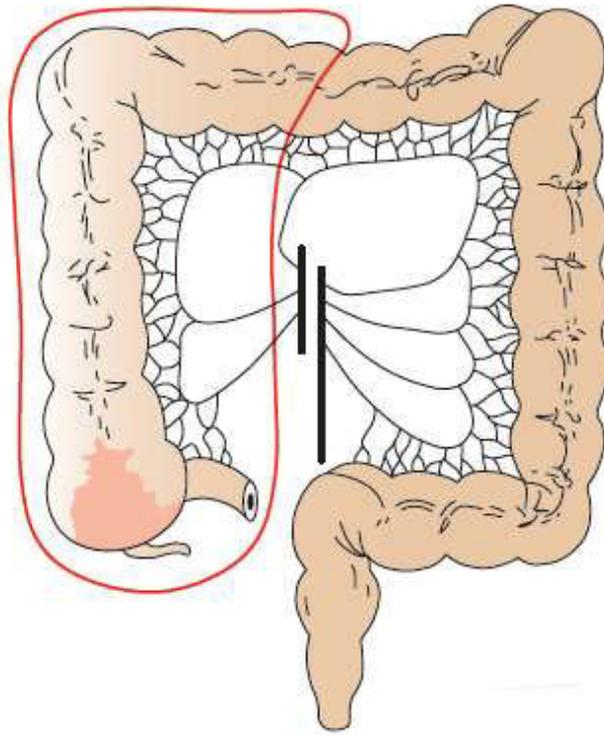


Figure 69.28 Schematic showing right hemicolectomy.

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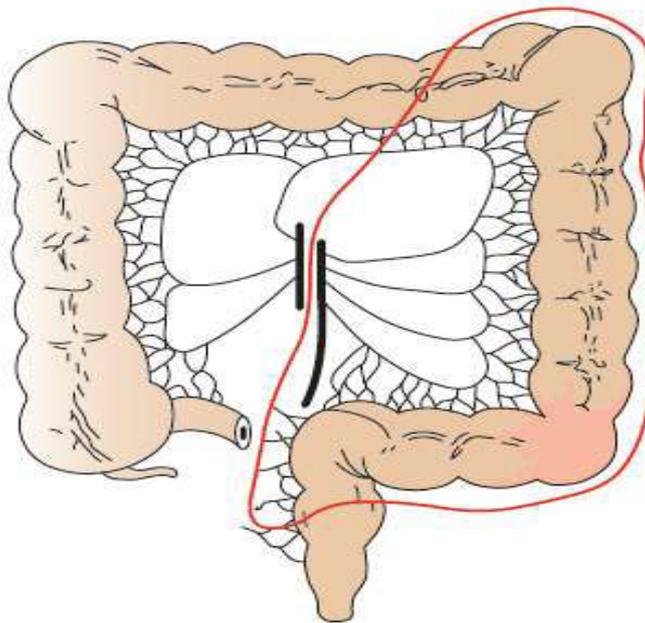


Figure 69.29 Schematic showing left hemicolectomy.

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Pouch (إمخاخ)

FAP

ileal Pouch anal anastomosis

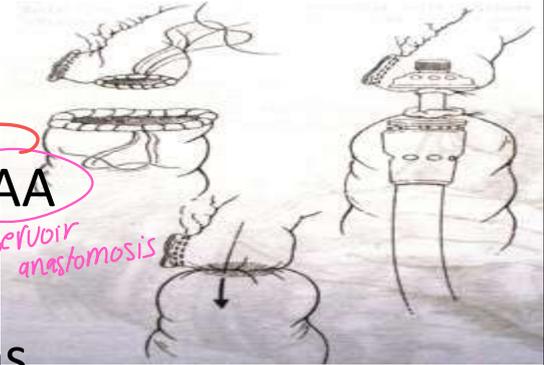
Total proctocolectomy and IPAA

X ileostomy ←

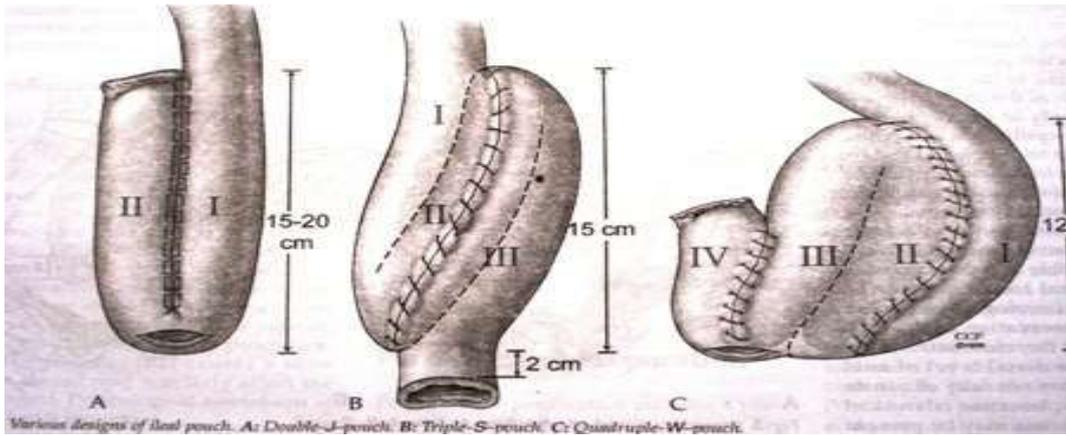
or

X dehydration ← ileum with rectum anastomosis

reservoir anastomosis



Various designs of ileal pouches



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Emergency surgery

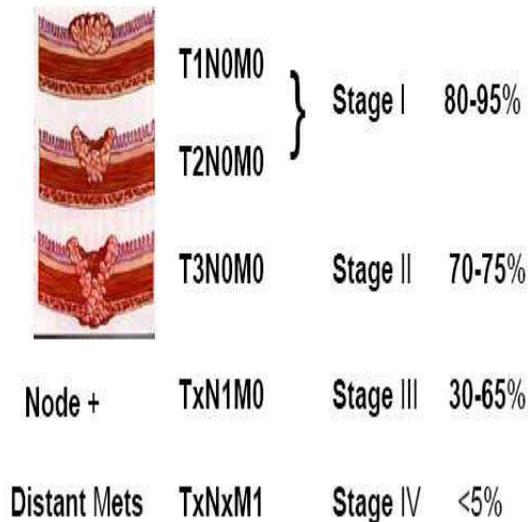
- 20 % of patients with colonic cancer will present as an emergency, the majority with obstruction, but occasionally with haemorrhage or perforation.
- If the lesion is right sided, it is usually possible to perform a right hemicolectomy and anastomosis in the usual manner; this can be facilitated by decompressing the bowel at the start of the operation
- Perforation with substantial contamination or if the patient is unstable, it may be advisable to bring out an ileo/colostomy rather than anastomosing bowel in these circumstances.
- For a left-sided lesion, the decision-making process is similar to that in diverticular disease between a Hartmann's procedure and resection and anastomosis

proctosigmoidectomy

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Stage	Mean 5 yr survival rate (%)
T ₁ N ₀	97
T ₂ N ₀	90
T ₃ N ₀	78
T ₂ N ₊	74
T ₄ N ₀	63
T ₃ N ₊	48
T ₄ N ₊	38

5 yr survival after curative resection of CRC



important

- The most important determinant of prognosis is tumour stage and, in particular, lymph node status.
- Overall five-year survival for colorectal cancer is approximately 50 %.
- Follow up aims to identify synchronous bowel tumours that were not picked up at original diagnosis due to emergency presentation or incomplete assessment

Chemotherapy

- 5Fu
- Leucovorin
- Oxaliplatin
- Irinotecan
- Bevacizumab
- cetuximab

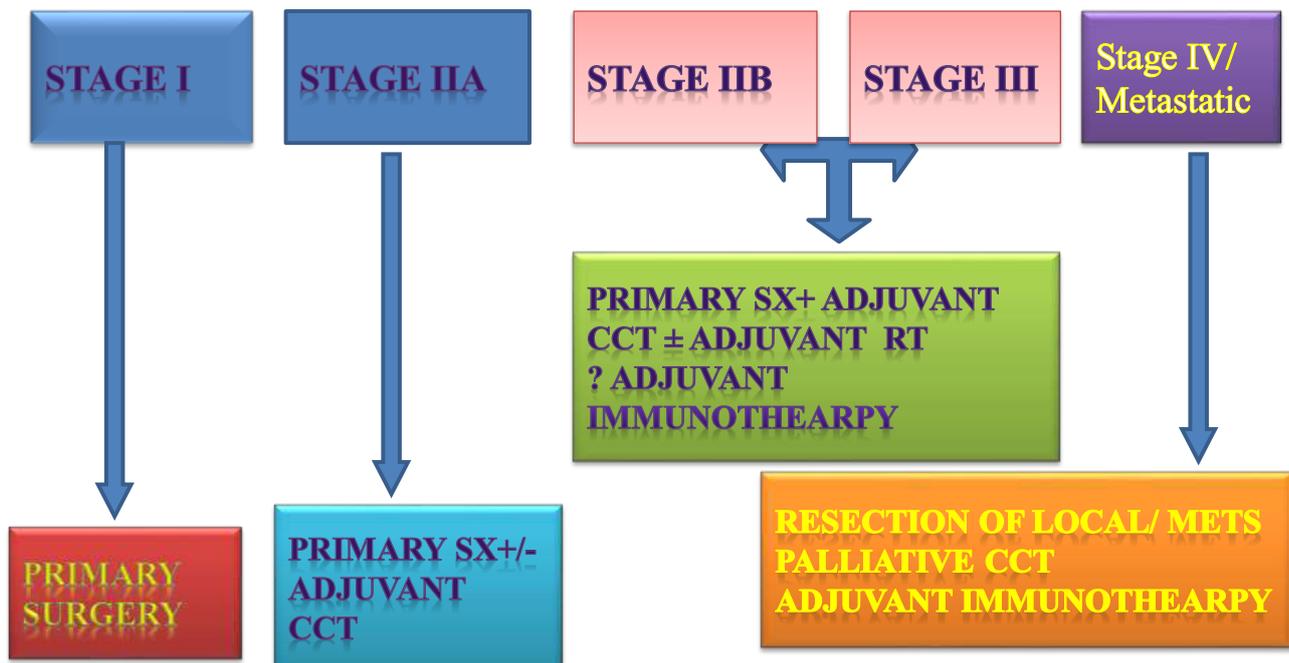
Combinations

- FOLFOX
- FOLFIRI
- Leucovorin/5FU
- Capecitabine
- Bevacizumab in combination with the above regimens.

Radiotherapy for local recurrence

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CA COLON



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Rectum

- The rectum measures approximately 15 cm in length
- It is divided into lower, middle and upper thirds
from pudendal → *middle hemorrh... from hypogastric* → *superior hemorrhoidal artery from IMA*
- The blood supply consists of superior, middle and inferior rectal vessels
- Although the lymphatic drainage follows the blood supply, the principal route is upwards along the superior rectal vessels to the para-aortic nodes

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Rectum safety margin : 2cm

- **Main symptoms of rectal disease**
 - Bleeding per rectum *most common*
 - Altered bowel habit
 - Mucus discharge
 - Tenesmus
 - Prolapse

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مستلويين
الارفاق

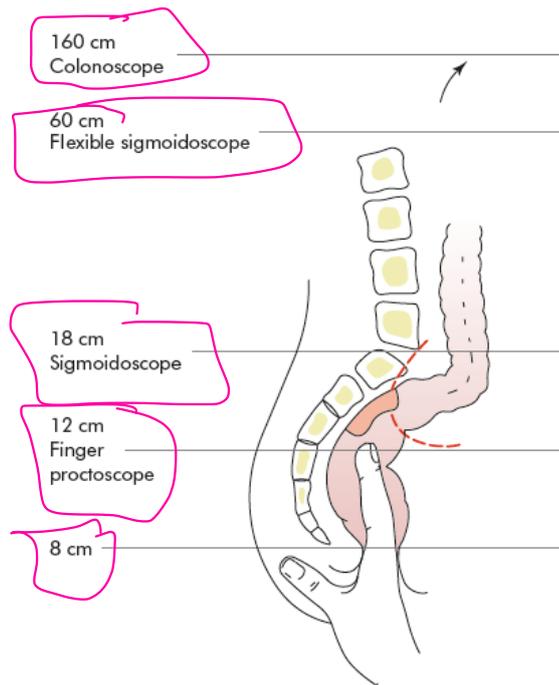


Figure 72.4 Illustration showing how the various methods of examining the rectum reach different levels. Note that even cancers in the upper part of the rectum can be felt with the index finger, especially if the patient is asked to 'strain down' (courtesy of CV Mann).

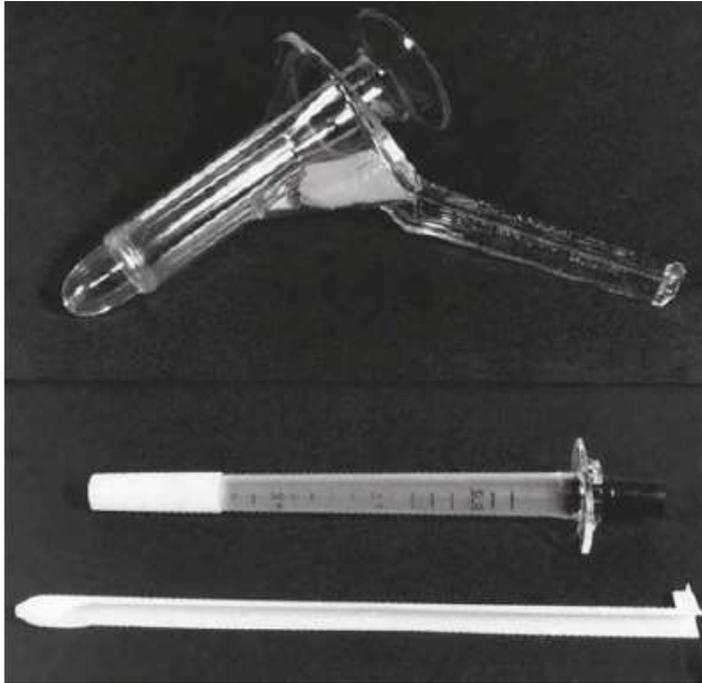
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Guidelines for screening →

- * Finger — 7 cm
- * Proctoscope — 10 cm
- * rigid sigmoidoscope — 25 cm
- * flexible sigmoidoscope — 60 cm
- * Colonoscope — 160 cm

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anoscope → 10 - 12 cm



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ما قرأ

Rectal polyps

- Either single or multiple
- Adenomas are the most frequent histological type
- Villous adenomas may be extensive and undergo malignant changes
- All adenomas must be removed to avoid carcinomatous change
- All patients must undergo colonoscopy to determine whether further polyps are present
- Most polyps can be removed by endoscopic techniques, but sometimes major surgery is required

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ما قرأ

Workup

- CT of the chest and abdomen to exclude distant metastases
- PET scanning can be helpful in identifying metastases if imaging is otherwise equivocal
- Endoluminal ultrasound, performed using a probe placed in the rectal lumen, can be used to assess the local spread of the tumour
- MRI

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Transrectal ultrasound –EUS

- use for clinical staging.
- 80-95% accurate in tumor staging
- 70-75% accurate in mesorectal lymph node staging
- Very good at demonstrating layers of rectal wall
- Use is limited to lesion < 14 cm from anus, not applicable for upper rectum, for stenosing tumor
- Very useful in determining extension of disease into anal canal (clinical important for planning sphincter preserving surgery)

ما قرأ

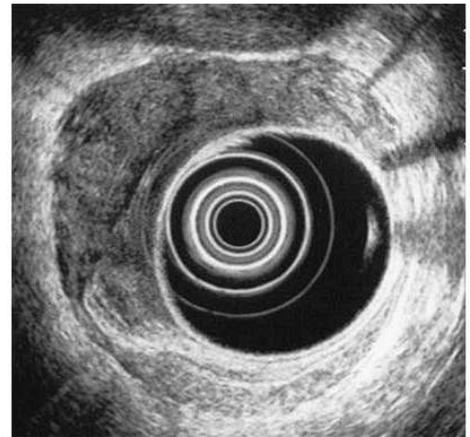
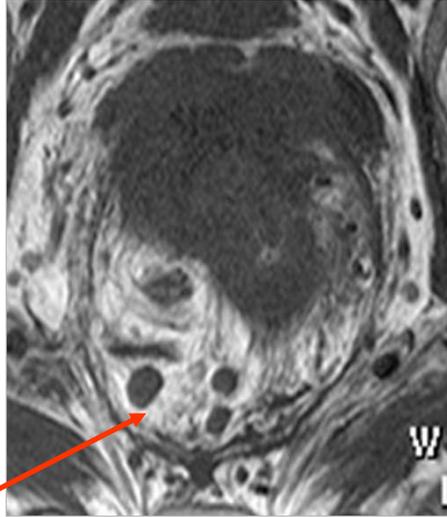


Figure. Endorectal ultrasound of a T3 tumor of the rectum, extension through the muscularis propria, and into perirectal fat.

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MRI



Circumferential Resection
Margin (CRM)

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ماجزا

Management

- Management of rectal cancer has become increasingly complex, because of the various surgical, neoadjuvant and adjuvant options available, and is best delivered in a multidisciplinary setting.
- Before treatment can be planned, it is necessary to assess:
 - Fitness of the patient
 - Extent of spread

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صا قرا

- Radical excision of the rectum, together with the mesorectum and associated lymph nodes, should be the aim in most cases.
- When a tumour appears to be locally advanced ,the administration of a course of neoadjuvant chemoradiotherapy over approximately 6 weeks may reduce its size and make curative surgery

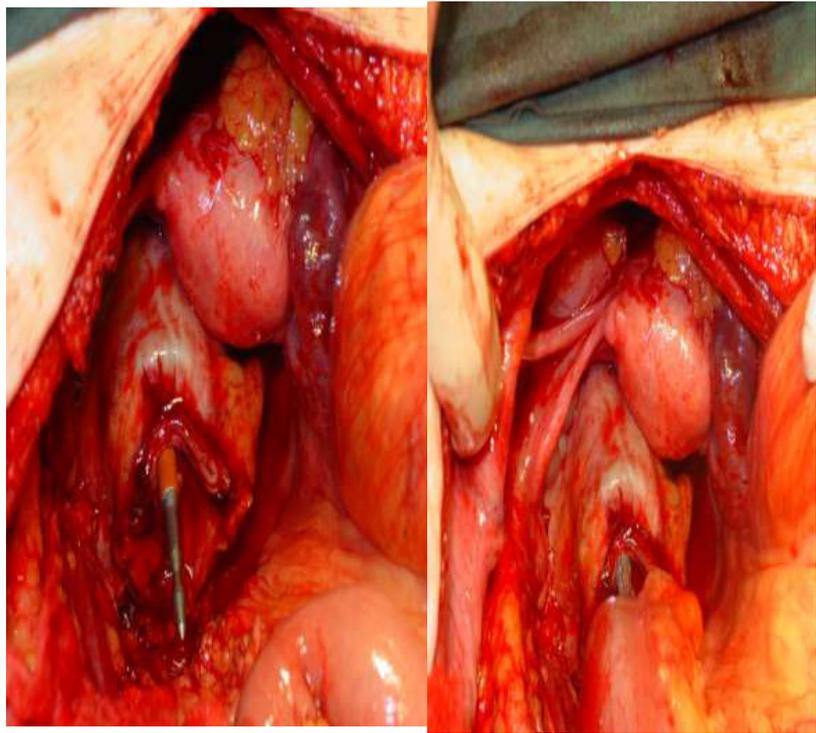
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السا قر

- For patients who are unfit for radical surgery, who have very early tumours or who have widespread metastases, a local procedure such as transanal excision, laser destruction or interstitial radiation should be considered
- Sphincter-saving operation (anterior resection) is usually possible for tumours whose lower margin is 2 cm above the anal canal.

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Mid-rectal Anastomosis



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Archive

* Risk of a malignant transformation of colorectal polyp depends on the following except:

- a. Size.
- b. Histopathology.
- c. Duration.
- d. Associated polyposis syndrome.
- e. More in pedunculated polyp than sessile type.

* Hereditary non-polyposis colorectal cancer characterized by of the following EXCEPT:

- a. Increased risk of ovarian, gastric and small intestinal cancers.
- b. Accounts for about 5 — 10 % of all colon cancers.
- c. Autosomal recessive condition caused by a mutation in DNA mismatch repair genes.
- d. The lifetime risk of developing colorectal cancer is 80 %.
- e. Mean age of diagnosis is 45 years.

* Which of the following polyp harbor the highest malignancy potential:

- a. 3 cm tubulovillous polyp in the descending colon.
- b. 2 cm villous polyp in the ascending colon.
- c. 4 cm hyperplastic polyp in the transverse colon.
- d. 5 cm tubular polyp in the ascending colon.
- e. 5 cm villous polyp in the descending colon.

* Familial Adenomatous Polyposis (FAP) , one is true :

- a. presence of more than 1,000 colorectal adenoma
- b. inherited as an autosomal recessive
- c. accounts for 1% or less of all colon cancer
- d. the risk of colorectal cancer is 80%
- e. congenital hypertrophy of the retinal pigmentepithelium (chrpe) present in less than 5% of patients

* Fap ?

- A. -100 % colon cancer
- B. -100 polyp
- C. - 15% of colon cancer

* Most common type of polyp :

adenoma

* Peutz jegherz type of polyp :

hamartoma

* wrong about Hereditary non polyposis colonorectal cancer :

autosomal recessive

* most likely pre cancerous lesion of following :

5 cm villous polyp (other choices were smaller polyps , and 5cm tubular polyp which is less precancerous than villous type)

* Massive GI bleeding in children except:

juvenile polyps

* Painful anal condition except:

Anal polyp

* Which of the following conditions is pre-malignant:

A. Juvenile polyp

B. Hamartomatous polyp

C. Adenomatous polyp

* All of the following predispose to the development of cancer colon and rectum, EXCEPT: (повтор)

A. Familial polyposis coli

B. Ulcerative colitis

C. Villous adenoma

D. Hamartomatous polyp

E. Adenomatous polyp

* One of the following extra-intestinal manifestation of Familial Adenomatous Polyposis can be used to screen affected families if genetic testing is unavailable: Select one:

a. Congenital hypertrophy of the retinal pigment epithelium.

b. Epidermoid cyst.

c. Pilomatixoma.

d. Osteomas.

e. Desmoid tumors.

*** Amsterdam II criteria one is FALSE:**

- a. Three or more family members with colorectal cancer or other associated cancers, one of whom is a first-degree relative of the other two
- b. Three successive affected generations
- c. At least one colorectal cancer diagnosed before the age of 50 years
- d. Familial Adenomatous Polyposis excluded
- e. Tumors verified by pathological examination

*** The adenoma -carcinoma pathway started on normal epithelium by :**

- a. Loss/ Mutation of APC.
- b. Loss of DNA methylation.
- c. Mutation of ras oncogene.
- d. Loss of DCC gene.
- e. Loss of p53 gene.

*** second step after occult blood positivity at screening of colorectal cancer :**

colonoscopy

بالتوفيق والسداد

