

Summary for lectures 5, 6 & 7  
By Mervat Khalid

Diseases of the intestines



\* → surgical speciality

\* intestinal obstruction

\* vascular disorders

mechanical obstruction

non-mechanical obstruction  
Hirschsprung disease.

intussusception    hernia    volvulus    Adhesions

Bowel infarction  
- Advanced volvulus

\* → 80% of mechanical obstruction.

herniation →



hernia isn't emergency case but ischemia with it is emergency.

hernia will decrease venous drainage blood supply lead to rupture, infarction ischemia, perforation

volvulus →



venous drainage ↓ blood supply stops → state of ischemia in infarction & perforation

Surgical emergency!!

early → untwist the bowel  
late → remove part of the bowel

intussusception →



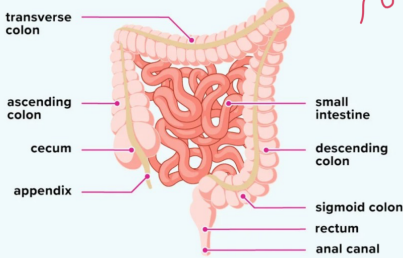
عند تضيق مكانه كالماء في

Adhesions →



result from inflammation, previous surgery or perforation (Fibrosis)

Small and large intestines

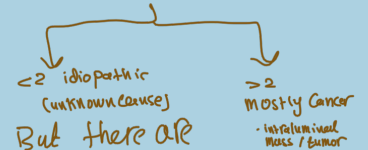


healthline

المعده

Clinical Features of intestinal obstruction regardless of cause → vomiting, constipation, Distention, Abdominal pain may be acute/chronic

Causes of intussusception



But there are predisposing factors for it:

- 1) Peyer patch hyperplasia (due to rotavirus vaccine, viral infections)
  - 2) Meckel's diverticulum (ileum)
- ← الفم القوي الذي الرصاص بالك لا يوجد فيه الكوري.

is a small outpouching extending from the wall of the intestine and located in the lower portion of the small intestine



Intussusception →

• Definition →

smaller segment of the intestine constricted by a wave of peristalsis, telescopes into the immediately distal segment that is bigger in diameter

فإنها تدن لهاي العملية ↑ peristalsis يزلها ويسحب معها الميسنتيري.

• most common cause of intestinal obstruction in children younger than two years.

any children < 2 years come to you with obstruction rule out intussusception first

\* Clinical Features

- pain
- irritability
- Abdominal swelling
- vomiting
- Currant jelly stool (stool mixed with blood & mucus)
- distended abdomen

management of intussusception →

- ↳ early → contrast enema for diagnosis & therapy.
- ↳ complicated by infarction or masses are the leading cause → surgery



# Hirschsprung disease

المرض زنج  
Spring ←  
صراويله Congenital aganglionic megacolon (another name)

\* Congenital defect in colonic innervation → ↓ peristalsis

\* More common in males but more severe in females.

\* it's congenital → risk increases in siblings

\* the child is born with this disease and the most common presentation is failing to pass meconium → First stool passed by meconium after birth

## pathogenesis →



disrupted migration of neural crest from cecum to rectum → intrinsic innervation (lack of Meissner (submucosal plexus) & Auerbach (enteric plexus)) → Failure of coordinated peristaltic contractions

هو الذاكر familial  
sporadic 15% ← mutations in RET gene

صوتك لرضه تلبها جيتان لانية وكامل بيسته

## Hirschsprung Continue ----

### Morphology →

\* rectum is always involved → لانه اضره من اجزاء ال large intestine  
\* Extent is variable → موثون لاول ال colon  
\* most cases in rectosigmoid. ديك

\* Aganglionic region normal / contracted.  
\* proximal to the aganglionic region → dilated } Macroscopic Features

### Diagnostic workup →

Barium enema, Biopsy, microscopic

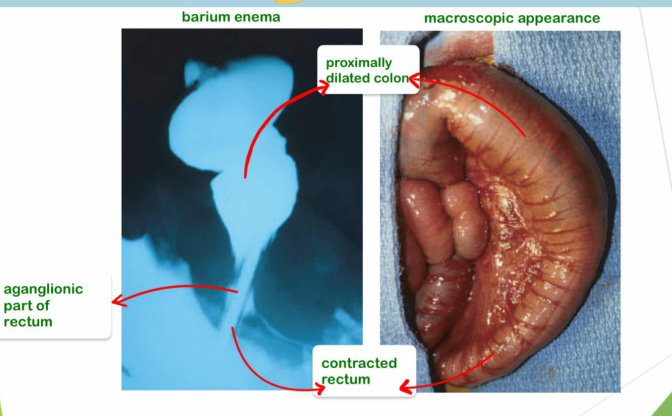
2 microscopically → lack of ganglion cells in the submucosal or intramuscular nerve plexuses

كيزم ال  
biopsy  
تتمثل كل  
اللقان !!

### Complications →

- Enterocolitis infection (bowel is distended and there's stagnation of stool → risk of bacterial overgrowth and infection)
- Fluid and electrolyte disturbances
- Perforation (bowel could be ruptured causing)
- Peritonitis

Treatment (Tx) → surgical resection of aganglionic segment & anastomosis of normal segment



# vascular disorders of the bowel

Ischemic bowel disease  
hemorrhoids.

## hemorrhoids

\* Definition →

### Varices

like paresis in esophagus it's a dilated tortuous veins but in the anorectal area

Dilated anal & perianal collateral vessels connect portal & Caval venous system



### Predisposing Factors →

- \* portal hypertension.
- \* venous stasis of pregnancy.

### Types of hemorrhoids →

- internal → above ano-rectal line
- external → below ano-rectal line

Thin-walled, dilated, submucosal (below anal/rectal mucosa)

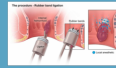
symptoms → • Bleeding (Fresh blood)

- Pain
- Thrombosis
- Inflammation

هون للشرج ال دا بالدم  
ما كتبه الكتورة ومثل بالسكينة  
بلك اضافة ميني كمان نصف لحظة

## Treatment →

- sclerotherapy → أن يتم حقن مادة بال veins  
عنا في ليدلهم closure
- rubber & band ligation → بالصوره
- infrared coagulation → باستخدام ال laser
- hemorrhoidectomy → الحفرة  
ببيل آي  
hemorrhoid  
dole



## Inflammatory intestinal diseases →

### Chronic inflammatory bowel diseases (CIBD)

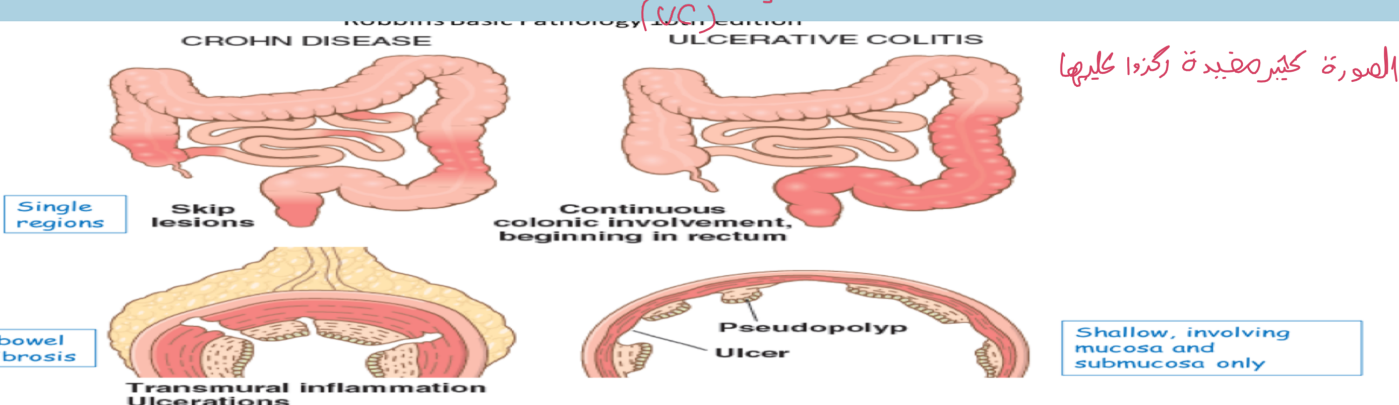
- \* genetic predisposition
- \* inappropriate mucosal damage
- \* immune mediated
- Epidemiology → \* 2 peaks → Adolescence & young adults & 5th decade
- \* Geographic variation
- \* Hygiene hypothesis (child exposure to environmental microbes prevents excessive immune reactions)

sigmoid diverticulosis

هون الكلام  
عن  
CIBD  
شكلك كام

### Crohn disease (CD)

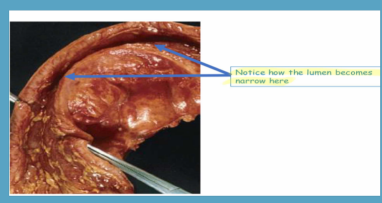
### Ulcerative Colitis (UC)



# Crohn disease →

## morphology →

- ① Regional enteritis → can be found in any area of the GIT in an uncontinuous pattern. (strip lesions)
- ② most common sites → terminal ileum, ileocecal, cecum → at the right side → similar clinical picture of appendicitis.
- ③ 
  - Small intestines only 40%
  - Small intestines & colon 30%
  - Colon only 30%



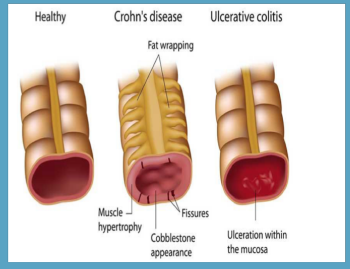
transmural: involves all layers of GIT

④ strictures are common due to transmural inflammation which cause fibrosis. Also, there is edema.

⑤ Earliest lesion is aphthous ulcer



⑥ Elongated, serpentine ulcers



⑦ Fissures, fistula & perforations

نتيجة ال Fat كرس

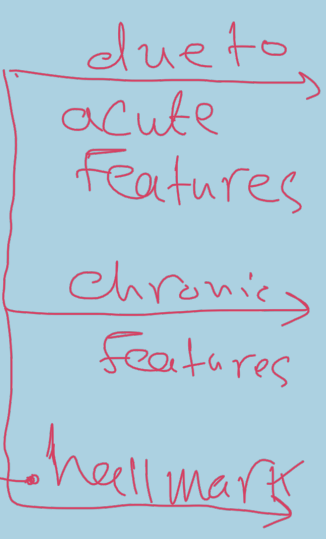
⑧ creeping fat → due to inflammation of serosa

⑨ Cobblestone appearance



ما قد يكون نتيجة لمرض ما تأثير  
 بال التهابية تأثير يعني  
 Strip due

microscopically →



- Neutrophils in active disease.
- Crypt abscesses.
- Ulceration.

- Distortion of mucosal architecture
- Paneth cell metaplasia in left colon
- Mucosal atrophy.

مرض ال Crohn  
 تكون موجودة بعد ال  
 CIBD

non caseating granuloma  
 هذا ال  
 CD

non caseating granuloma only in 35% of cases

# Clinical Features (very similar between CD & UC)

- ① Intermittent attacks of mild diarrhea, fever & abdominal pain.
- ② acute lower quadrant pain & fever (in 20% of cases)
- ③ Asymptomatic intervals
- ④ Bloody diarrhea & abdominal pain (Colonic disease)
- ⑤ Triggers →
  - physical stress (like surgery)
  - emotional stress
  - ↳ NSAID use
  - ↳ smoking


## Complications of CD →


- \* Hypoproteinemia and hypoalbuminemia, malabsorption of nutrients, vitamin B12 and bile salts  
 Hypoproteinemia and hypoalbuminemia, malabsorption of nutrients, vitamin B12 and bile salts → due to the involvement of small intestines
- \* Iron-deficiency anemia → due to bleeding.
- \* Fistulas, peritoneal abscesses & strictures
- \* Risk of colonic adenocarcinoma → risk is higher in UC

We always do screening for the presence of dysplasia or carcinoma for patients with CD and UC even if the patients is free of symptoms

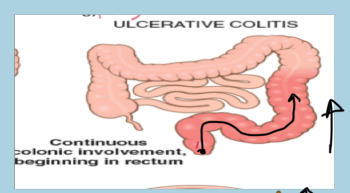
## Extraintestinal Manifestations of CD →

- \* uveitis (of the eye)
- \* migratory polyarthritis (different joint evolves each time)
- \* sacroiliacitis (of sacroiliac joint)
- \* Ankylosing spondylitis (Rheumatoid Arthritis)

\* Erythema nodosum 

\* clubbing of fingertips 

\* primary sclerosing cholangitis (more in UC)  
 ← immune mediated PSC  
 disease of bile duct  
 ↓  
 patients come with jaundice

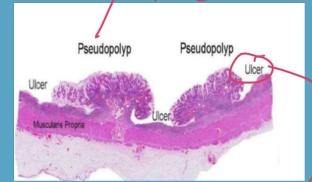
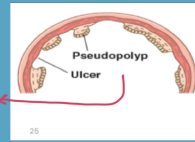


## Ulcerative Colitis

### Morphology →

- \* always involves the rectum (starts with the rectum then continues proximally)
- \* Extends proximally in continuous pattern.
- \* may present as pan colitis (all the colon is involved) & sometimes only rectal or recto-sigmoid sigmoid are involved.
- \* small intestine is normal except (back wash ileitis) → there is a connection between the cecum & ileum so sometimes the inflammation diffuses towards the ileum
- \* occasionally focal appendiceal or cecal inflammation. → التهاب في القولون، التهاب في الأمعاء
- \* Ulcerative proctitis (anatomically limited to the rectum) → proctosigmoiditis

Macroscopic → Broad based ulcers. ~~Fissure/deep ulcers~~  
 → pseudo polyps  
 → No strictures → because it involves only mucosa & submucosa.  
 → Serosal surface is normal.  
 → Mural thickening is absent → because it involves only mucosa & submucosa.  
 → Mucosal atrophy in long standing.



not true polyps  
 shallow ulcers

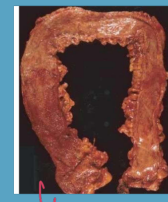
Microscopic → acute  
 chronic  
 vs  
 CD

Inflammatory infiltrates  
 Crypt abscesses

Crypt distortion  
 Epithelial metaplasia

Submucosal fibrosis *only in CD also muscularis*  
 Inflammation limited to mucosa and submucosa.  
 No skip lesions ✓  
 No granulomas ✓

limited to mucosa.



pancolitis

multiple ulcers & material



abrupt transition between normal & disease Sigmoids

### Clinical Features

- \* Relapsing remitting disorder.
- \* Attacks of bloody mucoid diarrhea + lower abdominal cramps
- \* Temporarily relieved by defecation
- \* Attacks last for days, weeks, or months.
- \* Asymptomatic intervals.
- \* Infectious enteritis may trigger disease onset (viral gastroenteritis that causes acute attack) or cessation of smoking.

the triggers

\* Colectomy cures intestinal disease only → it is acute only for UC not CD  
 → does also extra-intestinal  
 For CD we use surgeries in complications only

الجدول  
للحمة

تكرار لما  
تحتف

Feature	Crohn Disease	Ulcerative Colitis
<b>Macroscopic</b>		
Bowel region affected	Ileum ± colon	Colon only
Rectal involvement	Sometimes	Always
Distribution	Skip lesions	Diffuse
Stricture	Yes	Rare
Bowel wall appearance	Thick	Thin
Inflammation	Transmural	Limited to mucosa and submucosa
Pseudopolyps	Moderate	Marked
Ulcers	Deep, knifelike	Superficial, broad-based
Lymphoid reaction	Marked	Moderate
Fibrosis	Marked	Mild to none
Serositis	Marked	No
Granulomas	Yes (~35%)	No
Fistulas/sinuses	Yes	No

Feature	Crohn Disease	Ulcerative Colitis
<b>Clinical</b>		
Perianal fistula	Yes ( <u>in colonic disease</u> )	No
Fat/vitamin malabsorption	Yes	No
Malignant potential	With colonic involvement	Yes
Recurrence after surgery	Common	No
Toxic megacolon	No	Yes

NOTE: Not all features may be present in a single case.



Colitis associated neoplasia →

Dysplasia occurs in long standing ucl CD

Begins dysplasia → Carcinoma.

- Risk depends on →
  - Duration of disease → increase after 8-10 years
  - Extent of involvement → more with pancolitis
  - Inflammation → Frequency & severity

## Inflammatory intestinal disease



## Acquired

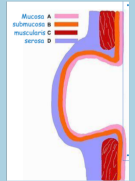
- \*causes →
  - Elevated intraluminal pressure in the sigmoid colon
  - Exaggerated peristaltic contractions,
  - Low fiber diet and constipation.

mostly happens in old age groups

pseudodiverticulae  
out pouching of colonic mucosa & submucosa.

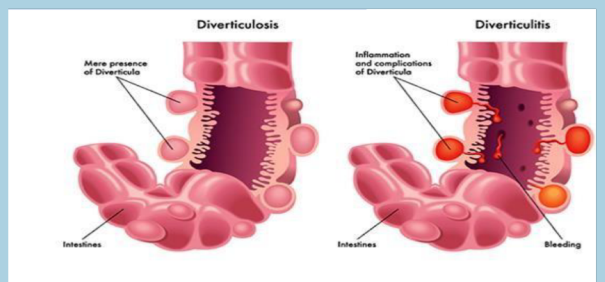
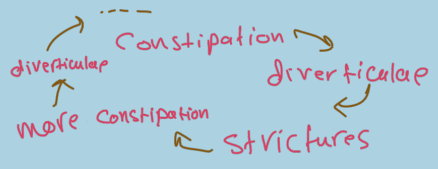
## Morphology →

- \*Flasklike outpouchings
- \*Mostly in sigmoid colon.



- \* has a Thin wall (atrophic mucosa, compressed submucosa) so there's a risk for rupture or perforation.
- Attenuated or absent muscularis.
- has a Thin wall (atrophic)

- \* Obstruction leads to diverticulitis
- \* Risk of perforation.



- \* Recurrent diverticulitis leads to strictures
- \* obstruction with fecal material may occur which leads to diverticulitis (causes diarrhea)





opening for diverticulum

diverticulitis



صلوا على رسول الله

# Clinical Features →

Mostly asymptomatic.

Intermittent lower abdominal pain

Constipation or diarrhea if inflammation occurs.

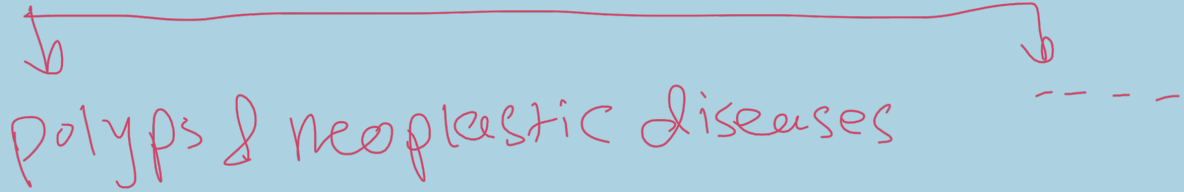
High fiber diet.

# Treatment →

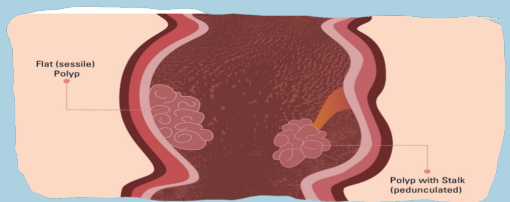
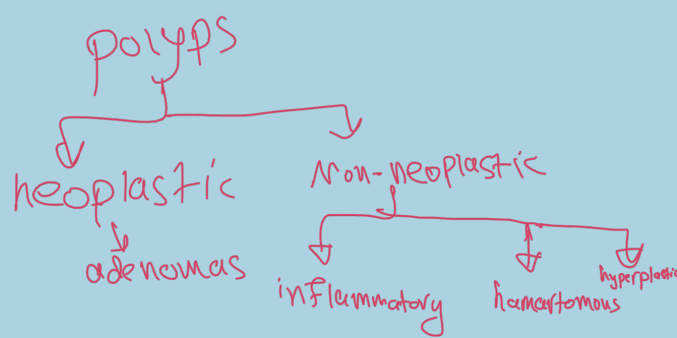
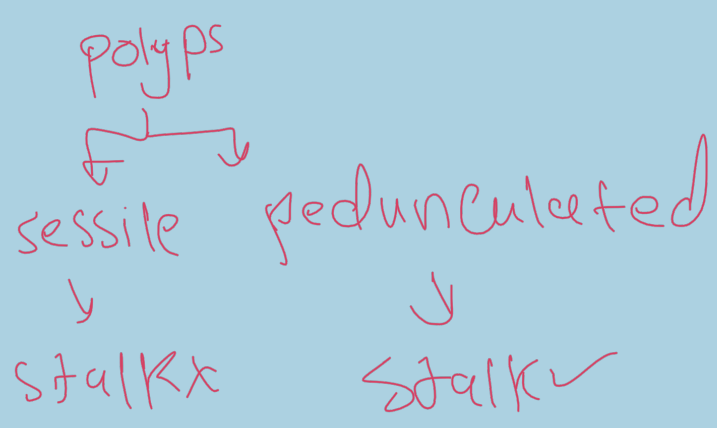
Antibiotics in diverticulitis.

Surgery in case of perforations.

# Diseases of the intestine



\* Colon is the most common site for polyps



## Inflammatory Polyps →

- ↳ most common cause is UC (pseudopolyps)
- ↳ also there is solitary rectal ulcer syndrome (recurrent abrasion & ulceration of the mucosa).
- \* chronic cycle of injury & healing → polypoid mass (mucosal protrusion of inflamed tissue)

**Hamartomatous polyps** → everything is normal (normal tissue in normal site but disorganized)

- ↳ sporadic (single)
- ↳ syndromic (multiple)

Examples of hamartomatous ---

Eg 1

**Juvenile polyps (most common)**

- ↳ sporadic → solitary (single)
  - in children younger than 5.
  - mostly in rectum
- ↳ syndromic → multiple (3-100)
  - ↳ mean age 5.
  - ↳ Autosomal dominant syndrome
  - ↳ mutation in (TGF-β)
  - ↳ increased risk of colonic carcinoma

All polyposis syndromes are multiple & increase risk of malignancy

Morphology of juvenile polyps →

pedunculated, reddish lesions, cystic spaces on

cut sections, granulation tissue on

surface, Dilated glands filled with mucin and inflammatory debris.

Eg 2

**Peutz-Jeghers polyp**

- ↳ Autosomal dominant
- ↳ mean age 10-15

- ↳ most common in small intestine
- ↳ patients have mucocutaneous hyperpigmentation

- ↳ multiple (if it is a syndrome) gastrointestinal polyps

# Peutz-Jeghers Syndrome (PJES) Continue ---

- increased risk of several malignancies
- LKB1, STK11 gene mutation.



Morphology of Peutz-Jeghers → large, Christmas tree pattern  
Arborizing network of CT, lamina propria & smooth muscle



→ mucocutaneous pigmentation

## Hyperplastic polyps →

وانيل المطالباتني ولكن خذ الدنيا غلابا

- \* 5th - 6th decade
- \* no malignant potential
- <sup>Cause ↓</sup> \* decreased epithelial turnover and delayed shedding of surface epithelium
- \* most common in left colon (rectosigmoid)

### Morphology

- \* Small < 5mm
- \* Can be multiple
- \* crowding of goblet & absorptive cells

آخر موضوع (Adenomas) لم اكتبه من سوء تفاهيد  
التادي لانه بسيف و لهم جلا!

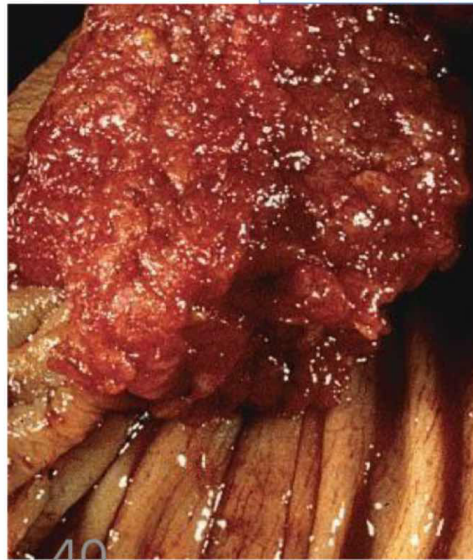
# Adenomas \*\*IMPORTANT



- ▶ Most common and clinically important because it's precancerous (it's the precursor of the majority of colorectal adenocarcinomas)
- ▶ Risk Increase with age.
- ▶ Definition: presence of epithelial dysplasia (low or high) with increased risk of malignancy (more with high grade dysplasia of course)
- ▶ Precursor for majority of colorectal adenocarcinomas
- ▶ Most adenomas DO NOT progress to carcinoma. (Mostly resection is done before progression) / بس عادي ممكن تشيلها ويتكون غيرها
- ▶ USA: screening colonoscopy starts at 50 yrs.
- ▶ Earlier screening with family history.
- ▶ Western diets and lifestyles increase risk.

## Pedunculated or sessile polyps

- REMEMBER!
- It's just an appearance and doesn't imply if it's hyperplastic or adenomatous.



## Colon adenoma

- ▶ Hallmark: epithelial dysplasia
- ▶ Dysplasia: nuclear hyperchromasia, elongation (larger), stratification (dark color of nuclei), high N/C ratio.

لازم يكون  
ديسپلاسيا

- ▶ Size of the polyp is : most important correlate with risk for malignancy (a 5cm polyp has a higher risk of malignancy than a 1cm one)

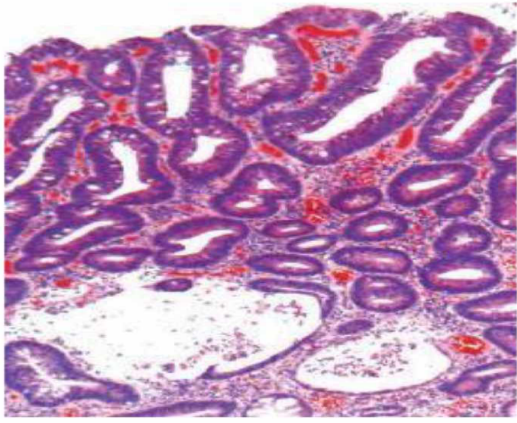
- ▶ High-grade dysplasia is the second factor

normal

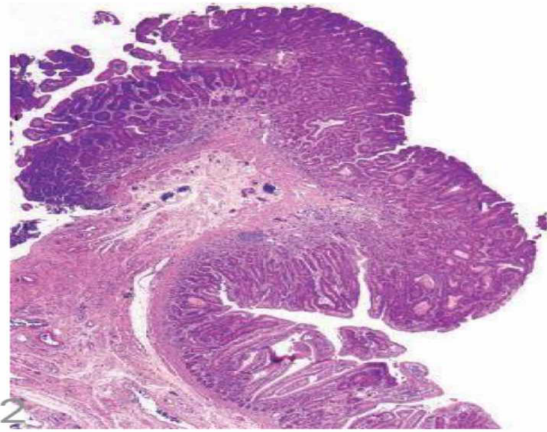
Colonic adenoma



## Tubular adenoma



42



This is a pedunculated polyp with normal mucosa under of it, **Glands are dysplastic**

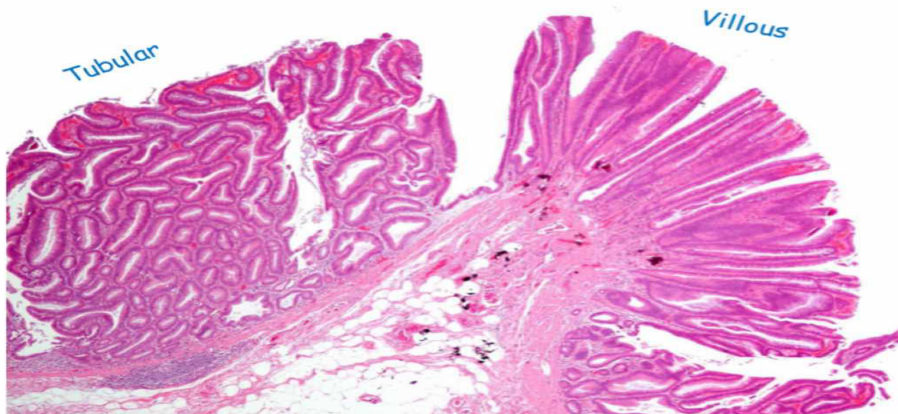
## Villous adenoma.



- ▶ has Long slender villi.
- ▶ also has More frequent invasive foci at the time of diagnosis
- ▶ Polyps types depending on **Architecture:**
- ▶ Tubular. (like tubules/glands (look at the previous slide))
- ▶ Tubulovillous. (MIX /next slide)
- ▶ Villous.

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## Tubulovillous adenoma



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Good luck

