

GIT Pathology

LEC 5

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Tumors of the small and large intestine

- Tumors of the small intestine are generally **rare** specially the epithelial tumors.
- The most common **malignant tumor** of the small intestine is **lymphoma**.
- While the epithelial tumors of the large intestine are **common** which are:
 - 1- Benign tumors (adenomas)
 - 2- Malignant tumors (adenocarcinoma)

Tumors of the large intestine

Polyp: is a tumor mass that protrudes into the lumen of the gut and are of two types:

1- Non neoplastic polyps:

*Hyperplastic *Inflammatory * Hamartomatous

2- Neoplastic (adenomatous polyp)

*Tubular *Villous *Tubulovillous.

1. Non neoplastic polyps:

A. Hyperplastic polyps

- * They are the **most common** polyps of the **colon & rectum**.
- * It is small in size **< 5mm**, often **multiple**
- * Discovered at the age of **50-60 years**.
- * **Gross:** smooth, nodular protrusions of the mucosa, located mainly at the **rectosigmoid** region
- * **Mic.:** consist of **well-formed glands and crypts lined by non-neoplastic epithelial cells**.

B. Inflammatory Polyps

- * Form as a result of chronic cycles of injury and healing.
- * The distinctive histologic features include **mixed inflammatory infiltrates and epithelial hyperplasia**.

C. Hamartomatous Polyps

❖ **Juvenile polyp**

* Usually single, about 1-3 cm

* Mainly in **children**

* Located in the **rectum**

* Presented with bleeding per rectum

* **Mic.:**

- Cystically dilated glands filled with mucin and inflammatory debris.
- Lamina propria expanded by mixed inflammatory infiltrates.

❖ Peutz-Jeghers polyp:

*They may occur sporadically or in the setting Peutz-Jeghers syndrome (PJS).

*Patients with this syndrome are **at risk for intussusception**.

*The polyps are present most **frequently in the small intestine**.

*Grossly:

- Large and pedunculated with a lobulated contour.

*Mic.:

- **Complex glandular architecture lined by normal-appearing intestinal epithelium**
- Stroma composed of **smooth muscle bundles** cutting through the lamina propria.

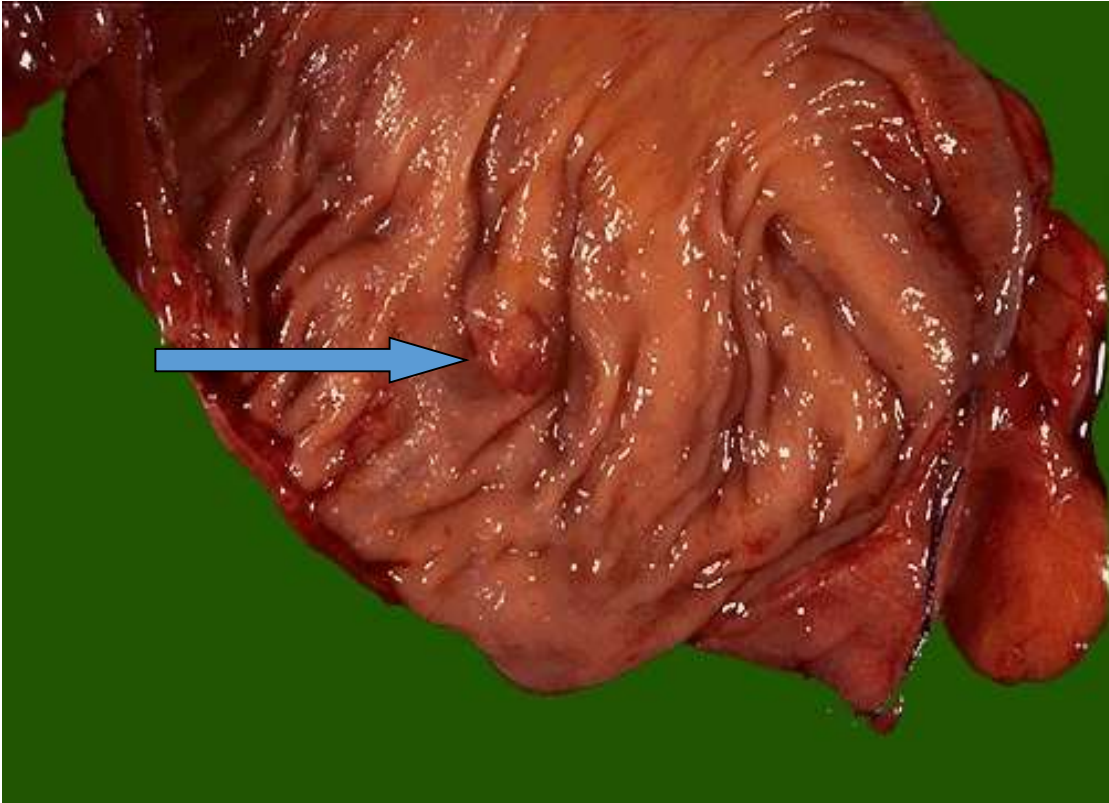
2- Neoplastic (adenomatous polyp)

- Results from epithelial proliferation and dysplasia
- They are a slowly growing tumors and they are called **ADENOMAS**
- They have a **malignant potentials** and can change into carcinoma
- Divided into **three types** according to the histological features :
 - * Tubular
 - * Villous
 - * Tubulovillous

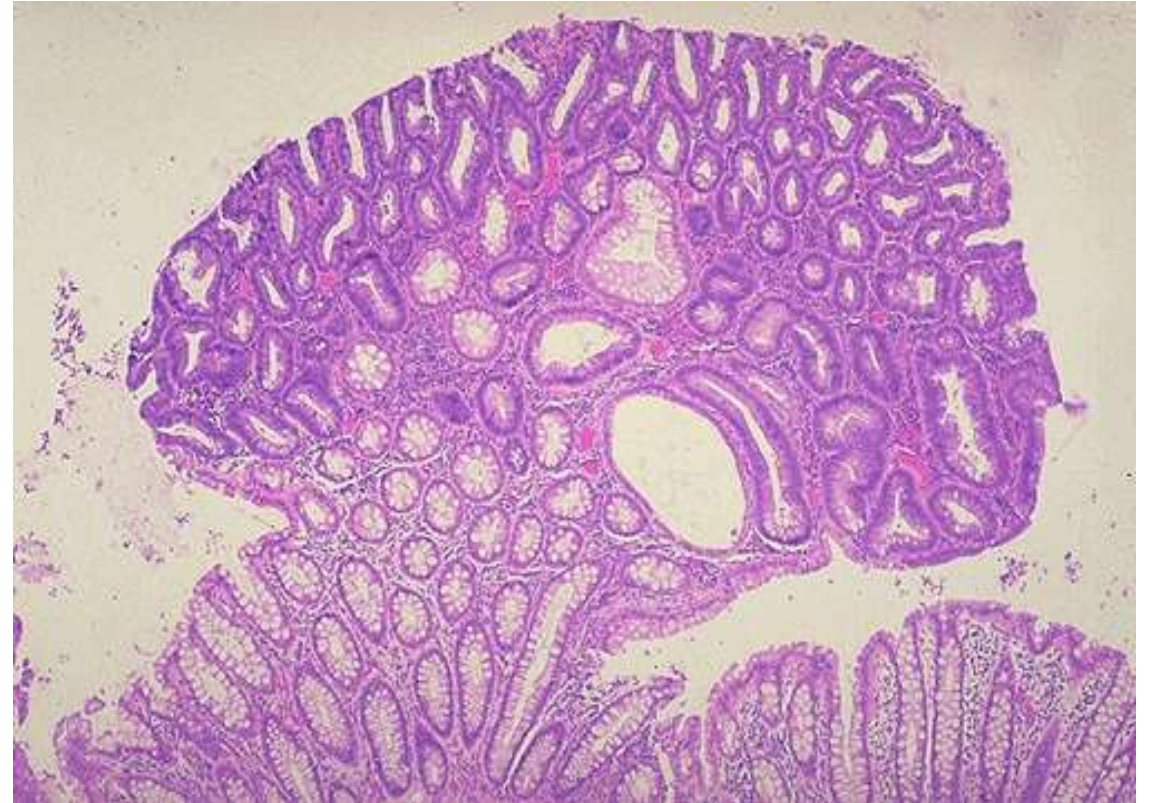
A. Tubular adenoma (tubular glands):

- *Single or multiple
- *Size: 2.5 cm
- *It has a **stalk** or pedicle
- *Usually at the **rectosigmoid area**
- ***Mic:** Proliferation of disorganized, **rounded glands** lined by crowded cells have **hyperchromatic nuclei**.
- * **Malignant transformation is rare** in those less than 1 cm

Tubular adenoma



Small, **pedunculated polyp** with smooth, rounded surface



Proliferation of disorganized, **rounded glands** lined by crowded cells have **hyperchromatic nuclei**.

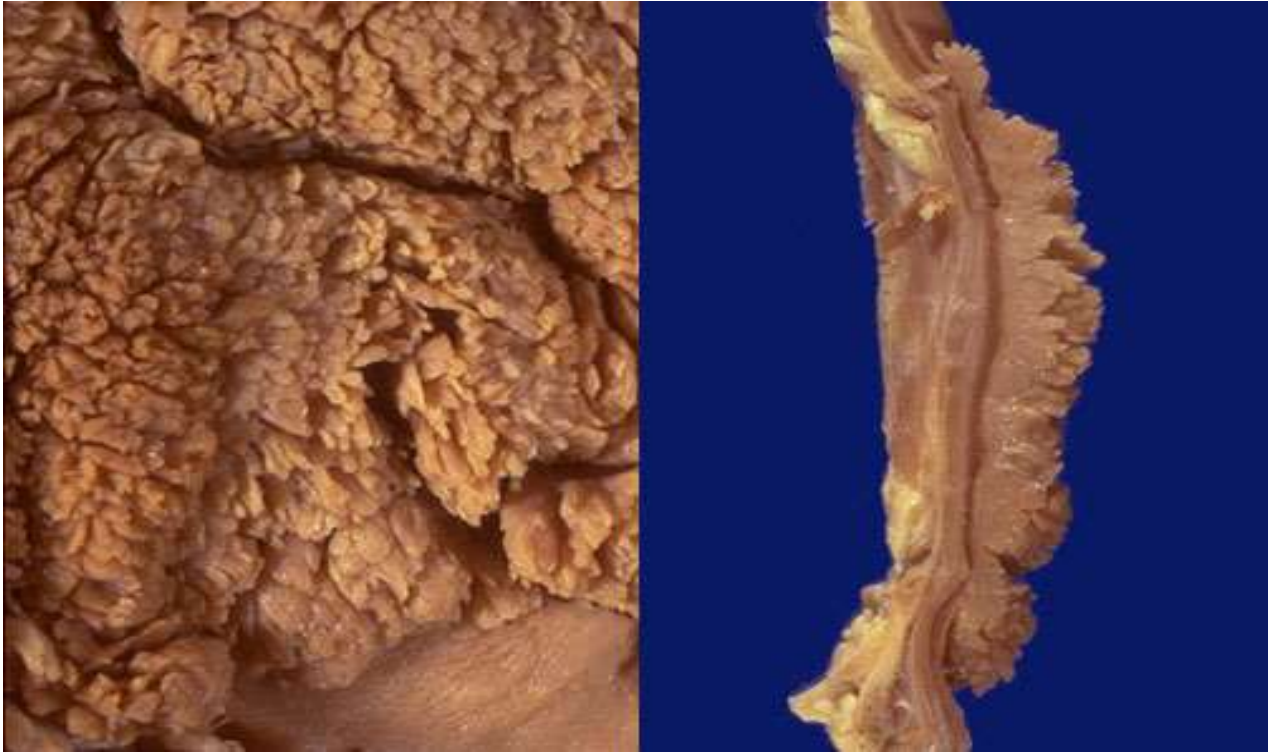
B. Villous adenoma (villous projections)

- * Usually **single**
- * Large in size **10 cm**
- * It does not have a pedicle (**sessile**) with broad base projecting above the surface mucosa
- * Common in the **rectum and rectosigmoid**
- **Mic.:** Proliferation of **elongated** glandular structures covered by dysplastic epithelium.

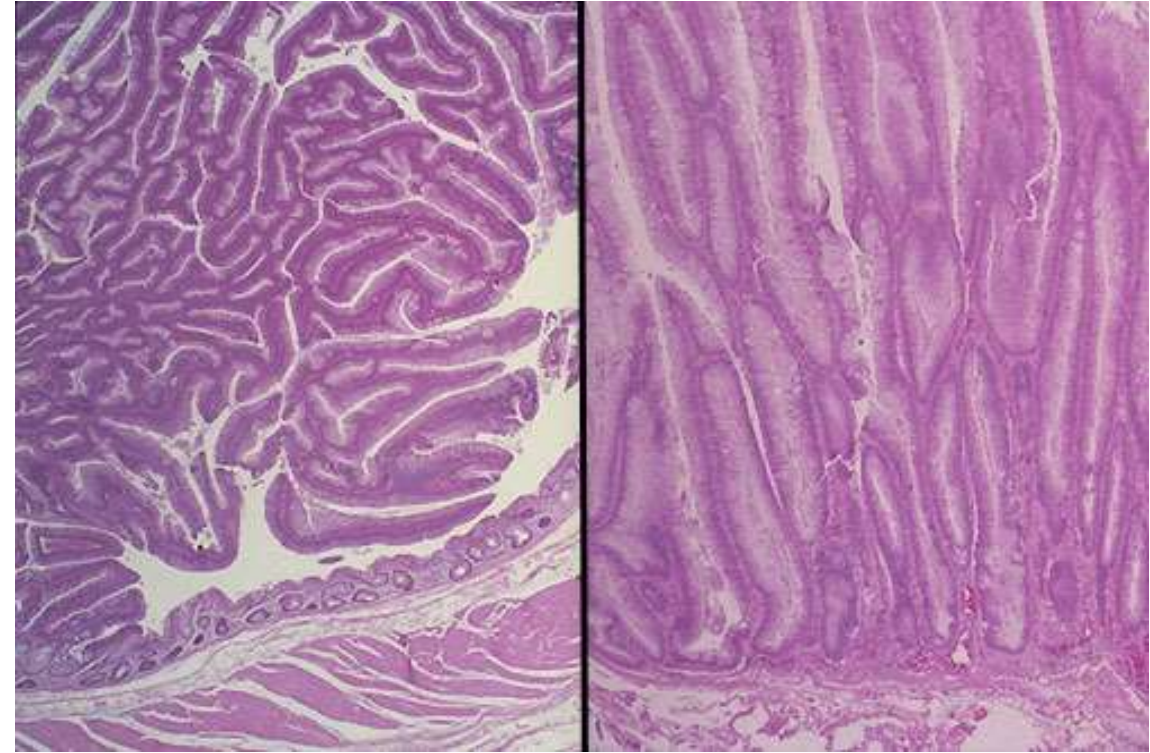
C. Tubulovillous adenoma

It contains both elements

Villous adenoma



Large, broad based and sessile covered by slender villi



Proliferation of **elongated** glandular structures covered by **dysplastic epithelium**.

Question ???

Does colonic adenomas change into malignancy?? and what are the factors affecting it's conversion??

Answer:

Yes it can change into malignancy, **according to:**

- 1- Size of the adenoma;** the **larger** the size, the greater the risk.
- 2- Histological type;** the **villous** carries more risk than tubular.
- 3- Number;** increase in no. → increase the risk
- 4- Dysplasia;** presence of severe dysplasia carries high risk.

Familial adenomatous polyposis (F.A.P)

- * Is an **autosomal dominant disorder**; caused by mutations of the adenomatous polyposis coli (*APC*) gene on **chromosome 5**.
- * Its importance lies in its **high risk of malignant transformation**.
- It is characterized by the presence of **innumerable adenomatous polyps** which may reach 500-2500 polyps and we need the presence of **at least 100 polyps to diagnose it** .
- * **The risk to develop colorectal carcinoma is 100%**.
- * Treatment: **Prophylactic colectomy**

Familial polyposis coli



Gross:

Hundreds of small polyps are present throughout the colon

Mic.:

- Tubular, villous or tubulovillous adenomas seen, but mostly **tubular adenoma type**.



Colorectal carcinoma

- Is the most common malignancy of the GI tract and is a major cause of morbidity and mortality worldwide.
- 98% of all cancers of the large intestine are **adenocarcinomas**.
- Age : 60-70 years

Etiology and pathogenesis:

1- Premalignant conditions:

- Adenomas (adenomatous polyps)
- Ulcerative colitis

2- Genetic factors:

- Familial adenomatous polyposis carries 100% risk of malignancy

3- Environmental factors specially dietary factors

- Low fiber diet
- High intake of refined carbohydrates and fat.
- Low intake of vit. A, C, E.

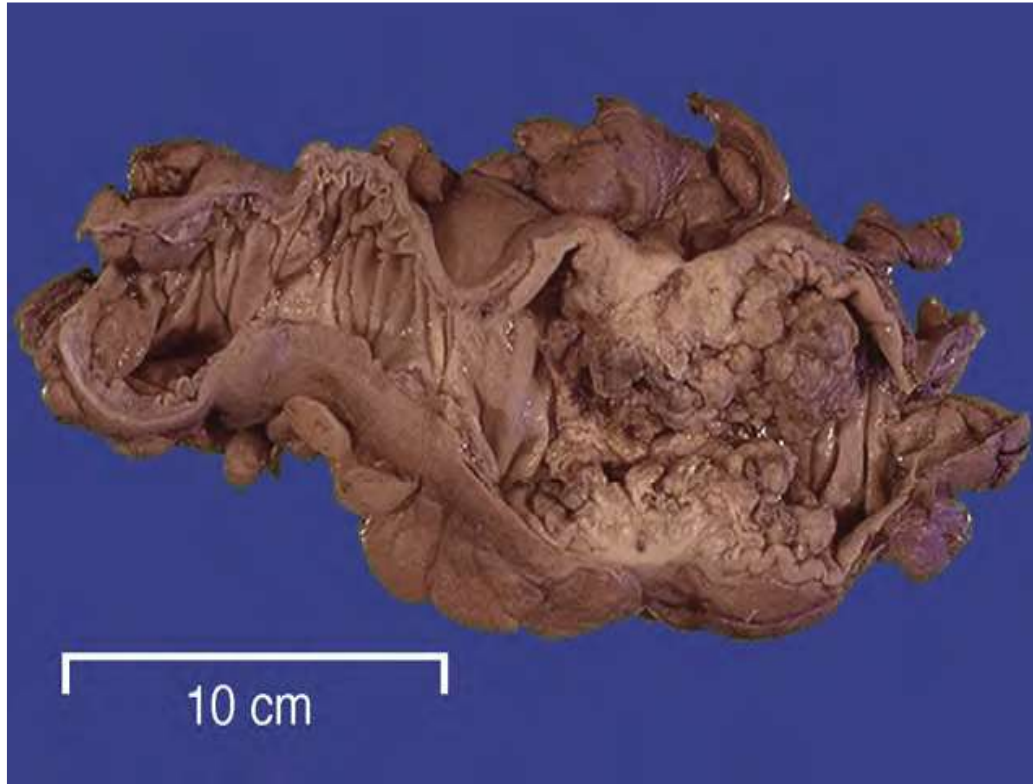
Gross:

- Overall, adenocarcinomas are distributed approximately equally over the entire length of the colon.

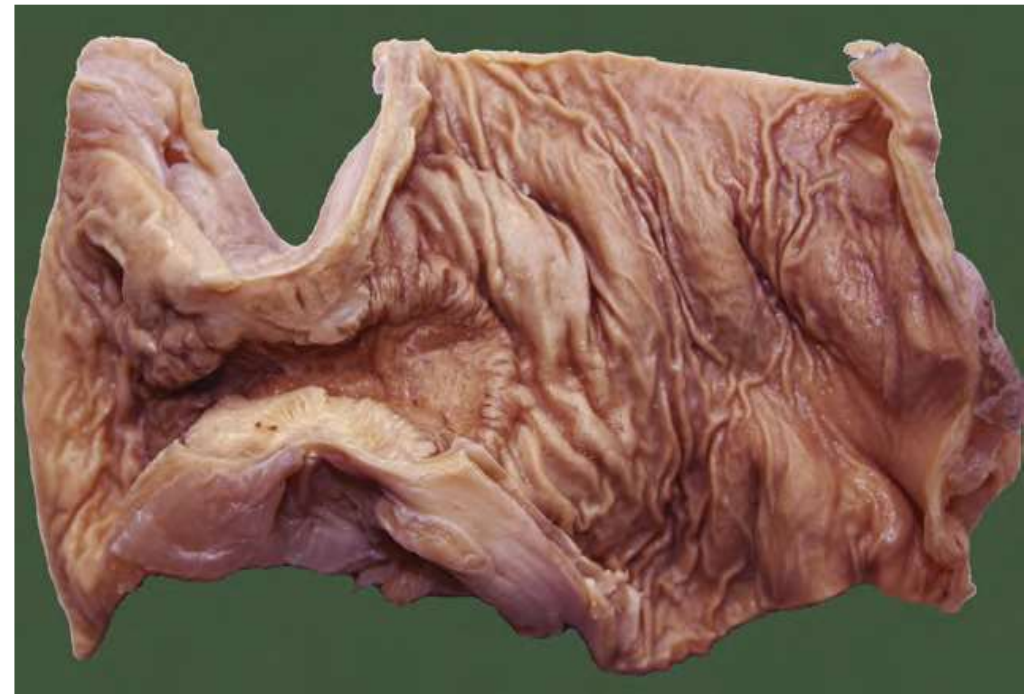
1- **Polypoid mass** (fungating) or cauliflower which is more common and tend to occur on the right side (cecal).

2- **Annular, encircling lesions** which produce ring “Napkin-ring” constrictions of the bowel which tend to involve the left side (rectosigmoid).

Gross:



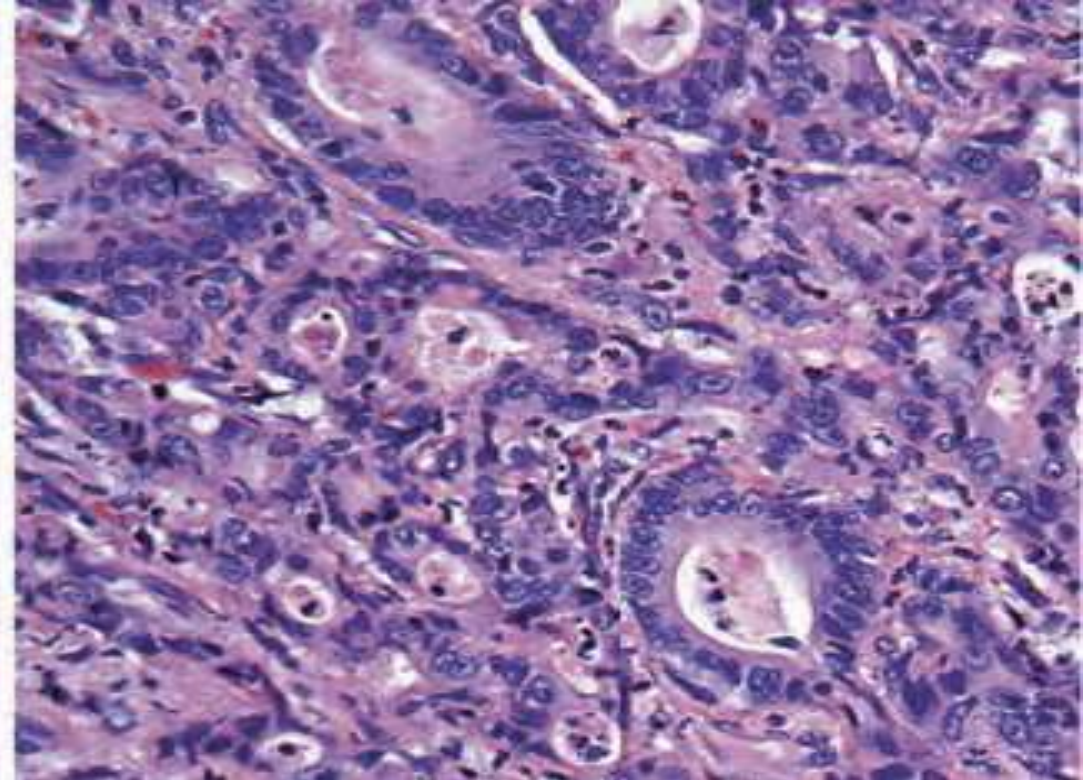
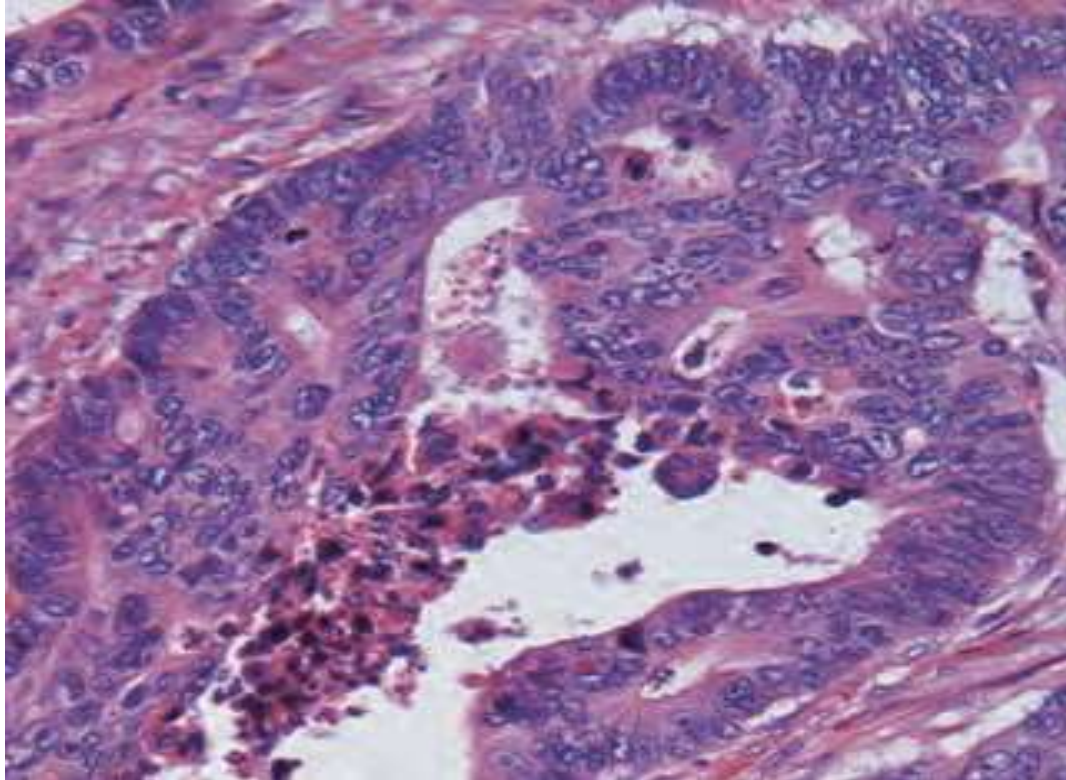
The **exophytic growth** pattern of the carcinoma can obstruct the colonic lumen.



Napkin ring type; the carcinoma is encircling and narrowing the lumen

Microscopically:

Adenocarcinoma ranging from well- poorly differentiated carcinoma.



❖ **Well-differentiated adenocarcinoma:**

- Elongated, hyperchromatic nuclei.
- Necrotic debris, present in the gland lumen, is typical.

❖ **Poorly differentiated adenocarcinoma:**

- Few glands but is largely composed of infiltrating nests of tumor cells.

➤ **Clinical features:**

- Asymptomatic
- Change in bowel motion
- Bleeding per rectum
- Intestinal obstruction
- Other systemic manifestations e.g. anemia ,weight loss.....etc

➤ **The two most important Prognostic Factors:**

- Depth of invasion
 - Invasion into the muscularis propria confers significantly reduced survival
- Lymph node metastases

Spread:

- 1- local
- 2- lymphatic
- 3- hematogenous

Prognosis:

- The most important is the **tumor stage** at time of diagnosis.
- In 1937 Dukes proposed a staging system.
- In 1954 Astler and Collier created another staging system with further subdivisions.

The staging system which is recommended nowadays is TNM system (8th edition) 2018

• **T (Tumor):**

T_x: primary tumor can not be assessed

T₀: no evidence of primary tumor

T_{is}: carcinoma in situ, intramucosal carcinoma (involvement of LP with no extension through muscularis mucosae)

T₁: tumor invades submucosa

T₂: tumor invades muscularis propria

T₃: tumor invades muscularis propria into pericolorectal tissues

T₄: tumor invade visceral peritoneum or adjacent organs.

- **N (lymph node metastasis):**

NX: regional LN can not be assessed

N0: no regional LN metastasis

N1: metastasis in 1-3 regional LN

N2: metastasis in 4 or more regional LN

- **M: (distant metastasis):**

M0: no distant metastasis by imaging

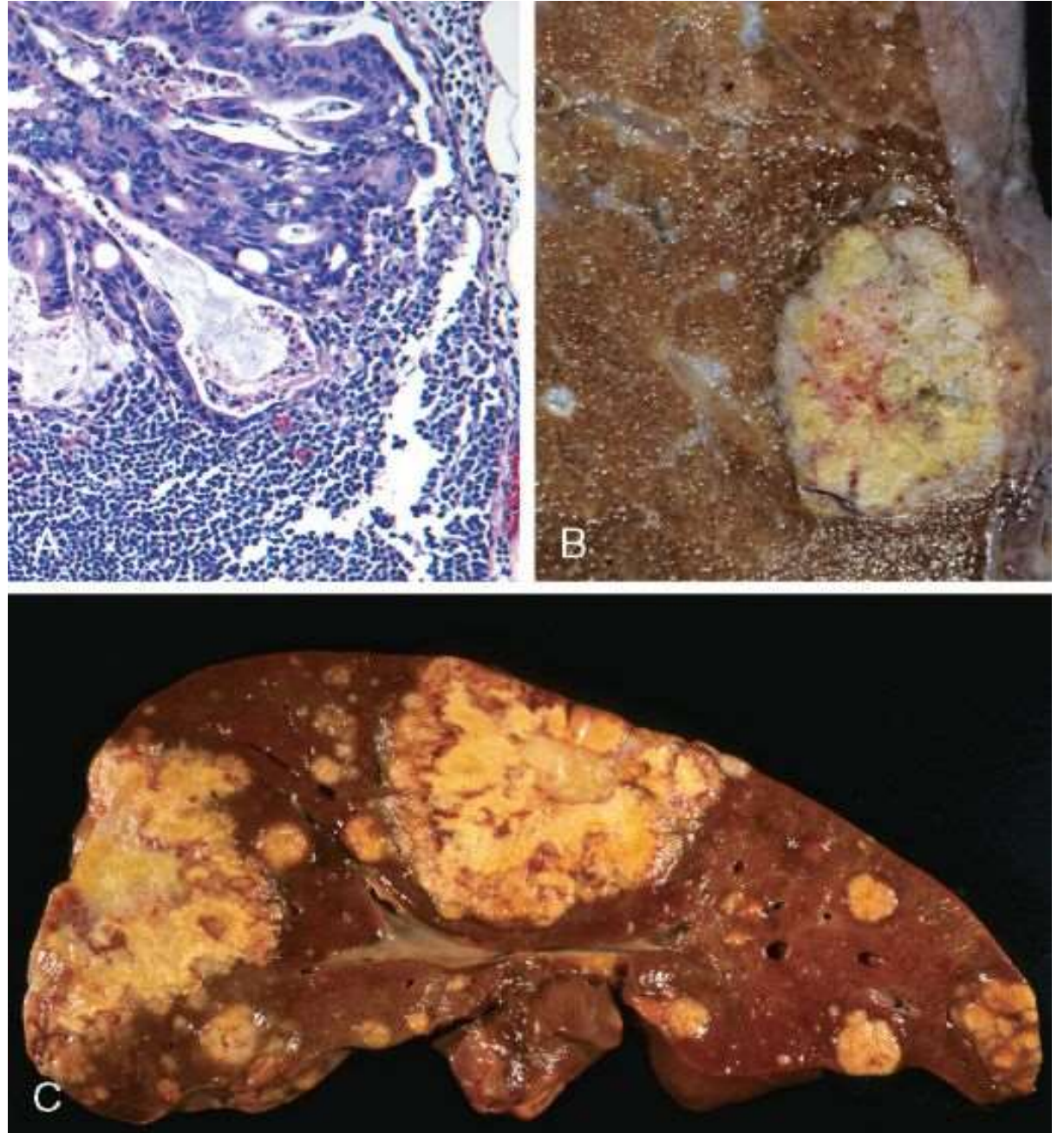
M1: distant metastasis present

Metastatic colorectal carcinoma:

(A) Lymph node metastasis; glandular structures within the subcapsular sinus.

(B) Solitary subpleural nodule of colorectal carcinoma metastatic to the lung.

(C) Liver containing two large and many smaller metastases; note the central necrosis within metastases



Acute Appendicitis

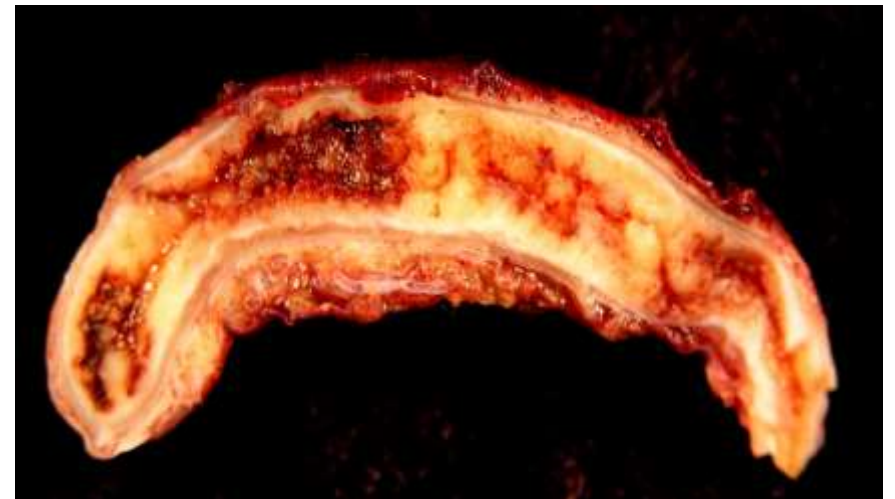
- Most common in **adolescents & young adults**
- **Males** slightly more often than females.
- DDs:
 - Mesenteric lymphadenitis
 - Acute salpingitis
 - Ectopic pregnancy
 - Ovulation pain or "midcycle pain".
 - Meckel diverticulitis

Pathogenesis:

- Progressive *increases in intraluminal pressure* that compromise venous outflow due to **obstruction by:**
 - Fecalith
 - Tumor
 - Mass of worms
- *Ischemic injury and stasis of luminal contents:*
 - Favor bacterial proliferation
 - Trigger inflammatory responses

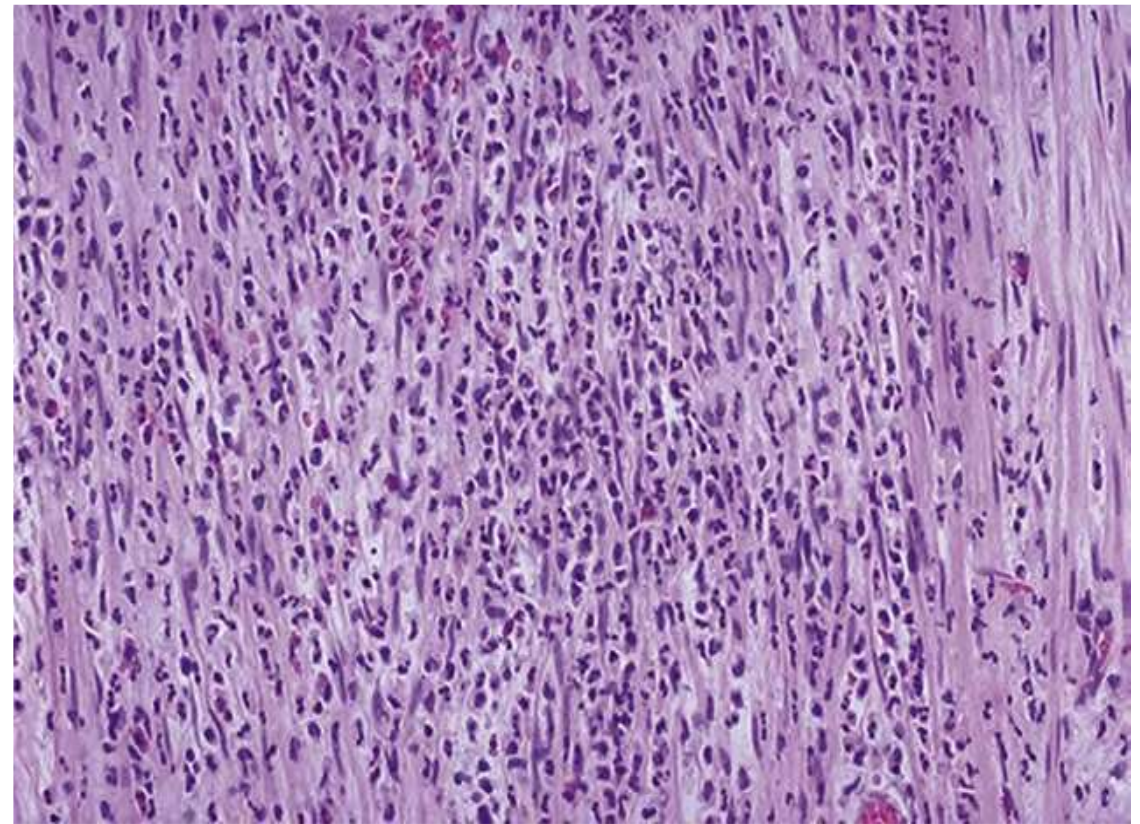
Morphology

- Congested serosal blood vessels
- Serosal surface turns into a dull, granular and erythematous
- Hallmark of Acute appendicitis:
 - Diagnosis of acute appendicitis requires neutrophilic infiltration of the muscularis propria
- **Other features:**
 - Mucosal ulceration
 - Luminal exudation
 - Fibrinopurulent exudate on the serosa
 - Acute suppurative appendicitis
 - Acute gangrenous appendicitis



Mic.:

Diagnosis of acute appendicitis requires **neutrophilic infiltration** of the **muscularis propria**



Clinical Features

- Pain:
 - Early acute appendicitis: Periumbilical
 - Later: Localizes to the right lower quadrant
- Classic physical finding is *McBurney's sign*

Complications of appendicitis:

- Perforation
- Pyelophlebitis
- Portal venous thrombosis
- Liver abscess
- Bacteremia

Tumors of the Appendix

- **Carcinoid**

- The most common tumor of the appendix is the *carcinoid*
- Usually discovered incidentally
- Usually involves the **distal tip** of the appendix
- **2 to 3 cm in diameter**
- Nodal metastases are infrequent, and distant spread is rare

❖ Carcinoid tumor:

- It arises from the **neuroendocrine cells** present in the wall of the bowel.
- They can produce many hormones e.g. serotonin, gastrin, and they can be demonstrated immunohistochemically by **neuron specific enolase, chromogranin and synaptophysin.**

➤ Sites:

- Appendix: Which is the commonest site
- Ileum
- Stomach
- Rectum

Carcinoid syndrome:

- The tumor is of two types:
 - 1- Non functioning
 - 2- **Functioning** which produce the characteristic **attacks** of flushing , diarrhea, bronchospasm due to the production of **serotonine (5- hydroxytryptamine)**.

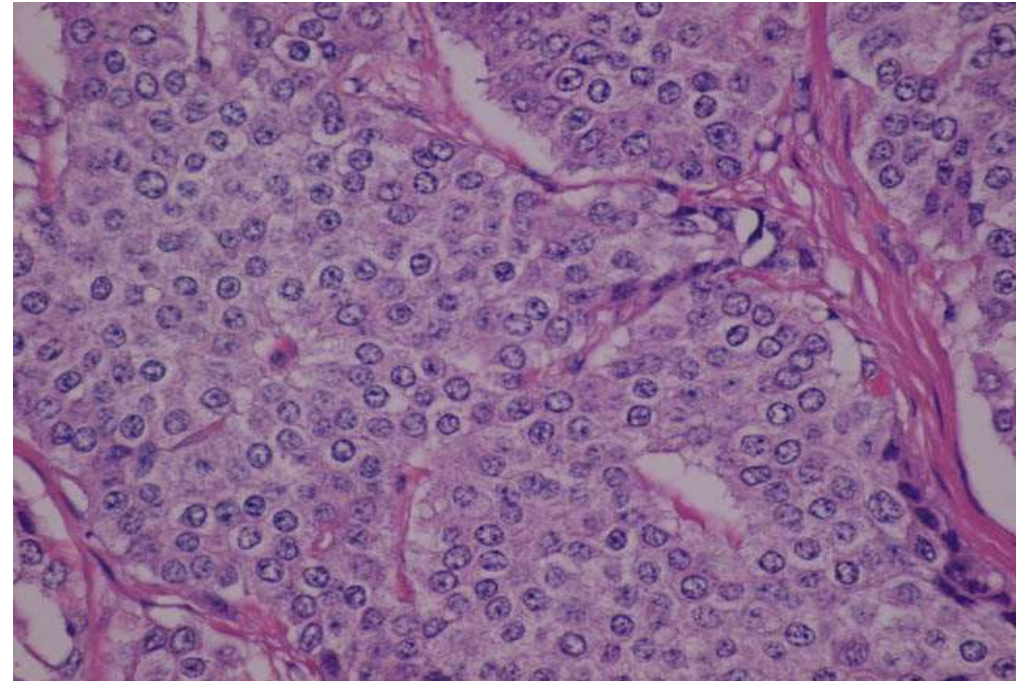
❖ Gross:

- Rounded swelling of the distal tip of the appendix.
- Solid yellow- tan on cut section.



Mic.:

- Neoplastic cells may form **islands**, **trabeculae**, or **sheets**, having a **scant**, **pink granular cytoplasm** and **round to oval nucleus**.



A microscopic view of plant tissue, likely a cross-section of a stem or root, showing numerous circular cells. Each cell contains a prominent, multi-lobed, pinkish-red structure, possibly a chloroplast or a specialized cell wall component. The background is filled with small, dark blue, spherical structures, likely nuclei or other organelles. The overall appearance is that of a highly organized, cellular structure.

GOOD LUCK