



# Colonic Tumors & Polyps - 1

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## Lecture 08

### 430 Pathology Team

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## Tumors of the small and large intestines:

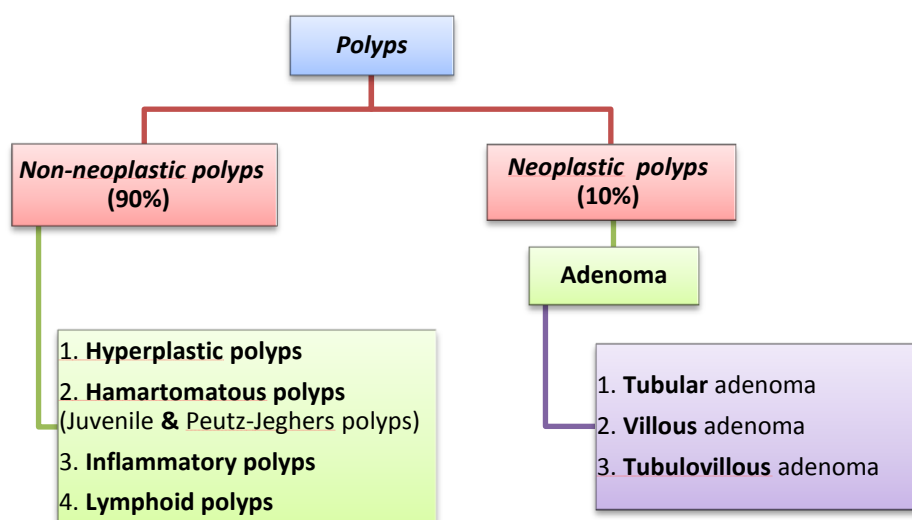
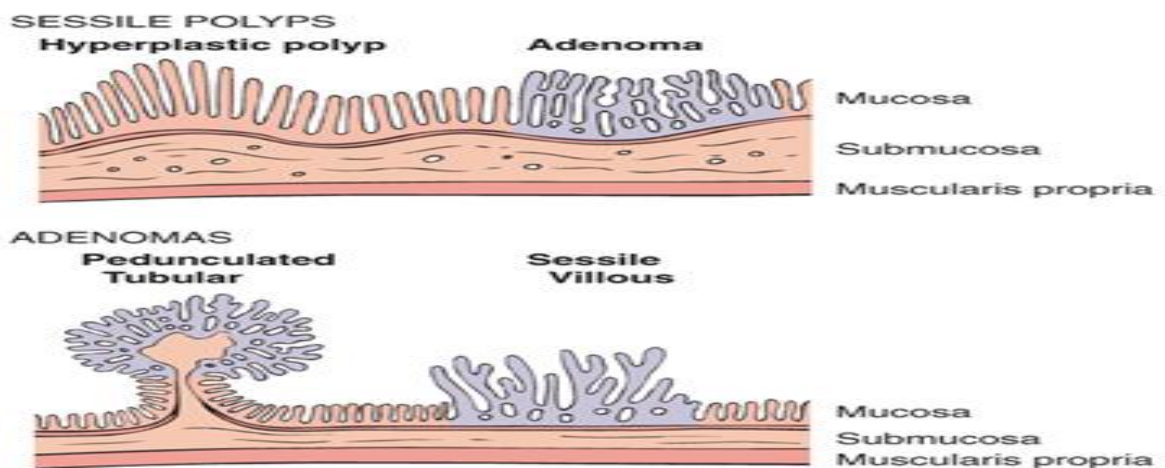
- Polyps → **benign**
  - Carcinoma
  - Carcinoid tumor
  - Lymphoma
- } **malignant**

### Polyps:

A polyp is a mass of mucosa that protrudes into the lumen of the gut. Polyps are generally formed as the result of abnormal mucosal maturation, inflammation, or architecture. Polyps can be sessile or pedunculated.

**What is the difference between pedunculated and sessile polyps?**

Pedunculated: has a stalk or a neck, sessile: lack the stalk.





## Non-neoplastic polyps (90%):

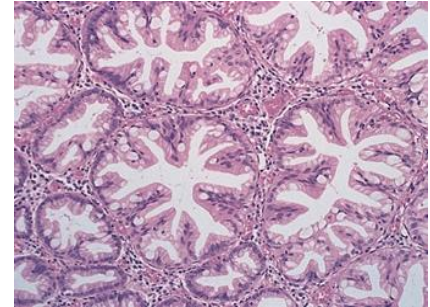
### 1. Hyperplastic Polyps:

**Definition:** is a polyp formed from hyperplastic proliferation of lining that has no dysplastic changes.

**Locations:** > 50% are located in the rectosigmoid

#### Characteristics:

- Asymptomatic
- Sawtooth surface because of the ↑ number of cells.
- Star shaped crypts
- Composed of well-formed glands and crypts lined by differentiated goblet or absorptive cells.



**Prognosis:** Usually they are benign except in one location, the right side of colon where there is mixture of hyperplastic polyp and neoplastic polyp, which is called serrated adenoma.

### 2. Hamartomatous polyps:

#### a- Juvenile Polyps (retention polyp):

**Characteristics:** Single developmental malformations affecting the glands (become dilated and contain large amount of mucus, hence called retention polyp) and lamina propria (become more edematous with inflammation).

**Age group:** commonly occur in children under 5 years old. In adult called retention polyp.

**Location:** rectum.

**Prognosis:** it doesn't progress to cancer (benign).

#### b- Peutz-Jehgers syndrome:

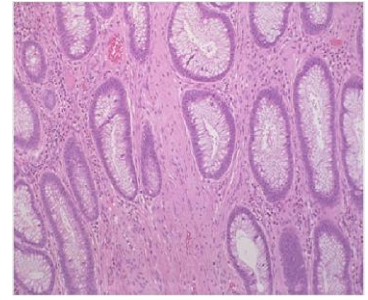
##### Characteristics:

- rare, autosomal dominant and patients have multiple polyps throughout GIT (stomach, large and small intestine).
- Hamartomatous polyps accompanied by mucosal and cutaneous pigmentation around the lips, oral mucosa, face and genitalia.
- Polyps tend to be large and pedunculated.



**Histologically:** consists of glands and in between them there is a large amount of smooth muscle instead of lamina propria and connective tissue.

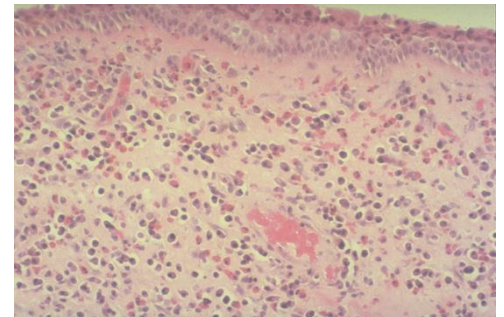
**Prognosis:** Increased risk of developing carcinoma (**not in the GIT due to mutation in one of the tumor suppressor gene**) of the pancreas, breast, lung, ovary and uterus.



### 3. Inflammatory Polyps:

#### Characteristics:

- Contain large amount of inflammatory cells (lymphocyte, macrophages, neutrophils, eosinophils) along with edema.
- Represent an exuberant reparative response to longstanding mucosal injury called pseudopolyps (**when there is an extensive ulceration in the mucosa the area which is NOT ulcerated will protrude up that give us what we call it pseudopolyps**).



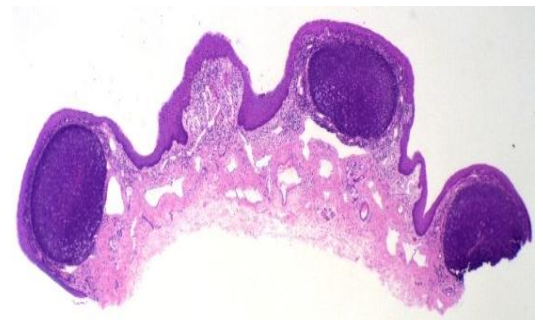
#### Cause:

Longstanding IBD (**inflammatory bowel disease**), especially in chronic ulcerative colitis.

### 4. Lymphoid polyps:

#### Characteristics:

- Lymphoid collection below the lining epithelium.
- It has lymphoid follicles with germinal center in biopsy, **NO** neoplastic significance and hyperplasia of peyer's patches.



### Neoplastic Polyps (10%):

#### - Adenomatous Polyp (adenoma):

**Definition:** it is benign tumor of the glands

**Location:** occur mainly in large bowel.

#### Subtypes:

1. sporadic (**usually 1 or 2 polyps are seen only**)
2. Familial (**multiple polyps are present; >100 polyp**).

#### Characteristics:

- Vary from small pedunculated to large sessile.

- Epithelium proliferation and features of dysplasia (hyperchromatism, pleomorphism, ↑nuclear cytoplasmic ratio and mitotic figures).

**Adenoma is further divided into:**

- Tubular adenoma: less than 25% villous architecture
- Villous adenoma: villous architecture over 50%
- Tubulovillous adenoma: villous architecture between 25% and 50%.

### Types of Adenomas:

#### 1. Tubular Adenoma:

**Characteristic:** pedunculated with smooth surface.

**Incidence:** represents 75% of all neoplastic polyps (most common).

**Location:** 75 % occur in the distal colon and rectum, usually it's benign.



#### 2. Villous Adenoma: (Most Dangerous)

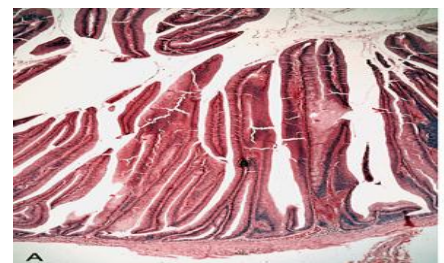
**Description:** broad base and the villi are finger like projection.

**Incidence:** the least common, largest (15 cm) and most ominous (bad or malignant) of epithelial polyps and sessile.

**Age group:** 60 to 65 years

**Features:** present with rectal bleeding or anemia, large ones may secrete copious amounts of mucoid material rich in protein which leads to hypoproteinemia and osmotic type of diarrhea.

**Location:** 75% located in rectosigmoid area.



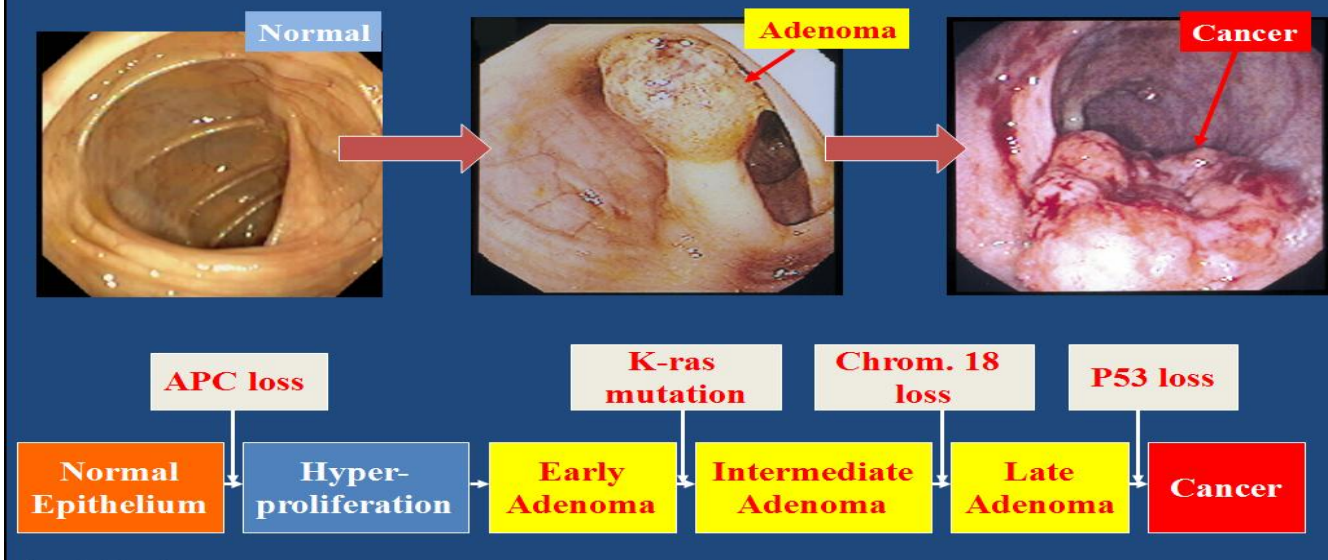
#### 3. Tubulovillous Adenoma:

Intermediate in size, degree of dysplasia and malignant potential between tubular and villous adenomas.

### Relationship of Neoplastic Polyps to Carcinoma:

- Adenoma to carcinoma sequence is documented by several genetic alterations and morphological changes as well.
- Polyp removal prevents it from converting to CRC (colorectal cancer)

## Adenoma to Carcinoma Pathway



**APC gene** is located on **chromosome 5**

**K-ras:** is a tumour suppressor gene located on **chromosome 21**

**P53:** gene located on the **chromosome 17**

The probability of carcinoma occurring in a neoplastic polyp is related to:

1. The size of the polyp ( $\uparrow$ size  $\rightarrow$  more chance to develop to cancer).
2. The relative proportion of its villous features ( $\uparrow$ villous architecture  $\rightarrow$  more chance to develop to cancer).
3. The presence of significant cytologic atypia (dysplasia) in the neoplastic cells ( $\uparrow$ dysplasia  $\rightarrow$  more chance to develop to cancer).

### Familial Polyposis Syndrome:

Patients have genetic tendencies to develop neoplastic polyps (mutation in chromosome 5).

#### 1. Familial polyposis coli (FPC):

**Cause:** genetic defect of Adenomatous polyposis coli (APC).

- APC gene located on the long arm of chromosome 5 (5q21).
- APC gene is a tumor suppressor gene

**Location:** innumerable neoplastic polyps in the colon (500 to 2500).

However, polyps are also found elsewhere in alimentary tract



**Prognosis:** the risk of colorectal cancer is 100% by midlife (the age of 30).



**Treatment:** patients need total colectomy.

## **2. Gardener's syndrome:**

Polyposis coli, multiple osteomas (**bone tumors**), epidermal cysts (**skin lesions**), and fibromatosis (**soft tissue tumors**).

## **3. Turcot syndrome:**

Polyposis coli, glioma (**brain tumors**) and fibromatosis (**soft tissue tumors**).