GI Polyps

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Introduction

- GI Polyp is a nonspecific clinical term that describes any projection from the surface othe gi mucosa into the lumen regardless of its histologic nature.

Risk factors :

Advanced age . (>50)

- **gender . (male)**
- **Race: more common in Black populations**
- **People with inflammatory disease of the bowel .**
- **Positive family history of colon cancer or polyps .**
- **Long standing tobacco and alcohol use .**
- **Obesity and sedentary lifestyle .**
- **Ureterosigmoidostomy**

Clinical features :

- Mostly asymptomatic
- If symptomatic:
  - Hematochezia (the most common symptom)
  - Change in bowel habits (constipation/diarrhea)
  - Mucus in stool
  - Pallor
  - Palpable rectal polyps on digital rectal exam
  - Bowel obstruction

Colonic polyps

- **Frequency**
  - **~ 70%: adenomatous polyps**
  - **~ 20%: hyperplastic polyps**
  - **< 10%: other kinds of polyps (traditional serrated adenomas, sessile serrated adenomas, and mixed mucosal polyps)**

Classification

Macroscopic classification of colonic polyps:

- Pedunculated: attached to the GI mucosa by a stalk
- Sessile: have a broad base (no stalk)

Histologies classification:

1. Inflammatory polyps
2. mucosal polyps
3. submucosal polyps
4. hyperplastic polyps
5. Hamartomatous polyps
6. serrated polyps
7. adenomatous polyps (tubulovillous , villous , tubular)

classification

Histologic classification of colonic polyps [3][4][5]			
Histological type	**Subtypes**	**Characteristics**	**Malignant potential**
Inflammatory polyps (pseudopolyps)		• Seen in inflammatory bowel disease, especially **ulcerative colitis**, secondary to mucosal ulceration and regeneration • Multiple, benign polyps	• Low malignant potential
Mucosal polyps		• Benign (no clinical significance) • Typically small < 5 mm • Mostly appear like normal mucosa	
Submucosal polyps		• Benign • Submucosal lipoma is the most common subtype.	
Hyperplastic polyps		• Most common type of nonneoplastic polyp among those with low malignant potential • Small (< 5 mm) • Common in the distal colon (rectosigmoid) • Might transform to serrated polyps • Histology: hyperplasia of normal cellular components with a sawtooth/serrated pattern of crypt epithelium	

Hamartomatous polyps [6]		• May occur throughout the GIT
		• Composed of normal tissue native to the site of origin (e.g., colon) but with disorganized growth
		• Associated syndromes
		  ◦ **Juvenile polyposis syndrome**
		  ◦ **Peutz-Jeghers syndrome**
		  ◦ Cowden syndrome
		  ◦ Cronkhite-Canada syndrome
			• Low for solitary polyps
			• Increased risk of colonic and extra-colonic malignancies when associated with syndromes

classification

Serrated polyps	**Sessile serrated polyps**	• Sessile lesions • > 5 mm in size • Common in the proximal colon (ascending colon) • Morphology similar to hyperplastic polyps	• Moderate malignant potential (~ 5%) [7]
	Traditional serrated adenoma	• Common in rectosigmoid • Histology: serrated architecture with dysplasia, sawtooth pattern of crypt epithelium	

Adenomatous polyps	**Tubular adenoma**	• Frequency: 65–80% [3]
		• Location: anywhere in the colon
		• Histology: proliferating cells forming tubules
			• High malignant potential [3]
			  ○ Tubular adenoma: < 5%
			  ○ Tubulovillous adenoma: ~ 20%
			  ○ Villous adenoma: ~ 50%

	Tubulovillous adenoma	• Frequency: 10–25% [3] • Histology: a mixture of tubular and villous histological picture	
	Villous adenoma	• Frequency: 5–15% • Location: common in the rectum • Larger than other adenomas (cauliflower-like), and often sessile • Histology: finger-like projections lined by dysplastic epithelium	

Risk of malignant transformation in polyps depends on :

Histology

tubular adenoma : most common , low risk

villous adenoma : less common , high risk

Morphology:

higher risk in sessile than in pedunculated

site:

left colon : most common , low risk right colon : less common , high risk

Size:

1-5 mm 0.6%

6-9 mm 2.1%

10 mm+ 13.4%

- **Inflammatory polyps/ Pseudopolyps**
  - Occur most commonly in inflammatory bowel disease
  - . But may also occur after amoebic colitis, ischemic colitis, and Schistosoma coliti

  - These lesions are not premalignant But they cannot be distinguished from adenomatous polyps based on gross appearance and therefore should be removed

  - **Polyposis may be extensive, especially in patients with severe colitis ,and may mimic FAP.**

    - Inflammatory polyps may be pedunculated or sessile and are usually smaller than 2 cm.

    - typically multiple, often filiform, and scattered throughout the involved areas of the colon.

Treatment

Medical

Infliximab has been shown to induce regression of PP in CD.

Topical enema with budesonide use was also reported to induce remission and control of minor bleeding of PP in UC.

Endoscopic

Endoscopic procedures such as argon plasma coagulation, endoscopic loop polypectomy, and ablation with YAG laser have been reported for control of bleeding provoked by ulcerated PP. Endoscopic resection with electrocautery is another effective means reported for removing symptomatic PPs

Surgical:

• Surgical methods are used when endoscopic therapy fails to manage complicated PP, for example in lower gastrointestinal bleeding or when obstructing phenomena, such as luminal obliteration or intussusception, occur.

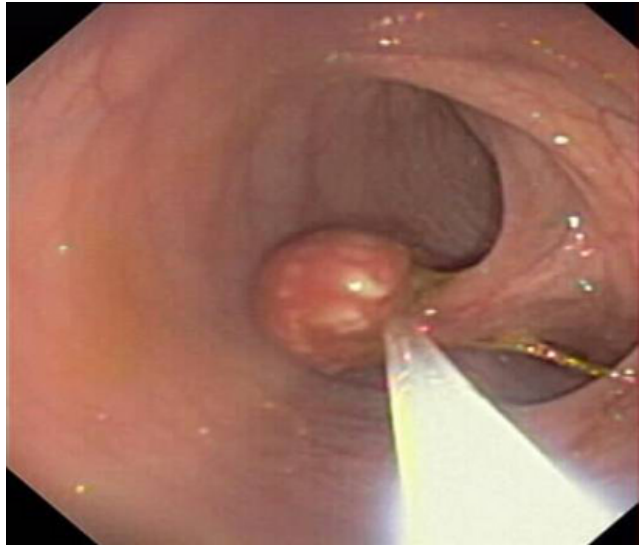
Hyperplastic polyps

Most common non-neoplastic colonic polyp
• Small (<5 mm) and usually sessile
• are common age-related lesions found in about 1/3 of the population older than **50 years.**
• most frequently encountered in the **distal colon and rectum**
• **they cannot be distinguished from adenomatous polyps colonoscopically and are therefore often removed.**

• **Treatment**
• Small hyperplastic polyps are typically biopsied or removed in the process of endoscopy with biopsy forceps because they can be difficult to distinguish from adenomatous polyps .
• small left-sided hyperplastic polyps are not a significant marker of colon cancer risk.
• Large lesions that contain some histologic features of a SSL, particularly when located in the right colon, should be resected in entirety

Hamartomatous polyps

❑ Juvenile polyps



• can occur sporadically or as part of a familial polyposis syndrome.

• Present as pedunculated cherry-red polyp with a smooth surface and contour.

• Approximately 60 to 80 percent of these polyps are in the rectosigmoid, and some of these can be palpated on rectal examination

Endoscopic photograph of a small juvenile pedunculated polyp located in the sigmoid colon.

• juvenile polyps usually are not **premalignant**

• These lesions are the characteristic polyps of **childhood but may occur at any age.**

• often present in the form of **hematochezia** because they are highly vascularized lesions.

• **Because the gross appearance of these polyps is identical to adenomatous polyps, these lesions should also be treated by polypectomy.**

GI Polyposis Syndromes

• **Hereditary polyposis syndromes**:
Associated with: Increased risk of colon cancer, Tumors in other parts of the GI tract, Extraintestinal manifestations

- Hamartomatous: Juvenile polyposis syndrome, Peutz-Jeghers syndrome, Cowden syndrome
- Adenomatous: Familial Adenomatous polyposis

• **Non hereditary polyposis syndromes**:
- Cronkhite-canada syndrome

Familial juvenile polyposis

➢ is an autosomal **dominant** disorder in which patients develop hundreds of polyps in the colon and rectum.

➢ **Unlike solitary juvenile polyps, these lesions may degenerate into adenomas and eventually carcinoma.**

- Surveillance
  - Annual secreening should begin annually at the age 10-12 years

❖ Treatment ; **is surgical and depends on the degree of rectal involvement.**

▪ If the rectum is relatively **spared, a total abdominal colectomy with ileorectal anastomosis may be performed with subsequent close surveillance of the retained rectum.**

▪ If the rectum is **carpeted with polyps, total proctocolectomy is the more appropriate operation. These patients are candidates for ileal pouch–anal reconstruction to avoid a permanent stoma.**

Peutz-Jeghers Syndrome

Peutz-Jeghers syndrome (PJS) is an autosomal dominant inherited disorder characterized **by intestinal hamartomatous polyps in association with a distinct pattern of skin and mucosal macular melanin deposition.**

PJS is rare, with prevalence estimates ranging between 1:50,000-200,000 births.

Gl polyps are **non-neoplastic hamartomas**

On gastrointestinal endoscopy, the Peutz-Jeghers (PJ) polyps have **no major distinguishing features, and may be sessile, pedunculated, or lobulated**

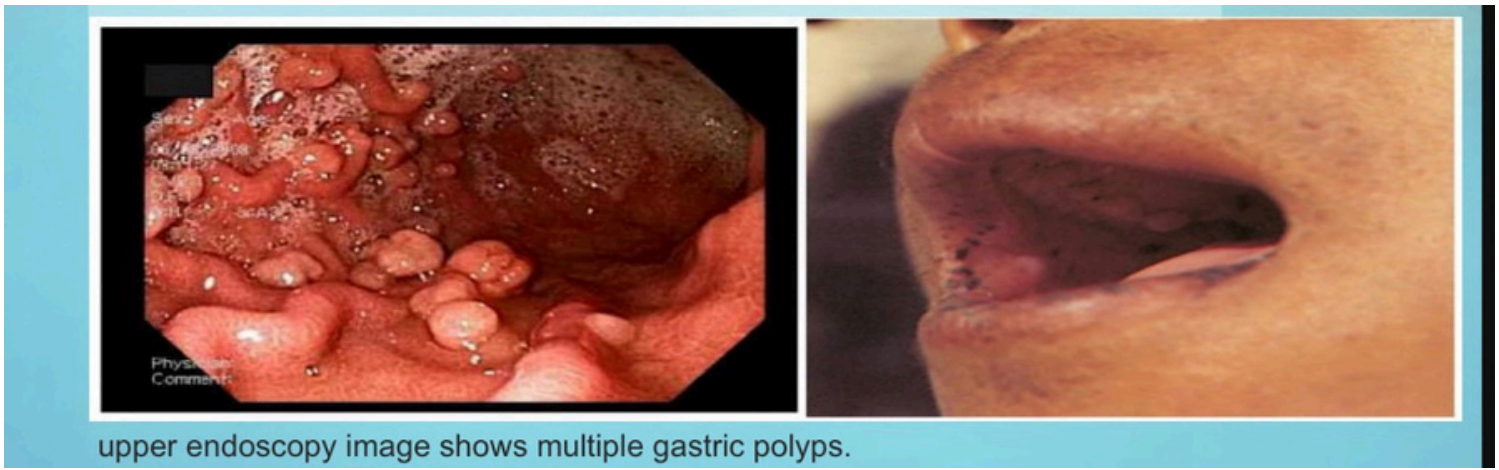
The number of polyps ranges **from 1 to more than 20 per segment of bowe**l, although some patients have solitary lesions.

The size of the polyps ranges from **0.1 to more than 5 cm in diameter**

- **Surveillance**
  - **Colonoscopy, EGD, and video capsule endoscopy: baseline at 8 years of age** [9][10]
- **Treatment** [9]
  - **Colon polypectomy**
  - **Refer to surgery if there are too many polyps to manage endoscopically**

Cutaneous manifestations:

> Mucocutaneous pigmented macules (melanin spots) are present in more than 95 percent of individuals with PJS and are caused by pigment-laden macrophages in the dermis. They are typically flat, blue-gray to brown spots
1 to 5 mm in size.
• consists of dark, macular lesions on the mouth (both on the skin and in the buccal mucosa), nose, lips, hands, feet, genitalia, and anus.



upper endoscopy image shows multiple gastric polyps.

Familial Adenomatous polyposis (FAP)

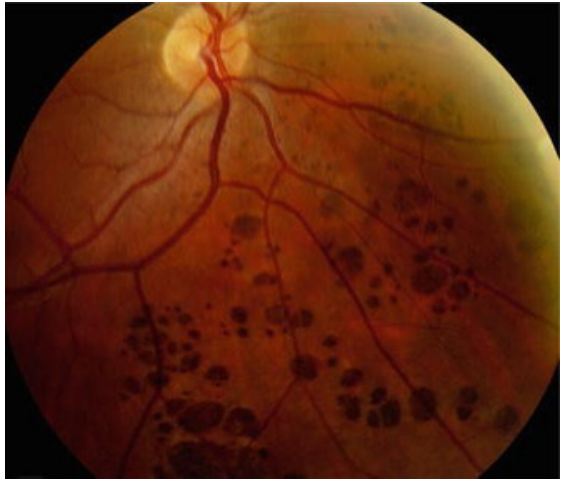
- Autosomal dominant syndrome, defined clinically by the presence of more than **100 colorectal adenomas, but is also characterized by duodenal adenomas and multiple extraintestinal manifestations.**
- Mutations in the tumor suppressing adenomatous polyposis coli (**APC**) **gene.**
- 50% of patients have congenital hypertrophy of the retinal pigment epithelium (CHRPE), which can be used to screen affected families if genetic testing is unavailable.
- Accounts for **1**% or less of all colon cancer.
- The risk of colorectal cancer is **100**% (onset typically occurs at 35 - 40 years of age)

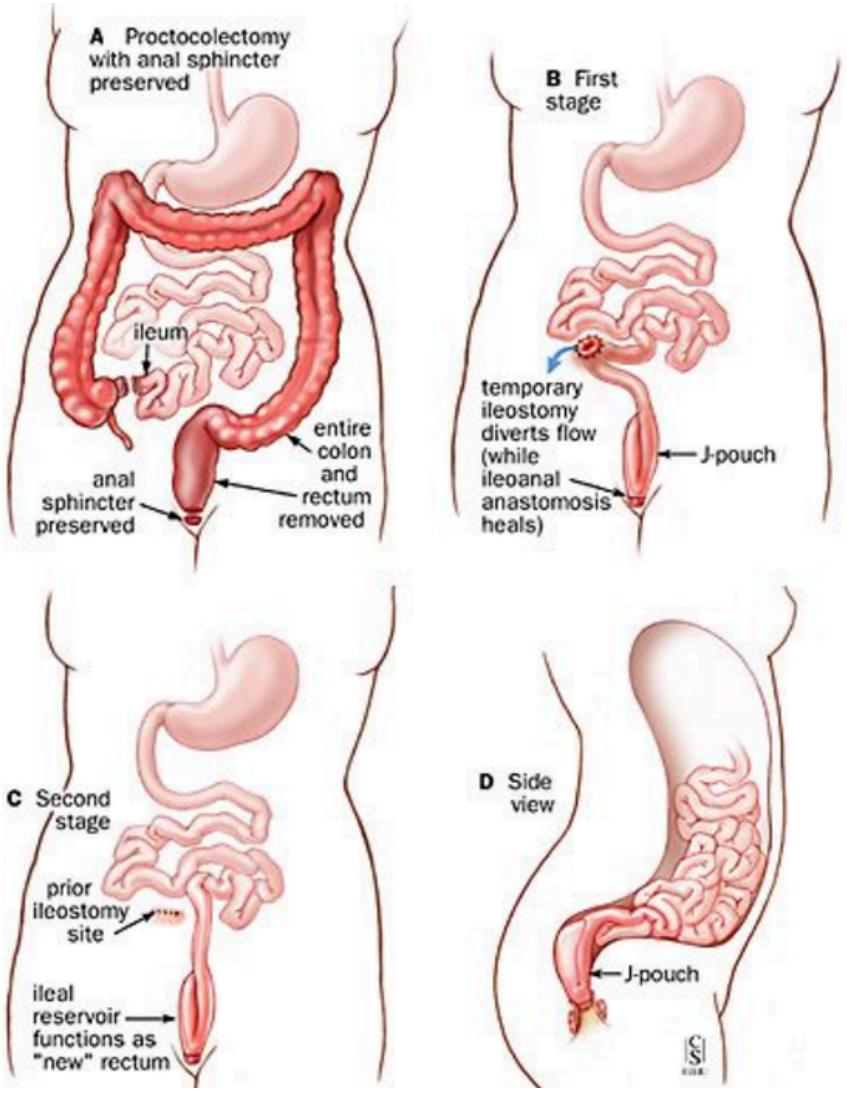
Surveillance

- Flexible sigmoidoscopy (no known polyps) or colonoscopy (known polyps): every 1–2 years starting at 10–15 years of age [9][10][11]

Treatment

- Prophylactic proctocolectomy with ileoanal anastomosis or ileostomy [10]
- NSAIDs (e.g., sulindac) may reduce the polyp burden. [9][10




A Proctocolectomy with anal sphincter preserved
ileum
entire colon and rectum removed
anal sphincter preserved
B First stage
temporary ileostomy diverts flow (while ileoanal anastomosis heals)
J-pouch
C Second stage
prior ileostomy site
ileal reservoir functions as "new" rectum
D Side view
J-pouch

Management of colonic polyps

- CBC for anemia
- Colonoscopy with polypectomy/biopsy

- Confirmatory test
- Alternatives include flexible sigmoidoscopy, CT colonoscopy, and double-contrast barium enema

- Send any samples for histologic classification of colonic polyp (as mentioned previously)
- Follow-up is required for all patients because of the increased risk of malignancy.

Note that : Polyps are often identified as an incidental finding on workup for other conditions. Patients with red flags for colon cancer or positive colorectal cancer screening tests (e.g., fecal occult blood testing) should undergo diagnostics for colorectal cancer.

Colonoscopy

Colonoscopy facilitates simultaneous diagnosis and management of most polyps; **suspected malignant colorectal polyps should be biopsied and referred to surgery**.

Recommended removal techniques for low and high-risk colonic polyps [24][26][27]

Suspected polyp type	Characteristic features	Recommended excision technique
Low-risk	• Sessile and < 10 mm • Pedunculated at any size	• Lesions of either type (< 10 mm): cold snare polypectomy • Pedunculated lesions ≥ 10 mm: hot snare polypectomy

High-risk	• Sessile and ≥ 10 mm
	• Dominant nodule
	• Ulceration
	• No lifting with submucosal injection
		• Lesion with no evidence of deep mucosal invasion
		  ○ 10–20 mm: hot or cold snare polypectomy
		  ○ ≥ 20 mm: endoscopic mural resection
		• Evidence of submucosal invasion: biopsy and refer to surgery

Surgical resection

- Colon resection may be required for suspected or confirmed malignancy
- **Hereditary polyposis syndromes** may require surgical polyp removal (e.g., for large polyps) and/or colonic resection

Small Bowel polyps

• Adenomas

Adenomas are the most frequently encountered polyps in the small intestine.

These neoplasms have a predilection for the distal duodenum, ampullary and periampullary region, but can be found throughout the entire small intestine

small-bowel adenomas tend to have a more pronounced villous or tubulovillous architecture than adenomas in the colorectum.

• Brunner gland hyperplasia/hamartoma/adenoma

association with peptic duodenitis,and therefore mostly limited to the duodenal bulb.
At endoscopy, appears as nodular duodenitis.

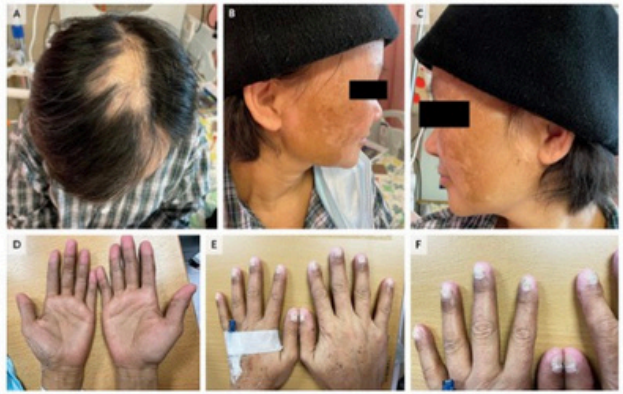
• Periampullary myoepithelialhamartoma/adenomyoma

- **Small myoepithelial hamartomas composed of dilated gland elements and surrounded by muscle occur in the duodenum usually in relation to the ampulla of Vater.**
- **Most cases are asymptomatic and discovered incidentally**
- **larger pedunculated lesions may cause intermittent biliary or pancreatic obstruction.**
- **The macroscopic appearance is usually of an umbilicated, sessile polyp.**

• Cronkhite–Canada syndrome

This rare syndrome combines diffuse polypoid thickening of the small-bowel mucosa with ectodermal changes that include alopecia,hyperpigmentation and atrophy of the nails.

occurs primarily in patients between 50 and 70 years of age , male to female ratio is 2:1



Clinical Presentation of small intestinal polyps

- found incidentally onesophagogastroduodenoscopy (EGD)

Symptoms that have been attributed to small bowel polyps :

1. Dyspepsia.
2. abdominal pain.
3. overt gastrointestinal bleeding.
4. Intussusception.
5. Obstruction.

There are certain anatomic characteristics of the duodenum that make endoscopic resection of duodenal lesions challenging. These factors include:

1. a narrow lumen
2. a “C-loop”
3. Brunner’s glands in the submucosal layer
4. a thin deep muscle layer
5. The duodenum has an extensive vascular network supplied by the gastroduodenal artery that increases the risk of bleeding, which can be severe and potentially life-threatening.

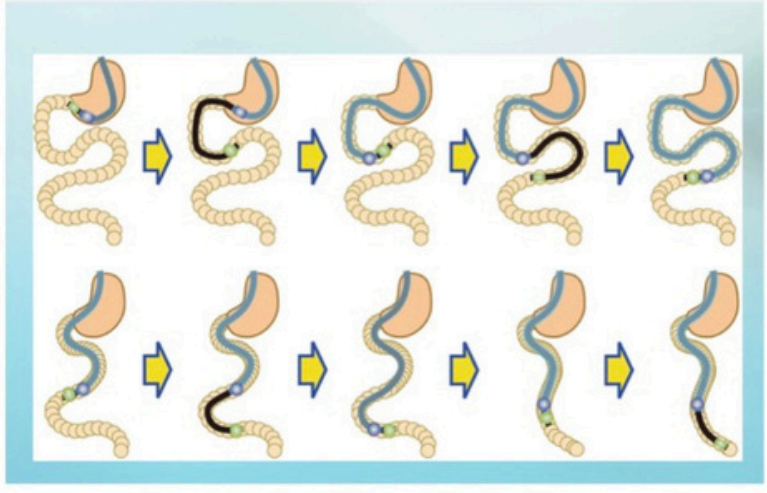
Management

- **1- Double balloon enteroscopy**

  called push-and-pull enteroscopy or balloon-assisted enteroscopy.

  It can be **anterograde** or **retrograde** , The choice of either the **oral** or the **anal** route depended on the suspected location of the lesions within the small bowel based on the clinical manifestations, results of laboratory radiological and previous radiological and endoscopic examinations.

  Complication of it :
  1. Pancreatitis
  2. perforation
  3. bleeding
  4. others (aspiration pneumonia, esophageal trauma)



ENDOSCOPIC MUCOSAL RESECTION (mucosectomy)

- technique used for the staging and treatment of superficial neoplasms of the gastrointestinal (GI) tract.
- submucosal injection 10 to 40 mL of **hydroxypropyl methylcellulose (HPMC)** is often used to separate mucosal and submucosal lesions from the muscularis propria , create an undermining **submucosal fluid cushion(SFC)** may decrease the incidence of perforation during EMR.

suction (suck-and-cut)

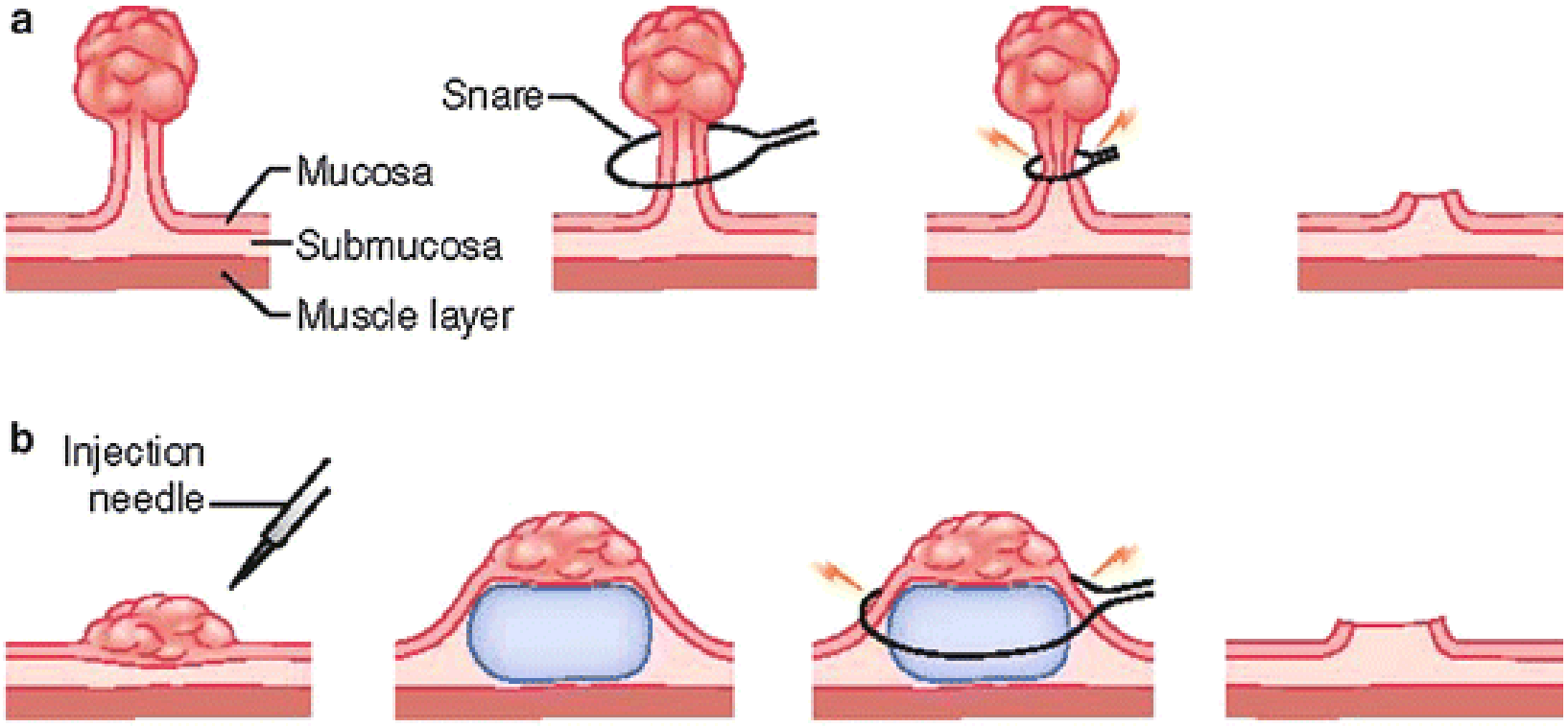
suctioned up and resected after lifted away

performed with a transparent cap affixed to the tip of the endoscope(cap-assisted EMR).

drawing the lesion into the cap. The lesion is then resected with a snare placed through the endoscope into the cap

Non-suction methods

grasping device to pull the lesion away from the muscularis propria, after which a snare is used to resect the specimen.


a
Snare
Mucosa
Submucosa
Muscle layer
b
Injection
needle

Gastric Polyps

- **Gastric polyps have many subsets, the most commonly seen and described are the triad of :**

1- gastric hyperplastic polyps (GHP) The development of GHPs is thought to be related to chronic inflammation commonly associated with H. pylori infection and atrophic gastritis.

2- Fundic gland polyps (FP) characterized by dilated and irregularly budded fundic glands predominantly lined by parietal cells with smaller proportion of chief cells.
several studies have indicated an association with chronic PPI usage D

3- adenomatous polyps characterized by low-grade glandular dysplasia.

- Presentation:

- The vast majority of gastric polyps are asymptomatic, with over 90% being found incidentally on endoscopy.
- The most common complaints associated with the finding of gastric polyps are **dyspepsia, acid reflux, heartburn, abdominal pain, early satiety, gastric outlet obstruction, gastrointestinal bleed, iron deficiency anemia and fatigue.**

Managemnt

- As it is difficult to discern the underlying histopathology of a gastric polyp from visualization under endoscopy alone, **biopsy and en-bloc resection are required to guide management.**
- It is well known that malignant potential increases with an increased size of the lesion, and as such, it is advised that all lesions greater than **10mm be removed by endoscopic mucosal resection (EMR).**

Management and follow-up after biopsy is guided by the histopathologic findings of the polyps removed during esophagogastroduodenoscopy (EGD):

- For GHPs removed by EGD without finding dysplasia, a single repeat EGD is recommended at one year of follow-up.
- If H. Pylori is found in biopsies associated with GHP, then a repeat EGD is often performed in 3-6 months for repeat biopsy to confirm eradication of infection and to track the regression of gastric polyps.

Managemnt

For GP, if there is a history of chronic PPI use, then discontinuation when possible is recommended.

- 1-year follow-up EGD is performed when lesions greater than 5 to 10 mm were found on initial EGD and to track response to therapy.
- The finding of adenoma on microscopic evaluation of gastric polyp indicates the need for 1-year follow-up EGD.
- in a patient less than 40 years old where multiple adenomas are seen on EGD, extensive family history taking and colonoscopy is recommended to rule out FAP.

• If dysplasia or early adenocarcinoma is detected on microscopic evaluation of a gastric polyp, repeat ED is performed at 1 year and again at 3 years from initial endoscopy.