Colorectal Polyps

- Good Day,

Today will be talking about colorectal polyps. These are short notes

I strongly advise referring to a textbook in general surgery for studying as this is a big topic that cant be covered in a simple lecture.

The numbers and some of the information in this lecture may change with time and with referenced used as well as the location of the population

Polyps

- Mass lesions protruding from the intestinal mucosa toward intestinal lumen or elevating the mucosa toward the lumen
- defect in
  - Cell proliferation
  - Differentiation
  - Apoptosis

} of Normal Mucosa

- At least one polyp was found in 34.3 % of asymptomatic patients by screening colonoscopy

- Polyps are Mass lesions protruding from the intestinal mucosa toward intestinal lumen or elevating the mucosa toward the lumen , it represent a defect in Cell proliferation Differentiation or Apoptosis

- During screening colonoscopy one polyp is found in about one third of cases. It is a common pathology

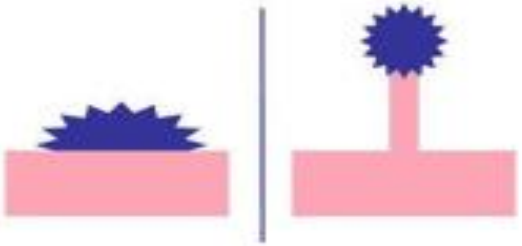
Classification of polyps

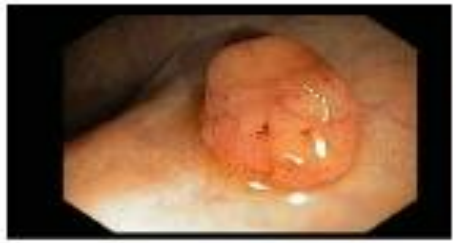
- Inflammatory : Inflammatory polyps
- Metaplastic : Metaplastic or hyperplastic
- Hamartomatous: Peutz-jeghers polyp, Juvenile polyps
- Neoplastic : Adenoma , carcinoma, carcinoid.

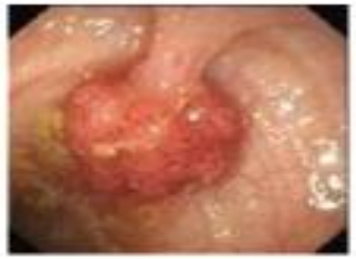
- Different classifications of polyps , according to histological examination polyps can be divided into :
- Inflammatory such as inflammatory polyps
- Metaplastic : either metaplastic or hyperplastic polyps
- Hamartomatous such as patient with Peutz-jeghers polyp, Juvenile polyps Or neoplastic such as adenoma , carcinoma.

Classification / Shape

- Sessile / Pedunculated







- Other method of classification is how it look morphologically either sessile of pedunculated

Neoplastic Colon Polyps Adenomas

- Epithelial tumour composed of abnormal glands of the large bowel
- Two-thirds of colon polyps are adenomatous polyps
- More common in men
- mostly located in the left colon
- Most adenomas (87 to 89%) are <1 cm in size

- According to the growth pattern of the glands
  - Tubular adenomas; 0 to 25% of the glands are villous
  - Tubulovillous adenomas: 25 to 75% of the glands are villous
  - Villous adenomas: if 75-100% of the glands are villous

Tubular	80–86 %,
Tubulovillous	8–16 %,
Villous adenomas	3–16 %

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Notes

- Most colorectal carcinomas are derived from benign adenomas (Adenoma-carcinoma sequence).
- 5 years from a clean colon to the development of invasive carcinoma.
- The distribution of adenomas throughout the large bowel is similar to that of carcinomas

- Removal of polyps reduce the risk of cancer. In fact : The incidence of colorectal cancer has been shown to fall with a long-term screening programme involving colonoscopy and polypectomy

- The malignant potential of adenomas depends on
  - size,
  - histological type,
  - degree of dysplasia

Dysplasia

- *Is the term describing the histologic abnormality* of an adenoma according to the degree of atypical cells.
- Low , moderate or high grade.
- High Grade: similar to carcinoma but limited to the epithelium.
- The larger the polyp the higher rate of dysplasia.

Table 9.2 Relation between type of adenoma and size of adenoma/degree of dysplasia

	Size of adenoma (%) [6]			Degree of dysplasia (%) [7]		
Type of adenoma	<1 cm	1–2 cm	>2 cm	Mild	Moderate	Severe
Tubular	77	20	4	88	8	4
Tubulovillous	25	47	29	58	26	16
Villous	14	26	60	41	38	21

Risk Factors ?

- age.
- lack of fruits and vegetables,
- fat-rich diet,
- low folate intake,
- excessive alcohol consumption, increased
- Smoking
- Physical inactivity
- Family history
- acromegaly

Progression

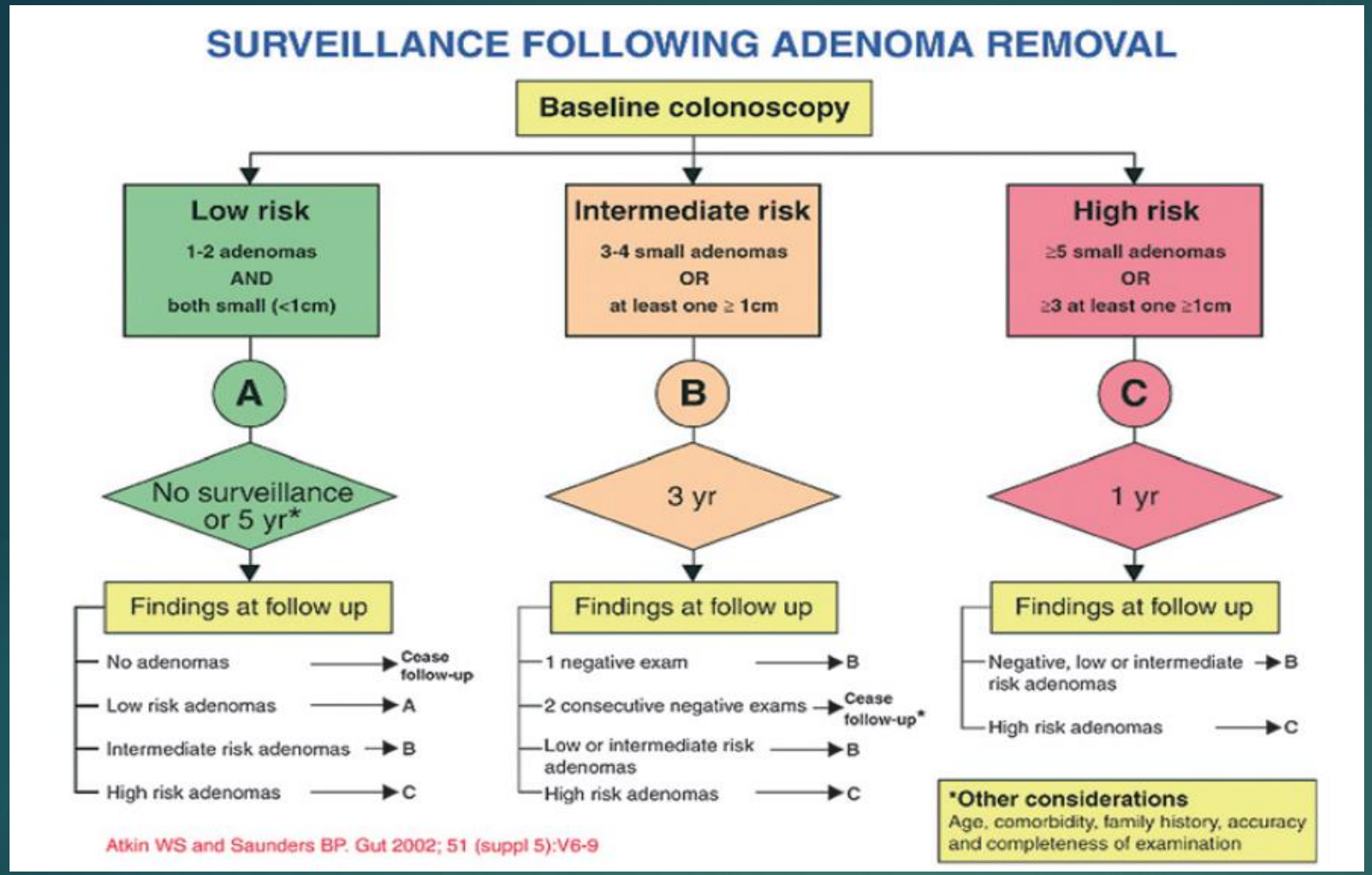
- Aspirin
- Non-steroid anti-inflammatory

reduce frequency

Risk of malignancy

The size and the histopathological type of the determine the risk of malignancy in a polyp
In addition the location and the number
Based on this we arrange for timing if the follow up colonoscopy for each patient.

- Size and type of polyp.
  - >1cm tubular polyp: 35% risk of cancer
  - 2cm villous polyp: 50% risk of cancer
  - Villous adenoma has higher cancer potential than tubular.
- Proximal location
- Number of Polyps
- Overall, the yearly rate of conversion from adenoma to carcinoma has been estimated to be 0.25%, but the risk is higher (the risk of carcinoma is 2.5 % in 5 years, 8 % in 10 years, and 24 % in 20 years after the diagnosis for polyps 1 cm in diameter)

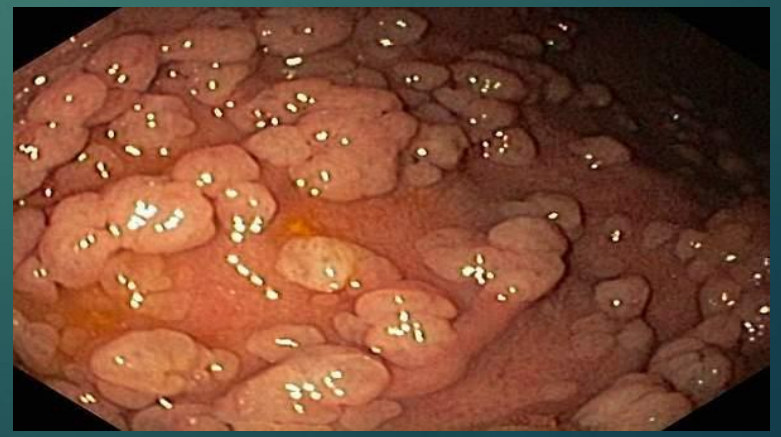


The British Society of Gastroenterology (BSG) and the Association of Coloproctology for Great Britain and Ireland (ACPGBI) commissioned this update of the 2002

- This slide represent guild line from the British society of gastroenterology for colonoscopy after removal of adenoma . You can see the divide patients into low and intermediate and high risk groups.
- Accordingly the surveillance colonoscopy can be planned.

Familial Adenomatous polyposis

- Feature:
  - Autosomal Dominance inheritance
  - Mutation APC gene at chromosome 5
  - Hundreds of Colorectal polyps (2nd -3rd decade)
  - Doudenal polyps
  - Multiple extra-intestinal manifestation
  - Lifetime risk of malignancy is 100%



- One of known interties is familial adenomatous polyposis, it s an Autosomal Dominance inheritance
- There is Mutation APC gene at chromosome number 5
- Patients develop Hundreds of Colorectal polyps at the 2nd and 3rd decade of life
- Association with possible Doudenal polyps
- And Multiple extra-intestinal manifestation as shown in the next slide

- Lifetime risk of malignancy is 100%

Extra-Colonic features

This is a list of extra intestinal manifestation of the FAP .

TABLE 26-1. Extracolonic features of FAP

System	Feature	Frequency (%)
Upper gastrointestinal tract	Upper gastrointestinal adenomas	95
	Upper gastrointestinal carcinoma	5
	Fundic gland polyps	40
Connective tissue	Osteomas (especially jaw)	80
	Desmoids	15
Dental	Unerupted and supernumerary teeth	17
Cutaneous	Epidermoid cysts	50
Endocrine	Adrenocortical adenomas[4]	5
	Papillary thyroid carcinoma[5]	1
Hepatobiliary	Biliary tract carcinoma	<1
	Hepatoblastoma	<1
Central nervous system	CHRPE	75
	Tumors (especially medulloblastoma)	<1

FAP – diagnosis

- In order to diagnose FAP, either you do than by demonstrating the presence of 100 or more colorectal adenoma during colonoscopy or the presence of APC gene mutation in 80% of cases.
- A New mutation in the APC gene can occur In 20% of cases .
- Milder form Attenuated FAP where is less number of polyps in the colon and rectum.

- If family mutation is known, Predictive genetic testing in early teens.

Otherwise

- Clinical Survillance
  - Annual flexible sigmoidoscopy starting 13-15 of age… if no polyps then colonoscopy started at 20.
  - Flex sig or colon. Anytime if sypmtomatic
  - If there are no adenomas by the ageof 30 years, FAP is unlikely.

  - Up to 50% of patients with FAP have congenital hypertrophy of the retinal pigment epithelium (CHRPE), which can be used to screen affected families if genetic testing is unavailable

Treatment of FAP

- Treatment of FAP
- Surgery is Prophylactic as Carcinoma of the large bowel develops 10–20 years after the
- onset of the polyposis

- Procto-Colectomy + restorative surgery is the operation of choice
- sulindac and celecoxib : cause regression of the polyps but require frequent examination.
- Upper GI Surveillance after the age of 30 looking for Doudenal Polyps . Every 2 years

Surgical option for FAP

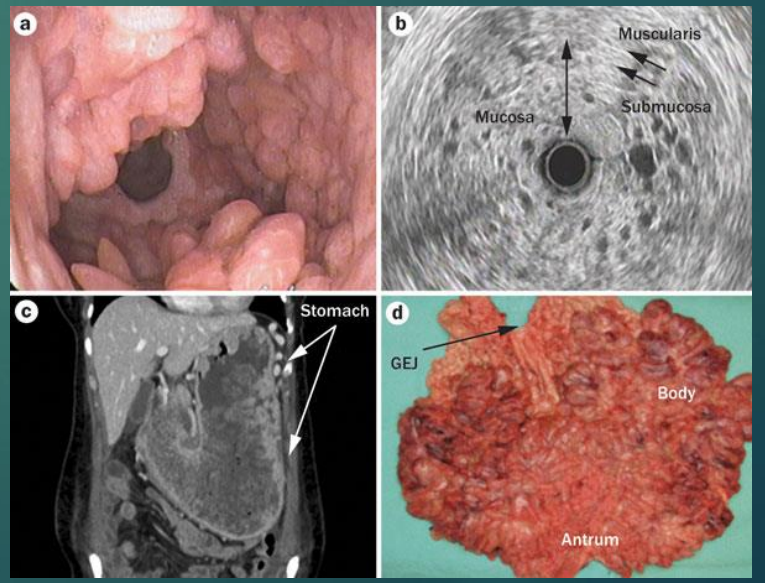
1- colectomy with ileorectal anastomosis (IRA)

2- restorative proctocolectomy with an ileal pouch–anal anastomosis (RPC);

3- total proctocolectomy and end ileostomy.

Juvenile Polyposis

- Juvenile polyps: hamartomas that lack smooth muscle histologically, having poor anchorage to bowel wall. Eventually amputate and disappear
- Around the age of 4. blood around stool.
- Multiple polyps in rectum , colon and stomach In 50%.
- Rare
- 50-200 polyps
- Risk of cancer 30-50%
- Autosomal dominant
- Treatment: polypectomy / colectomy

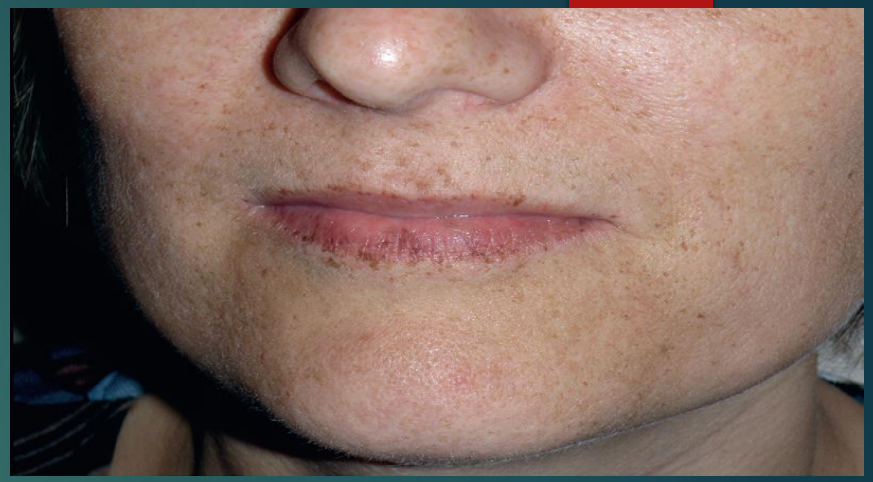


Juvenile polyp

- This is a bright red, glistening pedunculated sphere (‘cherry tumour’)
- Present in infants and children and can stay into adult life.
- Patient present with bleeding, pain and prolapse during defaecation.
- polyp has no tendency to malignant change It has a unique histological structure with large mucus-filled spaces covered by a smooth surface of thin rectal cuboidal epithelium

- Treatment is excision

Peutz–Jeghers syndrome



- an autosomal dominant condition
- characterised by:
  - mucocutaneous pigmentation
  - gastrointestinal hamartomatous polyps.

Peutz followed the family for 87 years and the member of the family developed bowel obstructions and cancers

Self reading

- The topic colorectal polyps is evolving and it is not limited to what been said earlier. I advise you all to related to a reference book for more details as well as reading about the other types of polyps, Such as
- Hyperplastic polyps
- Sessile serrated polyps
- Serrated polyposis syndrome
- Traditional serrated polyps
- Inflammatory polyps

Screening for colorectal polyps and cancer

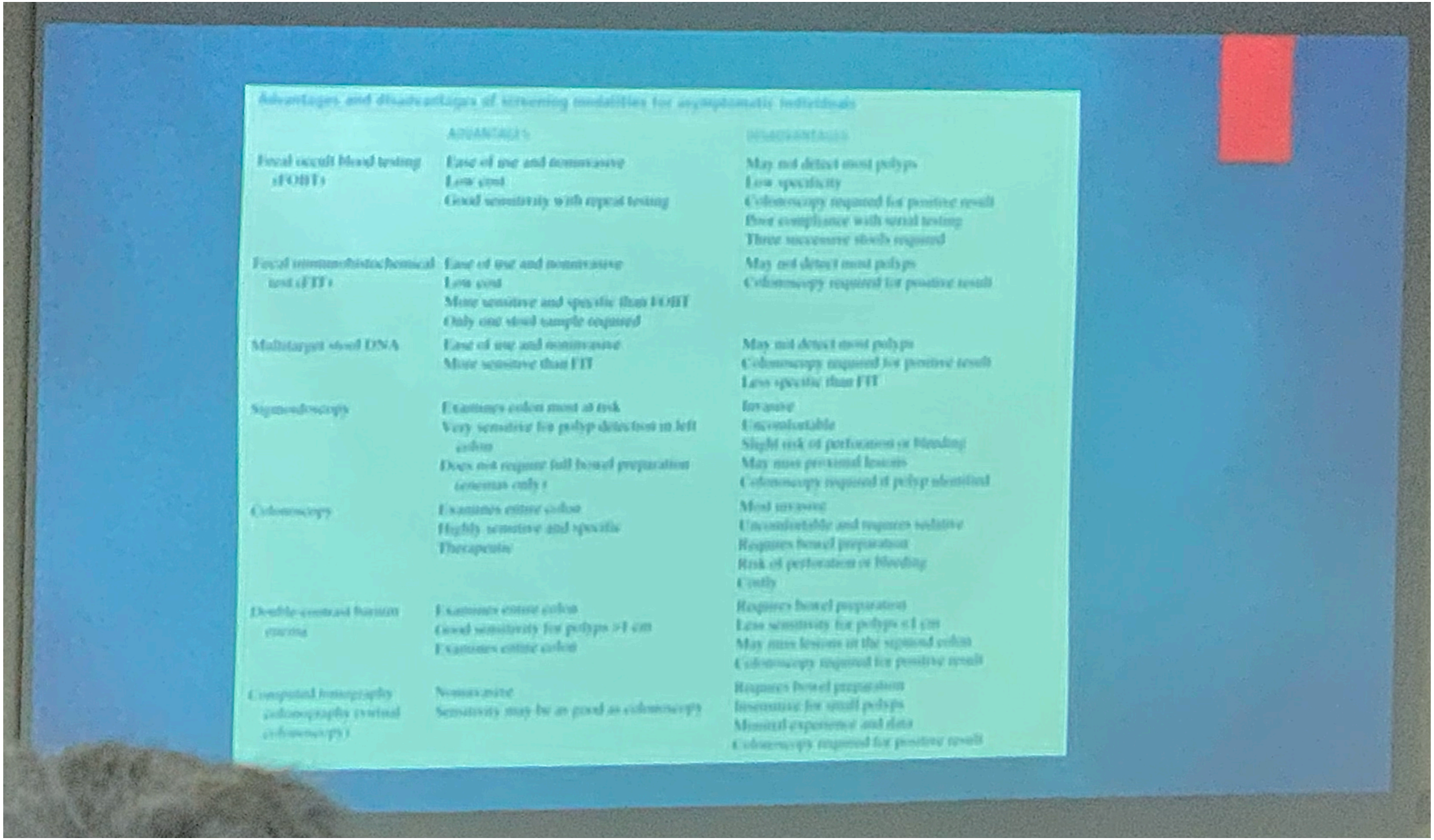
Screening guidelines are meant for asymptomatic patients

Colorectal cancers are thought to arise from adenomatous polyps

Many cancers are asymptomatic

Screening detect tumors at an early stage

Advantages and disadvantages of screening modalities for asymptomatic individuals



Check the next 3 slides

Advantages and disadvantages of screening modalities for asymptomatic individuals

	ADVANTAGES	DISADVANTAGES
Fecal occult blood testing (FOBT)	Ease of use and noninvasive Low cost Good sensitivity with repeat testing	May not detect most polyps Low specificity Colonoscopy required for p Poor compliance with serial Three successive stools requ
Fecal immunohistochemical test (FIT)	Ease of use and noninvasive Low cost More sensitive and specific than FOBT Only one stool sample required	May not detect most polyps Colonoscopy required for p
Multitarget stool DNA	Ease of use and noninvasive More sensitive than FIT	May not detect most polyps Colonoscopy required for p Less specific than FIT
Sigmoidoscopy	Examines colon most at risk Very sensitive for polyp detection in left colon	Invasive Uncomfortable Slight risk of perforation or

Multitarget stool DNA	Ease of use and noninvasive More sensitive than FIT	May not de Colonoscop Less specif
Sigmoidoscopy	Examines colon most at risk Very sensitive for polyp detection in left colon Does not require full bowel preparation (enemas only)	Invasive Uncomforta Slight risk May miss p Colonoscop
Colonoscopy	Examines entire colon Highly sensitive and specific Therapeutic	Most invas Uncomforta Requires bo Risk of per Costly
Double-contrast barium enema	Examines entire colon Good sensitivity for polyps >1 cm Examines entire colon	Requires bo Less sensiti May miss l Colonoscop
Computed tomography	Noninvasive Sensitivity may be as good as colonoscopy	Requires bo Insensitive Minimal ex

	Very sensitive for polyp detection in left colon Does not require full bowel preparation (enemas only)
Colonoscopy	Examines entire colon Highly sensitive and specific Therapeutic
Double-contrast barium enema	Examines entire colon Good sensitivity for polyps >1 cm Examines entire colon
Computed tomography colonography (virtual colonoscopy)	Noninvasive Sensitivity may be as good as colonoscopy