# Colorectal cancer

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# Outline

- Definitions
- Polyps
- Basics of colorectal cancer
- Surgery
- Staging

# Perspective


"Whoa, Frank ...
guess what youuuuuuuuuu sat in!"

# Definitions

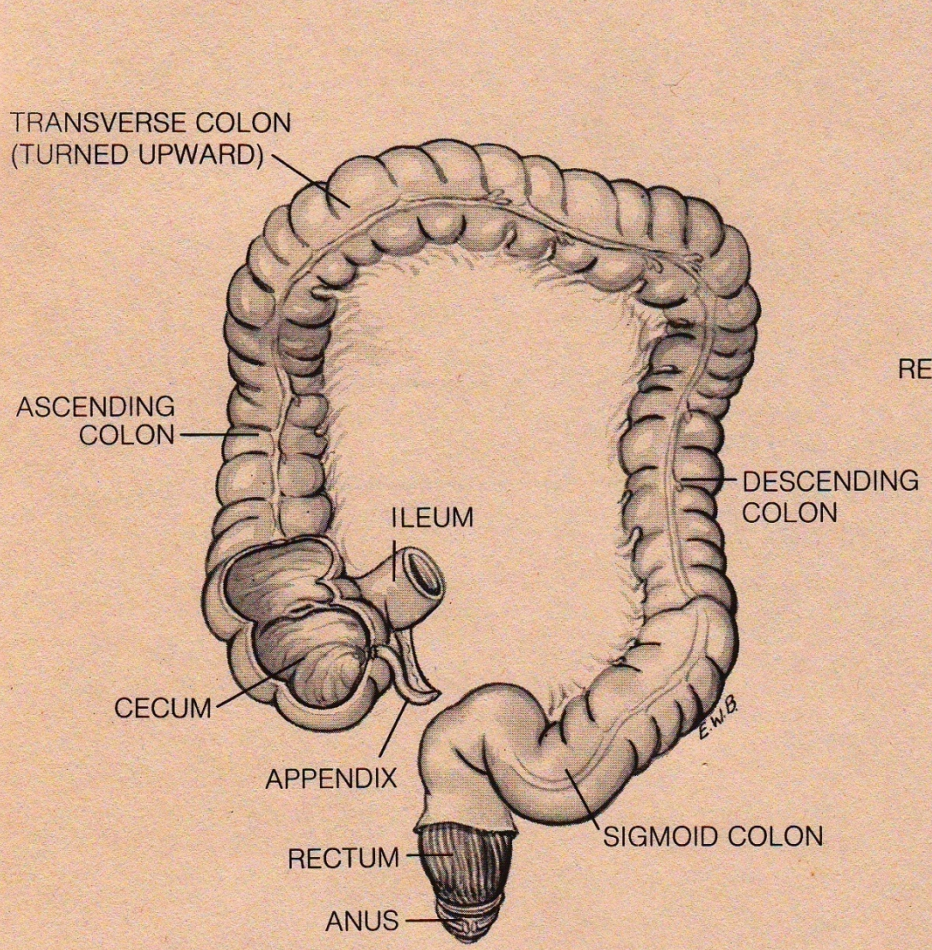
- Colon = large bowel = large intestine
- Rectum - terminal portion of the colon
- Polyp - benign growth; not invasive
- Adenoma - type of polyp
- Cancer - malignant growth; invasive
- Stage - where the cancer is growing
- Primary - the original tumour, where it started
- Metastases - where the tumour has spread to

# Cancer

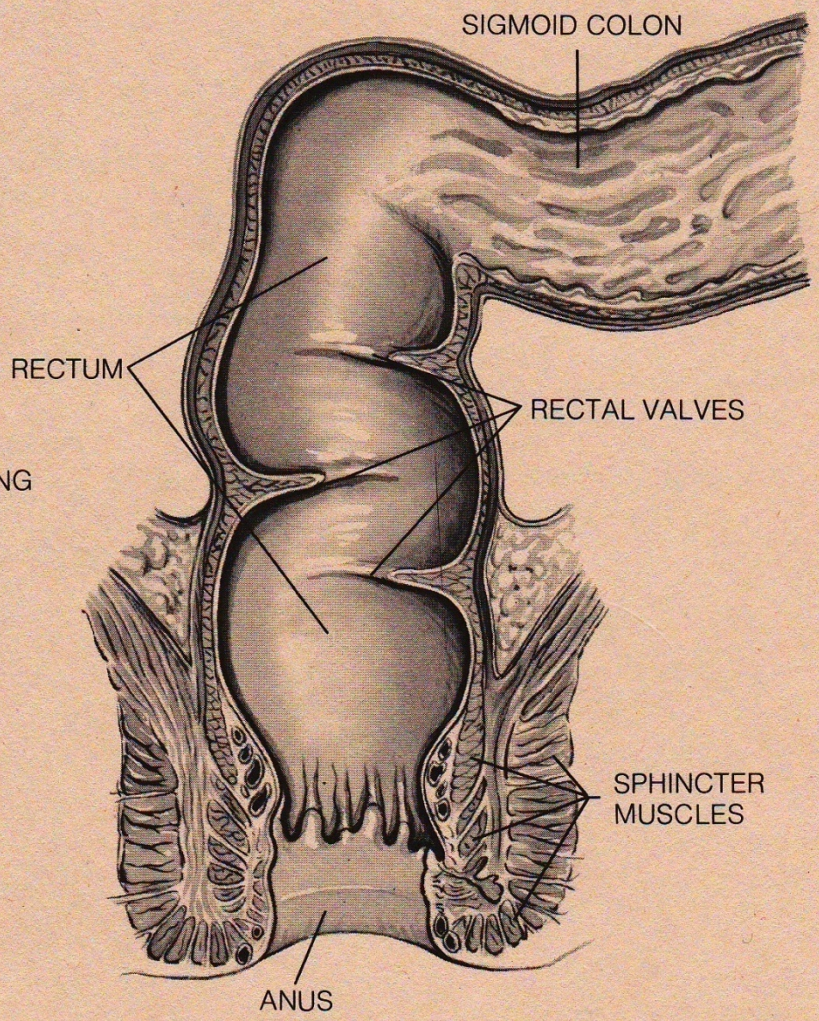
A cancer cell :

- is immortal ( lives forever)
- multiplies uncontrollably
- can live on its own without neighbors
- can live in other parts of the body

# Colon and Rectum




THE LARGE INTESTINE




RECTUM AND ANUS

# Colorectal Cancer

- Most cancers are acquired some are inherited
- Almost all cancers begin as a benign polyp or adenoma
- Only a tiny percentage of adenomas become cancers

# What is a polyp?

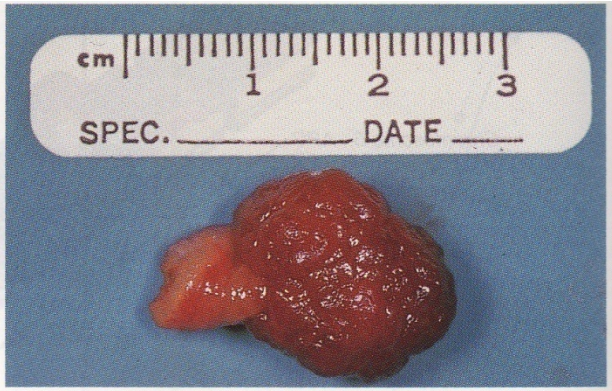



**Fig. 22-7** Pedunculated polyp.

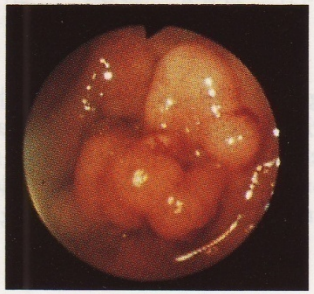
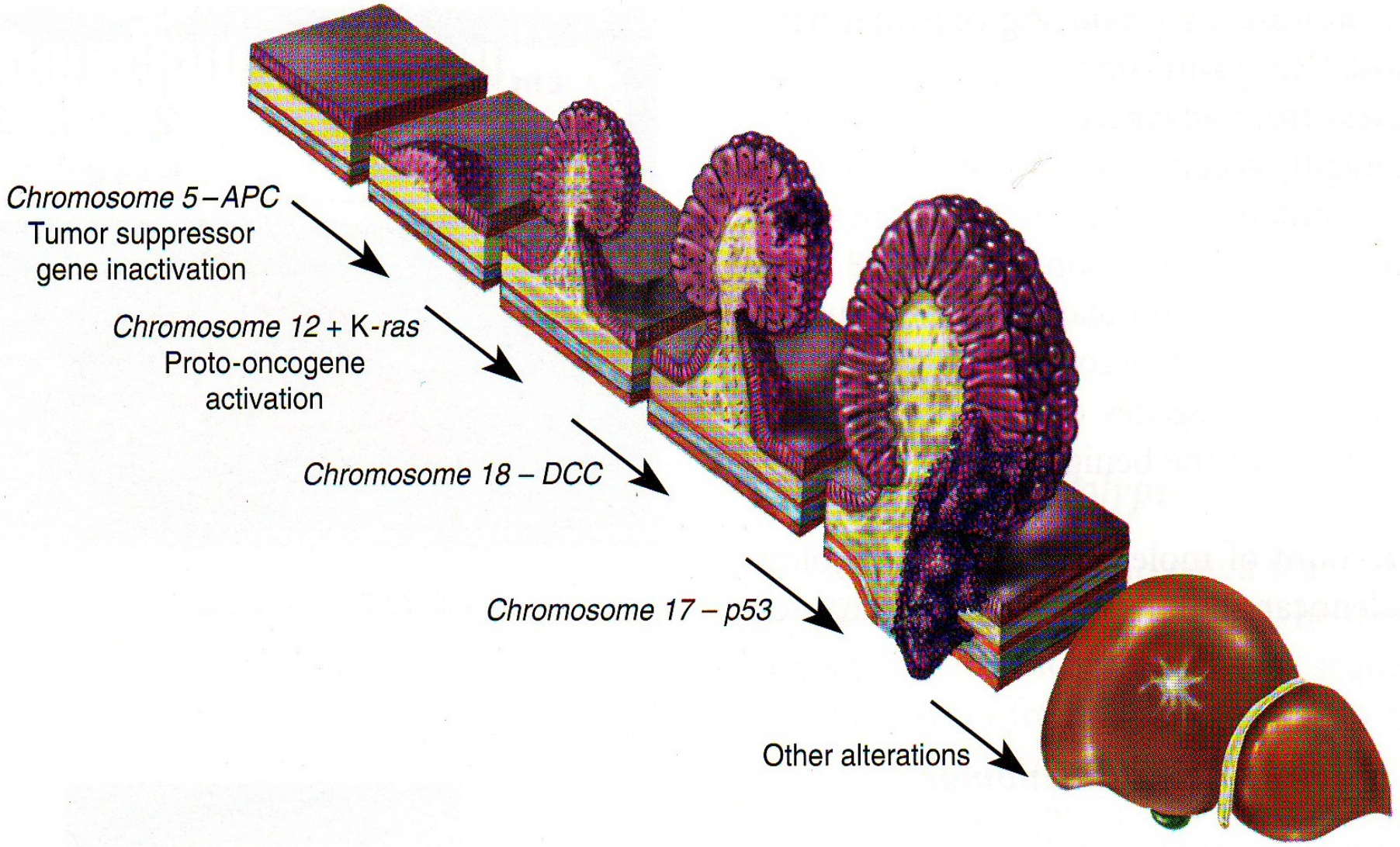


**Fig. 22-8** Sessile polyp.

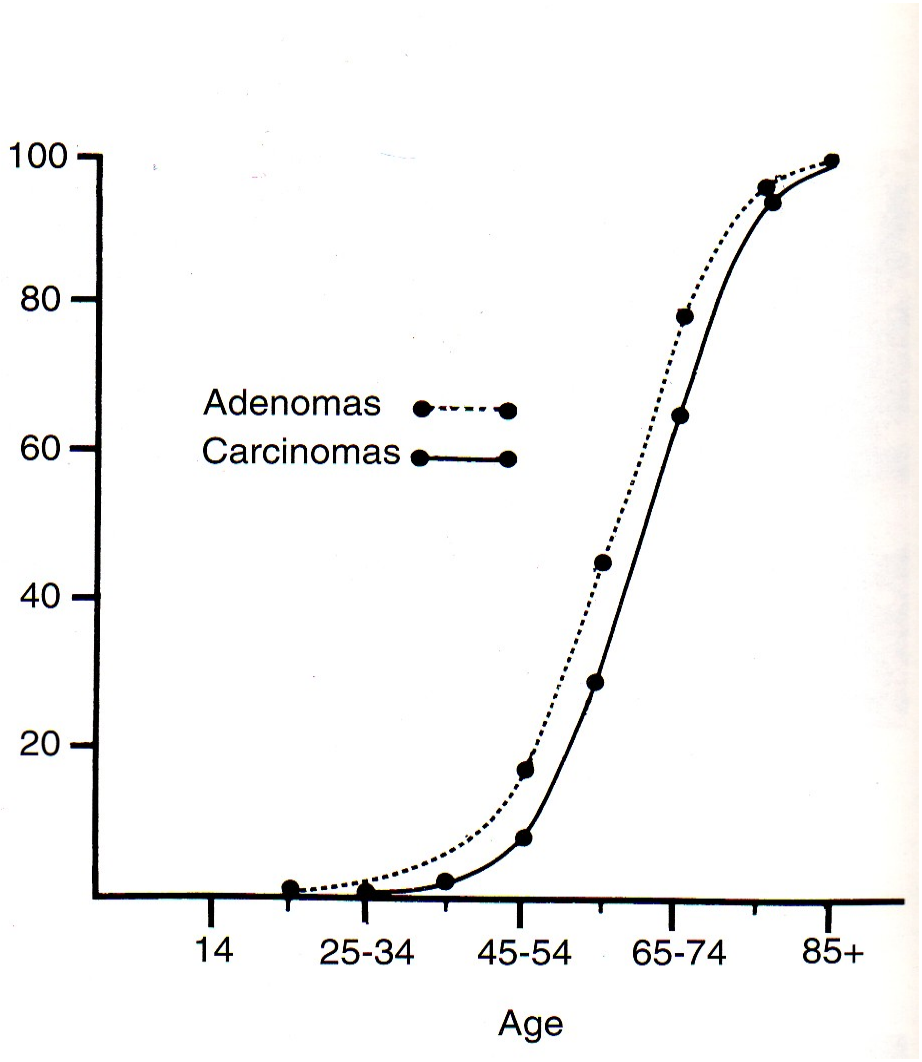
# Polyp - Cancer Sequence

- The process from benign polyp to cancer takes from 7 - 10 years
- The transformation into cancer is based on
  - the type of polyp –
  - Size of polyp –
- Multiple polyps = greater risk of cancer


805563
1
2
3
4


*Chromosome 5 – APC*
Tumor suppressor
gene inactivation
*Chromosome 12* + K-*ras*
Proto-oncogene
activation
*Chromosome 18 – DCC*
*Chromosome 17 – p53*
Other alterations

The Effect of Age on the Incidence of Colorectal Cancer and Colorectal Polyps



# Removing polyps prevents cancer

## Colonoscopy

# Colorectal Carcinoma

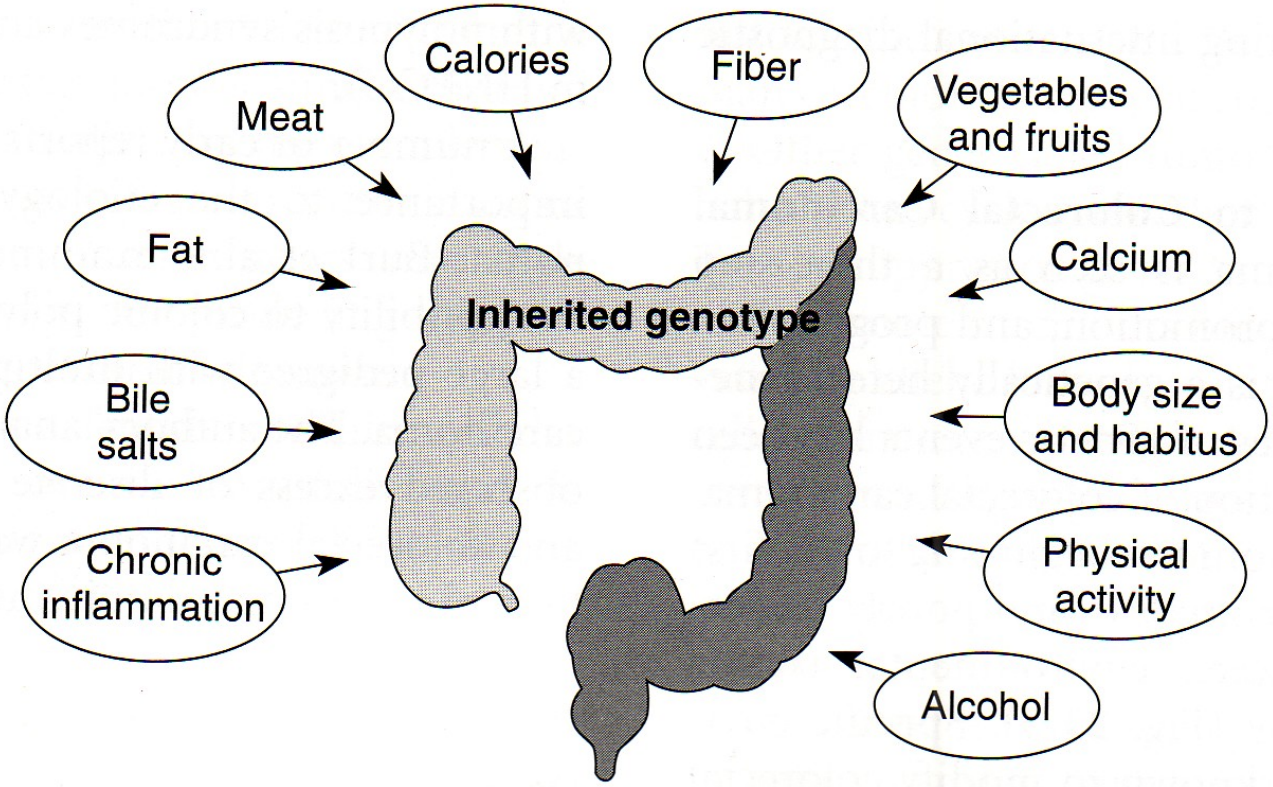
Classification

Adenocarcinoma 95%
Carcinoid
Lymphoma
Sarcoma
Squamous cell carcinoma

# Epidemiology

- 3th most common malignancy worldwide.
- 1st most common in Saudi males.
- second to lung cancer as a cause of cancer death
- 21,500 new cases, 8900 will die (2008)
- risk of CRC – women 1/16 , men 1/14
- peek incidence in 7th decade but it can occur at any age

# Etiology of Colorectal Cancer



# Risk Factors

1. Genetics, Family history
   - Personal history
   - One first degree family member doubles risk
   - Hereditary colorectal cancer syndomes
2. Polyps
3. Inflammatory bowel disease
4. Other
   - Diet, nutrients, smoking, ETOH

# Colorectal Cancer Risk Based on Family History

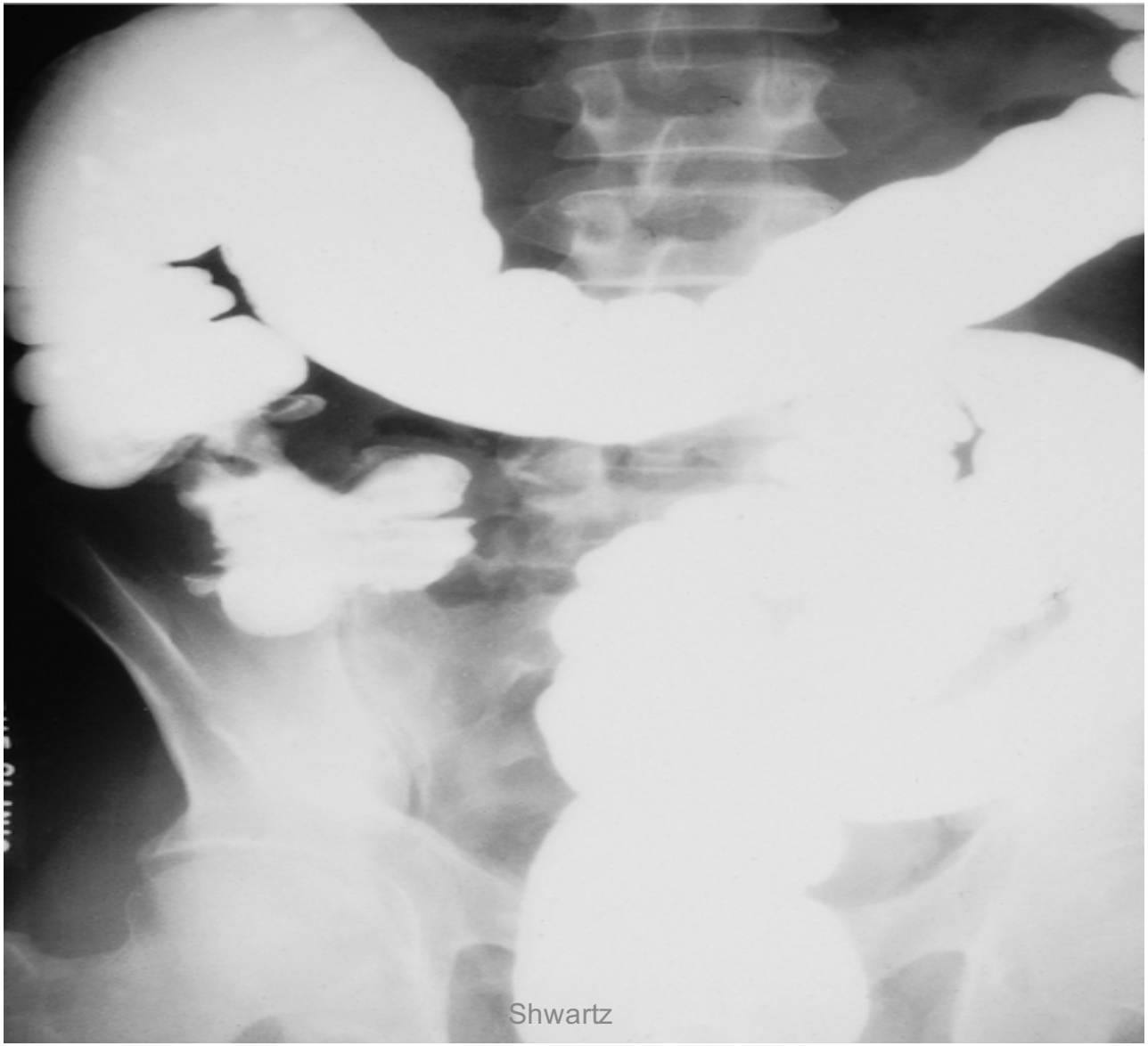
| | |
|---|---|
| 6% | General population |
| 2-3X* (12-18%) | One 1st degree CRC |
| 3-4X* | Two 1st degree CRC |
| 3-4* | One 1st degree CRC < 50 y |
| 1.5X | One 2nd or 3rd CRC |
| 2-3X* | 2 2nd degree CRC |
| 2X* | 1 first degree with polyp |

# Clinical presentation

1. Bleeding - gross, occult, anemia (37%)
2. Change in bowel habit – pain, diarrhea, constipation, alternating pattern
3. Obstruction – more common with left sided lesions most common cause of bowel obstruction in the elderly
4. Vague abdominal pains
5. Change in caliber of the stools
6. Weight loss
7. Abdominal mass
8. Asymptomatic

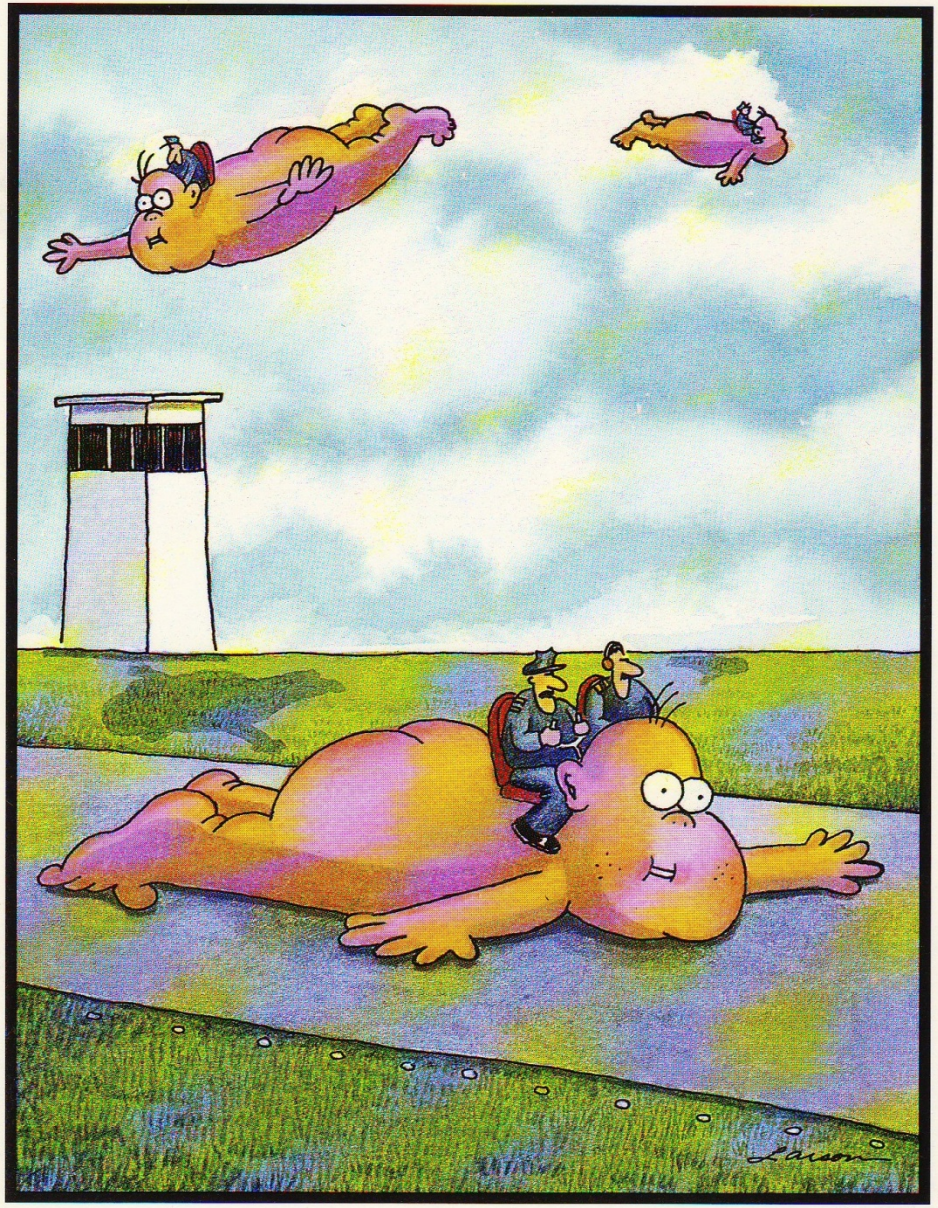
# Investigations

- General:
  - Complete history and physical (DRE)
- Endoscopic (identify primary, synchronous lesions)
  - Flexible sigmoidoscopy
  - Colonoscopy
- Staging
  - Endorectal ultrasound (rectal cancer)
  - Chest x-ray (metastases)
  - Liver ultrasound (metastases)
  - Abdominal CT scan (metastases)
- Bloodwork
  - CBC electrolytes, CEA (tumour marker)



# Surgical therapy

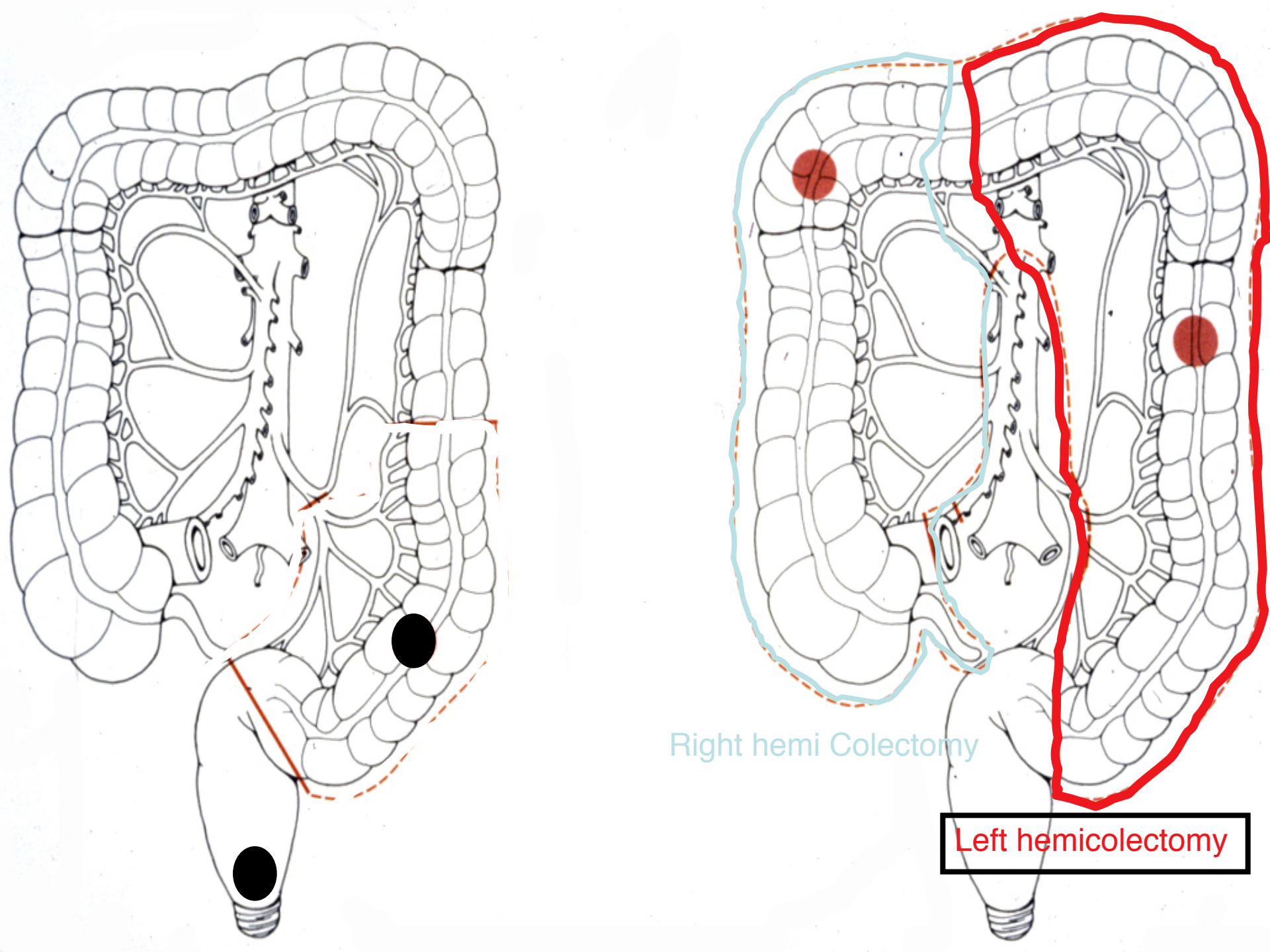
- Surgery is the most important variable in the treatment of colorectal cancer
- Radiation and chemotherapy alone cannot cure any stage of colorectal cancer
- The site of tumour dictates the basic procedure

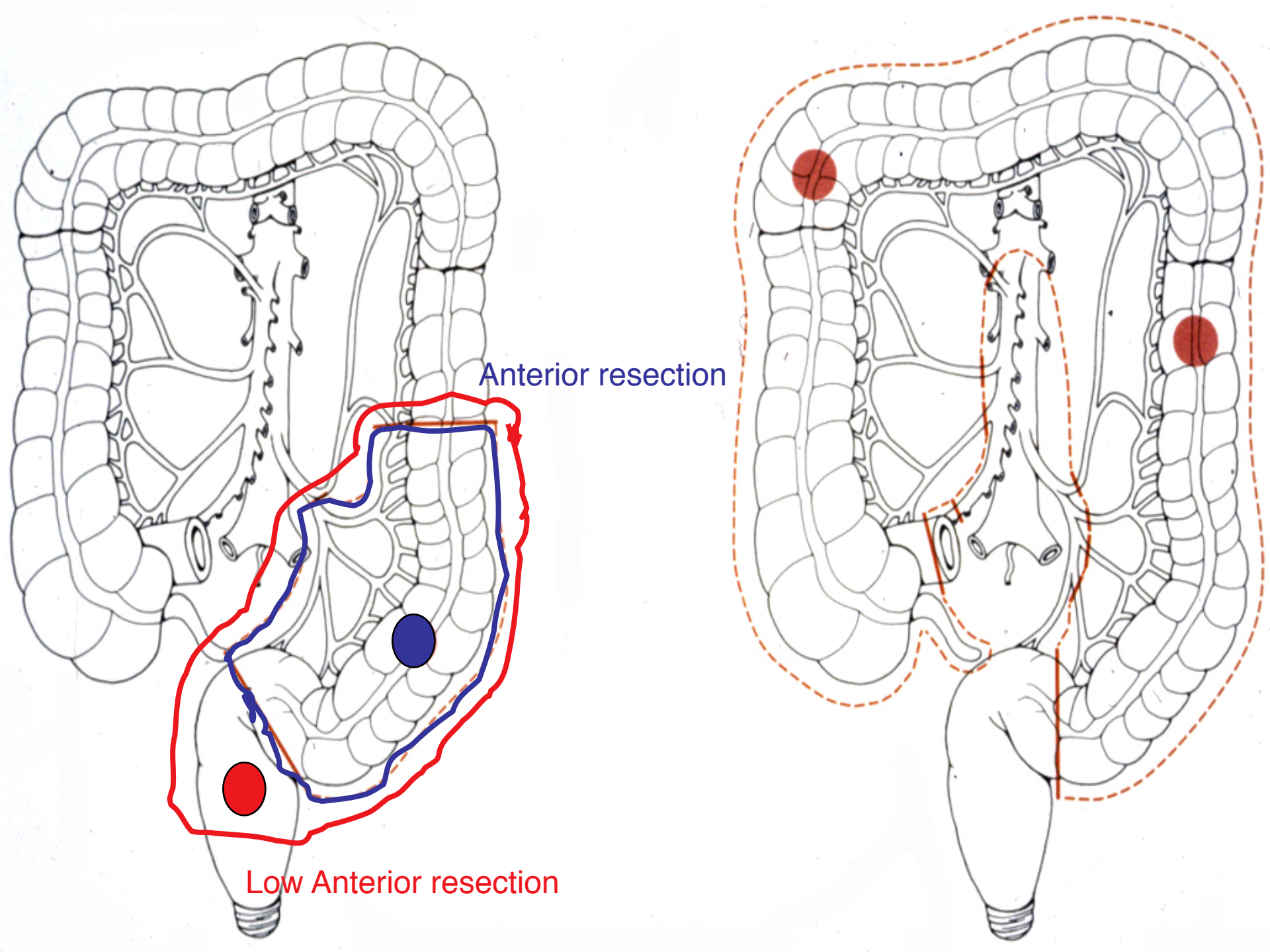


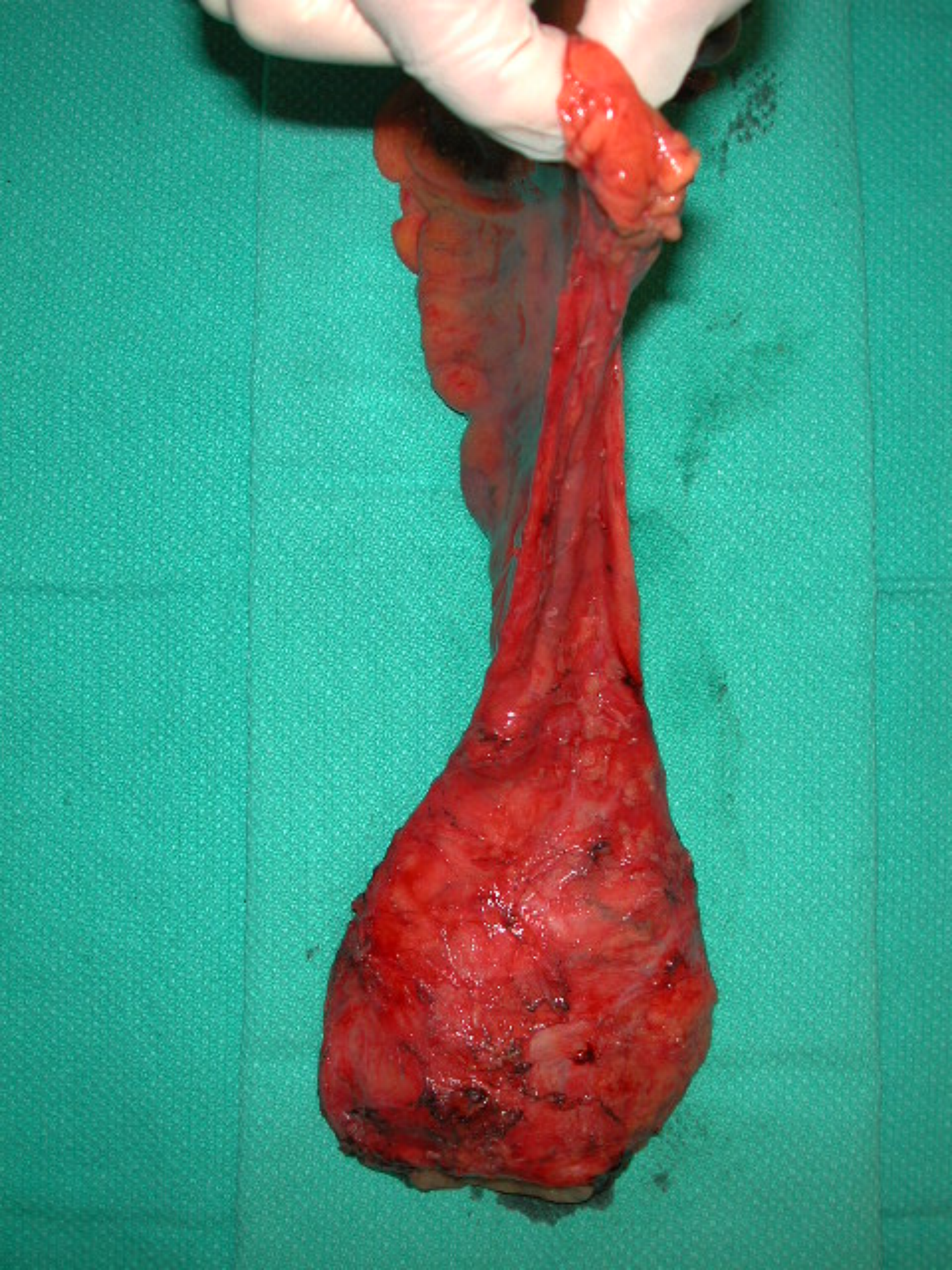

"Fuel . . . check. Lights . . . check. Oil pressure . . . check. We've got clearance. OK, Jack — let's get this baby off the ground."

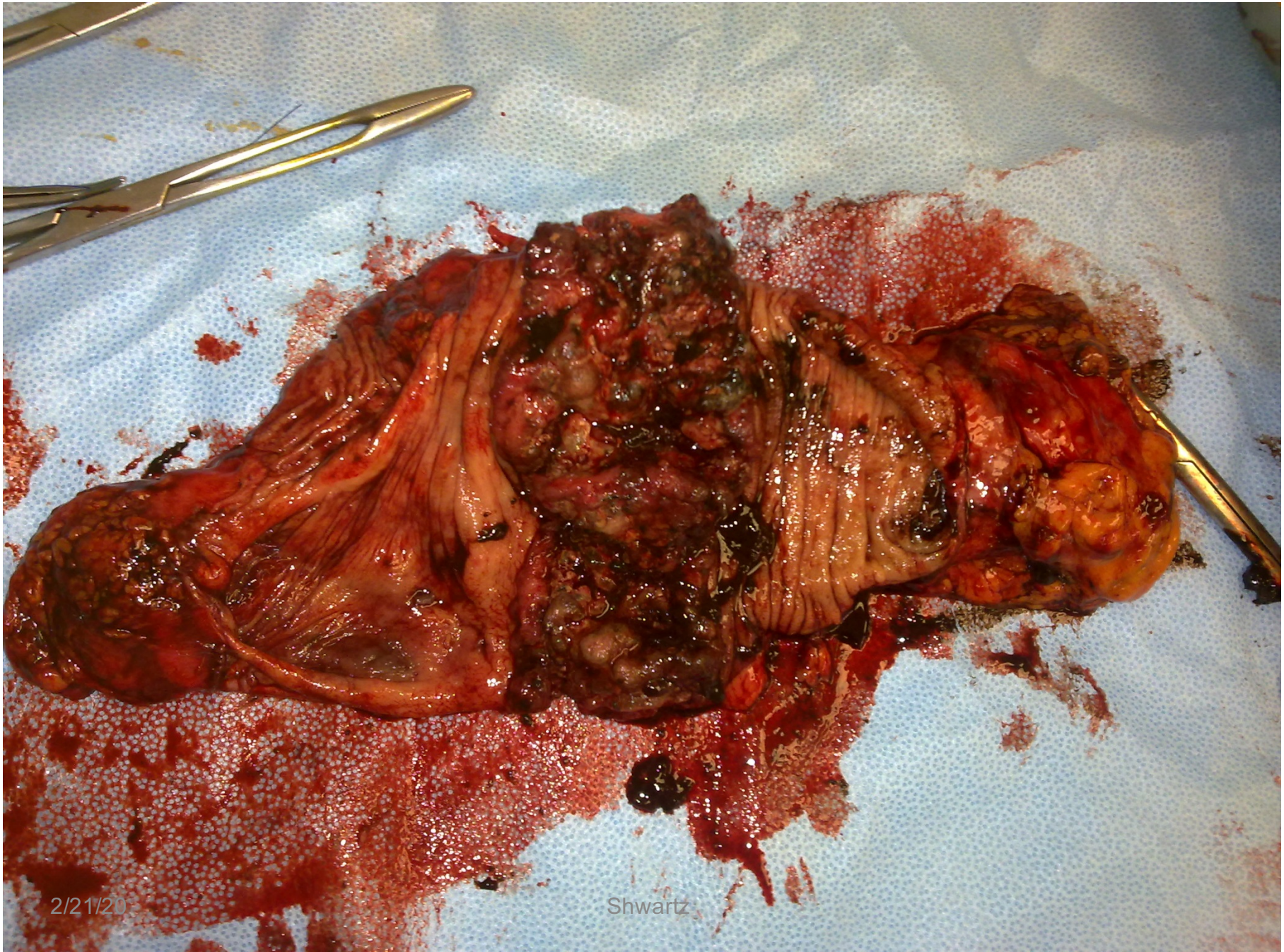
# Principles of Surgery

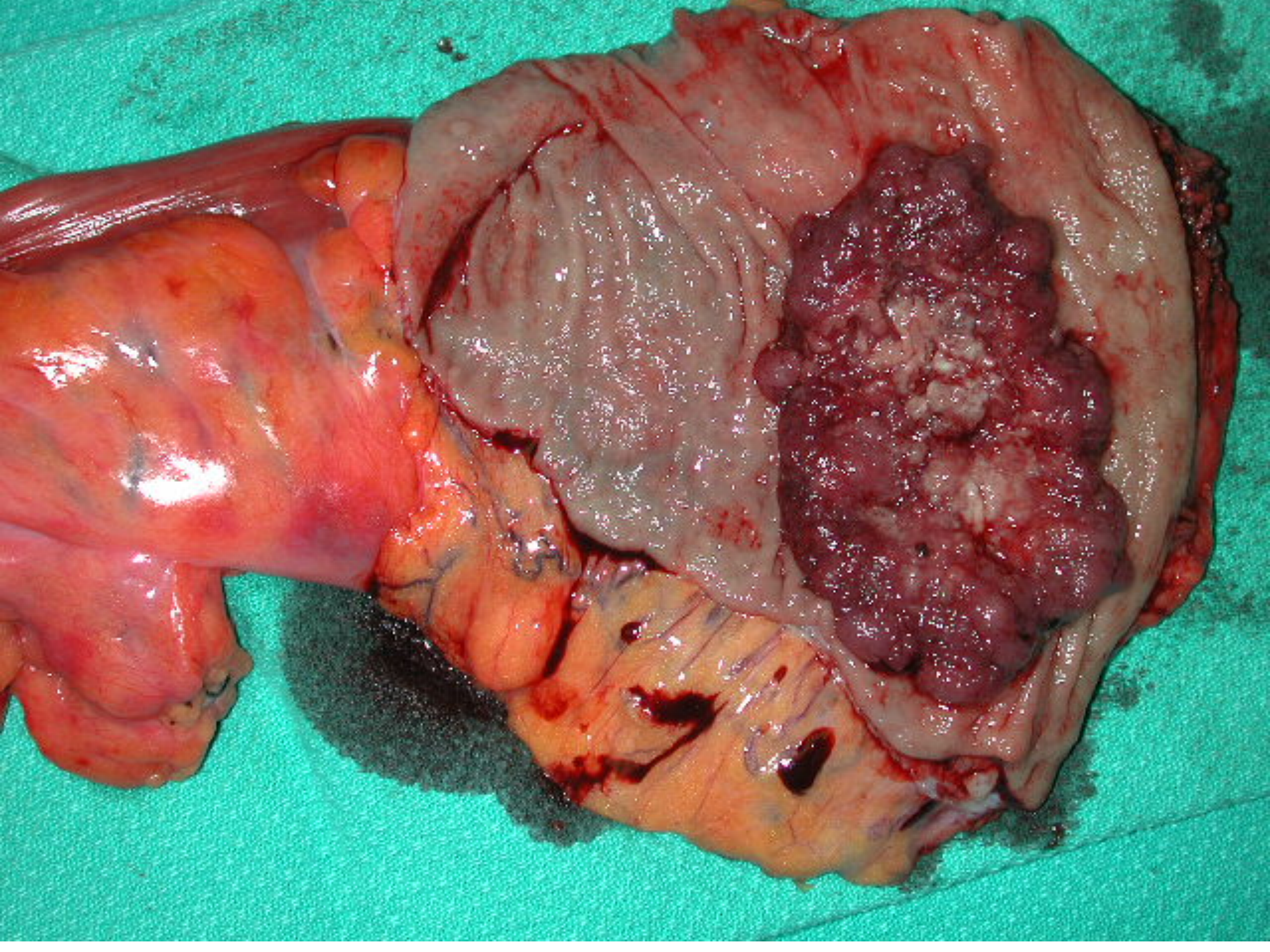
- Examine the entire abdomen
- Remove the appropriate segment of the colon with adequate margins
- Remove the corresponding lymph nodes
- Open vs laparoscopic approach


Right hemi Colectomy
Left hemicolectomy


Anterior resection
Low Anterior resection




2/21/20
Shwartz



# Follow up

- Office visit every 3 months for two years then every 6 months for 3 years
- Regular blood work (CEA)
- Colonoscopy at year 1 and 4 and every 5 years
- CT scan yearly

# Pathology of Colorectal Cancer

- Macroscopic:
- Microscopic (differentiation):
  - Well –
  - Moderately –
  - Poorly –
- Lymph node involvement

# Staging ( Where is it Growing?)

1. How far into the wall has it grown? T stage

- Tis – invasion of mucosa only
- T1 – Invasion of submucosa
- T2 – Invasion of muscularis propria
- T3 – Full thickness/perirectal fat
- T4 – Invasion into adjacent organs

# Staging ( Where is it Growing?)

N 2. Is it growing in other places?
stage, M stage

- N1 – 1-3 lymph nodes
- N2 - >4 lymph nodes
- N3 – distant lymph nodes
- M1 – Distant organ ( liver, lung)

# TNM Staging

- Stage 0 – Tis tumors
- Stage 1 – T1 and T2 tumors
- Stage 2 – T3 and T4 tumors
- Stage 3 – Any lymph node involvement
- Stage 4 – Distant metastases

# Who Gets Additional Treatment?

- COLON
  - All stage 3 patients (positive nodes) – chemotherapy
  - ?High risk stage 2 patients –

- RECTUM
  - All stage 2 and stage 3 patients should get radiation and chemo –

# Survival and TNM Stage

| 5-Year Survival | STAGE |
| --- | --- |
| 90% | 1 |
| 80%^ | 2 |
| 27-69%* | 3 |
| 8% | 4 |

^for T3N0 tumors

*depends on # of nodes involved

# Summary

1. Common Cancer
2. Can be prevented through screening and resection of polyps
3. Surgery is the primary treatment
4. Slow but steady improvement in survival


"Mr. Osborne, may I be excused?
My brain is full."