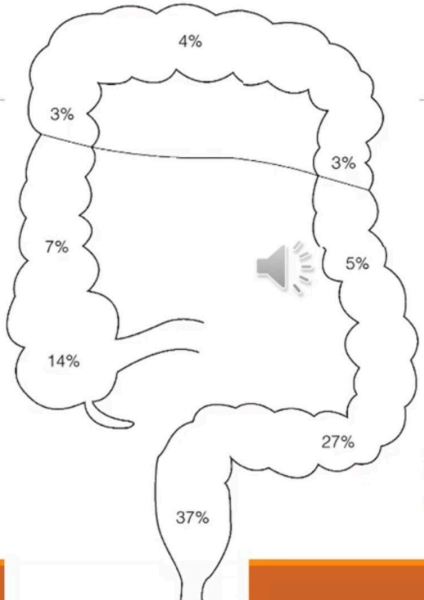
Colon and Rectal Cancer

Colorectal Cancer

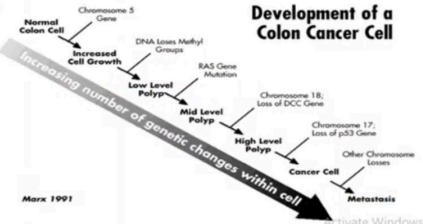
- Major Problem in western world
- Equal between men and women (slight more in men)
- Overall 5 year survival around 45% **and improving**
- The definition of rectum is not clear !!
  - 15 cm from anal verge
  - 11-12 cm from anal verge
  - Fusion of the taenea coli
  - Third sacral vertebrae
- Colon cancer is different from rectal cancer in term of
  - Preoperative
  - Operative
  - Postoperative



50% in the rectum and left colon
25% in the right
4–5% synchronous lesions

Aetiology

- The majority of colorectal cancer is sporadic in nature.
- 5 -10 % of cases can be linked to inherited syndromes. The most commonly Lynch syndrome and Familial adenomatous polyposis (FAP)
  - Lynch syndrome
    - caused by mutations to the DNA mismatch repair genes
  - Familial adenomatous polyposis (FAP)
    - germline mutations in the *APC* gene.
- Two main pathways to carcinogenesis – chromosomal and microsatellite instabilit



- APC gene
- K-ras mutation → stimulate cell growth (late)
- DCC gene (suppressor gene)
- *P53* gene (late event)

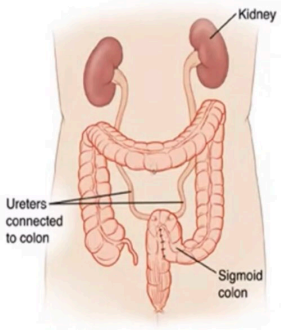
Colorectal cancer - Diet and lifestyle

- Decreased risk
  - physical exercise
  - dietary fibre
  - calcium, garlic,
  - non-starchy vegetables
  - pulses.

- Increased risk
  - obesity
  - red meat
  - processed meat
  - alcohol
  - animal fat
  - sugar
  - Smoking

Predisposing conditions

- Longstanding inflm. Bowel disease UC and CD
- Cholecystectomy
- After gastrectomy and vagotomy
- Uretero-sigmoidostomy



Clinical presentation of colorectal cancer

- Asymptomatic
  - Screening programs

- Symptomatic
  - Elective
  - Emergency

Presentation

Higher risk

Rectal bleeding with a change in bowel habit to looser stools or increased frequency of defecation persisting for 6 weeks (all ages)

Change in bowel habit as above without rectal bleeding and persisting for 6 weeks (> 60 years)

Persistent rectal bleeding without anal symptoms* (> 60 years)

Palpable right-sided abdominal mass (all ages)

Palpable rectal mass (not pelvic) (all ages)

- Unexplained iron deficiency anaemia (all ages)

Low risk

Patients with no iron deficiency anaemia, no palpable rectal or abdominal mass

Rectal bleeding with anal symptoms and no persistent change in bowel habit (all ages)

Rectal bleeding with an obvious external cause, e.g. anal fissure (all ages)

Change in bowel habit without rectal bleeding (< 60 years)

- Transient changes in bowel habit, particularly to harder or decreased frequency of defecation
- Abdominal pain as a single symptom without signs and symptoms

Investigation

(pre-operative evaluation / staging)

Colonoscopy
- Risk: perforation / bleeding
- Diagnostic and therapeutic
- Synchronous tumours (3- 5 %)

Ba enema
- Diagnostic only ,

CT Colonography
- Less invasive
- Diagnostic
- Radiation
- Nephrotoxicity

Pelvic MRI

FOB / Fit test : Screening tool only.

PET-CT scanning has a **limited role**,

recommended when surgical resection of metastases is being considered

Blood test

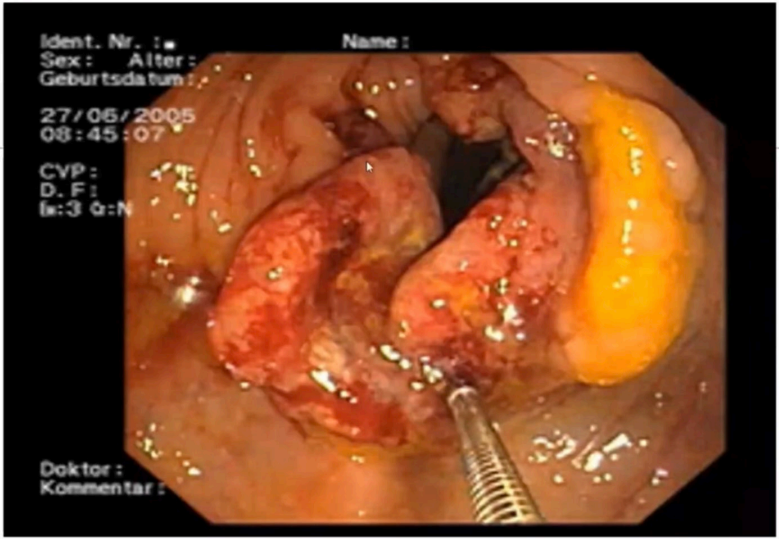
(Carcinoembryonic Antigen (CEA))

Routine laboratory studies,

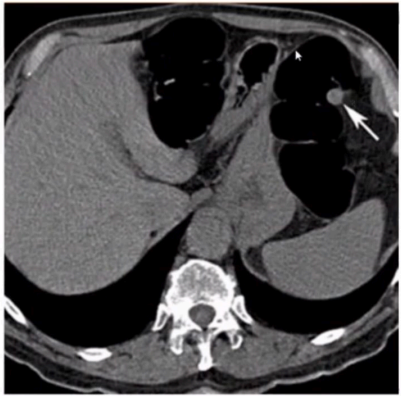
- complete blood count (CBC)
- serum CEA level

Carcinoembryonic Antigen is a glycoprotein primarily involved in intercellular adhesion It is produced by columnar and goblet cells and can be found in normal colonic mucosa.

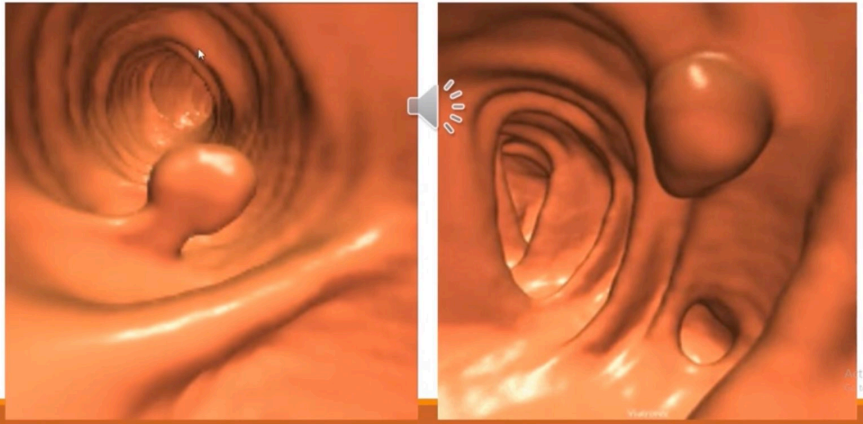
it is an important tool in CRC surveillance after surgical resection since its elevation may be the first indication of locally recurrent or metastatic disease



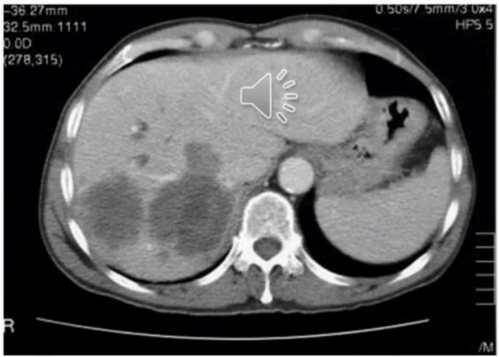
CT Colonography



Virtual Colonoscopy



CT Scan liver .



Spread of Colorectal cancer

- **Direct spread**
  - longitudinally, transversely and radially
- **Lymphatic spread**
  - from the paracolic nodes along the main colonic vessels to the nodes associated with either cephalad or caudal vessels, eventually reaching the para-aortic glands in advanced disease
  - 30 % can skip a tier of glands
  - 15% of cases confined to the bowel wall will be found to have lymph node metastases
- **Blood-borne spread**
  - The most common site : liver then lung
  - Up to 37% of patients may have occult liver metastases at the time of operation
- **Transcoelomic spread**

Treatment

Multidisciplinary Approach

Staging

- CT
- Blood : LFT , tumour marker (CEA)
- CXR
- Confirm pathology

Preoperative evaluation . Risk assessment

Treatment

Symptoms

Investigation and Diagnosis

Staging

Colon Adenocarcinoma

- Surgery (curative)
- Surgery (palliative)
- Other

Treatment

Symptoms

Investigation and Diagnosis

Staging

Rectal Adenocarcinoma

Surgery (curative)

Neoadjuvant treatment +surgery

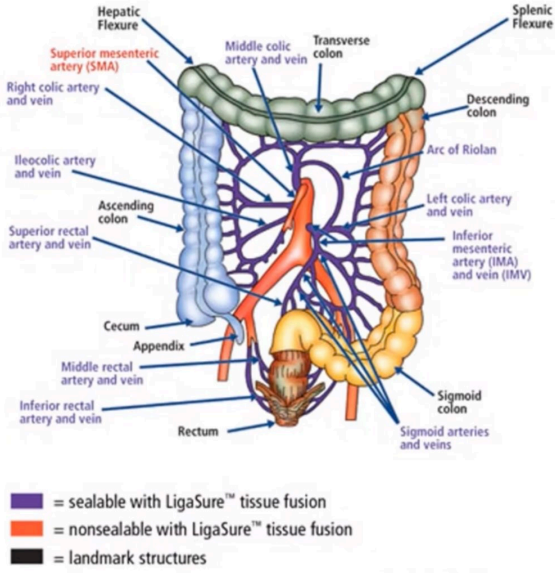
palliative + Other

Surgery

Curative or palliative

Aim

- Local control with free margin
- Excision of draining lymph nodes along named vessels.
- Viable bowel left behind
- Safe anastomosis



Pathological staging

Macroscopic description

Size of the tumour (greatest dimension).

Site of the tumour in relation to the resection margins.

Any abnormalities of the background bowel.

Microscopic description

Histological type.

Differentiation of the tumour, based on the predominant grade within the tumour.

Maximum extent of invasion into/through the bowel wall (submucosa, muscularis propria, extramural).

Serosal involvement by tumour, if present.

A statement on the completeness of excision at the cut ends (including the 'doughnuts' from stapling devices) and at any radial margin.

The number of lymph nodes examined, the number containing metastases, and whether or not the apical node is involved.

Extramural vascular invasion if present.

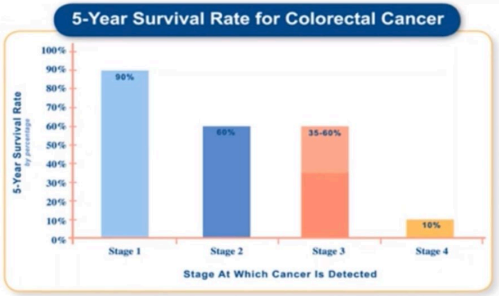
Pathological staging of the tumour according to Dukes' classification.

Final staging

TNM

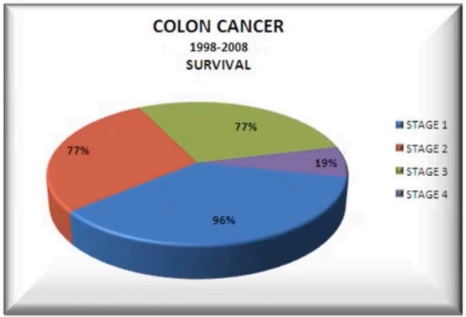
Consider postoperative chemotherapy

- Lymph positive
- Lympho-vascular invasion
- Perforation
- Obstruction
- Perintoneal involvement
- Poorly differentiated



Colorectal Cancer: Surveillance After Curative-Intent Therapy

- Intense follow up at the first 2 -3 years .
- 80% of recurrence occur within 3 years.
- Laboratory , radiological and endoscopy.
- Different guidelines and recommendations'



Advances of treatment of Colorectal Cancer

- MDT approach
- Preoperative (Neoadjuvant treatment) in rectal cancer
- Standardization of surgical technique
  meso-rectal and meso colon excision
- Standardization of pathological reporting
- Advanced chemotherapy agents
- Target treatment according to genetic testing
- Treatment of liver mets , peritoneal disease
- Screening program