# DISEASES OF THE RECTUM

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# Learning objectives:

**To understand:**

- The anatomy of the rectum and its relationship to surgical disease and its treatment
- The pathology, clinical presentation, investigation, differential diagnosis and treatment of diseases that affect the rectum

**To appreciate:**

- That carcinoma of the rectum is common and can present with symptoms similar to benign disease. Careful evaluation is required
- The principles involved in the management of rectal pathologies

# Lecture outlines:

1. Anatomy
2. Clinical features of rectal disease
3. Injuries
4. Foreign bodies
5. Prolapse
6. Proctitis
7. Rectal polyps
8. Benign rectal lesions
9. Carcinoma

# Anatomy of the Rectum

The rectum measures approximately 15 cm in length

- ✓ It is divided into lower, middle and upper thirds
- ✓ The blood supply consists of superior, middle and inferior rectal vessels
- ✓ The lymphatic drainage follows the blood supply. The principal route of drainage is upwards along the superior rectal vessels to the para-aortic nodes, although the lower rectum can drain to lymphatics along the lateral pelvic side walls

# Anatomical relations of the rectum

| | RELATIONDS |
|---|---|
| ANTERIOR | Bladder<br>Seminal vesicles and prostate (males)<br>Denonvillier's fascia (males)<br>Pouch of Douglas and rectovaginal septum (females)<br>Uterus and cervix (females)<br>Ureters |
| LATERAL | Lateral ligaments and middle rectal artery<br>Obturator internus muscle and side wall of pelvis<br>Pelvic autonomic plexus<br>Levator ani muscle |
| POSTERIOR | Sacrum and coccyx<br>Waldeyer's fascial condensation<br>Superior rectal artery and lymphatics<br>Hypogastric nerves |

# CLINICAL FEATURES OF RECTAL DISEASE

Main symptoms of rectal disease

- ✓ Fresh bleeding per rectum
- ✓ Altered bowel habit with loose stool
- ✓ Mucus discharge
- ✓ Tenesmus
- ✓ Prolapse
- ✓ Proctalgia (pain)

# CLINICAL FEATURES OF RECTAL DISEASE

Examination of the rectum

- ✓ Visual inspection of the perineum
- ✓ Digital examination
- ✓ Proctoscopy
- ✓ Sigmoidoscopy – rigid and/or flexible

# INJURIES

CAUSES

- ✓ by falling in a sitting posture onto a pointed object
- ✓ penetrating injury (including gunshots) to the buttocks
- ✓ sexual assault or sexual activity involving anal penetration
- ✓ by the fetal head during childbirth, especially forceps assisted

DIAGNOSIS

- ✓ Anal inspection & abdominal examination
- ✓ Water-soluble contrast study
- ✓ CT

TREATMENT

Injuries to the rectum are serious and invariably require surgery

- ✓ A temporary colostomy is often necessary
- ✓ There is a serious risk of associated necrotizing fasciitis, and broad-spectrum antibiotics are mandatory
- ✓ There may be associated bladder or urethral damage

# FOREIGN BODIES IN THE RECTUM

# PROLAPSE

Mucosal prolapse

- ✓ In infants (undeveloped sacral curvature)
- ✓ In children (diarrhea, Hirschsprung's disease,rectal prolapse, maldevelopement of rectum,cystic fibrosis and neurological disorder)
- ✓ In adults (mucohemorrhoidal prolapse, in males, in females, in old age and after operation for fistula-in-ano)

# PROLAPSE

TREATMENT

✓ In infants and young children

Digital repositioning or submucosal injection OR banding

✓In adults

submucosal injection OR banding

Excision of prolapsed mucosa if unilateral or circumferential

# PROLAPSE

Full-thickness prolapse (procidentia)

- ✓ Incidence
- ✓ Incontinence may be a symptom
- ✓ Complications
- ✓ Differential diagnoses (abdominal pain in children and intussusception)
- ✓ Treatment : surgery (abdominal or perineal)

# RECTAL EVACUATION DISORDER (RED), RECTAL INTUSSUSCEPTION AND SOLITARY RECTAL ULCER SYNDROME (SRUS)

# PROCTITIS

- ✓ May be non-specific or related to a specific infective agent
- ✓ Non-specific proctitis usually remains confined to the distal bowel, but can involve the proximal colon
- ✓ Symptoms include defaecatory frequency, loose stools, bleeding and tenesmus
- ✓ Endoscopic assessment with biopsy is required to establish the diagnosis
- ✓ Treatment usually involves medical management

# PROCTITIS

- ✓ Ulcerative proctocolitis
- ✓ Proctitis due to Crohn's disease
- ✓ Radiation proctitis
- ✓ Proctitis due to specific infections
  - Clostridium difficile
  - Bacillary dysentery
  - Amoebic dysentery
  - Tuberculous proctitis (ulcerative or hypertrophic)
  - Gonococcal proctitis
  - Lymphogranuloma venereum (chlamydial infection)
  - Acquired immunodeficiency syndrome(cytomegalovirus (CMV), herpes simplex virus and parasites such as Cryptosporidium)
  - 'Strawberry' lesion of the rectosigmoid (Spirochaeta vincenti and Bacillus fusiformis)
  - Rectal Bilhariziasis (Schistosoma mansoni)
- ✓ Proctitis due to herbal enemas

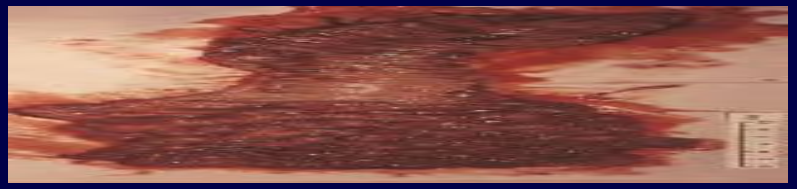
# RECTAL POLYPS

- ✓ The chance of developing invasive cancer is enhanced if the polyp is more than 1 cm in diameter.
- ✓ Adenomas are the most frequent histological type
- ✓ Villous adenomas may be extensive and undergo malignant change more commonly than tubular adenomas
- ✓ All adenomas must be removed to avoid malignant change
- ✓ All patients must undergo colonoscopy to determine whether further polyps are present
- ✓ Most polyps can be removed by endoscopic techniques, but sometimes major surgery is required
- ✓ Polyps are described in terms of their appearance (pedunculated, sessile, flat) or histological composition (tubular, villous, tubulovillous)

# RECTAL POLYPS

Polyps relevant to the rectum

- ✓ Hyperplastic polyps
- ✓ Tubular adenomas OR mixed tubulovillous adenoma
- ✓ Villous adenomas
- ✓ Serrated adenomas
- ✓ Familial adenomatous polyposis
- ✓ Inflammatory pseudopolyps
- ✓ Juvenile polyp



# RECTAL POLYPS

TREATMENT

- ✓ Most polyps of 2 cm in size or less can be safely removed by endoscopic mucosal resection (EMR)
- ✓ Larger polyps are more difficult to remove by EMR and may require a transanal procedure, such as transanal endoscopic microsurgery (TEMS)

# BENIGN RECTAL LESIONS

- ✓ Endometrioma
- ✓ Haemangioma: Selective angiography and embolisation may be helpful, but excision of the rectum is sometimes required
- ✓ Gastrointestinal stromal tumour (GIST): If the mitotic rate is high, and if there is variation in nuclear number, size and shape, hyperchromasia and frequent bizarre cells, these tumours are likely to metastasise. In these circumstances,

they should be classified as malignant gastrointestinal stromal tumours (formerly leiomyosarcomas). The uncertainty in their behaviour means that treatment should, whenever possible, be radical excision

- ✓ Neuroendocrine tumours(NET): welldifferentiated

(grades 1 and 2) (Carcinoid tumour) and poorly differentiated (grade3) tumours.

Treatment : excision (local or formal oncological resection), adjuvant therapy

# CARCINOMAS

Risk factors include diet, obesity, smoking and lack of physical exercise. Most colorectal cancers are due to old age,with around 60% of cases affecting patients 70 years or older.

The rectum is the most frequently involved site, accounting for approximately one-third of the cancers.

# CARCINOMAS

- ✓ Pathogenesis
- ✓ Clinical features
- ✓ Investigations
- ✓ Differential diagnoses
- ✓ Types of carcinoma spread
- ✓ Stages of progression
- ✓ Histological grading
- ✓ Treatment

# CARCINOMAS

## Pathogenesis

- ✓ Spontaneous colorectal cancer (Adenoma Carcinoma sequence)
- ✓ Hereditary cancers
- ✓ IBD
- ✓ Family history
- ✓ HNPCC or Lynch syndrome,
  Gardner syndrome and familial adenomatous polyposis(FAP)
- ✓ Mutations (inherited or acquired)(Wnt *pathway,APC,TP53*,TGF-B,*DCC*)
- ✓ Overexpression of Oncogenes(KRAS,RAF, PI3K)→ ↑cell proliferation &↓*PTEN*
- ✓ Epigenetic alteration from environmental factors (cellular or physiological effects)(miRNA,CpG,alter Histones & chromosomal architecture)

# Carcinoma

## Clinical features

* 6- months delayed advice seek

*Initial rectal examination and a low threshold for investigating persistent symptoms are essential

- ✓ Bleeding is earliest symptom
- ✓ Tenesmus important early symptom of lower half tumour + spurious diarrhea, bloody slime
- ✓ Alteration in bowel habit (frequent stool,early morning bloody diarrhea, increasing constipation)
- ✓ Pain is late because of obstruction or invasion
- ✓ Weight loss late & almost always associate metastatic disease

# Carcinoma

## Investigation

- ✓ Abdominal examination
- ✓ Rectal examination Within 7-8cm, fixity, sphincter complex, + PV
- ✓ Rigid sigmoidoscopy overshadowed by colonoscopy
- ✓ Colonoscopy for synchronous adenoma or carcinoma; if not possible complete scopy then
- ✓ Barium enema OR CT colonography
- ✓ It should be differentiated from inflammatory stricture, amoebic granuloma on macroscopic appearance.Similarly, endometriomas, carcinoid tumours, solitary rectal ulcers, benign adenomas, so biopsy is mandatory for diagnosis

# Carcinoma

Types of carcinoma spread

- ✓ Local spread: circumferentially rather than longitudinally, Downward spread for more than a few centimetres is rare.
- ✓ Lymphatic spread : above peritoneal reflection upwards, at middle rectal artery laterally, perianal rosette and distal 1-2 cm of anal canal drain to groin L.N, atypical dissemination in undifferentiated CA
- ✓ Venous spread : liver, lung, adrenals and even brain
- ✓ Peritoneal dissemination : Follow penetration of the peritoneal coat by a high-lying rectal carcinoma

# Carcinoma

stages of progression

Dukes' staging: A,B,C1,C2 and then added D

TNM staging (radiological staging using MRI) (internationally recognised)

T : Tx, T0, Tis, T1, T2, T3, $T4_a$ , $T4_b$

N: Nx, N0, $N1_a$ , $N1_b$ , $N1_c$ , $N2_a$ , $N2_b$

M: M0, $M1_a$ , $M2_b$

# Carcinoma

Histological grading

adenocarcinoma

well-differentiated → poor differentiated

vascular & perineural invasion

infiltrating rather than pushing margin

Signet-ring carcinoma(mucoid CA)

# Carcinoma

## Treatment

Surgery, neoadjuvant, adjuvant

multidisciplinary team

fitness assessment

staging (CXR, U/S, CT, MRI, PET scan, Endoluminal U/S)

# Carcinoma

## Treatment

*Preoperative preparation*

- ✓ Counselling(for post operative impotence in males & bladder disturbances) and siting of stomas
- ✓ Correction of anaemia and electrolyte disturbance
- ✓ Group and save of blood
- ✓ Bowel preparation
- ✓ Deep vein thrombosis prophylaxis
- ✓ Prophylactic antibiotics

# Carcinoma

## Treatment

*Principles of surgical treatment*

- ✓ Radical excision of the rectum (Anterior±defunctioning stoma, high anterior”open or LAP. Or robotic & Abdominoperineal, Hartmann operation,taTME, pelvic exenteration) ± liver resection ± adjuvant chemotherapy
- ✓ Palliation(Endoluminal stenting,External beam radiotherapy,Palliative resection, colostomies)
- ✓ Neoadjuvant(long course radiochemotherapy ± stoma, ± (watch & wait therapy)

  (short course radiotherapy)
- ✓ organ-preserving techniques (TEMS, Brachytherapy, Contact radiotherapy)
- ✓ Local recurrence treatment preoperative radiochemotherapy (if radiotherapy naïve) + pelvic exenteration

# Carcinoma

## Treatment

*Postoperative complications*

*(anterior resection syndrome), a condition characterised by defaecatory urgency, incontinence and incomplete evacuation secondary to removal of normal rectal reservoir

*Local recurrence*

Follow-up by:

1. Clinical (pain, bladder symptoms, perineal fistula)
2. CEA monitoring
3. CT
4. MRI
5. PET-CT

# References

1. Bailey & Loves short practice of surgery 28th edition.