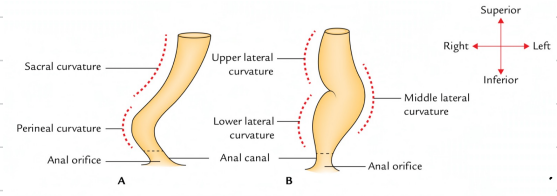
Rectum

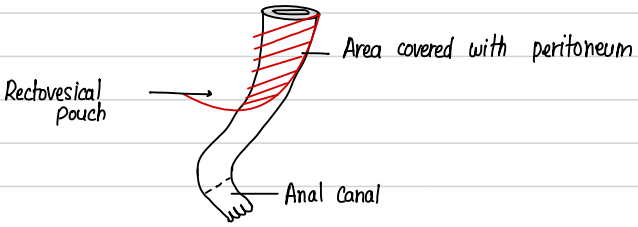
Anatomy

- **Extent** — Begins as continuation of sigmoid colon at level of 3rd Sacral Vertebra. Ends at Anorectal junction.
- **Length** — 12-18 cm.
- **Curvatures**
  - 3 lateral curves are present ⟙ Upper & Lower are convex to Right; Middle curve is convex to left.
  - 2 anterio posterior curves ⟙ Sacral flexure; Perineal flexure



Curvatures (flexures) of the rectum: A, anteroposterior curvatures; B, lateral curvatures.

- **Parts**
  - Upper 1/3 : Peritoneal covering anteriorly and laterally.
  - Middle 1/3 : Peritoneal covering anteriorly [and parts of lateral surface]
  - Lower 1/3 : Devoid of peritoneal covering.



- **Mucosal folds**
  - Longitudinal : Present in lower part of empty Rectum ; Obliterated on distension.
  - Transverse folds: Houston Valves [Plicae transversalis]
    - 3 in number
    - Permanent
    - Most marked when Rectum is distended.
    - 1st fold : May encircle & partially constrict lumen ; Projects from Left wall.
    - 2nd fold : Largest and Constant ; projects from Right and anterior wall.
    - 3rd fold : Most variable ; projects from Left wall.

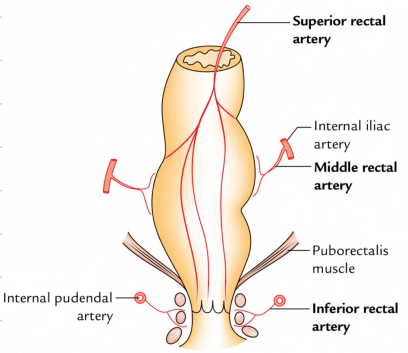
- **Anorectal Angle**: Puborectalis muscle encircles the Posterior and lateral aspects of ano rectal junction forming anorectal angle [120°].
- **Anorectal Ring** : formed by fusion of ⟙ Puborectalis [part of Levator ani]; Deep External Anal sphincter; Internal Anal Sphincter.

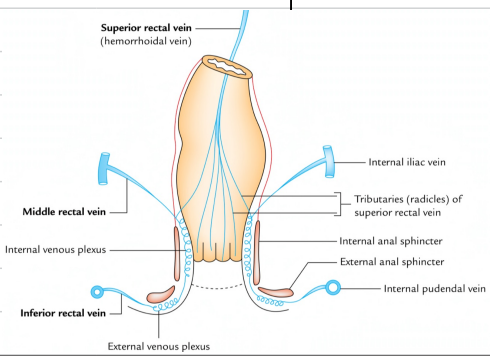
• Relations

- **Anterior :**
  - Bladder
  - Ureters
  - Seminal Vesicles and Prostate [♂]
  - Denonvillier's fascia [♂]
  - Uterus and Cervix [♀]
  - Pouch of Douglas & Rectovaginal Septum [♀]
- **Lateral :**
  - Lateral ligaments
  - Middle Rectal Artery
  - Obturator Internus
  - Pelvic Autonomic Plexus
  - Levator ani muscle.
- **Posterior :**
  - Sacrum & Coccyx
  - Waldeyer's fascia
  - Superior Rectal artery
  - Hypogastric Nerves

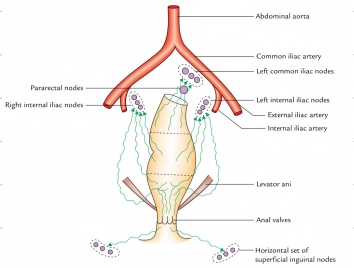
• Blood Supply

Artery	Branch of	Location	Parts supplied
Superior Rectal	Inferior mesenteric	Mesorectum	Upper third of Rectum
• Middle Rectal	Anterior division of Internal iliac artery	Lateral Rectal Ligament	Middle third of Rectum
• Inferior Rectal	Internal Pudendal	Ischio-rectal fossa	• Distal third of Rectum • Anal canal • Internal & External sphincters • Perianal skin





- **Lymphatics**
  - Upper Half : Inferior mesenteric Nodes. [After passing through Pararectal & Sigmoid Nodes]
  - Lower Half : Internal Iliac Nodes
  - Lower part of anal canal : Superficial Inguinal Nodes



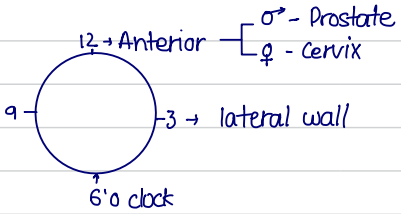
- **Nerve supply**
  - Sympathetic :
    - Via L_1, L_2
    - Inhibitory to Rectal musculature
    - Motor to Internal sphincter
  - Parasympathetic :
    - Through S_2, S_3, S_4
    - Motor to rectal musculature.
    - Inhibitory of the inhibitory to internal sphincter.
    - Sensations of rectal distension pass through parasympathetic
  - Pain sensations are carried by both sympathetic and parasympathetic nerves.
- **Rectal Support**
  - Pelvic floor : Formed by Levator ani.
  - Fascia of Waldeyer : Formed by condensation of pelvic fascia behind rectum. Attaches lower part of rectal ampulla to sacrum.
  - Rectovesical fascia of Denonvilliers : Separates prostate and bladder from Rectum [Also known as Rectoprostatic fascia]
  - Lateral ligaments of rectum : Attach Rectum to posterolateral walls of lesser pelvis.
  - The pelvic peritoneum and related vascular pedicles
  - Perineal body with muscles

Examination

- **DRE**

Digital Rectal Exam :

- Most common position : Left lateral / Sim's position
- Finger used : Adults - Index finger
  Children - Little finger
- Contraindication : Anal fissures
- Procedure : Start examination along the posterior wall [6'o clock position] and then proceed in Anticlockwise direction. Check for blood stain after DRE.



- **Scopes**

- Anoscope : 8 cm

  Proctoscope : 10 - 15 cm
- Rigid sigmoidoscope & Rectoscope : 25 cm
- Flexible Sigmoidoscope : 60 cm
- Colonoscope : 160 cm

Rectal prolapse

Mucosal prolapse

- Mucous membrane and submucosa of rectum prolapse outside anus.

- **Causes**
  - Infants: Undeveloped sacral curve.
  - Children: Diarrhoea
    Weight loss
    Loss of fat in ischiorectal fossa.
    May also be a/w Cystic fibrosis, Hirschprung disease, Rectal polyps.
  - Adults: Third degree haemorrhoids
    Torn peritoneum

- **Rx**
  - Infants and children: Digital repositioning
    Submucosal injection → 5% phenol in almond oil
    Submucosal rubber band ligation.
  - Adults: Submucosal sclerotherapy.
    ↳ Recurrent: Thiersch wiring

Full Thickness Prolapse

- Less common than mucosal prolapse.
- Protusion consists of all layers of rectal wall.
- Associated with weak pelvic floor and/or chronic straining.
- Commences as an intussusception of rectum which descends to protrude outside anus.
- Uncommon in children; More common in elderly [♀>♂]

- **Complications**
  - Rectal Ulceration and bleeding
  - Incontinence
  - Incarceration with strangulation of Rectum.

- **Mx**

Surgery
- Abdominal approach
- Perineal approach

Perineal approach	Abdominal Approach
• Minimal postoperative pain & morbidity.	• More post operative morbidity.
• Easier to perform	• Technically demanding.
• High recurrence rate	Lower recurrence rate
• for patients at higher risk of complications [Elderly].	• for young, fit patients at low risk of complication.
• Procedures: • Thiersch operation • Delorme's operation • Altemeier's procedure	• Anterior Rectopexy [Ripstein procedure] • Posterior Sling Rectopexy [Wells procedure] • Frykman-Goldberg procedure ↳ Resection Rectopexy.

- Complications of Abdominal Procedures:
  - Constipation
  - Impotence [due to injury to sacral nerves]
  - Recurrence

Rectal evacuation disorder

- **CIF**
  - Difficulty in emptying despite persistent straining
  - Tenesmus
- **Manifestations**
  - Rectal Intussusception
  - Prolapse
  - Solitary Rectal Ulcer syndrome [SRUS]

Solitary Rectal Ulcer Syndrome

- Usually located on **Anterior** Rectal Wall about 8 cm from the anal verge.
- Investigation of choice : Colonoscopy with biopsy [to rule out cancer]
- Radiological Investigation of choice : Defecography
- **Rx**: STARR procedure
  [Stapled Transanal Rectal Resection of Intussusception]

Strawberry lesions of rectosigmoid

- **Aetiology** Infection by Spirochaeta vincenti and Bacillus fusiformis.
- **CIF** Diarrhoea [Scantily blood stained]
- **Dx** Demonstration of organisms in stool.

Sigmoidosopy: Thickened raised mucosa with superficial ulceration. The inflamed mucous membrane oozes blood at numerous pinpoints giving appearance of over-ripe strawberry.

Defecographic grading

Grade	Description
N	Rectum remains fixed to sacrum, sphincter relaxes, and rectum empties
1	Non-relaxation of pubo-rectalis
2	Mild intussusceptions or mobility from sacrum
3	Moderate intussusceptions
4	Severe intussusceptions
5	**Prolapse**
R	Rectocele