Lecture (1)

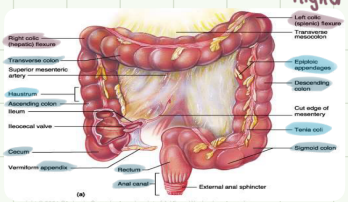
• large intestine

→ cecum + appendix + ascending colon + transverse colon + descending colon + sigmoid colon + rectum + anal canal

→ The junction between (Left colic/splenic flexure) attached to it → phrenicocolic ligament : separates upper abdomin from lower.

Junction between (Right colic/Hepatic flexure)

higher



→ diameter is larger in large intestine than the small intestine
→ function : Absorption of water + formation of faeces

* It has saculations / haustrations
* It has tenia coli : 3 bands of smooth muscles (absent in appendix & rectum)
* It has fat tags (epiploic appendages) (absent in appendix, cecum & rectum)

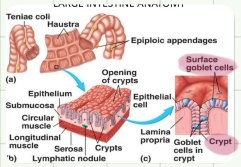
→ length : 1.5 - 2.5 m

- cecum : 2.5 - 3in
- appendix : 3 - 5 in
- colon → ascending : 5 in
  transverse : 15 in
  descending : 10 in
- rectum : 5 in
- anal canal : 4 cm

Histology :

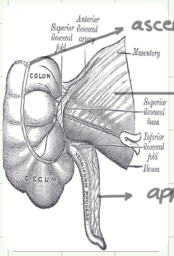
→ lining epithelium : simple columnar epithelium with numerous goblet cell (lubrication)

→ Basal glands : Crypts of lieberkuhn (without paneth cells)



Cecum :

- blind-ended pouch
- site : right iliac fossa, above inguinal ligament (lateral ويمين)
- intra peritoneal (fixed in the right iliac fossa) → It formes a fold of peritoneum → retrocecal recesses : common site of appendix
  - superior ileocecal recesses
  - inferior ileocecal recesses
- 3 openings



ascending colon فتحة 1
ileum فتحة 2
appendix فتحة 3

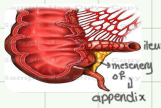
- intracecal pressure helps in :
  1) ascending the material upwards from cecum towards ascending colon.
  2) closure of ileocecal valve → which prevents material of cecum from flowing back into ileum (affected by nerves & hormones)
     → "rudimentary structure" physiological valve (Folds of mucosa around the opening)

- taenia coli covers the cecum & the base of appendix (by following taenia coli, the surgeon could find the appendix easily!)

- lymphatic drainage : superior mesenteric lymph nodes (mid gut)

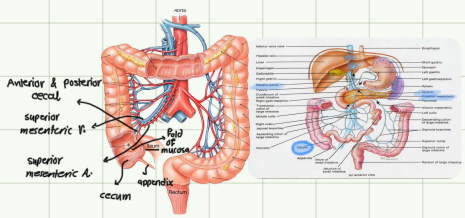
- Relations :
  - Anteriorly : - coils of small intestine (ileum) - greater omentum - anterior abdominal wall
  - Posteriorly : - Psoas & iliacus ⇒ iliopsoas muscle - Femoral N. + lateral cutaneous N. of thigh - External iliac vessels ⇒ Femoral A.
  - Postero-medially : - appendix
  - Medially : - small intestine (ileum)

- Blood Supply
  → Arteries : Branches of superior mesenteric artery → Anterior & Posterior cecal arteries



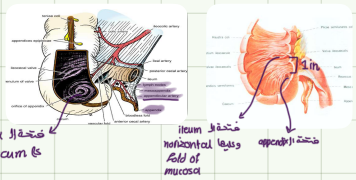
  → veins : superior mesenteric vein (behind neck of Pancreas) → Portal vein → liver
  splenic vein
  Anterior & posterior cecal veins

- Nerve Supply
  Sympathetic + Parasympathetic (vagus) = superior mesenteric plexus
  - BVs
  - sphincter
  - glands
  - smooth muscles (peristaltic movement)

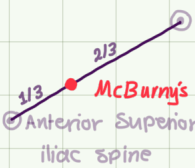


appendix :

- narrow, muscular tube
- larg amount of lymphoid tissue (no role in digestion !)
- length : 2 - 22 cm when infected → (expansion)
  3 - 5 in
- intraperitoneal
- it has mesentery ⟹ Mesoappendix
- common site :
  - 74 % retrocecal
  - 21 % pelvis
  - little % subcaecal + preileal + postileal] ileum & cecum



- Surface anatomy : (McBurney's Point)

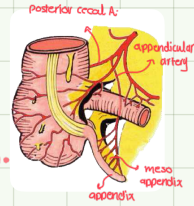


- McBurny's incision :
  * Surgical incision for appendictomy → throug this point parallel to inguinal ligament
  * through endoscope around umbilicus

• Blood Supply

→ Arteries : Branch from Posterior cecal A. ↳ appendicular artery

→ veins : Posterior cecal vein ↖ appendicular vein



* appendictomy :
  1) 2 ligations for appendicular artery & vein To prevent bleeding
  2) circular stitch around base of appendix

• lymphatic drainage

↳ by Mesoappendix lymph nodes

↳ Superior mesenteric lymph nodes

• Nerve Supply

• T 10 ⟶ That's why the pain of appendicitis start around umbilicus then concentrated in right iliac Fossa (1/2)

- sensory (skin over appendix) - appendix

Why appendictomy is mandatory ?

• appendix has very narrow lumen, infection & edema will obstruct the lumen → risk for rupture & peritonitis

* Acute appendicitis → Thrombosis of appendicular A. ⇩ gangrene (why? only one artery supplies it !)
* Acute cholecystitis → no gangrene (why ? it lies on liver (direct blood) so more than one artery supply it.

Ascending colon :

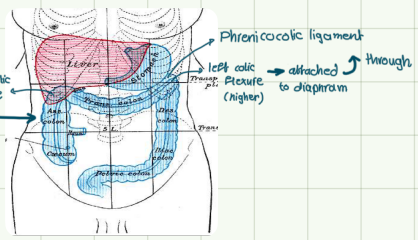
- length : 5 in
- start : cecum in right iliac fossa
- end : upwards to lower surface of liver ⟹ Right colic /hepatic Flexure (junction between ascending & transverse)
- It has ① Tenia coli ② Sacculations ③ Appendeces epiploica
- retroperitoneum [covering anterior surface & fixing both sides of ascending in the posterior abdominal wall]

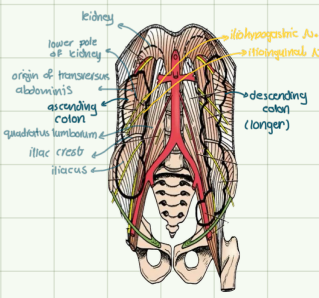
This fixation forms "Paracolic gutter" medial & lateral grooves, allowing the fluid & pus to pass through.

• Relations :

Anteriorly : - small intestine - greater omentum (localization of infection) - anterior abdominal wall

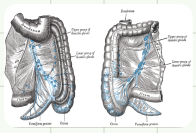
posteriorly : - iliacus - iliac crest - quadratus lumborum - iliohypogastric N. - ilioinguinal N. - origin of transversus abdominis muscle - lower pole of right kidney





• lymphatic drainage

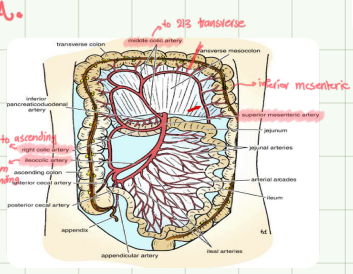
↳ To superior mesenteric lymph nodes



in colon cancers → those lymph nodes will be removed

• Blood Supply

- Arteries : superior mesenteric A. ↙ ileocolic & right colic
- veins : superior mesenteric V. ↗ ileocolic, right colic



• Nerve Suppl

⇒ Parasympathetic : Vagus N.

⇒ sympathetic : superior mesenteric ganglia → post ganglionic → plexus with BVs

Transverse Colon :

- length : 15 in
- start : right colic flexure - end : left colic flexure
- crosses umbilical region
* intraperitoneal
* it has mesentery ⇒ Mesocolon (short → in upper Part / long → to lower Part)
* proximal 2/3 : mid gut
  distal 1/3 : hind gut

1) Two layers from greater omentum
2) one layer superior to transverse & one layer inferior to it
3) Mesocolon is formed
4) attached to anterior border of pancreas

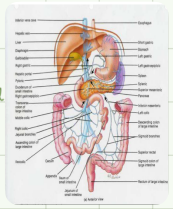
* It has Tenia coli + appendeces epiploica + saculations

- Why some organs are fixed & others are not ?
  ↳ preserve the viscera of the abdomin (fixed)
  ↳ allow the movement in surgery to ease the process (not fixed intraperitoneal organs)

- Relations :

Anteriorly :
- Greater omentum
- Anterior abdominal wall

Posteriorly :
- 2nd of duodenum
- head of pancreas
- coils of intestine



• lymphatic drainage

- proximal 2/3 → superior mesenteric lymph nodes
- distal 1/3 → inferior mesenteric lymph nodes

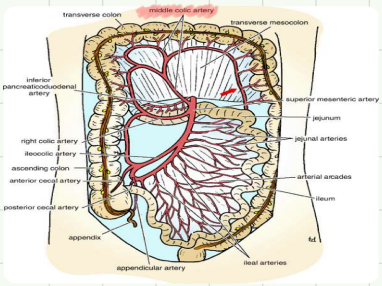
• Nerve Supply

• proximal 2/3
- Parasympathetic → Vagus N.
- Sympathetic pre : all Thoracic → Superior mesenteric ganglia → Post + para sympathetic → Superior mesenteric plexus

• distal 1/3
- Parasympathetic → S_2 S_3 S_4
- Sympathetic pre : L_1 L_2 → inferior mesenteric ganglia → Post + para sympathetic → inferior mesenteric plexus

• Blood Supply

→ Arteries :
- proximal 2/3 → Superior mesenteric A. → middle colic A.
- distal 1/3 → Inferior mesenteric A. → left colic A.



→ veins :
- proximal 2/3 → Superior mesenteric V. → middle colic V. → Portal V. → liver
- distal 1/3 → Inferior mesenteric V. → left colic V. → Portal V. → liver

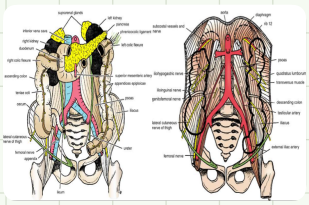
Descending colon :

- length : 10 in
- start : left colic flexure end : pelvic brim (بالج)
- It has Tenia coli + appendeces epiploica + saculations
- Peritoneum : Anterior border + both sides (fixation on posterior abdominal wall form right & left gutters)
  = Same as ascending

- Relations :

Anteriorly :
- small intestine
- greater omentum
- anterior abdominal wall

Posteriorly :
- iliacus
- iliac crest
- quadratus lumborum
- iliohypogastric N.
- origin of transversus abdominis muscle
- ilioinguinal N.
- lateral border of left kidney
- lateral cutaneous N. of thigh
- femoral N.
- Psoas muscle



• lymphatic drainage

↳ inferior mesenteric lymph nodes

• Blood Supply

- Arteries : inferior mesenteric A. → left colic A. + sigmoidal A. (1st branch)
- Veins : inferior mesenteric V. → splenic V. (superior mesenteric V.) → Portal V. → liver
  left colic V. + sigmoidal V. (1st branch)

• Nerve Supply

- Parasympathetic → S_2 S_3 S_4
- Sympathetic pre : L_1 L_2 → inferior mesenteric ganglia

Para sympathetic + Post → inferior mesenteric plexus / hypogastric plexus