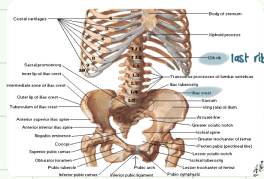
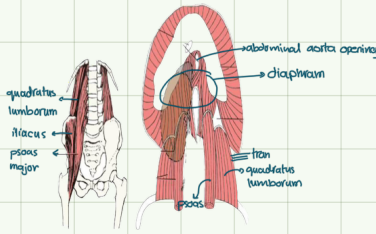


Lecture (2)

- structures of posterior abdominal wall :

- 1) 5 lumbar vertebra + their intervertebral disc
- 2) iliac crest (pelvis → abdominis iliac crest)
- 3) last rib (in the upper part)
- 4) Psoas major + Psoas minor muscles (if present, we use it in reconstructive surgery)
- 5) iliacus muscle
- 6) Quadratus lumborum
- 7) origin of transversus abdominis muscle



- Muscles :-

① Psoas major → Psoas fascia

origin : body & transverse processes of lumbar vertebra

Insertion : Lesser trochanter of femur

Nerve : spinal (T₁₂ + L₁ + L₂ + L₃)

Action : 2 sides → bending forward
1 side → bending to that side

③ iliacus

origin : iliac Fossa

insertion : lesser trochanter of femur

Nerve : Femoral N.

Action : Lateral Flexion of hip & thigh

② Quadratus lumborum

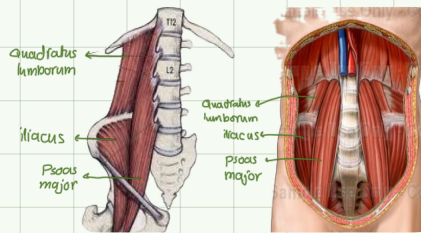
origin : iliolumbur ligament + iliac crest

Insertion : Last rib

Nerve : spinal (T₁₂ + L₁ + L₂ + L₃)

Action : 1) Fixing last rib & contraction of other muscles during respiration

2) Lateral Flexion of trunk



* iliolumbur ligament
↳ between (L₅ → iliac crest)
↳ strong ligament

• Arteries

"Abdominal aorta"

- 1) it penetrates the diaphragm, mid line at the level of (T₁₂)
- 2) it descends behind the peritoneum on the anterior surface of bodies of lumbar vertebrae (retro peritoneal organ)
- 3) it ends at the level of L₄ on left side

• Relations of aorta :

right : 1) cisterna chyli

2) thoracic duct

3) I.V.C

4) beginning of azygos vein

left : 1) Abdominal sympathetic chain

Ant. : 1) Pancreas

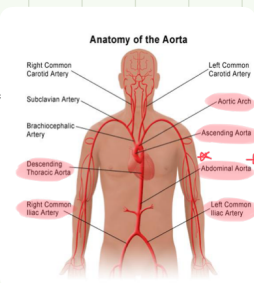
2) 3rd of duodenum

3) coils of small intestine

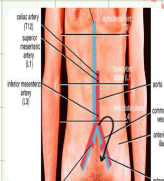
4) crossed by left renal vein

Why? → it's going to I.V.C on right side

• Branches of aorta :



- Single
- 3 Front
- 1) celiac trunk (L₁)
 - 2) Superior mesenteric A. (L₂)
 - 3) Inferior mesenteric A. (L₃)
- 1 back
- 1) median Sacral A.



Forget

① Celiac Trunk :

1) left gastric A.

↳ lower 1/3 of esophagus

2) lesser curvature → stomach

3) Anastomosis with right gastric

↳ Both are in lesser omentum

2) splenic A.

↳ tortuous A.

↳ upper border of pancreas → hilum of spleen

↳ Branches :

1) pancreatic

2) short gastric

3) fundus of stomach

4) right hepatic

5) left gastroepiploic

6) greater omentum → stomach

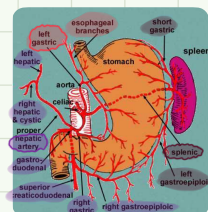
7) right gastroepiploic

8) superior pancreaticoduodenal

9) left hepatic

10) right hepatic

11) cystic (for gall bladder)



3) Hepatic A.

1) right gastric

2) lesser curvature → stomach

3) gastroepiploic

4) superior pancreaticoduodenal

5) left hepatic

6) right hepatic

7) cystic (for gall bladder)

8) right gastroepiploic

9) superior pancreaticoduodenal

10) left hepatic

11) right hepatic

12) cystic (for gall bladder)

13) right gastroepiploic

14) superior pancreaticoduodenal

15) left hepatic

16) right hepatic

17) cystic (for gall bladder)

18) right gastroepiploic

19) superior pancreaticoduodenal

20) left hepatic

21) right hepatic

22) cystic (for gall bladder)

23) right gastroepiploic

24) superior pancreaticoduodenal

25) left hepatic

26) right hepatic

27) cystic (for gall bladder)

28) right gastroepiploic

29) superior pancreaticoduodenal

30) left hepatic

31) right hepatic

32) cystic (for gall bladder)

33) right gastroepiploic

34) superior pancreaticoduodenal

35) left hepatic

36) right hepatic

37) cystic (for gall bladder)

38) right gastroepiploic

39) superior pancreaticoduodenal

40) left hepatic

41) right hepatic

42) cystic (for gall bladder)

43) right gastroepiploic

44) superior pancreaticoduodenal

45) left hepatic

46) right hepatic

47) cystic (for gall bladder)

48) right gastroepiploic

49) superior pancreaticoduodenal

50) left hepatic

51) right hepatic

52) cystic (for gall bladder)

53) right gastroepiploic

54) superior pancreaticoduodenal

55) left hepatic

56) right hepatic

57) cystic (for gall bladder)

58) right gastroepiploic

59) superior pancreaticoduodenal

60) left hepatic

61) right hepatic

62) cystic (for gall bladder)

63) right gastroepiploic

64) superior pancreaticoduodenal

65) left hepatic

66) right hepatic

67) cystic (for gall bladder)

68) right gastroepiploic

69) superior pancreaticoduodenal

70) left hepatic

71) right hepatic

72) cystic (for gall bladder)

73) right gastroepiploic

74) superior pancreaticoduodenal

75) left hepatic

76) right hepatic

77) cystic (for gall bladder)

78) right gastroepiploic

79) superior pancreaticoduodenal

80) left hepatic

81) right hepatic

82) cystic (for gall bladder)

83) right gastroepiploic

84) superior pancreaticoduodenal

85) left hepatic

86) right hepatic

87) cystic (for gall bladder)

88) right gastroepiploic

89) superior pancreaticoduodenal

90) left hepatic

91) right hepatic

92) cystic (for gall bladder)

93) right gastroepiploic

94) superior pancreaticoduodenal

95) left hepatic

96) right hepatic

97) cystic (for gall bladder)

98) right gastroepiploic

99) superior pancreaticoduodenal

100) left hepatic

101) right hepatic

102) cystic (for gall bladder)

103) right gastroepiploic

104) superior pancreaticoduodenal

105) left hepatic

106) right hepatic

107) cystic (for gall bladder)

108) right gastroepiploic

109) superior pancreaticoduodenal

110) left hepatic

111) right hepatic

112) cystic (for gall bladder)

113) right gastroepiploic

114) superior pancreaticoduodenal

115) left hepatic

116) right hepatic

117) cystic (for gall bladder)

118) right gastroepiploic

119) superior pancreaticoduodenal

120) left hepatic

121) right hepatic

122) cystic (for gall bladder)

123) right gastroepiploic

124) superior pancreaticoduodenal

125) left hepatic

126) right hepatic

127) cystic (for gall bladder)

128) right gastroepiploic

129) superior pancreaticoduodenal

130) left hepatic

131) right hepatic

132) cystic (for gall bladder)

133) right gastroepiploic

134) superior pancreaticoduodenal

135) left hepatic

136) right hepatic

137) cystic (for gall bladder)

138) right gastroepiploic

139) superior pancreaticoduodenal

140) left hepatic

141) right hepatic

142) cystic (for gall bladder)

143) right gastroepiploic

144) superior pancreaticoduodenal

145) left hepatic

146) right hepatic

147) cystic (for gall bladder)

148) right gastroepiploic

149) superior pancreaticoduodenal

150) left hepatic

151) right hepatic

152) cystic (for gall bladder)

153) right gastroepiploic

154) superior pancreaticoduodenal

155) left hepatic

156) right hepatic

157) cystic (for gall bladder)

158) right gastroepiploic

159) superior pancreaticoduodenal

160) left hepatic

161) right hepatic

162) cystic (for gall bladder)

163) right gastroepiploic

164) superior pancreaticoduodenal

165) left hepatic

166) right hepatic

167) cystic (for gall bladder)

168) right gastroepiploic

169) superior pancreaticoduodenal

170) left hepatic

171) right hepatic

172) cystic (for gall bladder)

173) right gastroepiploic

174) superior pancreaticoduodenal

175) left hepatic

176) right hepatic

177) cystic (for gall bladder)

178) right gastroepiploic

179) superior pancreaticoduodenal

180) left hepatic

181) right hepatic

182) cystic (for gall bladder)

183) right gastroepiploic

184) superior pancreaticoduodenal

185) left hepatic

186) right hepatic

187) cystic (for gall bladder)

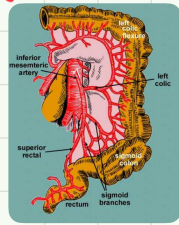
188) right gastroepiploic

189) superior pancreaticoduodenal

190) left hepatic

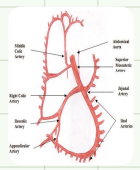
hindgut ③ Inferior mesenteric A.

- 1) left colic → lateral 1/3 of transverse colon & descending colon
- 2) Sigmoid → sigmoid
- 3) superior rectal → rectum & upper 1/2 of anal canal



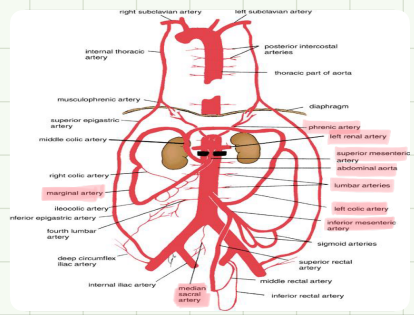
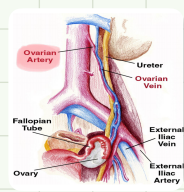
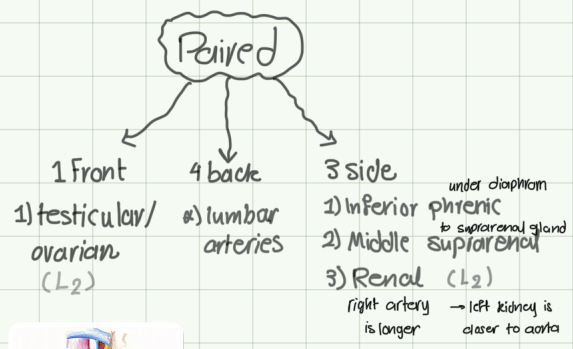
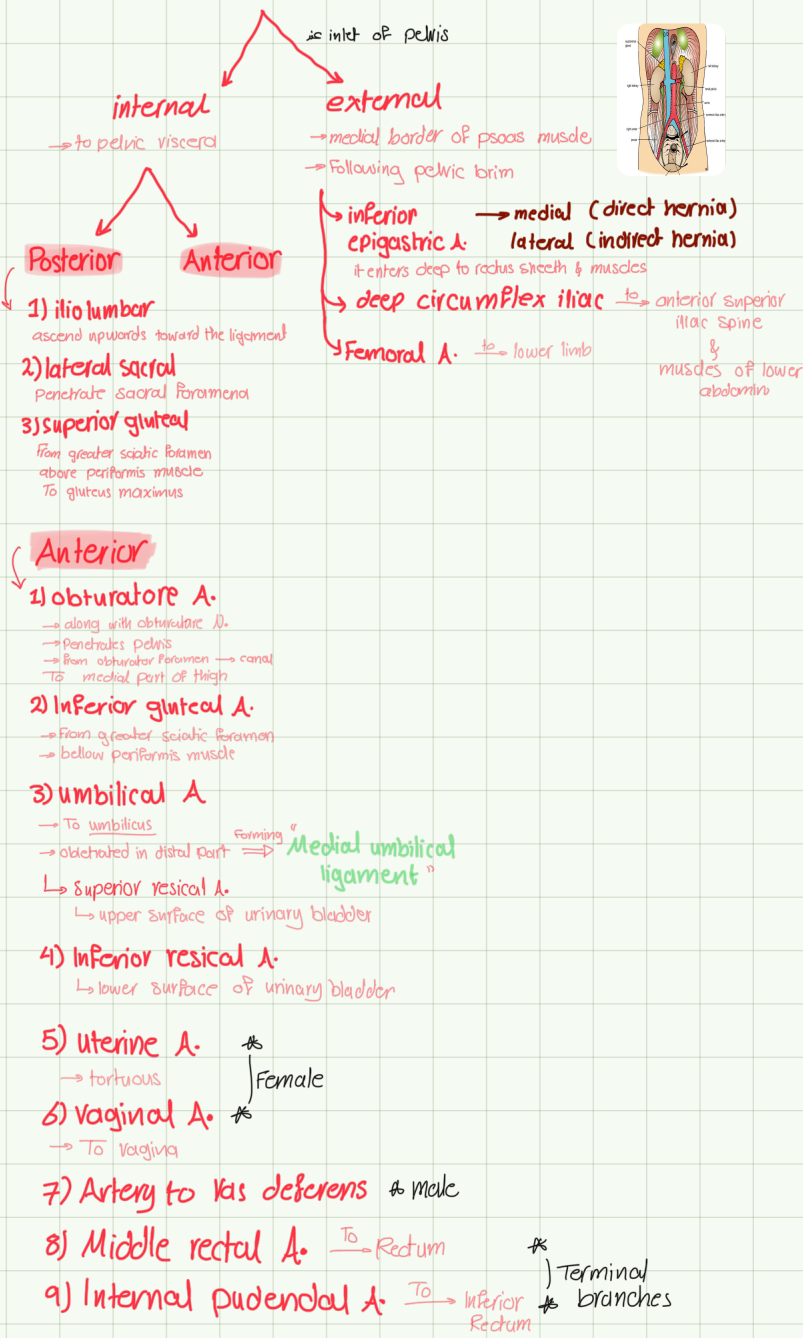
* Marginal Artery

→ In large intestine, all branches that are present in the concavity, they make "Anastomosis"



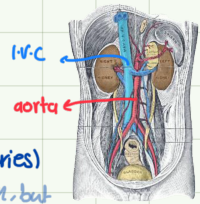
* common iliac arteries

start: L4 on left side



• Inferior vena cava

- Start: From common iliac veins (L5) on right side
- in pelvis: common iliac veins (deep to arteries) why? → veins wall is very thin, but arteries have thick wall so they can afford the pressure happens during pregnancy!
- It pierces diaphragm in "Central tendon" (T8)
- end: Right atrium of heart



* sympathetic chain in aort was on left edge

↳ Behind right edge

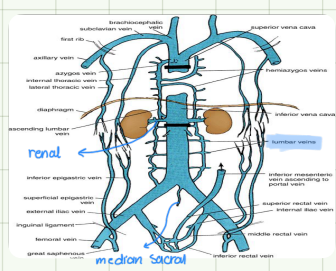
* Relations :

- Ant.
- 1) small intestine
 - 2) 1st & 3rd duodenum
 - 3) Head of pancreas & common bile duct
 - 4) Foramen of Winslow
 - 5) Portal vein
 - 6) deep groove of liver lvs

* Tributaries :

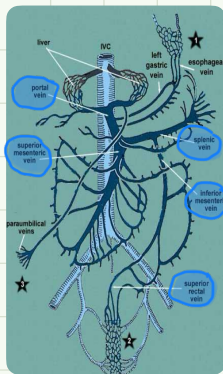
- 1) Hepatic veins → right
- 2) Right Suprarenal vein (left ⇒ left renal vein)
- 3) Right Testicular (ovarian vein) (left ⇒ left renal vein)
- 4) Inferior phrenic vein
- 5) four lumbar veins → five lateral abdominal wall tributaries
- 6) two common iliac veins
- 7) median sacral vein

varicocele is more common in left testis (lower)



* Inferior mesenteric vein
 ↓
 splenic vein
 ↓
 Portal vein → Portgut

superior mesenteric vein
 behind the neck of pancreas



* Portal circulation: venous drainage to portal vein → liver
 ↓
 Hepatic vein ⇒ I.V.C

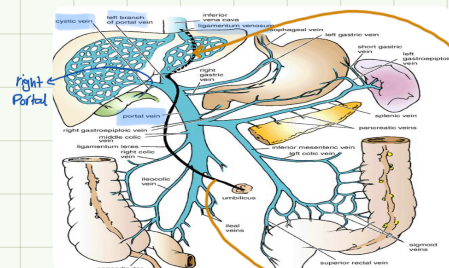
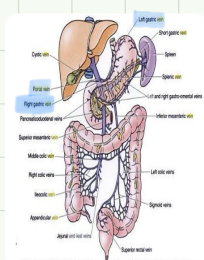
* Portal vein:

- ↳ length: 2 in / 5 cm
- ↳ Start: Behind neck of pancreas
- ↳ End: Porta hepatis
 - right branch
 - left branch

Tributaries:

- 1) Left & Right gastric veins
- 2) Superior pancreaticoduodenal
- 3) Cystic vein → Right portal

سدى الكبد liver



(ductus venosum)

↳ between I.V.C & left portal

→ obliterated umbilical vein

ligamentum Teres / round ligament of liver

Treatment: gastroscopy + sclerosing material + ice → vasoconstriction

* Portal systemic anastomosis

= in case of liver cirrhosis or fibrosis

& Portal vein → obstructed X

↳ So blood will return back from liver into its tributaries

⇒ It returns mainly into:

- ① lower 1/3 of esophagus through (left epigastric vein)
- ② umbilicus through (paraumbilical vein)
- ③ Rectum & anal canal through (superior rectal vein)

* Anastomosis happens between Portal vein & cystic vein

• causes of Portal hypertension:-

- ↳ 1) liver diseases → cirrhosis / fibrosis
- 2) valvular diseases in heart
- 3) Congenital patent
 - ↳ like opened ductus venosum

Portal systemic anastomosis

Region	Name of clinical condition	Portal circulation	Systemic circulation
lower 1/3 Esophageal	hematemesis Esophageal varices	Esophageal branch of left gastric vein	Esophageal branches of Azygos vein
Rectal & Anal canal	internal type Hemorrhoids ↳ bleeding with defecation	Superior rectal vein	Middle rectal veins and inferior rectal veins
Paraumbilical	like star around umbilicus Caput medusae	Paraumbilical veins	Superficial epigastric vein → Portocaval → external iliac vein
Retropertoneal	(no clinical name)	Right colic vein, middle colic vein, left colic vein	Renal vein, suprarenal vein, paravertebral vein, and gonadal vein
Intrahepatic	Patent ductus venosus	Left branch of portal vein	Inferior vena cava

Not mentioned in the lecture ↓

Lymphatics on the Posterior Abdominal Wall

- **Lymph Nodes**
- The lymph nodes are closely related to the aorta and form a pre-aortic and a right and left lateral aortic (Para-aortic or lumbar) chain.
- The **pre-aortic lymph nodes**
- lie around the origins of the celiac, superior mesenteric, and inferior mesenteric arteries and are referred to as the celiac, superior mesenteric, and inferior mesenteric lymph nodes, respectively.
- They drain the lymph from the gastrointestinal tract, extending from the lower one third of the esophagus to halfway down the anal canal, and from the spleen, pancreas, gallbladder, and greater part of the liver.
- The efferent lymph vessels form the large intestinal trunk.
- The **lateral aortic (para-aortic or lumbar) lymph nodes**
- drain lymph from the kidneys and suprarenals; from the testes in the male and from the ovaries, uterine tubes, and fundus of the uterus in the female; from the deep lymph vessels of the abdominal walls; and from the common iliac nodes.
- The efferent lymph vessels form the right and left lumbar trunk
- The **thoracic duct** commences in the abdomen as an enlarged lymph sac, the cisterna chyli. This lies just below the diaphragm in front of the first two lumbar vertebrae and on the right side of the aorta.

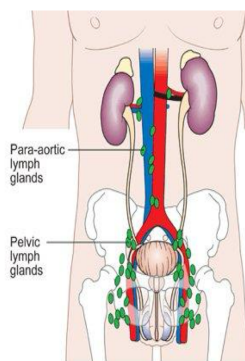


Diagram showing the pelvic and para-aortic lymph nodes
 Copyright © CancerHelp U

The cisterna chyli

- The right and left lumbar trunks under the diaphragm on the side of the aorta
- Receives lymph from
 - The intestinal trunk
 - Some small lymph vessels that descend from the lower part of the thorax.
 - Rt & Lt vessels from lower thorax

