

1st Practical



I-Sacrum

1- Promontory

2- **Ala** is related to

Sympathetic chain, lumbosacral trunk, obturator nerve and iliolumbar artery

3- **Ventral surface of body** is related to

- a) Median sacral vessels
- b) Sympathetic chain
- c) Piriformis which arises from the middle 3 pieces

4-The ventral sacral foramina transmit :

- Ventral rami of the upper 4 sacral nerves.
- The lateral sacral arteries.

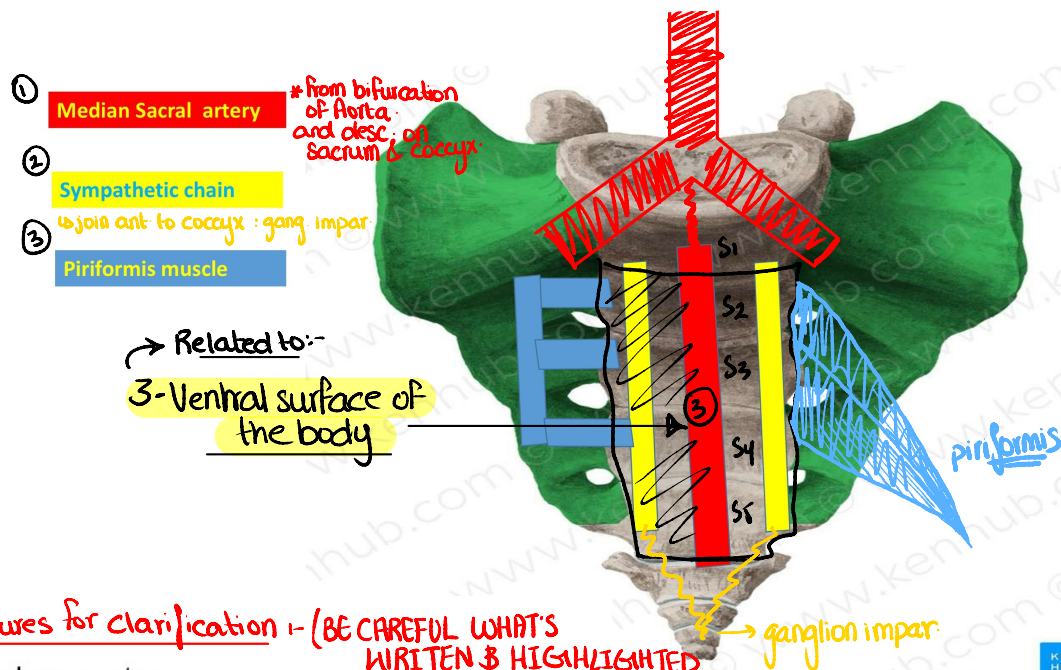
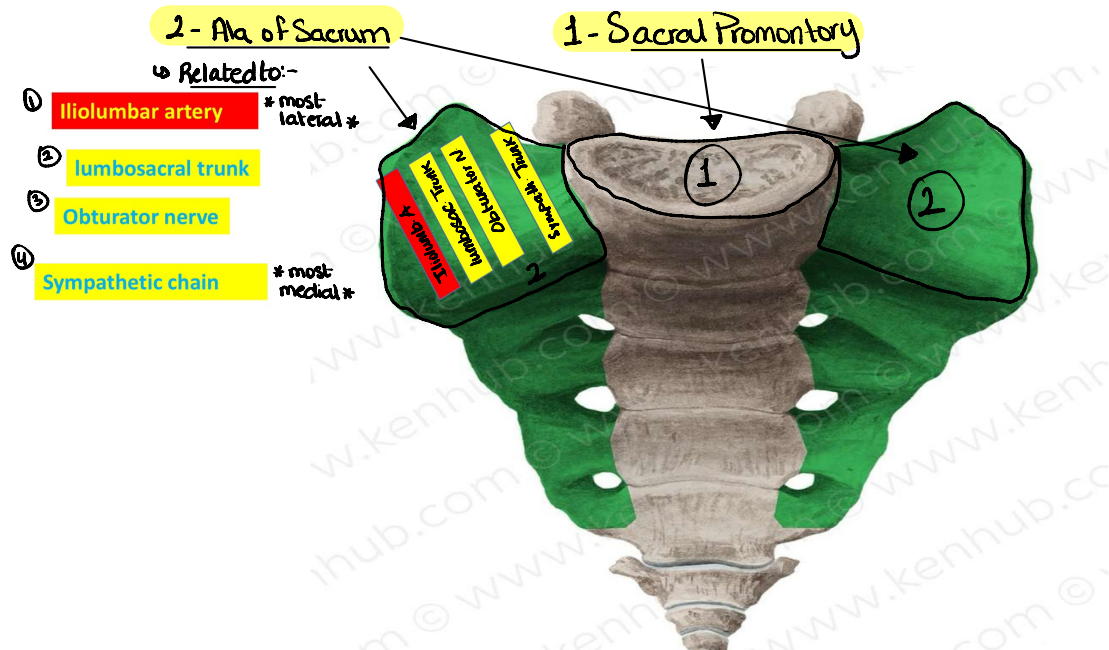
*Remember lateral Sacral Arteries enter ventral sacral foramina to supply content of sacral canal then exit through dorsal sacral foramina & supply overlying muscles *

5-The Dorsal sacral foramina transmit :

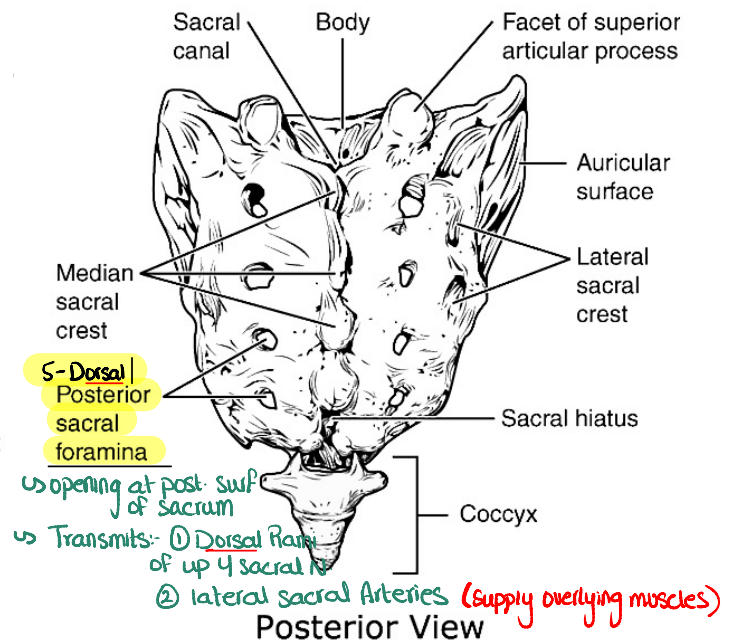
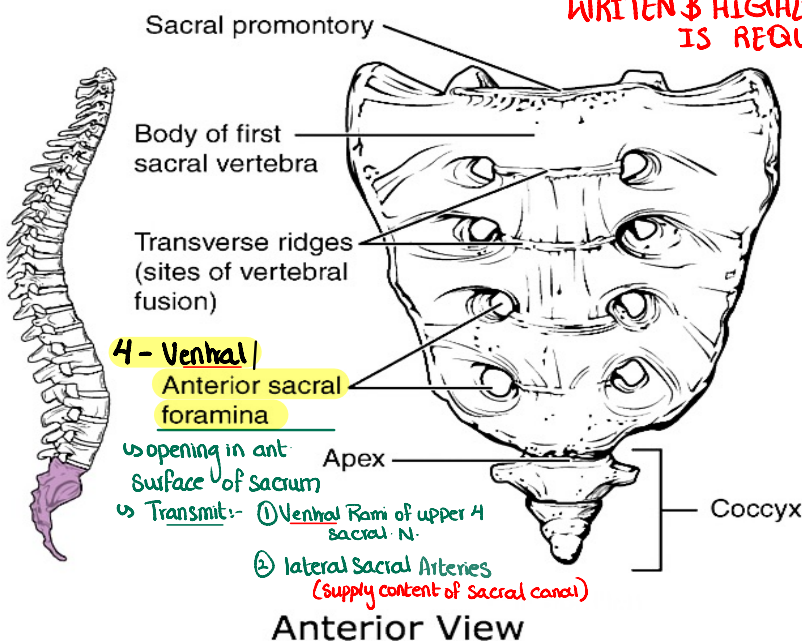
- Dorsal rami of the upper 4 sacral nerves.
- The lateral sacral arteries.

#1 ONE BY :-
Hala Abu Lin. ♥

I - SACRUM



→ Extra Pictures for clarification 1- (BE CAREFUL WHAT'S WRITTEN & HIGHLIGHTED IS REQUIRED)



* Extra information
remember spinal cords
end at lvl. of
L1-L2 → pia
matter (innermost
layer of meninges)
will
continue & attach
to coccyx for
stability → Fil. T

6- Sacral Canal (contents)

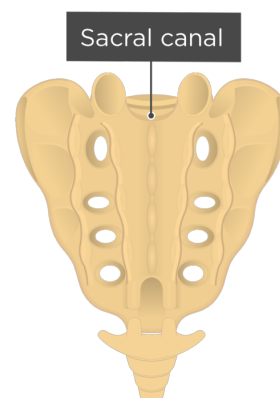
• Filum terminale : a prolongation of the pia mater, extends from the apex of the spinal cord down to be attached to the back of coccyx.

- Spinal dura and arachnoid; end at S2 vertebra,
- Subdural and subarachnoid spaces end at level of S2 vertebra,
- The roots of five pairs of sacral nerves and one pair of coccygeal nerves
- Internal vertebral venous ★

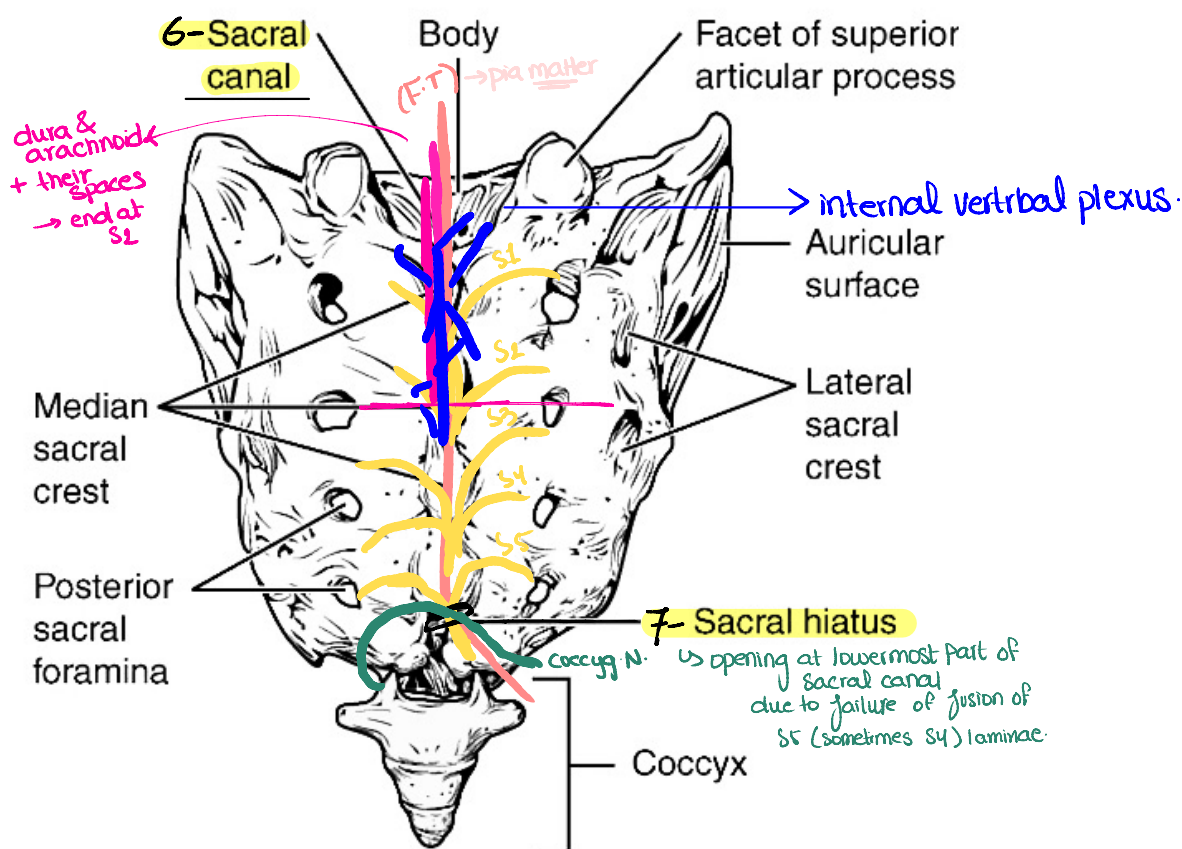
6-Sacral Hiatus

* FT attach to coccyx so etc. we will find here along with last sacral N & coccygeal beuz they are most inferior *

- Filum terminale.
- The 5th pair of sacral nerves.
- A pair of coccygeal nerves.



→ Extra Picture for Clarification



Posterior View

Iliolumbar artery

lumbosacral trunk

Obturator nerve

Sympathetic chain



Already Discussed

Median Sacral artery

Sympathetic chain

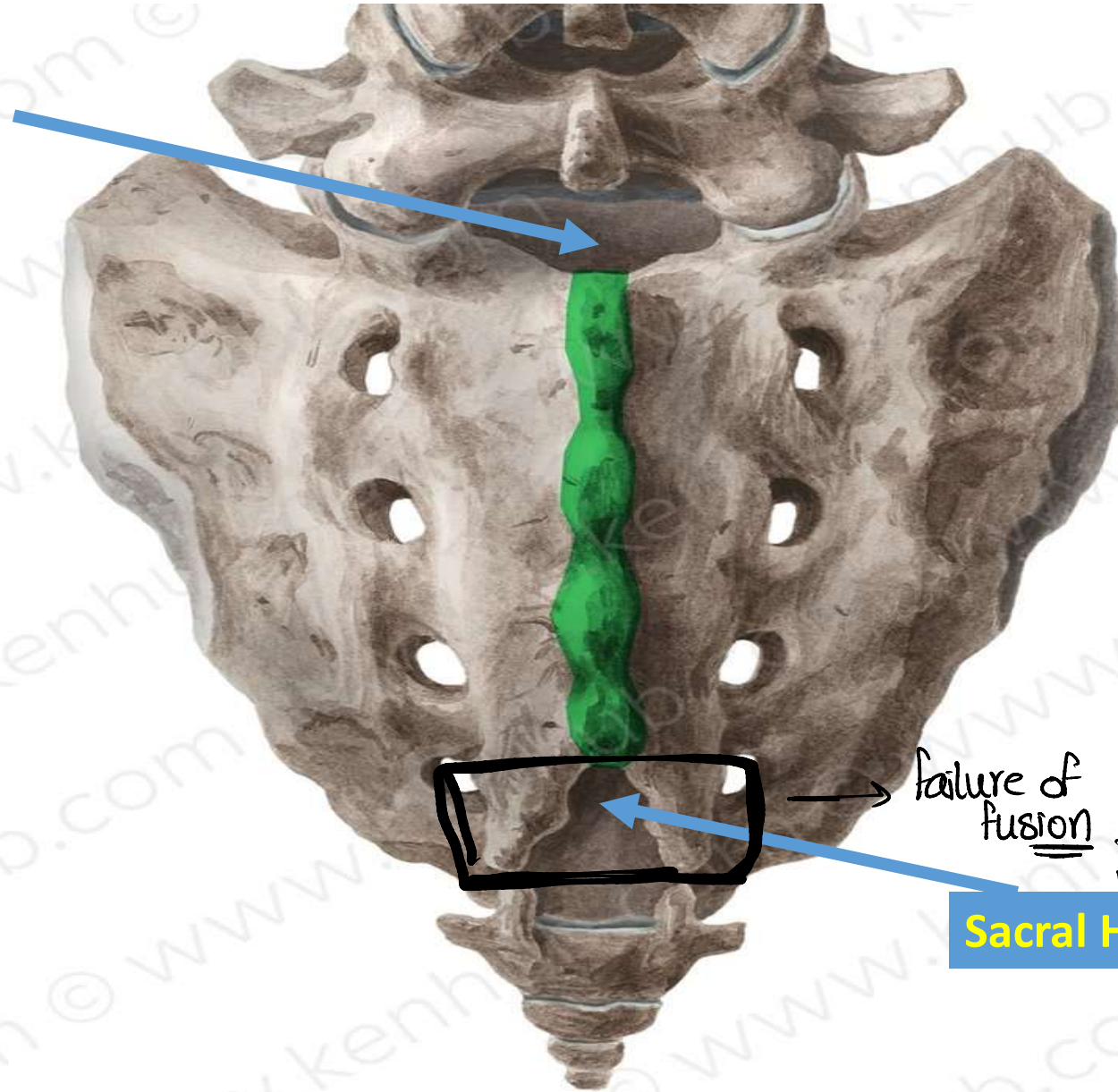
Piriformis muscle



Already Discussed

Sacral Canal

- Filum terminal
- Spinal dura and arachnoid
- Subdural and subarachnoid
- The roots of five pairs of sacral nerves and one pair of coccygeal nerves
- Internal vertebral venous



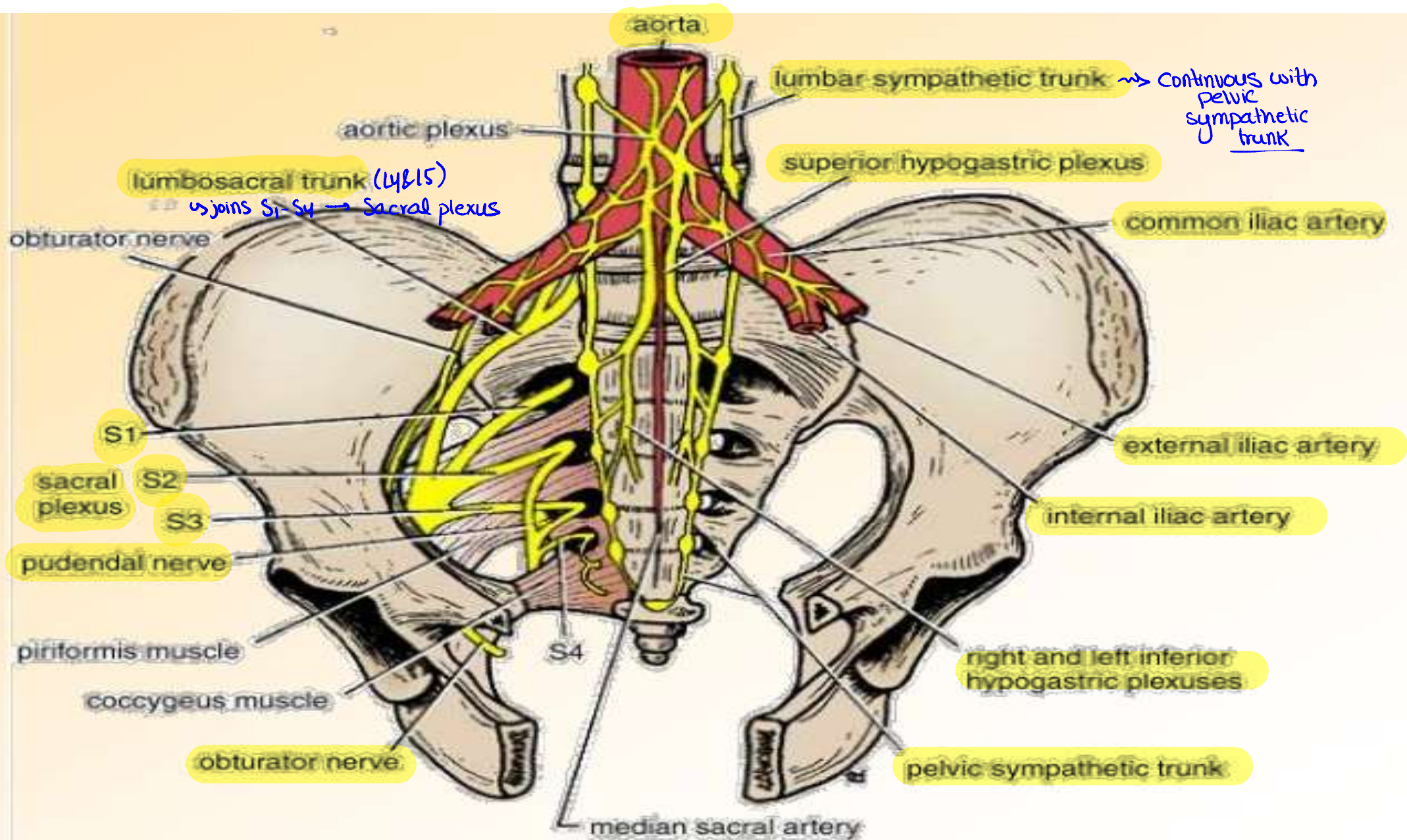
- Filum terminale.
- The 5th pair of sacral nerves.
- A pair of coccygeal nerves.

Sacral Hiatus

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Already Discussed



II-Hip bone

1. Arcuate line
2. Iliopubic eminence
3. Pectineal line
4. Pubic crest
5. Symphysis pubis
6. Sacro-iliac joint
7. Pubic Arch
8. Coccyx
9. Ischial tuberosity
10. Ischial spine
11. Ischiopubic rami
12. Sacrotuberous ligaments
13. Identify boundaries of pelvic inlet ,outlet and their diameters
14. Differentiate between male and female pelvis



- ↳ male:- narrow & deep:- Triangle/heart shape → everted internally
- ↳ female:- wide & shallow:- Oval shape → everted externally.

2- Hip Bone

↳ made up of 3 parts:-

10- Ischial Spine

6- Sacroiliac joint

1- Arcuate line

3- pectineal line

9- Ischial Tuberosity

8- coccyx

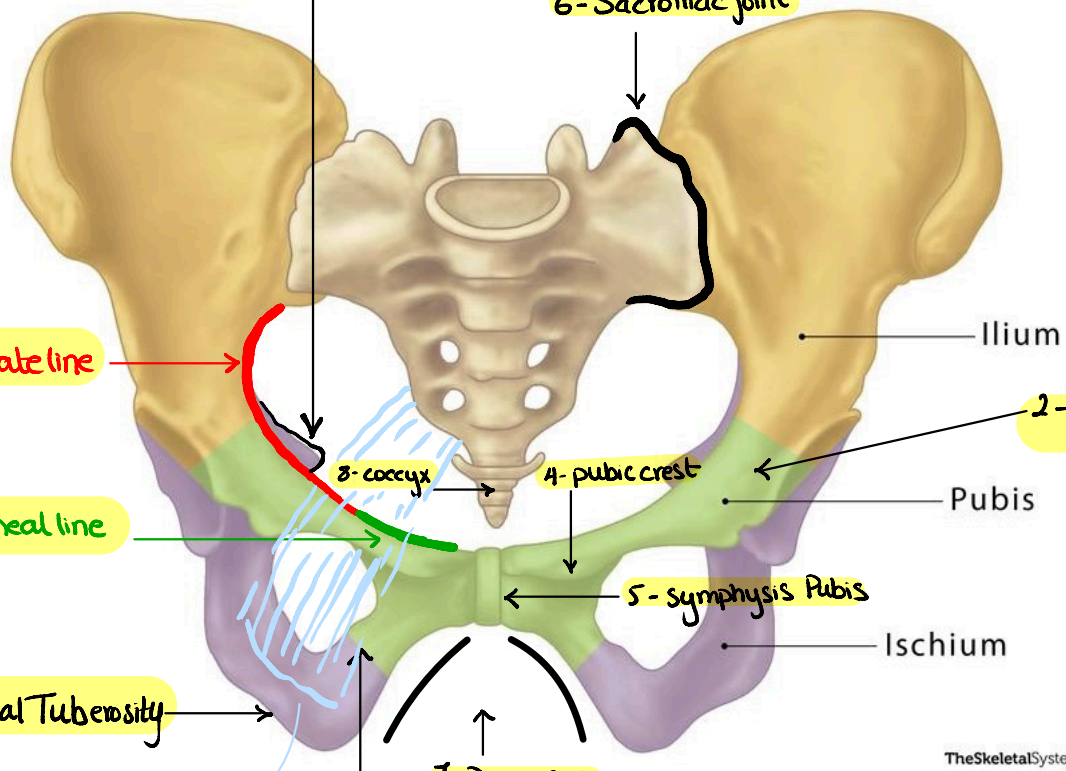
4- pubic crest

5- symphysis Pubis

7- Pubic Arch

11- Ischiopubic Rami

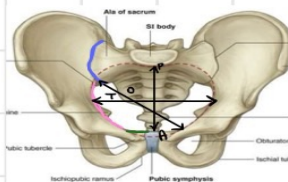
12- Sacrotuberous ligament
from post. ischial tuberosity
to lower part of sacrum & coccyx



TheSkeletalSystem.net

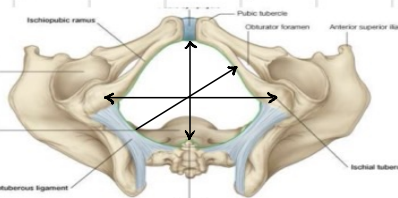
13- Boundaries of pelvic inlet, outlet, diameters

* Inlet of True Pelvis :-



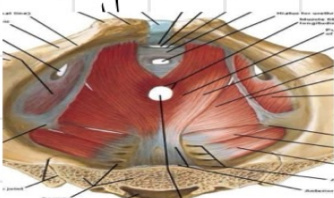
- Ant :- Symphysis Pubis
- Post :- Sacral promontory
- laterally :- Ala of Sacrum, Arcuate line, Pubic crest & Pectineal line.
- * Transverse diameter is largest - btwn the 2 arcuate lines
- * Anteroposterior :- btwn upp. border of symph. pubis & sacral promontory
- * Oblique :- Sacroiliac joint to opp. iliopubic eminence

* Outlet of Pelvis :-



- Ant :- lower border of symph. pubis
- Post :- Coccyx
- laterally :- Post :- Sacrospinous ligament
Ant :- ischiopubic rami.
- Angles :- Ischial Tuberosity
- * Anteropost. diameter is longer btwn lower border of Symph. Pubis & coccyx.
- * Transverse :- btwn 2 ischial Tuberosit.
- * Oblique :- ischiopubic rami & midpoint of sacroiliac joint

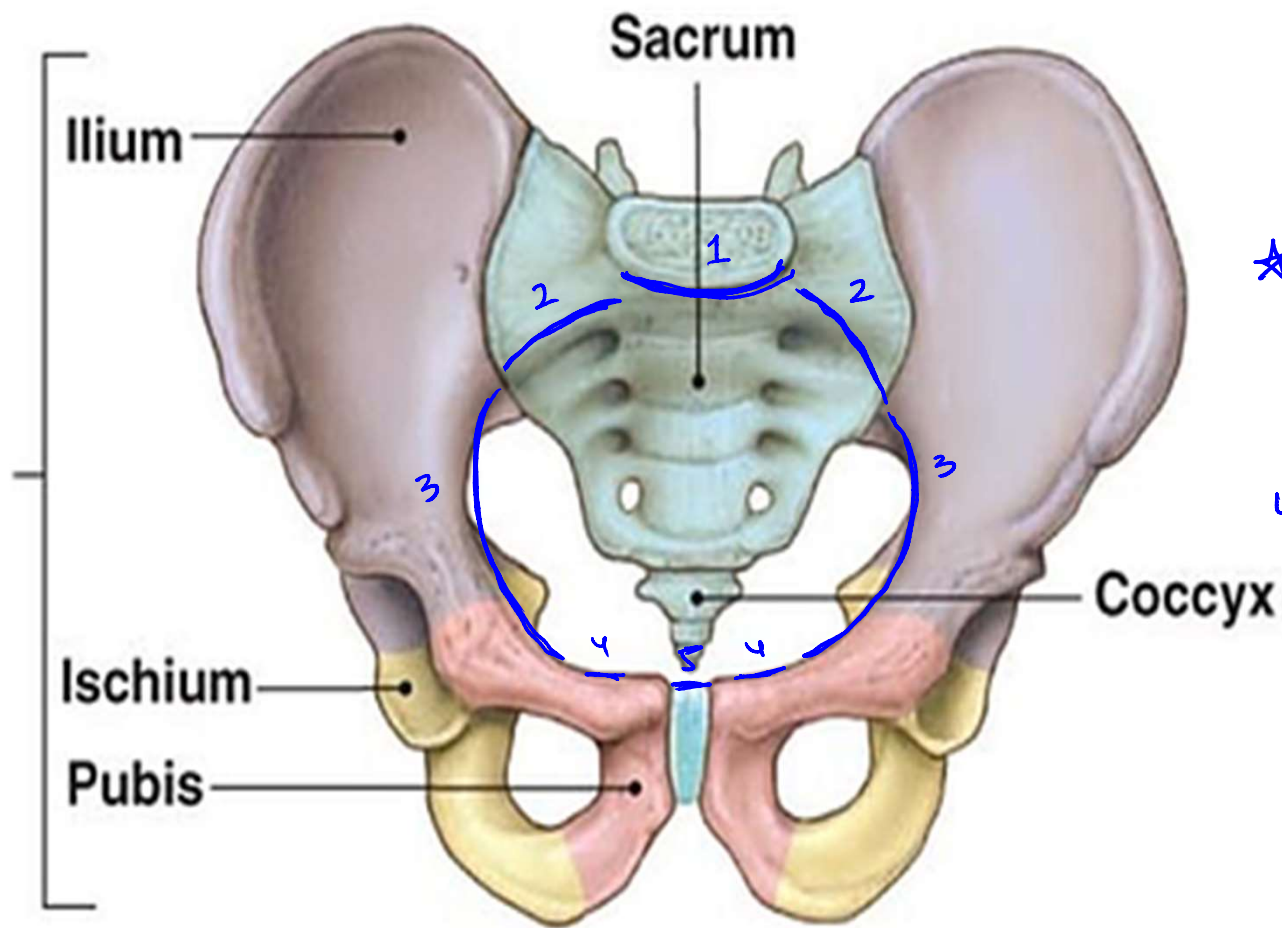
* Cavity of Pelvis :-



→ Women pelvis is wider & shallower & everted externally - for labor
↳ "oval"

→ - : above
o : isch. Tub.
+ : below

Hip Bone



★ Pelvic Inlet (Pelvic Brim)

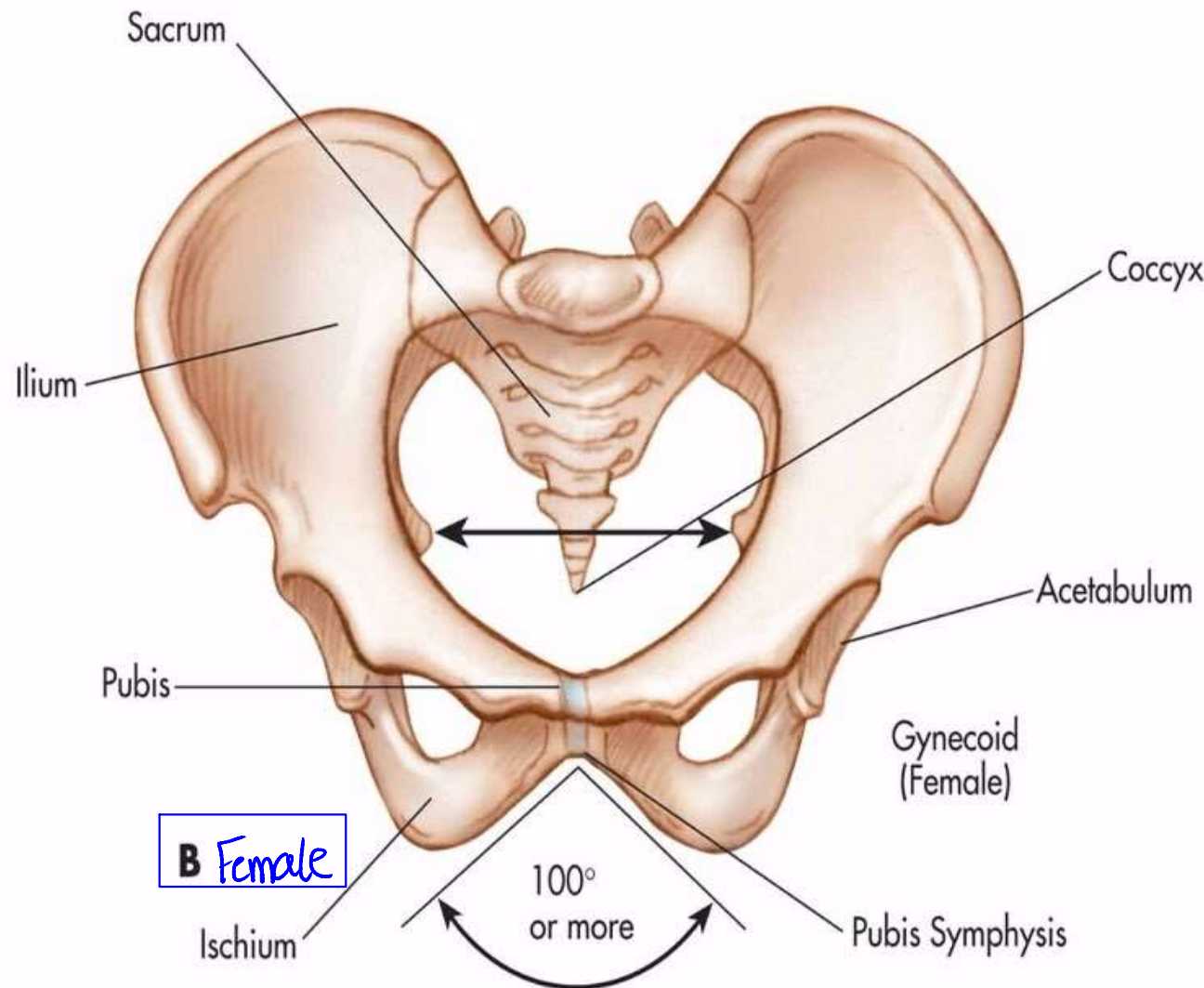
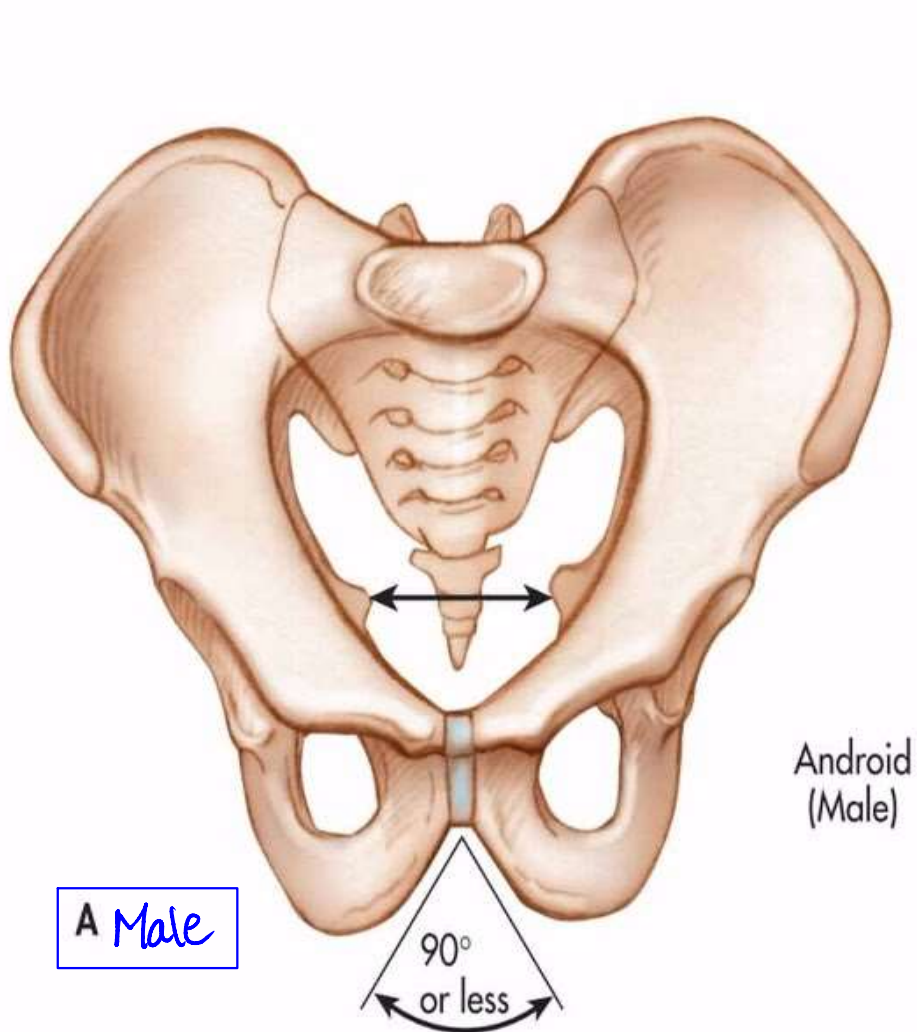
- 1- Sacral promontory
- 2- Ala of sacrum
- 3- Arcuate line
- 4- Pectineal line & Pubic crest
- 5- Pubic symphysis

- **Mark and mention boundaries of pelvic inlet**
- **Differentiate between true and false pelvis**

↳ Sep. by pelvic brim (pelvic inlet)

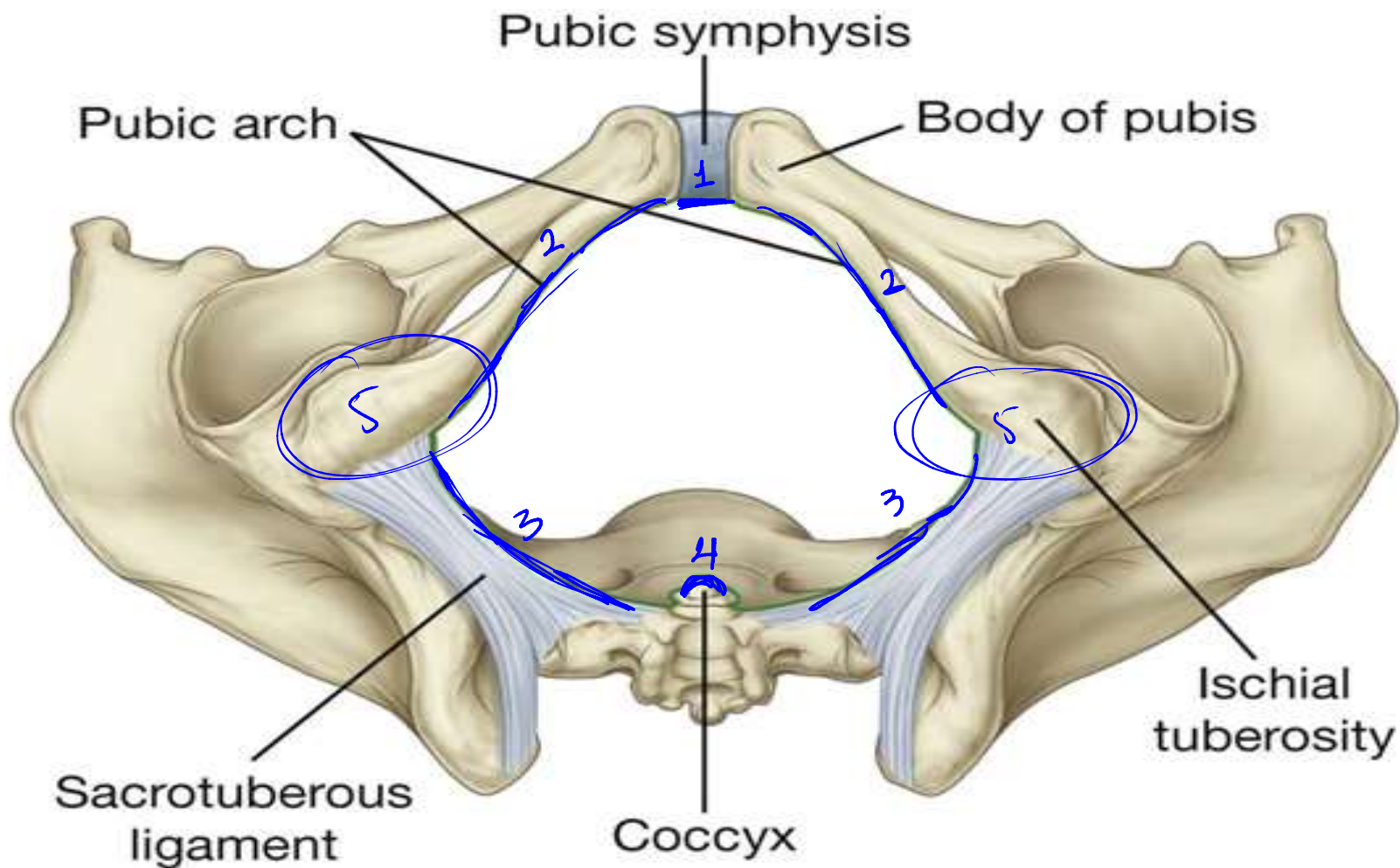
False "greater" → abdomen ← above

True "lesser" → Pelvis ← below



- Which is a male pelvis ?
- Mark the difference between the two pelvis

		Female <i>vs wide & narrow</i>	Male <i>vs narrow & deep</i>
1	Inlet	Wider, transversely oval	Smaller, heart shaped
2	Cavity	Wider, shallower	Narrow, deeper
3	Outlet	Larger	Smaller
4	Subpubic angle	Wide Angle	Acute angle
5	Ischial tuberosities	Are everted externally	Are turned in
6	Sacrum	Wider, shorter	Narrower, longer
7	Side of pubic arch	Everted externally	Not everted



Mark and mention boundaries of pelvic outlet

- 1- lower border of Pubic Symphysis
- 2- Ischiopubic Rami
- 3- Sacrotub ligament
- 4- coccyx 5- ischial tuberosity.

Assessed in labor

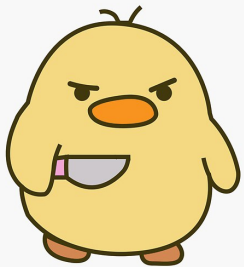
Mark

➤ **Diagonal conjugate** → Ins: lower PS

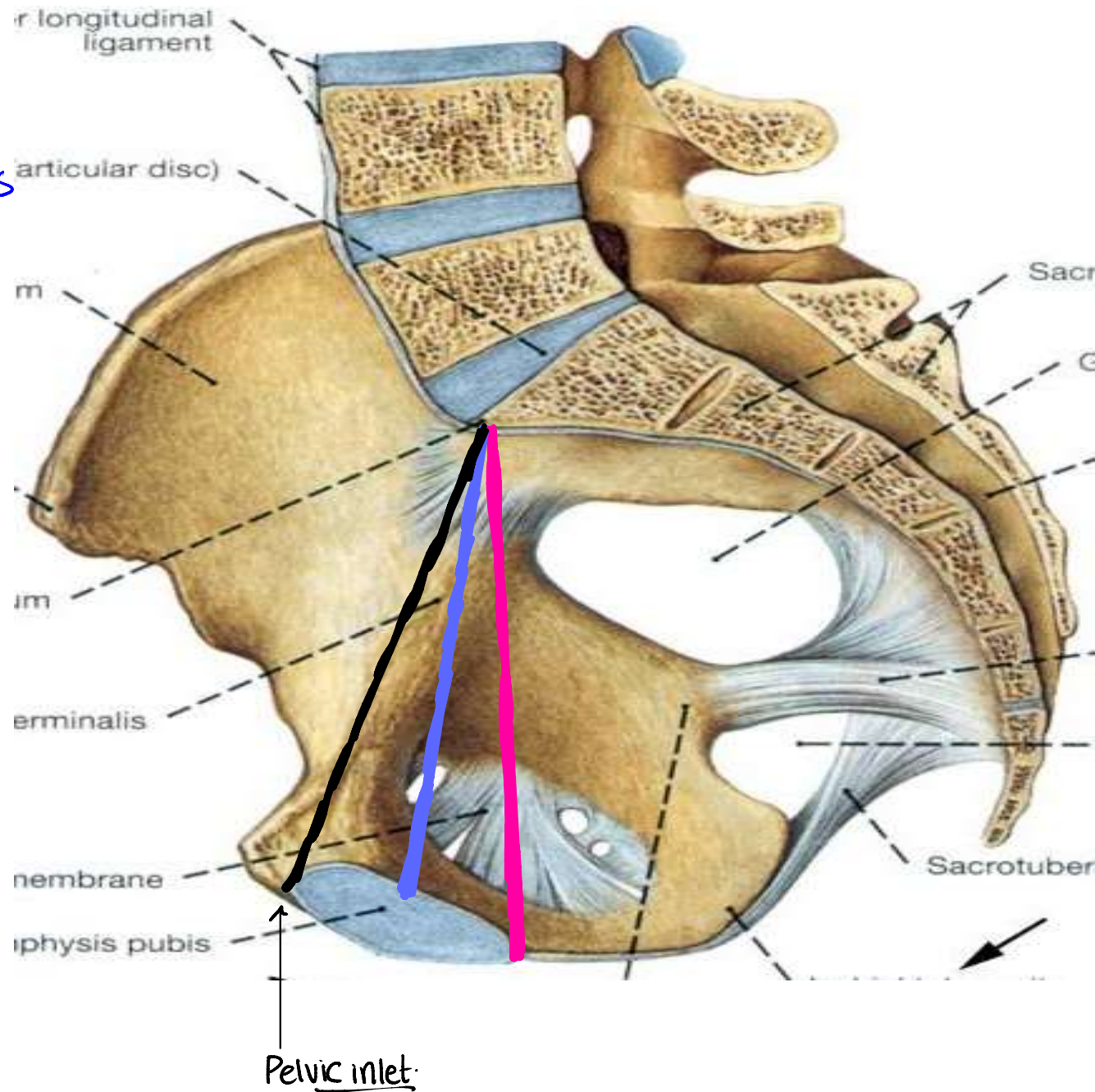
➤ **Obstetric conjugate** → Ins: middle PS

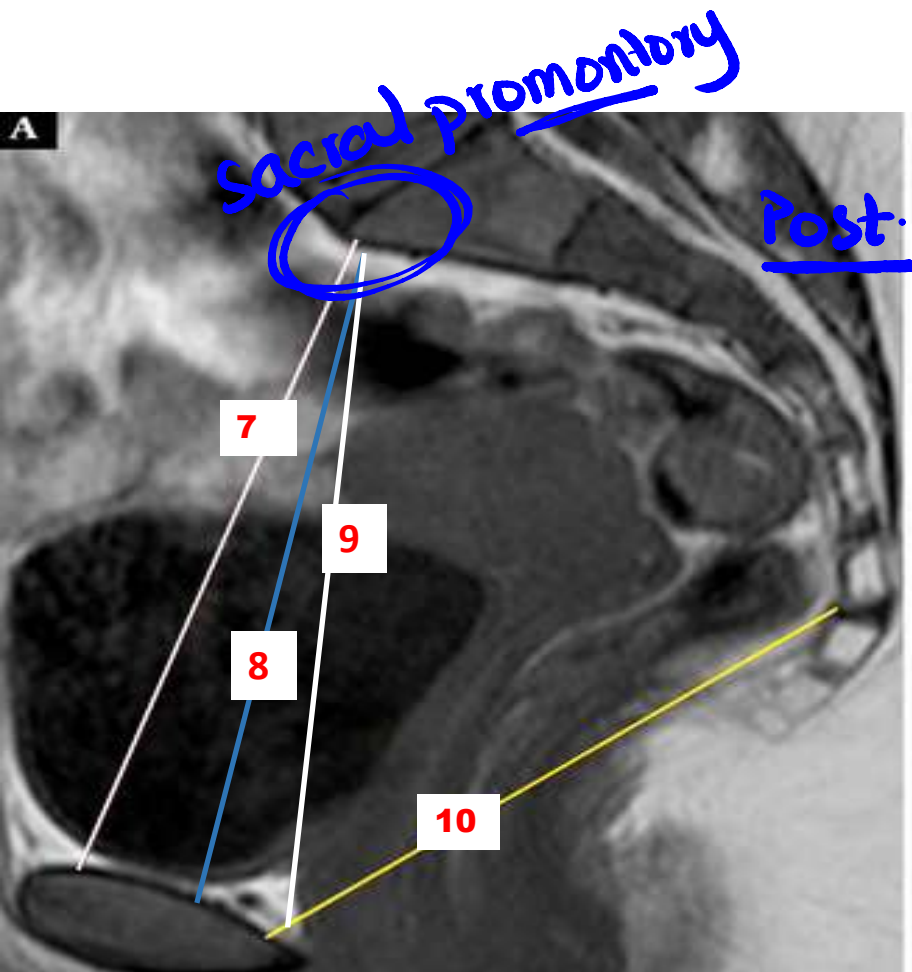
vs origin:- promontory of sacrum

you better not Quik!

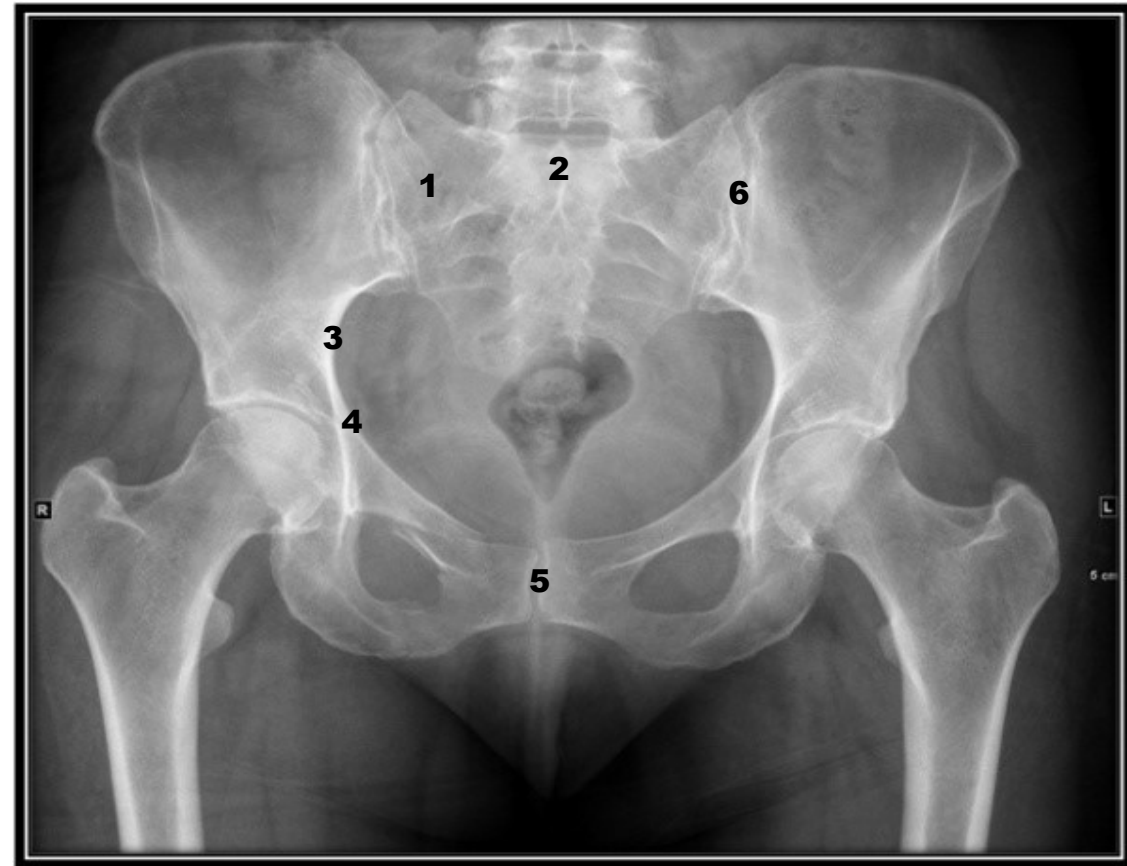


Keep going!



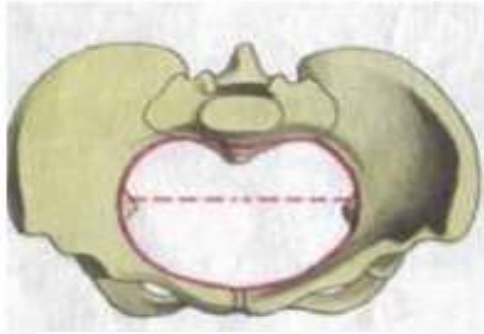


- 7- Pelvic inlet
- 8- Obstetric conjugate
- 9- diagonal conjugate
- 10- Pelvic outlet.

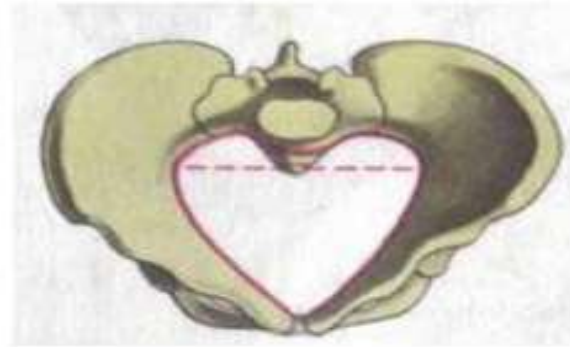


- 1- Ala of sacrum
- 2- Sacral promontory
- 3- Arcuate line
- 4- Iliopubic eminence
- 5- Pubic Symphysis
- 6- Sacroiliac joint.

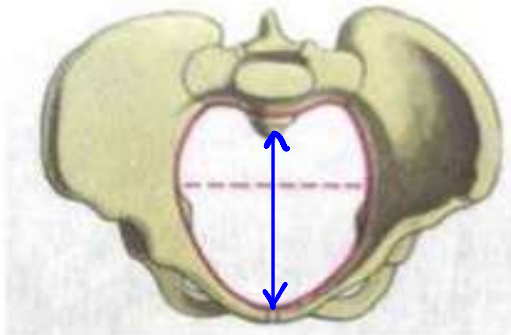
Types of pelvises



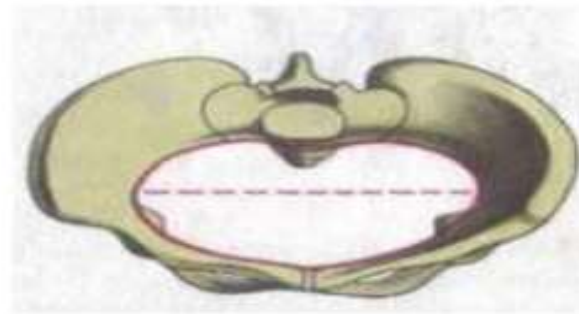
A Gynanceoid (normal female)



B Android (female + male)



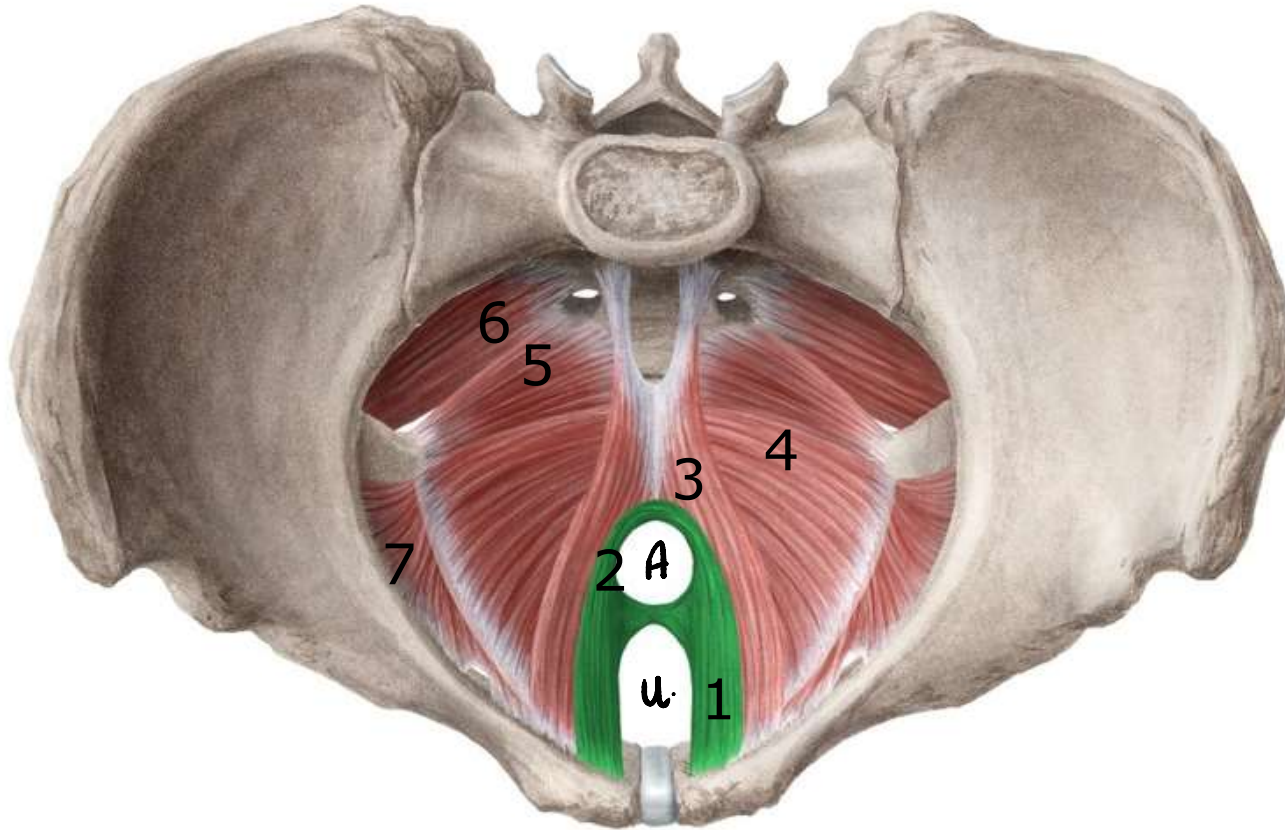
C Anthropoid
↳ long anteroposterior.



D Platelloid.
↳ long transverse diameter

Identify type of each pelvis

Pelvic part:- Sacral Plex $\leftarrow$ **III-Levator ani muscle** (parts, attachment, nerve supply, action)
 Peritoneum:- Pudendal N.



Levator Ani

- * ① white line (thick. of obt. fascia from I.S to P.B)
- ② lower part of back of pubic body
- ③ pelvic part of isch. spine

↳ F(x) - Support viscera,
 resist rise in intrapelvic pressure, Sphincter on anorectal & vagina.

Pubococcygeus Ant. 1/2 of white line & pubic body

* divided into 3 parts

* Anterior fibers *
 levator prostatae & sphincter vaginae

- medially & horizontal around prostate & vagina

* I:- perineal body

(fibrous tissue from anal canal)

bulb of penis → lower part of vagina

* F(x) - support prostate & perineal body.
 constrict vagina.

Iliococcygeus Post. 1/2 of white line & isch. sp.

* I:- lower coccyx & anococcygeal raphe

↳ medial & inf to pubococ. proper.

* Intermediate fibers *
 Puborectalis

- inferiorly to join opp muscle in a U-shape sling at anorectal junction.

* I:- Anococcygeal body

(fibrous mass btwn anal canal & lower coccyx)

* Posterior fibers *
 Pubococ. proper

- medially.
 * I:- lower coccyx & anococcygeal body

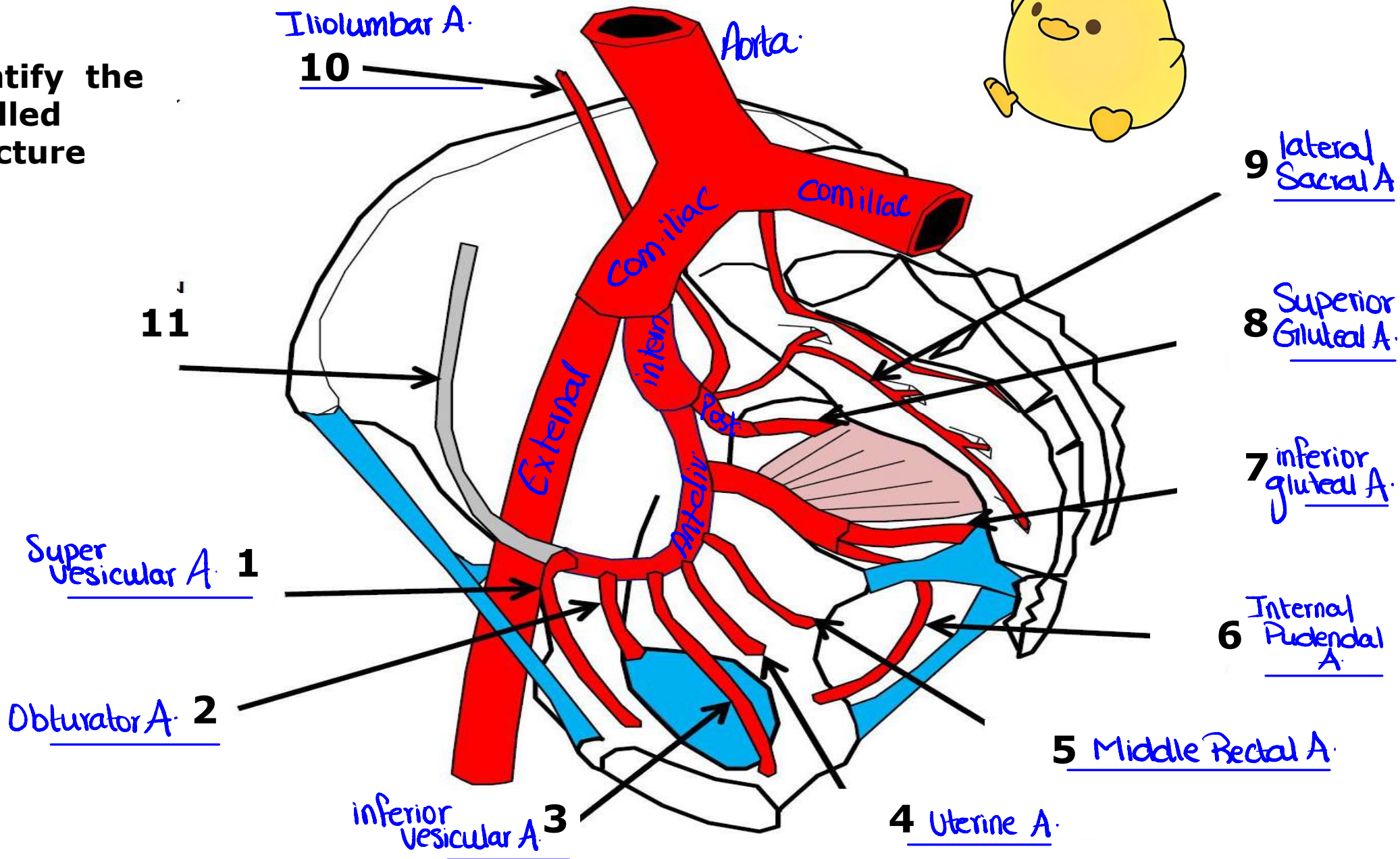
Identify the labelled structure

- ↳ 1 - levator prostate / Sphincter vagina
- 2 - Puborectalis
- 3 - Pubococcyg. proper
- 4 - iliococcygeus
- 5 - coccygeus
- 6 - piriformis
- 7 - Obturator Internus

IV- Internal iliac artery (beginning, termination, branches)

,branches)

Identify the labelled structure



⇒ Main Artery of Pelvis:- Internal Iliac Artery (Rt. & Lt.)

Start:- lumbosacral disc

End:- upper margin of greater sc. Foram
↳ divides into

(visceral branches)

1- Superior Vesicular A.

↳ was umbilical Arter. in Fetus
proximal $\swarrow$ $\searrow$ distal
S.V.A. medial
umbilical lig.

↳ Supply bladder & ureter
in males:- vas deferens

2- Inferior Vesicular A. (in males)

↳ Supply base of bladder, seminal vesicles, prostate
→ gives rise to artery of vas

anastom. with testicular A.

* (in females): Vaginal A.

↳ Supply base of bladder & vagina through vag. branch
anastom. with uterine A.

3- Uterine A.

↳ Pelvic part of ureter
↳ medial part of uterine tube
↳ cervix of uterus
↳ vagina (azygous arteries)
(med. on upp surf. of pelvic diaphragm).

4- Middle Rectal A.

↳ Supply mucosal memb
(in males) Sem. vesicle + prostate
(in females) vagina

① Anterior Division
(parietal branches)

1- Obturator A.

↳ in pelvis gives
pubic branch anast. with
pubic branch of
inferior epigastric A. on back
Surface of Pubic body



2- Internal Pudendal A.

↳ leaves pelvis in G.S.F
below piriformis muscle &
enter perineum

in L.S.F → pudendal canal + pudendal N.

* Note

doesn't pass through levator Ani to prevent constriction
during muscle contraction.

3- Inferior gluteal A.

② Posterior Division
(parietal branches)

1- Iliolumbar A. (muscular)

↳ iliacus

↳ psoas major

↳ Quadratus lumborum

2- Lateral Sacral (sup, inf)

↳ enters ventral sac. F.

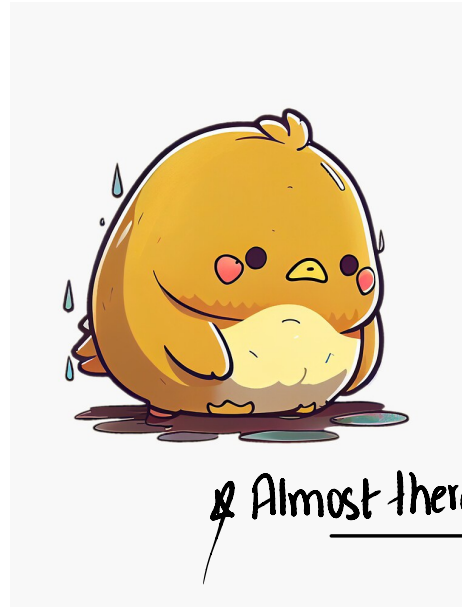
supply content of sacral canal, leaves from dorsal sacral F. & supply overlying muscles.

3- Sup. gluteal A.

Identify the following structures

I-Kidney

- a) Medulla (pyramids)
- b) Cortex
- c) Renal column
- d) Renal papillae
- e) Minor calyces
- f) Major calyces
- g) Renal pelvis
- h) Renal lobe
- i) Renal lobule
- j) Segmental artery
- k) Lobar artery
- l) Inter-lobar artery
- m) arcuate artery
- n) interlobular artery
- o) Renal artery
- p) Renal Vein
- q) Relation of the kidneys
- r) Peritoneal covering of the kidneys



** Almost there !!*

II -Ureter

- a) Ureter with its relations
- b) Site of normal constrictions of the ureters

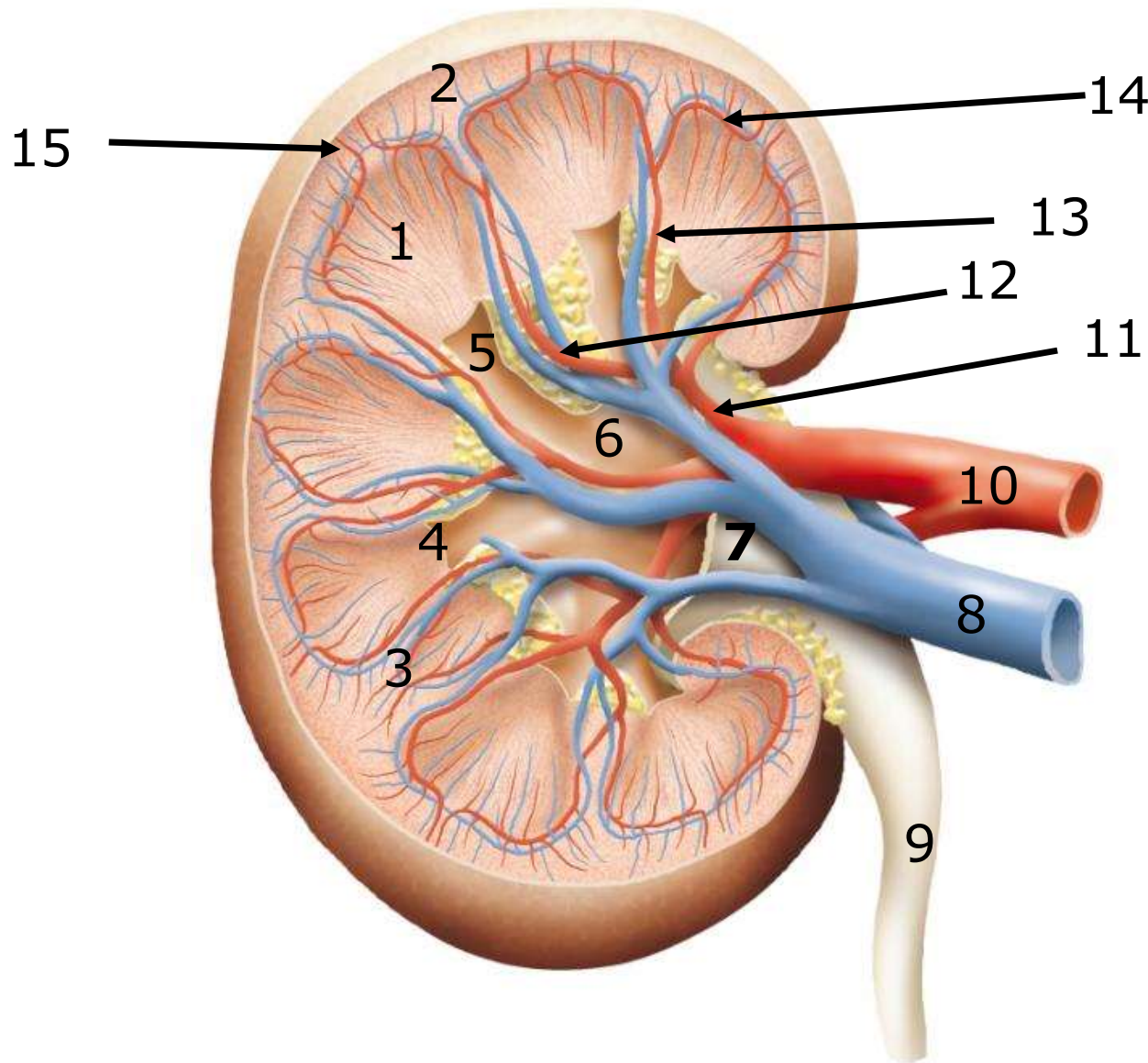
III-Urinary Bladder

- a) Surfaces and relations of the urinary bladder
- b) Interior of urinary bladder
- c) Ligaments of urinary bladder

IV- Urethra

- a) Parts of male urethra and its features

Label the Diagram



1- Medulla- Renal Pyramid.

2- Cortex.

3- Renal columns (part of cortex between pyramids).

4- Renal papillae (apex of renal pyramid)

5- Minor calyces.

6- Major calyces

7- Renal pelvis (poster.)

8- Renal Vein (Anterior)

9- ureter

10- Renal Artery

11- Segmental A.

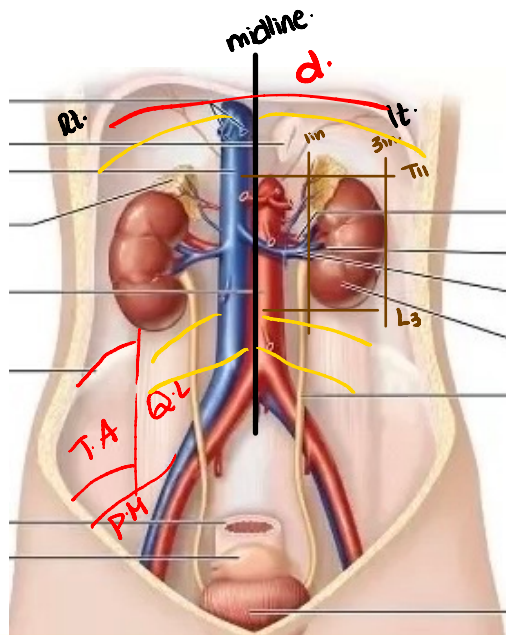
12- lobar A.

13- interlobar A.

14- arcuate A.

15- interlobular A.

9 - Relations of Kidney



* Relations:- Posteriorly:-

- ① Muscles:-
- ↳ Sup:- Diaphragm ⇒ Sep. Kidney upp. pole from costodiaphragmatic recess (pleura & lung)
 - ↳ Psoas Major
 - ↳ Quad. lumborum
 - ↳ Transversus abdominis
- injured in renal surgical operations

- ② Neurovascular:- Sacroiliac Vessels +
- ↳ Sacroiliac N.
 - ↳ Iliobinguinal N.
 - ↳ Iliohypogastric N.

Anteriorly

- ↳ Fixed:-
- ↳ ① Lt. & Rt. Suprarenal glands
 - ↳ ② Lt. & Rt. colic flexures
 - ↳ ③ Coils of small intestine (Rt. hepatic flex Lt. des. col.)
 - ↳ ④ Ascend. branches of Lt. & Rt. colic artery.

r) peritoneal cover of Kidney

↳ Retroperitoneal (peritoneum anteriorly only)

due to overlying of organs on kidney surface

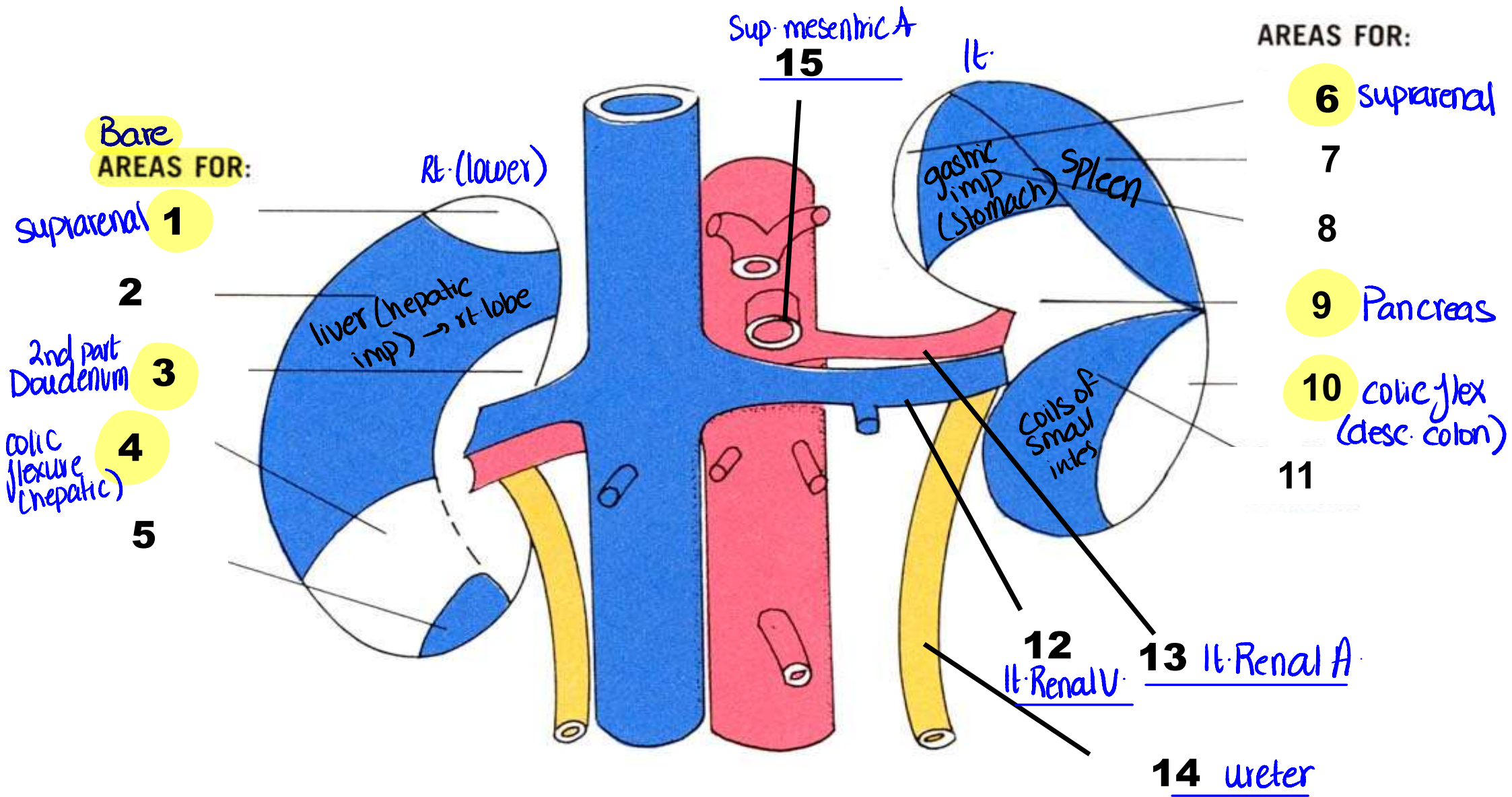
Bare Areas:-

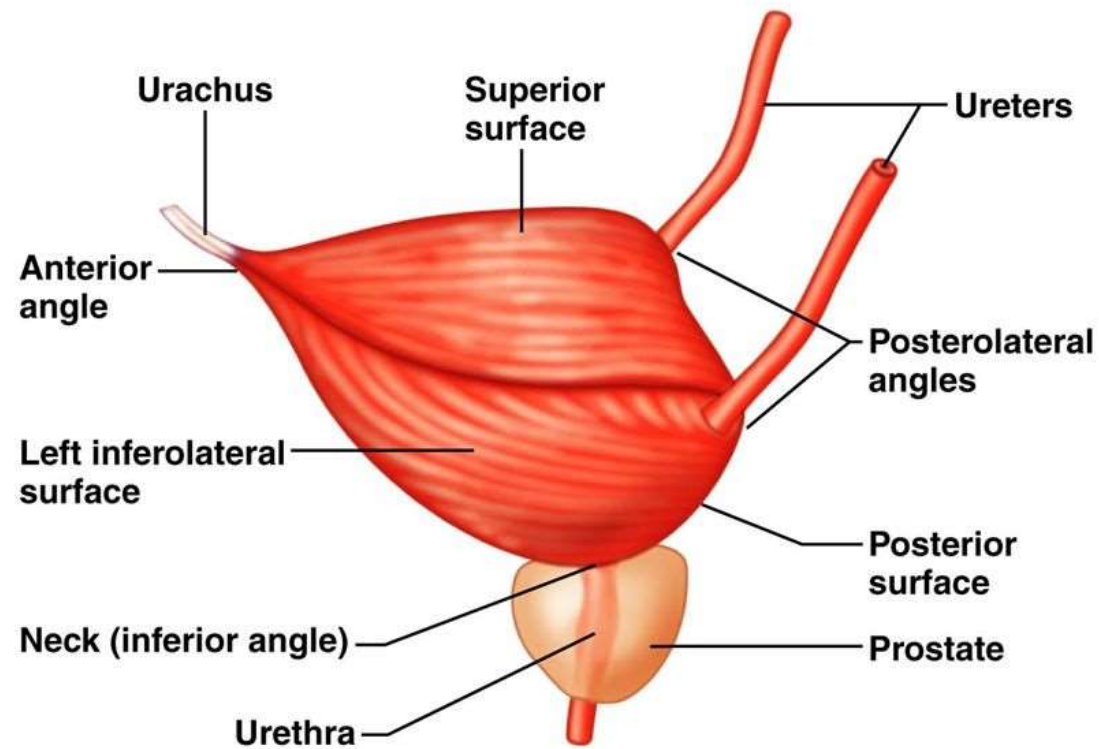
- ↳ fixed:- Suprarenal
- Colic
- ↳ diff:- Rt:-
- cloudrenal

Lt:- Pancreas

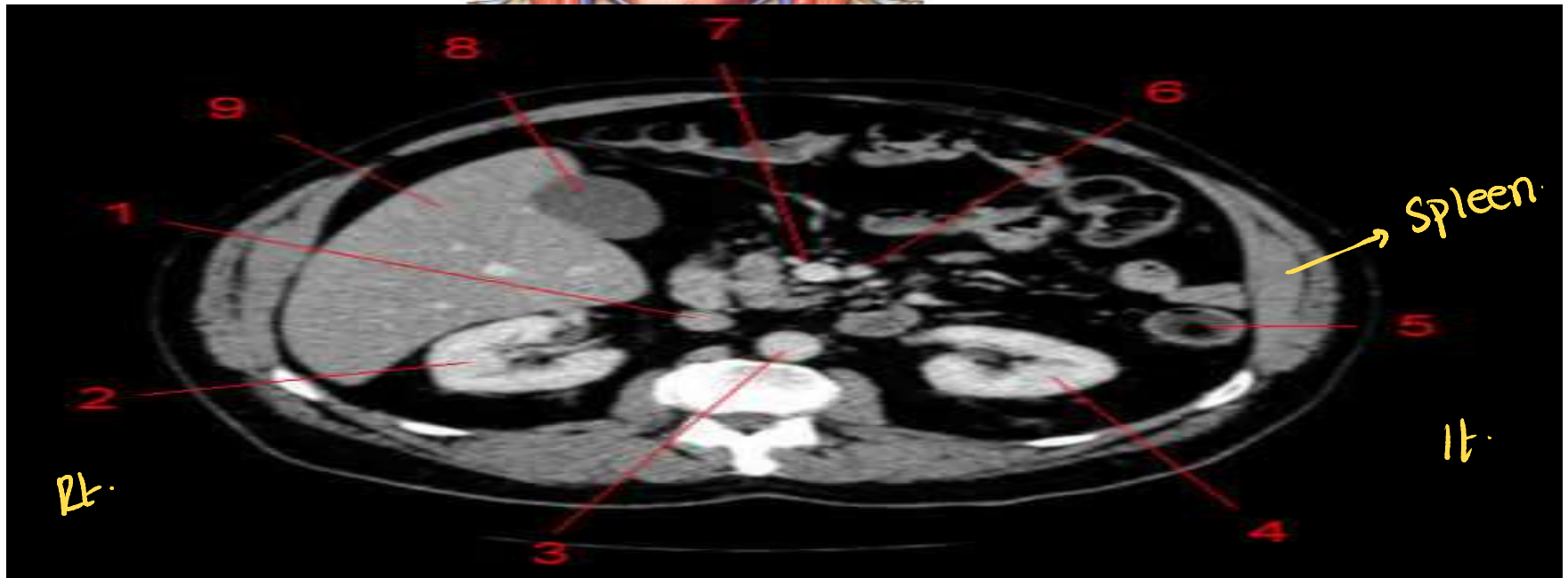
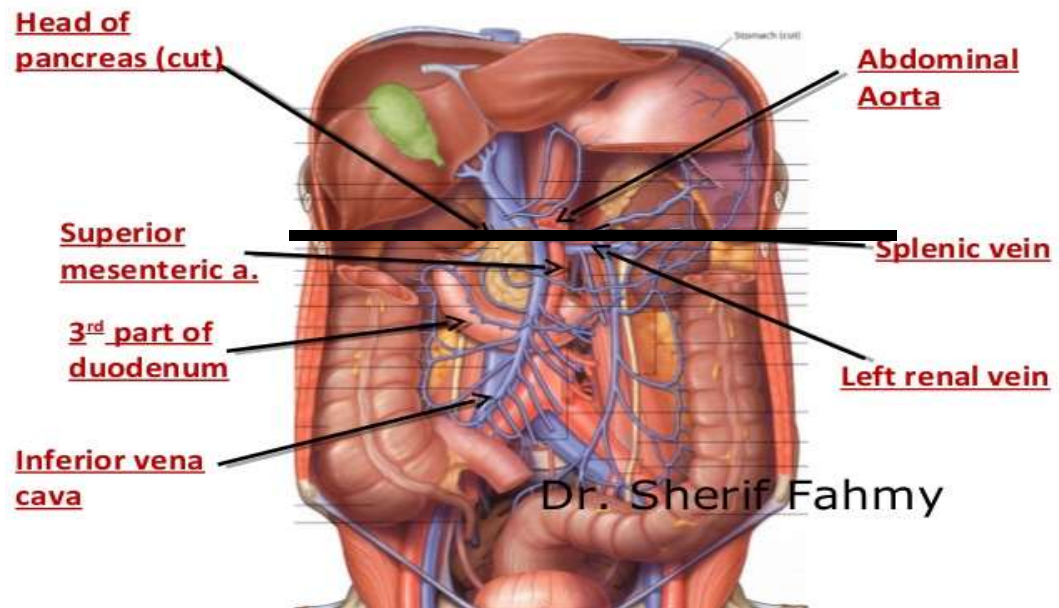
different:-

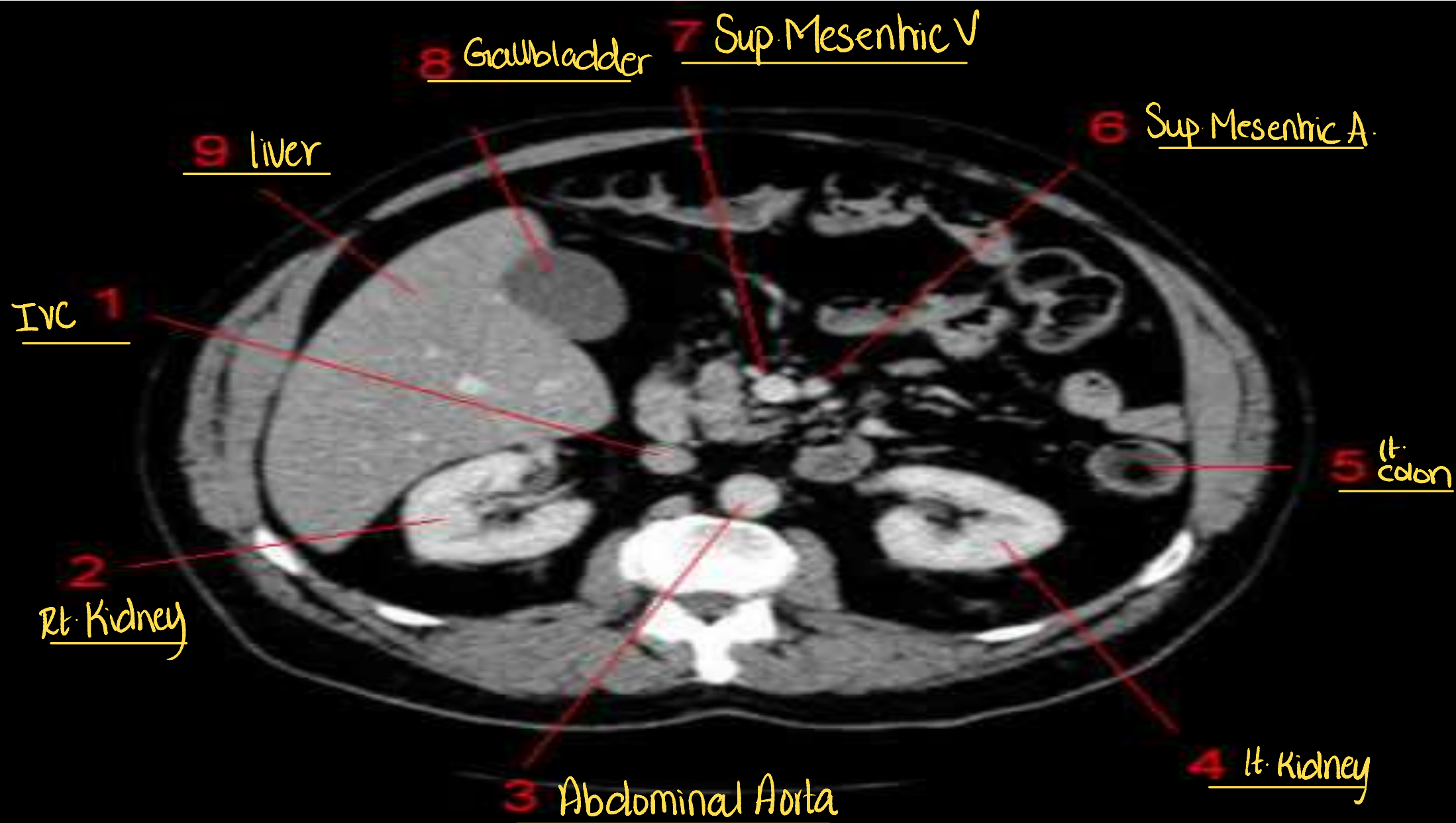
Rt	Lt.
Right lobe of liver + hepatorenal pouch	Post. surface of stomach + lesser sac.
2nd part of Duodenum of small intestine.	Pancreas + Splenic V. Spleen + lienorenal lig.





Mention the relation of urinary bladder In Male and Female



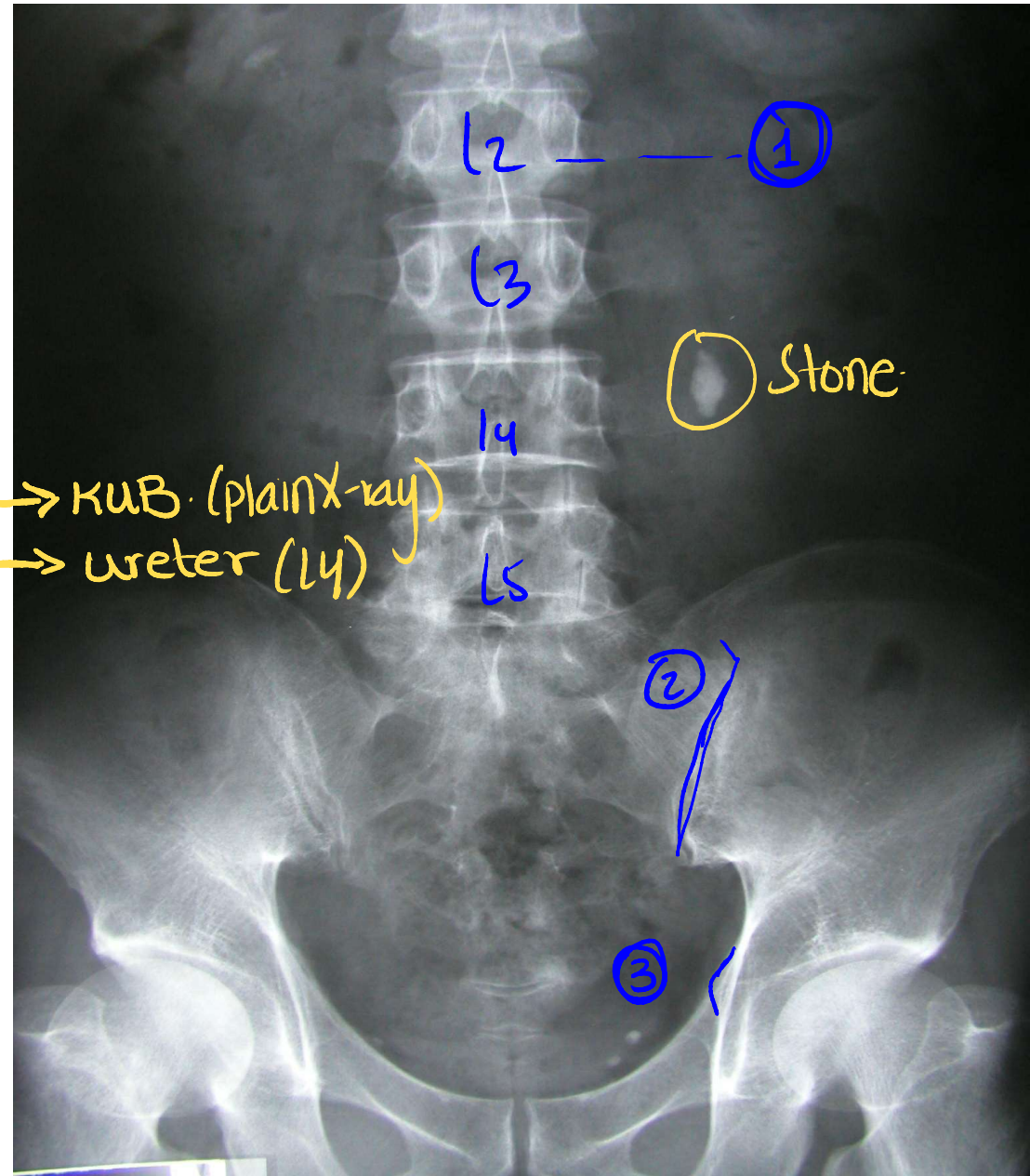


1. What is the type of this radiograph ? → KUB (plain X-ray)
2. Where is the location of the stone ? → Ureter (L4)
3. Mark sites of ureteric constriction

↳ ① Pelvouteric junction → L2

↳ ② Pelvic brim → Sacroiliac joint

↳ ③ Urinary bladder wall → ischial spine laterally





Abnormal urethra.

Which is abnormal urethrogram and why ?



great job!! Now go grab a Snack!