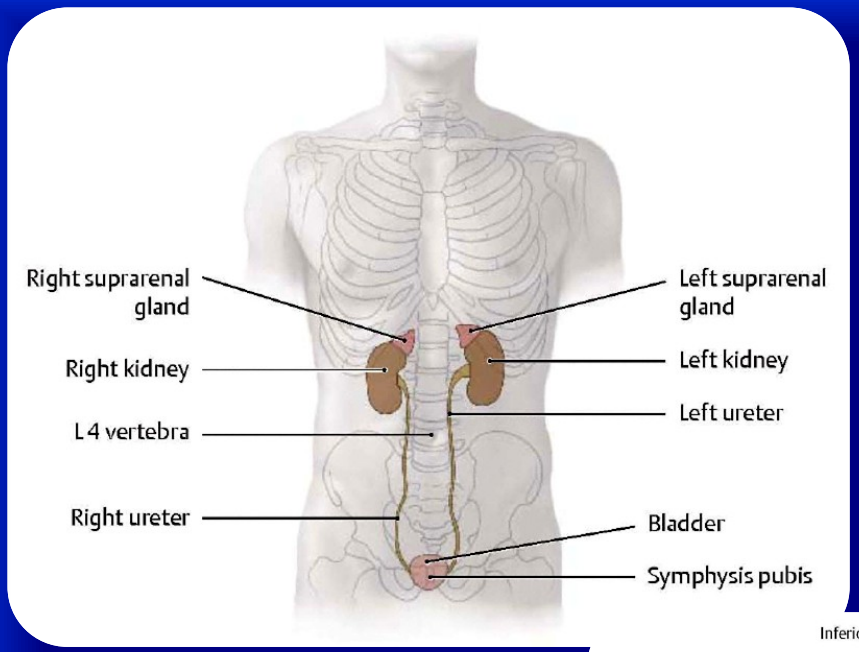
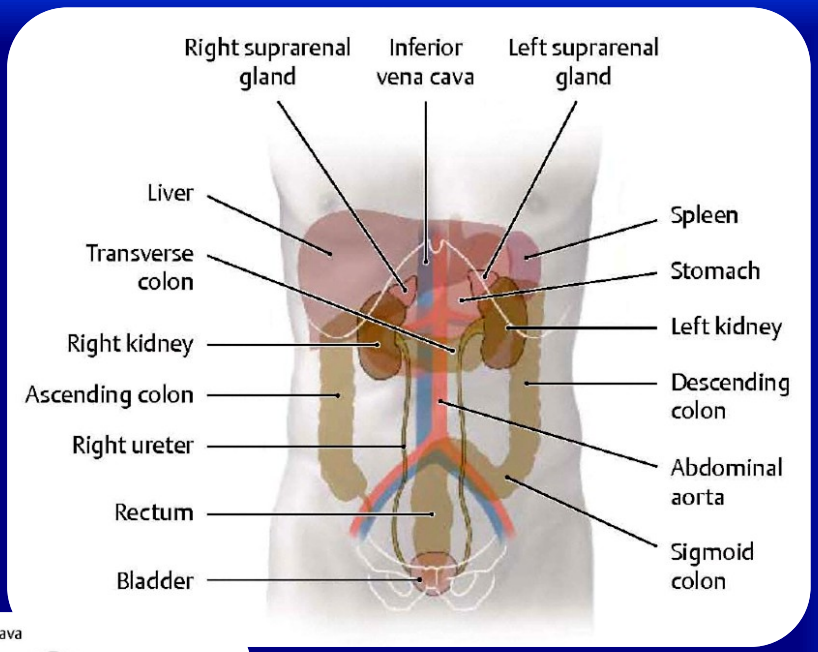
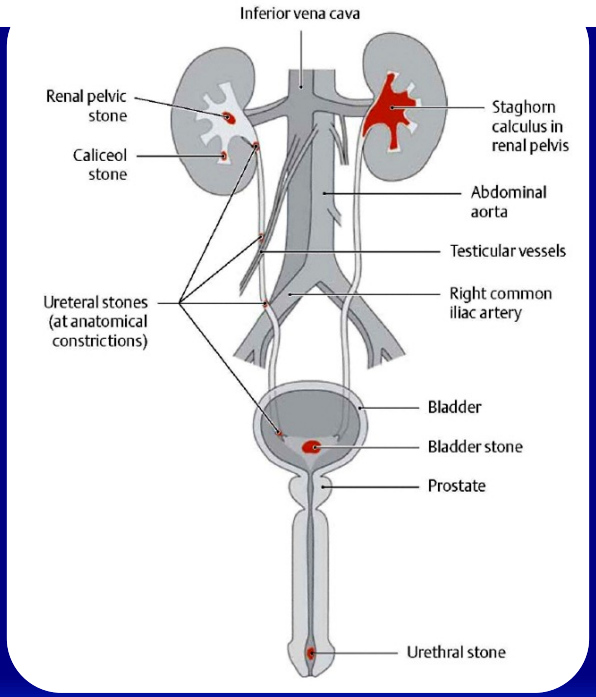
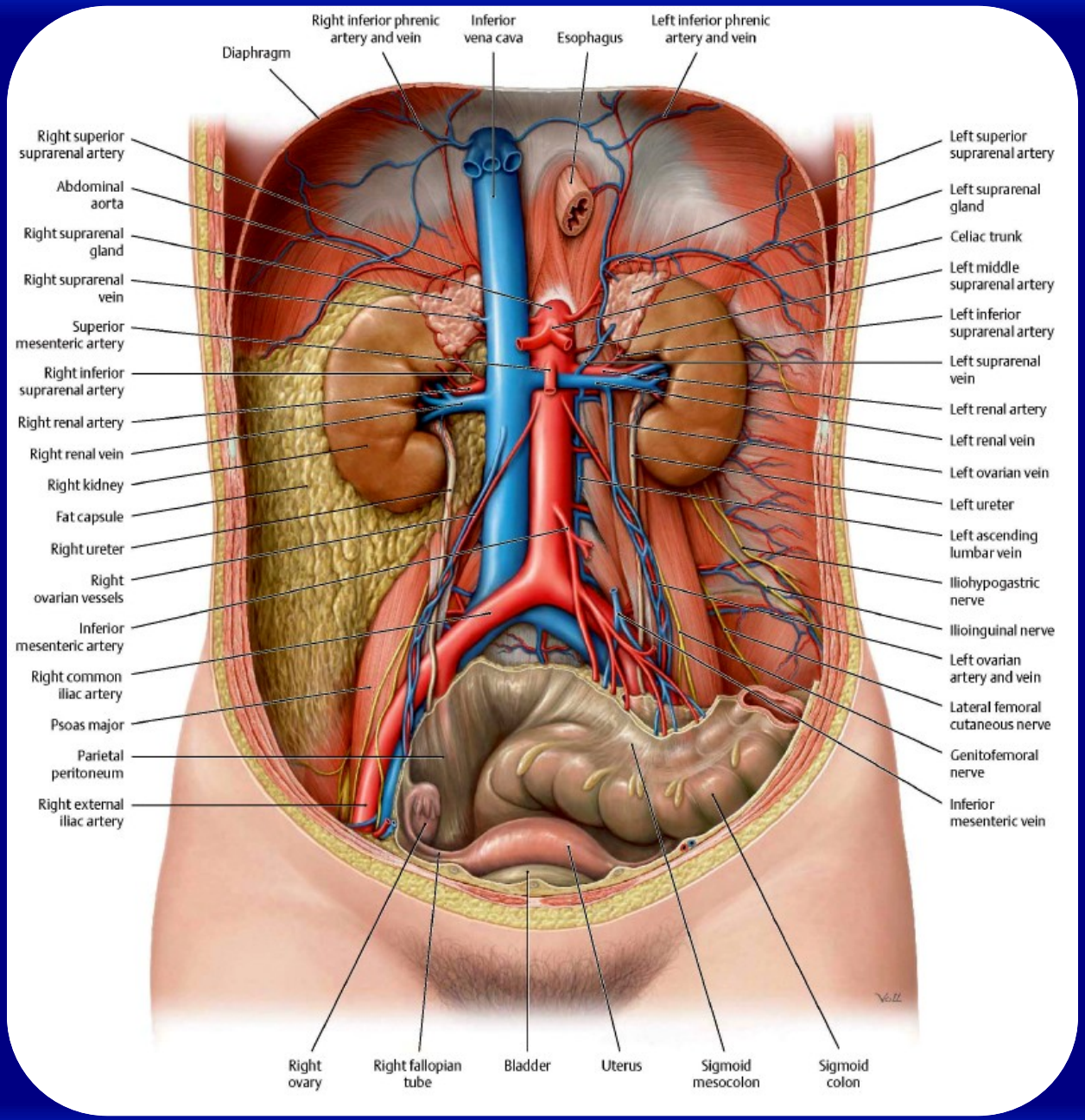
Rozwój układu moczowego

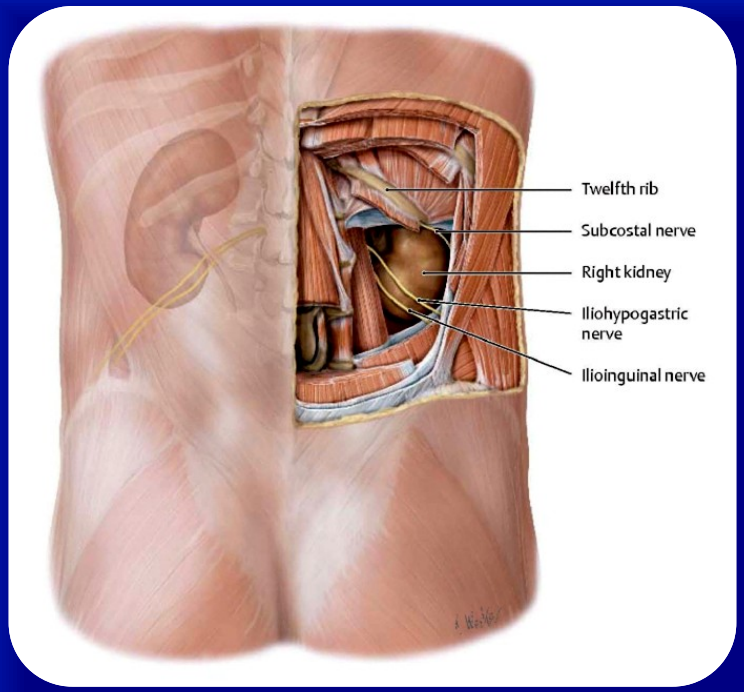
Thieme Netter Sobotta

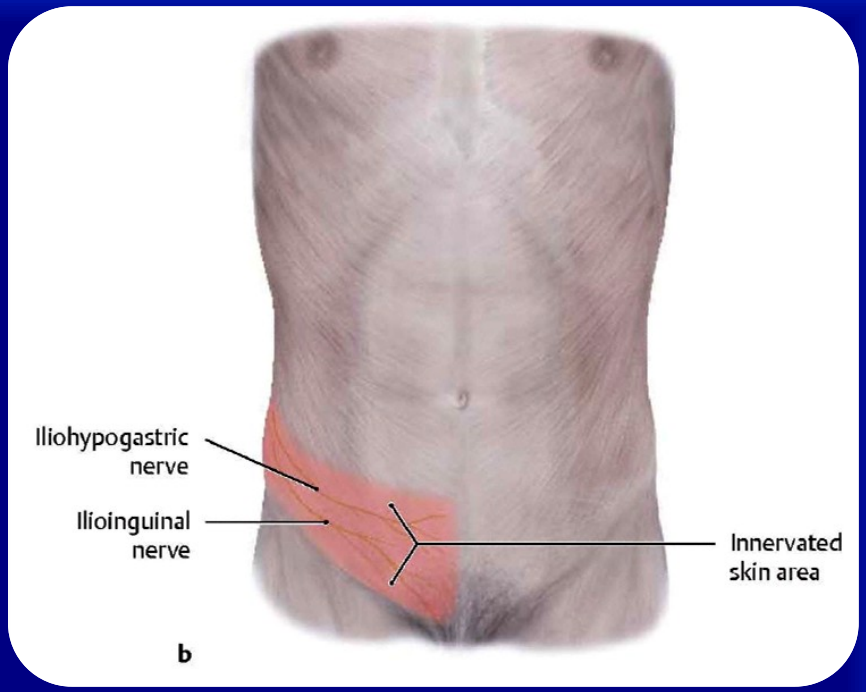

Right suprarenal gland
Left suprarenal gland
Right kidney
Left kidney
L4 vertebra
Left ureter
Right ureter
Bladder
Symphysis pubis

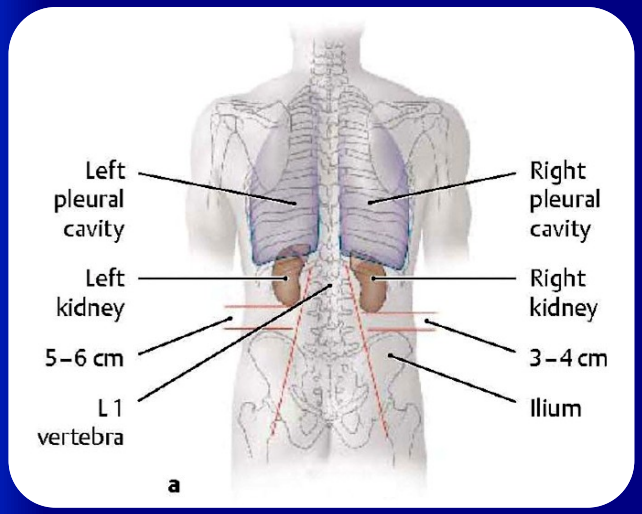

Right suprarenal gland
Inferior vena cava
Left suprarenal gland
Liver
Spleen
Transverse colon
Stomach
Left kidney
Right kidney
Descending colon
Ascending colon
Abdominal aorta
Right ureter
Rectum
Sigmoid colon
Bladder

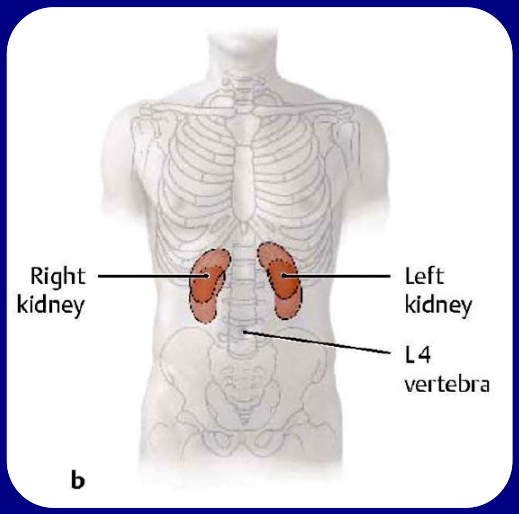

Inferior vena cava
Renal pelvic stone
Staghorn calculus in renal pelvis
Caliceol stone
Abdominal aorta
Testicular vessels
Ureteral stones (at anatomical constrictions)
Right common iliac artery
Bladder
Bladder stone
Prostate
Urethral stone

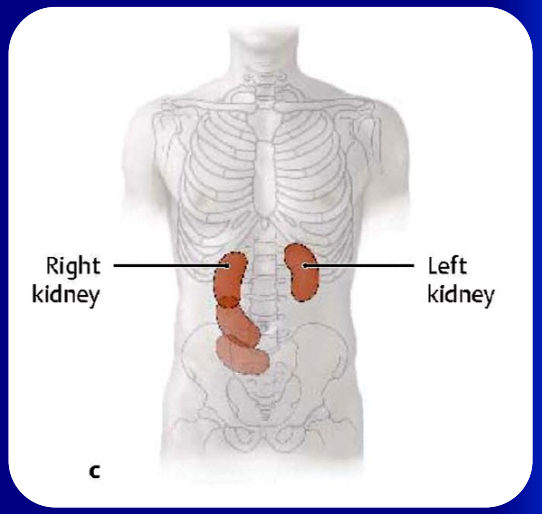

Diaphragm
Right inferior phrenic artery and vein
Inferior vena cava
Esophagus
Left inferior phrenic artery and vein
Right superior suprarenal artery
Abdominal aorta
Right suprarenal gland
Right suprarenal vein
Superior mesenteric artery
Right inferior suprarenal artery
Right renal artery
Right renal vein
Right kidney
Fat capsule
Right ureter
Right ovarian vessels
Inferior mesenteric artery
Right common iliac artery
Psoas major
Parietal peritoneum
Right external iliac artery
Left superior suprarenal artery
Left suprarenal gland
Celiac trunk
Left middle suprarenal artery
Left inferior suprarenal artery
Left suprarenal vein
Left renal artery
Left renal vein
Left ovarian vein
Left ureter
Left ascending lumbar vein
Iliohypogastric nerve
Ilioinguinal nerve
Left ovarian artery and vein
Lateral femoral cutaneous nerve
Genitofemoral nerve
Inferior mesenteric vein
Right ovary
Right fallopian tube
Bladder
Uterus
Sigmoid mesocolon
Sigmoid colon

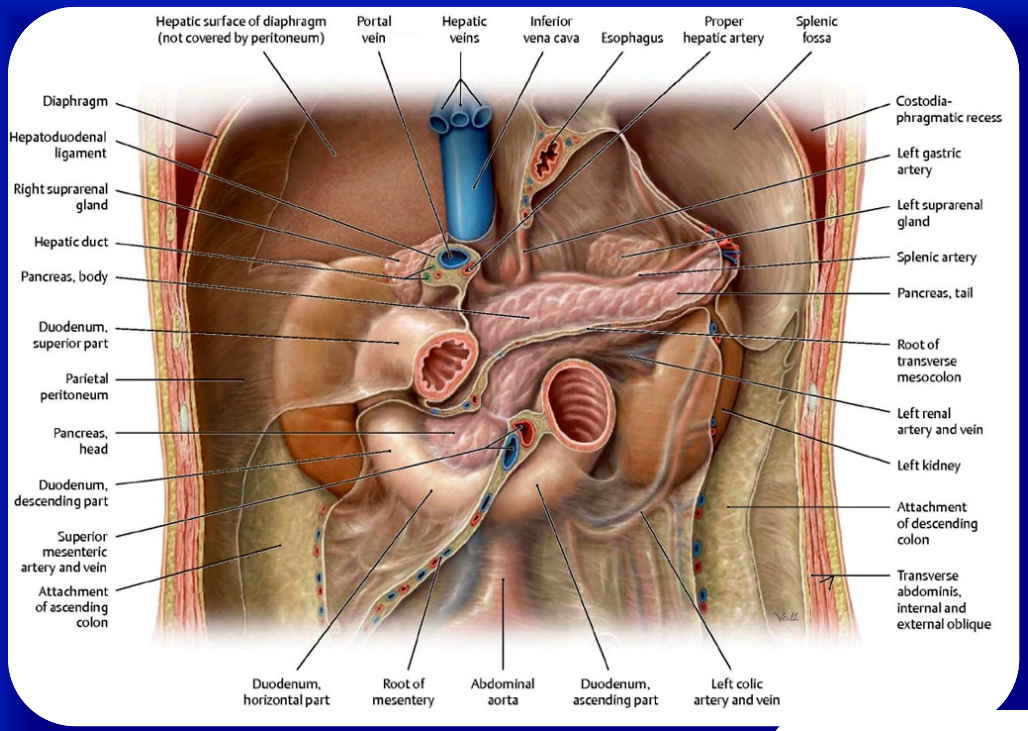

Twelfth rib
Subcostal nerve
Right kidney
Iliohypogastric nerve
Ilioinguinal nerve

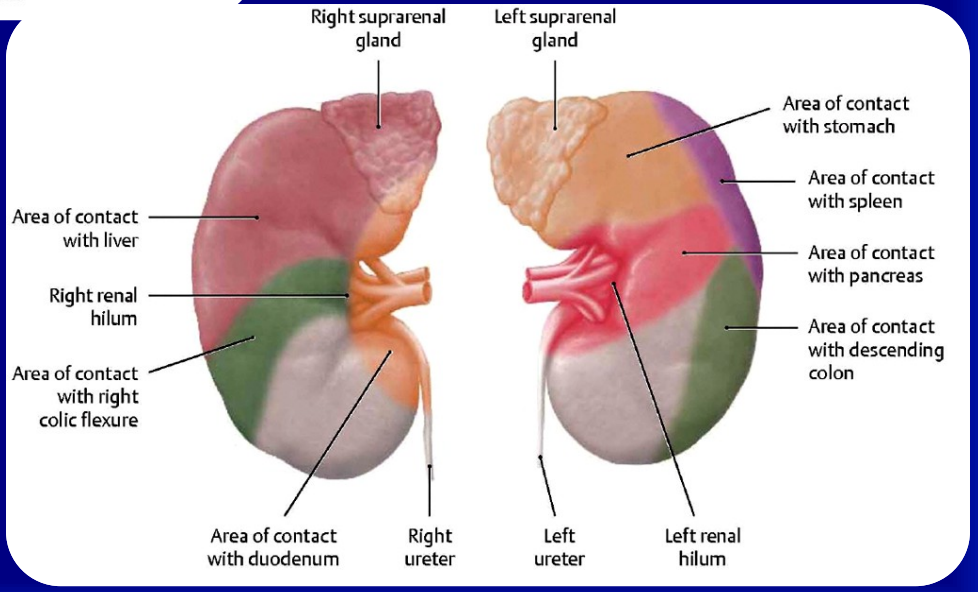

Iliohypogastric nerve
Ilioinguinal nerve
Innervated skin area
b

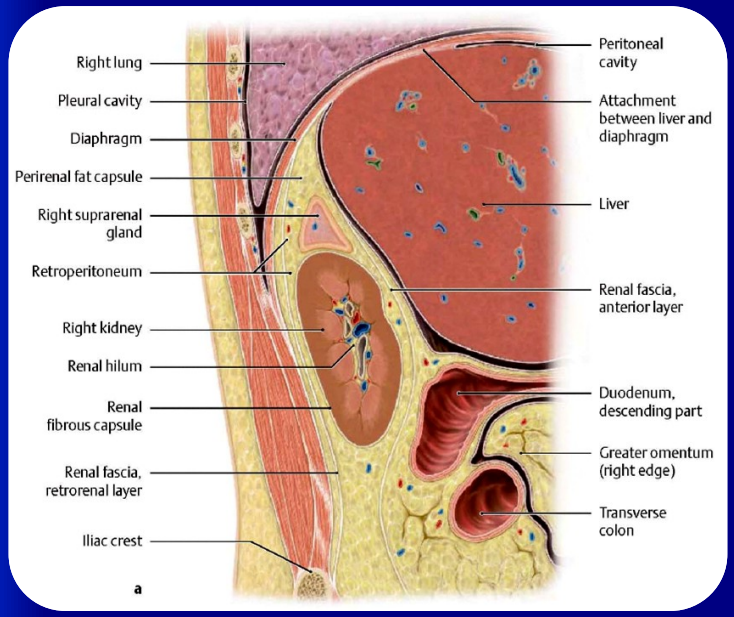

Left pleural cavity
Right pleural cavity
Left kidney
Right kidney
5–6 cm
3–4 cm
L1 vertebra
Ilium
a

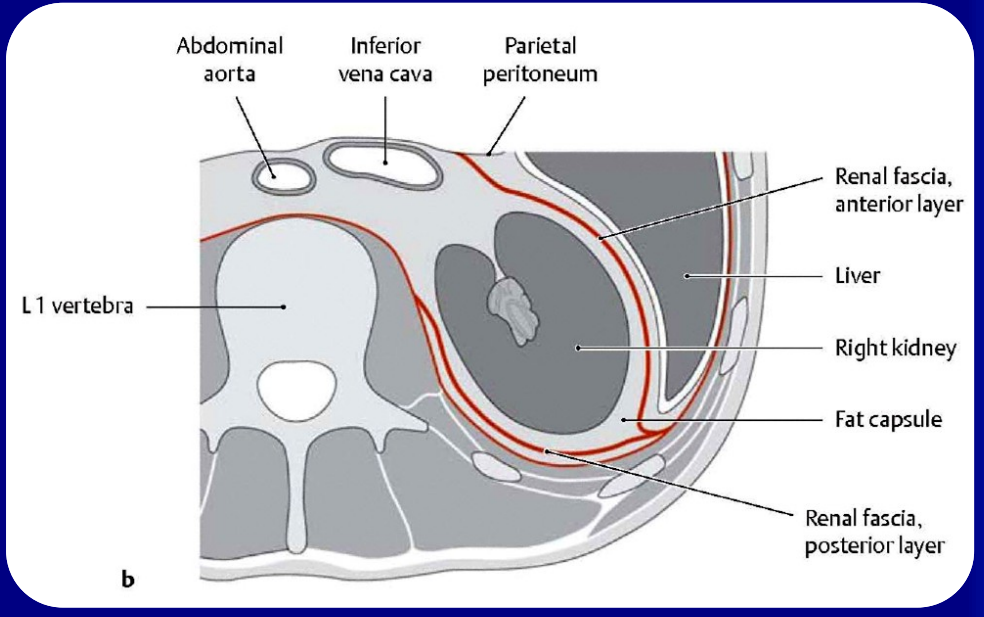

Right kidney
Left kidney
L4 vertebra
b


Right kidney
Left kidney
c


Hepatic surface of diaphragm (not covered by peritoneum)
Portal vein
Hepatic veins
Inferior vena cava
Esophagus
Proper hepatic artery
Splenic fossa
Diaphragm
Hepatoduodenal ligament
Right suprarenal gland
Hepatic duct
Pancreas, body
Duodenum, superior part
Parietal peritoneum
Pancreas, head
Duodenum, descending part
Superior mesenteric artery and vein
Attachment of ascending colon
Costodiaphragmatic recess
Left gastric artery
Left suprarenal gland
Splenic artery
Pancreas, tail
Root of transverse mesocolon
Left renal artery and vein
Left kidney
Attachment of descending colon
Transverse abdominis, internal and external oblique
Duodenum, horizontal part
Root of mesentery
Abdominal aorta
Duodenum, ascending part
Left colic artery and vein

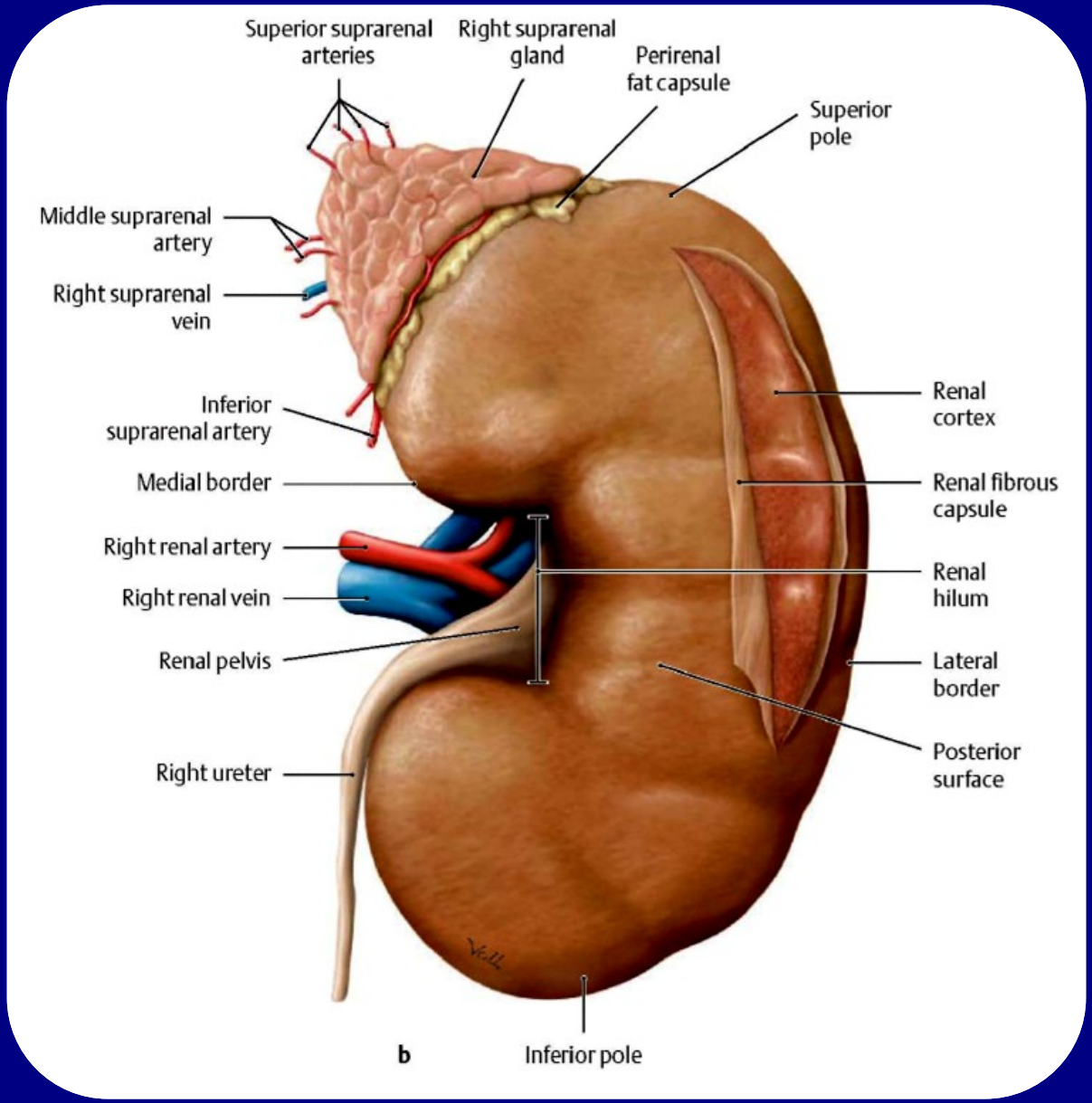

Right suprarenal gland
Left suprarenal gland
Area of contact with liver
Right renal hilum
Area of contact with right colic flexure
Area of contact with duodenum
Right ureter
Area of contact with stomach
Area of contact with spleen
Area of contact with pancreas
Area of contact with descending colon
Left ureter
Left renal hilum

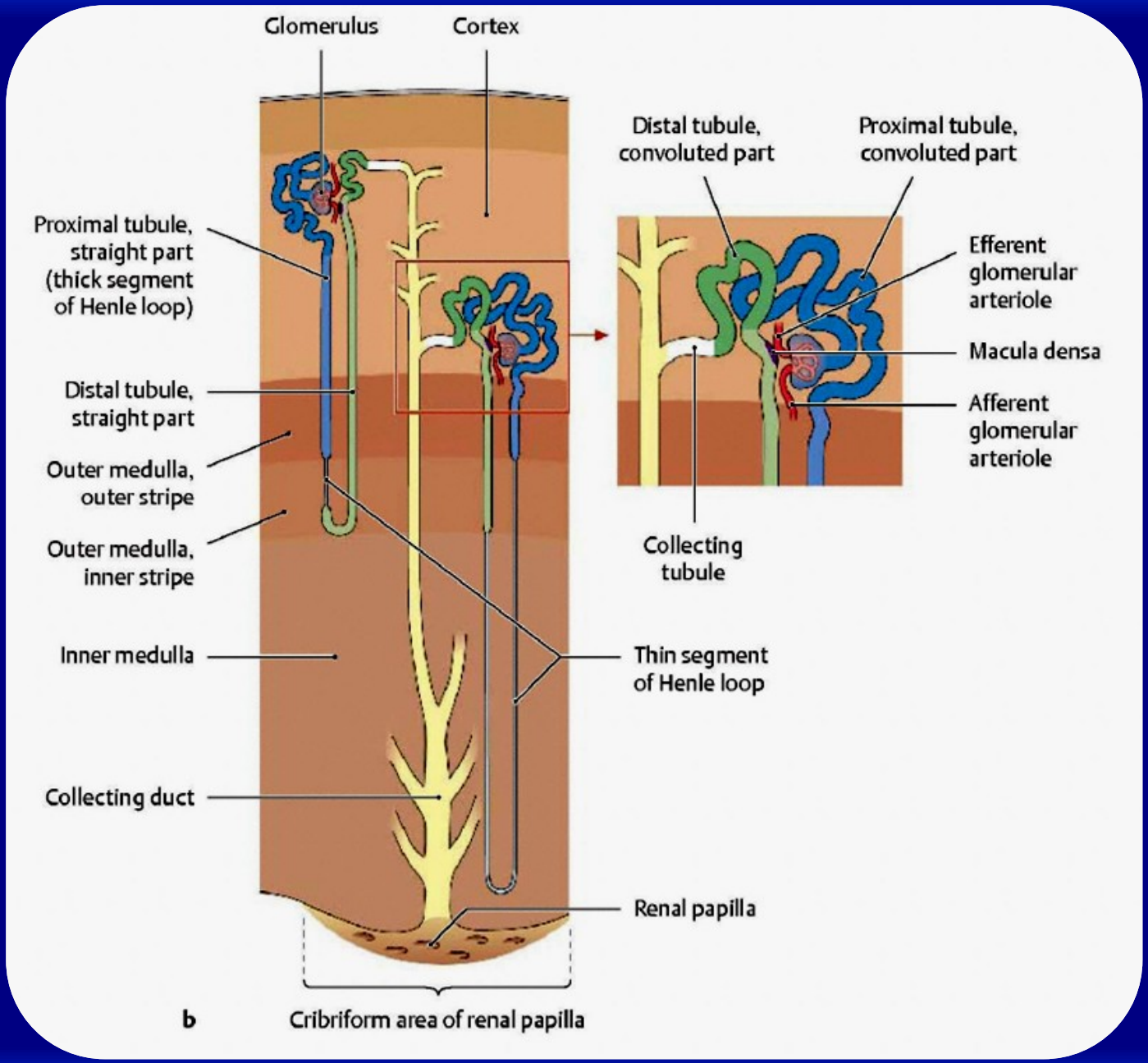


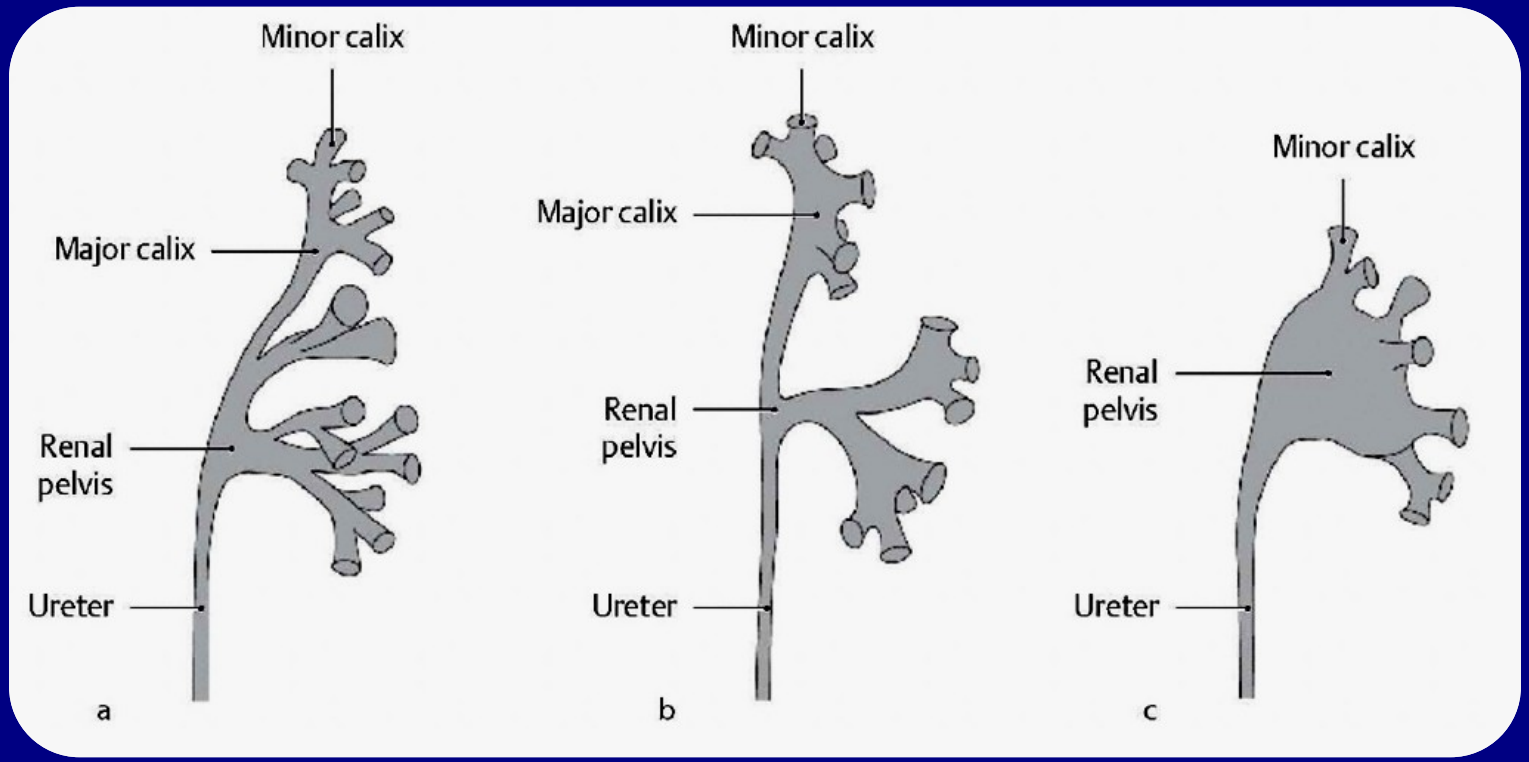


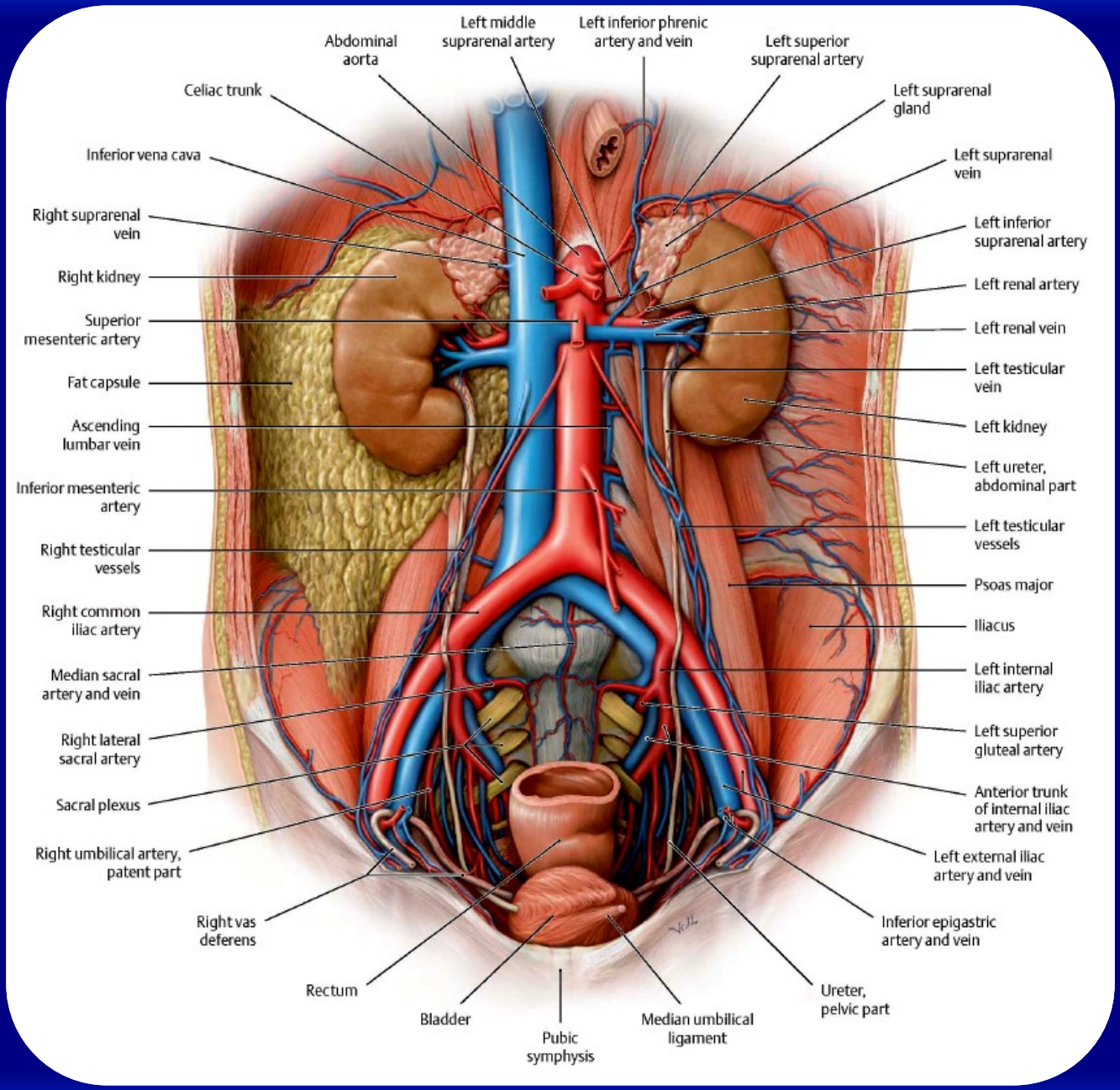
Renal bed: fasciae and capsules of the kidneys

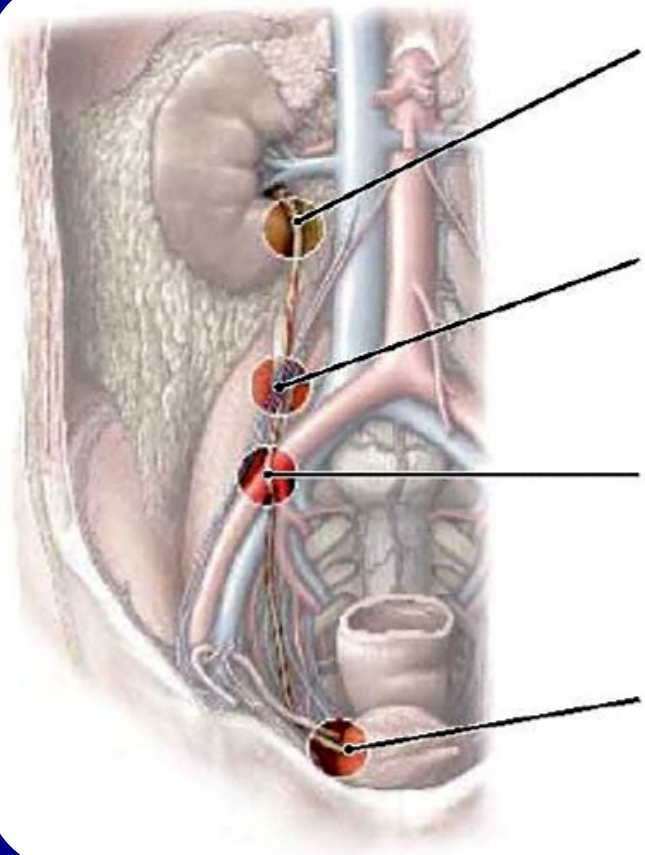
Renal fibrous capsule	Thin, firm connective-tissue capsule that closely invests each kidney
Fat capsule	Mass of fat that surrounds the kidneys and adrenal glands *and* completely occupies the renal bed; it is thickest lateral and posterior to the kidneys
Renal fascia	Connective-tissue fascial sac that encloses the fat capsule, portions of the abdominal aorta and inferior vena cava close to the kidney (see **Ab**), and the proximal ureter; subdivided into a thin prerenal layer and a thick retrorenal layer (see **Aa**)


Superior suprarenal arteries
Right suprarenal gland
Perirenal fat capsule
Superior pole
Middle suprarenal artery
Right suprarenal vein
Inferior suprarenal artery
Medial border
Right renal artery
Right renal vein
Renal pelvis
Right ureter
Renal cortex
Renal fibrous capsule
Renal hilum
Lateral border
Posterior surface
Inferior pole
b


Glomerulus
Cortex
Distal tubule, convoluted part
Proximal tubule, convoluted part
Proximal tubule, straight part (thick segment of Henle loop)
Efferent glomerular arteriole
Macula densa
Distal tubule, straight part
Afferent glomerular arteriole
Outer medulla, outer stripe
Outer medulla, inner stripe
Collecting tubule
Inner medulla
Thin segment of Henle loop
Collecting duct
Renal papilla
b
Cribriform area of renal papilla


Minor calix
Major calix
Renal pelvis
Ureter
a
Minor calix
Major calix
Renal pelvis
Ureter
b
Minor calix
Renal pelvis
Ureter
c


Abdominal aorta
Left middle suprarenal artery
Left inferior phrenic artery and vein
Left superior suprarenal artery
Celiac trunk
Left suprarenal gland
Inferior vena cava
Left suprarenal vein
Right suprarenal vein
Left inferior suprarenal artery
Right kidney
Left renal artery
Superior mesenteric artery
Left renal vein
Fat capsule
Left testicular vein
Ascending lumbar vein
Left kidney
Left ureter, abdominal part
Inferior mesenteric artery
Left testicular vessels
Right testicular vessels
Psoas major
Right common iliac artery
Iliacus
Median sacral artery and vein
Left internal iliac artery
Right lateral sacral artery
Left superior gluteal artery
Sacral plexus
Anterior trunk of internal iliac artery and vein
Right umbilical artery, patent part
Left external iliac artery and vein
Right vas deferens
Inferior epigastric artery and vein
Rectum
Ureter, pelvic part
Bladder
Median umbilical ligament
Pubic symphysis

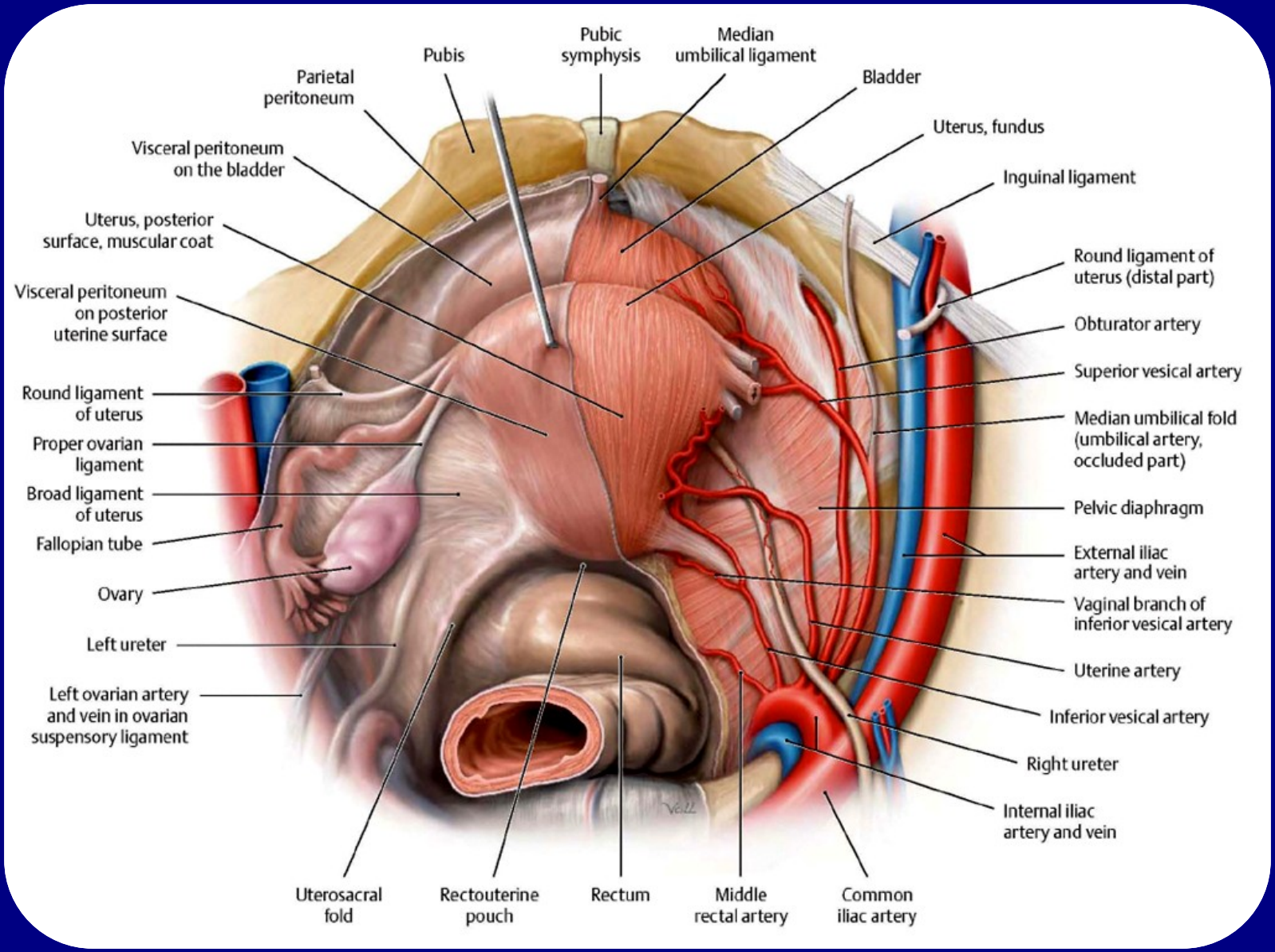


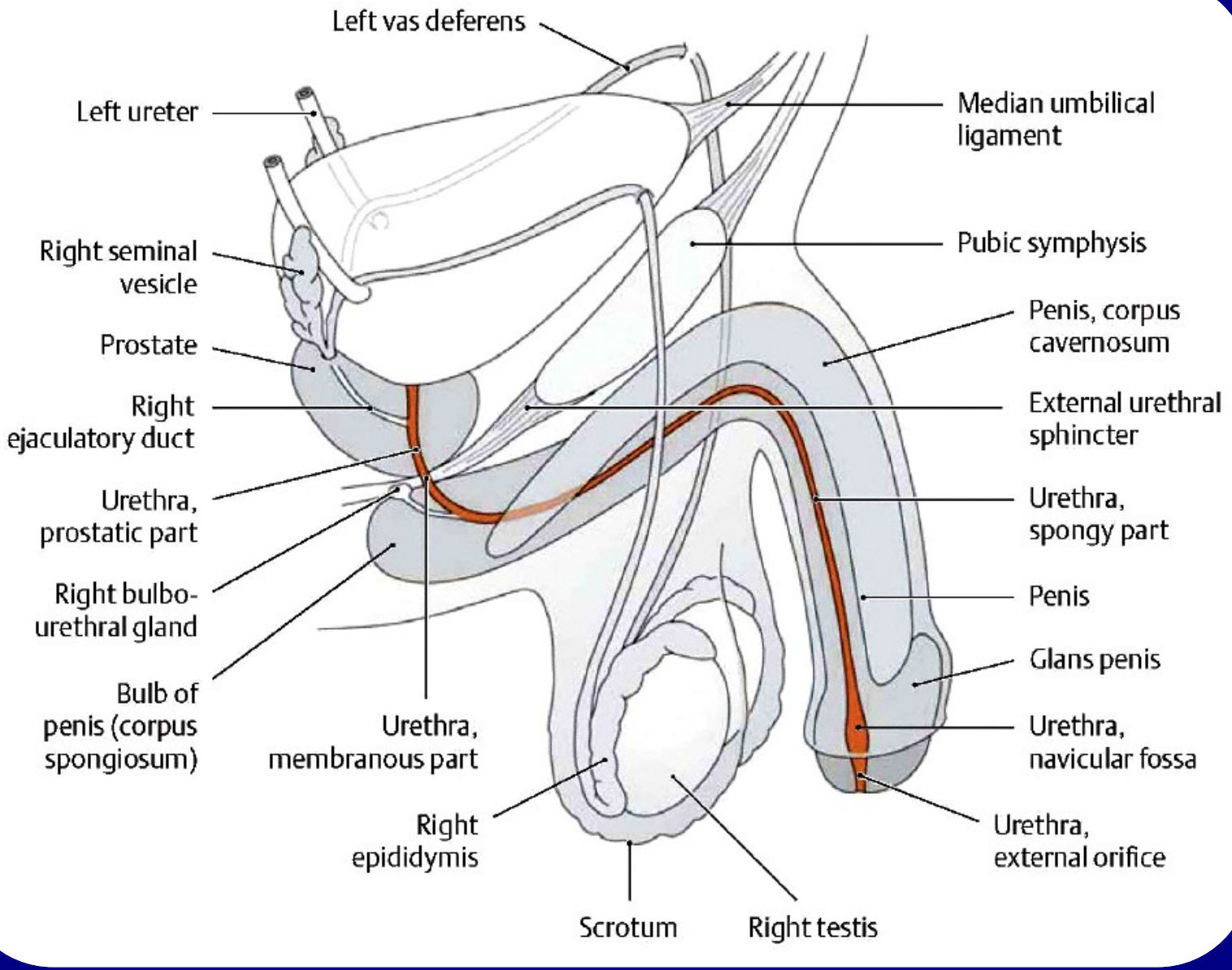
First constriction:
ureter passes over inferior
renal pole (abdominal part)

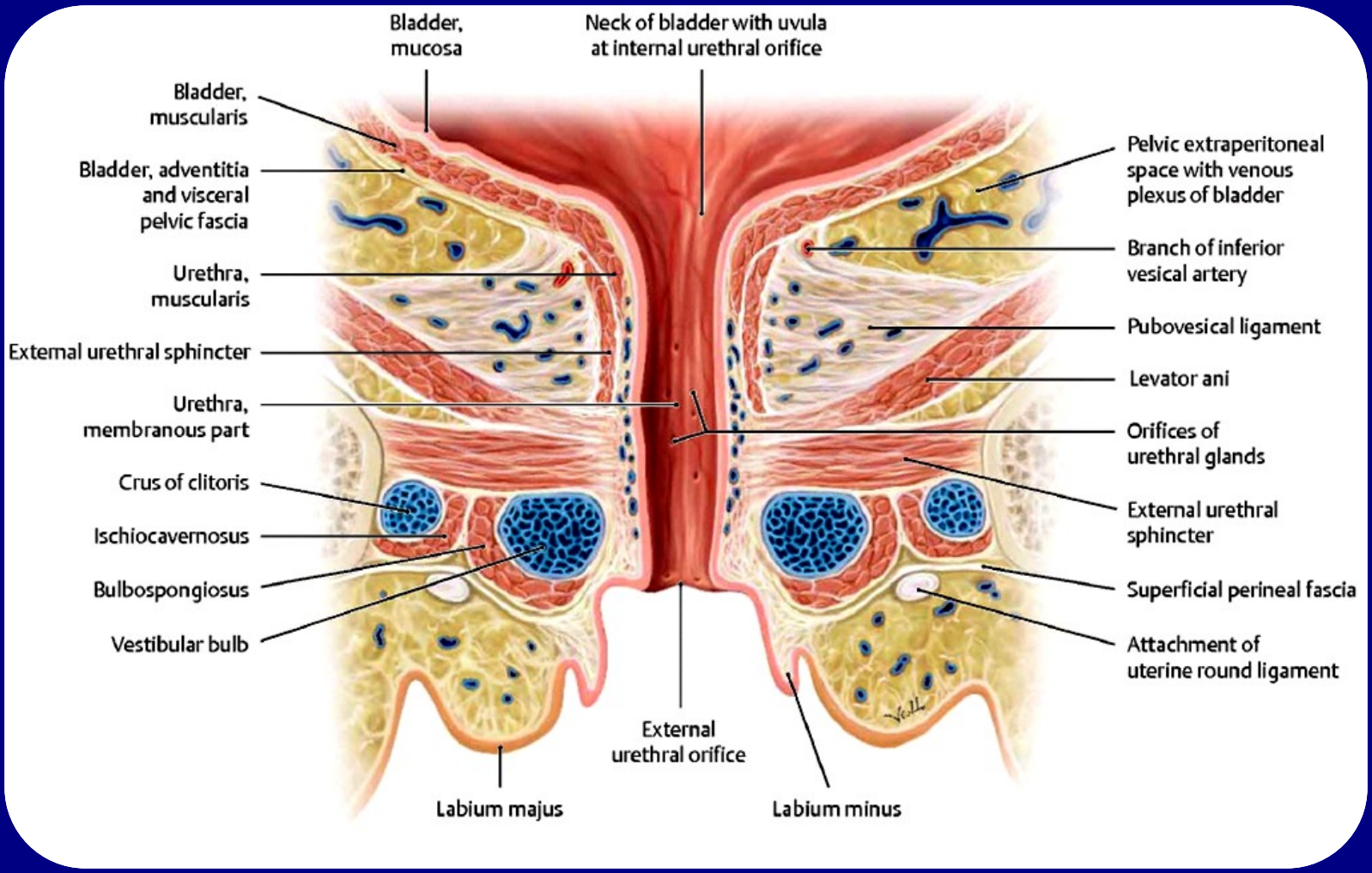
Possible constriction where
ureter passes behind testicular
or ovarian vessels

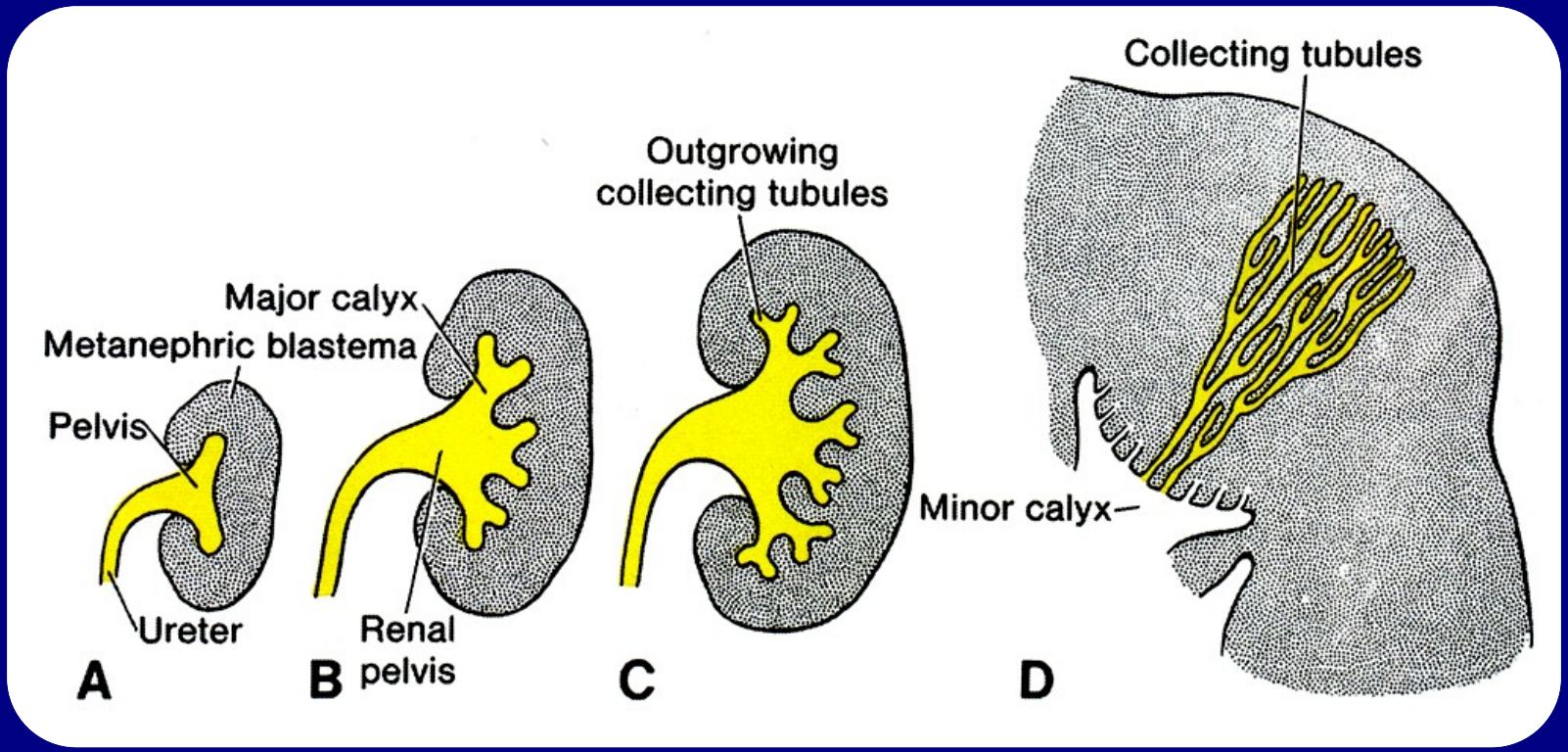
Second constriction:
ureter crosses over external
iliac vessels (pelvic part)

Third constriction:
ureter traverses the bladder
wall (intramural part)


Pubis
Pubic symphysis
Median umbilical ligament
Parietal peritoneum
Bladder
Visceral peritoneum on the bladder
Uterus, fundus
Inguinal ligament
Uterus, posterior surface, muscular coat
Round ligament of uterus (distal part)
Visceral peritoneum on posterior uterine surface
Obturator artery
Superior vesical artery
Round ligament of uterus
Median umbilical fold (umbilical artery, occluded part)
Proper ovarian ligament
Pelvic diaphragm
Broad ligament of uterus
External iliac artery and vein
Fallopian tube
Vaginal branch of inferior vesical artery
Ovary
Uterine artery
Left ureter
Inferior vesical artery
Left ovarian artery and vein in ovarian suspensory ligament
Right ureter
Internal iliac artery and vein
Uterosacral fold
Rectouterine pouch
Rectum
Middle rectal artery
Common iliac artery

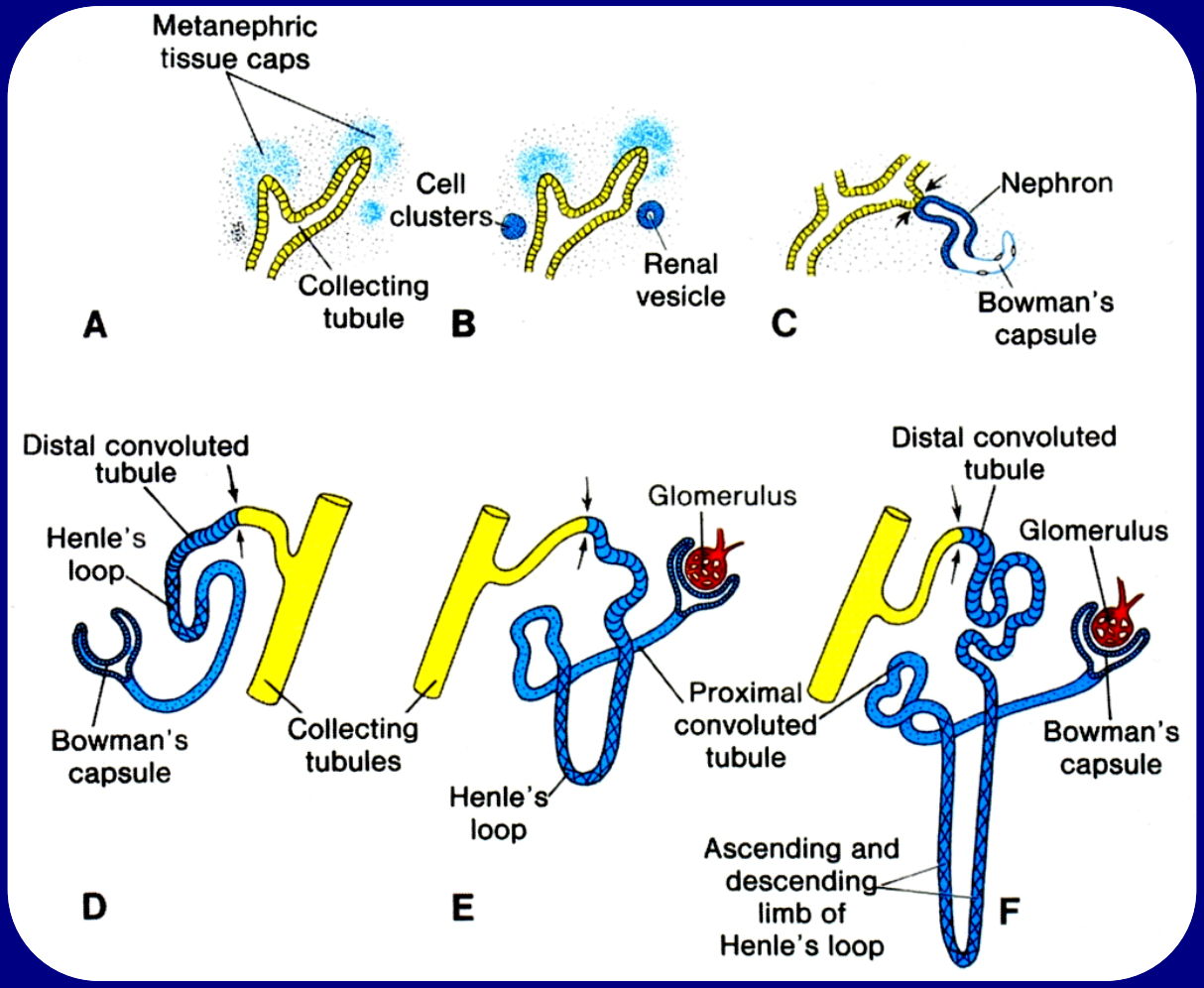

Left vas deferens
Left ureter
Median umbilical ligament
Right seminal vesicle
Pubic symphysis
Prostate
Penis, corpus cavernosum
Right ejaculatory duct
External urethral sphincter
Urethra, prostatic part
Urethra, spongy part
Right bulbo-urethral gland
Penis
Glans penis
Bulb of penis (corpus spongiosum)
Urethra, membranous part
Urethra, navicular fossa
Right epididymis
Urethra, external orifice
Scrotum
Right testis


Bladder, mucosa
Neck of bladder with uvula at internal urethral orifice
Bladder, muscularis
Bladder, adventitia and visceral pelvic fascia
Urethra, muscularis
External urethral sphincter
Urethra, membranous part
Crus of clitoris
Ischiocavernosus
Bulbospongiosus
Vestibular bulb
Pelvic extraperitoneal space with venous plexus of bladder
Branch of inferior vesical artery
Pubovesical ligament
Levator ani
Orifices of urethral glands
External urethral sphincter
Superficial perineal fascia
Attachment of uterine round ligament
External urethral orifice
Labium majus
Labium minus

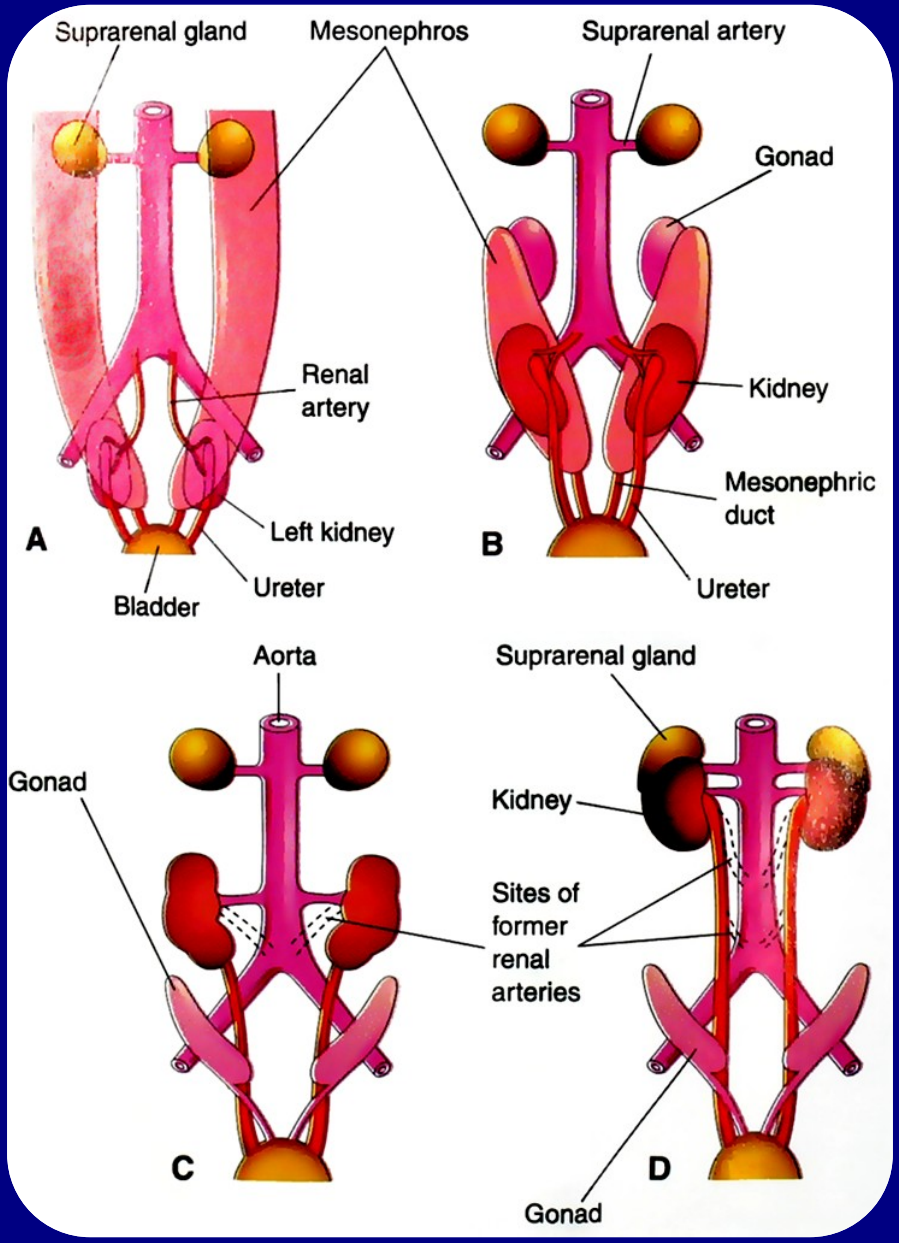


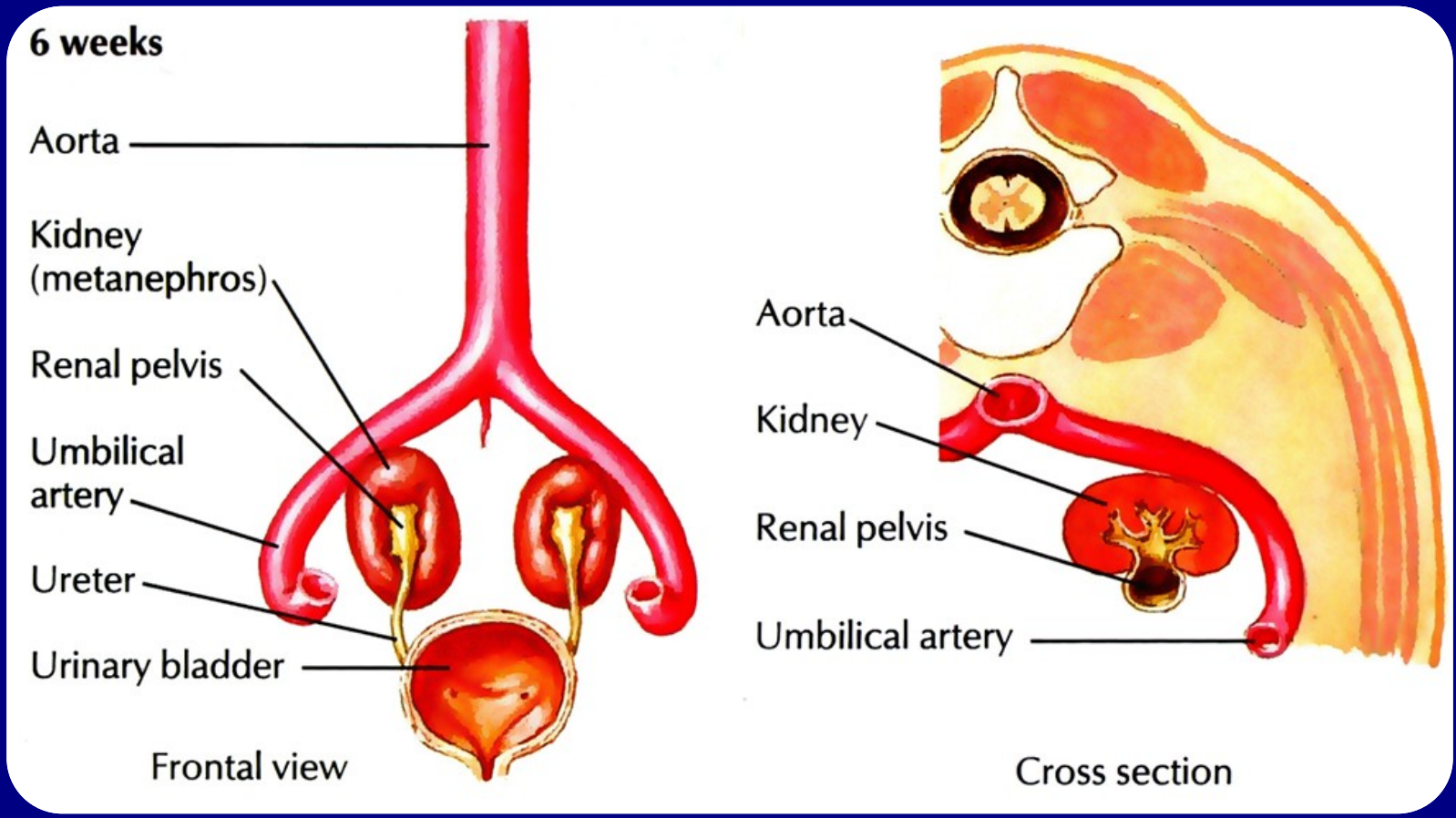
Development of the renal pelvis, calyces, and collecting tubules of the metanephros.

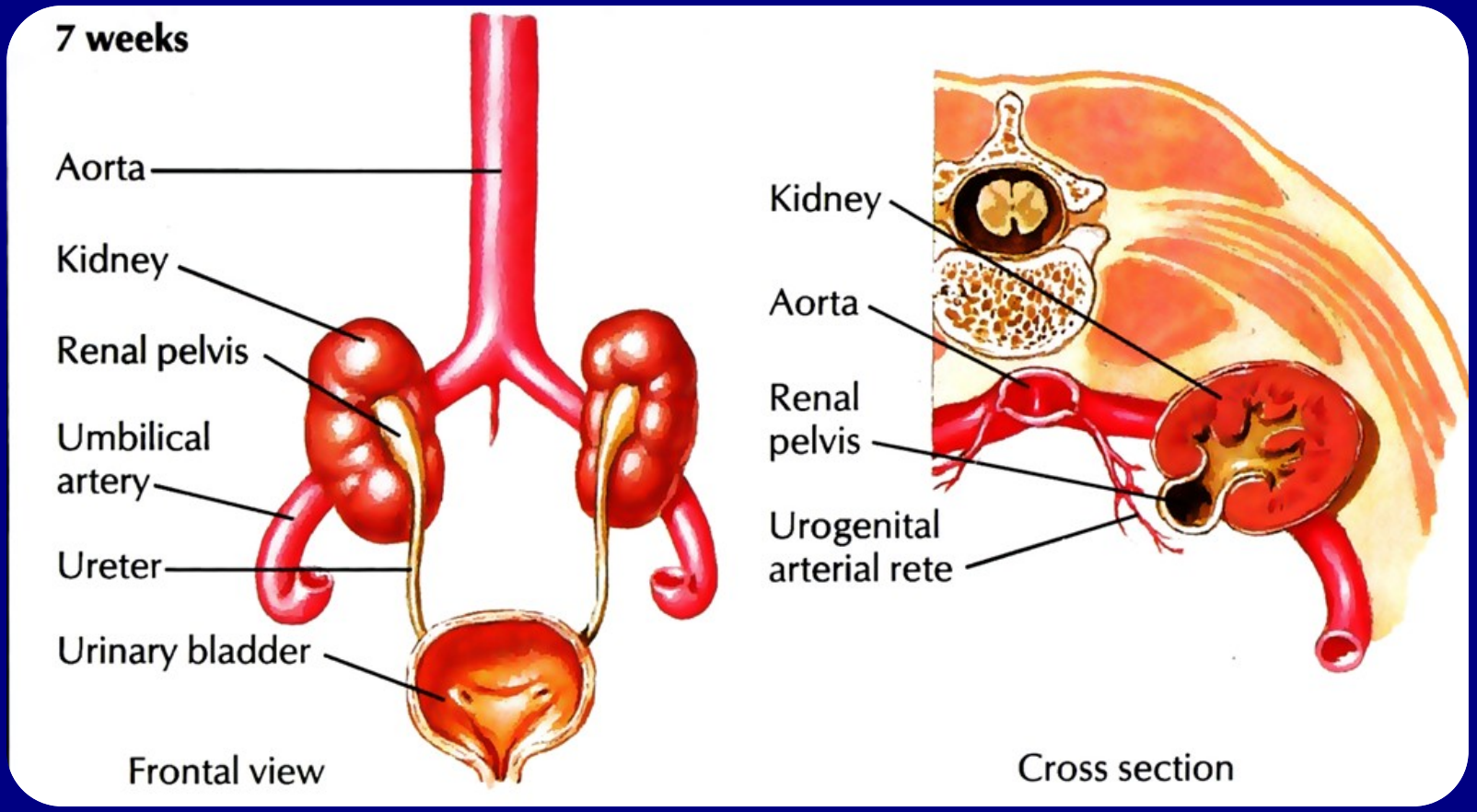
A – 6 weeks. B – At the end of the sixth week. C – 7 weeks. D – Newborn. Note the pyramid form of the collecting tubules entering the minor calyx.

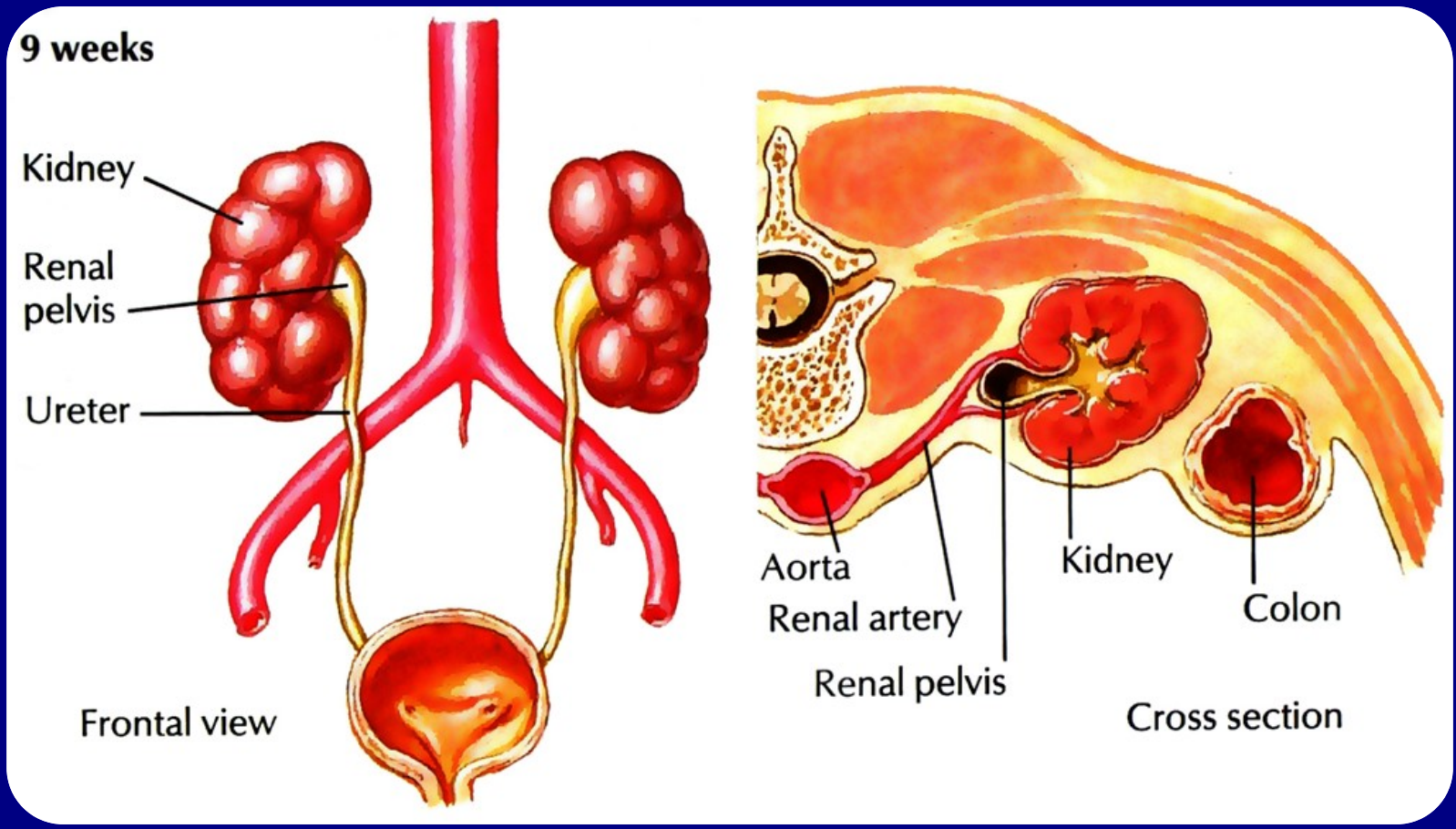


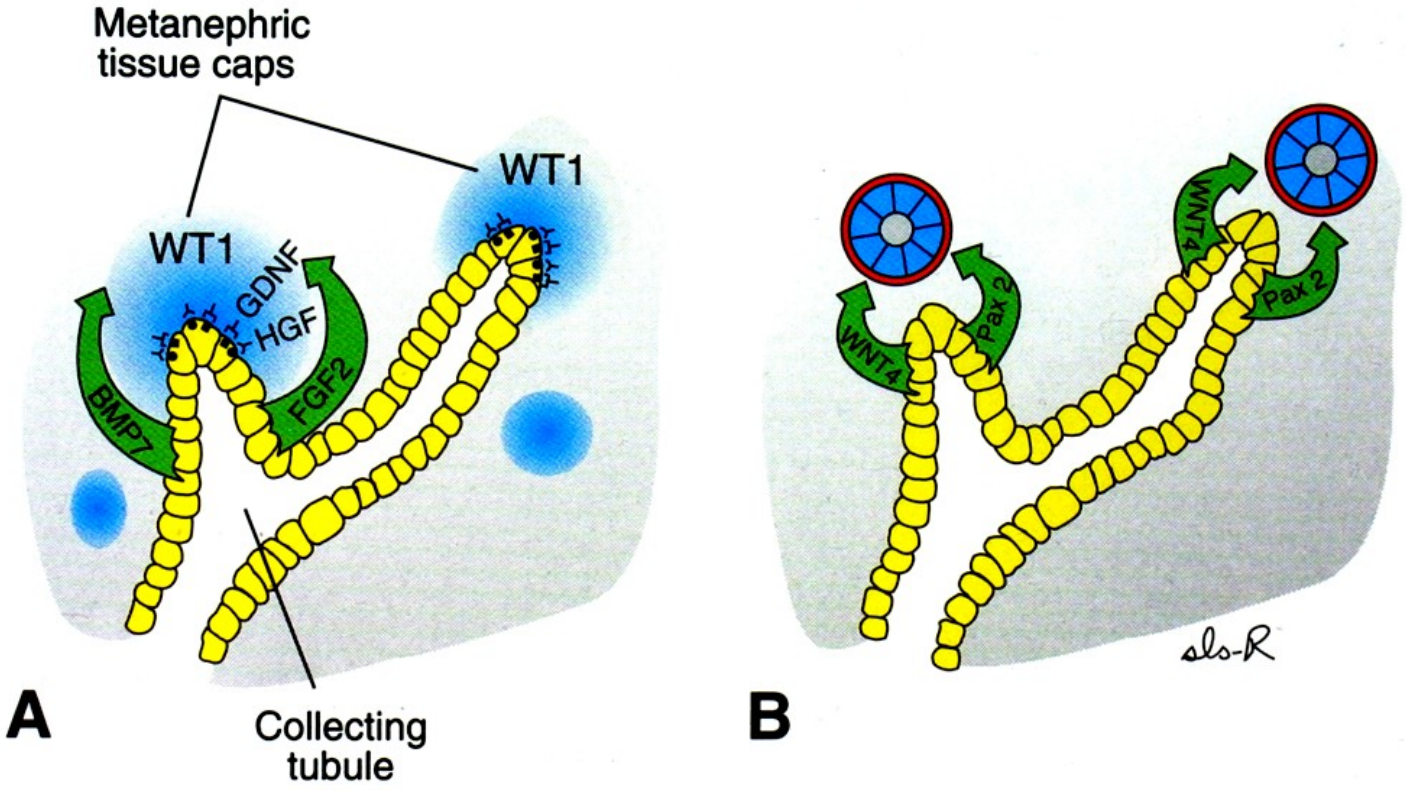
Development of a metanephric excretory unit. Arrows, the place where the excretory unit (blue) establishes an open communication with the collecting system (yellow), allowing flow of urine from the glomerulus into collecting ducts.


Suprarenal gland
Mesonephros
Suprarenal artery
Gonad
Renal artery
Kidney
Mesonephric duct
Left kidney
Ureter
Bladder
A
B
Ureter
Aorta
Suprarenal gland
Gonad
Kidney
Sites of former renal arteries
C
D
Gonad

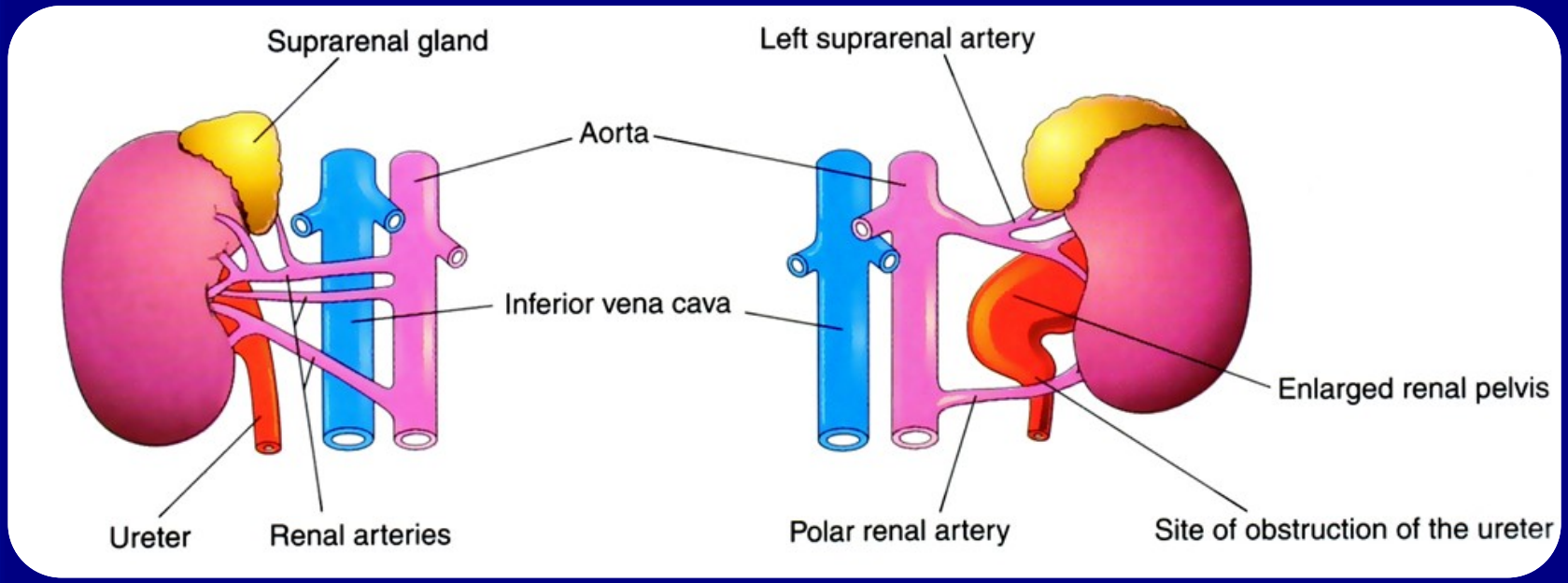

6 weeks
Aorta
Kidney (metanephros)
Renal pelvis
Umbilical artery
Ureter
Urinary bladder
Frontal view
Aorta
Kidney
Renal pelvis
Umbilical artery
Cross section


7 weeks
Aorta
Kidney
Renal pelvis
Umbilical artery
Ureter
Urinary bladder
Frontal view
Kidney
Aorta
Renal pelvis
Urogenital arterial rete
Cross section

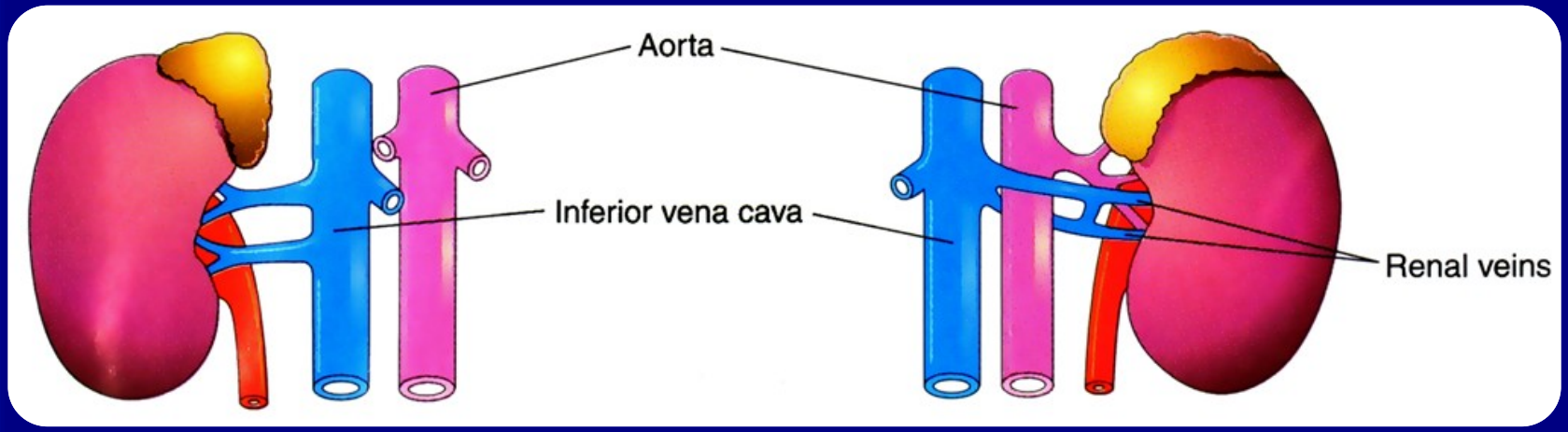

9 weeks
Kidney
Renal pelvis
Ureter
Frontal view
Aorta
Renal artery
Renal pelvis
Kidney
Colon
Cross section



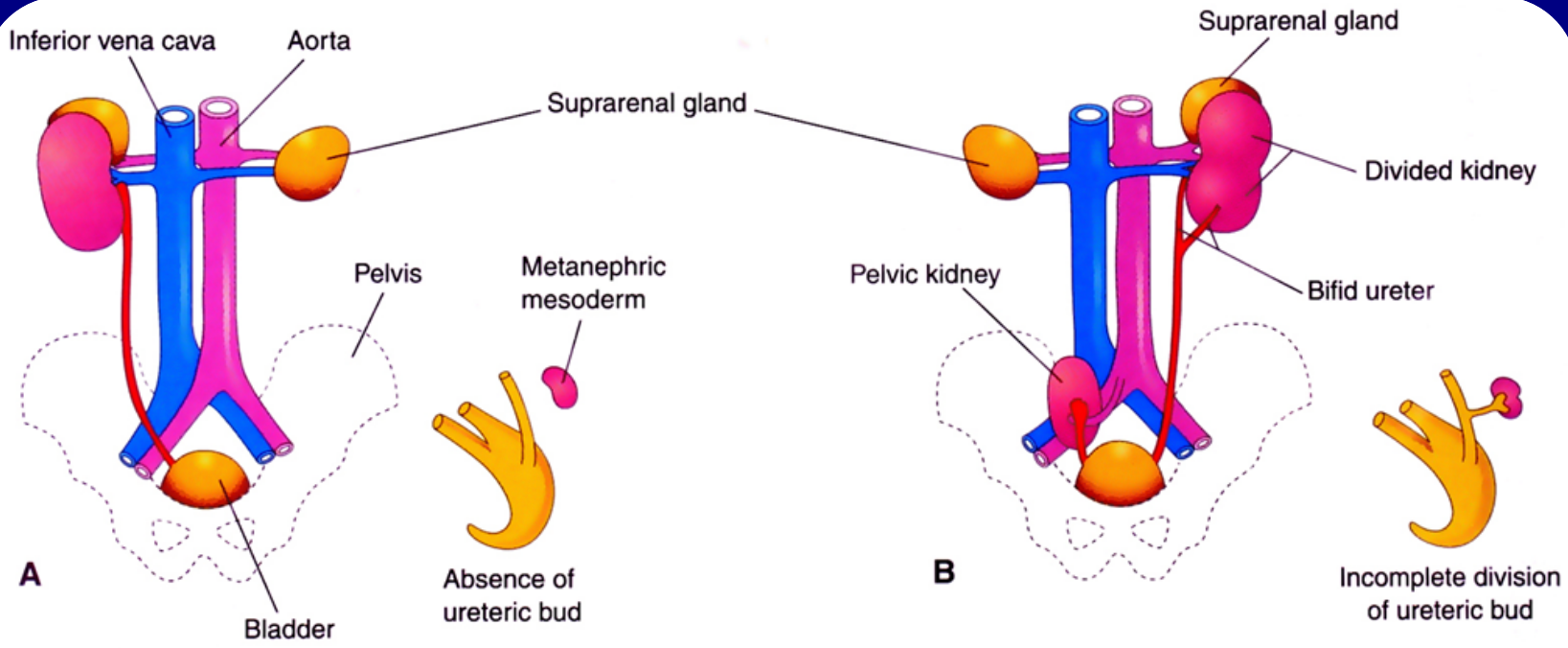
Genes involved in differentiation of the kidney. **A.** *WT1*, expressed by the mesenchyme, enables this tissue to respond to induction by the ureteric bud. GDNF and HGF, also produced by the mesenchyme, interact through their receptors, RET and MET, respectively, in the ureteric bud epithelium, to stimulate growth of the bud and maintain the interactions. The growth factors FGF2 and BMP7 stimulate proliferation of the mesenchyme and maintain *WT1* expression. **B.** PAX2 and WNT4, produced by the ureteric bud, cause the mesenchyme to epithelialize in preparation for excretory tubule differentiation. Laminin and type IV collagen form a basement membrane for the epithelial cells.



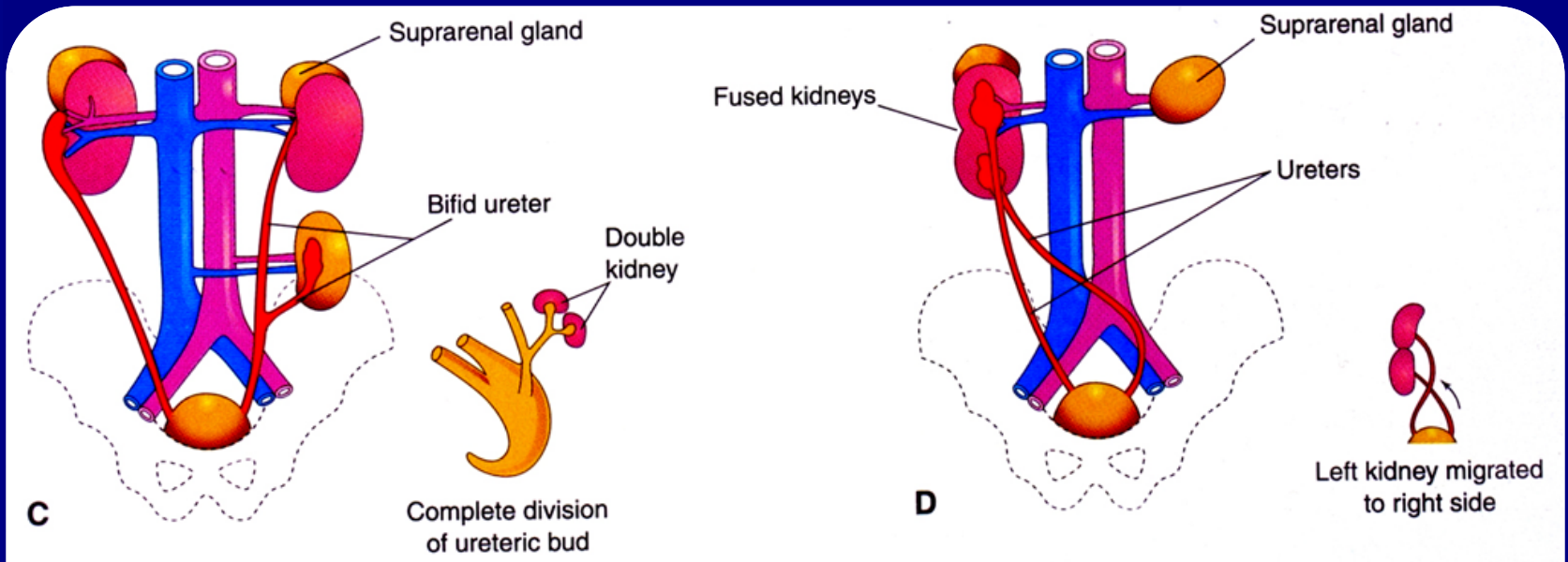
Multiple renal arteries.



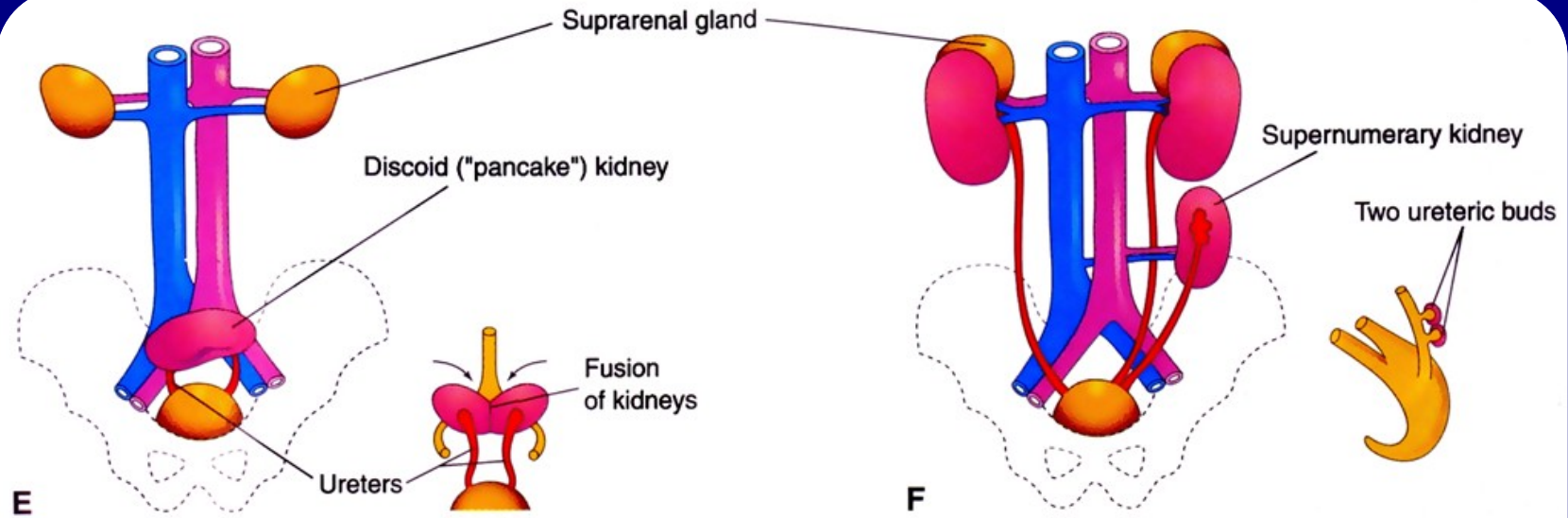
Multiple renal veins.



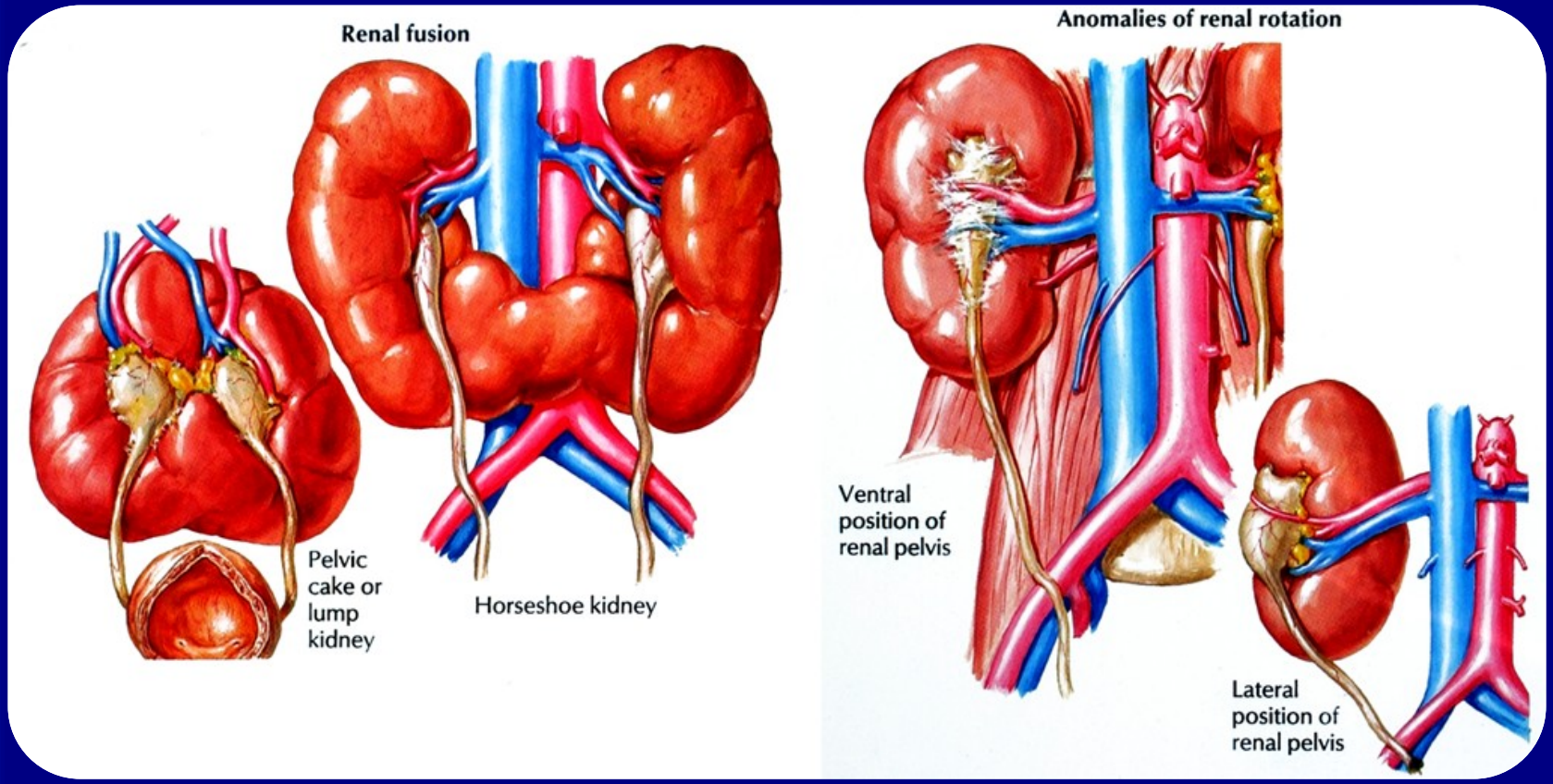
Drawings illustrating various anomalies of the urinary system. The small sketch to the lower right of each drawing illustrates the probable embryological basis of the anomaly. *A,* Unilateral renal agenesis. *B,* Right side, pelvic kidney; left side, divided kidney with a bifid ureter. *C,* Right side, malrotation of the kidney; left side, bifid ureter and supernumerary kidney. *D,* Crossed renal ectopia. The left kidney crossed to the right side and fused with the right kidney. *E,* Discoid kidney resulting from fusion of the kidneys while they were in the pelvis. *F,* Supernumerary left kidney resulting from the development of two ureteric buds.



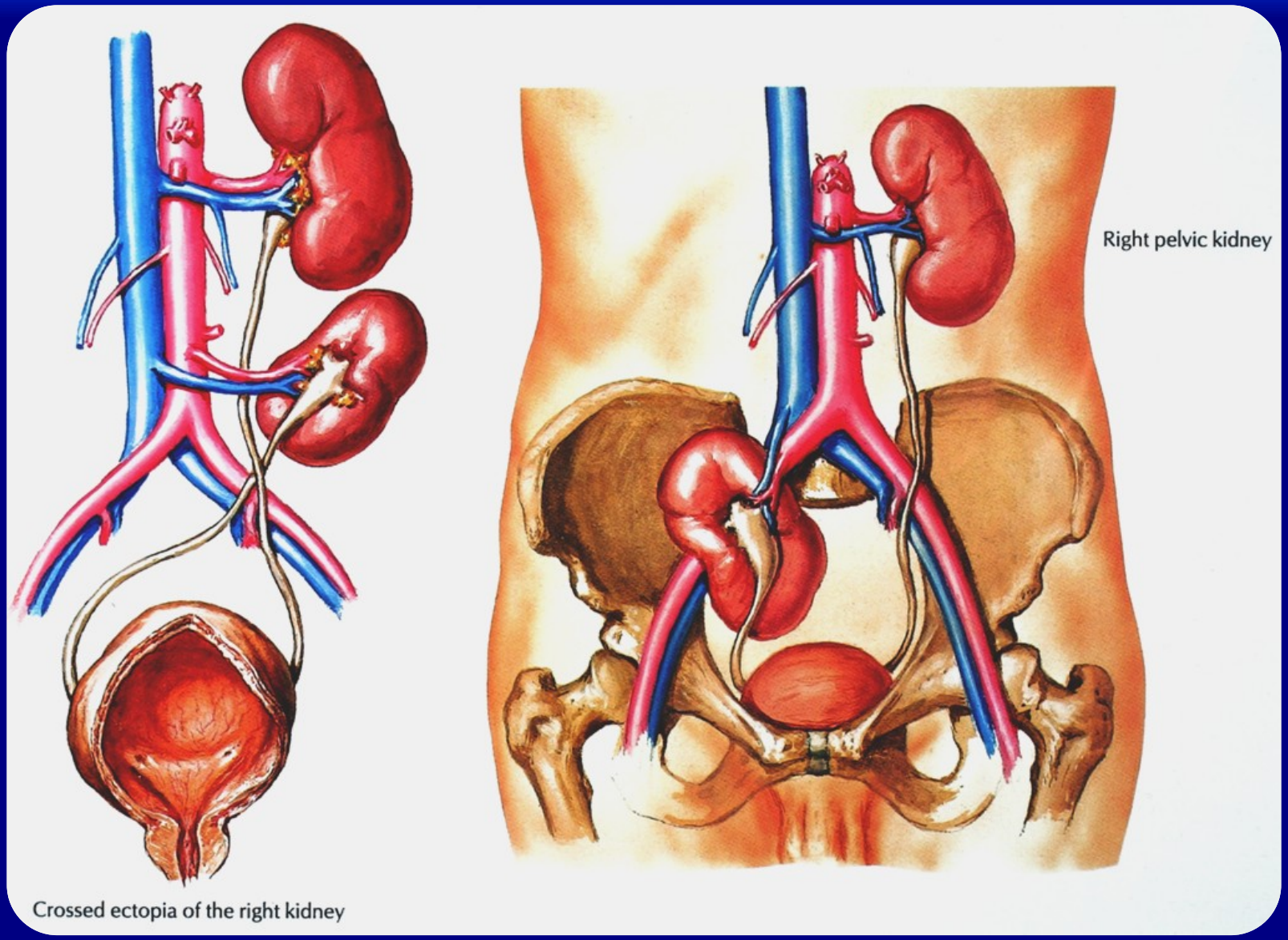
Drawings illustrating various anomalies of the urinary system. The small sketch to the lower right of each drawing illustrates the probable embryological basis of the anomaly. *A,* Unilateral renal agenesis. *B,* Right side, pelvic kidney; left side, divided kidney with a bifid ureter. *C,* Right side, malrotation of the kidney; left side, bifid ureter and supernumerary kidney. *D,* Crossed renal ectopia. The left kidney crossed to the right side and fused with the right kidney. *E,* Discoid kidney resulting from fusion of the kidneys while they were in the pelvis. *F,* Supernumerary left kidney resulting from the development of two ureteric buds.



Drawings illustrating various anomalies of the urinary system. The small sketch to the lower right of each drawing illustrates the probable embryological basis of the anomaly. *A,* Unilateral renal agenesis. *B,* Right side, pelvic kidney; left side, divided kidney with a bifid ureter. *C,* Right side, malrotation of the kidney; left side, bifid ureter and supernumerary kidney. *D,* Crossed renal ectopia. The left kidney crossed to the right side and fused with the right kidney. *E,* Discoid kidney resulting from fusion of the kidneys while they were in the pelvis. *F,* Supernumerary left kidney resulting from the development of two ureteric buds.

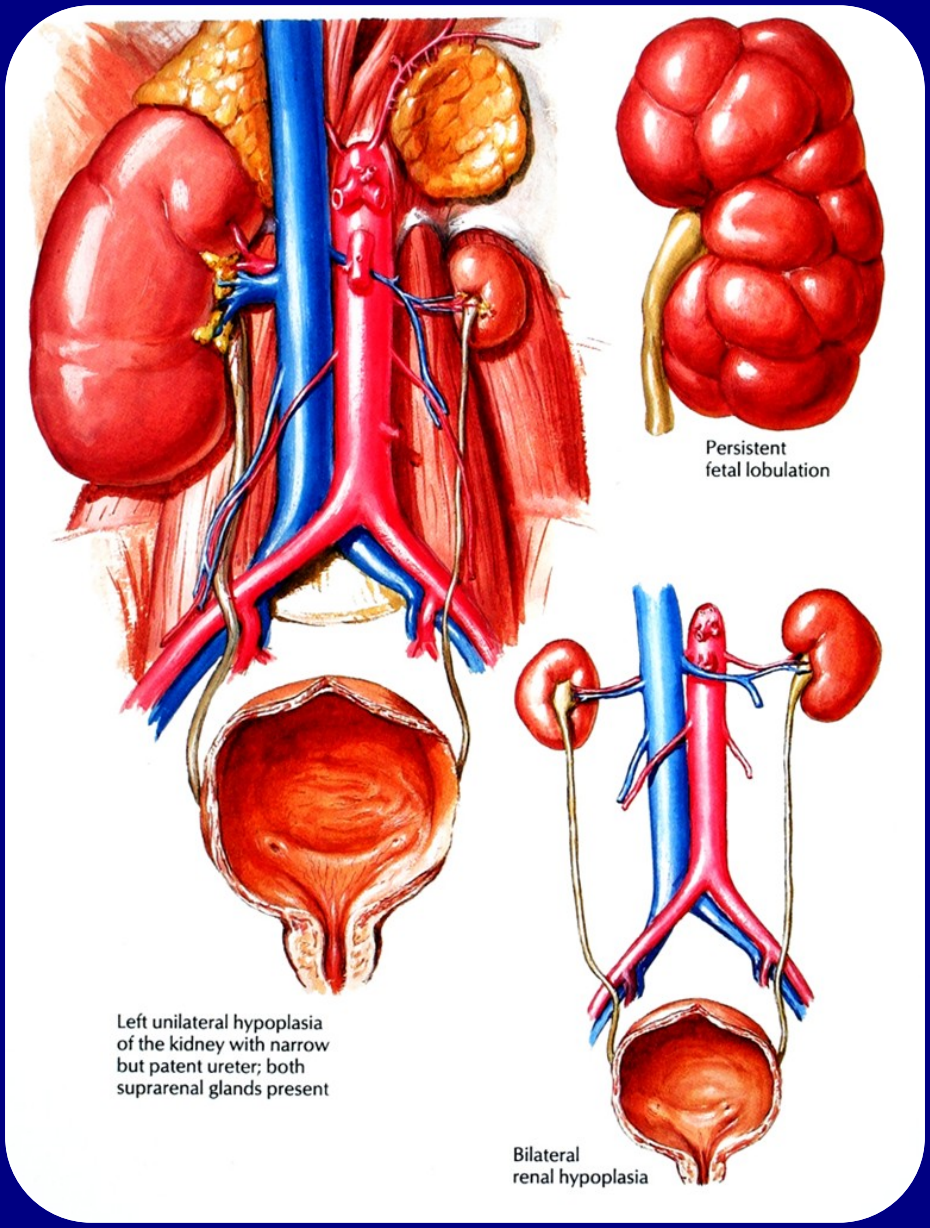


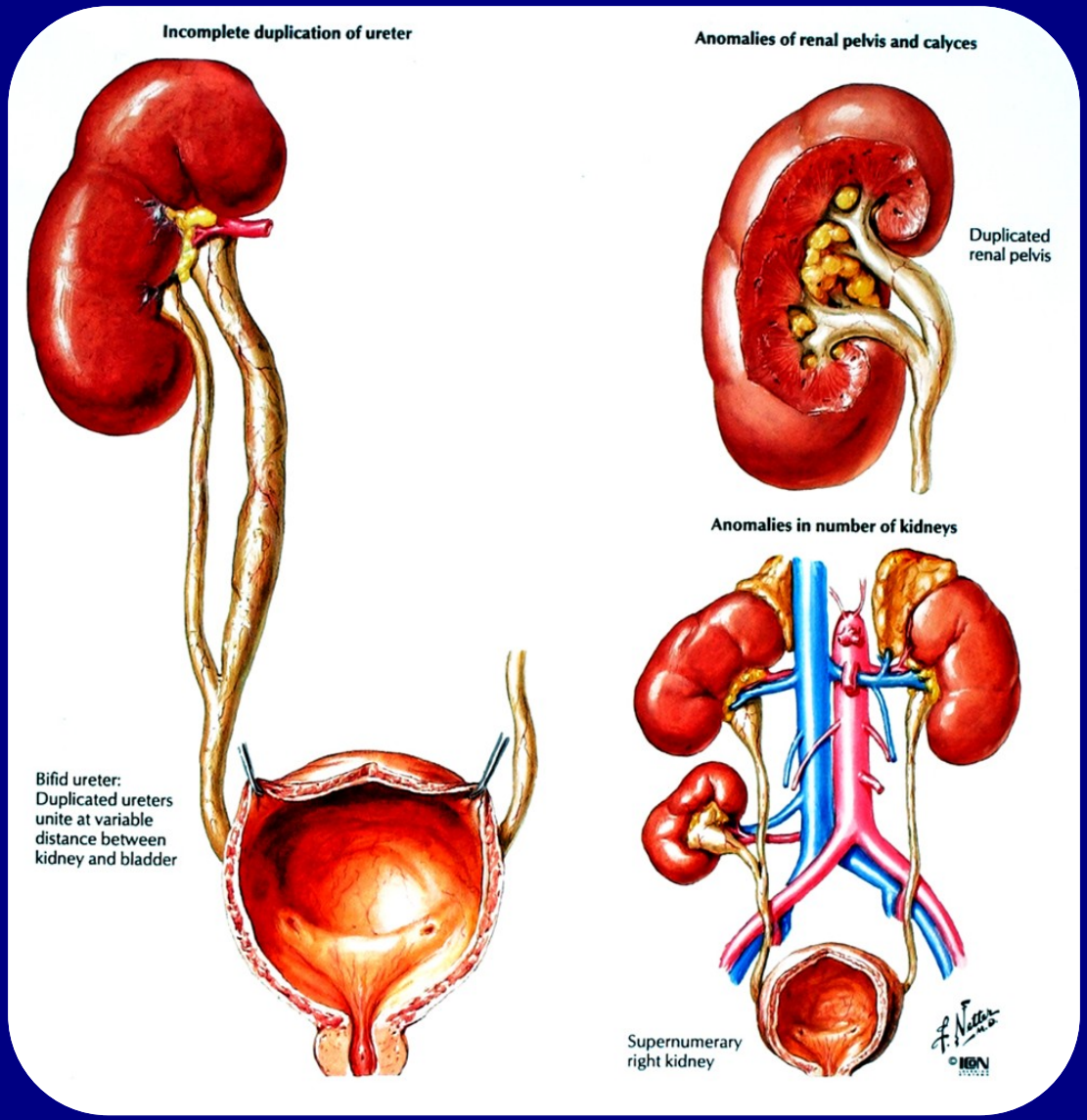
Kidney rotation anomalies and renal fusion.



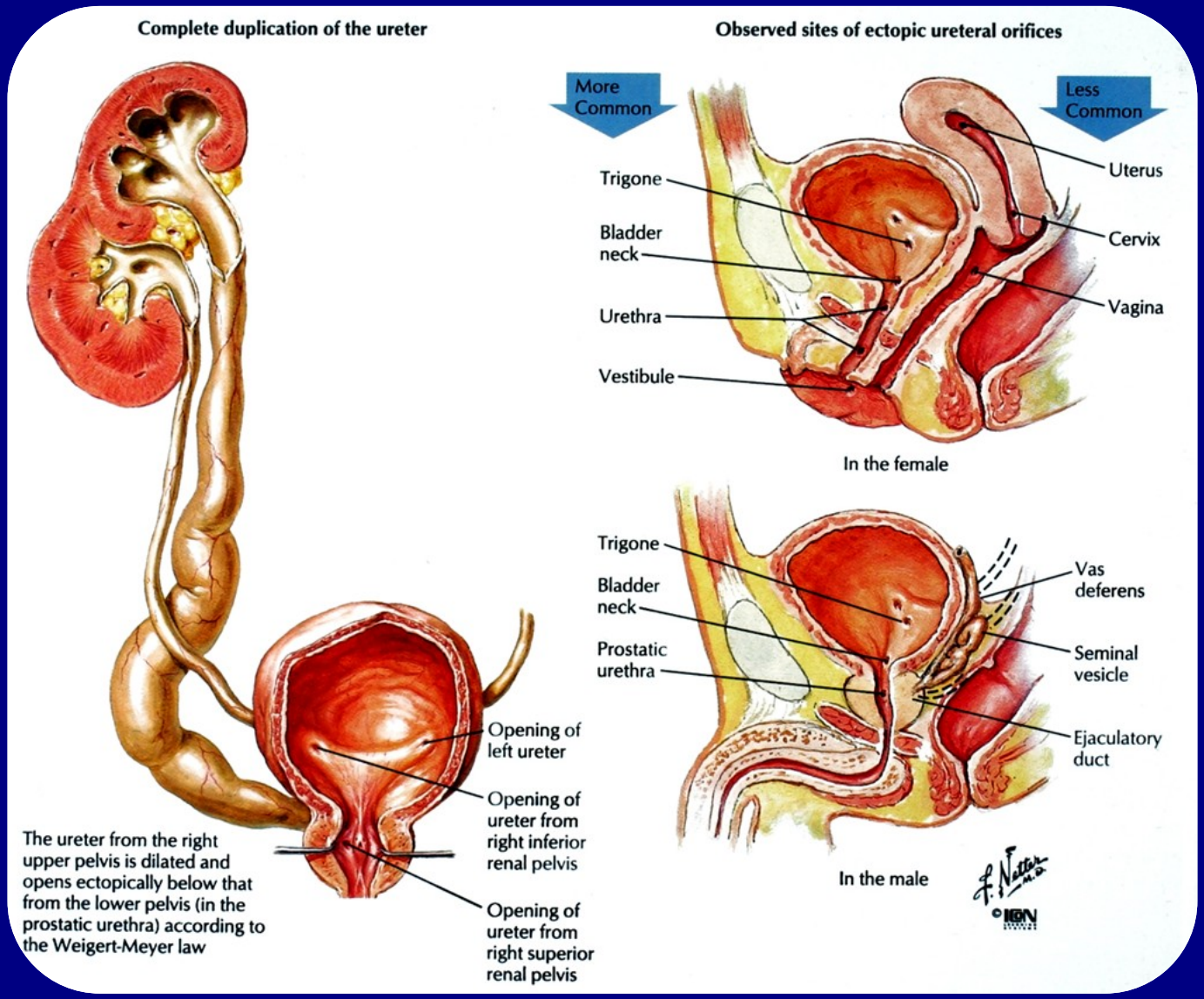
Kidney migration anomalies and blood vessel formation.

Hypoplasia

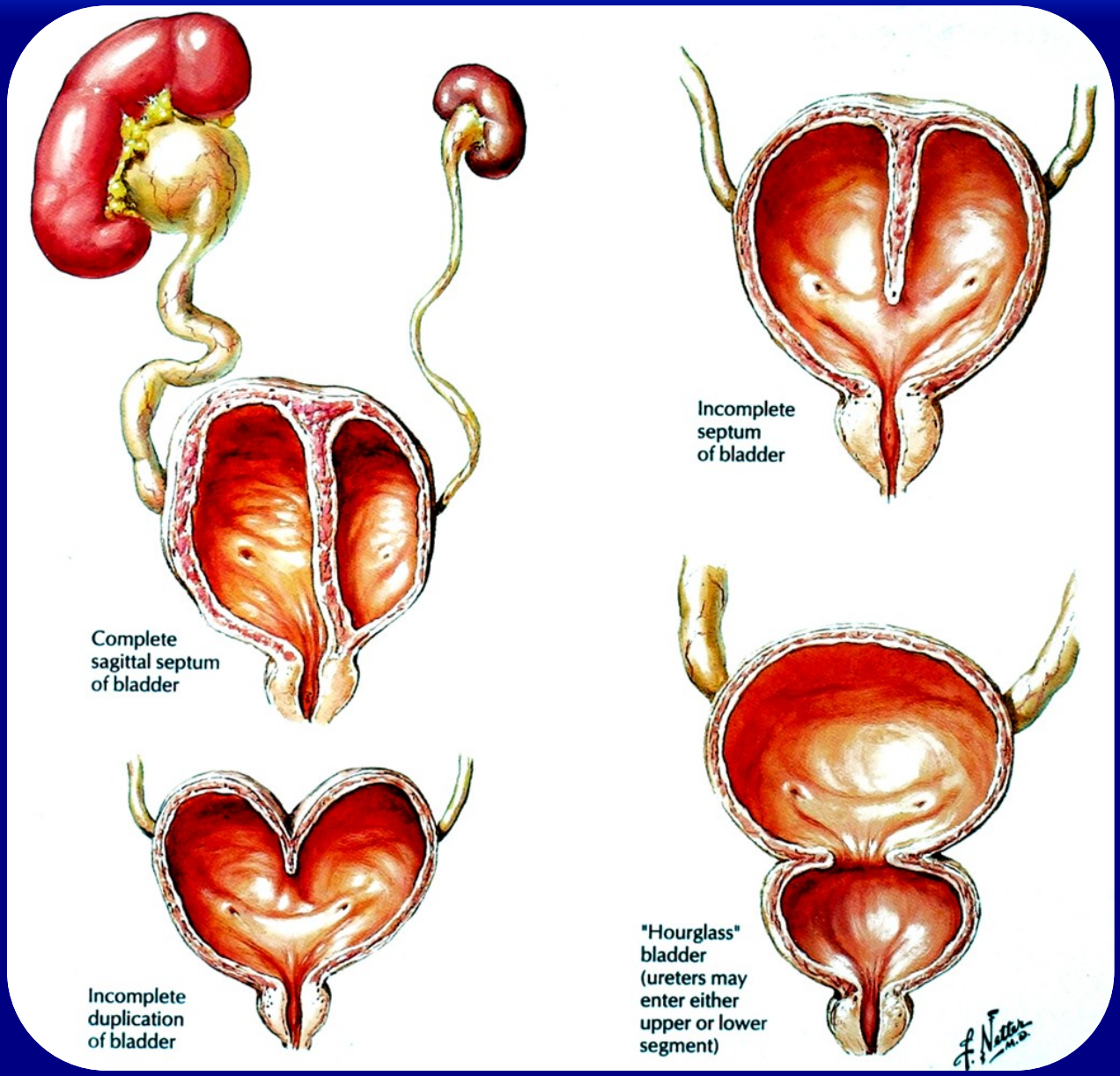

Persistent
fetal lobulation
Left unilateral hypoplasia
of the kidney with narrow
but patent ureter; both
suprarenal glands present
Bilateral
renal hypoplasia



Ureteric bud duplication

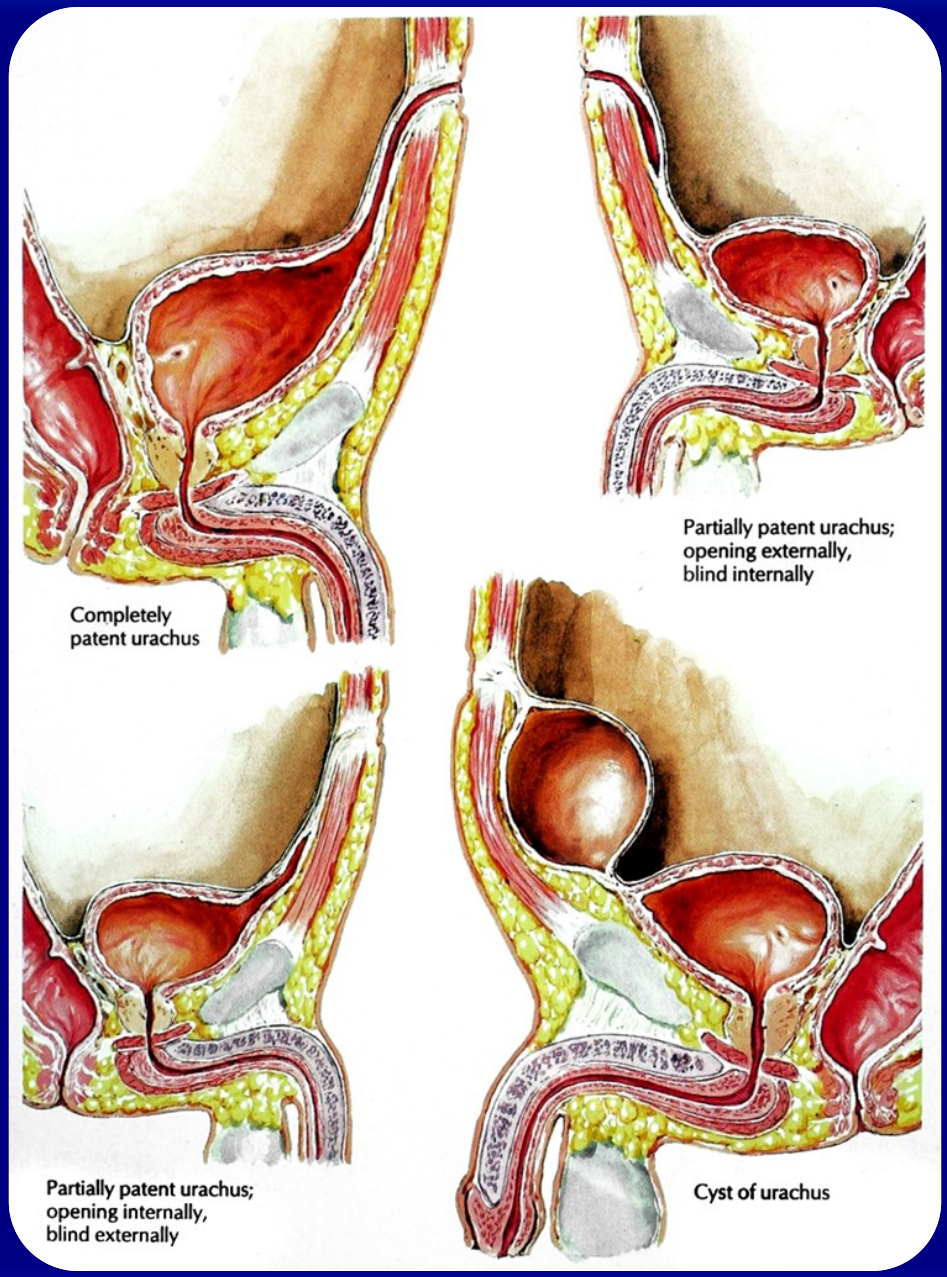


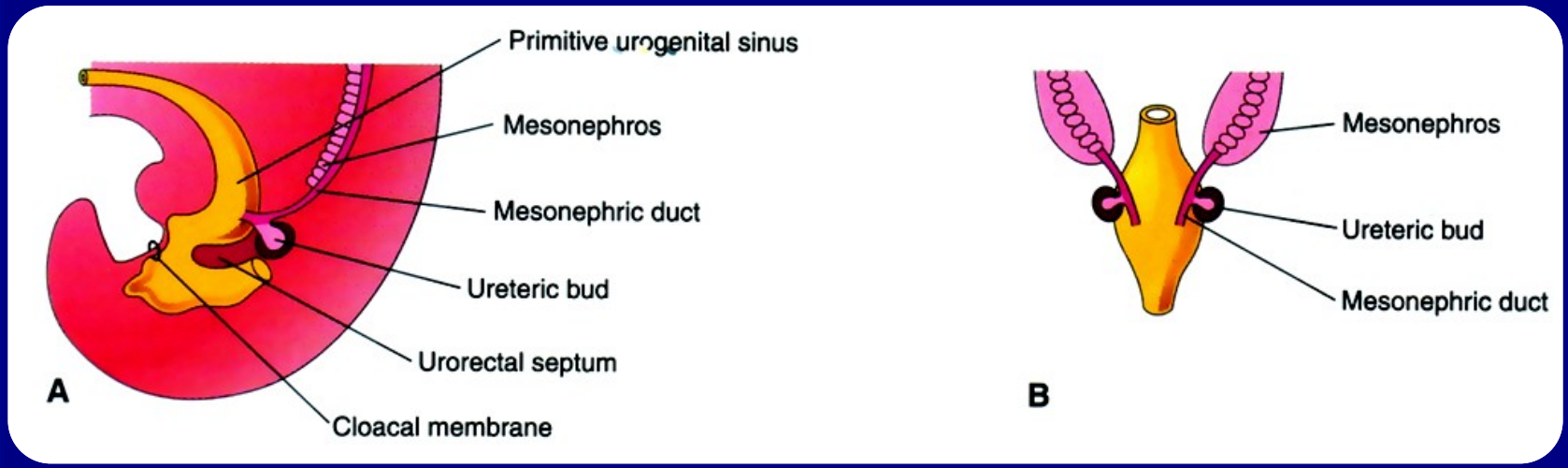
Ectopic ureters



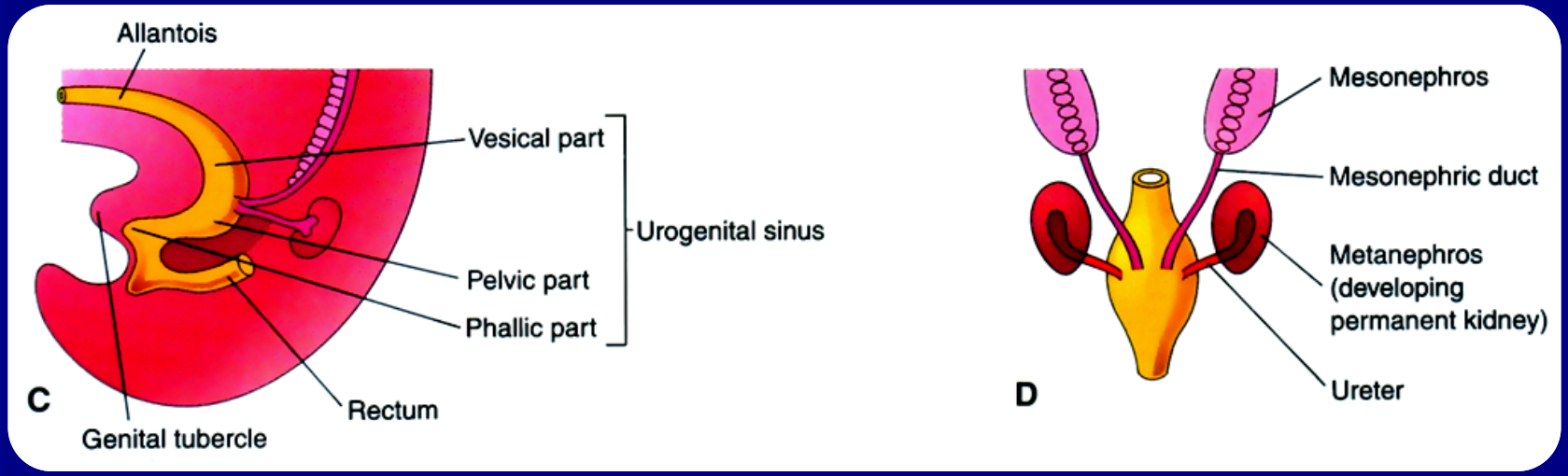
Bladder anomalies

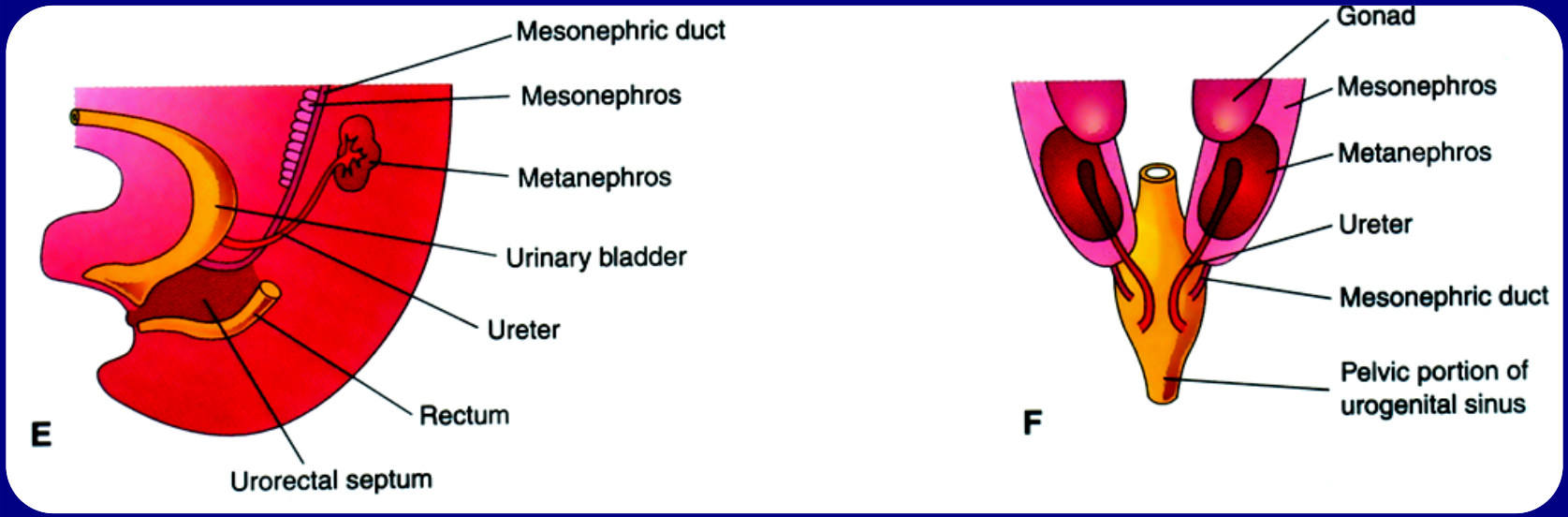
Allantois / Urachus anomalies.

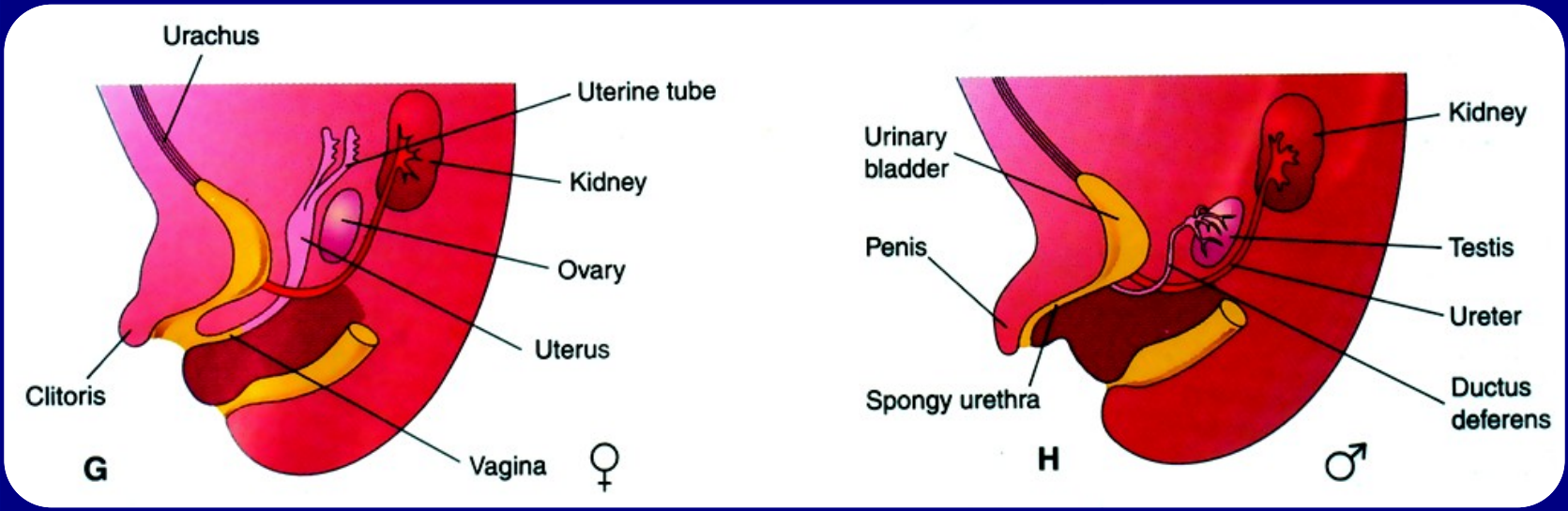




Division of the cloaca into the urogenital sinus and rectum.

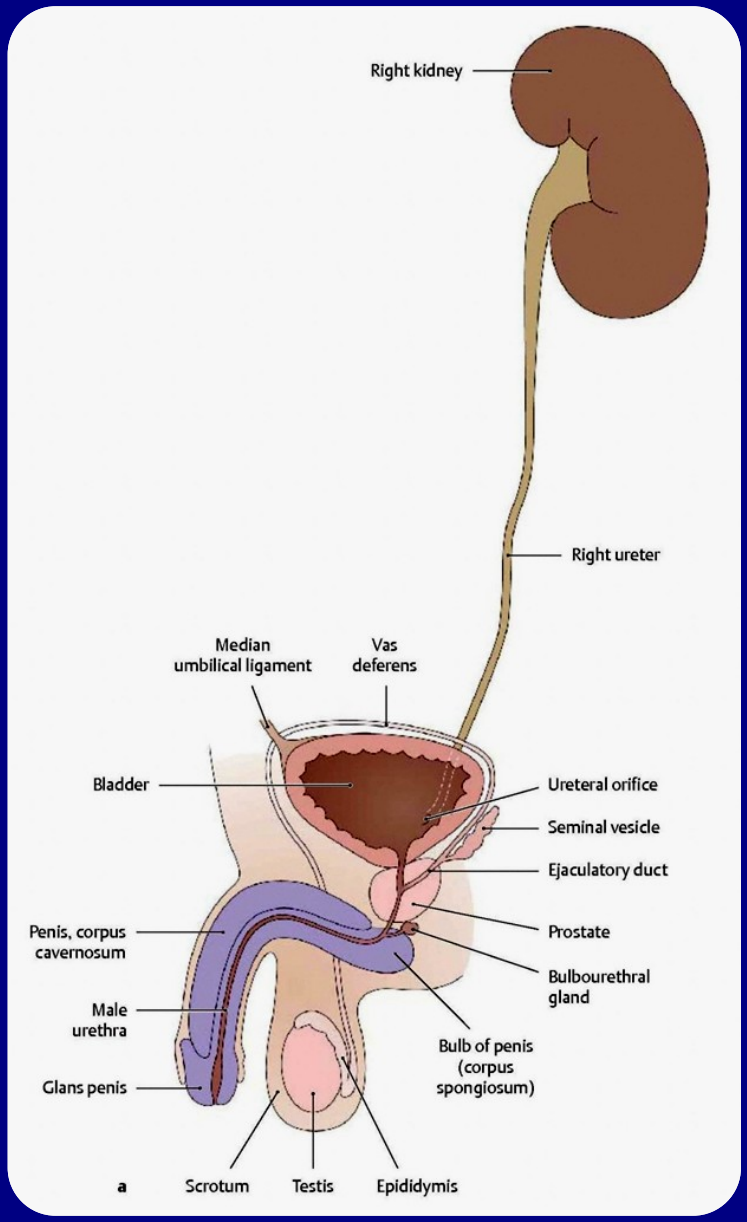

Allantois
Vesical part
Urogenital sinus
Pelvic part
Phallic part
C
Rectum
Genital tubercle
Mesonephros
Mesonephric duct
Metanephros
(developing
permanent kidney)
Ureter
D

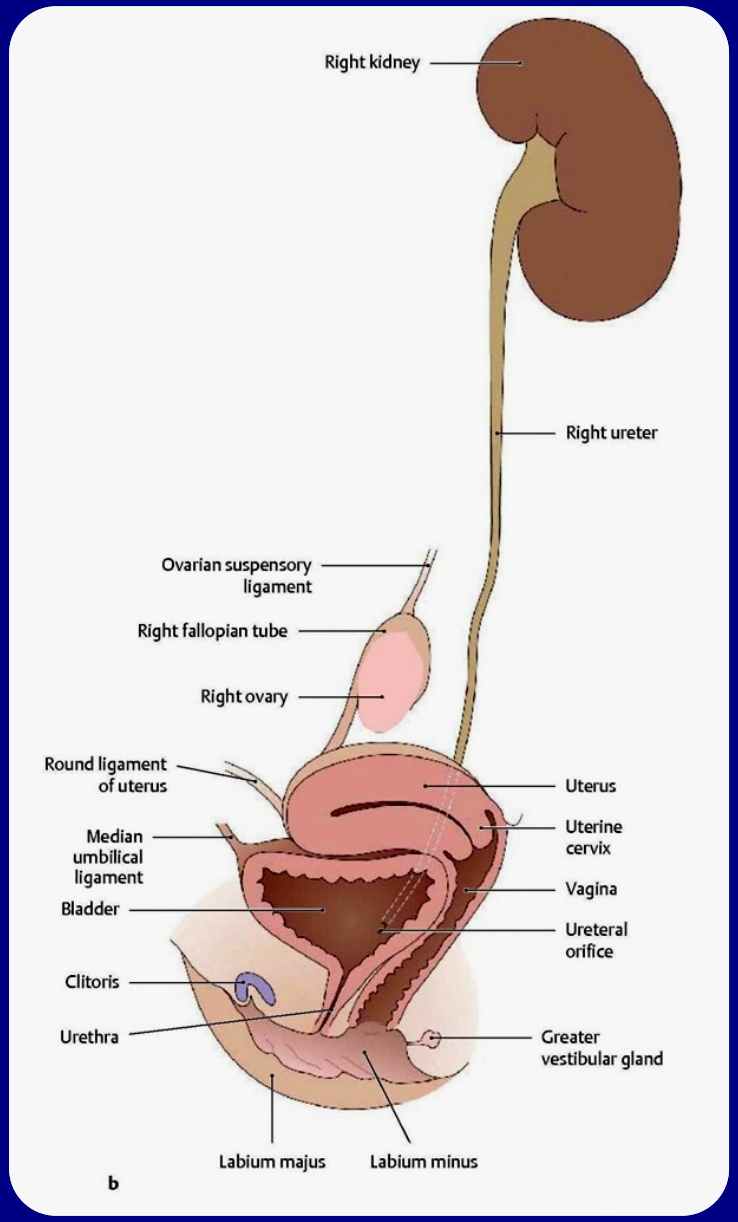

Mesonephric duct
Mesonephros
Metanephros
Urinary bladder
Ureter
Rectum
Urorectal septum
E
Gonad
Mesonephros
Metanephros
Ureter
Mesonephric duct
Pelvic portion of urogenital sinus
F

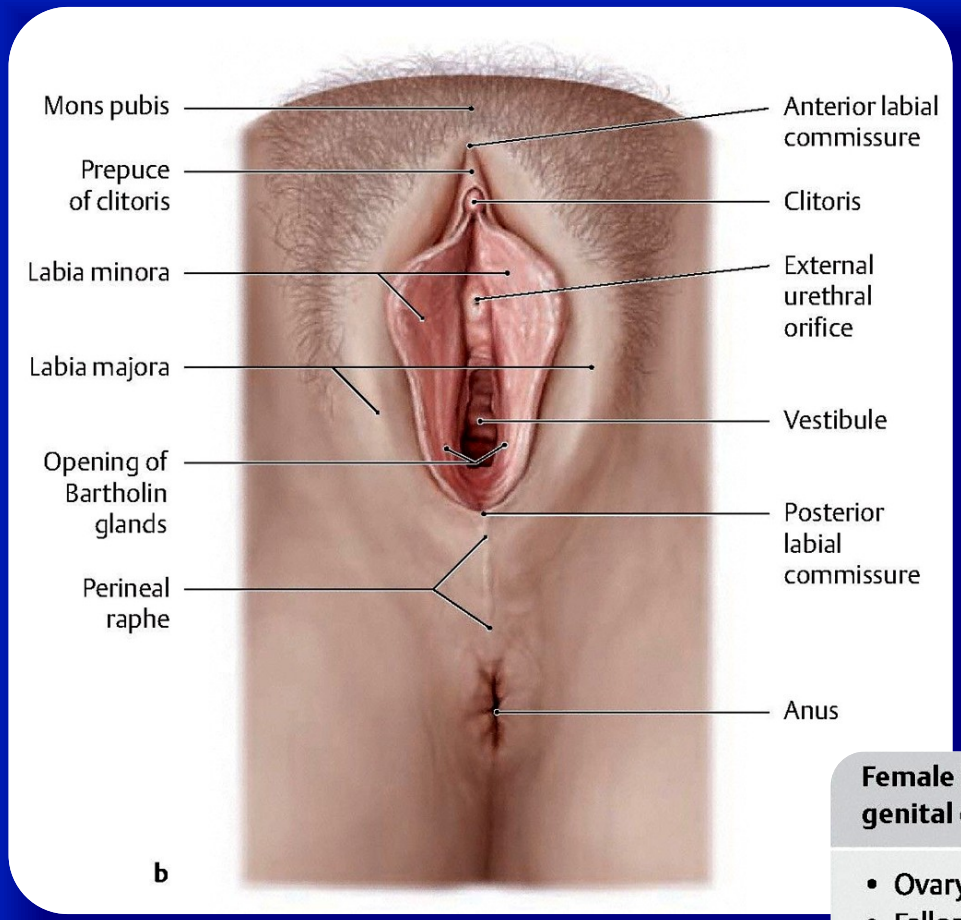

Urachus
Uterine tube
Kidney
Ovary
Uterus
Clitoris
Vagina
G
♀
Urinary bladder
Kidney
Penis
Testis
Ureter
Spongy urethra
Ductus deferens
H
♂

Rozwój
układu płciowego żeńskiego

Thieme
Sobotta


Right kidney
Right ureter
Median umbilical ligament
Vas deferens
Bladder
Ureteral orifice
Seminal vesicle
Ejaculatory duct
Penis, corpus cavernosum
Prostate
Bulbourethral gland
Male urethra
Bulb of penis (corpus spongiosum)
Glans penis
Scrotum
Testis
Epididymis
a

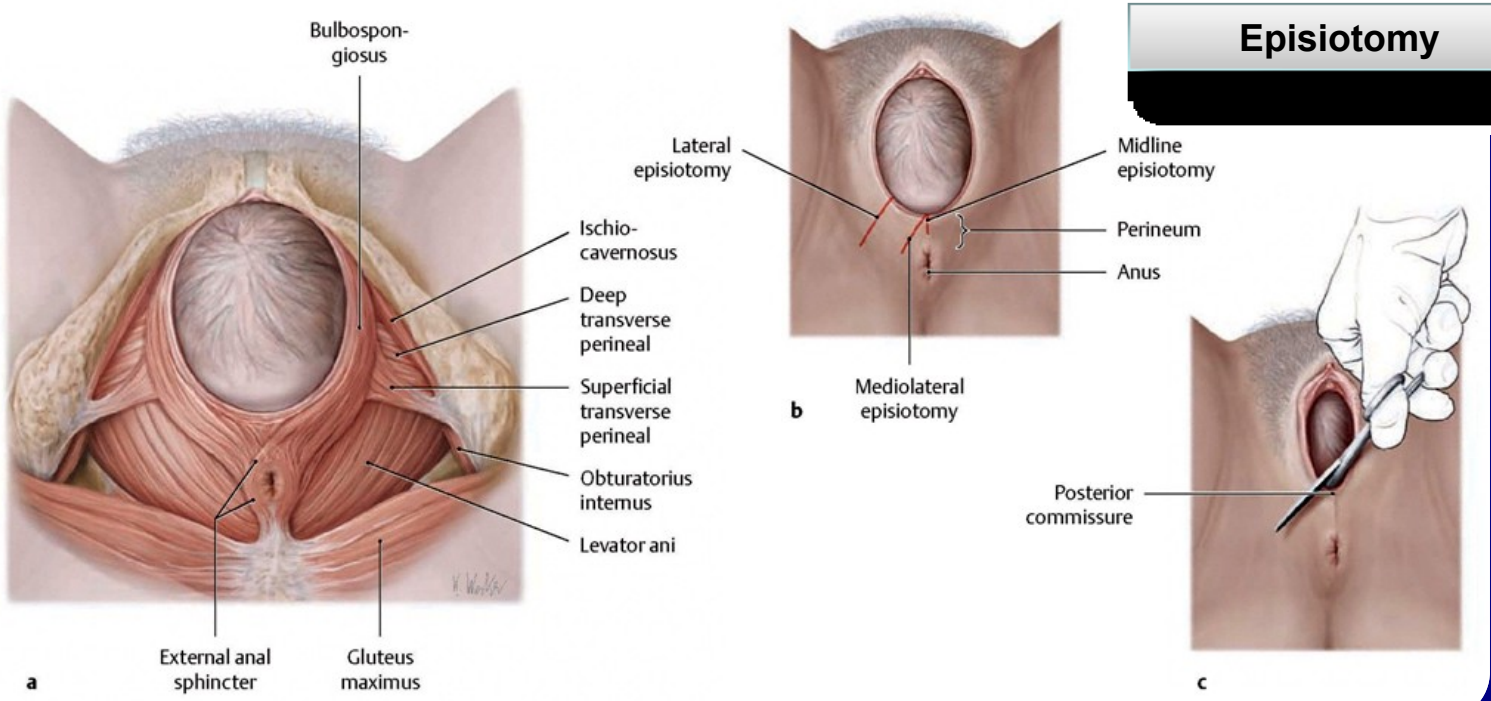

Right kidney
Right ureter
Ovarian suspensory ligament
Right fallopian tube
Right ovary
Round ligament of uterus
Uterus
Uterine cervix
Median umbilical ligament
Vagina
Bladder
Ureteral orifice
Clitoris
Urethra
Greater vestibular gland
Labium majus
Labium minus
b



Overview of the female genital organs

Female internal genital organs	Female external genital organs (vulva)
• Ovary • Fallopian tube • Uterus • Vagina	• Mons pubis • Labia majora • Labia minora • Vestibule of vagina • Vestibular bulb • Clitoris • Vestibular glands – Greater vestibular glands (Bartholin glands) – Lesser vestibular glands

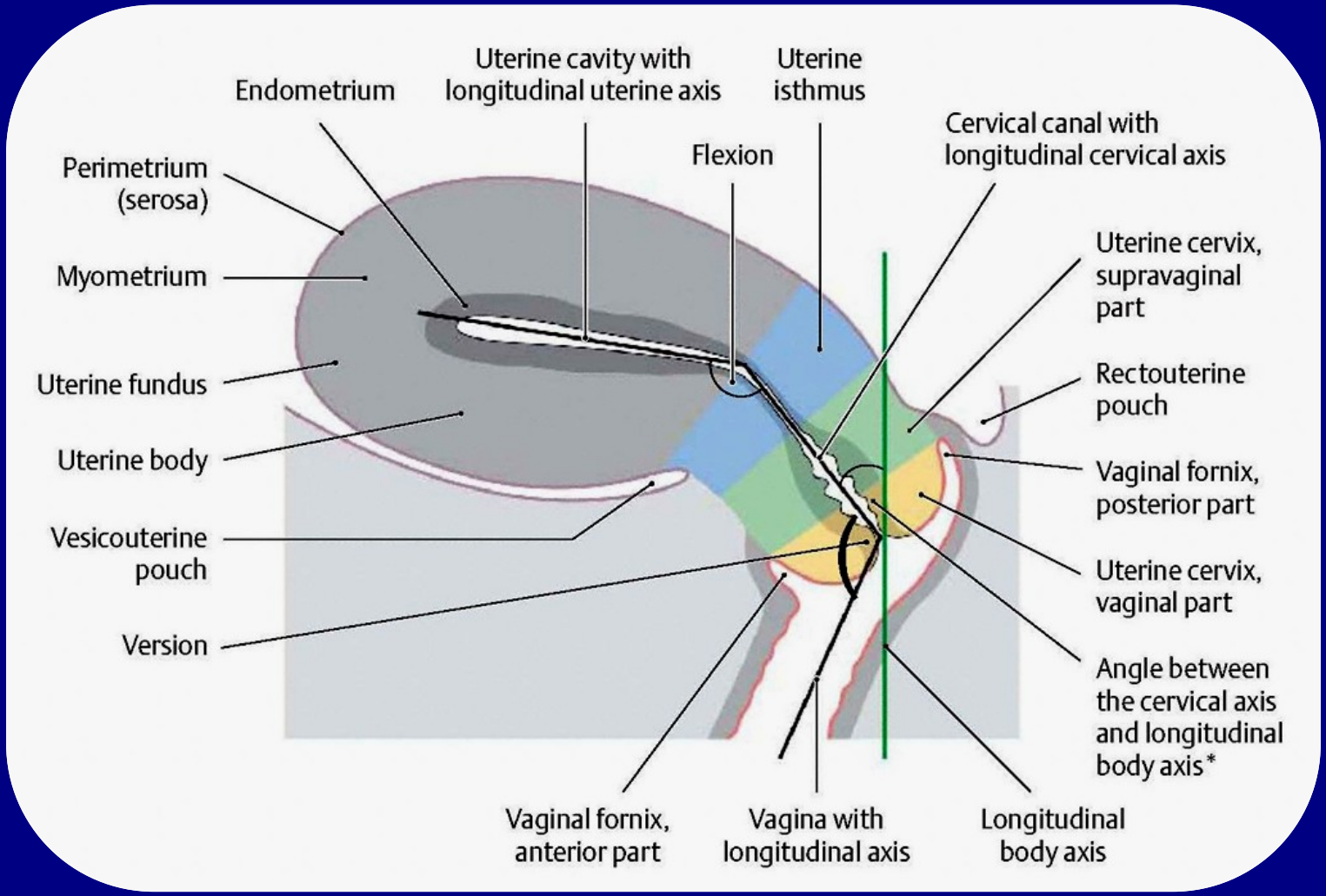
Episiotomy



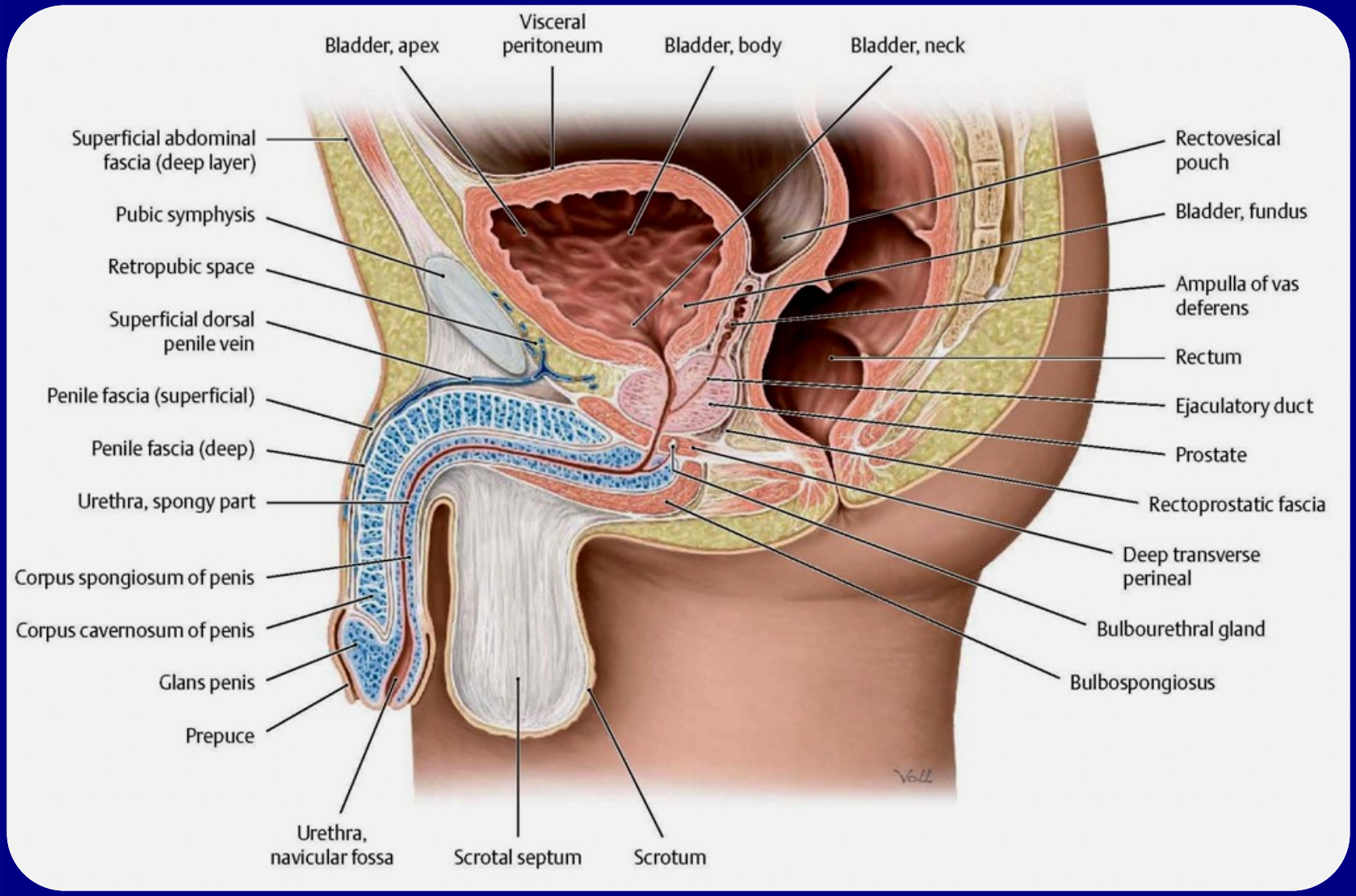
Advantages and disadvantages of the different types of episiotomy

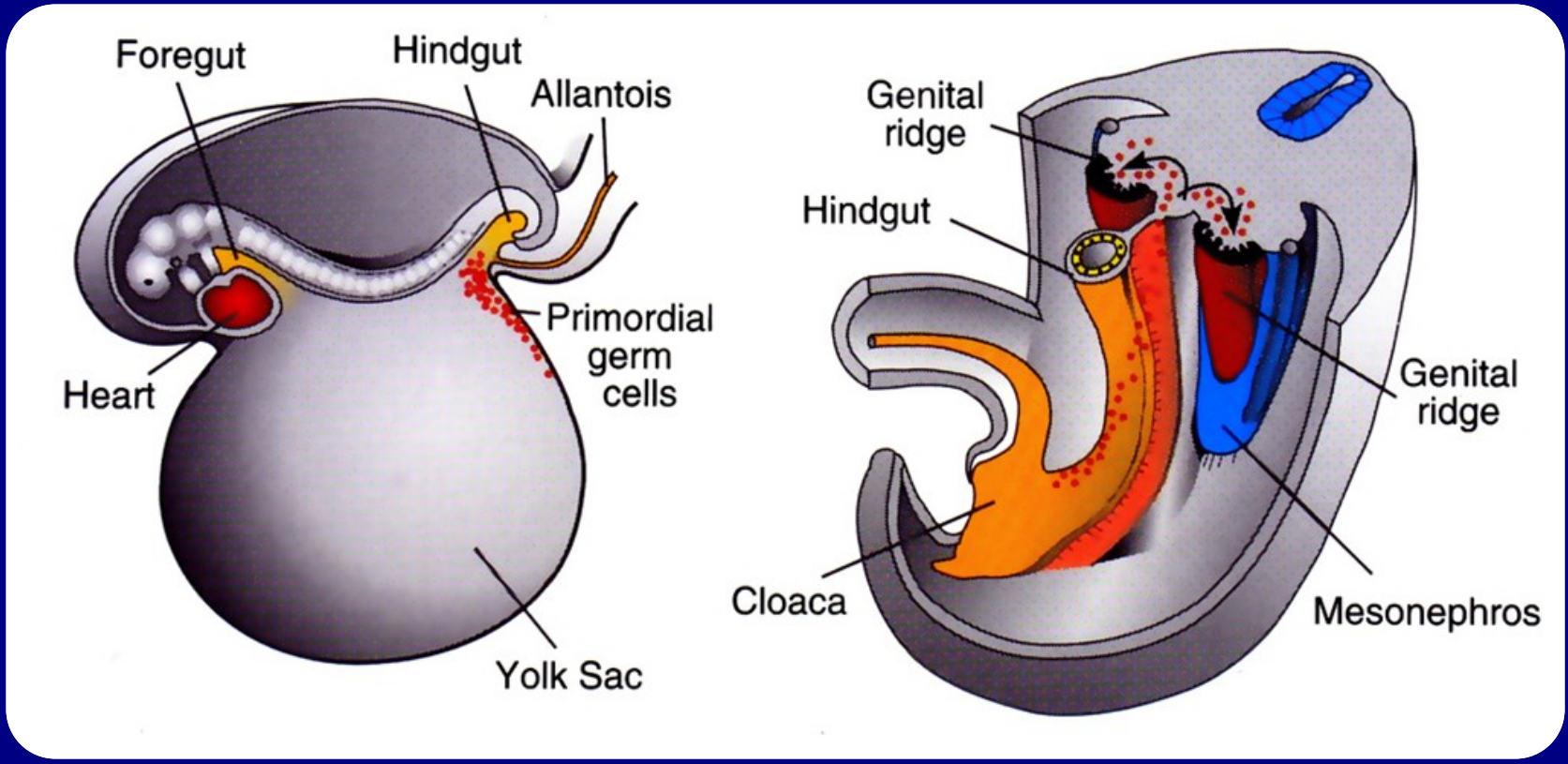
Episiotomy	Divided muscles	Advantages	Disadvantages
• Midline	• None	• Easy to repair • Heals well	• May lengthen to a grade III perineal laceration
• Medio-lateral	• Bulbospongiosus • Superficial transverse perineal	• Gains more room • Low risk of laceration	• Heavier bleeding • More difficult to repair • More difficult healing
• Lateral*	• Bulbospongiosus • Superficial transverse perineal • Levator ani (puborectalis)	• Gains the most room	• Heaviest bleeding • Potential complications (e.g., anal incontinence) • Greatest postpartum complaints

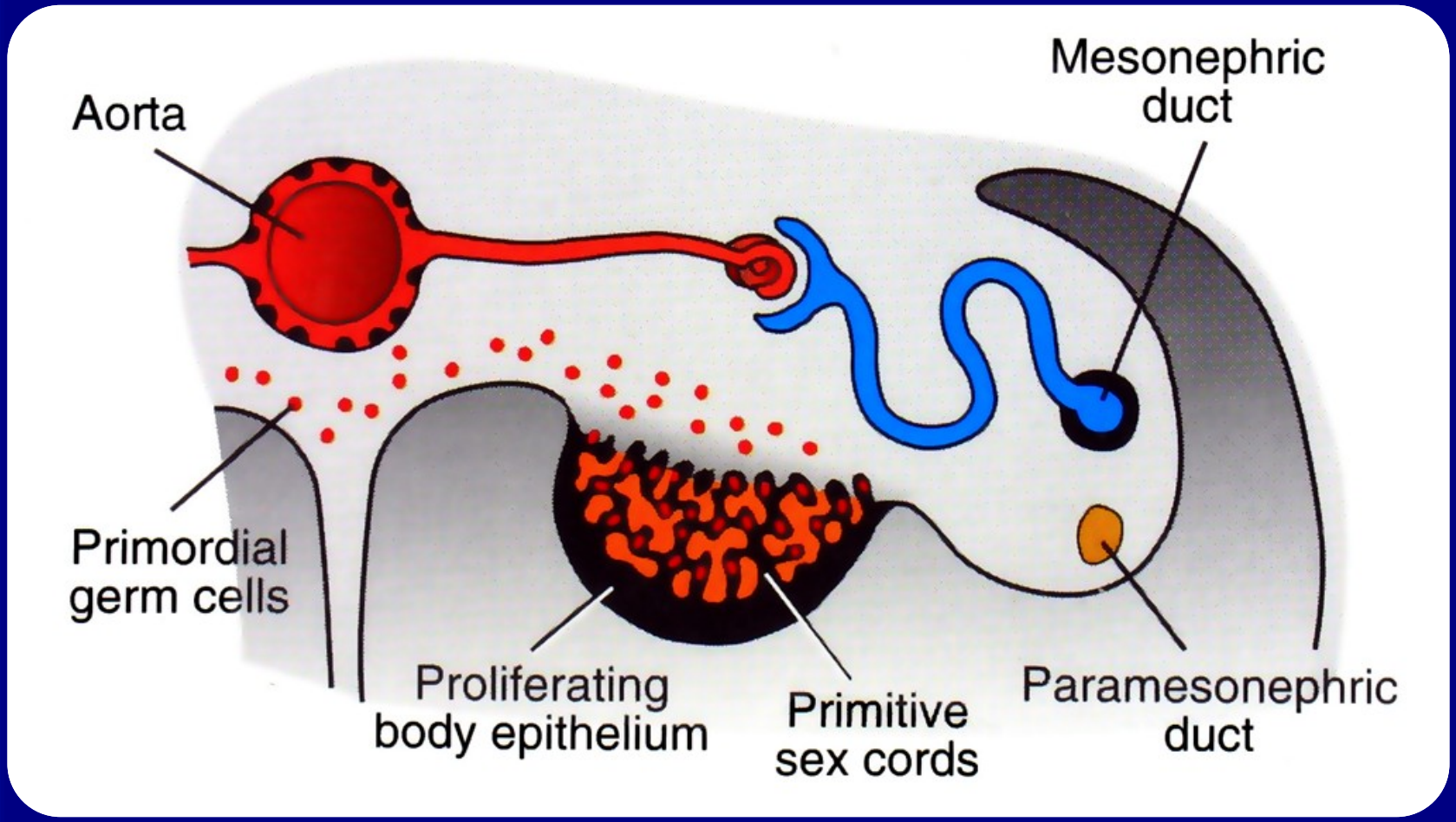
* Very rarely used

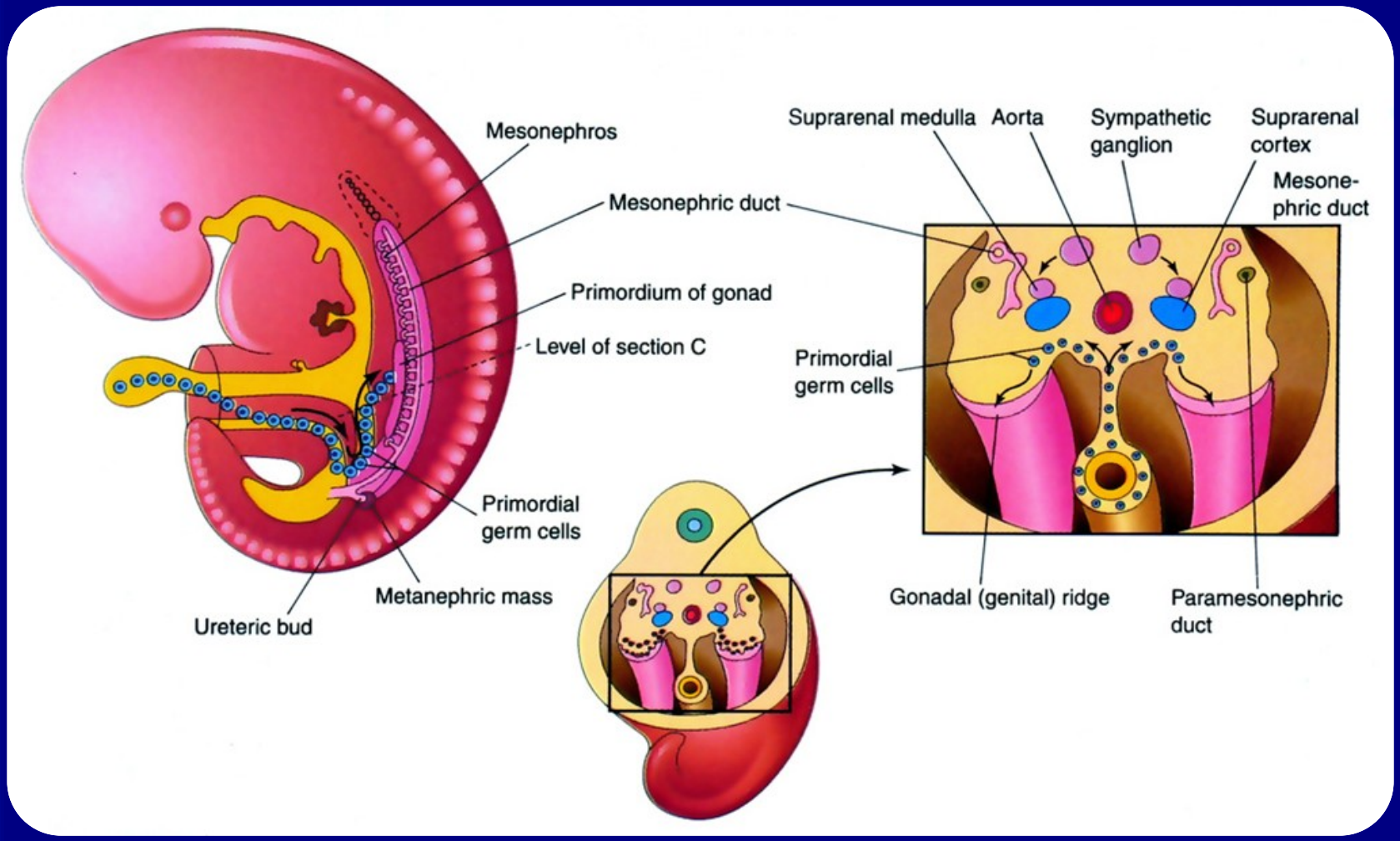


Curvature and position of the uterus

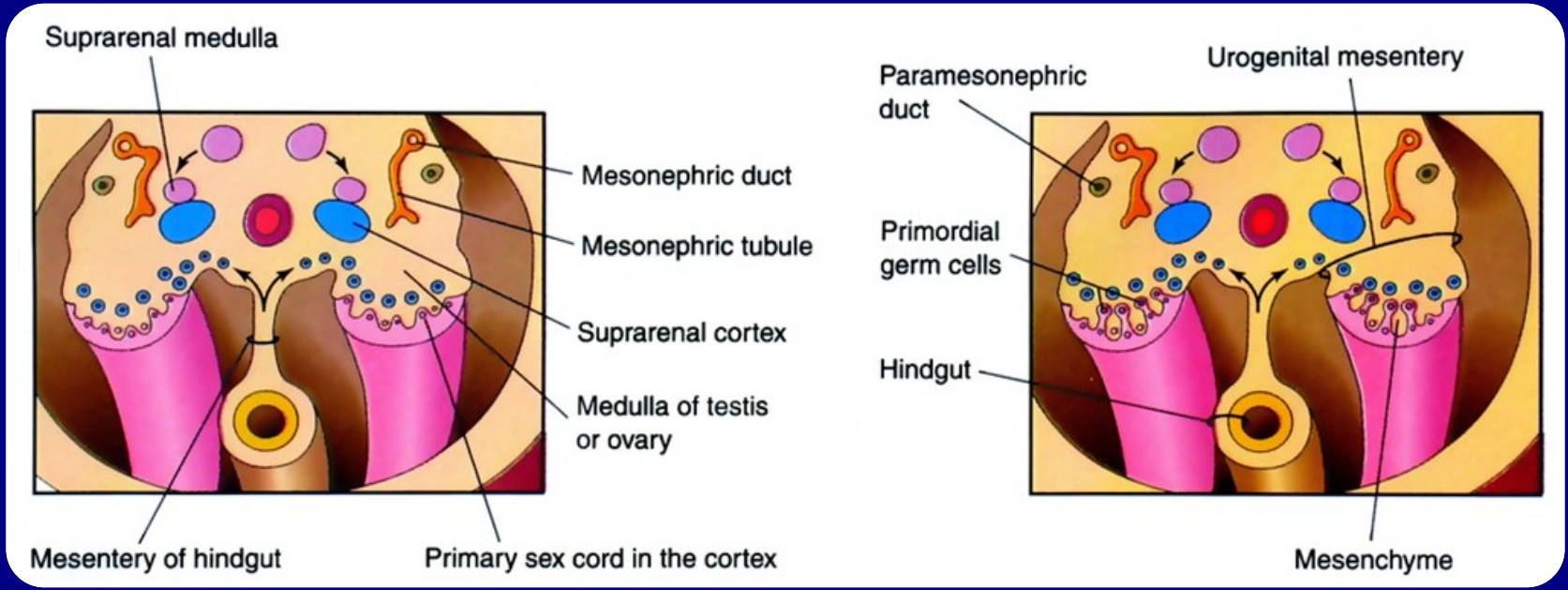

Bladder, apex
Visceral peritoneum
Bladder, body
Bladder, neck
Superficial abdominal fascia (deep layer)
Pubic symphysis
Retropubic space
Superficial dorsal penile vein
Penile fascia (superficial)
Penile fascia (deep)
Urethra, spongy part
Corpus spongiosum of penis
Corpus cavernosum of penis
Glans penis
Prepuce
Urethra, navicular fossa
Scrotal septum
Scrotum
Rectovesical pouch
Bladder, fundus
Ampulla of vas deferens
Rectum
Ejaculatory duct
Prostate
Rectoprostatic fascia
Deep transverse perineal
Bulbourethral gland
Bulbospongiosus


Foregut
Hindgut
Allantois
Primordial germ cells
Heart
Yolk Sac
Genital ridge
Hindgut
Genital ridge
Cloaca
Mesonephros

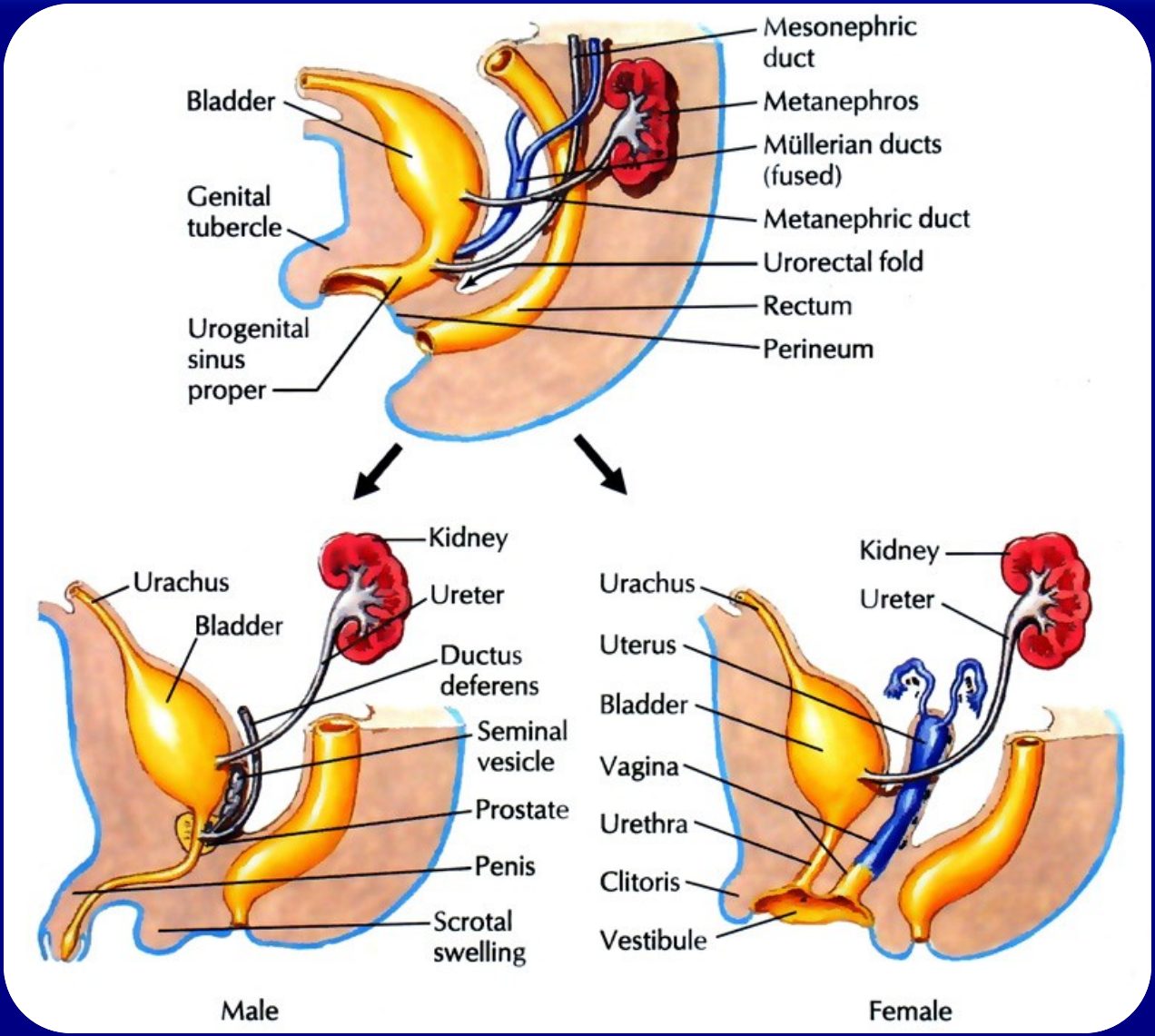

Aorta
Mesonephric duct
Primordial germ cells
Proliferating body epithelium
Primitive sex cords
Paramesonephric duct



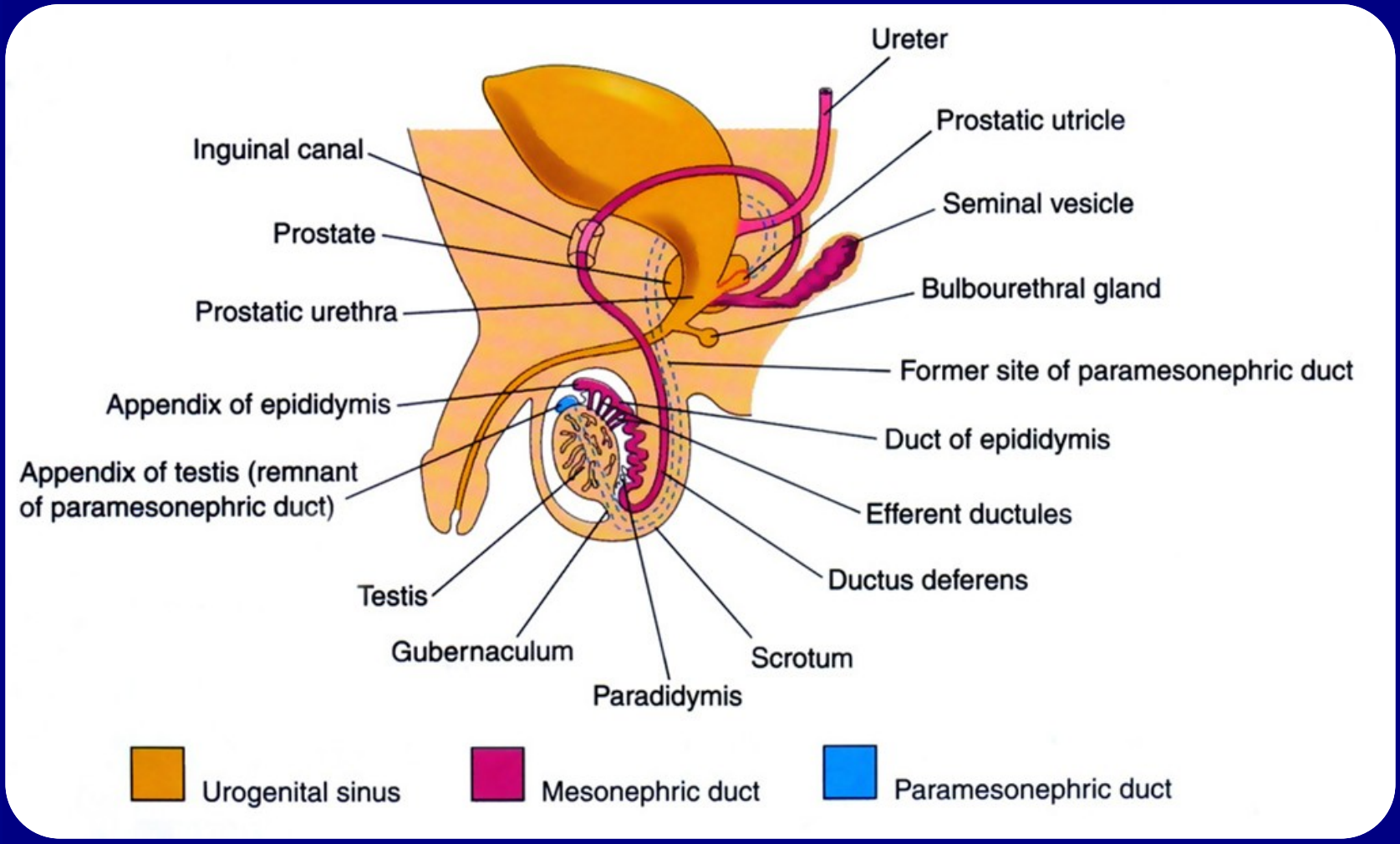
5-week embryo



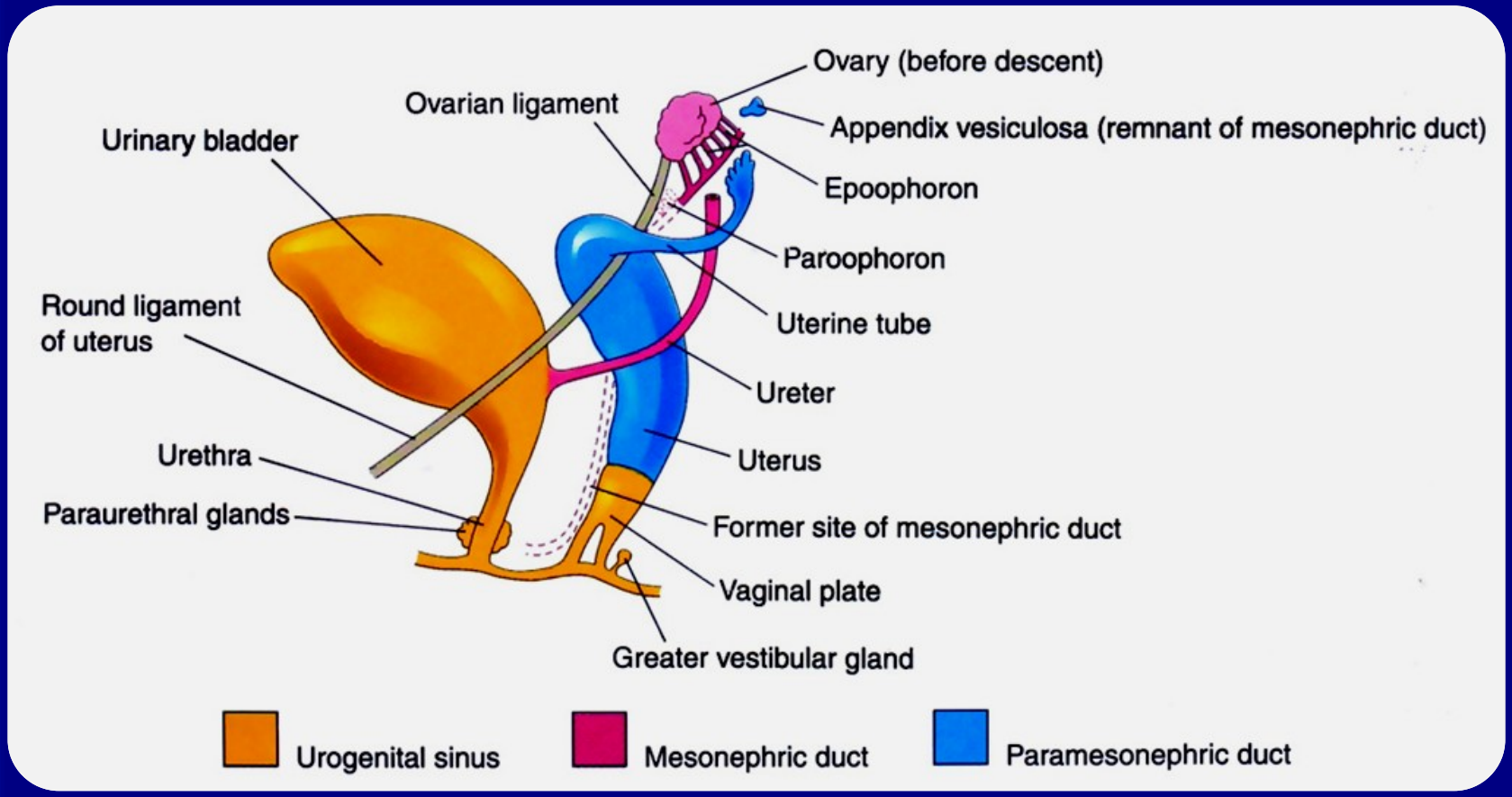
6-week embryo



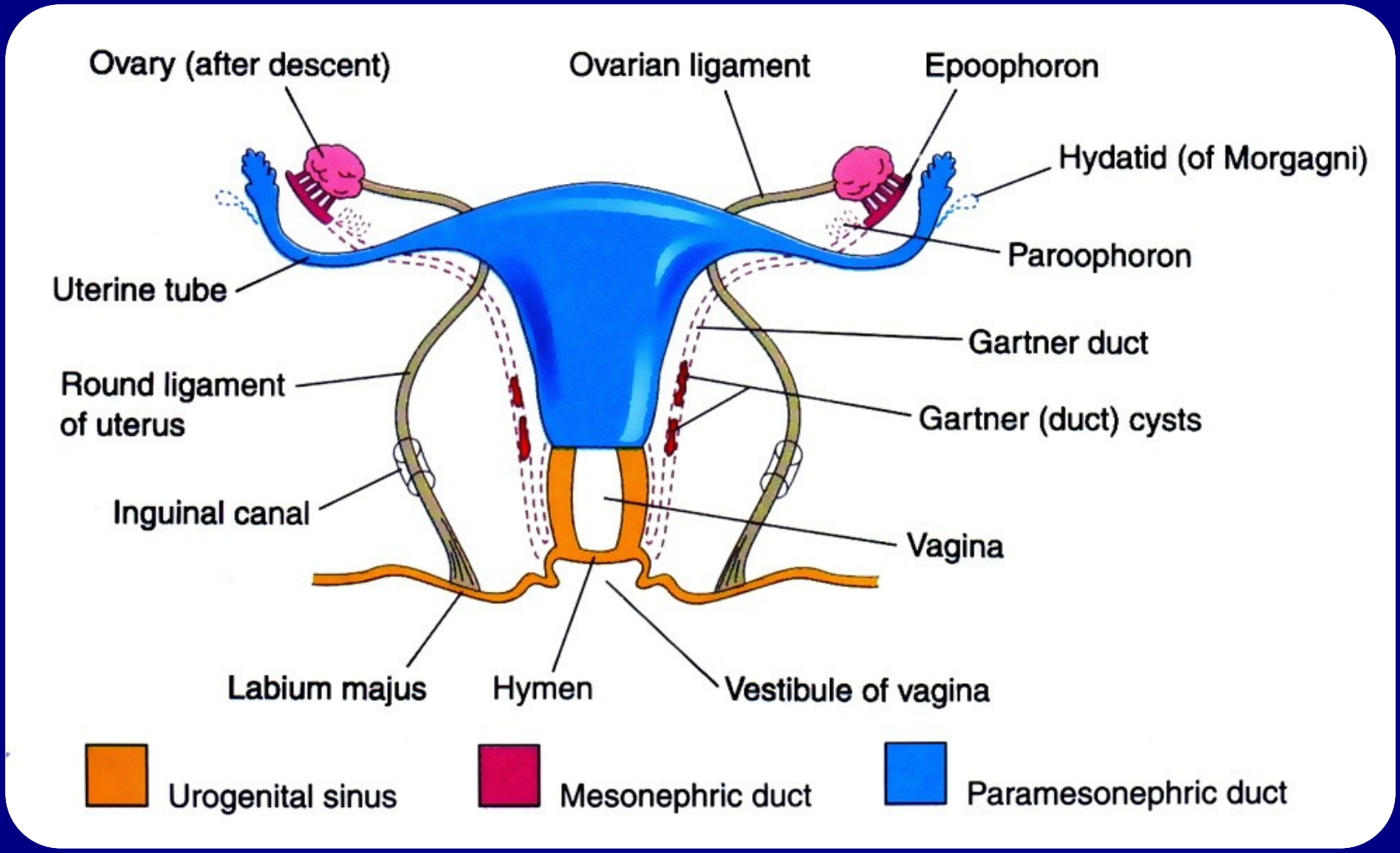
Lateral view (both sexes have identical primordia).



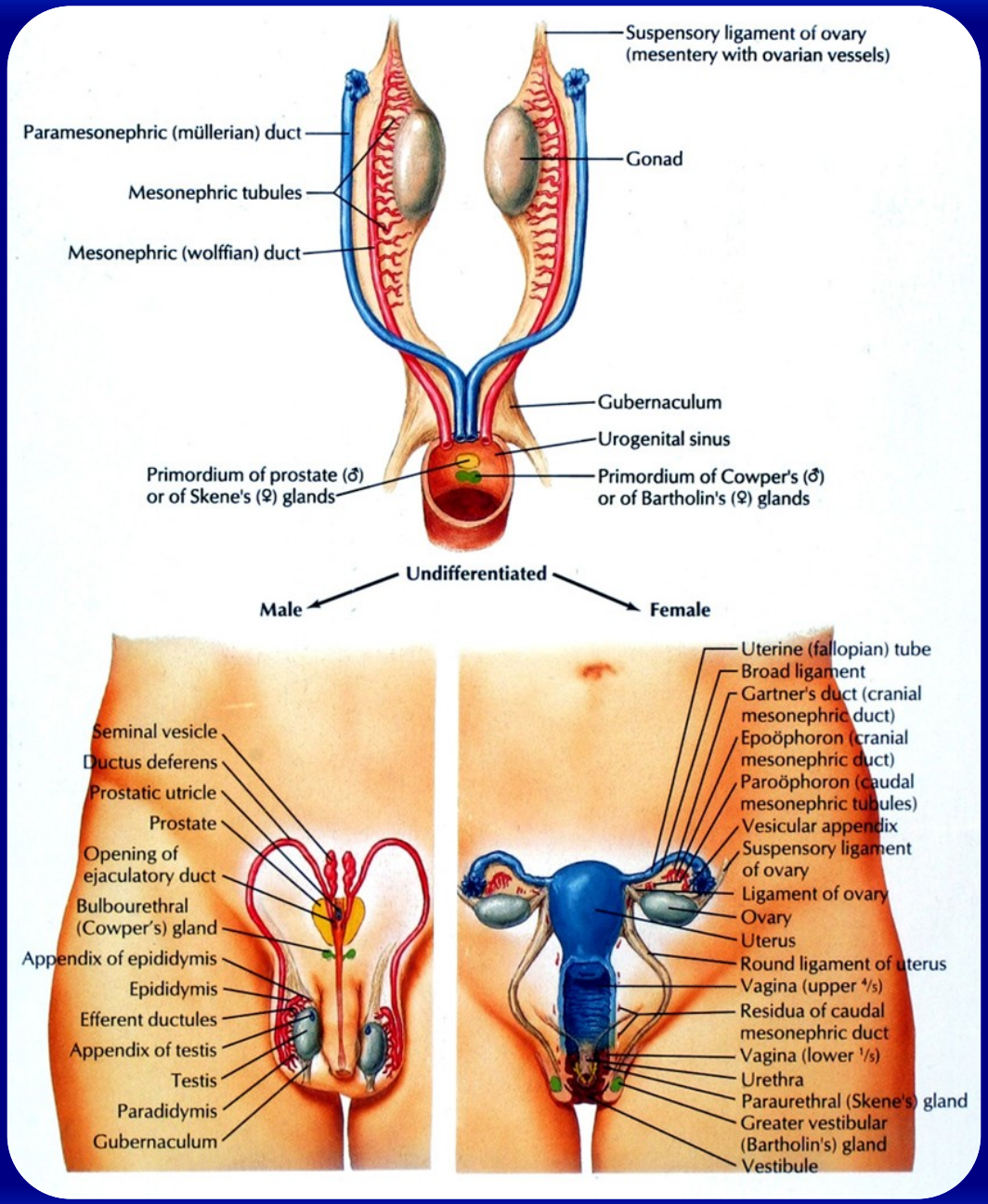
Reproductive system in a newborn male.

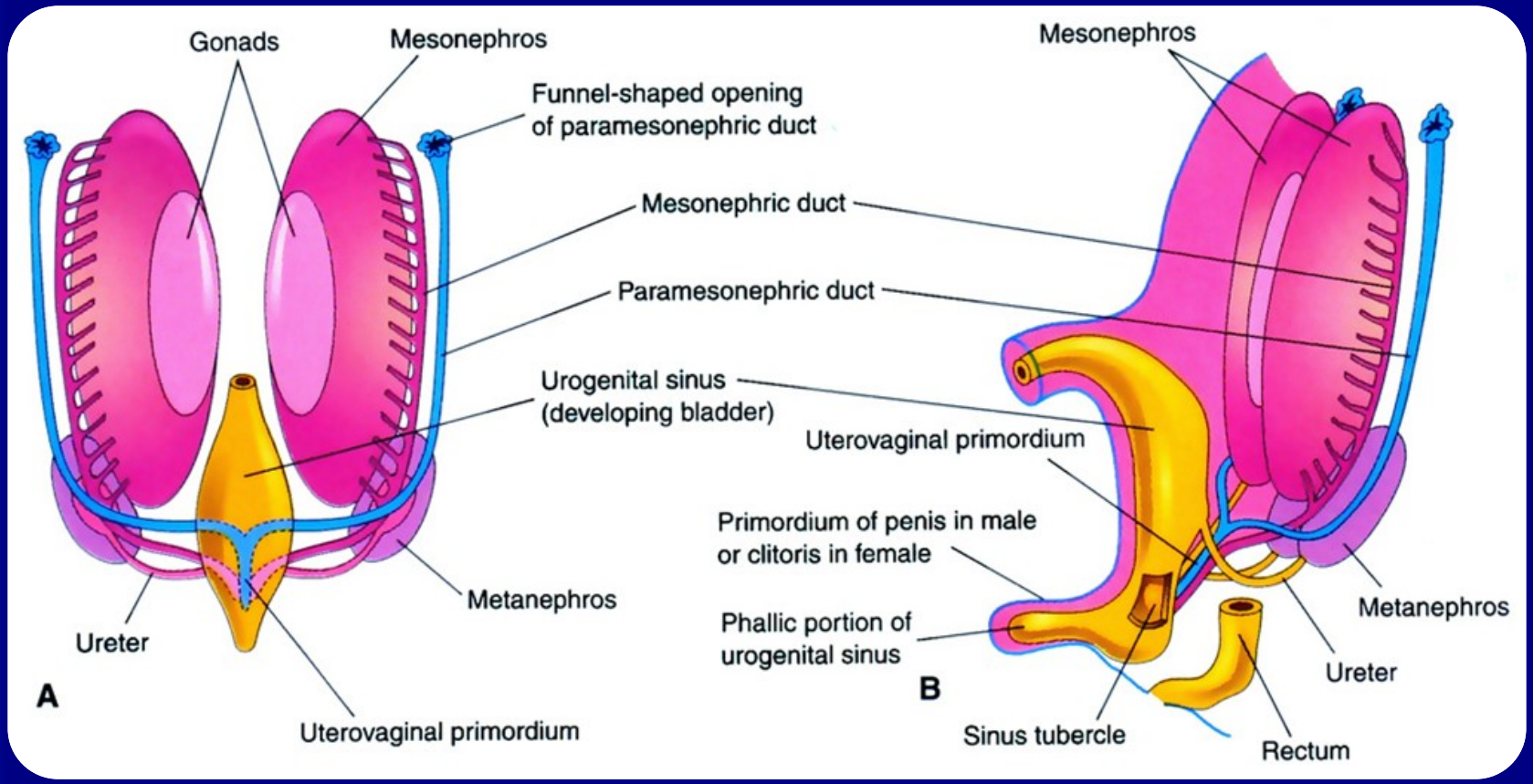


Female reproductive system in a 12-week fetus.

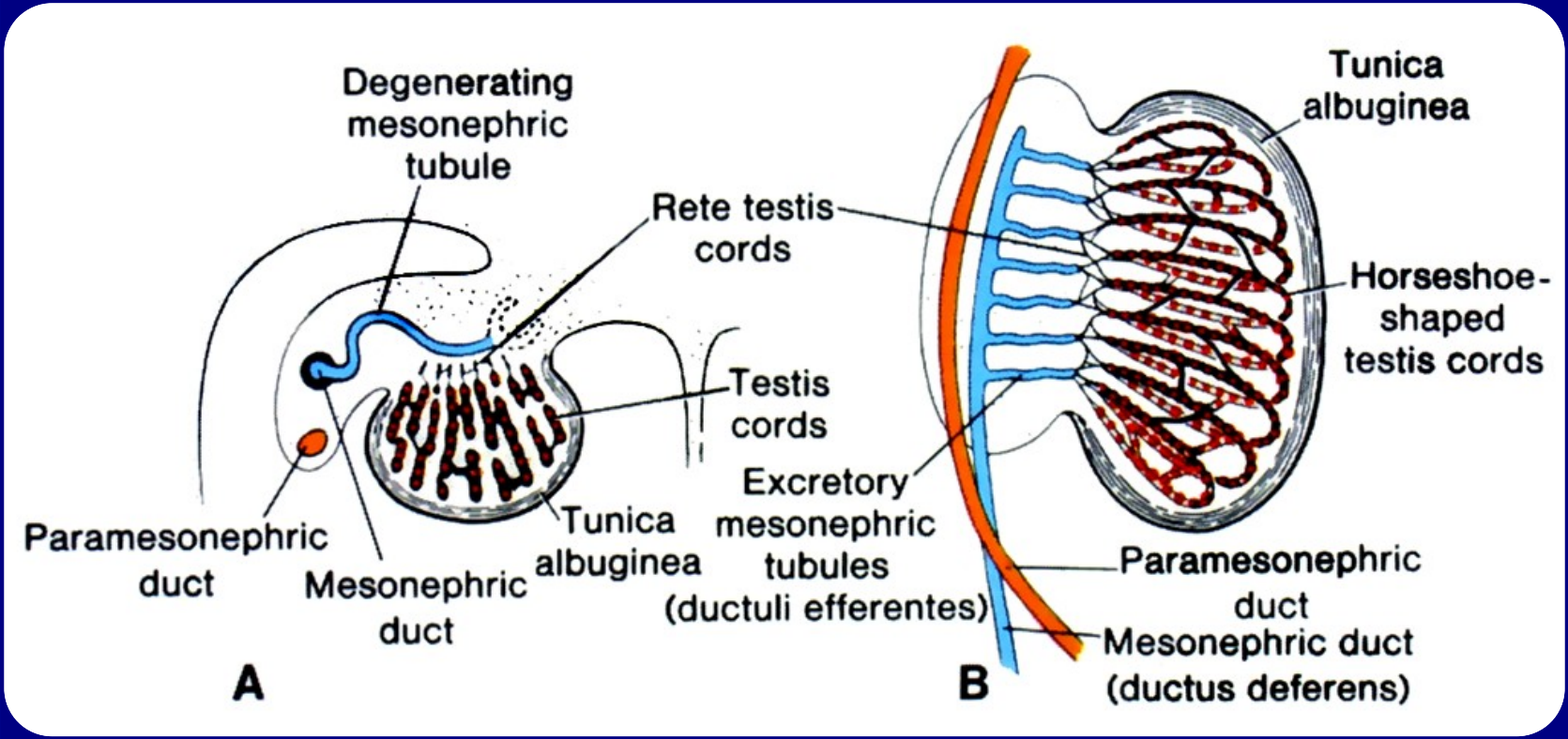


Reproductive system in a newborn female.

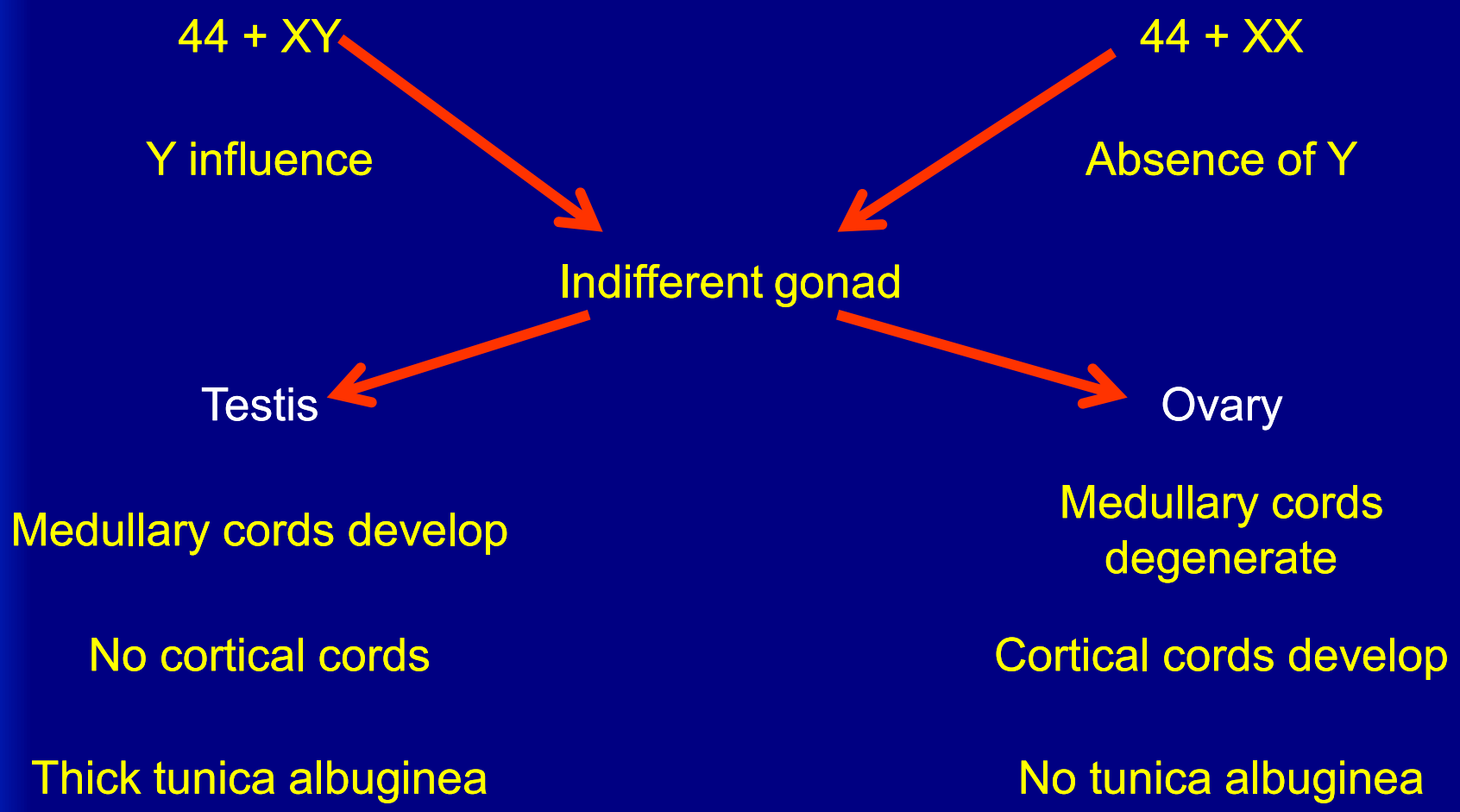

Suspensory ligament of ovary
(mesentery with ovarian vessels)
Paramesonephric (müllerian) duct
Gonad
Mesonephric tubules
Mesonephric (wolffian) duct
Gubernaculum
Urogenital sinus
Primordium of prostate (♂)
or of Skene's (♀) glands
Primordium of Cowper's (♂)
or of Bartholin's (♀) glands
Undifferentiated
Male
Female
Seminal vesicle
Ductus deferens
Prostatic utricle
Prostate
Opening of
ejaculatory duct
Bulbourethral
(Cowper's) gland
Appendix of epididymis
Epididymis
Efferent ductules
Appendix of testis
Testis
Paradidymis
Gubernaculum
Uterine (fallopian) tube
Broad ligament
Gartner's duct (cranial
mesonephric duct)
Epoöphoron (cranial
mesonephric duct)
Paroöphoron (caudal
mesonephric tubules)
Vesicular appendix
Suspensory ligament
of ovary
Ligament of ovary
Ovary
Uterus
Round ligament of uterus
Vagina (upper 4/5)
Residua of caudal
mesonephric duct
Vagina (lower 1/5)
Urethra
Paraurethral (Skene's) gland
Greater vestibular
(Bartholin's) gland
Vestibule

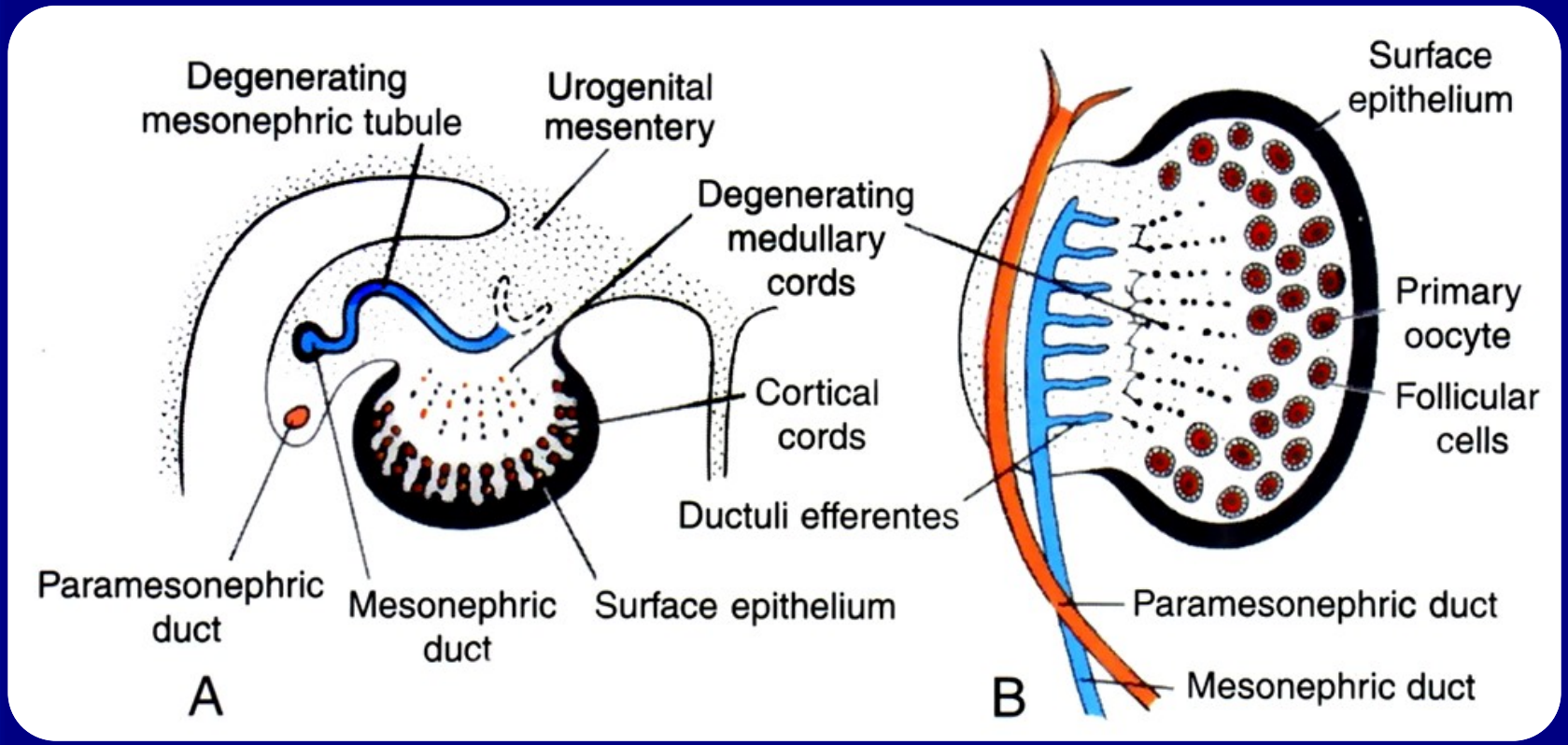


A – 7 week embryo. B – 9 week embryo.

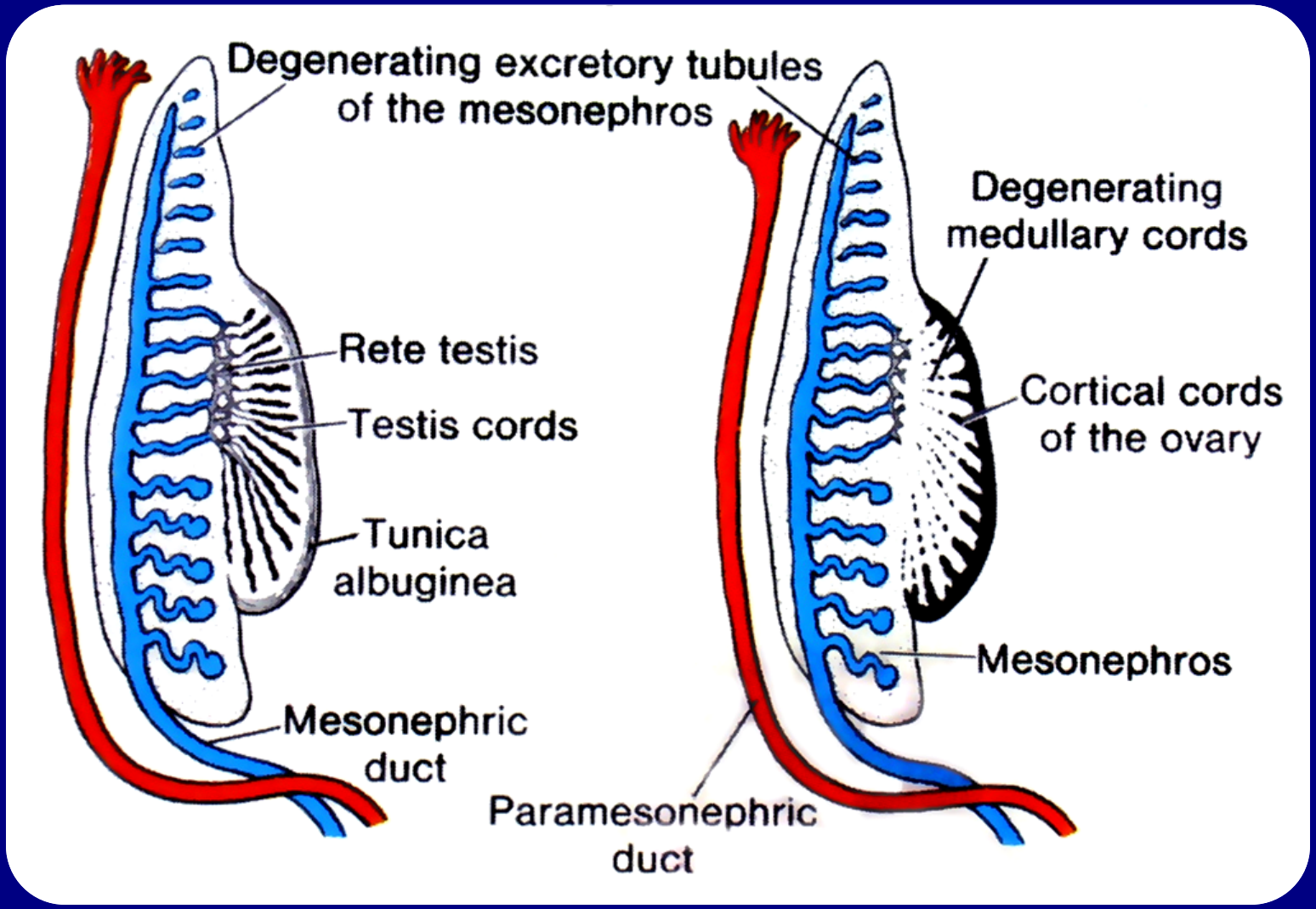


A – Section through the testis in the eight week. B – Testis and genital duct in the fourth month.

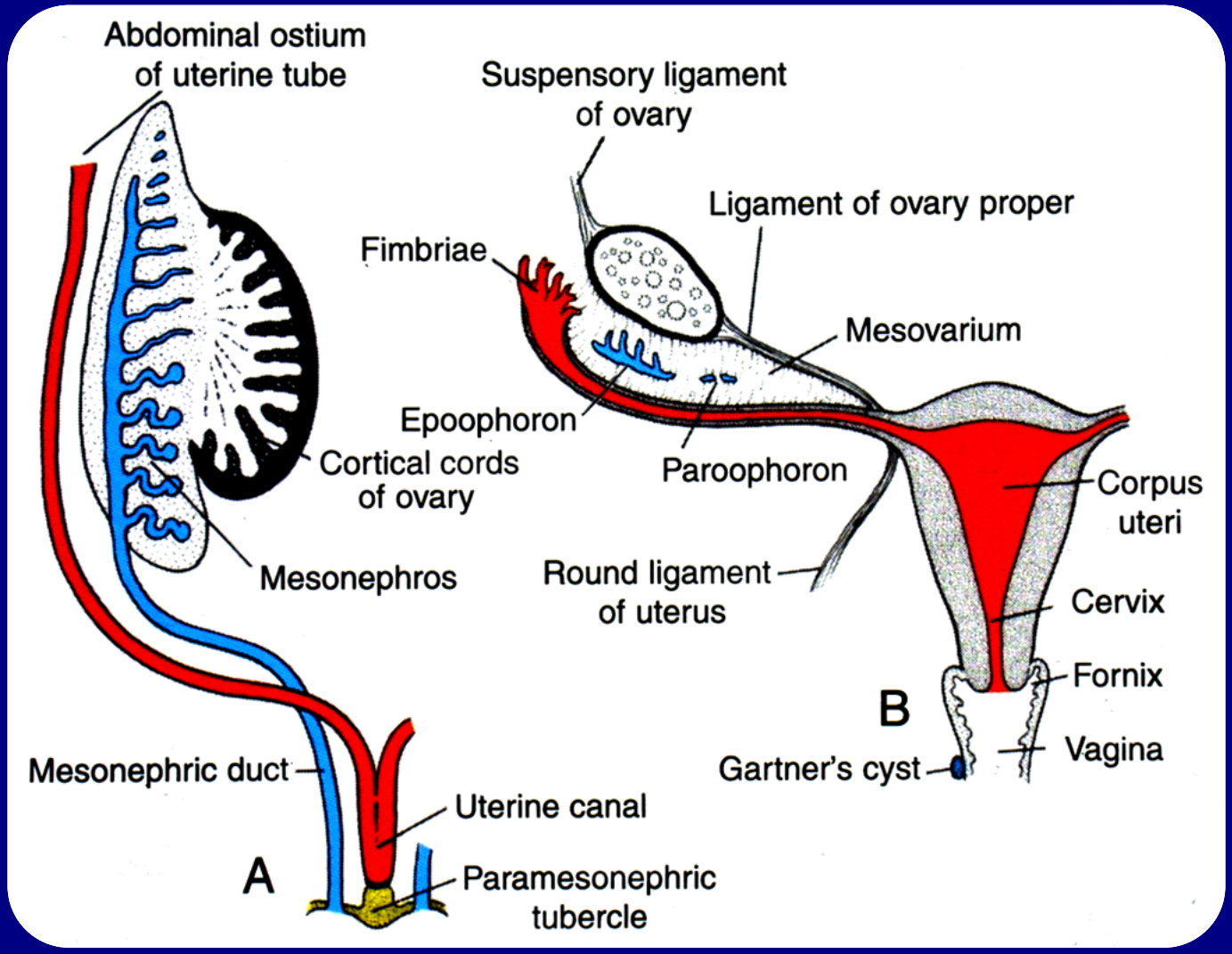

44 + XY
Y influence
44 + XX
Absence of Y
Indifferent gonad
Testis
Ovary
Medullary cords develop
No cortical cords
Thick tunica albuginea
Medullary cords degenerate
Cortical cords develop
No tunica albuginea



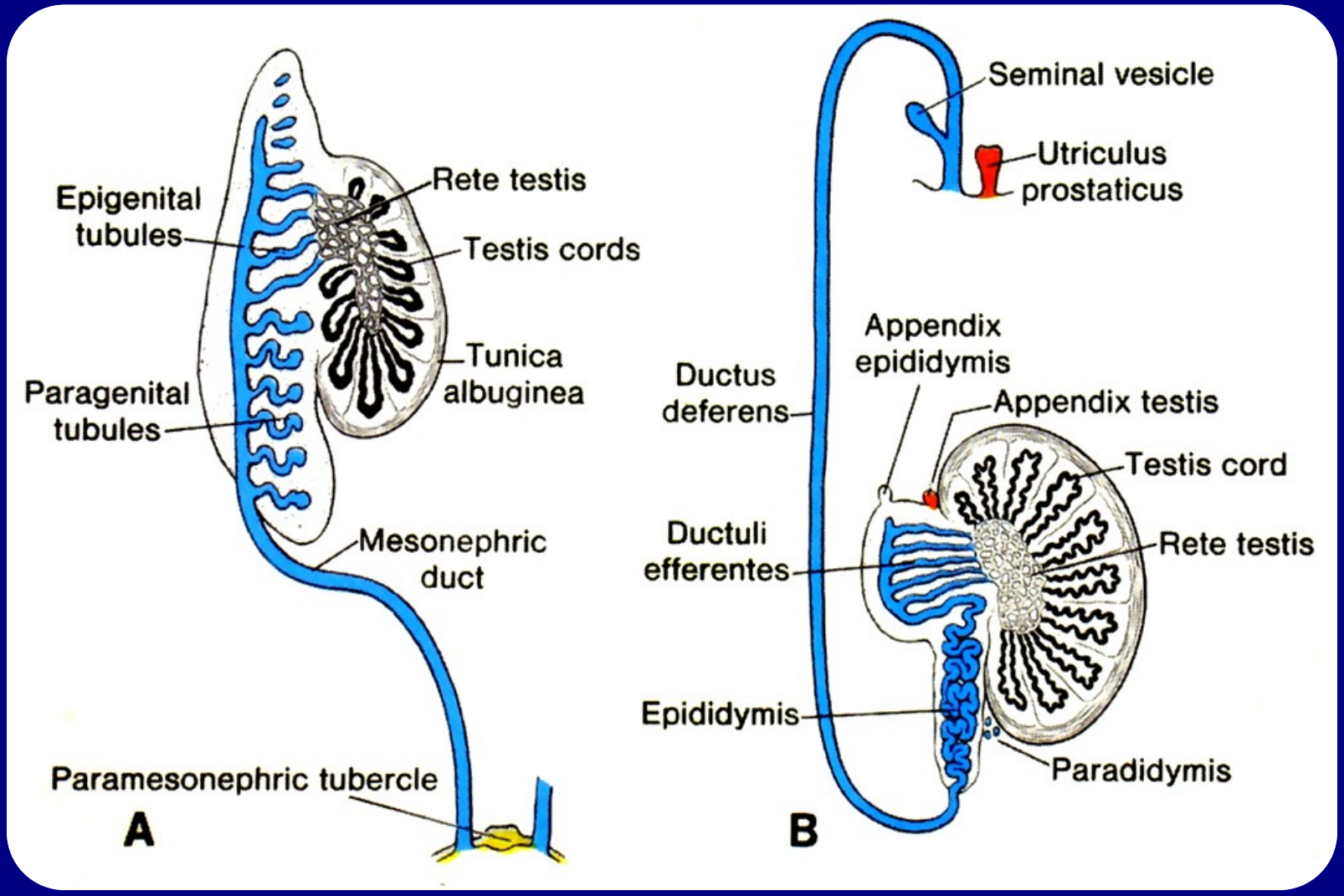
A – 7 week embryo. B – Fifth month.



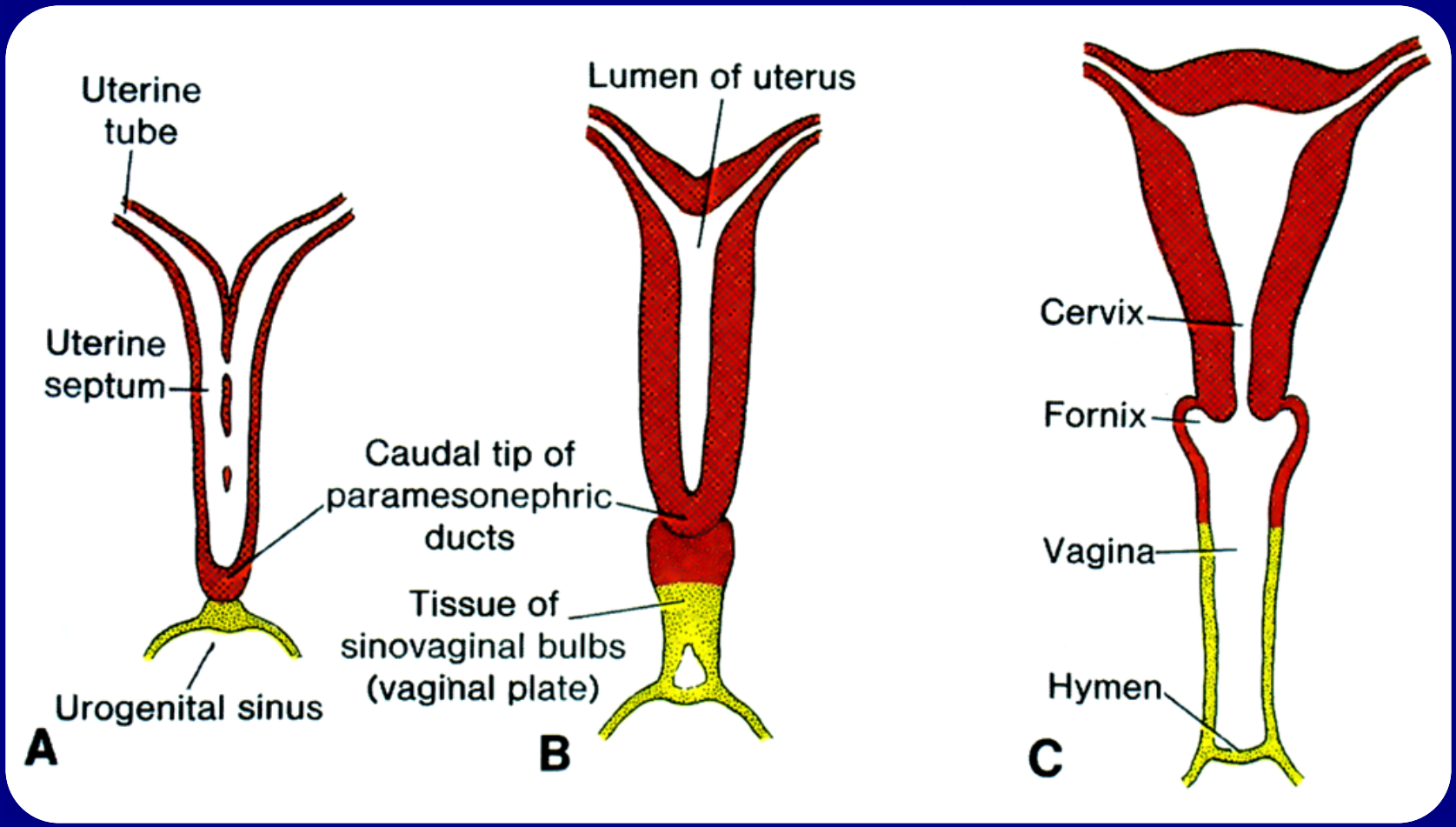
Genital ducts in the sixth week in the male and female.



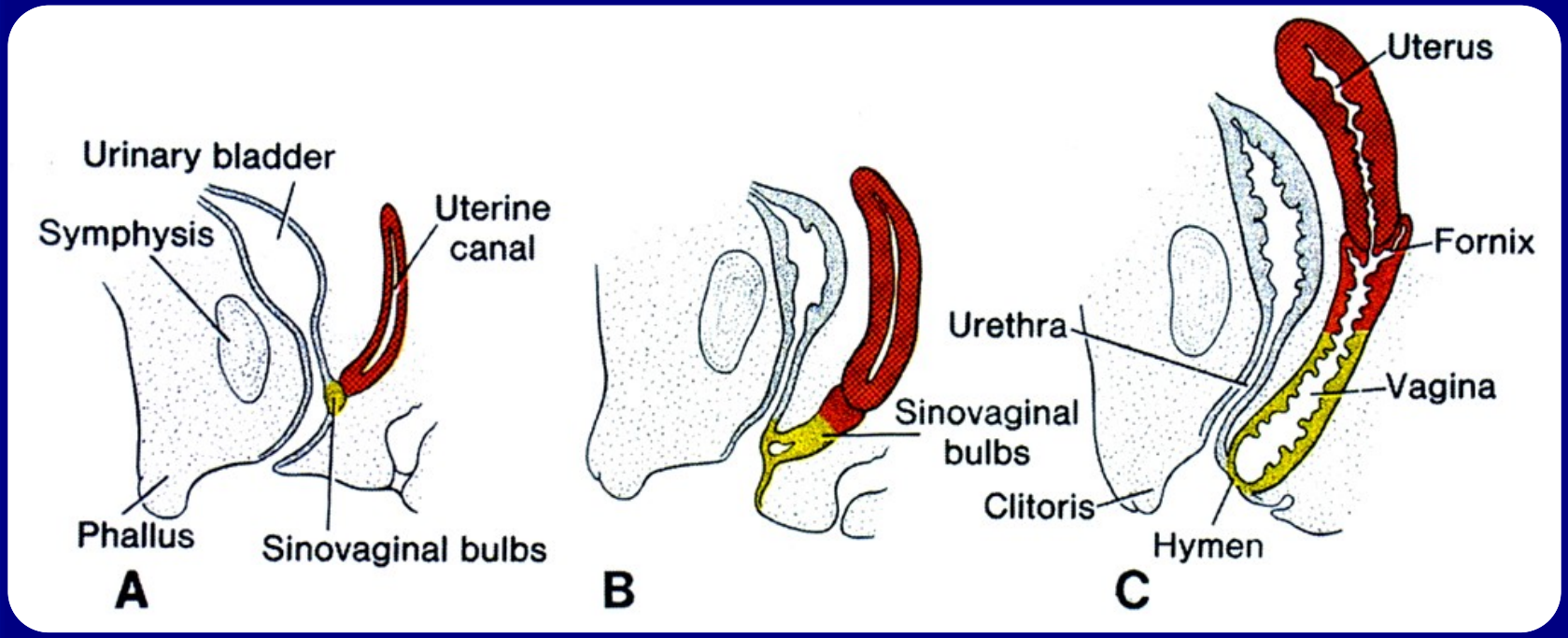
Genital ducts in the female (A) end of second month, (B) after descent of the ovary.



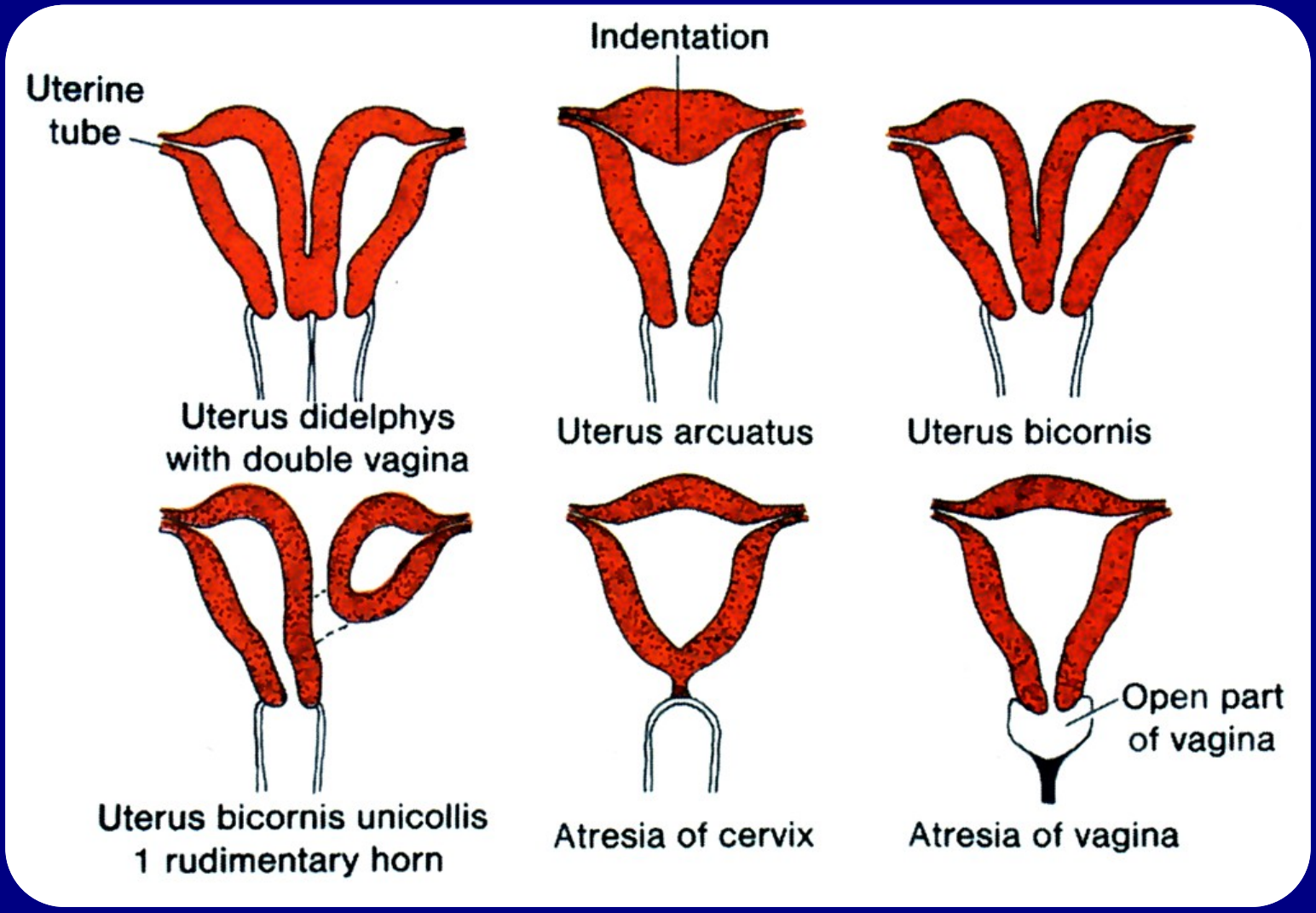
A – Genital ducts in the male in the fourth month. B – Genital ducts after descent of testis.



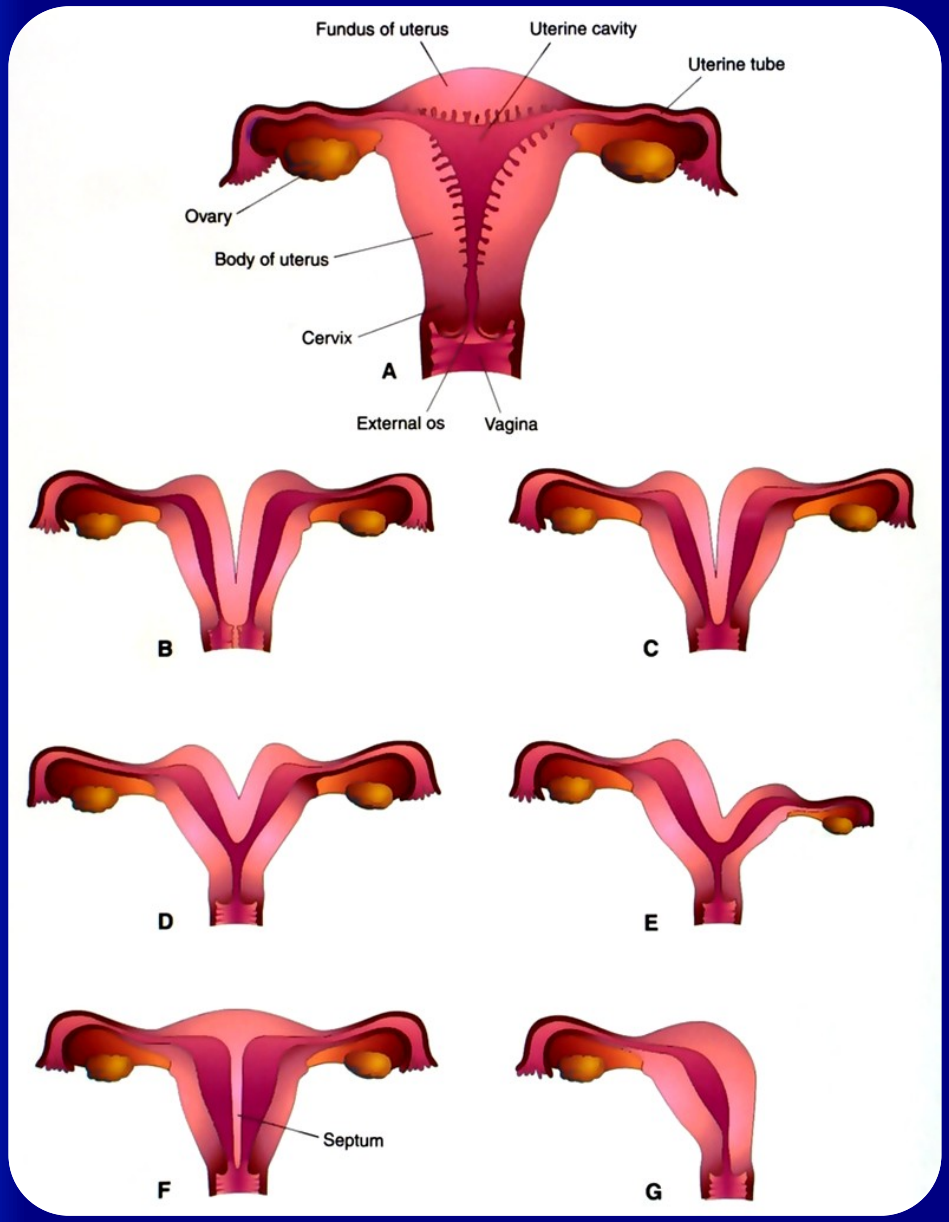
Formation of the uterus and vagina. A – 9 weeks. B – 3 months. C – Newborn.



Formation of the uterus and vagina. A – 9 weeks. B – 3 months. C – Newborn.



Main abnormalities of the uterus and vagina.



A – Normal uterus and vagina.

B – Double uterus and double vagina.

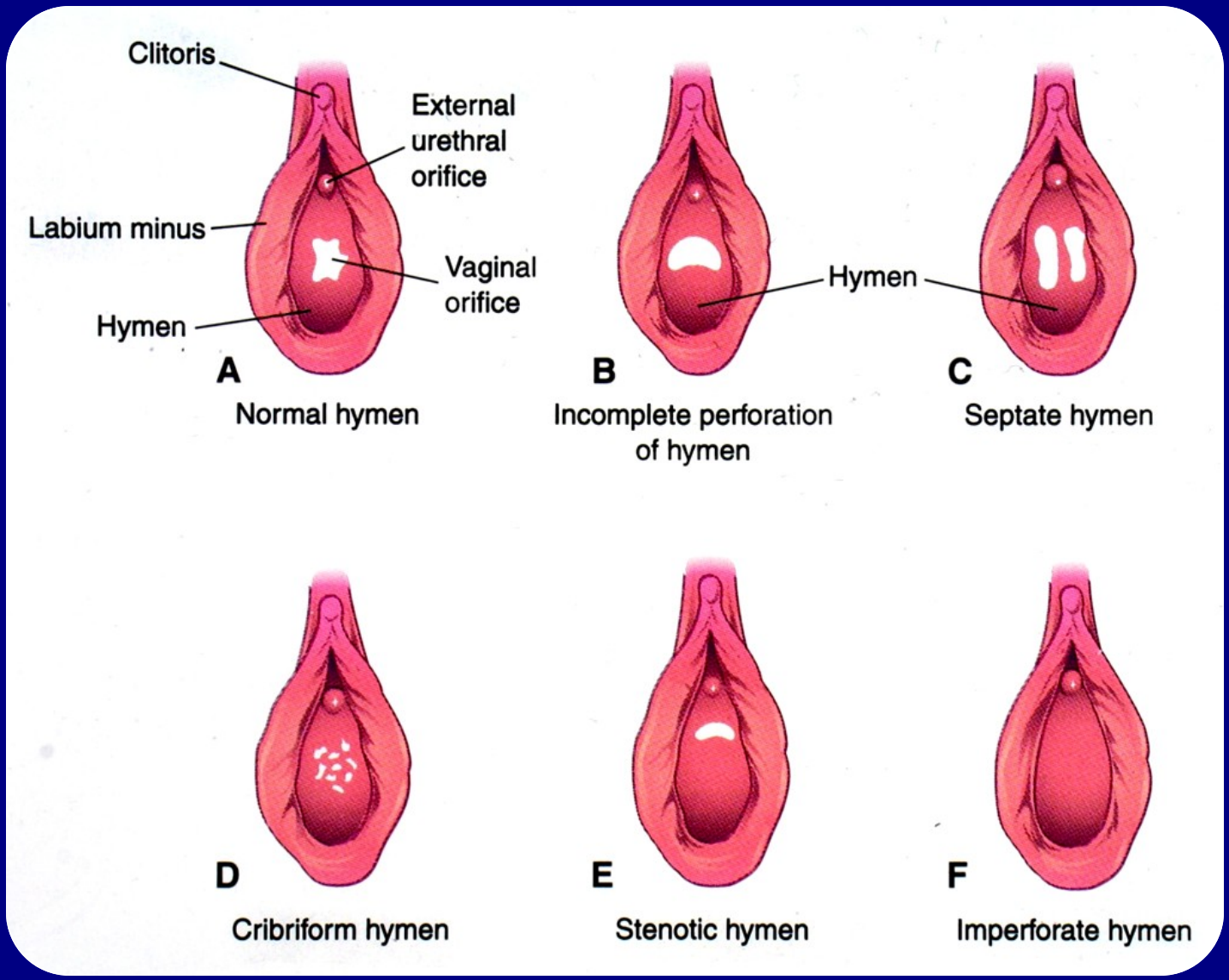
C – Double uterus with single vagina.

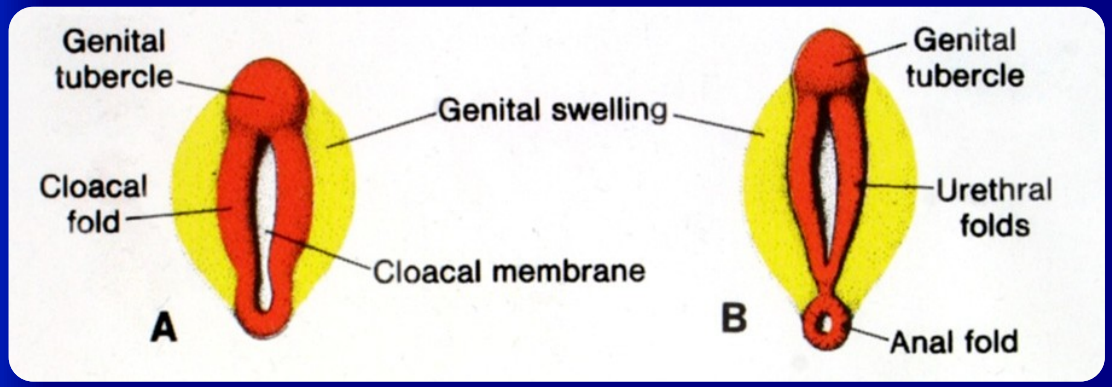
D – Bicornuate uterus.

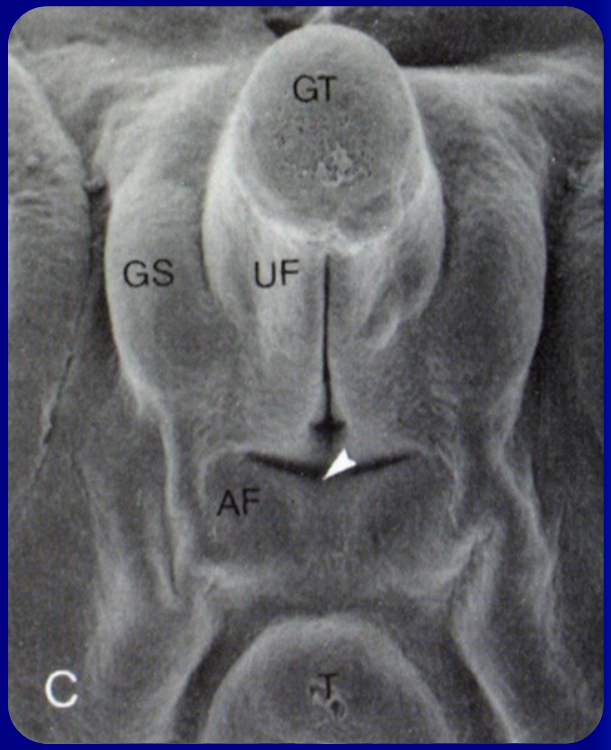
E – Bicornuate uterus with a rudimentary left horn.

F – Septate uterus.

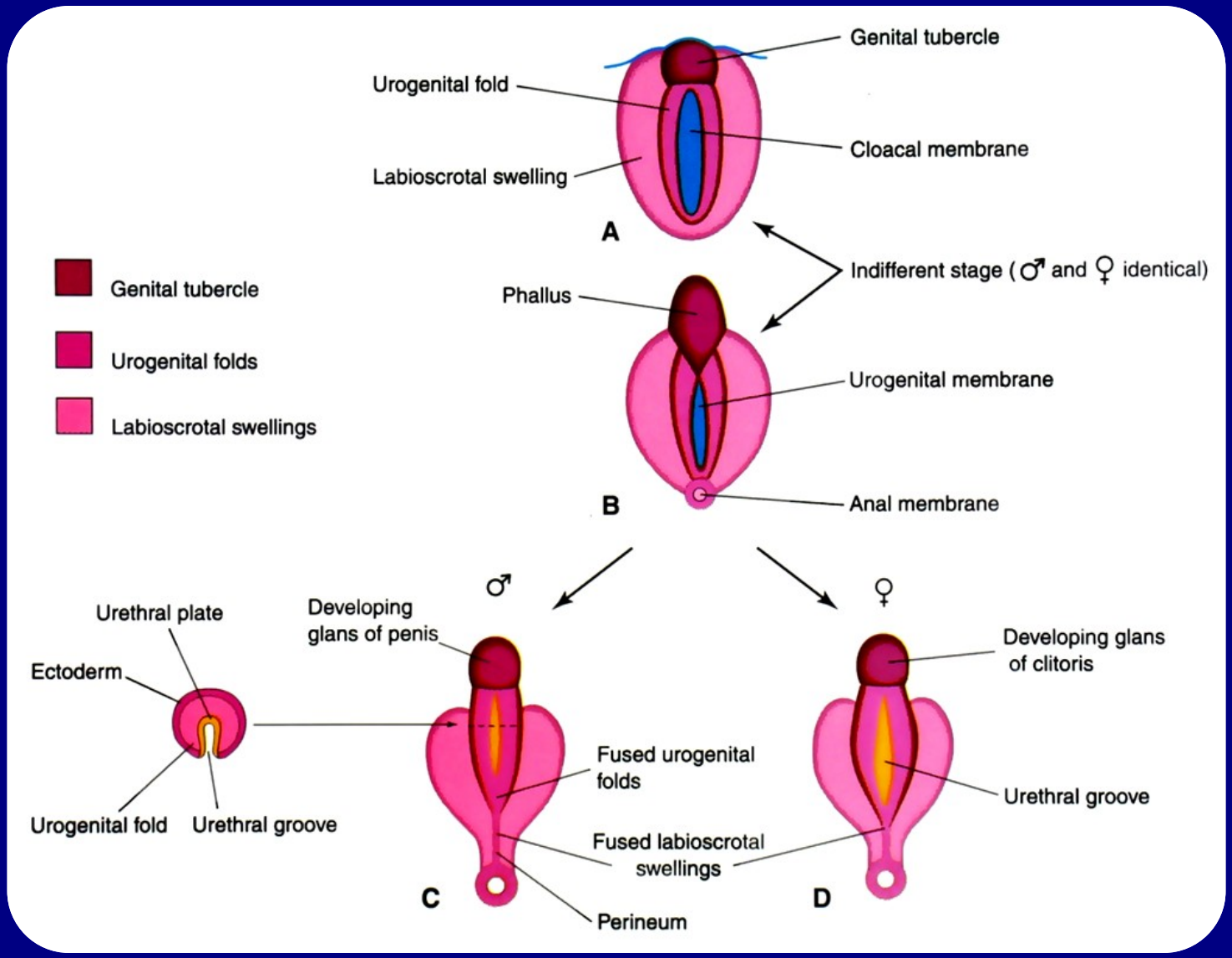
G – Unicornuate uterus.

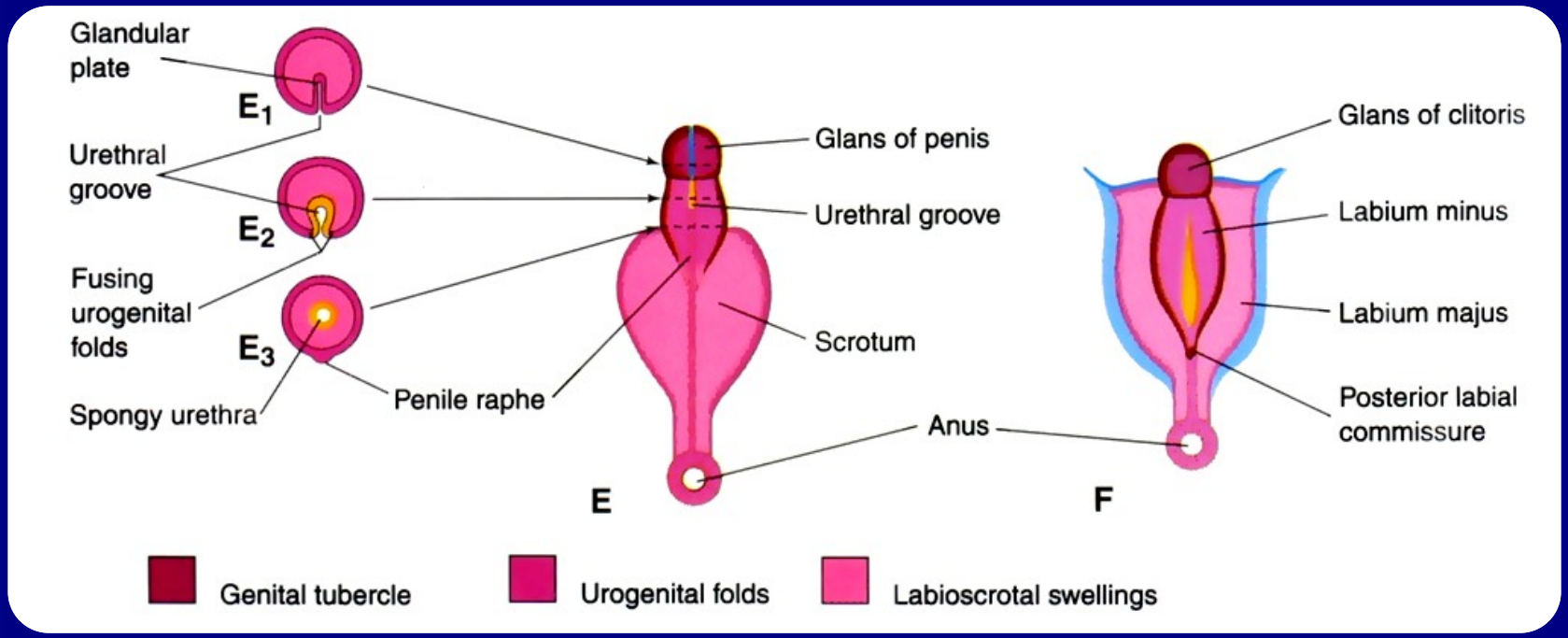

Clitoris
External urethral orifice
Labium minus
Vaginal orifice
Hymen
A
Normal hymen
B
Incomplete perforation of hymen
Hymen
C
Septate hymen
D
Cribriform hymen
E
Stenotic hymen
F
Imperforate hymen

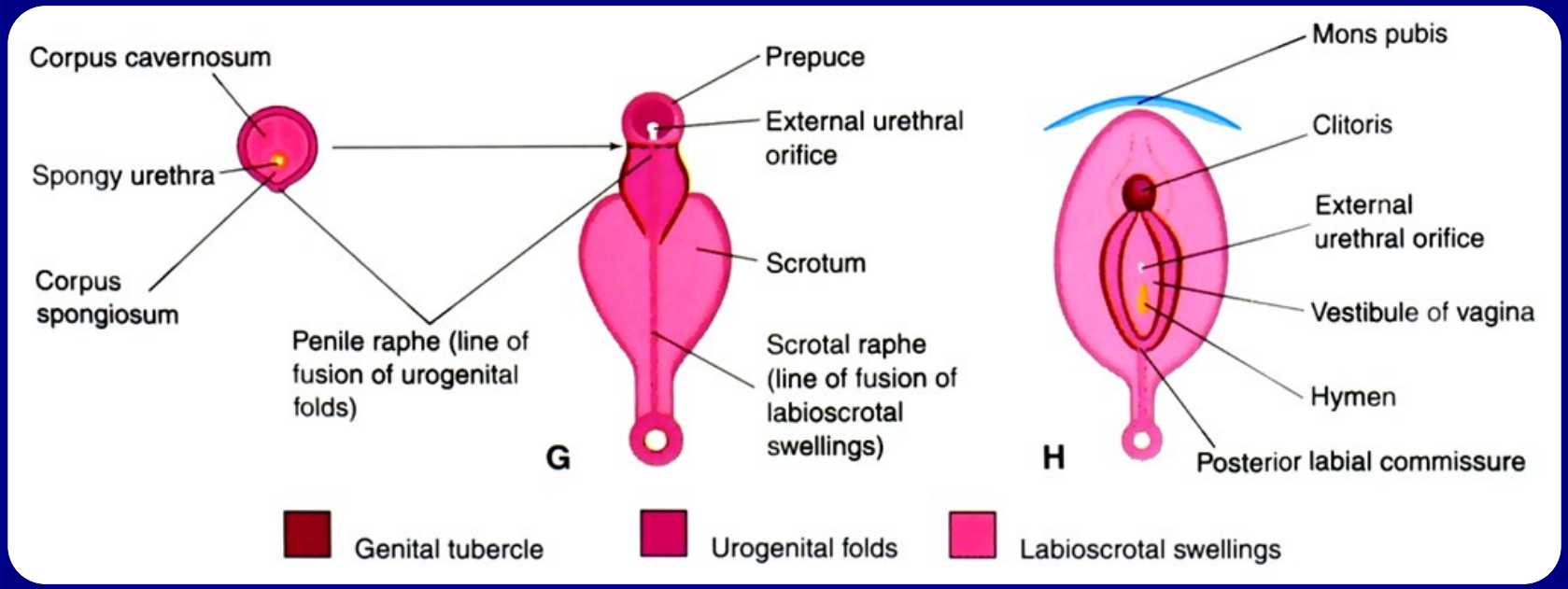


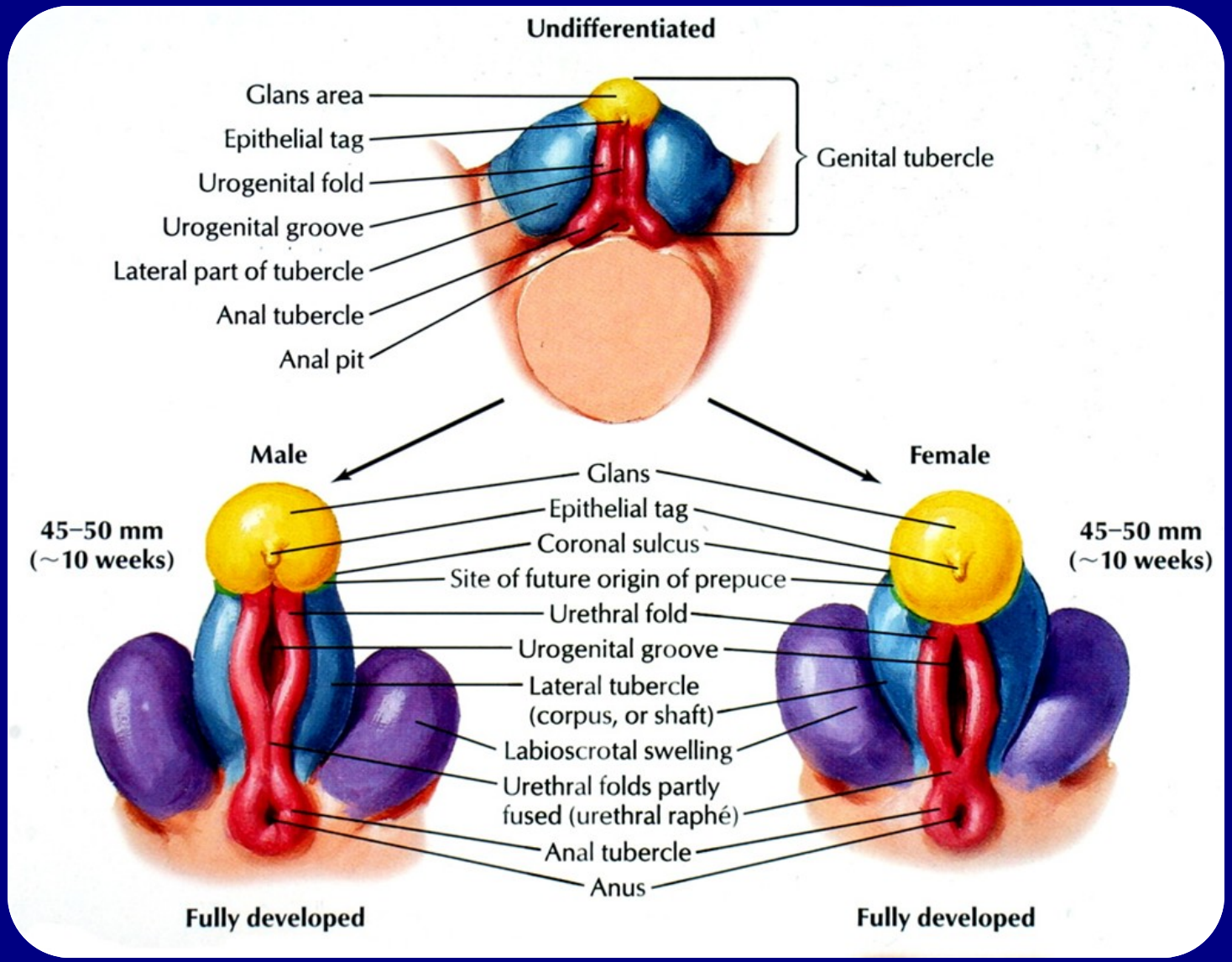


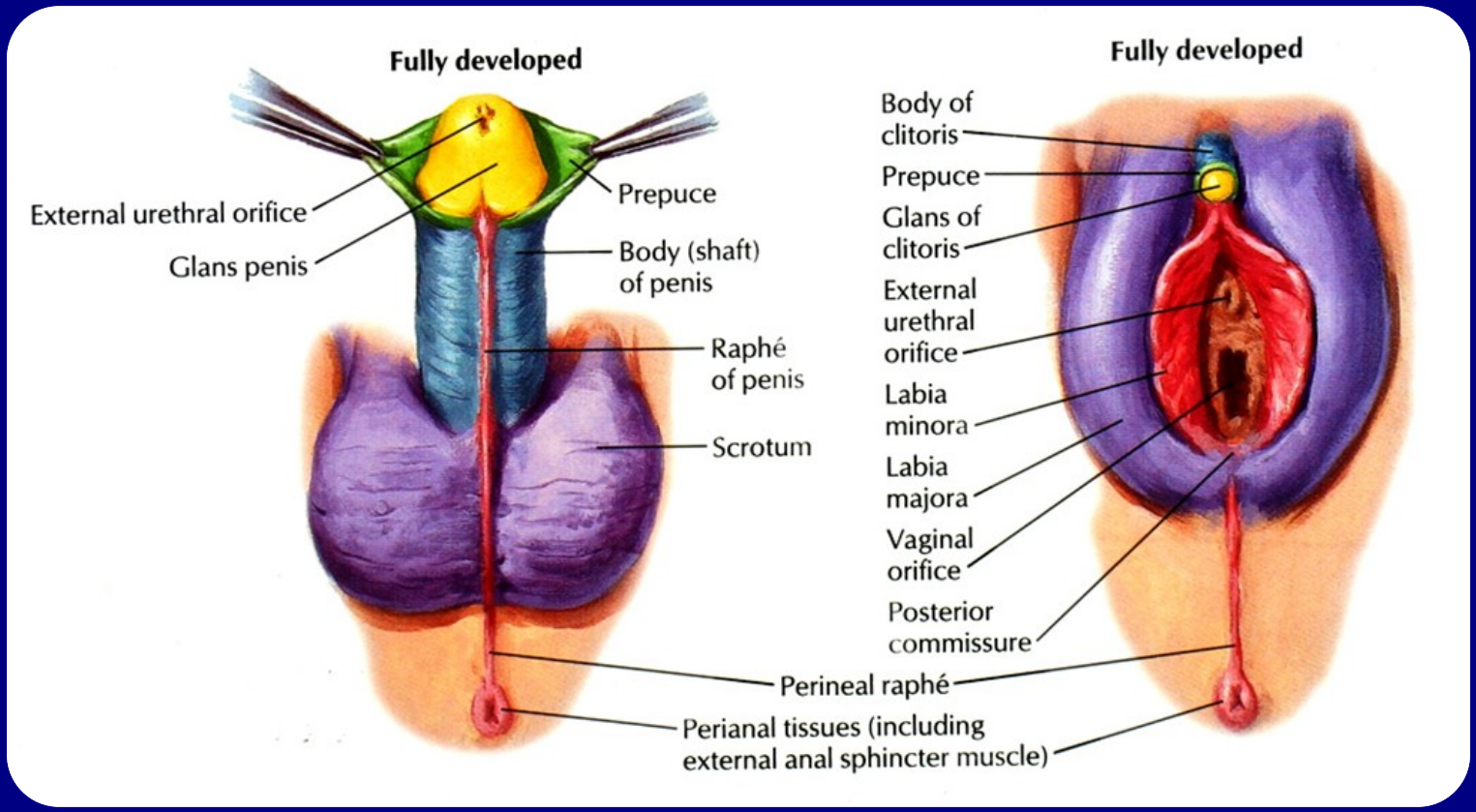
Indifferent stages of the external genitalia. A – 4 weeks. B – 6 weeks.

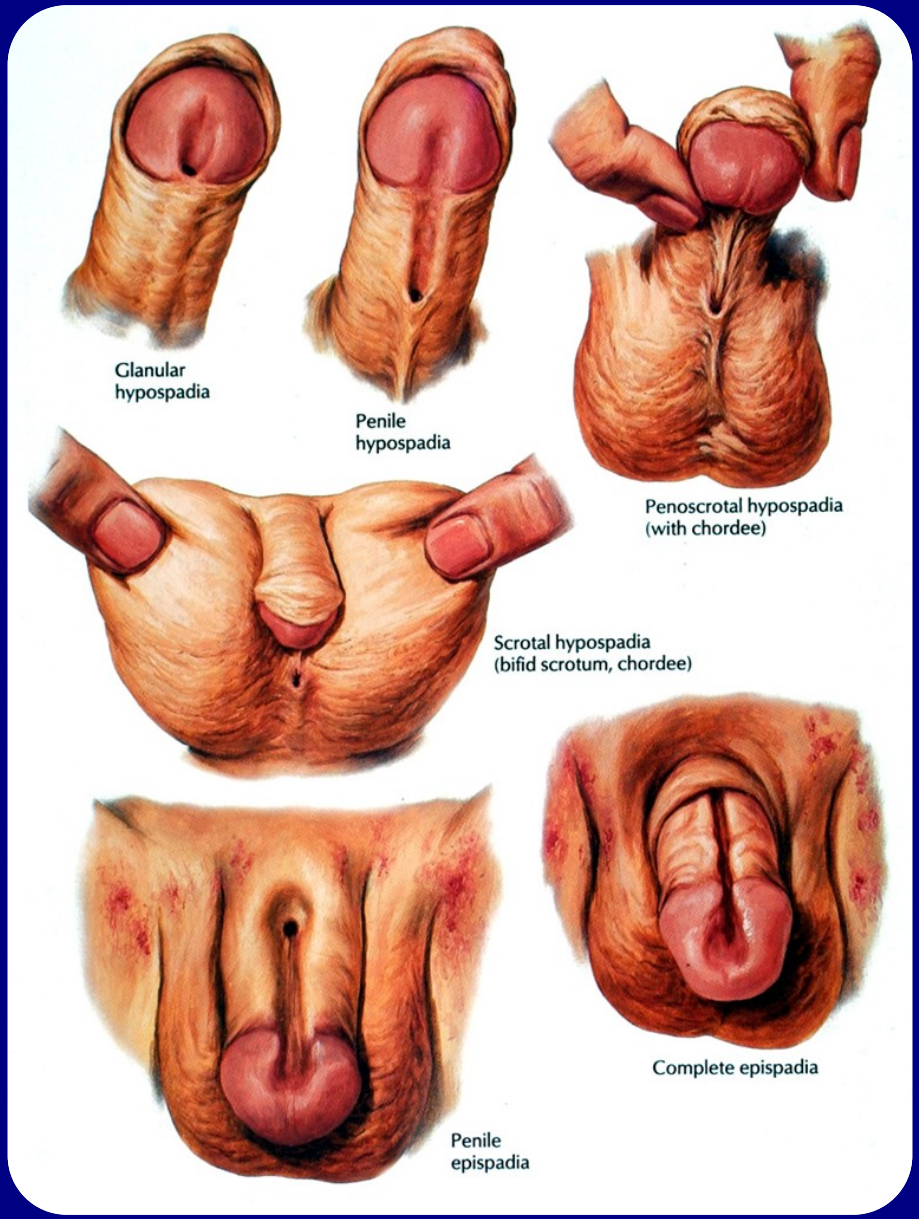

Genital tubercle
Urogenital fold
Cloacal membrane
Labioscrotal swelling
A
Indifferent stage (♂ and ♀ identical)
Genital tubercle
Urogenital folds
Labioscrotal swellings
Phallus
Urogenital membrane
B
Anal membrane
♂
♀
Urethral plate
Developing glans of penis
Developing glans of clitoris
Ectoderm
Fused urogenital folds
Urethral groove
Urogenital fold
Urethral groove
Fused labioscrotal swellings
C
D
Perineum


Glandular plate
E1
Urethral groove
E2
Fusing urogenital folds
E3
Spongy urethra
Penile raphe
Glans of penis
Urethral groove
Scrotum
Anus
E
Glans of clitoris
Labium minus
Labium majus
Posterior labial commissure
F
Genital tubercle
Urogenital folds
Labioscrotal swellings


Corpus cavernosum
Spongy urethra
Corpus spongiosum
Penile raphe (line of fusion of urogenital folds)
Prepuce
External urethral orifice
Scrotum
Scrotal raphe (line of fusion of labioscrotal swellings)
G
Mons pubis
Clitoris
External urethral orifice
Vestibule of vagina
Hymen
Posterior labial commissure
H
Genital tubercle
Urogenital folds
Labioscrotal swellings


Undifferentiated
Glans area
Epithelial tag
Urogenital fold
Urogenital groove
Lateral part of tubercle
Anal tubercle
Anal pit
Genital tubercle
Male
Female
Glans
Epithelial tag
Coronal sulcus
Site of future origin of prepuce
Urethral fold
Urogenital groove
Lateral tubercle (corpus, or shaft)
Labioscrotal swelling
Urethral folds partly fused (urethral raphé)
Anal tubercle
Anus
45–50 mm (~10 weeks)
45–50 mm (~10 weeks)
Fully developed
Fully developed


Fully developed
External urethral orifice
Glans penis
Prepuce
Body (shaft) of penis
Raphé of penis
Scrotum
Fully developed
Body of clitoris
Prepuce
Glans of clitoris
External urethral orifice
Labia minora
Labia majora
Vaginal orifice
Posterior commissure
Perineal raphé
Perianal tissues (including external anal sphincter muscle)

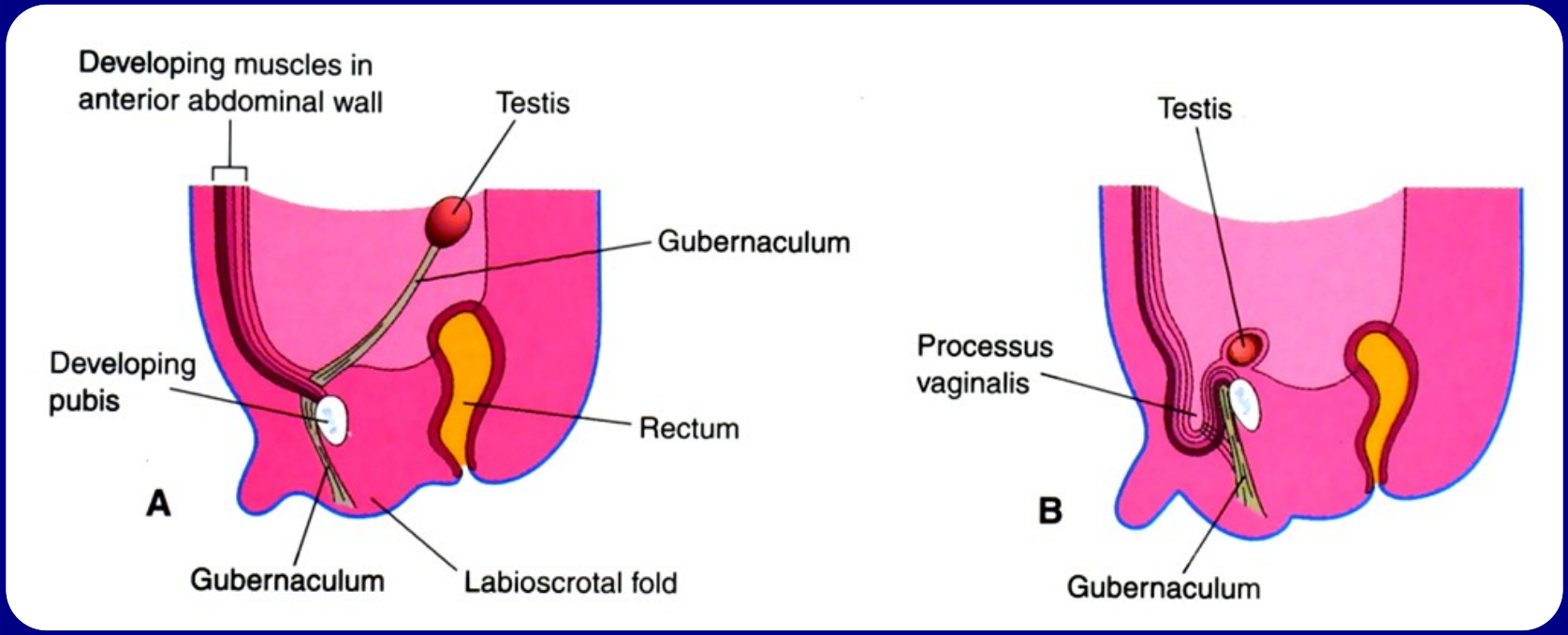

Glanular hypospadia
Penile hypospadia
Penoscrotal hypospadia (with chordee)
Scrotal hypospadia (bifid scrotum, chordee)
Complete epispadia
Penile epispadia

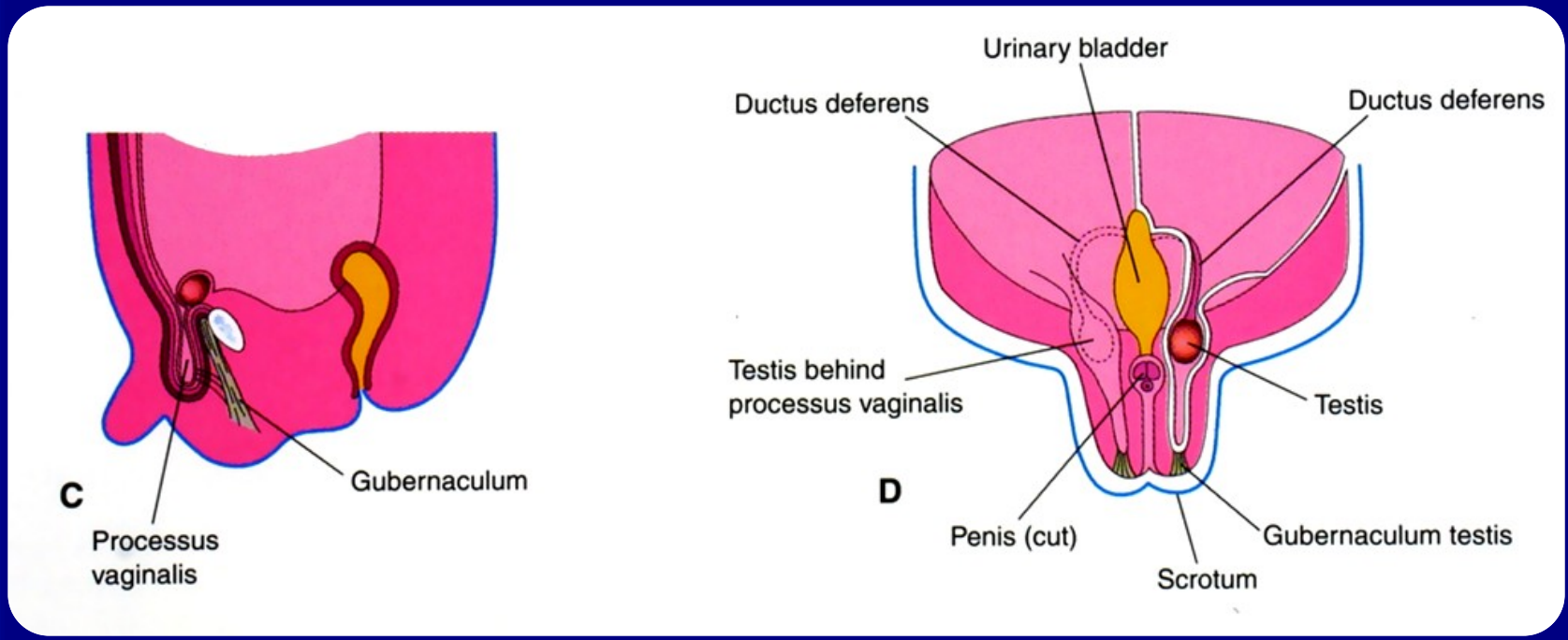
UROGENITAL PRIMORDIA AND DERIVATIVES

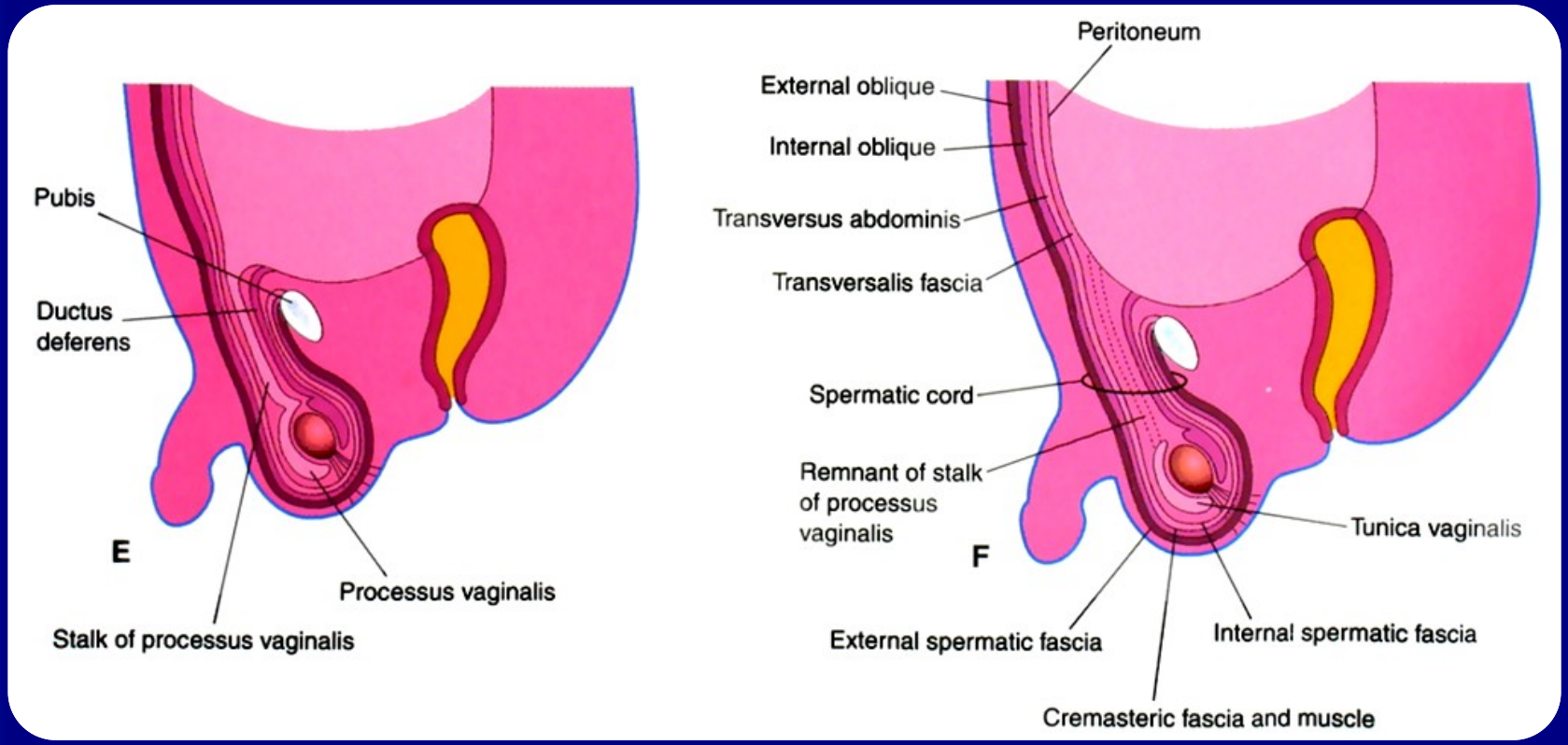
Female	Male
From the Urogenital Sinus	
Urinary bladder Urethra Lower vagina (and vaginal epithelium) Vestibule Greater vestibular/urethral glands	Urinary bladder Urethra (except navicular fossa) Prostate gland Bulbourethral glands
	Vestigial: prostatic utricle
From the Mesonephric Duct and Tubules	
Ureteric bud from mesonephric duct forms: Ureter Renal pelvis Major and minor calices Collecting tubules	Efferent ductules Duct of epididymis Ductus deferens Ejaculatory duct Seminal vesicles Ureter, renal pelvis, calices, and collecting tubules
Vestigial: epoophoron, paoophoron, appendix vesiculosa, Gartner's duct	Vestigial: appendix of epididymis
From the Paramesonephric Duct	
Uterine tubes, uterus, upper vagina	Vestigial: appendix of testis
Vestigial: hydatid	

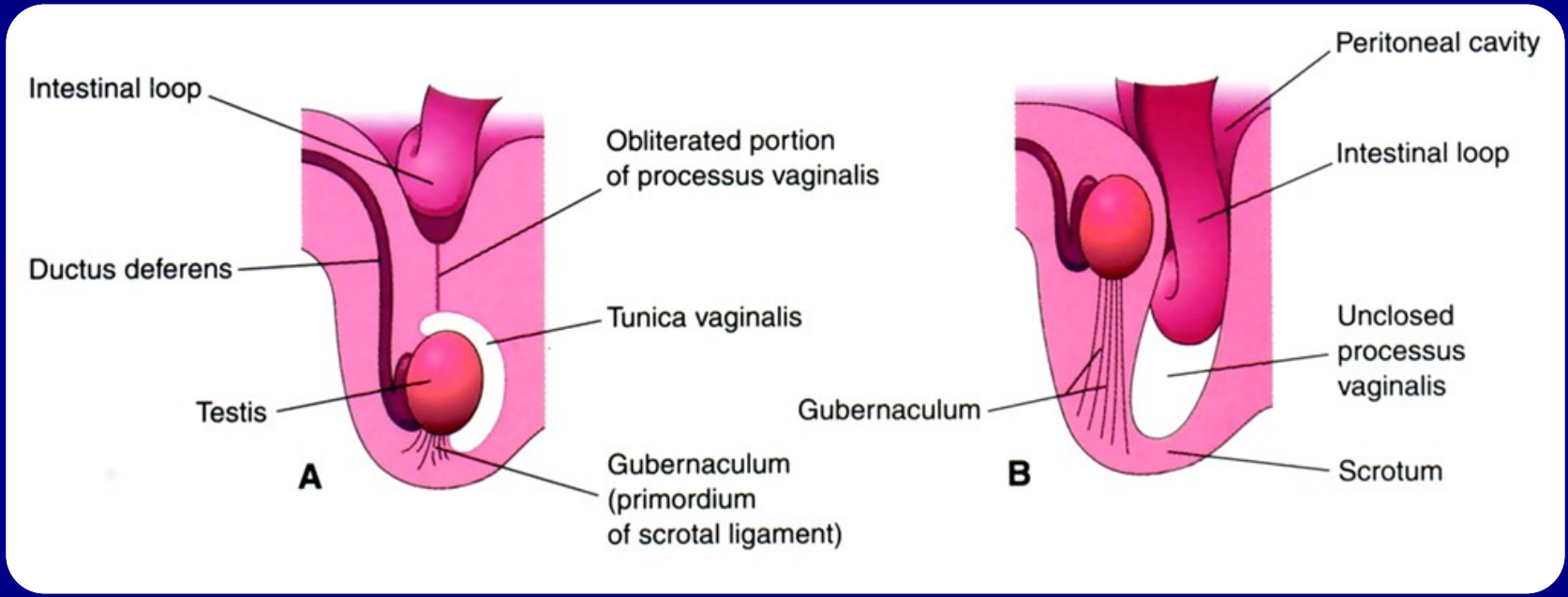
GENITAL PRIMORDIA AND DERIVATIVES

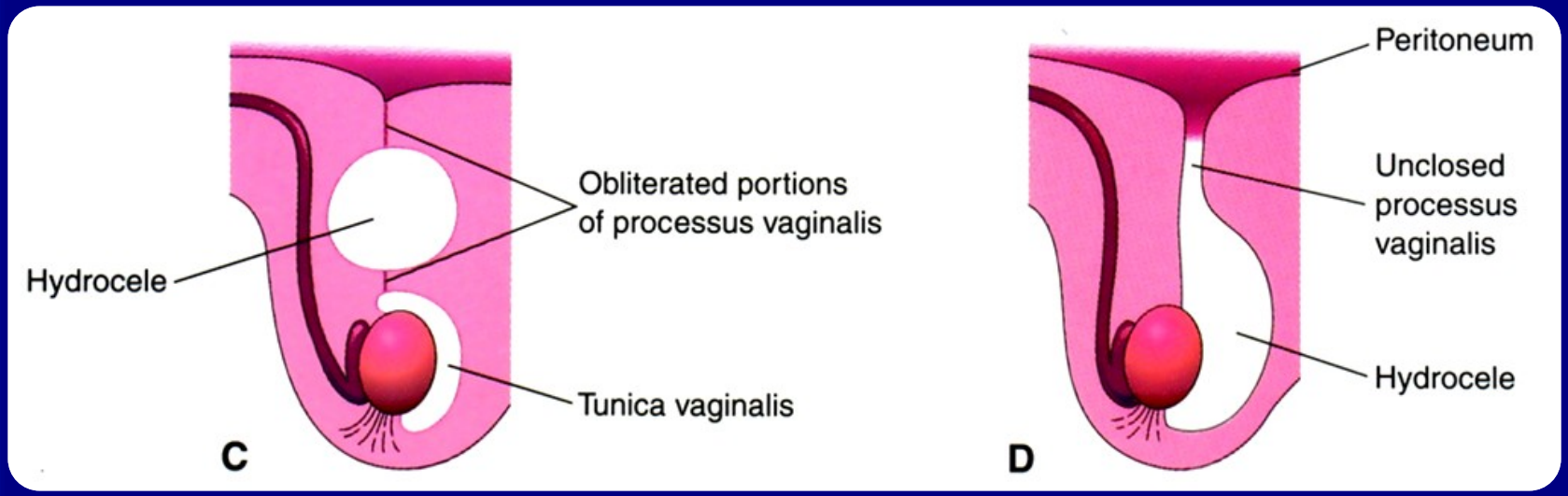
Female	Male
From the Genital Tubercle/Phallus	
Clitoris: Glans clitoridis Corpora cavernosa clitoridis Bulb of the vestibule	Penis: Glans penis (and navicular fossa) Corpora cavernosum penis Corpus spongiosum penis
From the Urogenital Folds	
Labia minora Perineal raphé Perianal tissue (and external anal sphincter)	Ventral aspect of penis Most of the penile urethra Perineal raphé Perianal tissue (and external sphincter)
From the Labioscrotal Folds	
Labia majora	Scrotum
From the Indifferent Gonad	
Ovary: follicles from secondary sex cords in cortex	Testis: seminiferous tubules from primary sex cords Rete testis in medulla
Vestigial: rete ovarii in medulla	
From the Gubernaculum	
Ovarian ligament Round ligament of the uterus	Gubernaculum testis

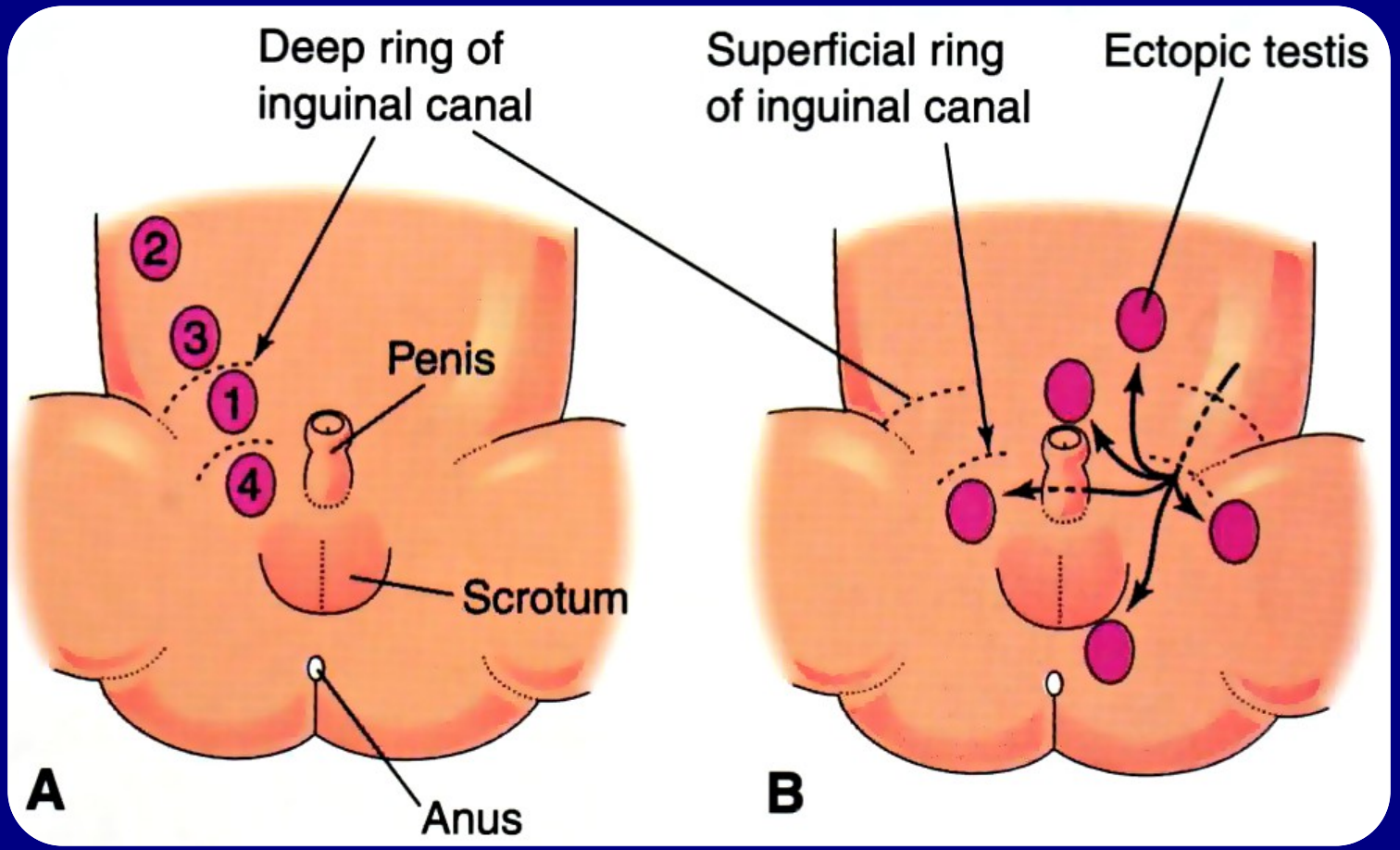

Developing muscles in anterior abdominal wall
Testis
Gubernaculum
Developing pubis
Rectum
A
Gubernaculum
Labioscrotal fold
Testis
Processus vaginalis
B
Gubernaculum


C
Gubernaculum
Processus vaginalis
D
Urinary bladder
Ductus deferens
Ductus deferens
Testis behind processus vaginalis
Testis
Penis (cut)
Gubernaculum testis
Scrotum


Pubis
Ductus deferens
E
Processus vaginalis
Stalk of processus vaginalis
Peritoneum
External oblique
Internal oblique
Transversus abdominis
Transversalis fascia
Spermatic cord
Remnant of stalk of processus vaginalis
F
Tunica vaginalis
External spermatic fascia
Internal spermatic fascia
Cremasteric fascia and muscle


Intestinal loop
Ductus deferens
Testis
A
Obliterated portion
of processus vaginalis
Tunica vaginalis
Gubernaculum
(primordium
of scrotal ligament)
Peritoneal cavity
Intestinal loop
Unclosed
processus
vaginalis
Gubernaculum
Scrotum
B


Hydrocele
Obliterated portions
of processus vaginalis
Tunica vaginalis
C
Peritoneum
Unclosed
processus
vaginalis
Hydrocele
D


Deep ring of inguinal canal
Superficial ring of inguinal canal
Ectopic testis
2
3
1
4
Penis
Scrotum
Anus
A
B