



ADRENAL GLAND: Start forming during WEEK 6

Different embryologic origin than kidney: development and location not affected in renal agenesis nor malposition

- CORTEX: MESODERM

At birth, zona glomerulosa (aldosterone) and fasciculata (cortisol) are present
Zona reticularis (sex hormones) developed at 3 years

- MEDULA: NEURAL CREST CELLS, ECTODERM (sympathetic)

Association between vas deferens and ipsilateral renal agenesis. COMMON ORIGIN: Mesonephric duct

KIDNEY: MESODERM

- PRONEPHROS (WEEK 4): non-functional. Caudally toward the cloaca. Disappears leaving the PRONEPHRIC DUCT

- MESONEPHROS (WEEK 4-8): temporary function. Joins the pronephric duct to generate MESONEPHROS DUCT (WOLFFIAN) which opens into the cloaca

URETERIC BUD (METANEPHRIC DIVERTICULUM) forms during WEEK 5 from mesonephros duct

PARAMESONEPHRIC, MULLERIAN DUCTS: lateral to mesonephros ducts (female repr. Organs)

- METANEPHROS (WEEK 9): ureteric bud moves cranially and into the metanephrogenic blastema. Caudally is absorbed into genitourinary sinus (bladder)

The pelvic kidney ascends to T12/L1 and rotates

URETERIC BUD: ureter, pelvis, calices, collecting tubules
METANEPHROGENIC BLASTEMA: glomerulus, proximal/distal tubule, Henle

BLADDER/URETHRA/PROSTATE: ENDODERM

- CLOACA: Common cavity genitourinary and intestinal IN WEEK 7 is divided by urorectum septum (ANTERIOR UROGENITAL SINUS AND POSTERIOR RECTUM)

- UROGENITAL SINUS (WEEK 8): Upper->bladder, pelvic->prostate *VERUMONTANUM: place of fusion Wolffian ducts and urogenital sinus

- BLADDER (WEEKS 9-12)

- PROSTATE (WEEK 12): from pelvic portion of sinus (DYHYDROTESTOSTERONE, DHT)

Paired epithelial buds (glands) arises from the urethra (sinus)

Trigone, ureteric orifice, prostate and ejaculatory ducts: MESODERM
Rest of the bladder: ENDODERM

WEEK 12: ALLANTOIS--> URACHUS: median umbilical ligament
*AdenoCa urachus: bladder dome, one of the few indications of partial cystectomy

GONADS: MESODERM, MEDIAL PART OF MESONEPHROS

In females, Wolffian duct regresses (lack testosterone) and the paramesonephric (Mullerian) persists: uterus, fallopian tubes and 1/3 superior vagina

- INDEFERENT GONAD: CORTEX: ovary and regresses in males, MEDULLA: testicle and regresses in females

Gonadal ridge is formed during WEEK 5 medial to mesonephros from germinal cells and mesenchyma

Primordial germ cells migrate into the mesenchyma forming PRIMARY SEX CORDS and INDIFERENT GONAD

- TESTES (WEEK 7)

SRG GENE, (Y CHROMOSOME)—TESTOSTERONE PRODUCTION—TESTICULAR DEVELOPEMENT

PRIMARY SEX CORDS: rete testis and seminiferous cords

LEYDING CELLS, develop between tubules. Secrete testosterone and androstenedione by WEEK 8

SERTOLY CELLS, seminiferous tubules. Secrete MULLERIAN INHIBITING SUBSTANCE--> Mullerian ducts to regress

The mesonephric (WOLFFIAN) ducts migrate caudally to form: SEMINAL VESICLES, EJACULATORY DUCTS, EPIDIDYMIS, EFFERENT DUCTULES AND DUCTUS DEFERENTS under the influence of the TESTOSTERONE
WEEK 9: CONNECTION efferent ductules and rete testis

Testicle descends at 8 MONTHS to the scrotum. While passing inguinal canal: piece of peritoneum: processus vaginalis which forms tunica vaginalis. If the processus vaginalis persist: communicating hydrocele or congenital inguinal hernia

GENITALS:

- INDIFERENT GENITALIA (WEEKS 4-7): At WEEK 4 genital tubercle (and labioscrotal swellings and urogenital folds) are formed on the cloacal membrane. Genital tubercle elongates to form primordial phallus (future glans or clitoris under hormonal stimulation during weeks 9-12)

- PENIS (WEEKS 9-12): MASCULINIZATION PRIMORDIAL PHALUS WITH DHT

The urogenital folds fuse: invagination and tubularization of the urethral plate (endoderm) to form spongy urethra and is covered by ectoderm (skin) and fuses to form penile raphe. Penile mesenchyme forms corpus cavernosum.

At WEEK 11 at the glands an ectodermal cord forms to travel proximally and joins spongy urethra (fossa navicularis/meatus). If problem with this: hypospadias

Labioscrotal swellings fuse in the midline: scrotum

TESTOSTERONE, WOLFFIAN	DHT, UROGENITAL SINUS
Seminal vesicles	Prostate
Ejaculatory ducts	Penis
Epididymis	Scrotum
Efferent ductules	
Ductus deferens	