



# ANATOMY

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# Most Important- part 2

## Positional Changes of Kidneys

⊙ Permanent kidneys lie close to each other in pelvis , Embryonic body caudal to kidneys grows. As a result kidneys gradually come to lie in the abdomen and more further a part

⊙ Positional change of kidneys is associated by 90° degree rotation, so that hilum is directed anteromedially, Kidneys attend their adult position by 9th week of embryonic life.

□ Change in Blood Supply of Kidneys (من باب الاحتياط)

As kidneys ascend from pelvis into abdominal cavity, they change their blood supply:

- a. Initially renal arteries are branches of common iliac arteries
- b. Kidneys then receive their blood supply from distal end of aorta
- c. When they ascend further, they receive new branches from aorta
- d. At 9th week they come into contact with suprarenal gland and receive permanent renal arteries from aorta

## Congenital Anomalies of Kidneys and Ureters

1- Renal agenesis:

- a. Unilateral renal agenesis: Absent of one kidney, usually left.
- b. Bilateral renal agenesis: Absent of both kidneys.

2- Malrotation of kidneys:

Hilum may face anteriorly or posteriorly or laterally.

3- Ectopic Kidneys:

One or both kidneys may be in an abnormal position:

- a. Pelvic kidneys: Results from failure of kidney to ascend
- b. Unilateral double kidney or crossed fused renal ectopia
- c. Rosette or "cake" kidney: Kidneys may fuse at their hila, result from early fusion of two metanephric diverticulum

## ●Horseshoe kidney

Results, when the ends of both kidneys fuse as they develop. It lies usually at level of lower lumbar vertebrae because its ascending is prevented by root of the inferior mesenteric artery.

## 4- Polycystic kidney:

It is a hereditary disease; both kidneys contain many hundreds of small cysts, resulted from failure of union between the developing convoluted tubules and collecting tubules.

## 5- Supernumerary kidney:

Probably results from formation of a two metanephric diverticulum.

## 6. Supernumerary renal arteries

This condition is relatively common.

## 7- Double pelvis

Usually is unilateral, due to premature division of metanephric diverticulum.

## 8- Bifid ureter

Double pelvis is usually associated with duplication of the abdominal part of ureter.

## 9- Ectopic ureter:

Ureter opens every where except urinary bladder

⊙ In males usually opens into the neck of bladder or into the prostatic urethra; but it may enter the vas deferens, prostatic utricle or seminal vesicle.

⊙ In female, an ectopic ureter may open into neck of the bladder, urethra, vagina or vestibule

## **Vesical Ligaments (Urinary Bladder)**

a. Lateral and medial puboprostatic ligaments (male) or pubovesical ligaments (female): Connect bladder to pubic bone.

b. Median umbilical ligament:

Connects bladder to umbilicus.

c. Lateral true ligaments:

Connects side of bladder to the tindinous arch of the pelvic fascia.

d. Posterior ligaments:

Envelops on each side vesical venous plexus and extends from posterior wall of bladder to internal iliac vein

## Parietal Pelvic Fascia

- The parietal pelvic fascia is continuous above with parietal fascia that lining abdominal wall and below with fascia of perineum.
- It lines the wall of pelvis and is named according to muscle it overlies.
- Over obturator internus muscle it is thick and strong and is called obturator internus fascia.
- Over levatores ani and coccygeus muscles it form levator ani and coccygeus fascia, frequently known as superior fascial layer of pelvic diaphragm.
- Where pelvic diaphragm is deficient anteriorly, the superior fascial layer of pelvic diaphragm becomes continuous with inferior fascial layer of pelvic diaphragm in perineum.
- In perineum, the parietal pelvic fascia covers sphincter urethrae muscle and perineal membrane, where it is called perineal layer of parietal pelvic fascia, which forms superior fascial layer of urogenital diaphragm.
- Injury to pelvic floor during a difficult childbirth can result in loss of support for pelvic viscera leading to uterine and vaginal prolapse, and alteration in the position of the bladder neck and urethra
- In the latter condition, patient dribbles urine whenever intra abdominal pressure is raised, as in coughing. Prolapse of the rectum may also occur.

## Functions of Sertoli cells

- (1) Support and protect developing spermatogenic cells: Sertoli cells provide support and protection to developing spermatogenic cells in several ways. They nourish spermatocytes, spermatids, and sperm; and control movements of spermatogenic cells and release of sperm into lumen of seminiferous tubule.
- (2) Produce blood-testis barrier: Adjacent Sertoli cells are bound together by occluding junctions at basolateral part of the cell, forming a blood-testis barrier.
- (3) Phagocytoses: They phagocytize excess spermatid cytoplasm, which shed as residual bodies during spermiogenesis.
- (4) Secretion of factors that regulate spermatogenesis and spermiogenesis.

- (5) Secretion of factors that regulate the function of Leydig cells.
- (6) Secretion of inhibin, which suppresses synthesis and release of FSH in the anterior pituitary gland.
- (7) Secretion of tubular fluid, which is used for sperm transport