

Urinary system	Blood supply	Venous drainage	Nerve supply	Lymphatic drainage
Kidney	Right, left renal arteries from abdominal aorta (L2 level). Renal artery > 5 segmental > lobar > interlobar > arcuate > interlobular > glomerular arterioles.	Right, left renal veins drain into IVC	renal plexus derived from the celiac plexus, and lowest splanchnic nerve (T12) (mainly vasomotor in function) (sympathetic) Renal pain: renal plexus > lowest splanchnic nerve > T12 > subcostal nerve > flank and anterior abdominal wall.	Lateral aortic lymph nodes
Ureter	Abdominal part: renal artery, abdominal aorta, gonadal and common iliac arteries. Pelvic part: vesical, middle rectal and uterine arteries.		sympathetic fibers from T11-L2 segments of spinal cord. Sensory fibers from the ureter enter the spinal cord through the same segments. Ureteric pain: sympathetic > T11-L2 > genitofemoral nerve (L1,L2) > groin, anterior aspect of the thigh, scrotum or labium majora	Lateral aortic, common iliac lymph nodes
Urinary bladder	M: superior vesical, inferior vesical artery. F: superior vesical, vaginal artery.	Vesical venous plexus > vesical veins > internal iliac veins (through posterior ligaments)	Vesical nerve plexus from inferior hypogastric plexus. Sympathetic: L1,L2 inhibitory to detrusor and stimulant to sphincter vesicae Parasympathetic: pelvic splanchnic nerves (S2-S4) motor to the detrusor muscle, inhibitory to sphincter vesicae	Internal and external iliac lymph nodes. Nick > directly to sacral lymph nodes

			Sensory: pelvic splanchnic and sympathetic fibers.	
Urethra	Urethra receives its blood supply from those of prostate and penis.		-Urethra receives its nerve supply from those of prostate and penis. -Internal urethral sphincter > Autonomic fibers from the <u>inferior hypogastric plexus</u> . -External urethral sphincter > Somatic from the perineal branch of <u> pudendal nerve </u> of the sacral plexus.	M: prostatic and membranous parts > internal and external iliac LN, spongy part > deep and superficial inguinal LN

Male genital system	Blood supply	Venous drainage	Nerve supply	Lymphatic drainage
Scrotum	- <u>Internal pudendal</u> artery (from internal iliac) -deep and superficial <u>external pudendal</u> arteries (from femoral artery) - <u>cremasteric artery</u> from inferior epigastric artery (from external iliac)		-Anterior 1/3: ilioinguinal (L1), genital branch of genitofemoral nerve. - P osterior 2/3: scrotal branches of P udendal nerve, P osterior cutaneous nerve of the thigh (S3)	Superficial inguinal LN
Testis and epididymis	Testicular artery from abdominal aorta (L2 level)	Pampiniform venous plexus > testicular vein > right drains into IVC, left into left renal vein. Varicocele: elongated and dilated veins of pampiniform plexus, more common on left side.	**Refer to the last page	Lateral aortic LN

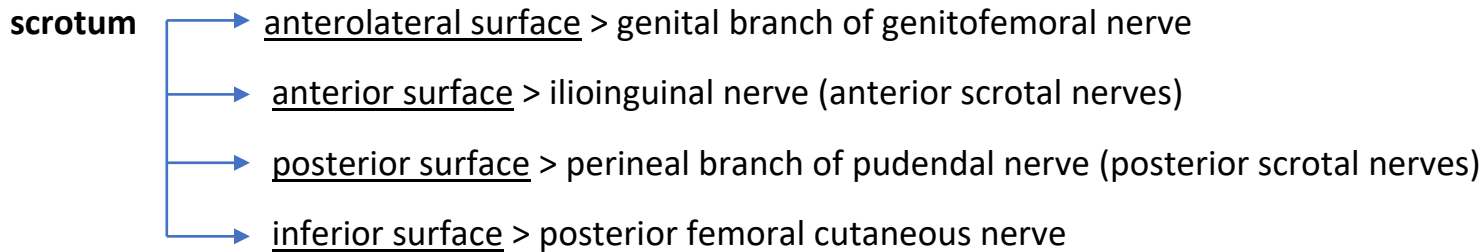
Vas deferens	Artery of vas (branch from inferior vesical artery)	Vesical venous plexus	Prostatic nerve plexus from inferior hypogastric plexus (Sympathetic)	
Seminal vesicles	Inferior vesical artery & middle rectal artery	Vesical venous plexus	Prostatic nerve plexus Mainly sympathetic	
Bulbourethral glands	Artery of bulb of penis		Prostatic nerve plexus	
Prostate	Inferior vesical artery, Middle rectal artery	Prostatic venous plexus (Present only in front and sides) <u>Posterolaterally</u> : to internal iliac vein which communicates with internal vertebral venous plexus through Batson venous plexus. <u>Superiorly</u> : communicate with vesical venous plexus.	Prostatic nerve plexus from inferior hypogastric plexus	Internal and external iliac LN
Penis	1. Dorsal artery of the penis supplies the skin, fascia, and glans . 2. Deep artery of the penis supplies the corpus cavernous with convoluted helicine arteries. 3. Artery of the bulb supplies the corpus spongiosum and glans penis	1.Deep dorsal vein of penis > prostatic venous plexus 2.superficial dorsal vein of penis > superficial external pudendal vein	Sensory: dorsal nerve of penis (branch from pudendal nerve) lateral to dorsal artery of penis Autonomic (parasympathetic): cavernous nerves (from inferior hypogastric plexus S2-S4) produce vasodilation and erection	Superficial inguinal LN. Glans penis> directly to gland of Cloquet in the femoral canal

Female genital system	Blood supply	Venous drainage	Nerve supply	Lymphatic drainage
Ovary	Ovarian arteries from abdominal aorta (L2 level). Through suspensory ligament > mesovarium > hilum at anterior border	Pampiniform venous plexus > ovarian vein > right drains into IVC, left into left renal vein	Autonomic nerves along ovarian arteries, derived from celiac and aortic nerve plexuses (sensory and vasomotor)	Lateral aortic LN
Uterine tube	Lateral 1/3: ovarian artery Medial 2/3: uterine artery	Same as blood supply	Lateral 1/3: ovarian nerve plexus Medial 2/3: uterine nerve plexus (Sympathetic and parasympathetic from inferior hypogastric plexus)	
Vagina	Vaginal arteries & uterine arteries. Anastomose to form <u>azygos arteries</u> (2 median longitudinal vessels which descend anterior and posterior to vagina).	Vaginal venous plexus > vaginal vein > internal iliac vein	<u>Above hymen</u> : Autonomic fibers from the <u>uterovaginal plexus</u> derived from the inferior hypogastric plexus. <u>Below hymen (lower inch)</u> : Pudendal nerve (somatic)	<u>Above hymen</u> : external and internal iliac LN. <u>Below hymen</u> : superficial inguinal LN.
Uterus	Uterine artery Crossed by ureter at lateral vaginal fornices (water under the bridge)	Uterine venous plexus > uterine vein > internal iliac vein. The plexus communicates with vaginal and ovarian venous plexuses	uterovaginal nerve plexus derived from the inferior hypogastric plexus.	<u>Body</u> : external iliac <u>Cervix</u> : external & internal iliac, sacral LN. <u>Fundus</u> : lateral aortic LN. <u>Uterotubal junction</u> : along the round ligament of the uterus to superficial inguinal LN.

Summary of the “innervation” part of the article sent by Dr Ahmad Salman

somatic supply to the testes and scrotum originates from the L1–L2 and S2–S4 nerve roots:

- iliohypogastric nerve > skin above the pubis
- ilioinguinal nerve > skin of the inner thigh, penile base, and upper scrotum
- femoral branch of genitofemoral nerve > small area of skin on the inside of the thigh
- genital branch of genitofemoral nerve > cremaster muscle, tunica vaginalis



******The testes are embryologically derived from the same level as the kidneys. Therefore, they share a common level of autonomic innervation: sympathetic (90%): T10-L1, parasympathetic: S2-S4

Three groups of autonomic nerves travel with the gonadal vessels and vas deferens to the epididymis and testis:

1) superior spermatic nerves: from renal and intermesenteric plexuses

follow the testicular artery to testis

[association between the intestinal \(intermesenteric\) and testicular nerves may explain the “kick in the stomach” feeling accompanying testicular injury.](#)

2) Middle spermatic nerves: from superior hypogastric plexus

pass to the mid-ureter and travel alongside the vas deferens to the internal ring, where they join the spermatic cord.

[ureteral proximity may explain pain radiation to the scrotum of an obstructing ureteral stone.](#)

3) Inferior spermatic nerves: from inferior hypogastric plexus (pelvic plexus)

join the middle spermatic nerves at the prostate-vesical junction

[Some afferent and efferent fibers decussate to the contralateral pelvic plexus, which may explain how lesions in one testis affect the function of the other testis.](#)