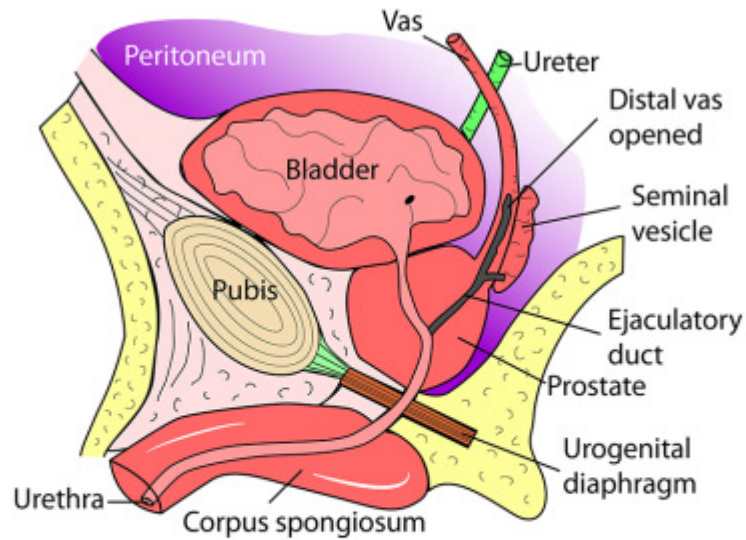


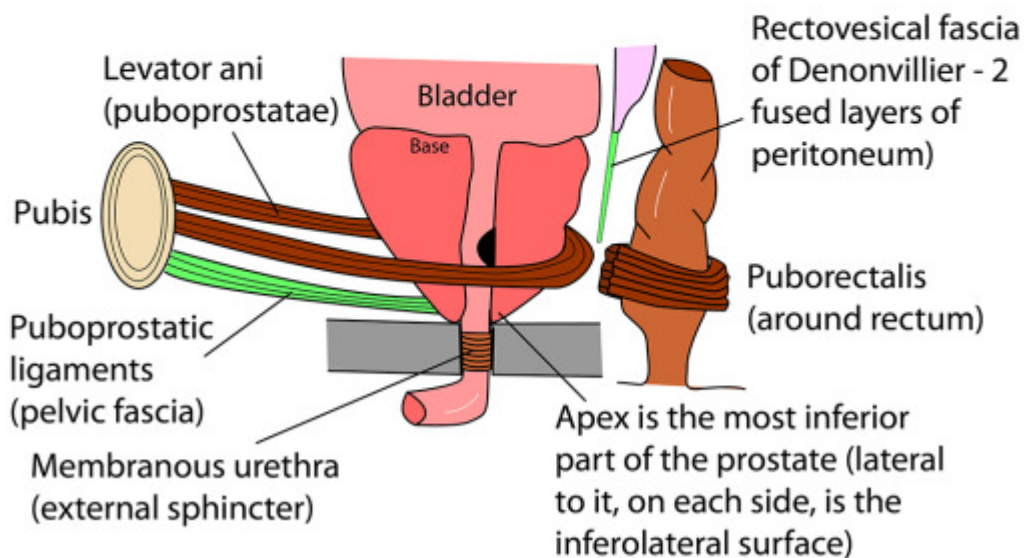
Abdomen: Male urinary and reproductive systems

PROSTATE



- Pyramidal shape with posterior groove
- Size of chestnut (2 x 3 x 4cm)
- Sits on UG diaphragm
- Intrinsic urethral mechanism around it and urethra runs through it
- Gives nutrients for sperm and is 30% ejaculate volume
- Ejaculatory ducts & prostatic utricle (paramesonephric remnant) open onto verumontanum in floor of prostatic urethra
- True & false capsules
- Veins: Preprostatic plexus - valveless (to vertebral plexuses)
- Arteries: Inferior vesical, middle rectal, internal pudendal
- Nerves: Sympathetic for ejaculation & smooth muscle contraction
Parasympathetic for erection & secretomotor of acini

PROSTATIC LIGAMENTS & SUPPORTS



PROSTATE - LOBES

The old surgical view of the prostate consisted of three lobes -

Anterior lobe

Middle lobe

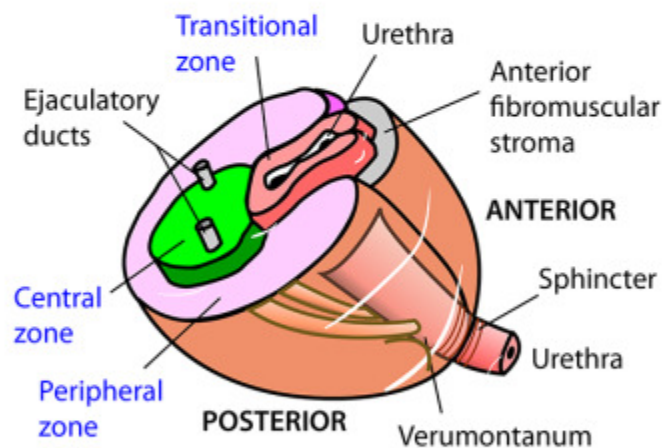
Posterior lobe (lateral extensions of which gave lateral lobes which were only significant if the prostate was hypertrophied)

A more modern zonal view suggests that the lobes are arranged in zones

Central zone: surrounds the ejaculatory ducts all the way to the verumontanum.

Transitional zone: surrounds the urethra. Liable to nodular benign enlargement (stroma & glandular) from 40 yrs onwards. Causes are ageing and circulating androgens

Peripheral zone: surrounds the other two zones. 70% of cancers start here. It is pushed peripherally by benign enlargement and compressed



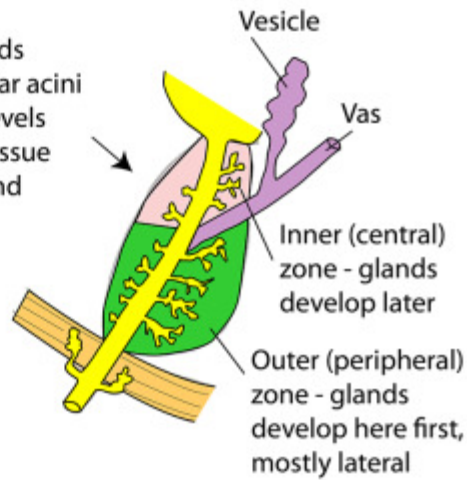
Dorsal vein of penis draining into the preprostatic venous plexus then the iliac veins

PROSTATE - DEVELOPMENT

Endodermal outpouch of glands from urethral part of the urogenital sinus. Fibromuscular stroma forms from the surrounding mesenchyme. Female equivalent is paraurethral glands.

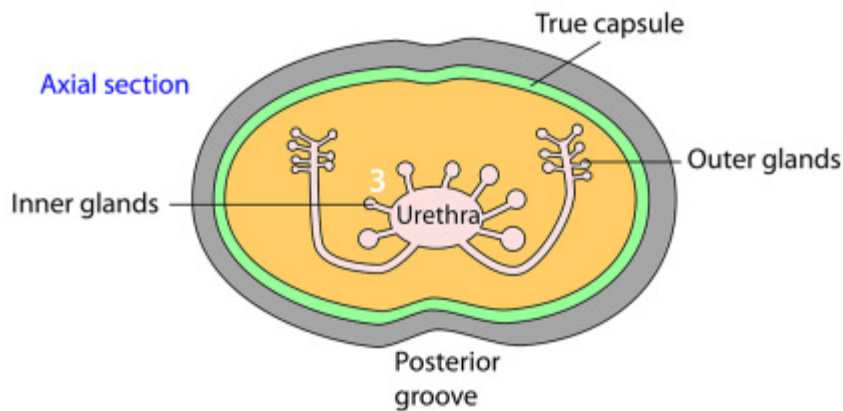
Between 13-15 weeks the cords develop a lumen and glandular acini under the influence of high levels of dihydrotestosterone. The tissue is invaded by blood vessels and autonomic nerves

Bulbo-urethral glands develop in deep perineal pouch by lateral budding from urethra

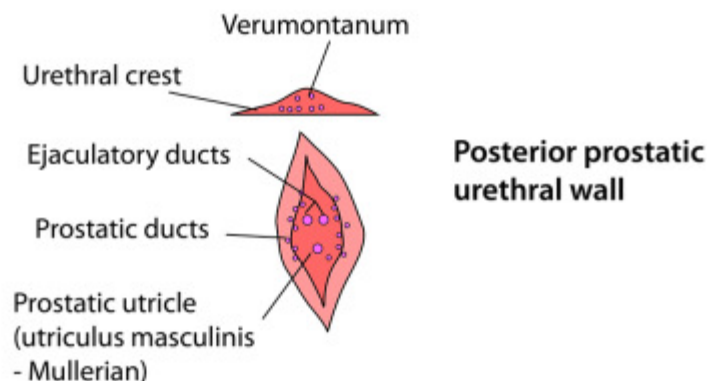


At 16 weeks there is the classical layering of ducts into mucosal (periurethral) opening directly into urethra (1). Plus short ducts from submucosal glands, also in central zone (2). In peripheral zone are main prostatic ducts from para-urethral glands

PROSTATIC DUCTS



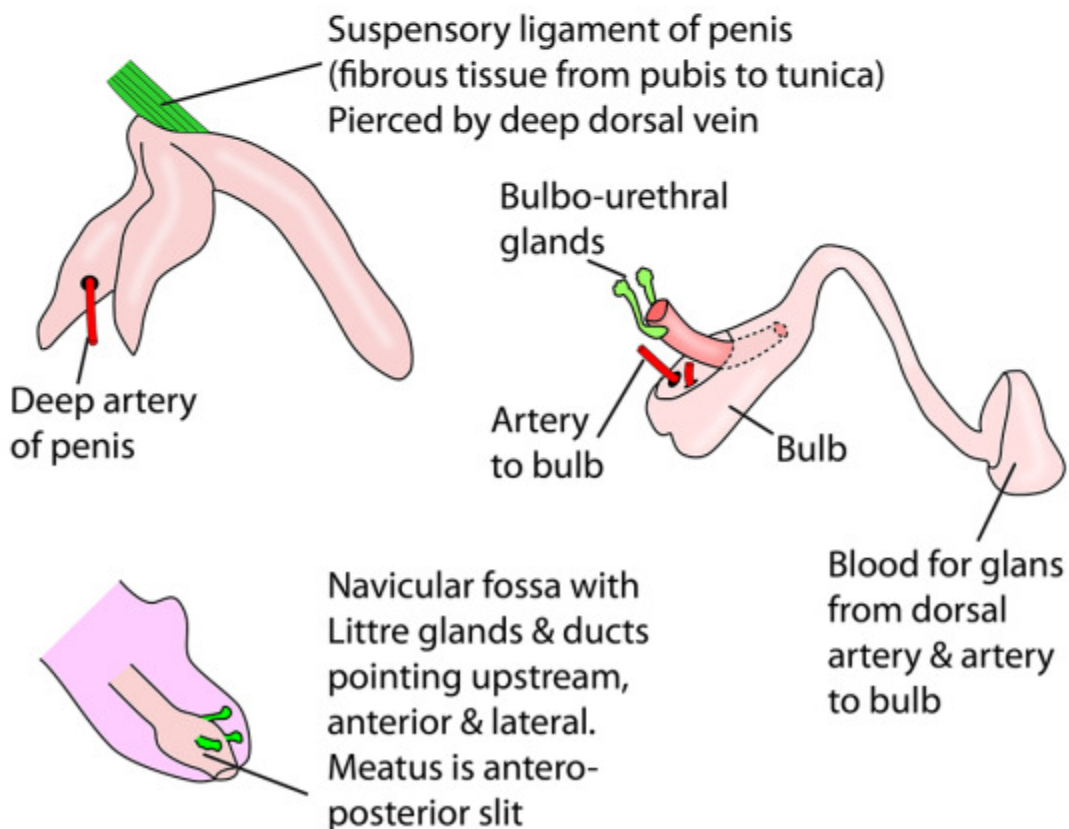
- Prostatic ducts open into urethra as two groups: inner and outer
- True fibrous capsule, but a false "capsule" develops when hypertrophic prostatic tissue compresses the posterior lobe (peripheral zone)



PENIS - CONSTITUENT PARTS & URETHRA

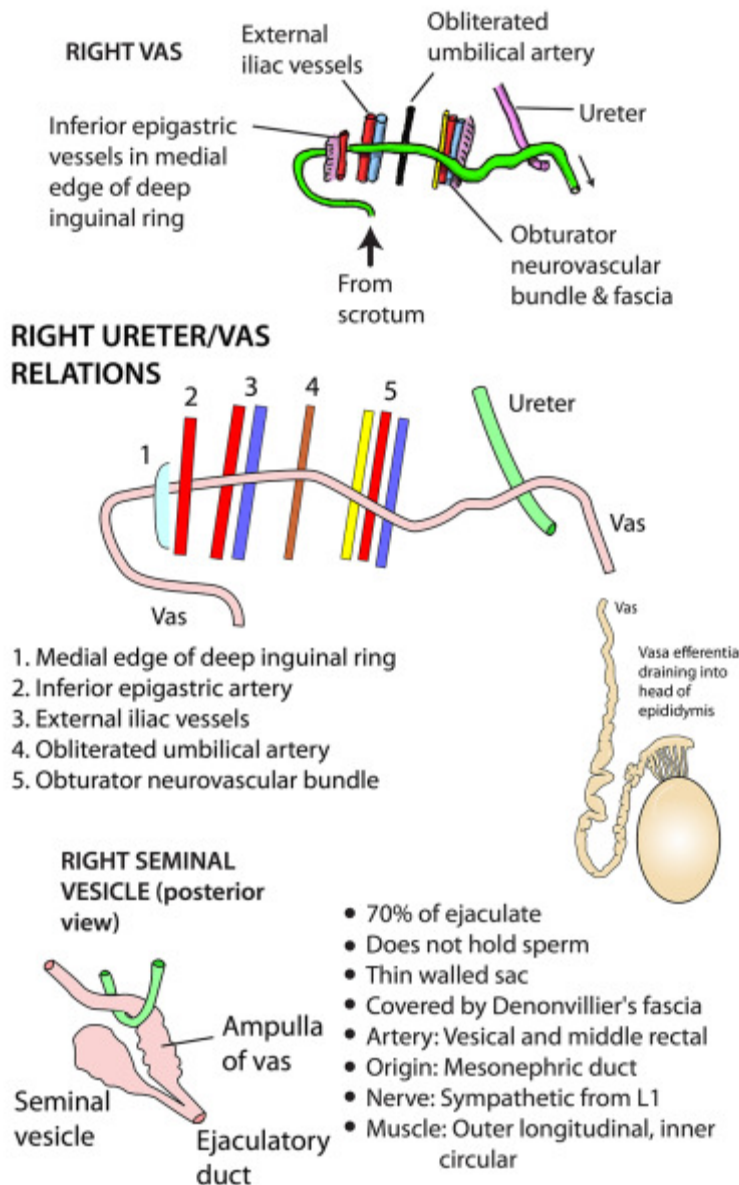
URETHRA

- Prostatic approximately 2.5cm
- Membranous 2cm
- These two together make the posterior urethra
- Bulbous & pendulous make the anterior urethra. Approximately 20cm
- Blood: Artery to bulb to glans & corpus spongiosum
 Deep artery to penis to corpus cavernosum
 Dorsal artery of penis to skin, fascia, glans
 Urethral artery from dorsal artery
- Veins: Superficial & deep dorsal veins of penis
- Lymph: Skin to superficial inguinal nodes. Glans, corpora, urethra to deep inguinal nodes
- Nerves: Posterior scrotal n to skin & glans. Pudendal gives dorsal nerve of penis. Sympathetics for ejaculation, Parasympathetics to corpora for erection.
- Receives: Ejaculatory ducts, bulbourethral glands, urethral glands



VAS & SEMINAL VESICLE

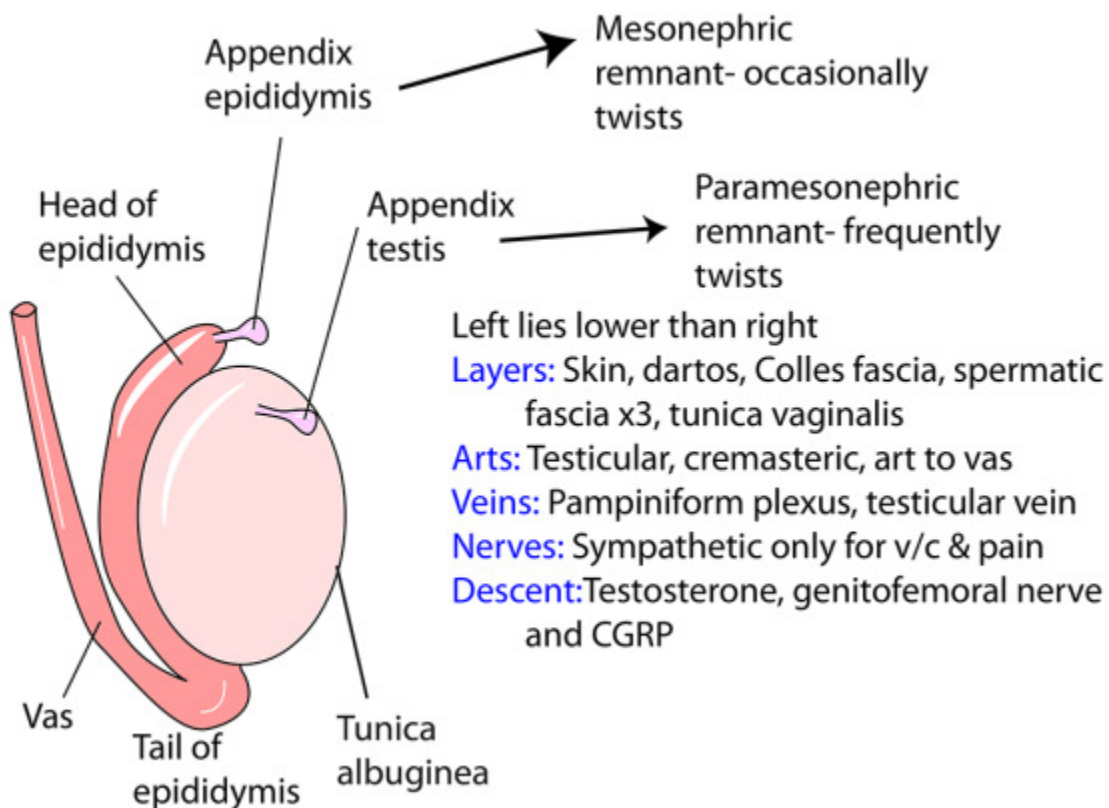
The ductus (vas) deferens is about 45cm long (as is femur, thoracic duct, spinal cord, Transverse colon & teeth to cardia of stomach!!) and is a highly muscular (smooth muscle) tube with ciliated epithelium. It starts at the lower pole of the epididymis and ends at the ejaculatory duct. It lies just beneath the peritoneum for most of its intra-abdominal course. It is supplied by a branch of either the superior or inferior vesical artery. Motor activity during ejaculation is controlled by post-ganglionic sympathetic fibres. Originates from the mesonephric duct



Seminal vesicles are thin walled sacs lying posterior to the bladder and prostate, producing 70% of the ejaculate but **containing NO sperm**. The remaining 30% is produced by the prostate. They produce fructose with medicolegal importance in identifying seminal fluid. They are covered posteriorly by Denonvillier's fascia. Arterial supply is from the vesical or middle rectal arteries and nerve supply is post-ganglionic sympathetic fibres. They arise from the mesonephric ducts. The lining is outer longitudinal and inner circular smooth muscle - needed for ejaculation. The ejaculatory ducts are formed by the distal vas and the seminal vesicle duct and enter the posterior urethra at the verumontanum.

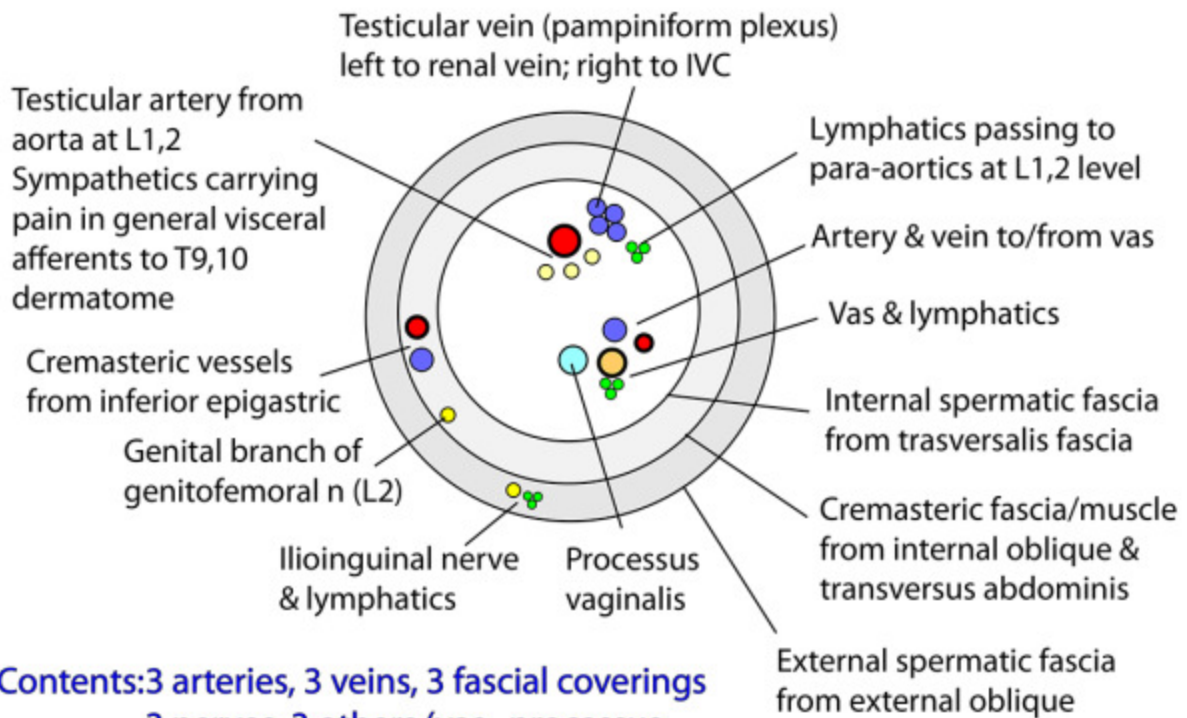
TESTIS

- 400 spaces divided by fibrous septa
- Each contains 2-4 convoluted seminiferous tubules
- Tubules are 60cm long & drain to 15-20 vasa efferentia which drain to the epididymis and then to vas deferens
- Complete cycle of production takes 64-70 days
- Left testis lies slight lower than right
- Coverings: Skin, dartos (with sympathetic supply), Colles fascia, external spermatic fascia, cremasteric fascia, internal spermatic fascia, tunica vaginalis
- Blood supply: Testicular artery, cremasteric/vas artery
- Venous drainage: Pampiniform plexus to testicular vein
- Lymph: Para-aortic nodes
- Nerve: Sympathetics from chain at L2 for vasoconstriction & carrying general visceral afferents for pain to T10 dermatome.
NO parasympathetic!
- Cells: Interstitial (Leydig) for hormones
Sertoli for support and Mullerian Inhibiting Substance
Germ cells for spermatogonia, primary spermatocytes, meiosis, secondary spermatocytes, spermatids, sperm



SPERMATIC CORD

(Cross section just beyond external inguinal ring)



**Contents: 3 arteries, 3 veins, 3 fascial coverings
3 nerves, 3 others (vas, processus vaginalis, lymphatics)**

VIA THE DEEP INGUINAL RING

- Vas
- Artery to vas (inferior vesical)
- Testicular artery (aorta)
- Cremasteric artery (inferior epigastric)
- Cremasteric vein (inferior epigastric)
- Testicular vein (IVC/left renal)
- Obliterated processus vaginalis
- Lymphatics
- Sympathetics
- Genital branch of genitofemoral n (L2)
Supplies motor to cremaster, sensory to fascia, tunica, scrotal skin, round ligament & labia majus

IN CANAL

- All these **plus**
- Internal spermatic fascia
- Cremasteric fascia
- Cremaster muscle
- Ilio-inguinal nerve

OUTSIDE SUPERFICIAL RING

- All these **plus**
- External spermatic fascia from external oblique