



GIS 4.2

ANATOMY



Done by: Ameen Alsarar + Samia Sami

Scientific Correction: Ameen Alsarar

Gramatical Correction: Ameen Alsarar

Doctor: Mohammad Almuhtasib

سللام سلام ، يعطيكم العافية ؛
 هاي الشيت عبارة عن نصف محاضرة ضائعة ما بين فيديو 4 من فيديوهات 018 ،
 و فيديو 5 من فيديوهات 015 ، لحتى تحضرها فوت [هون](#) على [22:55](#) تحديداً لآخر الفيديو ،
 الشيت بسيطة وسهلة ، وهاد [الفيديو](#) بيساعد في إيصال الفكرة إن أحببت .

SPERMATIC CORD

Before we start ; some terminology to remember :

- **Testis:** the male reproductive gland, its functions are to produce both sperm and androgens, primarily testosterone.
- **Epididymis:** a tube that connects a testicle to a vas deferens , its responsible for maturation of the sperms
- **Vas deferens:** is a tiny muscular tube that carries sperm from the epididymis to the ejaculatory duct.
- **Scrotum:** a thin external sac of skin that is divided into two compartments; each compartment contains one of the two testes.
- **Prostate :** is a gland located between the bladder and the penis, it is just in front of the rectum. It secretes fluid that nourishes and protects sperm.
- **Seminal vesicles :** vesicular glands, are located within the pelvis. They secrete fluid that partly composes the semen.
- **Ejaculatory duct :** is formed by the union of the vas deferens with the duct of the seminal vesicle, pass through the prostate, and open into the urethra at the seminal colliculus.

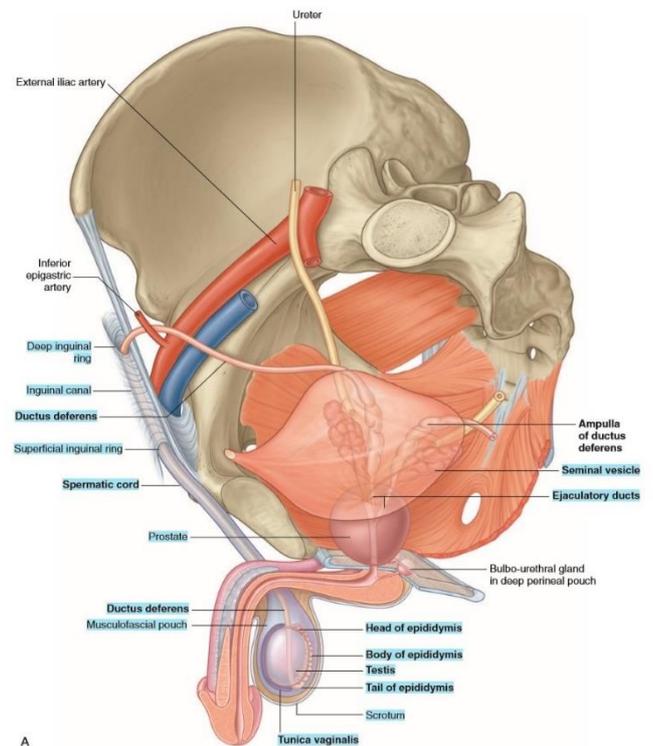


Fig. 5.47 Reproductive system in men. A. Overview.

Now Let's go back to Spermatic cord:

- It is found in males only
- It is a collection of structures that pass through the inguinal canal **to** and **from** the testis

To: Certain arteries and motor nerves go to the testes through spermatic cord

From: Vas deferens emerges from tail of epididymis and moves away from the testis through spermatic cord (More details about vas deferens later on)

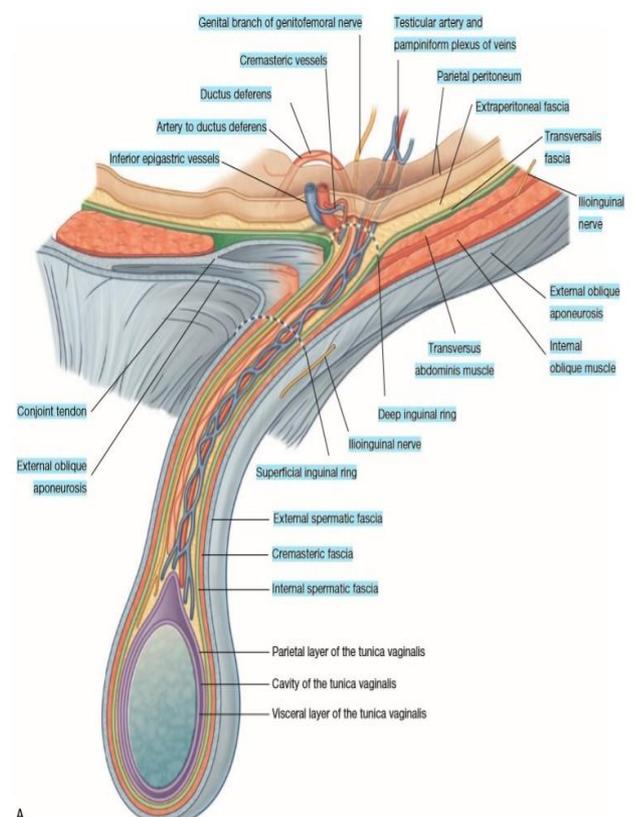
- It is covered with three concentric layers of fascia derived from the layers of anterior abdominal wall
 - 1) External Spermatic fascia: derived from the external oblique aponeurosis and attached to the margins of the superficial inguinal ring
 - 2) Cremasteric Fascia: derived from the internal oblique muscle inside the inguinal canal
 - 3) Internal Spermatic Fascia: derived from the fascia transversalis and attached to the margins of deep inguinal ring.
- It begins at the deep inguinal ring lateral to the inferior epigastric artery and ends at the testis

Spermatic Cord has structures run with it; can be remembered using ANO x 3:

- 1) Arteries: testicular artery, cremasteric artery, artery of vas deferens
- 2) Nerves: ilioinguinal, genital branch of genitofemoral, autonomic nerve fibers
- 3) Others: vas deferens, pampiniform plexus of veins, testicular lymphatics.

VAS DEFERENS

- It is a cord like structure, 45cm long. It starts from the tail of epididymis & ends in the prostatic urethra, surrounded by artery, vein & lymphatics .
- Can be palpated between finger and thumb in the upper part of the scrotum
- It is a thick walled muscular duct that transport spermatozoa-mature ones- from the epididymis to the seminal vesicles. Seminal vesicles give nutrition to the sperms then contracts to send them away through right and left ejaculatory ducts until they reach prostatic urethra. After that they pass through membranous urethra, penile urethra (penis), and finally outside the body.



TESTICULAR ARTERY

(Right and left); branches of abdominal aorta at L2. It descends on the posterior of the anterior abdominal wall(through deep ring) and goes through inguinal canal to supply the epididymis and testes.

TESTICULAR VEIN

The pampiniform plexus; a net or spider web around the testes, continues through the inguinal canal (it becomes the singular testicular vein at the level of deep ring). The right testicular vein goes to inferior vena cava (obliquely), and the left one goes straight up (perpendicular) and ends in the left renal vein.

- **Remember:** Varices are engorged, dilated, and tortious veins
- Because the left testis is lower, its vein goes straight upward, and has a higher pressure, which can cause varices on the left side
- Varicocele of the testis leads to infertility because they increase temperature of the testis. Sperm production occurs at 2-3 degrees below body temperature, that's why testes are located in the scrotum outside the body. Removal of varicocele returns the testis to their optimum temperature and the patient is fertile again.

AUTONOMIC NERVES

Are mainly sympathetic fibers that go with the testicular artery. They contain both vasomotor nerves as well as afferent sensory nerve from the testes. So, if a patient has orchitis (inflammation of the testis), the severe pain sensation is carried through these sympathetic fibers.

THE GENITAL BRANCH OF GENITOFEMORAL NERVE

It is a branch of L1 and L2, and it supplies the cremasteric muscle (the cremasteric muscle pulls the testes upwards towards the body in cold weather to maintain the temperature needed for sperm production). Itching of the upper medial side of the thighs leads to contraction of the cremasteric muscle, which is called cremasteric reflex, **HOW?** This reflex happens from the stimulation of femoral branch of the genitofemoral nerve then it goes to the spinal cord and returns in the genital branch leading to contraction of the cremasteric muscle.

THE TESTICULAR LYMPHATICS

Drain the testis and epididymis and goes through the inguinal canal to pour into the para-aortic lymph nodes at level of L1. While the lymphatic drainage of the scrotum (skin) goes to the inguinal lymph nodes in the femoral triangle.

PROCESSUS VAGINALIS

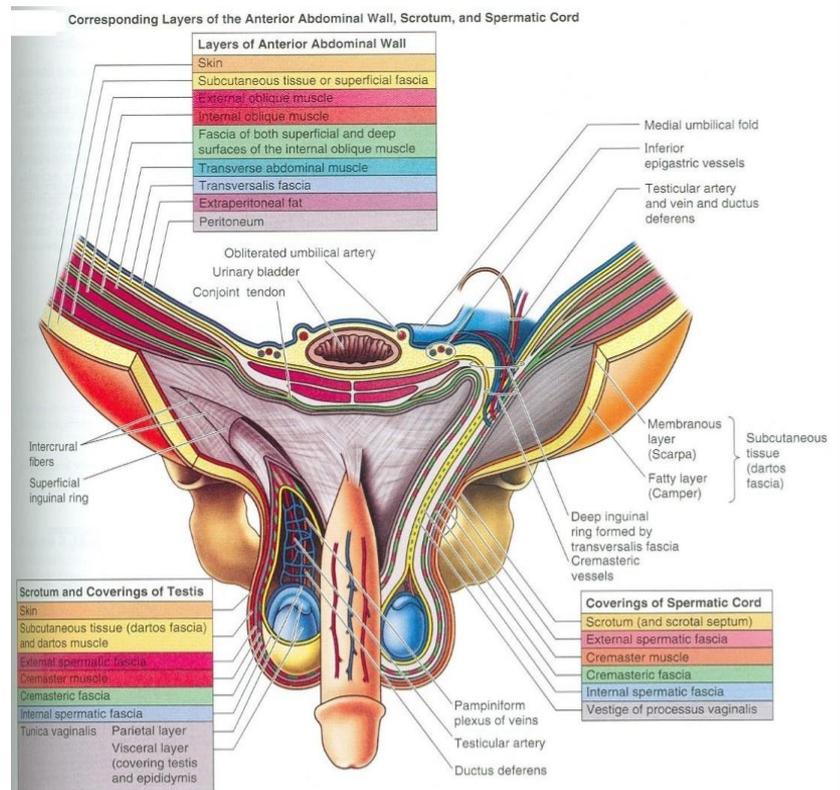
Part of peritoneum that takes the testes from the abdomen down to the scrotum. Testes and ovaries originally develop in the posterior abdominal wall at the level of L1. In the 8th month of pregnancy, processus vaginalis along with the gubernaculum, pull testes downwards to the deep ring → inguinal canal → superficial ring → Scrotum. Ovaries are pulled downwards in the same way until they reach iliac fossa

***NOTE:** If the testes were not in place after birth, a surgical intervention has to be done.

When the testes are finally in the scrotum, processus vaginalis undergoes obliteration and fibrosis, **sealing** the deep inguinal ring completely. A defect in this process will lead to congenital indirect inguinal hernia

→ Coverings of the testis:

- 1) **Skin**
- 2) **Fatty layer:** Dartos fascia and Dartos muscle which are derived from Camper's fascia. Dartos muscle is responsible for wrinkling of the skin of scrotum
- 3) **Membranous layer:** Colle's fascia which is derived from Scarpa's fascia
- 4) **External spermatic fascia, cremasteric fascia, internal spermatic fascia**
- 5) **Tunica Vaginalis** (Remnants of processus vaginalis after it gets obliterated in the deep ring. It consists of two layers, parietal and visceral).



Good Luck!!