All Living Things Can Reproduce.....

The Reproductive System

Unlike other animals, humans can **CHOOSE** when they want to reproduce.

Male Reproductive System

<u>Major Structures:</u>

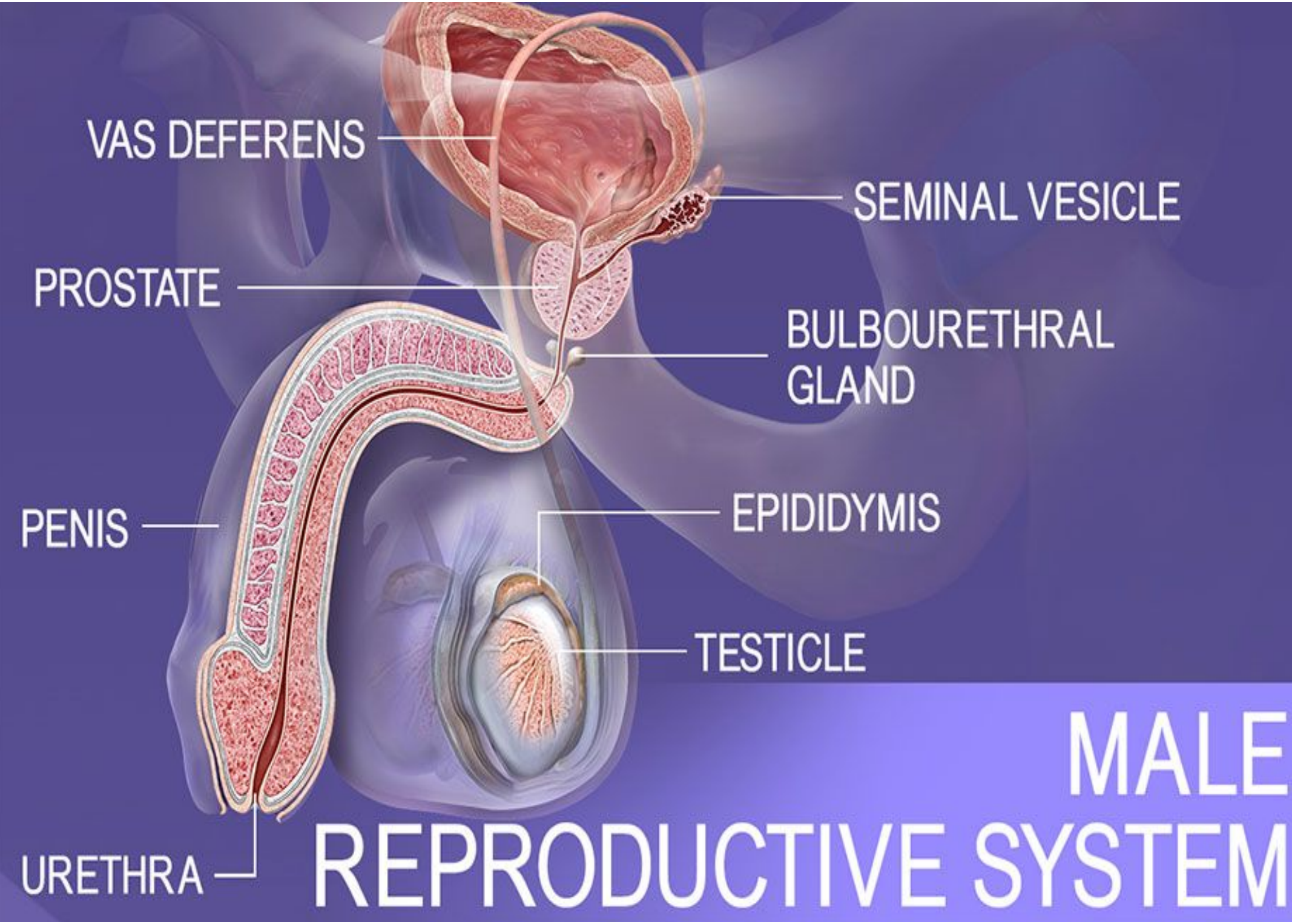
Testes

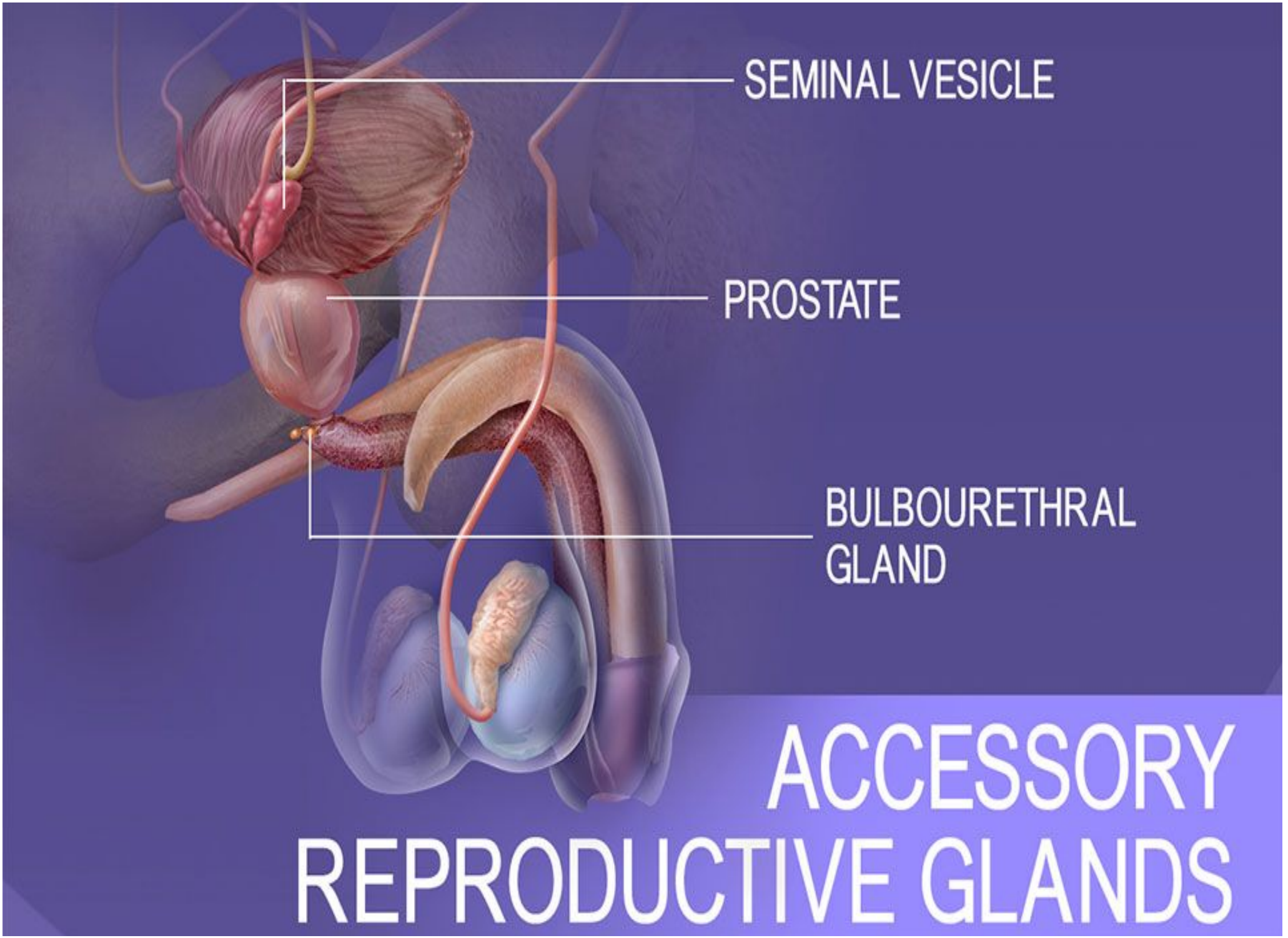
Epididymis

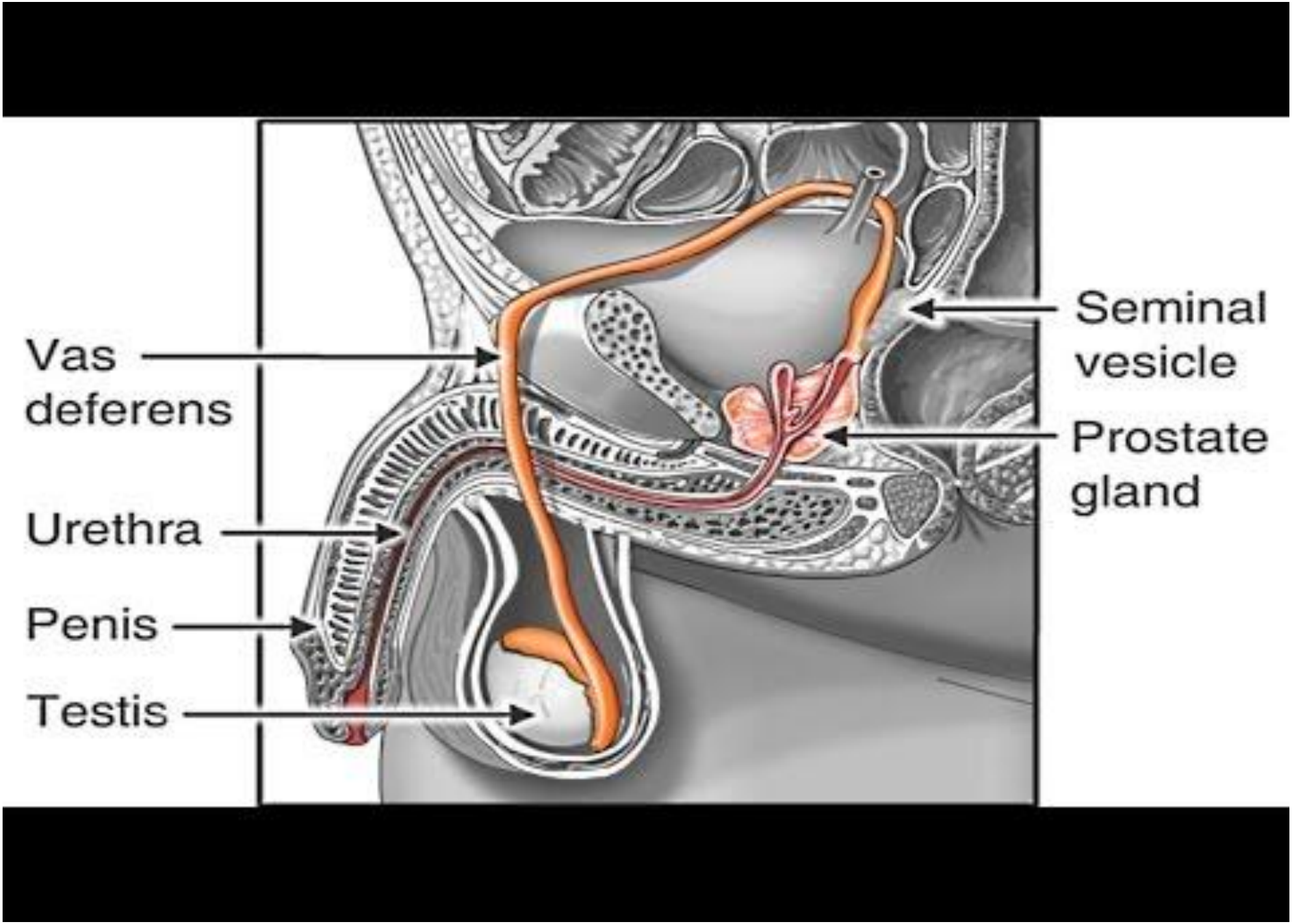
Vas Deferens

Prostate

Penis


VAS DEFERENS
SEMINAL VESICLE
PROSTATE
BULBOURETHRAL GLAND
PENIS
EPIDIDYMIS
TESTICLE
URETHRA
MALE
REPRODUCTIVE SYSTEM


SEMINAL VESICLE
PROSTATE
BULBOURETHRAL GLAND
ACCESSORY REPRODUCTIVE GLANDS


Vas deferens
Urethra
Penis
Testis
Seminal vesicle
Prostate gland

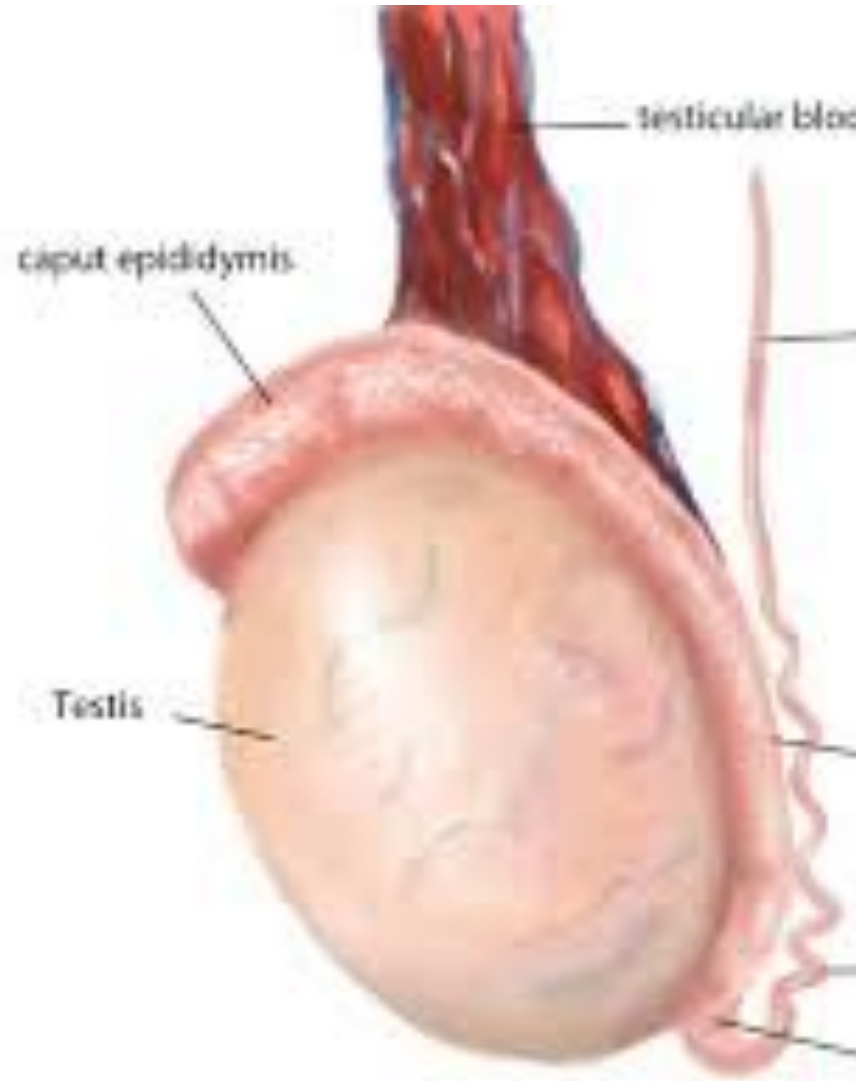
Testes

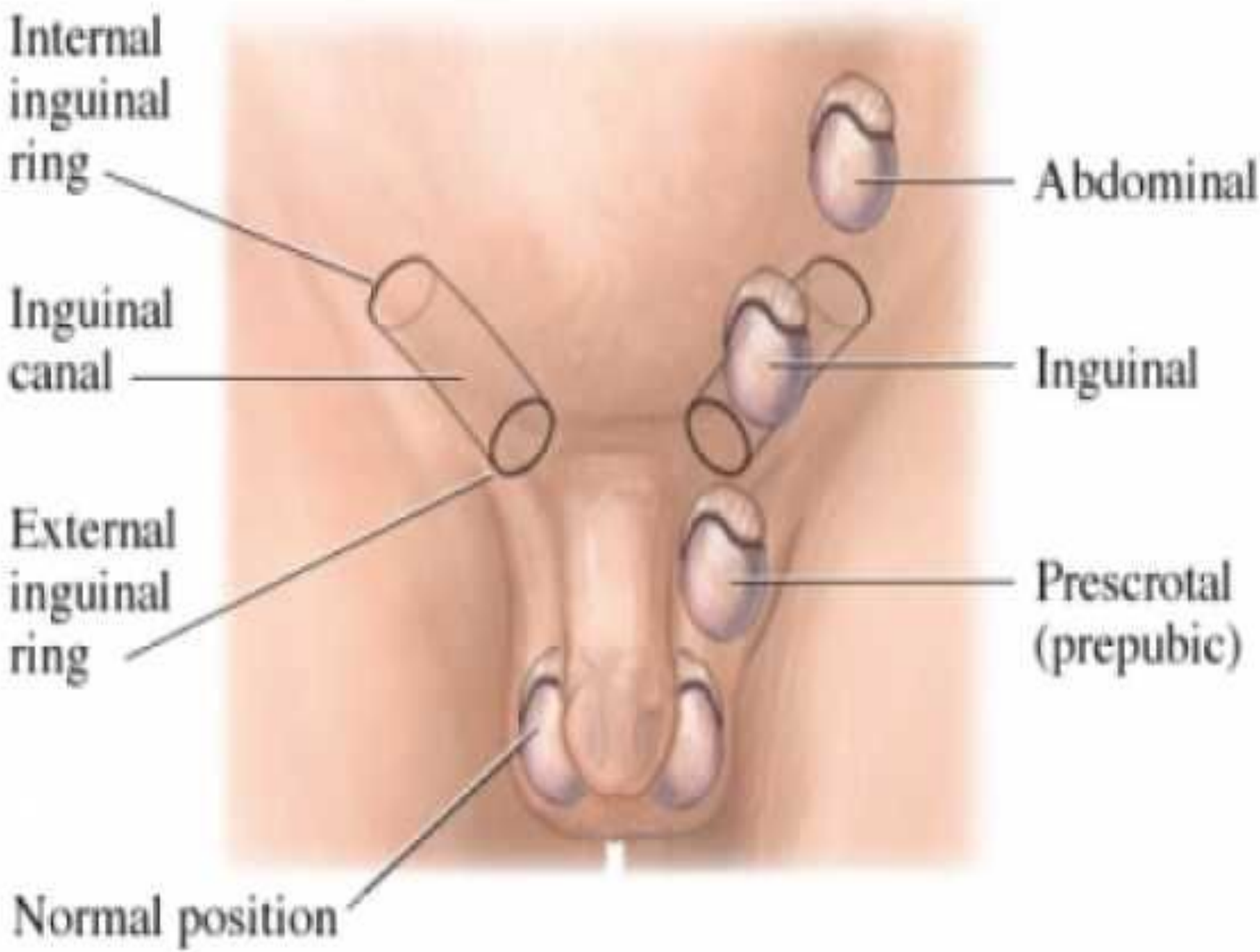
-Endocrine glands that make sperm via meiosis.

The testes also produce testosterone, the male hormone.

Testosterone is responsible for many of the male characteristics.

- They are enclosed in the scrotum
- Called the male gonads
-




Internal inguinal ring
Inguinal canal
External inguinal ring
Normal position
Abdominal
Inguinal
Prescrotal (prepubic)

Hypogonadism

You can be born with this condition. It can also happen due to an injury, infection, or other condition that affects testosterone production.

Symptoms of hypogonadism vary depending on age:

- **In infants:** The genitals might not be clearly male, or both sets of genitals might be present.

- **In teenagers.** Symptoms may include:
  - a lack of muscle development
  - little body hair growth
  - no voice deepening
  - unusual arm and leg growth relative to the rest of the body

- **In adults.** Symptoms may include:
  - a lack of fertility
  - loss of body hair
  - growth of breast tissue
  - loss of bone density
  - an inability to get an erection

Epididymis

a tube that connects a testicle to a vas deferens

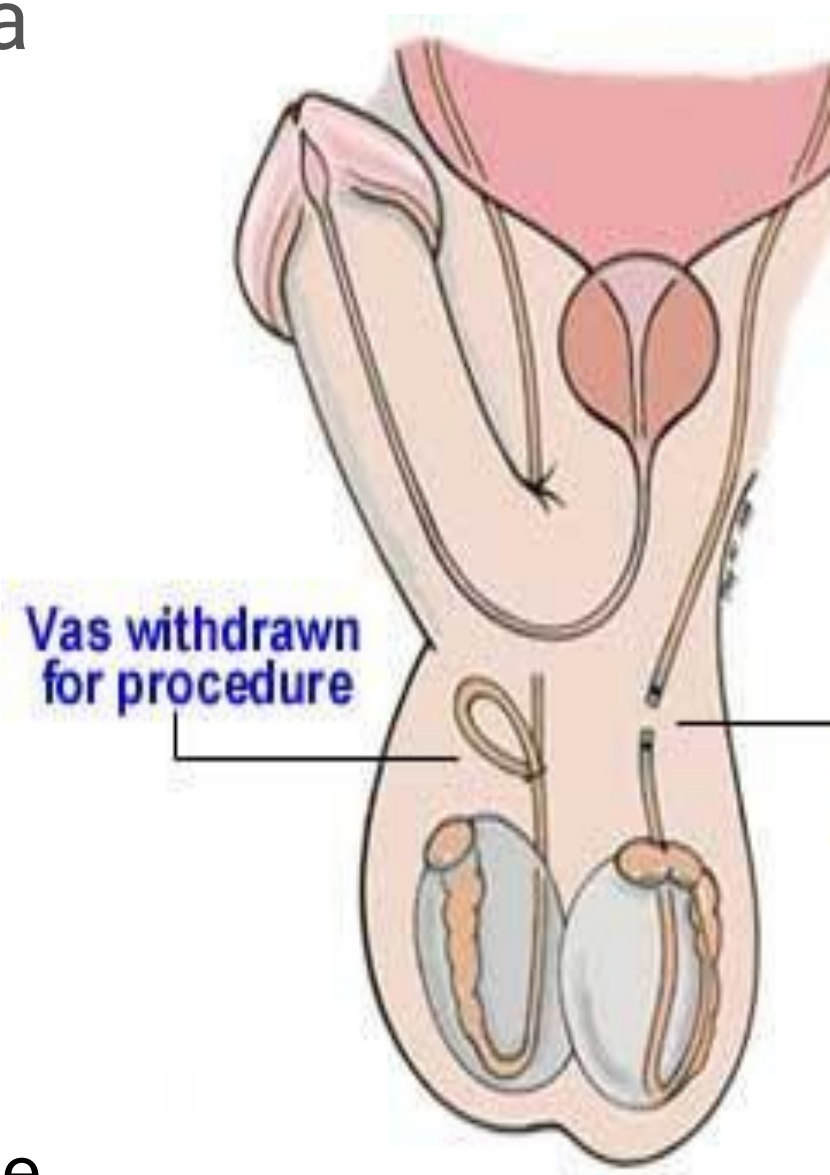
(collects mature sperm which is eventually propelled through the vas deferens)

Vas deferens - tube for sperm travel joins with urethra

(This is cut for a vasectomy)

Vasectomy - the tube is cut to prevent sperm leaving (and fertilizing an egg)

This procedure can be done right in the doctor's office



Seminal Fluid:

Fluid from the prostate and other sex glands that helps transport sperm out of the man's body during orgasm. Seminal fluid contains sugar as an energy source for sperm.

-The average volume of semen produced at ejaculation is 2 to 5mL

- It takes about 72 days for a sperm cell to be created, mature, and get ejaculated

-Sperm make up only 2 to 5 % of the ejaculate (volume of your ejaculate will not be noticeable after vasectomy)

- Because the sperm cannot come out after the vas deferens is cut, like other dead body cells, the sperm disintegrate and are reabsorbed by the body.

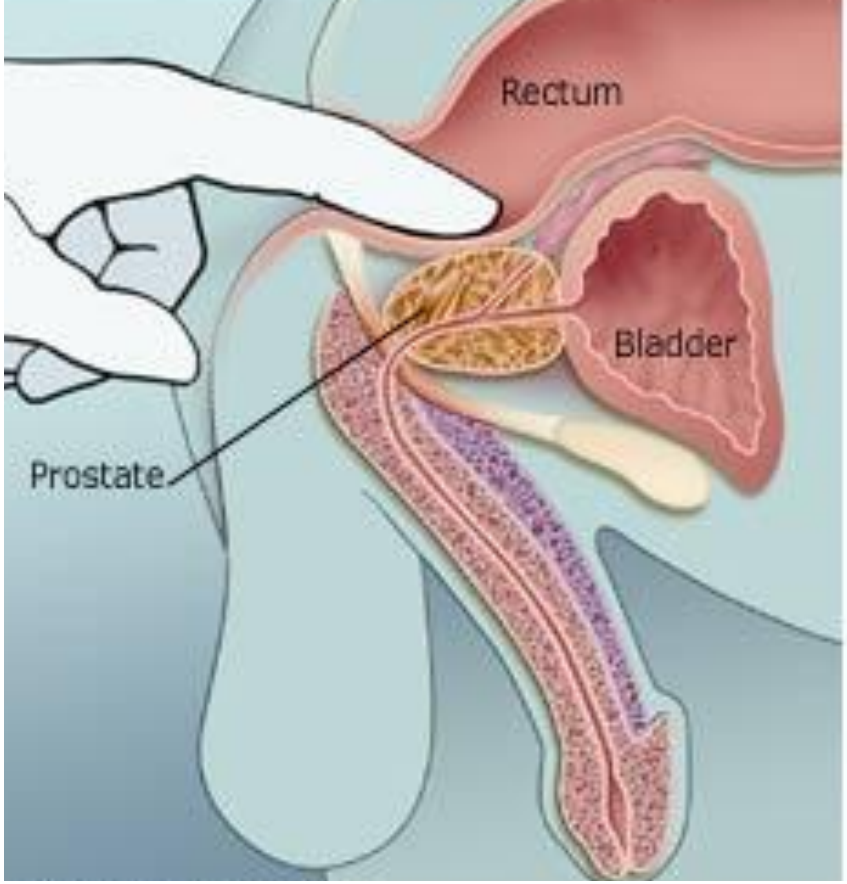
Prostate

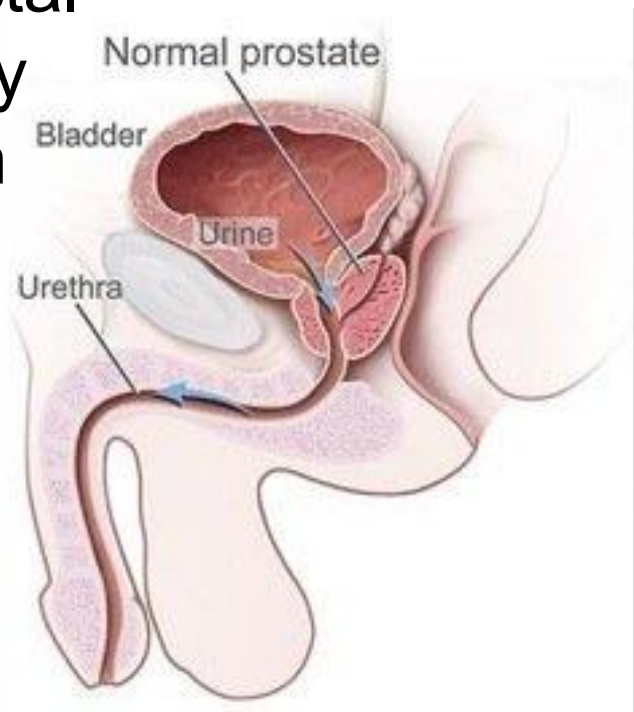
- gland that produces a fluid that carries sperm during ejaculation

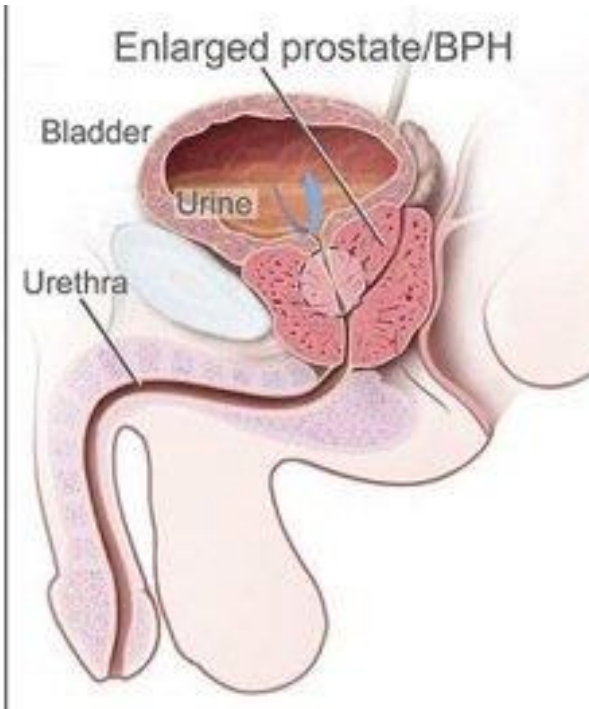
- this gland surrounds the urethra

Recommended after age 50
- prostate exam

Doctors use the digital rectal exam (DRE) as a relatively simple test to check for an enlarged the prostate







A robotic butt and virtual patient software allows medical students to receive feedback on the prostate exams they administer.

Penis

It has three parts: the root, which attaches to the wall of the abdomen; the body, or shaft; and the glans, which is the cone-shaped end of the penis.

- The skin of the penis is loose and elastic to allow for changes in penis size during an erection.
- Semen, which contains sperm, is expelled (ejaculated) through the end of the penis when the man reaches sexual climax (orgasm).
- When the penis is erect, the flow of urine is blocked from the urethra, allowing only semen to be ejaculated at orgasm.

Penis

Glans (head) of the penis:

-In uncircumcised men, the glans is covered with pink, moist tissue called mucosa. Covering the glans is the foreskin (prepuce).

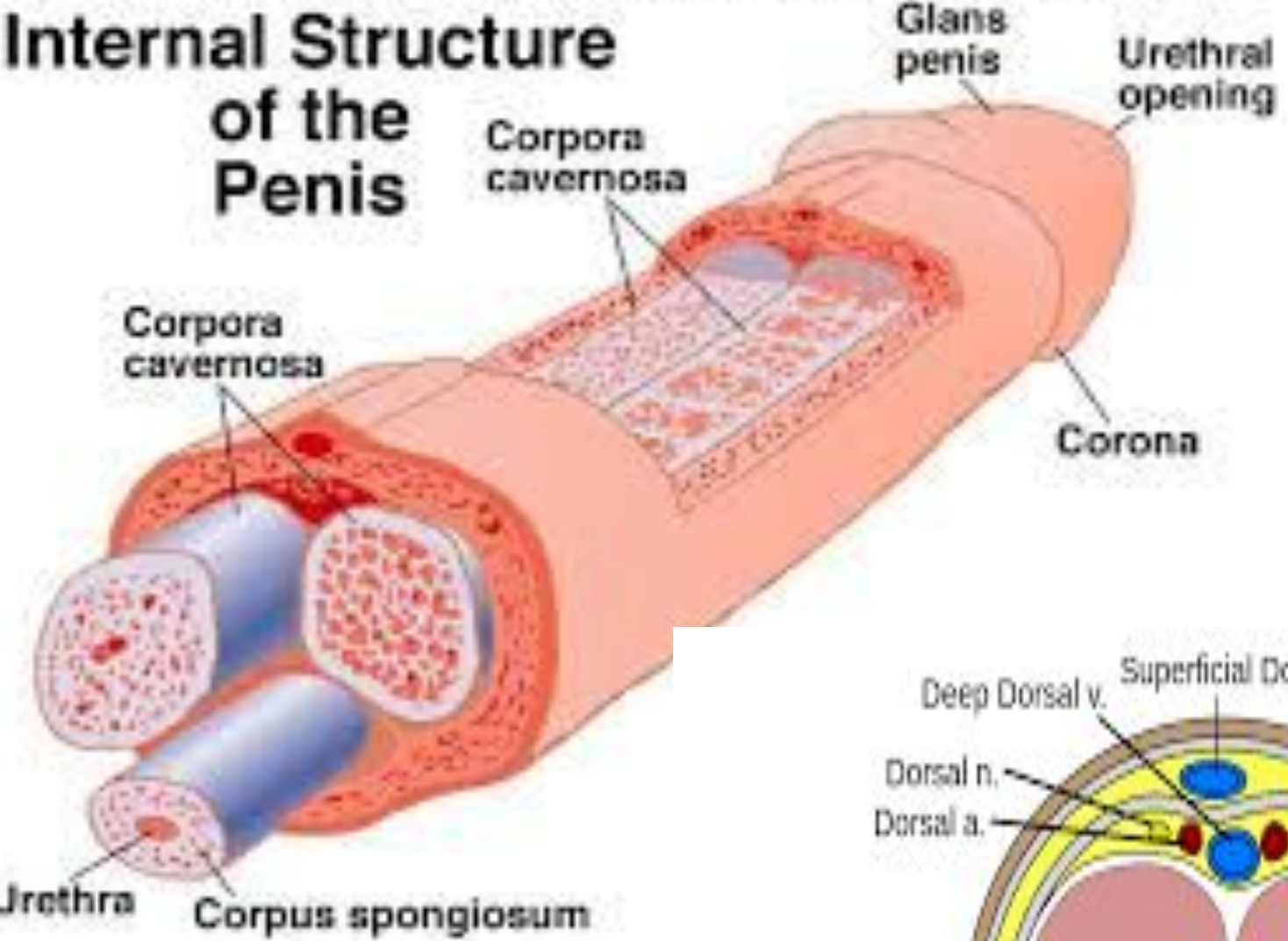
-in circumcised men, the foreskin is surgically removed and the mucosa on the glans transforms into dry skin.

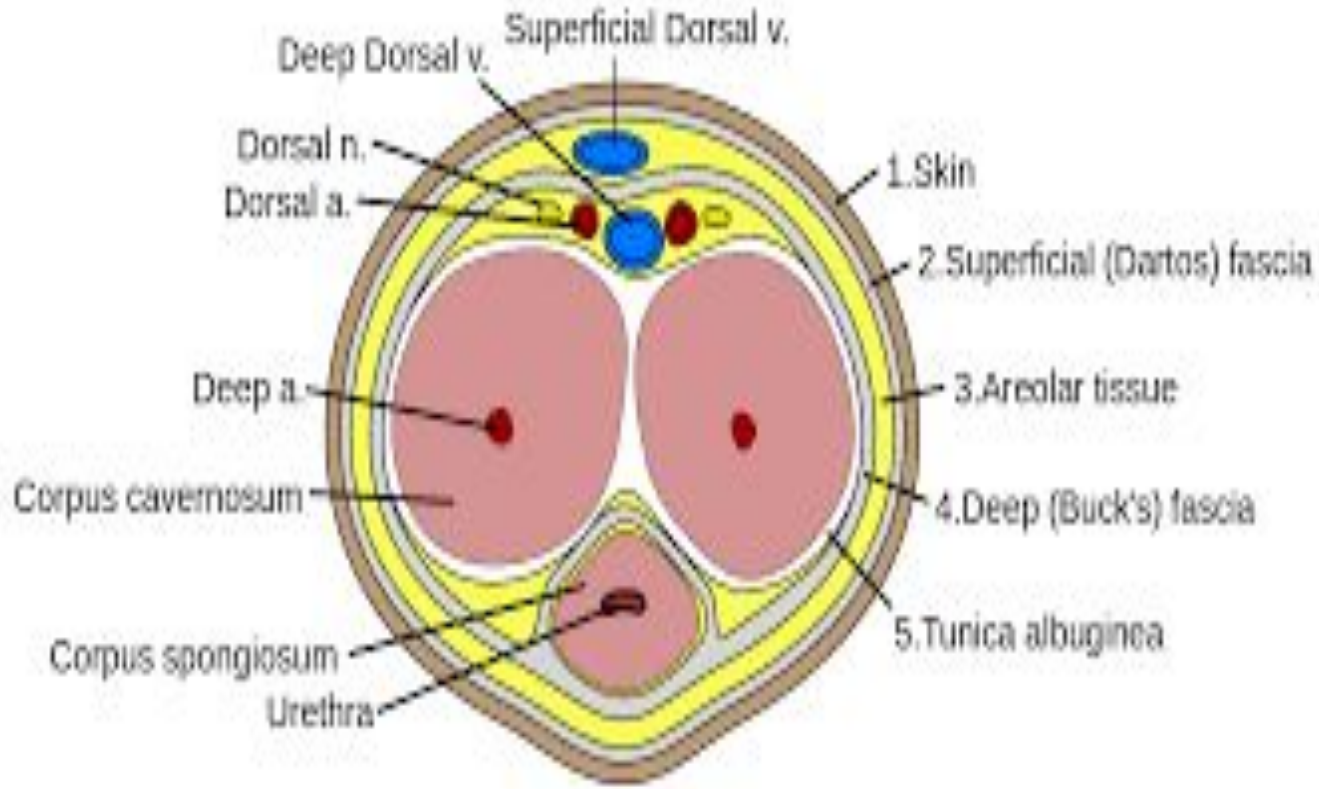
• Corpus cavernosum: Two columns of tissue running along the sides of the penis. Blood fills this tissue to cause an erection.

• Corpus spongiosum: A column of sponge-like tissue running along the front of the penis and ending at the glans penis; it fills with blood during an erection, keeping the urethra -- which runs through it -- open.

• Urethra: runs through the corpus spongiosum, conducting urine out of the body.

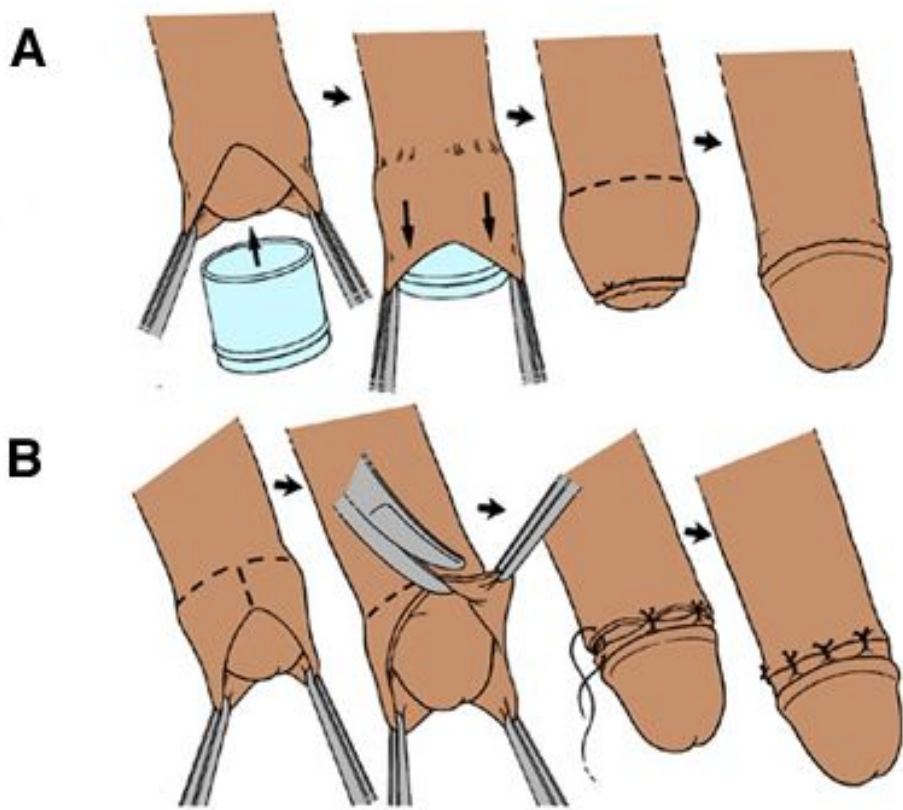
Internal Structure of the Penis





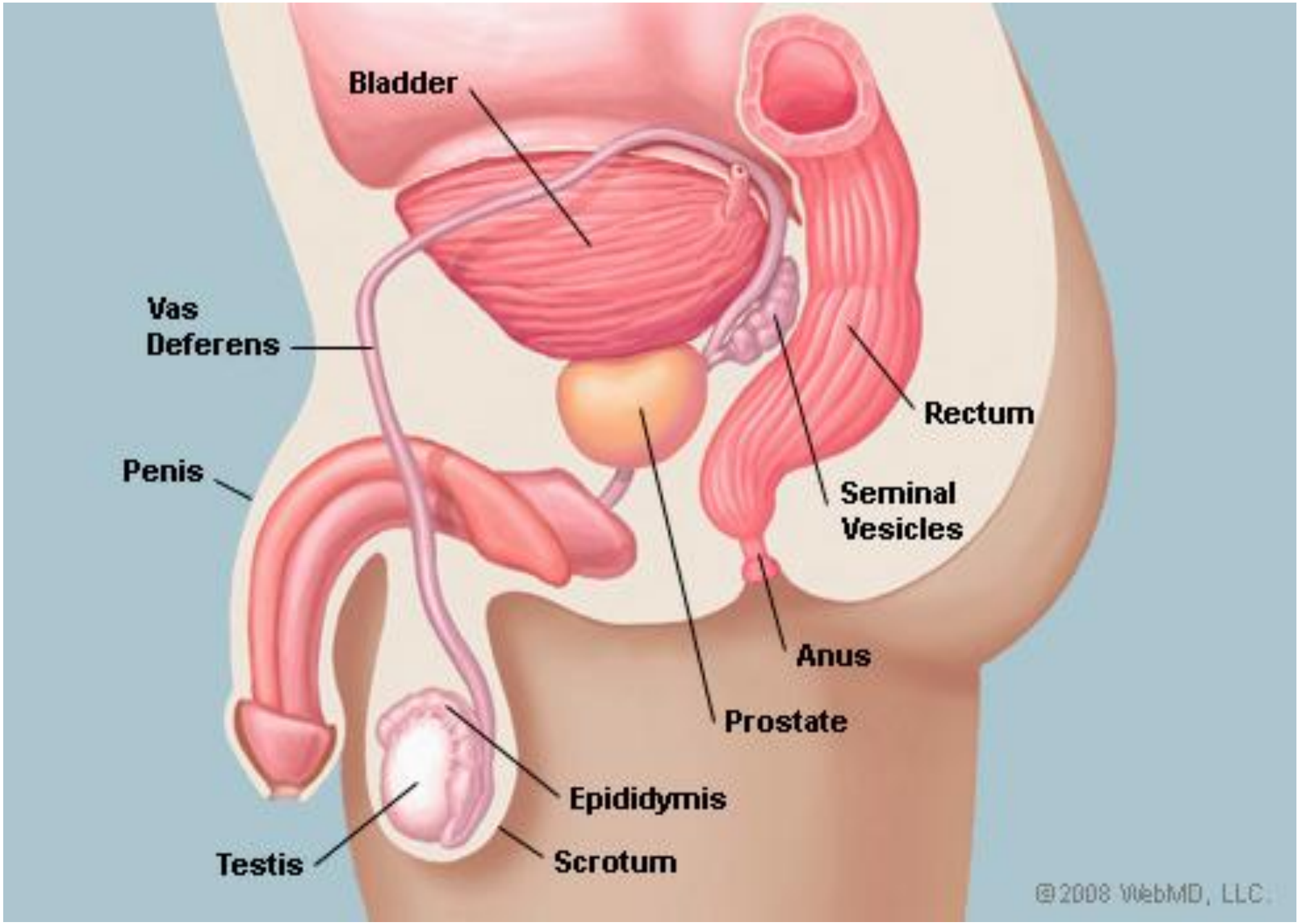
Circumcision

Boys are born with a hood of skin, called the foreskin, covering the head (also called the glans) of the penis. In circumcision, the foreskin is surgically removed, exposing the end of the penis.



Erections results from changes in blood flow in the penis.

When sexually aroused, nerves cause penis blood vessels to expand. More blood flows in and less flows out of the penis, hardening the tissue in the corpus cavernosum.


Bladder
Vas Deferens
Penis
Rectum
Seminal Vesicles
Anus
Prostate
Epididymis
Testis
Scrotum
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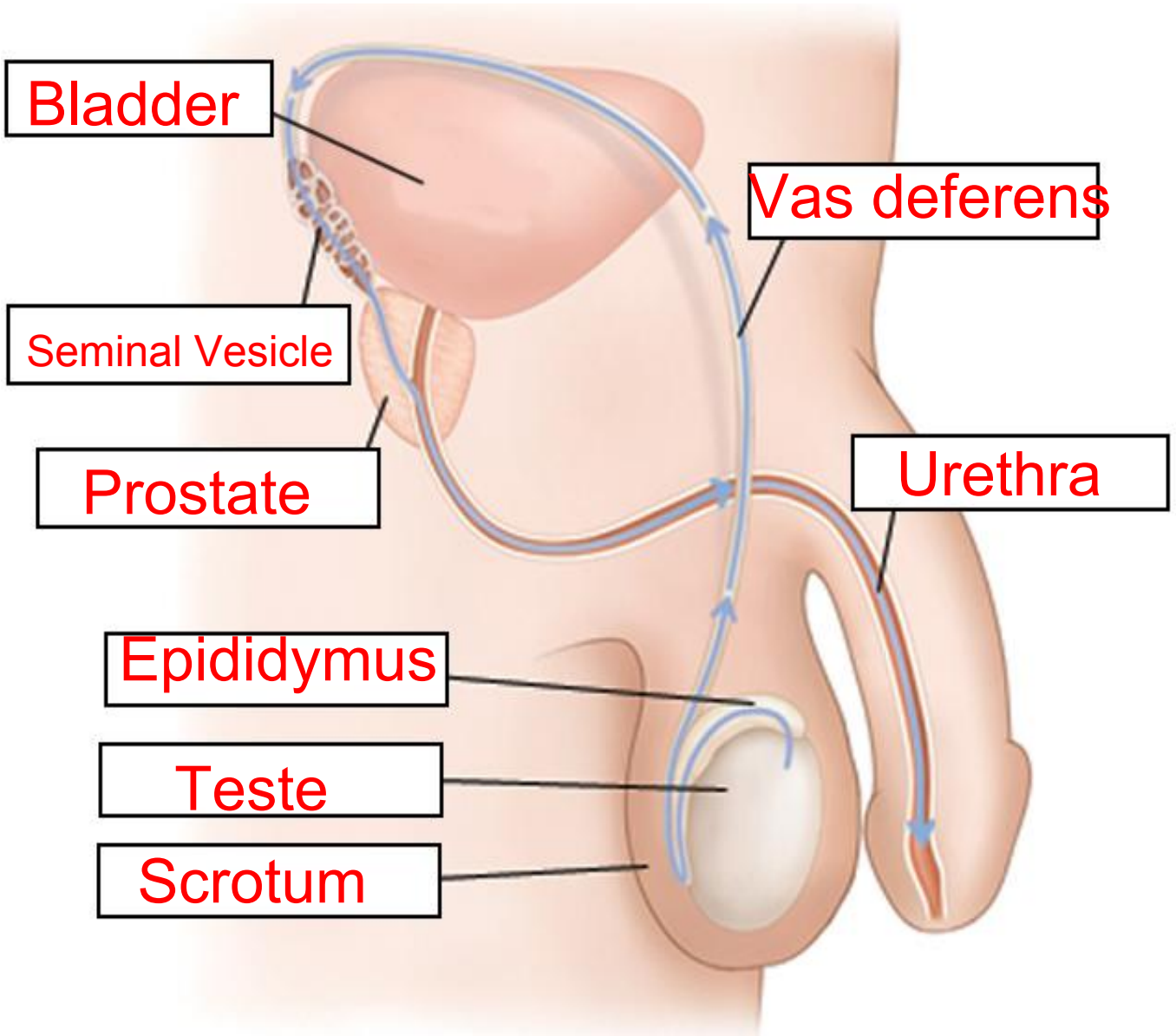


WORD BANK

Vas deferens

Scrotum

Urethra

Prostate

Epididymus

Bladder

Teste

Seminal Vesicle

See also: [Kidshealth Male Reproductive]

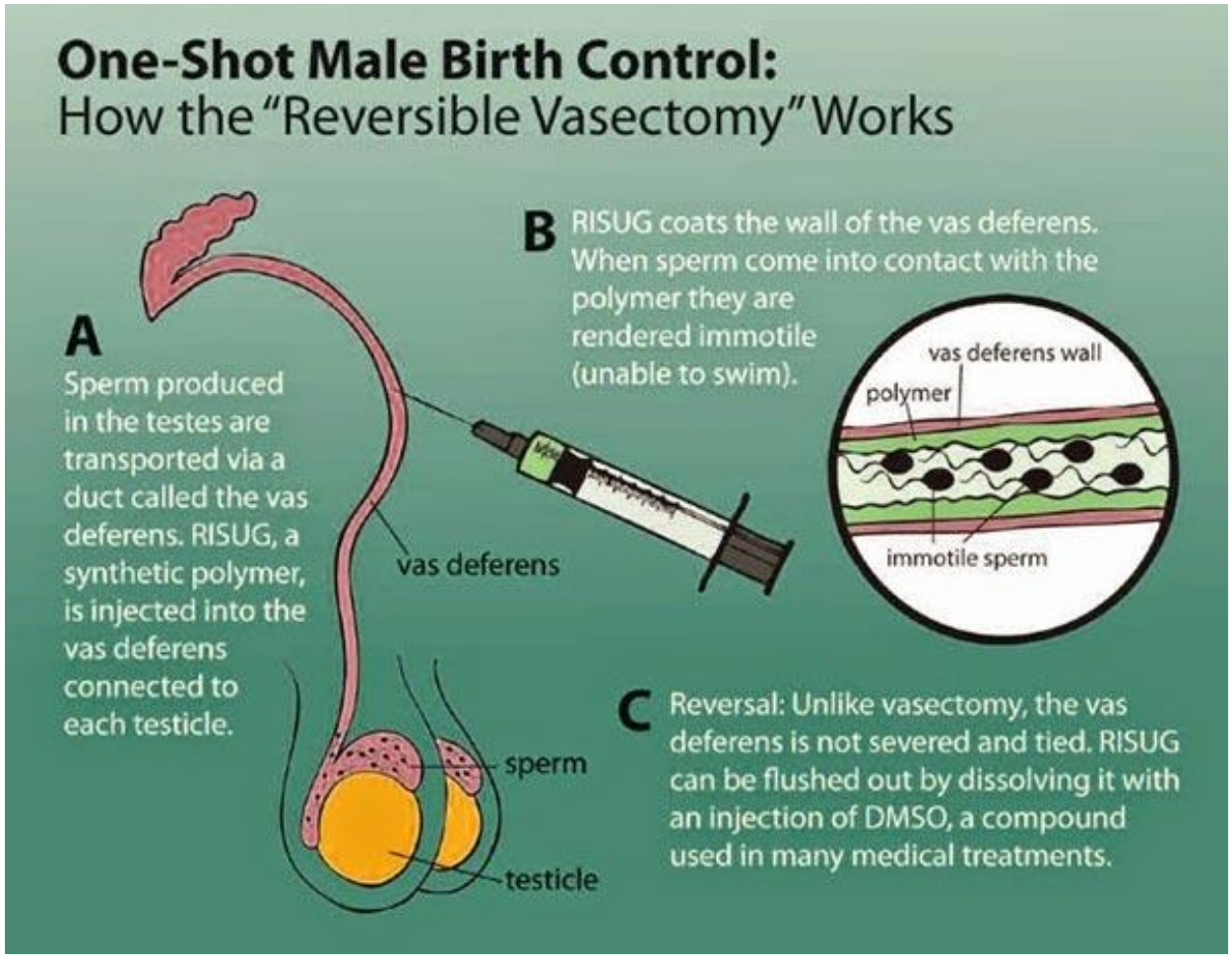
Penis Conditions

- Erectile dysfunction: A man's penis does not achieve sufficient hardness for satisfying intercourse. Atherosclerosis (damage to the arteries) is the most common cause of erectile dysfunction.
- Priapism: An abnormal erection that does not go away after several hours even though stimulation has stopped. Serious problems can result from this painful condition.
- Hypospadias: A birth defect in which the opening for urine is on the front (or underside), rather than the tip of the penis. Surgery can correct this condition.

- Phimosis (paraphimosis): The foreskin cannot be retracted or if retracted cannot be returned to its normal position over the penis head. In adult men, this can occur after penis infections.
- Balanitis: Inflammation of the glans penis, usually due to infection. Pain, tenderness, and redness of the penis head are symptoms.
- Balanoposthitis: Balanitis that also involves the foreskin (in an uncircumcised man).
- Chordee: An abnormal curvature of the end of the penis, present from birth. Severe cases may require surgical correction.
- Peyronie's Disease: An abnormal curvature of the shaft of the penis may be caused by injury of the adult penis or other medical conditions.
- Urethritis: Inflammation or infection of the urethra, often causing pain with urination and penis discharge. Gonorrhea and chlamydia are common causes.

- Gonorrhea: The bacteria N. gonorrhea infects the penis during sex, causing urethritis. Most cases of gonorrhea in men cause symptoms of painful urination or discharge.
- Chlamydia: A bacteria that can infect the penis through sex, causing urethritis. Up to 40% of chlamydia cases in men cause no symptoms.
- Syphilis: A bacteria transmitted during sex. The initial symptom of syphilis is usually a painless ulcer (chancre) on the penis.
- Herpes: The viruses HSV-1 and HSV-2 can cause small blisters and ulcers on the penis that reoccur over time.
- Micropenis: An abnormally small penis, present from birth. A hormone imbalance is involved in many cases of micropenis.
- Penis warts: The human papillomavirus (HPV) can cause warts on the penis. HPV warts are highly contagious and spread during sexual contact.
- Cancer of the penis: Penis cancer is very rare in the U.S. Circumcision decreases the risk of penis cancer.

Male Contraception - not yet approved



Vasalgel is a long-acting, nonhormonal contraceptive with a significant advantage over vasectomy: it is likely to be more reversible. The procedure is similar to a vasectomy, except a gel is injected into the vas deferens, rather than cutting the vas.

Another injection can remove the polymer and restore fertility (maybe).

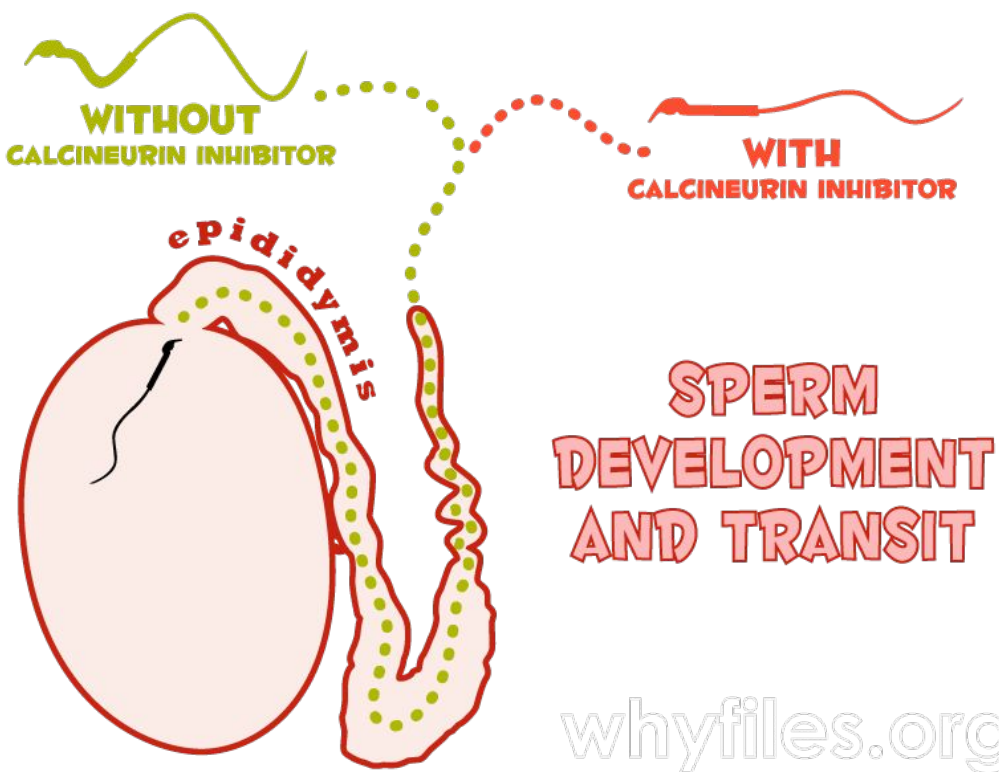
This technique is still being studied and has not been approved for use.

RISUG (Reversible Inhibition of Sperm Under Guidance)

Also See http://www.wired.com/magazine/2011/04/ff_vasectomy/ for full story and VIDEO!

In a study in mice published in October 2015, a protein called Calcineuron was found to be crucial in helping sperm swim and break through the membrane of a female egg.

When the genes behind this protein were blocked, the mice became infertile. Effects were seen in the mice within four to five days after treatment. The effects were also reversible as fertility was restored one week after treatments were stopped.



The midpiece of the sperm tail (flagella) contains the sperm's mitochondria and operates the movement of the tail. When sperm are deprived of the chemical calcineurin, the midpiece becomes more rigid and adopts a hook-like shape that constricts the tail's range of motion.