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Topic: Structure of mammalian Testis

Structure of mammalian Testis

The male reproductive system consists of glands with their ducts and supporting structures.

- The glands include a pair of testes, a pair of seminal vesicles, a pair of bulbourethral (cowper's) glands, and one prostate gland.
- Ducts of testes include a pair of epididymis, a pair of vas deferens, a pair of ejaculatory ducts, and one urethra.
- Supporting structures are divided into: Internal – a pair of spermatic cords and external – scrotum and penis.

The male reproductive system is to perform the following functions:

- To produce, maintain, and transport sperm (the male reproductive cells) and protective fluid (semen)
- To produce and secrete male sex hormones responsible for maintaining the male reproductive system.

- Most of the male reproductive system is located outside of the body. These external structures include the penis, scrotum, and testicles.

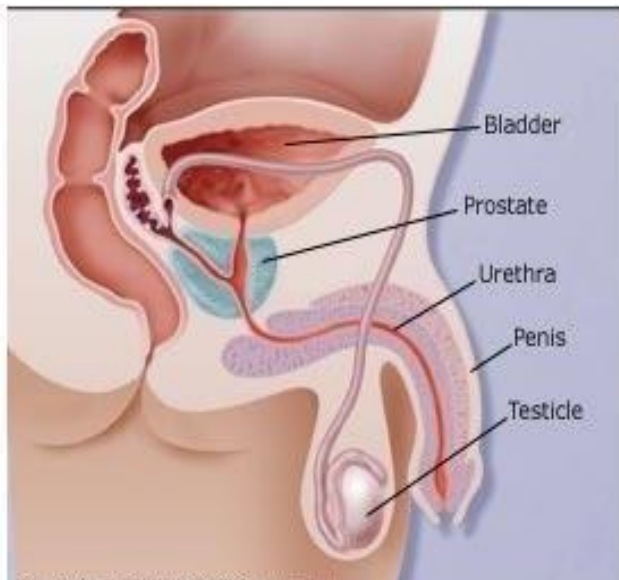


Fig. Male reproductive system

- **Penis:** This is the male organ used in sexual intercourse. It has three parts: the root, which attaches to the wall of the abdomen; the body, or shaft; and the glands, which is the cone-shaped part at the end of the penis. The glands, also called the head of the penis, are covered with a loose layer of skin called foreskin. This skin is sometimes removed in a procedure called circumcision. The opening of the urethra, the tube that transports semen and urine, is at the tip of the penis. The glands of the penis also contain a number of sensitive nerve endings.

The body of the penis is cylindrical in shape and consists of three circular shaped chambers. These chambers are made up of special, sponge-like

tissue. This tissue contains thousands of large spaces that fill with blood when the man is sexually aroused. As the penis fills with blood, it becomes rigid and erect, which allows for penetration during sexual intercourse. The skin of the penis is loose and elastic to accommodate changes in penis size during an erection.

Semen, which contains sperm (reproductive cells), 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.

- **Scrotum:** This is the loose pouch-like sac of skin that hangs behind and below the penis. It contains the testicles (also called testes), as well as many nerves and blood vessels. The scrotum acts as a "climate control system" for the testes. For normal sperm development, the testes must be at a temperature slightly cooler than body temperature. Special muscles in the wall of the scrotum allow it to contract and relax, moving the testicles closer to the body for warmth or farther away from the body to cool the temperature.
- **Testicles (testes):** These are oval organs about the size of large olives that lie in the scrotum, secured at either end by a structure called the spermatic cord. Most men have two testes. The testes are responsible for making testosterone, the primary male sex hormone, and for generating sperm. Within the testes are coiled masses of tubes called seminiferous tubules. These tubes are responsible for producing sperm cells.

The internal organs of the male reproductive system, also called accessory organs, include the following:

- **Epididymis:** The epididymis is a long, coiled tube that rests on the backside of each testicle. It transports and stores sperm cells that are produced in the testes. It also is the job of the epididymis to bring the sperm to maturity, since the sperm that emerge from the testes are immature and incapable of fertilization. During sexual arousal, contractions force the sperm into the vas deferens.
- **Vas deferens:** The vas deferens is a long, muscular tube that travels from the epididymis into the pelvic cavity, to just behind the bladder. The vas deferens transports mature sperm to the urethra, the tube that carries urine or sperm to outside of the body, in preparation for ejaculation.
- **Ejaculatory ducts:** These are formed by the fusion of the vas deferens and the seminal vesicles. The ejaculatory ducts empty into the urethra.
- **Urethra:** The urethra is the tube that carries urine from the bladder to outside of the body. In males, it has the additional function of ejaculating semen when the man reaches orgasm. When the penis is erect during sex, the flow of urine is blocked from the urethra, allowing only semen to be ejaculated at orgasm.
- **Seminal vesicles:** The seminal vesicles are sac-like pouches that attach to the vas deferens near the base of the bladder. The seminal vesicles produce a sugar-rich fluid (fructose) that provides sperm with a source of energy to help them move. The fluid of the seminal vesicles makes up most of the volume of a man's ejaculatory fluid, or ejaculate.

- **Prostate gland:** The prostate gland is a walnut-sized structure that is located below the urinary bladder in front of the rectum. The prostate gland contributes additional fluid to the ejaculate. Prostate fluids also help to nourish the sperm. The urethra, which carries the ejaculate to be expelled during orgasm, runs through the center of the prostate gland.
- **Bulbourethral glands:** Also called Cowper's glands, these are pea-sized structures located on the sides of the urethra just below the prostate gland. These glands produce a clear, slippery fluid that empties directly into the urethra. This fluid serves to lubricate the urethra and to neutralize any acidity that may be present due to residual drops of urine in the urethra.
- **Seminal fluid:** Seminal fluid or semen is the fluid that is ejaculated at the time of orgasm. It is a slightly alkaline mixture of sperm cells and secretions from the accessory glands. Secretions from the seminal vesicles make up about 60 % of the volume of the semen, with most of the remainder coming from the prostate gland.
- **Hormones control:** The entire male reproductive system is dependent on hormones, which are chemicals that regulate the activity of many different types of cells or organs. The primary hormones involved in the male reproductive system are follicle-stimulating hormone, luteinizing hormone, and testosterone. Follicle-stimulating hormone is necessary for sperm production (spermatogenesis), and luteinizing hormone stimulates the production of testosterone, which is also needed to make sperm. Testosterone is responsible for the development of male characteristics,

including muscle mass and strength, fat distribution, bone mass, facial hair growth, voice change, and sex drive.