

CHAPTER 11

► Urology

The Male Reproductive System

After studying this chapter, you will be able to:

- 11.1** Name the parts of the male reproductive system and discuss the function of each part
- 11.2** Define combining forms used in building words that relate to the male reproductive system
- 11.3** Identify the meaning of related abbreviations
- 11.4** Name the common diagnoses, clinical procedures, and laboratory tests used in treating disorders of the male reproductive system
- 11.5** List and define the major pathological conditions of the male reproductive system
- 11.6** Explain the meaning of surgical terms related to the male reproductive system
- 11.7** Recognize common pharmacological agents used in treating disorders of the male reproductive system

Structure and Function

The sex cell or **spermatozoon** (plural, **spermatozoa**) or **sperm** is produced in the male gonads or **testes** (singular *testis*). The testes are also called **testicles** and are contained within the **scrotum**, a sac outside the body. The scrotal sack holds and protects the testes as well as regulating the temperature of the testicles. If the testicles are too cold, the scrotum contracts to draw them closer to the body for warmth. If the testicles are too warm, then the scrotum relaxes to draw the testicles away from the body's heat.

The development of sperm (**spermatogenesis**) takes place in the scrotum, where the temperature is lower than inside the body. The lower temperature is necessary for the safe development of sperm. Inside the testes are cells that manufacture the sperm cells. These cells are contained in *seminiferous tubules*. Between the seminiferous tubules lie endocrine cells that produce **testosterone**, the most important male hormone; it is thought to decrease during a stage of life sometimes referred to as “male menopause.” Table 11-1 lists the male reproductive hormones and their purpose.

At the top part of each testis is the **epididymis**, a group of ducts for storing sperm. The sperm develop to maturity and become *motile* (able to move) in the epididymis. They leave the epididymis and enter a narrow tube called the **vas deferens**. The sperm then travel to the *seminal vesicles* (which secrete material to help the sperm move) and to the *ejaculatory duct* leading to the **prostate gland** and the urethra. The prostate gland also secretes

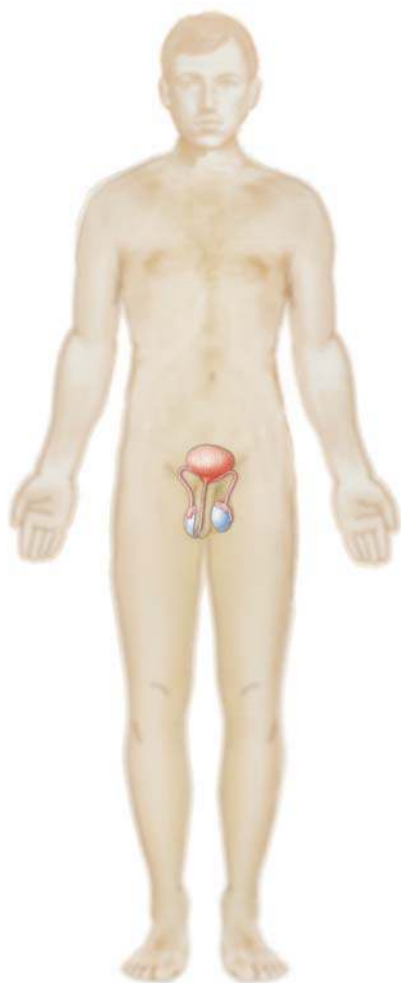


TABLE 11-1 Male Reproductive Hormones

Hormone	Purpose	Source
testosterone	stimulates development of male sex characteristics; increases sperm; inhibits LH	testes
FSH (follicle-stimulating hormone)	increases testosterone; aids in sperm production	pituitary gland
LH	stimulates testosterone secretion	pituitary gland
inhibin	inhibits FSH	testes

prostatic fluid, which provides a milky color to **semen** (a mixture of sperm and secretions from the seminal vesicles, Cowper's glands, and prostate) and helps the sperm move. The gland then contracts its muscular tissue during ejaculation to help the sperm exit the body.

Just below the prostate are the two **bulbourethral glands (Cowper's glands)** that also secrete a fluid that neutralizes the acidity of the male urethra prior to ejaculation. The urethra passes through the **penis** to the outside of the body. The tip of the penis is called the **glans penis**, a sensitive area covered by the **foreskin (prepuce)**. Between the penis and the anus is the area called the **perineum**. Figure 11-1a shows the male reproductive system. Figure 11-1b is a diagram of the path of sperm through the system.

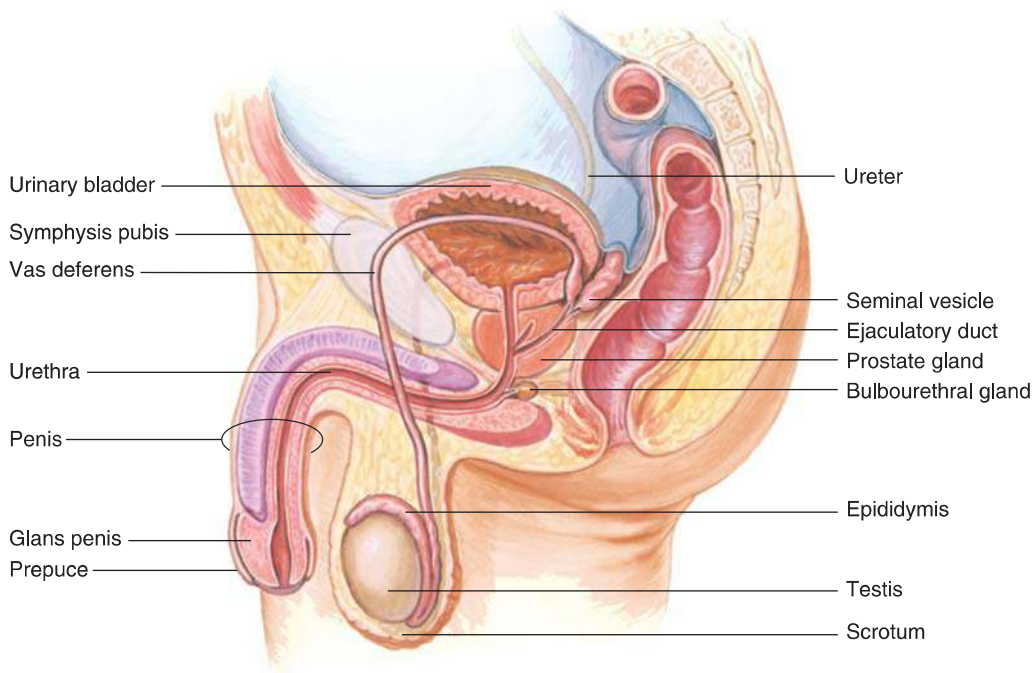


FIGURE 11-1A The male reproductive system usually maintains fertility well into old age.

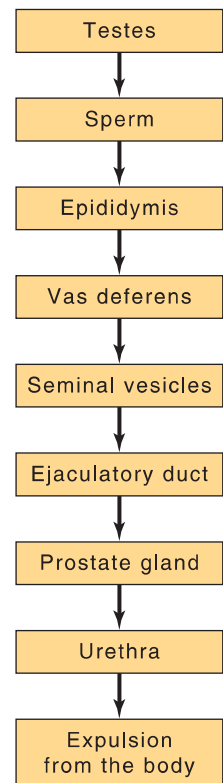


FIGURE 11-1B A diagram of the path that sperm travel.

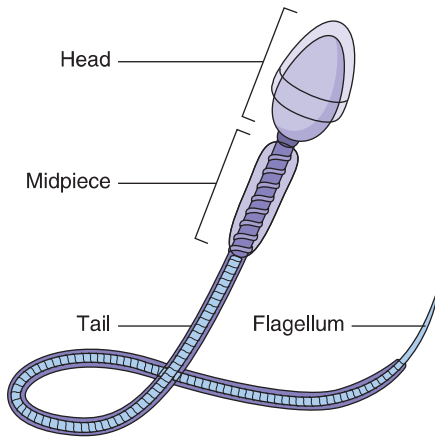


FIGURE 11-2 Spermatozoa have a flagellum to help propel them forward.

MORE ABOUT . . .

Male Hormones

Traditionally, the term menopause has referred to women only. In recent years, some researchers have studied the hormonal cycle of males. While males do not experience menstruation and its ultimate cessation, they do seem to experience reduced hormone production, particularly testosterone. This can cause symptoms similar to those of female menopause, including mood swings, decreased libido, and increased fatigue. Some men require treatment with hormonal therapy.

The spermatozoon is a microscopic cell, much smaller than an ovum. It has a head region that carries genetic material (*chromosomes*) and a tail (**flagellum**) that propels the sperm forward (Figure 11-2). During **ejaculation**, hundreds of millions of sperm are released. Usually only one sperm can fertilize a single ovum. In rare instances, two or more ova are fertilized at a single time, resulting in twins, triplets, quadruplets, and so on. *Identical twins* are the result of one ovum's splitting after it has been fertilized by a single sperm. *Fraternal twins* are the result of two sperm fertilizing two ova.

VOCABULARY REVIEW

In the previous section, you learned terms relating to the male reproductive system. Before going on to the exercises, review the terms below and refer to the previous section if you have any questions. Pronunciations are provided for certain terms. Sometimes information about where the word came from is included after the term. These etymologies (word histories) are for your information only. You do not need to memorize them.

Term	Definition
bulbourethral [BŬL-bō-yū-RĒ-thrāl] gland bulbo-, bulb + urethra	See Cowper's gland.
Cowper's [KŌW-pĕrs] gland After William Cowper (1666–1709), English anatomist	One of two glands below the prostate that secrete a fluid to lubricate the inside of the urethra.
ejaculation [ĕ-jăk-yū-LĀ-shŭn] Latin <i>e-iaculo</i> , to shoot out	Expulsion of semen outside the body.
epididymis [ĕp-ĭ-DĪD-ĭ-mĭs] Greek, on twins (testes)	Group of ducts at the top of the testis where sperm are stored.
flagellum [flă-JĔL-ŭm] Latin, little whip	Tail at the end of a sperm that helps it move.
foreskin [FŌR-skin] fore-, in front + skin	Flap of skin covering the glans penis; removed by circumcision in many cultures.
glans penis [glănz PĒ-nĭs] Latin <i>glans</i> , acorn	Sensitive area at the tip of the penis.

Term	Definition
penis [PĒ-nīs] Greek <i>perineon</i>	Male reproductive part that covers the urethra on the outside of the body.
perineum [PĚR-ĭ-NĒ-ŭm] Greek <i>perineon</i>	Area between the penis and the anus.
prostate [PRŌS-tāt] gland Greek <i>prostates</i> , one that protects	Gland surrounding the urethra that emits a fluid to help the sperm move and contracts its muscular tissue during ejaculation to help the sperm exit the body.
scrotum [SKRŌ-tŭm] Latin, sac	Sac outside the body containing the testicles.
semen [SĒ-mĕn] Latin, seed	Thick, whitish fluid containing spermatozoa and secretions from the seminal vesicles, Cowper's glands, and prostate; ejaculated from the penis.
sperm [spĕrm] Greek <i>sperma</i> , seed	Male sex cell that contains chromosomes.
spermatogenesis [SPĚR-mă-tō-JĚN-ĕ-sīs] spermato-, sperm + -genesis	Production of sperm.
spermatozoon (<i>pl.</i> , spermatozoa) [SPĚR-mă-tō-ZŌ-ŏn (SPĚR-mă-tō-ZŌ-ă)] spermato- + Greek <i>zoon</i> , animal	See sperm.
testicle [TĚS-tĭ-kl] Latin <i>testiculus</i> , small testis	See testis.
testis (<i>pl.</i> , testes) [TĚS-tĭs (TĚS-tĕz)] Latin	One of a pair of male organs that produce sperm and are contained in the scrotum.
testosterone [tĕs-TŌS-tĕ-rŏn]	Primary male hormone.
vas deferens [văs DĚF-ĕr-ĕns] Latin, vessel that carries away	Narrow tube through which sperm leave the epididymis and travel to the seminal vesicles and into the urethra.

CASE STUDY

Getting Help

Marta and Luis Consalvo have been trying to have a baby for two years. They are both young and healthy. Recently, Marta's obstetrician-gynecologist referred the couple to an infertility clinic. The doctors at the clinic found nothing in Marta that would cause infertility. They found, however, that Luis had a low sperm count. Marta's ob-gyn referred Luis to a urologist, Dr. Medina, for an examination.

Critical Thinking

1. Why did Marta's physician refer Luis to a urologist?
2. What parts of the male reproductive system might Dr. Medina examine for the cause of Luis's low sperm count?

STRUCTURE AND FUNCTION EXERCISES

Check Your Knowledge

Choose answer a, b, or c to identify each of the following parts of the reproductive system.

- a. only in males b. only in females c. in both males and females
- | | |
|-------------------------|-------------------------|
| 3. sex cell _____ | 8. epididymis _____ |
| 4. prostate gland _____ | 9. fallopian tube _____ |
| 5. perineum _____ | 10. gamete _____ |
| 6. foreskin _____ | 11. ova _____ |
| 7. scrotum _____ | 12. spermatozoa _____ |

Put in order the following sites through which sperm travel, starting with the letter a.

- | | |
|----------------------------|-----------------------------|
| 13. epididymis _____ | 16. ejaculatory ducts _____ |
| 14. seminal vesicles _____ | 17. vas deferens _____ |
| 15. testes _____ | 18. urethra _____ |

Check Your Understanding

Circle T for true or F for false.

19. Urine is stored in the prostate gland. T F
20. Fluid from the seminal vesicles helps the sperm move. T F
21. During ejaculation, about three thousand sperm are released. T F
22. Cowper's gland is another name for the prostate gland. T F
23. Identical twins result from two sperm and one ovum. T F
24. Male genetic material is called testosterone. T F
25. In many cultures, the glans penis is removed during circumcision. T F

Combining Forms and Abbreviations

The lists below include combining forms and abbreviations that relate specifically to the male reproductive system. Pronunciations are provided for the examples.

COMBINING FORM	MEANING	EXAMPLE
andr(o)	men	<i>andropathy</i> [än-DRÖP-ä-thē], any disease peculiar to men
balan(o)	glans penis	<i>balanitis</i> [bäl-ä-NĪ-tīs], inflammation of the glans penis
epididym(o)	epididymis	<i>epididymoplasty</i> [ěp-ĭ-DĪD-ĭ-mō-pläs-tē], surgical repair of the epididymis
orch(o), orchi(o), orchid(o)	testes	<i>orchitis</i> [ör-KĪ-tīs], inflammation of the testis

COMBINING FORM		MEANING	EXAMPLE
prostat(o)		prostate gland	<i>prostatitis</i> [prös-tă-Tĭ-tis], inflammation of the prostate
sperm(o), spermat(o)		sperm	<i>spermatogenesis</i> [SPĔR-mă-tō-JĔN-ē-sis], sperm production

ABBREVIATION	MEANING	ABBREVIATION	MEANING
AIH	artificial insemination homologous	SPP	suprapubic prostatectomy
BPH	benign prostatic hypertrophy	TUIP	transurethral incision of the prostate
PED	penile erectile dysfunction	TUNA	transurethral needle ablation
PSA	prostate-specific antigen	TURP	transurethral resection of the prostate

CASE STUDY

Achieving Results

Dr. Medina was able to help Luis by giving him prescription hormones for his low sperm count and telling him about certain techniques that can increase sperm count. Within six months, Marta was pregnant.

As a urologist, Dr. Medina treats both the reproductive and urinary systems of males. Men who have fertility problems account for a small percentage of Dr. Medina's practice. A slightly larger group sees Dr. Medina about difficulties in sexual functioning (PED, ED). Most of Dr. Medina's patients are much older than Luis. Middle-aged and elderly men tend to have urinary tract problems more frequently than younger men.

Bernard McCoy, who is 35 years old, called for an appointment after his urethrogram. The receptionist

scheduled a visit for 10:00 a.m. on November 15. McCoy was escorted to the examining room where the nurse made notes about his complaints (difficulty in urination). A digital rectal exam showed extensive swelling but his previous PSA test was normal. The doctor examined Mr. McCoy. The doctor spoke to Mr. McCoy about the results of his urethrogram.

Critical Thinking

26. What part of the urinary tract is tested for by a PSA test?
27. What condition does Dr. Medina think Mr. McCoy has?

11/15/XX TW: Bernard McCoy, age 35, complains of frequent urination, small stream, and stop and start urine flow; inability to achieve erection. RM: Lab: CBC, chem screen panel, PSA normal. Urethrogram showed swelling. Diagnosis: BPH. A. Medina, M. D.

COMBINING FORMS AND ABBREVIATIONS EXERCISES

Build Your Medical Vocabulary

Build words for the following definitions using at least one combining form from this chapter. You can refer to Chapters 1, 2, and 3 for general combining forms.

28. Morbid fear of men: _____

29. Surgical reconstruction of the glans penis: _____
30. Killer of sperm: _____
31. Incision into a testis: _____
32. Abnormal discharge of prostate fluid: _____

Put the reproductive system combining form and its meaning in the space following the sentence.

33. A prostatectomy is usually performed only in cases of cancer. _____
34. Androgens cause the development of male secondary sex characteristics. _____
35. An orchiectomy is done in cases of cancer. _____
36. Balanoplasty may be necessary in cases of injury. _____

Diagnostic, Procedural, and Laboratory Terms

The Prostate Cancer Research Institute www.prostate-cancer.org offers free booklets and a wealth of information about this disease.

A normal male medical checkup may include a *digital rectal exam (DRE)*, the insertion of a finger into the rectum to check the prostate for abnormalities, tenderness, or irregularities. During the DRE, the physician can reach approximately two-thirds of the prostate. A medical check-up for males usually includes a **prostate-specific antigen (PSA) test**, a blood test to screen for abnormal prostatic growth, which can be associated with prostate cancer. The PSA level that is considered normal ranges from 0 to 4 nanograms/milliliter (ng/ml). A PSA level of 4 to 10 ng/ml is considered slightly elevated; levels between 10 and 20 ng/ml are considered moderately elevated; and anything above that is considered highly elevated.

Visit the American Fertility Association Web site (www.theafa.org) to find out what is normal in a semen analysis.

If a couple is having fertility problems, a **semen analysis** is done to determine the quantity and quality of the male partner's sperm. Such an analysis determines the percentage of living and normally developed sperm, the ability of the sperm to move, and the percentage of well-formed sperm. Poor-quality sperm may result from temperature variation of the testicles, illness, the effect of drugs (even over-the-counter medications), and stress.

X-ray or imaging procedures are used to further test for abnormalities or blockages. A **urethrogram** is an x-ray of the urethra and prostate. A sonogram may be used when needle biopsies are taken, as of the testicles or prostate. If cancer is present, surgery, chemotherapy, or radiation may be used. Hormone replacement therapy is given to males who have a deficiency of male hormones. Men who have erectile dysfunction may be treated chemically with medications or with a *penile prosthesis*, a device implanted in the penis to treat impotence.

VOCABULARY REVIEW

In the previous section, you learned terms relating to diagnosis, clinical procedures, and laboratory tests. Before going on to the exercises, review the following terms and refer to the previous section if you have any questions. Pronunciations are provided for certain terms. Sometimes information about where the word came from is included after the term. These etymologies (word histories) are for your information only. You do not need to memorize them.

Term	Definition
prostate-specific [ĂN-tĩ-jěn] antigen (PSA) test	Blood test for prostate cancer.
semen analysis	Observation of semen for viability of sperm.
urethrogram [yū-RĒ-thrō-grām] urethro-, urethra + -gram, a recording	X-ray of the urethra and prostate.

CASE STUDY

Testing Further

Alan Salvo is a 58-year-old male with a complaint of difficulty urinating. His blood work is normal including his PSA test. Dr. Medina schedules Mr. Salvo for a urethrogram.

Critical Thinking

37. The normal PSA test virtually eliminated one possible diagnosis. What did it likely eliminate?
38. What might the urethrogram show?

DIAGNOSTIC, PROCEDURAL, AND LABORATORY TERMS EXERCISES

Check Your Knowledge

Fill in the blanks.

39. A semen analysis examines the _____ and _____ of sperm.
40. A DRE is for finding any abnormalities in the _____ and _____.
41. A PSA tests for _____ cancer.
42. Both males and females may need _____ therapy.
43. Erectile problems may be treated chemically or with a _____.

Pathological Terms

Birth or developmental defects affect the functioning of the reproductive system. An *undescended testicle* (**cryptorchism**) means that the normal descending of the testicle to the scrotal sac does not take place during gestation and requires surgery to place it properly (Figure 11-3). **Anorchism** or **anorchia** is the lack of one or both testes.

Hypospadias is an abnormal opening of the urethra on the underside of the penis. **Epispadias** is an abnormal opening on the top side of the penis. Figure 11-4 shows these two abnormal conditions of the urinary meatus. **Phimosis** is an abnormal narrowing of the foreskin over the glans penis (only in uncircumcised males). These conditions are also repaired by surgery (sometimes during circumcision), in which the foreskin is removed and used in the repair.

As the male matures, infections and various other medical conditions may cause **infertility**, an inability to produce enough viable sperm to fertilize an ovum or an inability to deliver sperm to the proper location in the vagina. Several levels of sperm production may be involved in infertility.

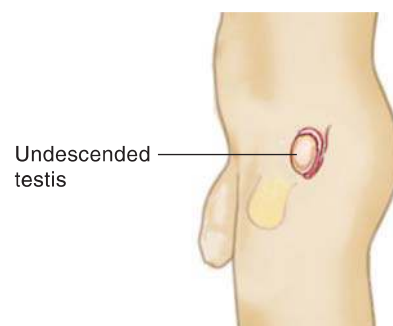
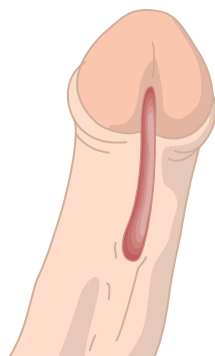
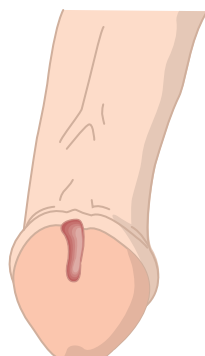


FIGURE 11-3 Cryptorchism is also known as an undescended testicle.



Hypospadias



Epispadias

FIGURE 11-4 Hypospadias and epispadias are two congenital urethral abnormalities.

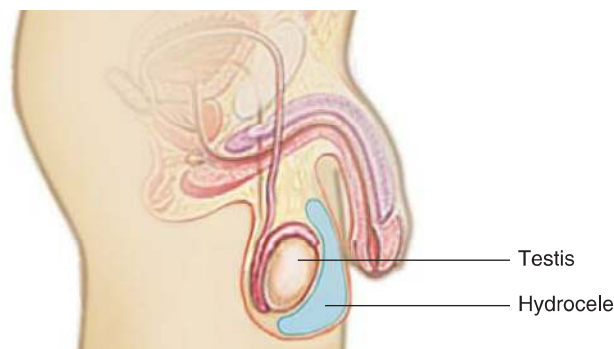


FIGURE 11-5 Hydroceles commonly occur in the scrotal sac.

Aspermia is the inability to produce sperm; **azoospermia** is semen without living sperm; and **oligospermia** is the scanty production of sperm. Medical or psychological conditions may cause **impotence** (*penile erectile dysfunction*), inability to maintain an erection for ejaculation. **Priapism** is a persistent, painful erection, usually related to other medical conditions. **Hernias**, abnormal protrusions of part of a tissue or an organ out of its normal space through a barrier, may occur in the male reproductive system. (Hernias are also covered in Chapter 14.) A **hydrocele** is a fluid-containing hernia in a testicle (Figure 11-5); a **varicocele** is a group of herniated veins near the testes. This is a common cause of infertility due to the increased heat that the dilated blood vessel brings to the scrotum. It can be corrected by surgery.

Various inflammations occur in the male reproductive system. **Prostatitis** is any inflammation of the prostate; **balanitis** is an inflammation of the glans penis; and **epididymitis** is an inflammation of the epididymis. Likewise, some diseases and conditions affect the function of the reproductive system. *Benign prostatic hypertrophy* or *hyperplasia* (BPH) is enlargement of the prostate gland not involving cancer but causing some obstruction of the urinary tract. *Testicular torsion* is a surgical emergency caused by the constriction of testicular arteries. Ischemia and infarction result in testicular death if not corrected.

Peyronie's disease is a disorder with curvature of the penis caused by some hardening in the interior structure of the penis. *Prostate cancer* and *testicular cancer* are fairly common malignancies. A common tumor of the testicle is a **seminoma**.

Sexually transmitted diseases are the same for the male as for the female (see Chapters 10, 12, and 13), with males being more susceptible to **chancroids**, venereal sores caused by a bacterial infection on the penis, urethra, or anus.

The National Kidney and Urologic Diseases Clearinghouse (<http://kidney.niddk.nih.gov/kudiseases/pubs/peyronie/index.htm>) provides information about Peyronie's disease.

VOCABULARY REVIEW

In the previous section, you learned terms relating to pathology. Before going on to the exercises, review the terms below and refer to the previous section if you have any questions. Pronunciations are provided for certain terms. Sometimes information about where the word came from is included after the term. These etymologies (word histories) are for your information only. You do not need to memorize them.

Term	Definition
anorchism [ăn-ŌR-kĭzm], anorchia [-kē-ă] an-, without + orch-, testicle + -ism, state of being	Congenital absence of one or both testicles.
aspermia [ā-SPĚR-mē-ă] a-, without + sperm + -ia, condition	Inability to produce sperm.
azoospermia [ā-zō-ō-SPĚR-mē-ă] a- + zoo-, life + sperm + -ia	Semen without living sperm.
balanitis [bāl-ă-NĪ-tĭs] Greek <i>balanos</i> , acorn + -itis, inflammation	Inflammation of the glans penis.
chancroids [SHĀNG-kröyds] chancr(e) + -oid, like	Bacterial infection that can be sexually transmitted; results in sores on the penis, urethra, or anus.
cryptorchism [krĭp-TŌR-kĭzm] crypto-, hidden + orch- + -ism	Birth defect with the failure of one or both of the testicles to descend into the scrotal sac.
epididymitis [ĕp-ĭ-dĭd-ĭ-MĪ-tĭs] epididym(is) + -itis	Inflammation of the epididymis.
epispadias [ĕp-ĭ-SPĀ-dē-ăs] epi-, upon + Greek <i>spadon</i> , a ripping or tearing	Birth defect with abnormal opening of the urethra on the top side of the penis.
hernia [HĚR-nē-ă] Latin, rupture	Abnormal protrusion of tissue through muscle that contains it.
hydrocele [HĪ-drō-sēl] hydro-, water + -cele, hernia	Fluid-containing hernia of the testis.
hypospadias [HĪ-pō-SPĀ-dē-ăs] hypo-, under + Greek <i>spadon</i> , a ripping or tearing	Birth defect with abnormal opening of the urethra on the bottom side of the penis.
impotence [ĪM-pō-tĕns] Latin <i>impotentia</i> , inability	Inability to maintain an erection for ejaculation.
infertility [ĭn-fĕr-TĪL-ĭ-tē] in-, not + fertility	Inability to fertilize ova.
oligospermia [ōl-ĭ-gō-SPĚR-mē-ă] oligo-, few + sperm + -ia	Scanty production of sperm.
Peyronie's [pā-RŌN-ēz] disease After Francois de la Peyronie (1678–1747), French surgeon	Abnormal curvature of the penis caused by hardening in the interior of the penis.
phimosi s [fĭ-MŌ-sĭs] Greek, a muzzling	Abnormal narrowing of the opening of the foreskin.
priapism [PRĪ-ă-pĭzm] After Priapus, god of procreation	Persistent, painful erection of the penis.
prostatitis [prōs-tă-TĪ-tĭs] prostat-, prostate + -itis	Inflammation of the prostate.
seminoma [sēm-ĭ-NŌ-mă] Latin <i>semen</i> , seed + -oma, tumor	Malignant tumor of the testicle.
varicocele [VĀR-ĭ-kō-sēl] varico(se) + -cele	Enlargement of veins of the spermatic cord.

CASE STUDY

Resolving Problems

Marta and Luis Consalvo's baby, an 8-pound boy, was healthy except for hypospadias. Dr. Medina told the Consalvos that an operation to properly place the urethral opening would be needed, but as long as the baby remained in diapers, they could wait until he was a bit older for the surgery. The parents were also told to delay circumcision, so that any excess skin might be used to repair the penis.

Critical Thinking

44. Why might hypospadias cause urination problems once the baby is out of diapers and trained to use a toilet?
45. Hypospadias, if left untreated, may cause fertility problems later in life. How?

PATHOLOGICAL TERMS EXERCISES

Find a Match

Match the definitions in the right-hand column with the terms in the left-hand column.

- | | |
|-----------------------|--------------------------------------|
| 46. ____ anorchism | a. inflammation of the glans penis |
| 47. ____ aspermia | b. hernia in the testes |
| 48. ____ seminoma | c. inability to maintain an erection |
| 49. ____ balanitis | d. inability to fertilize an ovum |
| 50. ____ hydrocele | e. undescended testicle |
| 51. ____ impotence | f. lacking sperm |
| 52. ____ infertility | g. abnormal urethral opening |
| 53. ____ hypospadias | h. lacking testicles |
| 54. ____ cryptorchism | i. having no living sperm |
| 55. ____ azoospermia | j. testicular tumor |

Surgical Terms

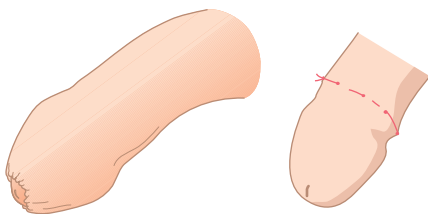


FIGURE 11-6 Circumcision is usually determined by cultural preference.

The most common surgery of the male reproductive system is **circumcision**, the removal of the foreskin or prepuce (Figure 11-6). Various cultures and religions have rituals associated with this removal. Some parents prefer to have it done in the hospital immediately after birth.

Other surgeries are to prevent or enhance the possibility of conception, diagnose or remove cancerous tumors, remove or reduce blockages, and remove or repair parts of the system. Biopsies are commonly taken of the testicles and prostate when cancer is suspected.

Various operations to remove cancerous or infected parts of the reproductive system are an **epididymectomy**, removal of an epididymis; an **orchietomy** or **orchidectomy**, removal of a testicle; a **prostatectomy**, removal of the prostate gland, which may be done through the perineum or above the pubic bone; and a *transurethral resection of the prostate (TURP)*, removal of

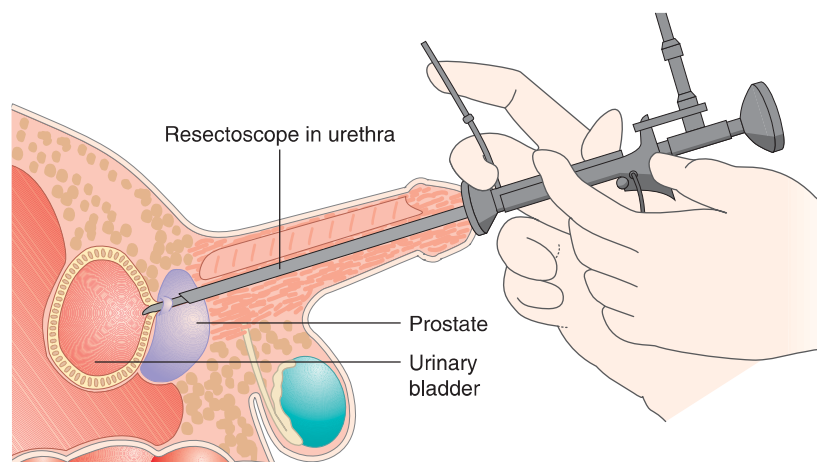


FIGURE 11-7 A TURP (transurethral resection of the prostate) is the removal of some prostate tissue through the urethra.

a portion of the prostate through the urethra (Figure 11-7). A **vasectomy** is the removal of part of the vas deferens as a method of birth control. A **vasovasostomy** is the reversing of a vasectomy so the male regains fertility. **Castration** is the removal of the testicles in the male.

In addition to the TURP, other treatments exist for benign prostatic hypertrophy. In the procedure called *transurethral microwave thermotherapy* (TUMT), the Prostatron, an FDA-approved device, sends computer-regulated microwaves through a catheter to heat and destroy selected portions of the prostate. A cooling system protects the urinary tract during the procedure. A similar microwave device, the Targis System, also received FDA approval. Like the Prostatron, the Targis System delivers microwaves to destroy selected portions of the prostate and uses a cooling system to protect the urethra. A heat-sensing device inserted in the rectum helps monitor the therapy. Both procedures take about 1 hour and can be performed on an outpatient basis without general anesthesia. Neither procedure has been reported to lead to impotence or incontinence. The *transurethral incision of the prostate* (TUIP) is similar to TURP. It is used on slightly enlarged prostate glands. The surgeon places one or two small cuts in the prostate. This relieves pressure without trimming away tissue. It has a low risk of side effects. Like TURP, this form of BPH treatment helps with urine flow by widening the urethra. The *transurethral needle ablation* (TUNA) burns away excess prostate tissue using radio waves. It helps with urine flow, relieves symptoms, and may have fewer side effects than TURP.

The practice of circumcising infant males is the subject of controversy. There is a Web site (www.circumcision.org) that gives reasons against the practice, while other Web sites give information about the surgery.

VOCABULARY REVIEW

In the previous section, you learned terms relating to surgery. Before going on to the exercises, review the terms below and refer to the previous section if you have any questions. Pronunciations are provided for certain terms. Sometimes information about where the word came from is included after the term. These etymologies (word histories) are for your information only. You do not need to memorize them.

Term	Definition
castration [kās-TRĀ-shŭn] Latin <i>castro</i> , to deprive of power	Removal of the testicles.
circumcision [sĭr-kŭm-SĪZH-ŭn] Latin <i>circumcido</i> , to cut around	Removal of the foreskin.
epididymectomy [ĔP-ĭ-dĭd-ĭ-MĔK-tō-mē] epididym(is) + -ectomy, removal	Removal of an epididymis.
orchidectomy [ōr-kĭ-DĔK-tō-mē] orchid-, testicle + -ectomy	Removal of a testicle.
orchiectomy [ōr-kē-ĔK-tō-mē] orchi-, testicle + -ectomy	Removal of a testicle.
prostatectomy [prōs-tă-TĔK-tō-mē] prostat- + -ectomy	Removal of the prostate.
vasectomy [vă-SĔK-tō-mē] Latin <i>vas</i> , vessel + -ectomy	Removal of part of the vas deferens to prevent conception.
vasovasostomy [VĀ-sō-vă-SŎS-tō-mē] vaso-, vessel + vaso- + -stomy, creation of a hole	Reversal of a vasectomy.

MORE ABOUT . . .

Birth Control

An operation is not necessary for male birth control. Other options available to males are a *condom*, a sheath worn over the penis to collect the semen after ejaculation, *coitus interruptus*, removal of the penis from the vagina before ejaculation (although this is not very safe), and a forthcoming *male birth control pill*, which will block the production of sperm.

CASE STUDY

Surgical Relief

Dr. Medina checked the results of Mr. McCoy's urethrogram. There did not seem to be any abnormalities other than in the prostate. He scheduled Mr. McCoy for a TURP, which is done as cryogenic surgery (surgery using cold to numb an area prior to operating). The procedure is done on an outpatient basis, and one week later, Mr. McCoy is improving rapidly. Dr. Medina wants to wait a while to see if the TURP also helps improve erectile function,

before exploring other options. One such option is new medication that can improve erectile function.

Critical Thinking

56. Why did Dr. Medina schedule Mr. McCoy for a TURP?
57. If medication does not work to improve sexual function, what is another option for men with impaired erectile function?

SURGICAL TERMS EXERCISES

Check Your Knowledge

Fill in the blanks.

58. Circumcision is removal of the _____ and is commonly practiced in various cultures.
59. An _____ or _____ is removal of a testicle.
60. A prostatectomy is a general term for removal of the _____.
61. A contraceptive operation is a(n) _____.
62. An operation to reverse a previously done contraceptive one is a(n) _____.

Pharmacological Terms

Males are sometimes treated with hormone replacement therapy (usually, testosterone). Such treatment can help with sexual problems and with some of the signs of aging. Medications for impotence may help some men restore sexual function. It may also be treated surgically or with mechanical devices. Some erectile dysfunction is a vascular problem and may be treated with *transient vasoconstrictors*, medications that cause temporary constriction of the blood vessels in the penis. Table 11-2 lists some of the medications used to treat disorders of the male reproductive system.

Anabolic steroids can help overcome the symptoms of some wasting diseases and build muscle mass. The ability of such drugs to increase muscle mass means that they are important to some athletes. However, the widespread overuse of anabolic steroids by some people has proven to be dangerous, even fatal. Many sports organizations now disqualify athletes who are found using steroids.

The American Academy of Pediatrics (www.aap.org/family/steroids.htm) discusses the abuse of steroids in children's sports.

TABLE 11-2 Drugs Used to Treat Disorders of the Male Reproductive System

Drug Class	Purpose	Generic	Trade Name
treatments for benign prostatic hypertrophy	to cure or relieve enlargement of the prostate	finasteride dutasteride terazosin doxazosin alfuzosin tamsulosin	Proscar Avodart Hytrin Cardura Uroxatral Flomax
treatments for erectile dysfunction	to achieve or lengthen the duration of erections	sildenafil tadalafil vardenafil	Viagra Cialis Levitra

CASE STUDY

Trying Medication

About a month later, Mr. McCoy is back for an appointment to discuss his sexual dysfunction. He still is having difficulty sustaining erections. Dr. Medina reviews other medications that Mr. McCoy takes to check for possible interactions, prescribes a drug to treat impotence, and asks Mr. McCoy to call him in about a month. The drug works well for Mr. McCoy.

In recent years, Dr. Medina has seen an increase in the number of patients who cite sexual dysfunction as a problem. Often, people would rather accept the condition rather than talk to a doctor openly about it. Media publicity about impotence has made known some of the available treatments.

Critical Thinking

63. Mr. McCoy's impotence existed for about ten years before he told a doctor about it. Do you think all the media coverage of the issue of impotence or PED helps people to discuss this issue with their health care practitioners? Why or why not?
64. Dr. Medina tells Mr. McCoy to call him if his internist prescribes any other drugs for him while he is taking his medication for impotence. Why is Dr. Medina concerned?

PHARMACOLOGICAL TERMS EXERCISES

Check Your Knowledge

Fill in the blanks.

65. Male hormone replacement therapy usually involves the hormone _____.
66. Inability to maintain an erection can be treated with _____.
67. Weight trainers and sports figures sometimes illegally use _____.

CHALLENGE SECTION

William Hartman, 30 years old, has a history of orchialgia, which was usually treatable with a mild painkiller. Lately, he tells his internist, the pain is increasing. He is referred to Dr. Medina. His records are sent to Dr. Medina's office for review. Dr. Medina notes that the patient has an encysted hydrocele that has been aspirated and drained once before. Now it is quite large. He suggests removal of the hernia on an outpatient basis. He explains to the patient that its removal may affect the functioning of his left testicle.

Critical Thinking

68. Should William be worried about fertility issues?
69. What is inside a hydrocele that makes it swell?

TERMINOLOGY IN ACTION

From the following letter, can you determine why the doctor did not suspect prostate cancer?

*Dr. Robert Thorkild, MD
Department of General Surgery
555 Tenth Avenue
New York, NY 99999*

Dear Dr. Thorkild:

Thank you for agreeing to see John Roberts, a patient of mine, on an urgent basis. He is the 30-year-old male I mentioned in my telephone conversation.

Mr. Roberts complains of right inguinal cramping and sharp, constant pain radiating into the scrotum and right testicle. The pain occurred after lifting several heavy objects at work. He works for a moving company and does constant heavy lifting.

On examination, abdomen is soft and non tender. There is fullness in the right groin area. Palpation of the inguinal canal reveals a bulge that is made worse with coughing. It is reducible and there is no question of strangulation. Rectal examination is normal. Prostate is normal in size and texture.

My assessment is right inguinal hernia.

Because of his difficult financial situation, he needs to have this repaired as soon as possible. He agrees to seeing you and having you perform a herniorrhaphy.

Thank you for seeing Mr. Roberts.

Sincerely,

Robert Thorkild, MD

USING THE INTERNET

Google the words “prostate cancer” and write a short paragraph on recent news about prostate cancer.

CHAPTER REVIEW

The material that follows is to help you review all the material in this chapter.

Build Your Medical Vocabulary

Using the combining forms learned in this chapter and in Chapters two and three, build a medical term for each of the following.

- 70. painful prostate: _____
- 71. surgical fixation of the testes: _____
- 72. surgical repair of the glans penis: _____
- 73. suturing of the testes: _____
- 74. herniation of the prostate: _____
- 75. pain in the testes: _____

Root Out the Meaning

Divide each of the following terms into parts and then define the term.

- 76. orchitis: _____
- 77. spermatogenesis: _____
- 78. prostatomegaly: _____
- 79. prostaticorrhea : _____
- 80. vasectomy: _____
- 81. perineoplasty : _____
- 82. spermatocele: _____

Spell It Correctly

Write the correct spelling in the blank to the right of each word. If the word is already correctly spelled, write C.

- 83. hyospadias _____
- 84. testosterone _____
- 85. semin _____
- 86. epididimis _____
- 87. semenoma _____

DEFINITIONS

Define the following terms and combining forms. Review the chapter before starting. Make sure you know how to pronounce each term as you define it. The blue words in curly brackets are references to the Spanish glossary available online at www.mhhe.com/medterm3e.

WORD

- | | | |
|--|---|---|
| 88. anabolic steroids | 108. foreskin [FÖR-skĭn] { prepucio } | 127. prostate-specific antigen [ÄN-tĭ-jĕn] (PSA) test |
| 89. andr(o) | 109. glans penis [glänz PĒ-nĭs] | 128. prostatitis [prös-tă-TĪ-tĭs] { prostatitis } |
| 90. anorchism, anorchia [än-ÖR-kĭzm, -kĕ-ă] { anorquia } | 110. hernia [HĚR-nĕ-ă] { hernia } | 129. scrotum [SKRÖ-tŭm] { escroto } |
| 91. aspermia [ä-SPĚR-mĕ-ă] { aspermia } | 111. hydrocele [HĪ-drō-sĕl] { hidrocele } | 130. semen [SĒ-mĕn] { semen } |
| 92. azoospermia [ä-zō-ō-SPĚR-mĕ-ă] { azoospermia } | 112. hypospadias [HĪ-pō-SPĀ-dĕ-ăs] { hipospadias } | 131. semen analysis |
| 93. balan(o) | 113. impotence [ĪM-pō-tĕns] { impotencia } | 132. seminoma [sĕm-ĭ-NŌ-mă] |
| 94. balanitis [băl-ă-NĪ-tĭs] { balanitis } | 114. infertility [ĭn-fĕr-TĪL-ĭ-tĕ] { infertilidad } | 133. sperm [spĕrm] { esperma } |
| 95. bulbourethral [BŪL-bō-yŭ-RĔ-thrăl] gland | 115. oligospermia [öl-ĭ-gō-SPĚR-mĕ-ă] { oligospermia } | 134. sperm(o), spermat(o) |
| 96. castration [käs-TRĀ-shŭn] { castración } | 116. orch(o), orchi(o), orchid(o) | 135. spermatogenesis [SPĚR-mă-tō-JĔN-ĕ-sĭs] |
| 97. chancroids [SHÄNG-kröyds] | 117. orchidectomy [ör-kĭ-DĚK-tō-mĕ] { orquidectomía } | 136. spermatozoon (<i>pl.</i> , spermatozoa) [SPĚR-mă-tō-ZŌ-ōn (SPĚR-mă-tō-ZŌ-ă)] { espermatozoo } |
| 98. circumcision [sĕr-kŭm-SĪZH-ŭn] { circuncisión } | 118. orchiectomy [ör-kĕ-ĔK-tō-mĕ] { orquietomía } | 137. testicle [TĔS-tĭ-kl] { testículo } |
| 99. Cowper's [KŌW-pĕrs] gland | 119. penis [PĒ-nĭs] { pene } | 138. testis (<i>pl.</i> , testes) [TĔS-tĭs (TĔS-tĕz)] { testículo } |
| 100. cryptorchism [krĭp-TÖR-kĭzm] | 120. perineum [PĚR-ĭ-NĔ-ŭm] { perineo } | 139. testosterone [tĕs-TÖS-tĕ-rŏn] { testosterona } |
| 101. ejaculation [ĕ-jăk-yŭ-LĀ-shŭn] { eyaculación } | 121. Peyronie's [pā-RŌN-ĕz] disease | 140. urethrogram [yŭ-RĔ-thrō-grăm] |
| 102. epididym(o) | 122. phimosis [fĭ-MŌ-sĭs] { fimosis } | 141. varicocele [VÄR-ĭ-kō-sĕl] { varicocele } |
| 103. epididymectomy [ĔP-ĭ-dĭd-ĭ-MĔK-tō-mĕ] | 123. priapism [PRĪ-ă-pĭzm] { priapismo } | 142. vas deferens [väs DĔF-ĕr-ĕns] |
| 104. epididymis [ĕp-ĭ-DĪD-ĭ-mĭs] { epidídimo } | 124. prostat(o) | 143. vasectomy [vă-SĔK-tō-mĕ] { vasectomía } |
| 105. epididymitis [ĕp-ĭ-dĭd-ĭ-MĪ-tĭs] { epididimitis } | 125. prostate [PRÖS-tăt] { próstata } gland | 144. vasovasostomy [VĀ-sō-vă-SŌS-tō-mĕ] { vasovasostomía } |
| 106. epispadias [ĕp-ĭ-SPĀ-dĕ-ăs] { epispadias } | 126. prostatectomy [prös-tă-TĔK-tō-mĕ] { prostatectomía } | |
| 107. flagellum [flă-JĔL-ŭm] { flagelo } | | |

Abbreviations

Write the full meaning of each abbreviation.

ABBREVIATION

145. AIH

147. PED

149. SPP

146. BPH

148. PSA

150. TURP

Name _____ Date _____

Chapter 11: Word- Building (20 questions—1 pts. each)

Using the following combining forms, complete the word that best fits the definition of each word relating to the male reproductive system listed below. Combining forms may be used more than once.

andr(o)	orch(o)	prostat(o)
balan(o)	orchi(o)	sperm(o)
epididym(o)	orchid(o)	spermat(o)

1. Male testicular tumor: _____ blastoma
2. Involuntary movement of the testis: _____ chorea
3. Removal of the epididymis: _____ ectomy
4. Inflammation of the glans penis: _____ itis
5. Enlargement of the prostate: _____ megaly
6. Surgical moving of an undescended testis: _____ pexy
7. Having both male and female characteristics: _____ gyny
8. Inflammation of the prostate and bladder: _____ cystitis
9. Incision into a testis: _____ tomy
10. Stone in the prostate: _____ lith
11. Surgical removal of the epididymis and the vas deferens:
_____ vasectomy
12. Sperm-bearing: _____ phore
13. Stimulating growth of male sex organs: _____ gen
14. Destruction of sperm: _____ lysis
15. Testicular disease: _____ itis
16. Incision into the epididymis: _____ tomy
17. Primitive sperm cell: _____ gonium
18. Repair of the glans penis: _____ plasty
19. Agent that destroys sperm: _____ cide
20. Abnormal prostatic discharge: _____ rrhea