

## MALE REPRODUCTIVE SYSTEM



One of the primary functions of the human body is to reproduce and ensure the survival of our offspring. In order to accomplish this, our body systems must work together to maintain good health. The sexual and parenting instincts are among the strongest of our basic drives. In this century, sexual behavior has changed with the availability of reliable contraception and many couples delay having children until later in their lives when fertility begins to decline. A whole new science has been developed to help these couples become parents.



## MALE REPRODUCTIVE SYSTEM

The main purpose of the male genital organs is to produce sperm cells and transport them to the female reproductive system. There is an overlap between the genital and urinary systems in men and women, with some of the organs being used in each system. The link is so close, that genital system disorders frequently cause symptoms in the urinary system or vice-versa. A urologist manages both system disorders of men and urinary disorders of women. In women, gynecologists do both. The main genital organs of men are the penis, testicles, the vas deferens (duct through which semen passes), the seminal vesicles, and the prostate gland.

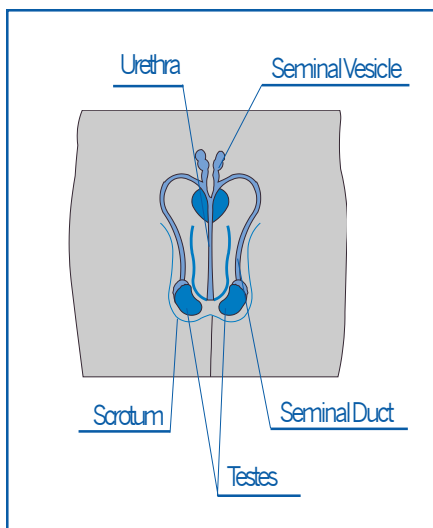
**Penis** The penis is a sexual organ and also transports urine. The urethra runs through the center of the penis and carries urine and semen. There are many blood vessels in the penis and during sexual arousal, these vessels send blood to three cylindrical, spoon-like structures that run parallel to the urethra along the length of the penis. As these structures fill with blood, an erection occurs.

**Testes** The testes are two oval organs about two inches long contained in a pouch of skin, called the scrotum. Sperm production is optimum at a temperature lower than the body, and so the testicles are housed in the scrotum. It hangs below the abdomen and behind the penis. In each testicle there is a tightly packed mass of coiled tubes surrounded by a protective capsule. The testicles begin to produce sperm cells for reproduction about the time of puberty and continues throughout life. In addition to producing sperm cells, the testicles secrete the male hormone, testosterone, which enters the bloodstream and plays an important role in development and maintenance of the typical masculine physical characteristics (facial hair, greater muscle mass, strength, and a deeper voice).

**Epididymis** Sperm cells that are constantly being produced by each testicle are transported to the epididymis (cord-like structure) and then stored in the seminal vesicles.

**Seminal Vesicle** Collects sperm from the epididymis and secretes fluids and secretions of the prostate gland for semen.

**Prostate Gland** The prostate gland contributes fluids to the semen, and among other things, appears to sustain the viability of the sperm in the acidic environment of the vagina. As a man ages, the prostate frequently enlarges. Sometimes this interferes with the flow of urine.





## TESTICLES AND SCROTUM DISORDERS

The testicles produce both sperm cells and testosterone. The location makes them vulnerable to injury. Tumors and growths are easily detected by self-examination.

### ■ TESTICULAR TORSION

Each testicle is suspended within the scrotum on a spermatic cord which contains the blood vessels that supply the testicle. Torsion (twisting) of these cords occurs with strenuous physical activity or without any apparent cause. It is not common.

#### SIGNS AND SYMPTOMS

Sudden, generally severe pain in one testicle; elevation of the testicle in the scrotum; nausea and vomiting; sensation of faintness. These are similar symptoms to inflammation.

#### TREATMENT

Occasionally, the twisted testicle can be manipulated into place.

#### SURGICAL TREATMENT

An early surgical procedure can save the testicle and return it to its normal position. If several hours elapse, the testicles will experience a lack of blood supply and have to be removed from the scrotum.

### ■ TESTICULAR FAILURE

This is an uncommon inability of the testicles to produce sperm, or sometimes, male hormones. The cause may be genetic, problems with sexual maturation, damage by trauma, or drug use. Although not life-threatening, the seriousness is reflected in the symptoms and signs.

#### SIGNS AND SYMPTOMS

Infertility; possible lack of sexual drive; delay of puberty for the development of male characteristics.

#### DRUG TREATMENT

Restoration of a normal sexual drive can often be achieved with replacement of male hormones (testosterone) – administered intramuscularly or by skin patches.

### ■ EPIDIDYMITIS

This is an inflammation of the coiled tube that transports sperm to the vas deferens. Usually only one testicle is affected. This is an acute condition that should be easily diagnosed. Epididymitis is often caused by sexually transmitted organisms and a sexual partner should be evaluated and treated for STD (sexually transmitted disease).

#### SIGNS AND SYMPTOMS

Inflammation and severe pain in the scrotum; swollen area is hot to touch.

#### TREATMENT

Rest and ice packs are required.

#### DRUG TREATMENT

Pain medication is helpful. It responds well to antibiotics.



## ■ SCROTAL MASSES

Scrotal masses have various causes including tumors, cysts, inflammation, physical injury, and inguinal hernia. The tumors may be cancerous or noncancerous. The tumors growing inside of the testicles are often malignant (cancerous). Those tumors located elsewhere around the testicles are usually noncancerous (eg, a common type of cyst or an inguinal hernia). (Hydrocele and varicocele are discussed later in this chapter.) Scrotal masses when discovered, should be evaluated by a physician. If the mass is a tumor, it must be removed before an accurate diagnosis can be made. Malignant tumors, if removed before they spread, respond well to treatment. Other, nonmalignant masses are not life-threatening.

## ■ HYDROCELE

The testicular hydrocele is a collection of watery fluid in the sheath that holds the testicle, most common in older men. Normally, the sheath holds enough water to lubricate the testicle. The fluid accumulates because of overproduction, or lack of reabsorption. The condition is not serious and surgery is not necessary unless the swelling and discomfort are painful.

## ■ VARICOCELE

This is a swelling in the scrotum caused by varicose (enlarged) veins. The blood backs up in the veins from the testicles because of a disorder with the valve located inside the veins. This is not a serious disorder but the blood backing up can cause male infertility. If this is the case, tying off the veins (ligation) can often restore fertility.

## ■ ORCHITIS

Orchitis is inflammation of the testicle. The most common cause is mumps in adult men. The mumps can be prevented with childhood vaccination. Orchitis can permanently damage one or both testicles and cause infertility. Rest and analgesia are used during the acute phase.

## ■ UNDESCENDED TESTICLE (CRYPTORCHISM)

Before birth, the testicles develop inside the male infant's abdomen. Usually they start to move down into their permanent place in the scrotum at one month before birth. A small percentage of male infants are born with one or both testicles undescended. In most of these babies, the testicles will move down in the first few years of life. Sometimes, the use of medication (male hormones) or surgery is necessary. Male hormones are more successful when given between 12 and 18 months of life.



## ■ CANCER OF THE TESTICLE

Testicular cancer often begins in the cells that produce sperm. Most tumors are diagnosed by self-examination and if detected early, respond more favorably to treatment. The cancer normally affects only one testicle. It is more common in younger men (15 to 35 years of age). If malignant, blood tests, x-rays, and other tests may be necessary to determine if the cancer has spread to other parts of the body. The most common type of tumor (seminoma) can be cured in nearly all cases if it is discovered early.

### SIGNS AND SYMPTOMS

A pea-sized, nonpainful lump on the testicle.

### SURGICAL TREATMENT

The primary treatment is surgical removal (with or without radiation therapy). If it is necessary to remove only one testicle, the healthy testicle can maintain the body's normal sexual and hormone-producing functions with hormone replacement. If both testicles are lost, infertility, and loss of male hormone production will result.

## ■ STERILIZATION (See Infertility)



## PENIS, URETHRA, AND BLADDER DISORDERS

The penis functions as a sexual organ and transports urine through the urethra (a small tube that runs through the center of the penis). The urine originates from the kidneys and is conveyed to the bladder, a storage pouch within the abdomen, before it is excreted through the urethra. The entire drainage system may be infected by an organism traveling from outside the body and upward. Most of the conditions affecting the urine drainage system is caused by a viral or bacterial infection.

### ■ CYSTITIS

This is an inflammation of the bladder, most often as a result of an infection. Inflammation in older men often occurs because of an enlarged prostate that has interfered with the urine drainage and causes painful urination. Cystitis is uncommon in men and common in women. If the underlying problem causing the infection is adequately treated, the recurrence rate is lessened. Uncomplicated cystitis is not serious if treated promptly and correctly.

#### SIGNS AND SYMPTOMS

Painful urination.

#### DRUG TREATMENT

Proper antibiotics are given.

#### SURGICAL TREATMENT

If the cystitis is related to another cause (prostate problems), surgery may be necessary.

### ■ PENILE WARTS

Warts on the penis are similar to warts found elsewhere on the body and are caused by a virus. They are harmless but highly contagious and sexually transmitted (both sexual partners will require treatment).

#### DRUG TREATMENT

The warts may be treated with a prescribed solution (podophyl- lum). Do not use over the counter wart medication -- they are designed for skin less sensitive than the penile skin.

#### SURGICAL TREATMENT

Cryosurgery (freezing), laser surgery, or electrodesiccation surgery is used to remove the warts with local or general anesthesia.



## ■ URETHRITIS

This is inflammation of the urethra. It is often caused by a sexually transmitted disease (STD), particularly chlamydia and gonorrhea — sometimes, no cause is found. In most cases, urethritis is easily treated. The affected person's sexual partner should be treated as well. Urethritis is occasionally associated with a form of arthritis (Reiter's syndrome). In a small number of cases, urethritis resists treatment, and other urinary complications may occur (eg, stricture, obstruction).

**SIGNS AND SYMPTOMS** A discharge from the urethra will vary with the infective cause; itching.

**DRUG TREATMENT** Antibiotics specific for the organism cultured are prescribed.

## ■ URETHRAL STRICTURE

This is a narrowing of the urethra that blocks the passage of urine. This is a rare condition. The causes include injury and chronic infections.

**SIGNS AND SYMPTOMS** Difficulty or inability to urinate.

**SURGICAL TREATMENT** The initial treatment is stretching the urethra with a thin instrument (called a sound) using a local anesthesia. Treatment often requires repeated dilatations. If the passageway does not stay open, additional surgery may be necessary (bladder neck resection).

## ■ BALANITIS

This is an inflammation and redness of the tip of the penis (glans). It is more common in uncircumcised males when the foreskin cannot be retracted. The underlying causes include urinary tract infections, irritation from clothing that rubs against the penis, from chemicals used in cleaning or manufacturing the clothing, and reactions to perfumed contraceptive creams. Men with diabetes are prone to balanitis as a result of high sugar levels in the urine. The principal treatment is cleanliness. If the penis is uncircumcised, pull back the foreskin and clean the head of the penis beneath it. Perform self-examination at this time for sores, growths, or tumors.

**DRUG TREATMENT** The local use of antibiotics and antifungal creams and ointments are helpful. Occasionally, oral antibiotics are used. Circumcision is considered for chronic recurring balanitis.



## ■ CURVATURE OF THE PENIS (PEYRONIE'S DISEASE)

This is a painful bend in the penis during an erection, making sexual intercourse difficult. It affects men between the ages of 40 and 60 years. Scar tissue (or plaque) forms inside the penis. The plaques can be felt beneath the skin. If the symptoms are mild, no treatment is recommended. If the condition worsens, removal of the plaques by surgery may be necessary.

## ■ PARAPHIMOSIS

This occurs when the foreskin of an uncircumcised penis becomes trapped in the retracted position and cannot be returned over the glans or head of the penis. This should be reported to a physician immediately.

### SIGNS AND SYMPTOMS

Painful swelling in the end of an uncircumcised penis.

### SURGICAL TREATMENT

Full or partial circumcision is necessary to release the foreskin. If prompt treatment is given, there is usually no permanent damage.

## ■ CANCER OF THE PENIS

This is very rare, and when it occurs, it most often affects an uncircumcised male. Without surgical removal and microscopic examination tests, these may be indistinguishable from ordinary penile warts, which are harmless. As the malignancy grows, pain, swelling, and bleeding occur, which requires immediate medical examination, usually by a urologist. If cancer is found, other tests may be done to determine if the tumor has spread. As with any other form, cancer of the penis can be life-threatening. The earlier it is detected and treated, the better are the chances for cure.

### SIGNS AND SYMPTOMS

In its early stages, pimple-like, painless sores on the end of the penis. Later stages, pain; swelling; bleeding.

### DRUG TREATMENT

Radiation therapy and chemotherapy may be used to prevent or reduce the spread of disease to other parts of the body.

### SURGICAL TREATMENT

Removal of the malignant growth and possibly adjacent portions of the penis. Often, a portion of the penis can be left so that sexual activity and urination can continue.



## ■ URINARY INCONTINENCE

Urinary incontinence (unable to control urination) may have many causes. The muscular and neural systems that control the retention or release of urine can be affected by illness, medication, urinary tract infections, prostate gland problems, an operation of the urinary tract, and even psychological factors, such as depression, anger, confusion, or fatigue. In children, bed-wetting is common. After puberty, however, urinary incontinence is rare until later years of life. Urinary incontinence is more frequent in women than men. In many cases, treating the underlying cause with drugs, modification of daily habits, or other special aids is beneficial.

### SIGNS AND SYMPTOMS

Inability to control urination, part or all of the time; involuntary urination upon coughing, sneezing, laughing, running, or other physical activity involving the abdominal muscles (stress incontinence).

### TREATMENT

Exercises to strengthen the pelvic muscles or bladder training techniques to regain control. Often, a simple adjustment in daily routine (eg, changing the time you take medications, or the hours you sleep) can make a difference. With some people, remembering when to go to the bathroom is difficult and the use of an alarm may help. It may also be wise to have a urinal nearby if the bathroom is distant or if handicaps make getting there in time a problem.

### SPECIAL AIDS

Absorbent undergarments. Devices can be used to catch the urine, such as a type of condom that fits over the penis and drains urine through a tube into a plastic bag. There is also a type of foam rubber clamp that can be worn around the penis. For more difficult cases, a catheter is placed through the penis to the bladder, to drain the urine to an external plastic bag (the plastic bags are drained and cleaned as needed).

### DRUG TREATMENT

Some drugs for incontinence are helpful.

### SURGICAL TREATMENT

The underlying cause of incontinence, such as prostate gland problems, sometimes requires surgical correction. An artificial device (implant) allows the patient to control its open and close settings to allow continence with the use of the catheter.



## PROSTATE GLAND DISORDERS

The prostate gland is located within the pelvis, beneath the bladder. It surrounds the urethra through which urine passes. The gland plays an important function in reproduction by contributing fluids to the semen. As men age, it is common for the prostate gland to enlarge and interfere with urination. This can be treated medically and surgically.

### ■ ENLARGED PROSTATE

An enlarged prostate gland is also called benign prostatic hypertrophy. The National Institutes of Health reports that more than four of every five men between the ages of 50 and 60 have benign (nonmalignant) enlargement of the prostate.

**SIGNS AND SYMPTOMS** Need to urinate frequently, difficulty starting to urinate; decreased strength and force of the urine stream; inability to sleep through the night without getting up to urinate; dribbling after urination; complete inability to urinate (an emergency).

**DRUG TREATMENT** Medication (to reduce the size of the prostate) has reduced the need for surgery.

**SURGICAL TREATMENT** Surgery can reduce the size of the prostate gland, or it can be removed. The most common surgical procedure is called a transurethral prostate resection (TUR), which is performed without an incision in the abdomen. However, if the gland is too large, surgical removal is done through an incision. Cryosurgery (freezing), a newer technique, is currently gaining interest for managing benign (noncancerous) prostatic enlargement.

### ■ ACUTE PROSTATITIS

This is a sudden infection of the prostate gland. A portion of the prostate, or all of it, will be inflamed. Prompt treatment is recommended. Untreated acute prostatitis can lead to abscesses of the prostate or complete retention of urine.

**DRUG TREATMENT** Acute prostatitis is generally treated with antibiotics, orally or intravenously. In severe cases, hospitalization is necessary. In some cases, chronic (recurring) prostatitis results.

### ■ CHRONIC PROSTATITIS

Chronic prostatitis is a long lasting or recurring infection of the prostate gland. The symptoms are milder than the acute form. This ailment may be associated with other urinary tract problems.

**SIGNS AND SYMPTOMS** Discomfort with urination and ejaculation. It varies with different people from slight discomfort to severe pain.



**TREATMENT** Hot sitz baths, and drinking more fluids (two quarts of water per day).

**DRUG TREATMENT** Antibiotics are used to treat infections and some anticholinergic drugs help with the symptoms by reducing spasms of the muscles innervating the bladder.

## ■ PROSTATE CANCER

Cancer of the prostate is common — it ranks third among the types of cancer that kill American men. It occurs most frequently between the ages of 50 to 70 years. Its cause is unknown and is not linked to benign (nonmalignant) enlargement of the prostate. If detected early, cancer of the prostate can be cured. It can be detected before it causes symptoms by digital rectal examination and screening with Prostatic-specific Antigen (PSA) testing (blood test) which should be routinely done on all men over 50 years of age. All treatments, regardless of type, are expected to have side effects.

**SIGNS AND SYMPTOMS** Decreased strength of the urine stream; dribbling after urination; difficulty starting to urinate; hip or back pain; urination or ejaculation is painful; blood or pus in the urine.

**DRUG TREATMENT** Promising new drugs, including leuprolide and flutamide, are now available. The administration of female hormones is also used when the tumor has metastasized (spread to other body parts).

**SURGICAL TREATMENT** Surgical removal of the prostate, with lymph nodes and surrounding tissue, is often performed hoping to preserve both continence and sexual function without compromising the treatment. For advanced cancer with metastases, castration or orchiectomy (removal of the testicles) is done to stop the production of testosterone (male hormone), which supports the growth of the cancer.

**RADIATION THERAPY** Cancers not treatable with surgery (and in older men) are treated with radiation therapy.

## STAGES OF PROSTATE CANCER

**Stage I** Cancer confined within the prostate; is not felt or detected, but found incidentally (eg, after surgery).

**Stage II** Cancer, within the prostate, usually felt on digital rectal examination.

**Stage III** Cancer found outside the prostate in adjacent tissues.

**Stage IV** Cancer spread outside the gland and metastasized to distant tissues.



## SEXUAL DISORDERS

These problems include difficulties in achieving an erection, ejaculating too soon (premature ejaculation), and failure to ejaculate. Male sexual problems range in seriousness from minor to some that may be very damaging to one's self image or sex life. Fortunately, effective treatment is available. The cause of, and the solution to, such sexual problems frequently involve the sexual partner as well. Consultation with a physician is recommended to identify and treat these problems.

### ■ IMPOTENCE (ERECTILE DYSFUNCTION)

This is a persistent inability to obtain an erection or sustain it long enough for sexual intercourse. It is important to know that an occasional episode of impotence happens to most men and is perfectly normal. When impotency proves to be a pattern or a persistent problem, however, it can be detrimental to a man's image and sexual life. The penis has two cylindrical, sponge-like structures that run along its length, parallel to the urethra. During arousal, these spongy tissues fill with blood and cause an erection. Diminished or loss of sexual desire is not the same thing as impotence. Nonphysical causes of impotence account for more than one-half of the cases of impotence. Relaxation, avoidance of stress, and focusing on the moment of sexual arousal may be of help. Impotence is an occasional side effect of psychological problems such as depression. Physical causes account for nearly one-half of the cases of impotence (eg, diabetic neuropathy, cardiovascular disorders, prescription medications, operation for prostate cancer, injured spinal cord, multiple sclerosis, hormone disorders, alcoholism, or other forms of drug abuse). Impotence may be treated once the cause is identified. Men usually see urologists for this treatment.

#### TREATMENT

The treatment varies depending on the cause determined by an endocrinologist or urologist. It may include psychological counseling (if related to anxiety, panic, depression), testosterone (if related to a deficiency of male hormone), erectile devices and implants (when other treatments fail), external vacuum devices (when filling of the erectile tissue is not otherwise possible), and new medications (injected into the penis or urethra), and newer oral medications (Viagra or sildenafil citrate).

### ■ PREMATURE EJACULATION

Ejaculation that occurs just before or shortly after penetration is considered premature. Often associated with problems in a relationship, it may also be due to inadequate control over the ejaculatory process and does not have a physical cause. This is considered a psychological problem requiring behavioral therapy, which is successful when both partners participate.



## ■ PRIAPISM

Priapism is a prolonged, often painful, penile erection that lasts for more than four to six hours and is not associated with sexual desire. Causes are often unclear but have been found to include leukemia or sickle-cell anemia. Prolonged erections also can result from the use of drugs and injection into the penis to correct erectile problems. The condition must be immediately treated by a urologist to prevent permanent damage to the penis.

## ■ RETROGRADE EJACULATION

In retrograde ejaculation, orgasm occurs, but the ejaculate enters the bladder. This condition usually arises after surgical removal of an enlarged prostate (when the muscles around the bladder neck are removed). Instead of sperm being expelled through the penis, it enters the urethra near the opening of the bladder and is flushed out with urine. Although a man may be unable to have children without special assisted techniques, he retains his sexual drive, potency, and ability to have an erection and orgasm.



## BREAST ABNORMALITIES IN MEN

### ■ GYNECOMASTIA

Enlargement of the male breasts (gynecomastia) can occur on one or both sides. It is usually triggered by an imbalance in the normal ratio of androgen to estrogen in the blood supply — either androgen production is decreased, or estrogen levels are increased. Gynecomastia can occur normally in a newborn, at adolescence, or with aging. It can also result from several endocrine disorders and some medications. Gynecomastia should be evaluated by a health provider.

## TESTS AND PROCEDURES FOR MEN

### ■ NOCTURNAL PENILE TUMESCENCE TEST

Sleep-associated erections can be monitored with this test. Normal males have three to five erections per night's sleep. Both intrapenile injections and penile tumescence tests may be used to complete a diagnostic evaluation.

### ■ SEMEN ANALYSIS

Semen is collected from a male after two or more days of abstinence. Ideally, two or more samples are taken over a 75 to 90 day period. A normal sperm count is at least 20 million sperm per milliliter. At least 50 percent of the sperm should be moving, with a significant number moving rapidly forward, and at least 50 per cent of the sperm should appear normal on microscopic examination. This test is performed as part of an infertility examination.

### ■ VASECTOMY (STERILIZATION)

About one-half million men in the United States have vasectomies each year. It is often performed through a small incision in the scrotum through which the vas (tubes that carry sperm from the testes to the urethra) are tied. No stitching is required and the operation usually takes no more than ten minutes. Recovery takes about a week. A semen analysis must be done to make sure the disruption was successful before relying on the sterilization. Vasectomies are generally reversible. A vasovasectomy is rejoining of the two ends of the vas — this procedure has a high success rate and a pregnancy rate of up to 60 percent can result.



## WHAT TO DO

SEVERITY LEVEL	SYMPTOM	POSSIBLE DIAGNOSIS
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Make an appointment to see your doctor

Sudden severe pain in one testicle, elevated testicle, nausea and vomiting, fainting sensation

Testicular torsion

Inflammation and severe pain in scrotum, swollen area is hot to touch, responds to antibiotics

Epididymitis

A pea-sized, nonpainful lump on testicle

Testicular cancer

Enlarged prostate symptoms accompanied by complete inability to urinate

Enlarged prostate

Painful urination

Cystitis

Discharge from urethra with itching

Urethritis

Difficulty urinating

Urethral stricture

Painful swelling at end of uncircumcised penis

Paraphimosis

Pimple-like, painless sores on end of penis, later stages are pain, swelling, bleeding

Penile cancer

Need to frequently urinate, difficulty starting to urinate, having to urinate during the night, dribbling after urination

Enlarged prostate

Discomfort urinating and ejaculating

Prostatitis

Decreased urine stream, dribbling after urination difficulty in starting to urinate, hip or back pain, painful urination or ejaculation, blood or pus in urine

Prostate cancer



Try the home treatment outlined in this chapter

Inability to control urine, urinating when coughing, sneezing, laughing, etc. (when severe, call physician)

Urinary incontinence

