

Prostate Gland Disorders



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St. Maarten Medical Center

The Male Anatomy

A male's prostate gland is located in the floor of the pelvis surrounding the urethra between the bladder and the penis. The prostate is positioned immediately in front of the rectum, this being the area from which it is examined.

Function of the Prostate

Semen is composed of sperm (from the testes) and a mixture of fluids secreted by the seminal vesicles, bulbourethral glands and the prostate gland. A milky alkaline fluid, which neutralizes the acidic environment of the vagina, semen is secreted by the prostate gland to impart maximum mobility to the sperm. The gland contains muscle fibers and contracts in rhythm with the vasa deferential to help ejaculation.

Prostate Disorders

Three principal disease processes affect the prostate gland:

- **Infection**
- **Benign enlargement** (a non-cancerous increase in size of the gland)
- **Cancer**

Infection

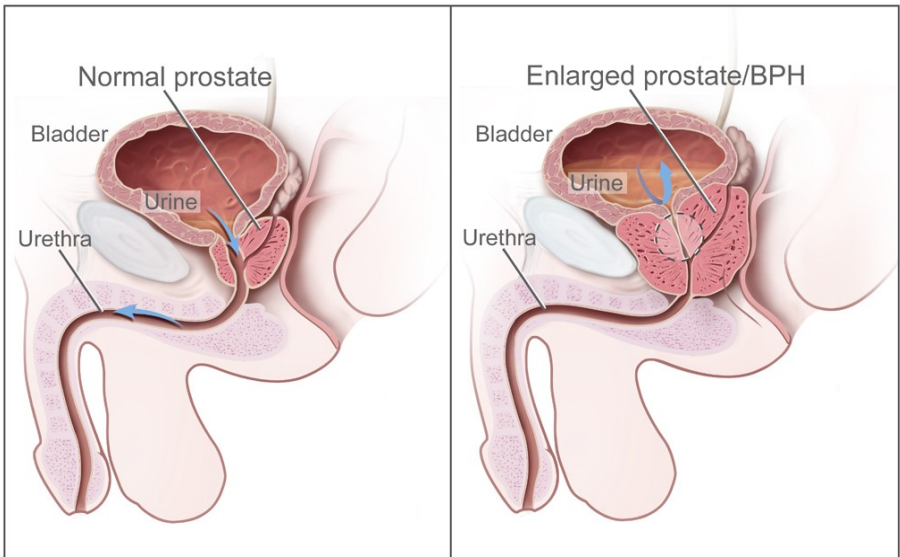
Bacteria that cause infections in the bladder and the kidney may also affect the prostate. This may occur following infection of the urinary tract, surgery or catheter insertion. Acute infection causes pain, tenderness, fever, chills and burning urine. Chronic infection manifests as subtle or vague symptoms, such as pelvic pain and discomfort, low back pain or burning urine.

So called '*a bacterial prostatitis*' may be due to either Chlamydia or Urea

plasma organisms. These are usually sexually transmitted. **Infection of the prostate gland may be so mild that the male is unaware of it.** Testing of prostatic secretions and urine will lead to identification of the organism and appropriate antibiotic treatment.

Benign Enlargement

Benign enlargement of the prostate is extremely common in men over 50 years of age, with 70% of men by the age of 60 and 90% by the age of 70 having the condition. As a result, your prostate becomes a uneven, rubbery mass that can be felt via a rectal examination.



Cross section of the male urinary tract showing a normal and an enlarged prostate gland.

Such enlargement in the confined space of the pelvis, results in compression of the urethra and interference with passing urine. This produces the characteristic clinical symptoms of delayed starting, poor weak flow, terminal dribbling, and often the retention of a small pool of urine in the bladder. Occasionally men experience acute retention or an inability to pass any urine at all. This results in painful overfilling of the bladder that must be relieved by insertion of a catheter. As a result, bladder and kidney infections

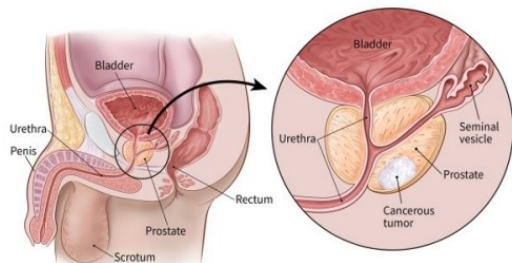
are much more common in men with this condition. Obstruction or infection, or both, may cause severe kidney damage in some people. Despite the common nature of this complaint, surgical treatment is only required by 5 to 10 percent of men diagnosed with benign enlargement. If surgery is necessary, a prostatectomy or partial reduction in the volume of the gland will relieve the obstruction to the urine outflow.

Cancer

Cancer of the prostate gland is very common, generally in men over the age of 50. Statistics indicate that it ranks among the most common cancer and cause of cancer death in men. The cause of prostate cancer is unknown; however, it often occurs along with the benign (non- cancerous) enlargement of the prostate gland. This is coincidental, since they are not believed to be related as cause and effect and men with benign prostatic enlargements do not necessarily develop cancer. It also can appear in men who undergo surgery for benign enlargement are still at risk for developing prostate cancer because all of that prostate is not removed.

Male sex hormones play a role in cancer growth. Drugs that reduce their levels or block their action are often used in the treatment of prostate cancer. In its early stages prostate cancer is usually an insidious, symptomless disease.

Consequently it may not be discovered until it is quite advanced. Often the tumor is discovered incidentally after the removal of excessive benign tissue,



which has been blocking urinary flow. Prostate cancer may spread to other pelvic areas i.e. lymph glands and bones, where it can cause severe pain. **If prostate cancer is diagnosed at an early stage, it is potentially curable.**

Treatment

Treatment depends on how advanced the cancer is and the presence of other clinical factors that influence the state of health of the patient.

Surgery, radiotherapy and hormone therapy are available and may be used in varying combinations depending on individual circumstances. Some cases of very slow growing tumors may require no active treatment apart from simple observation.

Early Detection

Digital rectal examination combined with a blood test to measure prostate specific antigen (PSA), are useful tests for the early detection of prostate cancer. PSA is a protein produced by the cells in the prostate gland and is thought to play a role in preventing semen from coagulating. Infection, benign enlargement and prostate cancer can all produce detectable elevations in the blood levels of PSA. Estimation of the degree of elevation and the rate of elevation together with the findings of clinical examination often allow your doctor to distinguish the likely cause of a high PSA level. **Regular medical examination by your doctor is the key to early diagnosis.**



Following the clinical examination and blood test, there are complementary imaging scans (available from diagnostic imaging practices) that can further assist in the detection and diagnosis of an enlarged prostate. These examinations include ultrasound with or without biopsy, CT Scanning, and Magnetic Resonance Imaging (MRI).

Monitoring

PSA may be measured via a blood test prior to the commencement of treatment. Individual response to surgery, medication, progress or recurrence can then be monitored by repeat blood testing following treatment.

Prostate Specific Antigen (PSA) Test

The PSA test measures the level of PSA in a man's blood. Early diagnosis is done through frequent prostatic evaluation, which must start at the age of 40. This test is done with or without symptoms and requires the testing of the total and free PSA count, a prostate ultrasound and a digital rectal examination.

Total PSA Ratio	Prostate Cancer Risk
Higher than 10 ng/ml	High risk
Between 4.1 ng/ml - 9.9 ng ml	Moderate risk
Lower than 4 ng/ml	Low risk

Diagnosis of Prostate Disorders

Cystoscopy

A cystoscopy is usually a safe and effective way of finding out if there is a problem with your bladder or the urethra. A cystoscopy may be recommended if you are getting pain, blood in your urine or repeated infections, or have an irritable bladder (a sudden and uncontrolled urge to pass urine). The procedure usually takes about

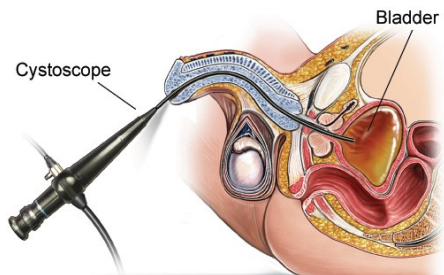


Figure 1
A flexible cystoscopy

five minutes. The urologist will pass the cystoscope into your urethra (see figure 1). Fluid will be passed fluid through the cystoscope and into your bladder to help them make the diagnosis. Your urologist will use the cystoscope to look for any problems in the lining of your bladder.

Uroflowmetry

Uroflowmetry is a simple, diagnostic screening procedure used to calculate the flow rate of urine over time. The test is noninvasive, and may be used to assess bladder and sphincter function.

Uroflowmetry is performed by having a person urinate into a special funnel that is connected to a measuring instrument.

The measuring instrument calculates the amount of urine, rate of flow in seconds, and length of time until completion of the void.

This information is converted into a graph and interpreted by a doctor. The information helps evaluate function of the lower urinary tract or help determine if there is an obstruction of normal urine outflow.



Uroflowmeter

Risk Factors

The common risk factors for prostate cancer are:

- Age 40 and above.
- Men of African descent (increased risk of 4 times more than men of Caucasian descent).
- A family history of prostate cancer (Father, uncle, or cousins with prostate disorders), or a mother with history of breast cancer.



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