

Prostate Health

Educational Guide

About the prostate gland

The prostate is a tubuloalveolar exocrine gland that is part of the male reproductive system. It can be variably sized but is usually about the size of a walnut. It is found behind the pubic bone, in front of the rectum, and below the bladder, and it surrounds the tube called the urethra. The urethra has two jobs – to carry urine from the bladder during urination, and to carry semen during ejaculation.

The main function of the prostate is to store and secrete a clear, slightly alkaline fluid that is 10-30% of the volume of the seminal fluid. This fluid, along with spermatozoa, make up semen.

The different areas of the muscular prostate gland are divided into lobes, which are also referred to as concentric zones.

These include:

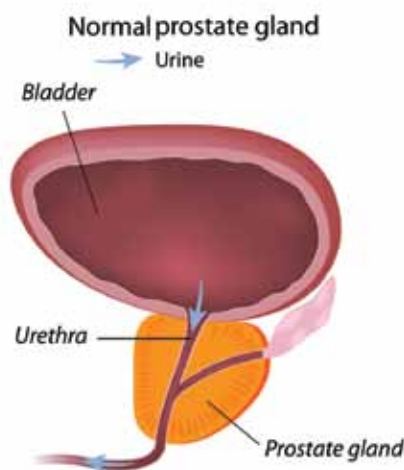
- Anterior fibromuscular zone (or stroma)
- Central zone (CZ)
- Peripheral zone (PZ)
- Transition zone (TZ)

The anterior fibromuscular stroma is where the urethral sphincter is located. This sphincter controls urination. Since it is largely muscle and fiber, and devoid of glandular components, neither cancer nor prostate enlargement can occur here. This zone accounts for approximately 5% of the weight of the prostate.

The central zone comprises about 20% of a normal prostate gland. This area is involved with the connection of the seminal vesicles to the prostate, and it surrounds the ejaculatory ducts. Tumors in the central zone account for about 25% of all prostate cancers.

The largest area of the prostate is the peripheral zone, which makes up to 70% of a normal prostate gland in young men. It is found in the posterior area of the prostate, and sometimes presents a shallow middle furrow, which can imperfectly separate the zone into a right and left lobe. These form the main mass of the gland and are located behind the urethra, then

connected by a band of tissue called the isthmus. The PZ can be located during a rectal examination, and, because it is the area where 70% of prostatic cancers originate, it is a starting point for doctors checking for prostate disease.



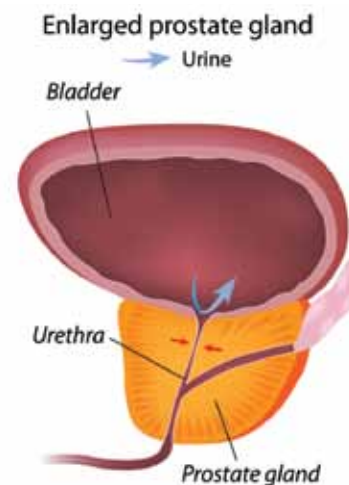
The last area is called the transition zone. Like the anterior stroma, it constitutes only about 5% of the prostate. This zone surrounds the proximal urethra and is the part of the prostate gland that naturally continues to grow throughout life. Although the TZ is very rarely associated with carcinoma, it is the exclusive site for the development of benign prostatic hyperplasia (BPH).

Prostate disorders

The prostate is vulnerable to a number of conditions as men age. Most prostate issues occur in men after the age of 40, although bacterial and viral prostatitis can manifest itself in younger men, as well as lower urinary tract symptoms (LUTs).

BPH The most common prostate condition is benign prostatic hyperplasia (BPH). The prostate gland goes through two major growth periods as men mature. During puberty it doubles in size. At about 25, the gland begins to grow again, and this second growth phase often eventually results in BPH. Though the prostate continues to grow, the enlargement usually doesn't cause problems until after age 50.

As the prostate enlarges, the thin layer of tissue surrounding it stops it from expanding. This causes the gland to press against the urethra, and the bladder wall becomes thicker and sensitive to irritation. The bladder begins to contract when



even small amounts of urine are present, causing the need to urinate more frequently. Eventually the bladder weakens and becomes unable to empty itself completely, leaving some of the urine in the bladder. The combination of a narrowing urethra and a partially emptied bladder cause many of the problems associated with BPH.

As with many conditions, the exact cause of BPH is not understood. BPH always occurs in older men and never develops in men who have had their testes removed before puberty, which indicates a relationship between the testes and the prostate as aging occurs.

Testosterone is an important male hormone produced in the testes throughout men's lives. As men age, the amount of testosterone produced diminishes which leaves a higher proportion of estrogen, a hormone found in men, usually in a lower concentration. When higher levels of estrogen occur in the prostate gland, it can increase the activity of substances that promote cell growth. Dihydrotestosterone (DHT) is another substance derived from testosterone in the prostate. As the level of testosterone diminishes with age, DHT continues to be produced and can accumulate. Since DHT is thought to impact the multiplication of prostate cells, it can be a contributor to BPH. Men who do not produce DHT do not develop BPH.



BPH symptoms arise from the obstruction of the urethra and loss of bladder function. Men can experience one or more of these symptoms, and they can vary from person to person. They include:

- A hesitant, interrupted or weak urine stream
- Urgency to urinate
- Leaking or dribbling
- More frequent urination, especially at night (nocturia)

Oddly, the degree of prostate enlargement does not seem to impact the severity of these symptoms. Some men with very little enlargement can experience more obstruction and severe symptoms, while men with a greatly enlarged prostate will experience few symptoms. While BPH is generally annoying, it can become serious over time, resulting in urinary tract infections, incontinence, bladder stones, or bladder or kidney damage. This is why it is important to recognize and treat BPH in its early stages.

Acute urinary retention is the inability to pass any urine at all. This may be triggered by over-the-counter cold or allergy medications, which contain a decongestant drug that may prevent the bladder opening from relaxing and emptying. When acute urinary retention occurs, it is important to contact your healthcare professional.

Prostatitis Prostatitis refers to any form of inflammation in the prostate gland, and is a common urological condition. It differs from BPH in that the inflammation is almost always caused by a pathogen such as bacteria. Prostatitis can less commonly be caused by virus, parasites, and fungi.

The diagnosis and treatment of prostatitis differs from BPH, and requires the counsel of a healthcare professional. At that

time, it can be determined if the swelling is BPH, or one of four categories of prostatitis:

- Acute bacterial prostatitis
- Chronic bacterial prostatitis
- Chronic prostatitis/chronic pelvic pain syndromes, Pelvic Myoneuropathy
- Asymptomatic inflammatory prostatitis

LUTs Lower Urinary Tract symptoms are often associated with BPH. While BPH itself is not life-threatening, when coupled with LUTs, it can diminish the quality of life because of annoying, painful, and inconvenient symptoms. Studies have shown that a diuretic-induced increase in urinary output can bring about a significant increase in contractility of the bladder and of bladder weight, and an increase of both the capacity and the compliance of the bladder.



The role of PSA

There has been a great deal of press about PSA and how PSA levels are an important measure of prostate health. Prostate specific antigen (PSA) is a protein produced in the prostate and secreted in large amounts in male semen. It is also found in minute quantities in the bloodstream. Elevated levels of PSA in the blood stream are often an indication of prostate cancer, which is why doctors will routinely monitor PSA levels in men over 50.

PSA may actually get into the bloodstream accidentally, since it serves no purpose in the blood. Most PSA in the blood is bound by a variety of protective blood proteins. These proteins inactivate the PSA molecule. Most of the PSA in a man's bloodstream are bound, or "complexed" and PSA levels were based on the amount of complexed PSA in the blood. The measure of PSA has recently been divided into complexed PSA and "free PSA." While free PSA is often lower in men with prostate cancer, other benign conditions can also create lower free PSA levels. BPH is a benign prostate condition that can elevate total PSA levels. Testing for the relationship between free PSA and total PSA levels can help determine if further evaluation for prostate cancer is necessary. The use of free PSA is still a matter of scientific study and debate, and a healthcare professional will help men decide the best course of action once PSA levels have been determined and evaluated.

Life style suggestions for better prostate health

As with almost all aspects of wellbeing, prostate health can be maintained or improved with an overall healthy lifestyle.

When dietary factors and physical exercise are included in a program for prostate health, symptoms can be reduced, and drug therapy and even surgery can be avoided. Here are some tips men can incorporate into their lives for better prostate health:



Physical factors and exercise ideas

- Take time to urinate when it is convenient
- Know that cold weather and immobility can increase urinary retention
- Keep warm
- Incorporate stress reduction techniques if stress is a factor
- Exercise regularly, at least 4 times a week (consider Kegel exercises to help prevent urine leakage)

Diet and nutrition choices

- Avoid alcohol, coffee, and other fluids after dinner
- Drink tea (green, red, herbal) for the flavonoids
- Avoid polyunsaturated fats
- Limit consumption of red meat
- Avoid dairy products, especially butter
- Eat at least 5 helpings of vegetables and fruit each day
- Avoid processed flour and sugar. Use whole grains.

Pharmaceutical factors

- Avoid decongestants and antihistamines
- Consider herbal diuretics if necessary as some pharmaceuticals interfere with other much-needed medications
- Avoid antidepressants (unless approved by physician)
- Avoid drugs that treat spasticity

About Us

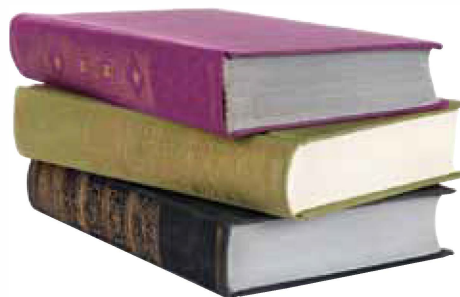
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