

Benign Prostatic Hyperplasia (BPH)

Throughout a man's life, his prostate may become larger and start to cause problems as he ages. But what are some of those problems? How do I know if I have BPH? When should I see a doctor? What kinds of tests will my doctor perform? The following should help answer these questions as well as others.

What is the prostate?

The prostate is part of the male reproductive system, is about the same size and shape as a walnut and weighs about an ounce. It is located below the bladder and in front of the rectum, and surrounds the urethra, the tube-like structure that carries urine from the bladder out through the penis. The main function of the prostate is to produce ejaculatory fluid.

What is BPH?

Benign prostatic hyperplasia (BPH), also known as lower urinary tract symptoms (LUTS), is a common urological condition caused by the non-cancerous enlargement of the prostate gland in aging men. As the prostate enlarges, it can squeeze down on the urethra. This can cause men to have trouble urinating leading to the symptoms of BPH.

What are some of the risk factors for BPH?

Risk factors for developing BPH include increasing age and a family history of BPH.

What are some of the symptoms associated with BPH?

Since the prostate surrounds the urethra just below the bladder, its enlargement can result in symptoms that irritate or obstruct the bladder. A common symptom is the need to frequently empty the bladder, sometimes as often as every one to two hours, especially at night. Other symptoms include the sensation that the bladder is not empty, even after a man is done urinating, or that a man cannot postpone urination once the urge to urinate arises. BPH can cause a weak urinary stream, dribbling of urine, or the need to stop and start urinating several times when the bladder is emptied. BPH can cause trouble in starting to urinate, often requiring a man to push or strain in order to urinate. In extreme cases, a man might not be able to urinate at all, which is an emergency that requires prompt attention.

How is BPH diagnosed?

In order to help assess the severity of such symptoms, the American Urological Association (AUA) BPH Symptom Score Index was developed. This diagnostic system includes a series of questions that ask how often the urinary symptoms identified above occur. This helps measure how severe the BPH is — ranging from mild to severe.

When a doctor evaluates someone for possible BPH, the evaluation will typically consist of a thorough medical history, a physical examination (including a digital rectal exam or DRE), and use of the AUA BPH Symptom Score Index. In addition, the doctor will generally do a urine test called a urinalysis. There are a series of other studies that may or may not be offered to a patient being evaluated for BPH depending on the clinical situation. These include:

1. prostate specific antigen (PSA), a blood test to screen for prostate cancer
2. urinary cytology, a urine test to screen for bladder cancer
3. a measurement of post-void residual volume (PVR), the amount of urine left in the bladder after urinating
4. uroflowmetry, or urine flow study, a measure of how fast urine flows when a man urinates
5. cystoscopy, a direct look in the urethra and/or bladder using a small flexible scope
6. urodynamic pressure-flow study that tests the pressures inside the bladder during urination
7. ultrasound of the kidney or the prostate

When should I see a doctor about BPH?

A man should see a doctor if he has any of the symptoms mentioned previously that are bothersome. In addition, he should see a doctor immediately if he has blood in the urine, pain with urination, burning with urination or is unable to urinate.

Frequently asked questions:

Is BPH a rare condition?

No, it is very common. It will affect approximately 50 percent of men between the ages of 51 and 60 and up to 90 percent of men over the age of 80.

Does BPH lead to prostate cancer?

No, BPH is not cancer and cannot lead to cancer, although both conditions can exist together. There are usually no symptoms during the early stages of prostate cancer, and so yearly physical examinations and PSA tests are highly recommended to eliminate cancer diagnosis.

Are there risks in not seeking treatment for BPH?

In the majority of men BPH is a progressive disease. It can lead to bladder damage, infection, blood in the urine, and even kidney damage. It is therefore important for men with this condition to continue to be followed.

Which type of drugs are the best?

To date, there is not enough research data to predict who will respond to medical therapy or which drug will be better for an individual patient. There are a variety of drugs available and, in some men, a combination of drugs may work best.

How do I know if oral medications are the best treatment for me?

If you are diagnosed with BPH, you should discuss all treatment options with your urologist. Together, you can decide whether medication, minimally invasive therapy or surgical treatment is best for you.

What are some of the medical treatments available for BPH?

Alpha blockers: These drugs, originally used to treat high blood pressure, work by relaxing the smooth muscle of the prostate and bladder neck to improve urine flow and reduce bladder outlet obstruction. Although alpha blockers may relieve the symptoms of BPH, they usually do not reduce the size of the prostate. They are usually taken orally, once or twice a day and they work almost immediately. Commonly prescribed alpha blockers include: alfuzosin, terazosin, doxazosin and tamsulosin. Side effects can include headaches, dizziness, light-headedness, fatigue and ejaculatory dysfunction.

5-alpha-reductase inhibitors: Finasteride and dutasteride are oral medications that work completely different than alpha blockers. In select men, finasteride and dutasteride can relieve BPH symptoms, increase urinary flow rate and actually shrink the prostate though it must be used indefinitely to prevent recurrence of symptoms. Studies suggest that these medications may be best suited for men with relatively large prostate glands. It may take as long as six months to a year, however, to achieve maximum benefits from this drug. Side effects can include impotence, decreased libido and reduced semen release during ejaculation.

What are some of the minimally invasive treatments available for BPH?

Prostatic stent (stenting): Anesthesia is not required for this procedure. The technology involves placing a spring-like contraction inside the prostatic part of the urethra to hold it open. There are many different kinds of stents but their overall use is limited. This is usually best suited for patients who have many medical problems or who are high-risk for surgery. Serious complications include urinary incontinence, dislodgement of stent position, stone formation on the stent with blockage and difficulty removing the stent. Minor complications include urinary frequency and urgency, dribbling of urine, discomfort and light bleeding. Patients with certain conditions are often advised against stent placement including those with strictures (narrowing) in the urethra, urinary infection, bladder stones, weak bladder and cancer, and patients who will be undergoing other procedures performed through the urethra soon after stent placement (e.g., treatment of kidney stones). Generally, prostatic stents are used for the same patients who would otherwise use an indwelling catheter or transurethral microwave thermotherapy (TUMT).

High-intensity focused ultrasound (HIFU): Anesthesia is usually required for this procedure. A special ultrasound probe is placed into the rectum near the prostate. Ultrasound waves heat the prostate up to very high temperatures, which causes destruction to the prostate tissue. The heated prostate tissue is destroyed and initially swells but then shrinks. The need for catheterization due to retention of urine and blood in the urine has been a problem postoperatively.

Holmium Laser Ablation of the Prostate (HoLAP): Holmium laser treatment (also known as HoLAP - Holmium Laser Ablation of the Prostate) uses laser energy to remove obstructing prostate tissue. A small flexible fiber delivers laser energy to the prostate. The physician controls the direction and delivery of the laser energy, rapidly vaporizing the obstructing tissue. Once the tissue has been vaporized, urine flow may be restored.

The procedure may be completed in an hour or less. The surgical time depends upon the size of your prostate, the amount of prostate removed, the surgical technique and the power of the laser used by your doctor.

You may go home after a few hours or an overnight stay. You will almost always go home in less than 24 hours.

What are the reasons for undergoing the procedure?

HoLAP is a minimally invasive treatment that uses laser energy designed to alleviate BPH symptoms and reduce some of the traditional complications usually associated with traditional surgery. Holmium treatment may provide immediate symptom relief and improve your quality of life.

Intended benefits of HoLAP

- Potential immediate relief of symptoms
- Virtually bloodless
- o Reduced risk of bleeding or transfusion
- o Limited or no catheterization required
- Outpatient procedure
- o Generally return home in 24 hours or less
- o Generally recover and return to normal activities rapidly
- Potentially long lasting results
- Can be performed while on anticoagulant medication like Coumadin® (warfarin sodium)
- May eliminate need for drugs that were taken to relieve BPH symptoms
- There are generally no commonly expected sexual side effects from a holmium ablation treatment.
- Impotence and incontinence have not been reported after holmium ablation. Some men may experience retrograde ejaculation

Holmium laser enucleation of prostate (HoLEP): After the patient receives anesthesia, the surgeon inserts an instrument called a resectoscope through the penis into the urethra. A visual lens and laser are passed through the hollow center of the instrument. The prostate tissue is vaporized using the holmium:YAG laser. There is very little bleeding and recovery time is cut significantly. Typically, the patient has a catheter removed the next day and stays overnight in the hospital one day.

Interstitial laser coagulation: Anesthesia is usually required for this procedure, but patients can usually go home the same day. The technology involves placing a "cystoscope" (metal tube through which the visual lens and laser can be passed). A laser is used to pierce through into the prostate and the laser energy burns the tissue. Studies to date have shown limited long term benefits.

Transurethral electroevaporation of the prostate (TUVP): After the patient receives anesthesia, the surgeon inserts an instrument called a resectoscope through the penis into the urethra. An electrode moves across the surface of the prostate and transmits current that vaporizes prostate tissue. The vaporizing effect penetrates below the surface area being treated so underlying blood vessels are coagulated and sealed. Bleeding and fluid absorption are minimal and patients can usually return home without a catheter after an overnight hospital stay.

Transurethral microwave thermotherapy of the prostate (TUMT): This is an office-based procedure performed with topical and oral pain medication and does not require anesthesia. Computer-regulated microwaves are sent through a catheter to heat portions of the prostate. A cooling system is required in some types for better tolerance. Traditionally, the best use of this procedure has been for patients who have too many medical problems for more invasive surgery or for patients who truly wish to avoid any type of anesthesia. Benefits are that there is no need for anesthesia and there is no blood loss or fluid absorption (these would be significant benefits in a person with a weak heart). Patients usually go home the same day. Many urologists have the technology available in their practice and results are pretty reliable regardless of who performs the procedure. The use of TUMT has been expanding to a broader patient population and there are several types of TUMT machines available.

Transurethral radio frequency needle ablation of the prostate (TUNA): The procedure involves anesthesia and medications to make the patient sleepy. The technology involves heating of tissue using radio frequency energy transmitted by needles inserted directly into the prostate. High frequency radiowaves heat the prostate up to very high temperatures. The heated prostate tissue is destroyed and initially swells but then shrinks. Most men require a catheter for a period of time after this procedure. Advantages in the use of TUNA include the limited anesthesia requirement, the ability to perform the procedure in an office setting and avoidance of serious complications sometimes associated with other procedures.

Photoselective vaporization of the prostate (PVP): This is fast becoming a very popular procedure performed either in a well equipped office or as an out-patient at the hospital. It uses a high-powered laser that vaporizes the obstructing prostate tissue with minimal bleeding or side effects. This procedure can serve to get men off of medical therapy. It is effectively replacing more invasive surgical treatment.

Catheterization: Placement of a catheter into the bladder will temporarily drain urine. Catheters can be placed intermittently every six to eight hours—clean intermittent catheterization—or left in place for one to three months at a time (indwelling). Catheters can be placed either through the urethra or by making a small puncture into the bladder above the pubic bone (called a suprapubic tube). Infection is the biggest risk of having a catheter in place for long periods, as bacteria can stick to the surface of the catheter, making it difficult for the body's immune system or antibiotics to clear the organisms. Another risk is that after a few years there is a higher risk of bladder cancer due probably to the long-term irritation caused by the catheter sitting in the bladder. Catheterization, performed by the individual or a caregiver every six to eight hours, minimizes the risk of infection and cancer compared with an indwelling catheter. Catheters are most useful as a treatment of choice for temporary drainage while waiting for medication to start working, surgery to be scheduled, or clearance of infection. They also might be the most appropriate choice for a patient with multiple medical problems and a short life expectancy, where the risk and discomfort of surgery outweigh the risk of infection or cancer. Catheterization is the treatment of choice over medications or surgery for patients who have neurogenic bladder in addition to prostatic obstruction.

When is surgical treatment suggested as a form of treatment?

When medical therapy fails, surgery is required to remove the obstructing tissue. Surgery is almost always recommended for men who are unable to urinate, have kidney damage, frequent urinary tract infections, significant urethral bleeding or stones in the bladder.

What are the different surgical treatments available?

Removal of the prostate can be accomplished in several different ways. The location of the enlargement within the prostate and the patient's general health will help the urologist determine which of the three following procedures to use.

Transurethral resection of the prostate (TURP): Transurethral resection is the most common surgery for BPH. In the United States, approximately 200,000 people have TURPs performed each year. After the patient receives anesthesia, the surgeon inserts an instrument called a resectoscope through the tip of the penis into the urethra. The resectoscope contains a light, valves for controlling irrigating fluid and an electrical loop that cuts tissue and seals blood vessels. With this instrument, obstructive prostate tissue is removed one piece at a time. The removed tissue pieces are carried by the irrigating fluid into the bladder and then flushed out and sent to a pathologist for examination under a microscope. At the end of the procedure, a catheter is placed in the bladder through the penis. The bladder is continuously irrigated with fluid through the catheter in order to monitor bleeding and prevent blood from clotting and obstructing the catheter. Since there are no surgical incisions with this procedure, patients normally stay in the hospital only one to two days. Depending on surgeon preference, the catheter may be removed while the patient is still in the hospital or the patient may be sent home with the catheter in place, attached to a leg bag for convenience and removed several days later as an outpatient procedure.

Transurethral incision of the prostate (TUIP): Transurethral incision is used for men with smaller prostate glands who suffer from significant obstructive symptoms. Instead of cutting and removing tissue to relieve the obstructed bladder, this procedure widens the urethra by making several small cuts in the bladder neck where the urethra joins the bladder and in the prostate itself. This reduces the pressure of the prostate on the urethra and makes urination easier. Patients normally stay in the hospital one to three days. A catheter is left in the bladder for one to three days after surgery.

Open prostatectomy: When a transurethral procedure cannot be done, open surgery may be required. Open prostatectomy for BPH is also performed for a prostate that is too large to remove through the penis. Other reasons for choosing an open prostatectomy include patients with large bladder diverticula, with large bladder stones and who cannot physically tolerate having their legs placed in stirrups for TURP/TUIP surgery.

An incision is made in the abdominal wall from below the belly button to the pubic bone. The prostate gland can then be removed in its entirety through either an incision in the fibrous capsule surrounding the prostate (retropubic prostatectomy) or through an incision made in the bladder (suprapubic prostatectomy). Postoperative pain is mild to moderate. Patients usually stay in the hospital for several days and go home with a urinary catheter. In some cases a second catheter draining the bladder through the lower abdominal wall is used.

What can be expected after treatment?

Postoperatively, patients typically experience significant improvement in their symptoms (table 1). As with any operative procedure, complications do exist. Some occur in the early postoperative period (table 2) while others may occur many years later (table 3).

Table 1: Overall improvement in patient symptoms

TURP	TUIP	Open
88%	80%	98%

Table 2: Immediate post-operative complications

	TURP	TUIP	Open
Infection	15%	13%	13%
Bleeding requiring transfusion	5-10%	1%	8%
Impotence	14%	12%	17%

Retrograde ejaculation	73%	25%	77%
Incontinence	1%	<1%	<1%

Table 3: Late post-operative complications

	TURP	TUIP	Open
Stricture and bladder neck contracture (scar tissue causing obstruction)	4%	3%	4%
Additional surgery within 5 years	10%	9%	2%

Frequently asked questions:

Will surgery for BPH affect my ability to enjoy sex?

Most urologists say that even though it takes a while for sexual function to return fully, most men are able to enjoy sex again. Most experts agree that if you were able to maintain an erection shortly before surgery, you will probably be able to do so after surgery. Most men find little or no difference in the sensation of orgasm although they may find themselves suffering from retrograde ejaculation.