Benign Prostatic Hyperplasia (BPH)

Benign prostatic hyperplasia (BPH) is a non-cancerous growth of the prostate that is a result, in part, from the hormonal changes accompanying aging. In men with BPH, growth of the prostate can obstruct the urethra, which can lead to problems with urination, making it weaker, more frequent, or less efficient.

For many years, a prostatectomy was the only treatment for this very common problem. Although effective, such major surgery requires patients to spend significant time in the hospital and at home in recovery. Fortunately, today's technological advances now provide urologists with an array of medications and minimally invasive techniques to treat BPH.

Anatomy and Function

The prostate is a walnut-sized gland found just beneath the bladder. It encircles the upper part of the urethra, and secretes an alkaline fluid rich in enzymes and prostaglandins. This secretion is vital to the survival and performance of the sperm.

Causes and Risks

Benign prostatic hyperplasia (BPH), is clinically evident in 50% of men by age 60 and in 90% by age 80. BPH is a progressive disease of variable tempo. In some men, if left untreated, it can result in complications including urinary retention, kidney impairment, recurrent urinary tract infection (UTI), significant blood in urine (gross hematuria), bladder stones, bladder fibrosis with loss of contractility, or overflow incontinence. Other serious complications of progressive BPH are acute urinary retention and the need for surgical intervention.

Symptoms

The symptoms of bladder outlet obstruction that occur with BPH include urinary hesitancy, weakness of urinary stream, interruption of urination, a feeling of incomplete bladder emptying, and bladder irritability as manifested by urinary frequency, getting up at night to void, and urinary urgency.

Diagnosis

The evaluation of BPH 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, a urinalysis is routinely performed. 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:

* Prostate Specific Antigen (PSA) — a blood test to screen for prostate cancer.
* Urinary Cytology — a urine test to screen for bladder cancer.
* Measurement of Post-Void Residual Volume (PVR) — the amount of urine left in the bladder after urinating
* Urine Flow Study — a measure of how fast urine flows when a man urinates
* Cystoscopy — a direct look in the urethra and/or bladder using a small flexible scope
* Urodynamic Pressure-Flow Study — tests the pressures inside the bladder during urination
* Ultrasound of the kidney or the prostate

Treatment

There are several treatment options for men with benign prostate hyperplasia, depending on the severity of symptoms. If symptoms do not threaten the man's health, he may choose not to be treated. If symptoms are severe enough to cause discomfort, interfere with daily activities, or threaten health, treatment is usually recommended.

WATCHFUL WAITING

Watchful waiting is recommended as an important option for men who have mild symptoms and do not find them particularly bothersome. It is the least invasive treatment and avoids the risks, inconvenience and costs of medical and surgical treatments. In some men, symptoms improve over time as long as there are no high-risk symptoms like urinary retention, recurrent urinary tract infection, recurrent blood in the urine, bladder stones, kidney failure or bladder diverticula.

MEDICATION

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, one or twice a day just before bedtime and they work almost immediately. Commonly prescribed alpha blockers include: terazosin, doxazosin and tamsulosin. Side effects can include headaches, dizziness, light-headiness, fatigue and difficulty breathing.

5-Alpha Reductase Inhibitors: Finasteride is an oral medication that works completely different then alpha blockers. In some men, finasteride can relieve BPH symptoms, increase urinary flow rate and actually shrink the prostate though it must be used indefinitely to prevent recurrence of symptoms. One study suggests that finasteride 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.

MINIMALLY INVASIVE TREATMENTS

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 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 holium: 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.

Prostatic Stent (Stenting): Anesthesia is not required for this procedure. The technology involves placing a spring-like contraption inside the prostatic part of the urethra to hold it open. There are many different kinds of stents. 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.

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. The resectoscope contains a light, valves for controlling irrigating fluid and a grooved rolling metal electrode. This electrode moves across the surface of the prostate and electrical current 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 works simultaneously to protect the urinary tract during the procedure. 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.

Transurethral Radiofrequency 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.

GreenLight PVP: The GreenLight PVP Laser Procedure (Photoselective Vaporization of the Prostate) offers a unique and simple solution to BPH because it combines the effectiveness of TURP, the surgical "gold standard" with the safety, comfort and ease of a minimally invasive treatment. The GreenLight PVP Laser Procedure uses a very high-powered laser to immediately vaporize and precisely remove enlarged prostate tissue. Most patients return home a few short hours after the procedure and can return to normal, non-strenuous activities within days.

SURGERY

When medical therapy fails, surgery is required to remove the obstructing tissue. Surgery is usually recommended for men who are unable to urinate, have kidney damage, frequent urinary tract infections, significant urethral bleeding or stones in the bladder.
Removal of the prostate can be accomplished in several different ways. The extent of the enlargement and the patient's general health will determine which of the three following procedures to use.

Transurethral Resection of the Prostate (TURP): Transurethral resection of the prostate is a surgical procedure performed through the urethra to remove obstructing prostate tissue. While under anesthesia, an instrument called a resectoscope is inserted into the urethra and advanced to the prostate. 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 is sent for pathologic examination. 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.

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.

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).

Postoperatively, patients typically experience significant improvement in their symptoms. As with any operative procedure, complications do exist including infection, bleeding, stricture, retrograde ejaculation, incontinence, and need for repeat surgery.