PRESENTATION BY

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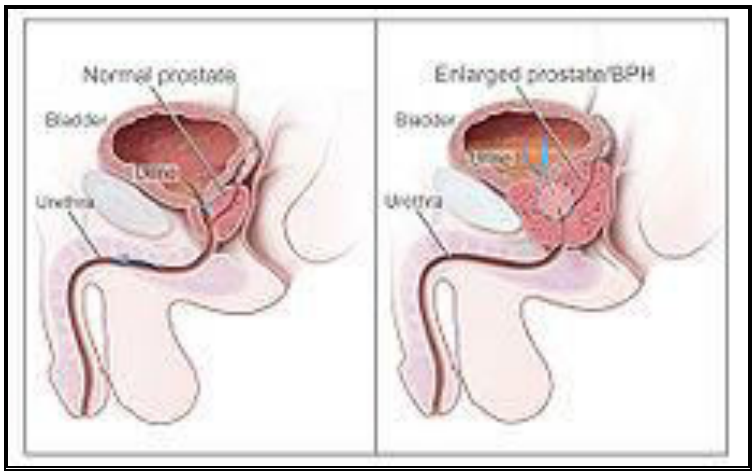
BENIGN PROSTATIC HYPERPLASIA

1. DEFINITION:

BPH is enlargement of the prostate that constricts the urethra, causing urinary symptoms.

Benign prostatic hyperplasia (**BPH**) also known as **benign prostatic hypertrophy**, **benign enlargement of the prostate (BEP)**, and **adenofibromyomatous hyperplasia**, refers to the increase in size of the prostate.



2. INCIDENCE:

Adenomatous prostatic growth is believed to begin at approximately age 30 years. An estimated 50% of men have histologic evidence of BPH by age 50 years and 75% by age 80 years. In 40-50% of these patients, BPH becomes clinically significant.

3. CAUSES:

The actual cause of prostate enlargement is unknown. Factors linked to aging and the testicles themselves may play a role in the growth of the gland. Men who have had their testicles removed at a young age (for example, as a result of testicular cancer) do not develop BPH.

Similarly, if the testicles are removed after a man develops BPH; the prostate begins to shrink in size.

Some facts about prostate enlargement:

- The likelihood of developing an enlarged prostate increase with age.
- BPH is so common that it has been said all men will have an enlarged prostate if they live long enough.
- A small amount of prostate enlargement is present in many men over age 40 and more than 90% of men over age 80.
- No risk factors have been identified other than having normally functioning testicles.

4. PATHOPHYSIOLOGY:

The process of aging and the presence of circulating androgens are required for the development of BPH.

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The prostatic tissue forms nodules as enlargement occurs.

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The normally thin and fibrous outer capsule of the prostate becomes spongy and thick as enlargement progresses.

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The prostatic urethra becomes compressed and narrowed, requiring the bladder musculature to work harder to empty urine.

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Effects of prolonged obstruction cause trabeculation (formation of cords) of the bladder wall, decreasing its elasticity.

5. SYMPTOMS:

Less than half of all men with BPH have symptoms of the disease, which include:

- Dribbling at the end of urinating
- Inability to urinate (urinary retention)
- Incomplete emptying of your bladder
- Incontinence
- Needing to urinate two or more times per night
- Pain with urination or bloody urine (these may indicate infection)
- Slowed or delayed start of the urinary stream
- Straining to urinate
- Strong and sudden urge to urinate
- Weak urine stream
- Problems in ejaculation
- Abdominal straining
- Irritation during urination

6. DIAGNOSTIC TESTS:

✓ History collection

✓ Physical examination: perform a Digital Rectal Exam (DRE) to feel the prostate gland.

✓ The following tests may also be performed:

- Urine flow rate

- Post-void residual urine test to see how much urine is left in your bladder after urination
- Pressure flow studies to measure the pressure in the bladder as the patient urinate
- Urinalysis to check for blood or infection
- Urine culture to check for infection

Prostate-specific antigen (PSA) blood test to screen for prostate cancer Elevated prostate specific antigen (PSA) levels needs further investigations such as reinterpretation of PSA results, in terms of PSA density and PSA free percentage, rectal examination and transrectal ultrasonography. These combined measures can provide early cancer detection.

Cystoscopy

In this examination, the doctor inserts a small tube through the opening of the urethra in the penis. This procedure is done after a solution numbs the inside of the penis so all sensation is lost. The tube, called a cystoscope, contains a lens and a light system that help the doctor see the inside of the urethra and the bladder. This test allows the doctor to determine the size of the gland and identify the location and degree of the obstruction.

Rectal Ultrasound and Prostate Biopsy

Ultrasound examination of the testicles, prostate, and kidneys is often performed, again to rule out malignancy and hydronephrosis.

If there is a suspicion of prostate cancer, rectal ultrasound may be recommended. In this procedure, a probe inserted in the rectum directs sound waves at the prostate. The echo patterns of the sound waves form an image of the prostate gland on a display screen. To determine whether an abnormal-looking area is indeed a tumor, we can use the probe and the ultrasound images to guide a biopsy needle to the suspected tumor. The needle collects a few pieces of prostate tissue for examination with a microscope.

Urine Flow Study

The physician may ask the patient to urinate into a special device that measures how quickly the urine is flowing. A reduced flow often suggests BPH.

7. MANAGEMENT:

7.1. MEDICAL MANAGEMENT:

The two main medications for management of BPH are alpha blockers and 5α-reductase inhibitors.

- Alpha blockers (technically α_1-adrenergic receptor antagonists) are the most common choice for initial therapy. Alpha blockers used for BPH include doxazosin, terazosin, alfuzosin, tamsulosin, and silodosin. All five are equally effective but have slightly different side effect profiles. The older drugs phenoxybenzamine and prazosin are not recommended. Alpha blockers relax smooth muscle in the prostate and the bladder neck, thus decreasing the blockage of urine flow. Common side effects of alpha blockers include orthostatic hypotension, ejaculation changes, nasal congestion, and weakness.

- The 5α-reductase inhibitors finasteride and dutasteride are another treatment option. These medications inhibit 5a-reductase, which in turn inhibits production of DHT, a hormone responsible for enlarging the prostate. Effects may take longer to appear than alpha blockers, but they persist for many years. When used together with alpha blockers, a reduction of BPH progression to acute urinary retention and surgery has been noted in patients with larger prostates. Side effects include decreased libido and ejaculatory or erectile dysfunction.

Antimuscarinics such as tolterodine may also be used, especially in combination with alpha blockers. They act by decreasing acetylcholine effects on the smooth muscle of the bladder, thus helping control symptoms of an overactive bladder.

Sildenafil citrate shows some symptomatic relief, suggesting a possible common etiology with erectile dysfunction.

7.2. Herbal remedies:

People often seek herbal remedies for BPH. Several are approved in European countries, but none in the USA. Saw palmetto extract from *Serenoa repens* is one of the most extensively studied. It showed promise in early studies, though later trials of higher methodological quality indicated no difference from placebo.

Other herbal medicines that have research support in systematic reviews include beta-sitosterolfrom *Hypoxis rooperi* (African star grass) and pygeum (extracted from the bark of *Prunus africana*), while there is less substantial support for the efficacy of pumpkin seed (*Cucurbita pepo*) and stinging nettle (*Urtica dioica*) root. There is weak evidence that pollen extracts frp, rye grass (*Secale cereale*) may also correlate with modest symptomatic relief.

7.3. Minimally Invasive Therapy

Because drug treatment is not effective in all cases, researchers in recent years have developed a number of procedures that relieve BPH symptoms but are less invasive than conventional surgery.

Transurethral microwave procedures. In 1996, the FDA approved a device that uses microwaves to heat and destroy excess prostate tissue. In the procedure called transurethral microwave thermotherapy (TUMT), the device sends computer-regulated microwaves through a catheter to heat selected portions of the prostate to at least 111 degrees Fahrenheit. A cooling system protects the urinary tract during the procedure.

The procedure takes about 1 hour and can be performed on an outpatient basis without general anesthesia. TUMT has not been reported to lead to erectile dysfunction or incontinence.

Although microwave therapy does not cure BPH, it reduces urinary frequency, urgency, straining, and intermittent flow. It does not correct the problem of incomplete emptying of the bladder. Ongoing research will determine any long-term effects of microwave therapy and who might benefit most from this therapy.

Transurethral needle ablation. Also in 1996, the FDA approved the minimally invasive transurethral needle ablation (TUNA) system for the treatment of BPH.

The TUNA system delivers low-level radiofrequency energy through twin needles to burn away a well-defined region of the enlarged prostate. Shields protect the urethra from heat damage. The TUNA system improves urine flow and relieves symptoms with fewer side effects when compared with transurethral resection of the prostate (TURP). No incontinence or impotence has been observed.

Water-induced thermotherapy. This therapy uses heated water to destroy excess tissue in the prostate. A catheter containing multiple shafts is positioned in the urethra so that a treatment balloon rests in the middle of the prostate. A computer controls the temperature of the water, which flows into the balloon and heats the surrounding prostate tissue. The system focuses the heat in a precise region of the prostate. Surrounding tissues in the urethra and bladder are protected. Destroyed tissue either escapes with urine through the urethra or is reabsorbed by the body.

High-intensity focused ultrasound. The use of ultrasound waves to destroy prostate tissue is still undergoing clinical trials in the United States. The FDA has not yet approved high-intensity focused ultrasound.

7.4. SURGICAL MANAGEMENT:

Prostate surgery may be recommended if you have:

- Incontinence
- Recurrent blood in the urine
- Inability to fully empty the bladder (urinary retention)

- Recurrent urinary tract infections
- Kidney failure
- Bladder stones

The choice of a specific surgical procedure is usually based on the severity of your symptoms and the size and shape of your prostate gland.

- **Transurethral resection of the prostate (TURP):** This is the most common and most proven surgical treatment for BPH. TURP is performed by inserting a scope through the penis and removing the prostate piece by piece.
- **Transurethral incision of the prostate (TUIP):** This procedure is similar to TURP, but is usually performed in men who have a smaller prostate. It is usually performed without the need for a hospital stay. Like TURP, a scope is inserted through the penis until the prostate is reached. Then, rather than removing the prostate, a small incision is made in the prostate tissue to enlarge the opening of the urethra and bladder outlet.
- **Simple prostatectomy:** An open prostatectomy is usually performed using general or spinal anesthesia. An incision is made through the abdomen or perineum (the area behind the scrotum). Only the inner part of the prostate gland is removed. The outer portion is left behind. This is a lengthy procedure, and it usually requires a hospital stay of 5 to 10 days.

Most men who have prostate surgery have improvement in urine flow rates and symptoms.

Other, less-invasive procedures are available. These use different forms of heat to destroy prostate tissue, including:

- Radiofrequency energy -- transurethral needle ablation (TUNA)
- Microwave energy -- transurethral microwave thermotherapy (TUMT)
- Electrical current -- transurethral electrovaporization (TUVP)
- Hot water -- water-induced thermotherapy (WIT)

- Laser -- interstitial laser coagulation (ILC) and holmium laser enucleation of the prostate (HoLEP)

None of these techniques have been proven to be better than TURP. Patients who receive these less-invasive procedures are more likely to need surgery again after 5 or 10 years. However, these procedures may be a choice for:

- Younger men (many of the less-invasive procedures carry a lower risk for impotence and incontinence than TURP, although the risk with TURP is not very high)
- Elderly patients
- Patients with severe medical conditions, including uncontrolled diabetes, cirrhosis, alcoholism, psychosis, and serious lung, kidney, or heart disease
- Men who are taking blood-thinning drugs

7.5. NURSING MANAGEMENT:

Nursing Assessment

- Obtain history of voiding symptoms, including onset, frequency of day and nighttime urination, presence of urgency, dysuria, sensation of incomplete bladder emptying, and decreased force of stream. Determine impact on quality of life.
- Perform rectal (palpate size, shape, and consistency) and abdominal examination to detect distended bladder, degree of prostatic enlargement.
- Perform simple urodynamic measures—uroflowmetry and measurement of post-void residual, if indicated.

Nursing Diagnosis

- Impaired Urinary Elimination related to obstruction of urethra

Nursing Interventions:
Facilitating Urinary Elimination

- Provide privacy and time for patient to void.
- Assist with catheter introduction with guide wire or by way of suprapubic cystotomy as indicated.
    - Monitor intake and output.
    - Maintain patency of catheter.
- Administer medications, as ordered, and monitor for and teach patient about adverse effects.
    - Alpha-adrenergic blockers—hypotension, orthostatic hypotension, syncope (especially after first dose), impotence, blurred vision, rebound hypertension if discontinued abruptly.
    - Finasteride and dutasteride—hepatic dysfunction, impotence, interference with PSA testing, presence in semen with potential adverse effect on fetus of pregnant woman.
- Assess for and teach patient to report hematuria, signs of infection.

8. COMPLICATIONS:

Men who have had long-standing BPH with a gradual increase in symptoms may develop:

- Sudden inability to urinate
- Urinary tract infections
- Urinary stones
- Damage to the kidneys
- Blood in the urine

9. PREVENTION:

The best protection against prostate problems is to have regular medical checkups that include a careful prostate exam. Patient should go for a check up if symptoms occur such as

- a frequent urge to urinate,

- difficulty in urinating, or
- dribbling of urine.

Regular checkups are important even for men who have had surgery for BPH. BPH surgery does not protect against prostate cancer because only part of the prostate is removed. In all cases, the sooner a doctor finds a problem, the better the chances that treatment will work.

10. PATIENT EDUCATION AND HEALTH MAINTENANCE:

- Explain to patient not undergoing treatment the symptoms of complications of BPH—urinary retention, cystitis, increase in irritative voiding symptoms. Encourage reporting these problems.
- Advise patients with BPH to avoid certain drugs that may impair voiding, particularly OTC cold medicines containing sympathomimetics such as phenylpropanolamine.
- Advise patient that irritative voiding symptoms do not immediately resolve after relief of obstruction; symptoms diminish over time.
- Tell patient postoperatively to avoid sexual intercourse, straining at stool, heavy lifting, and long periods of sitting for 6 to 8 weeks after surgery, until prostatic fossa is healed.
- Advice follow-up visits after treatment because urethral stricture may occur and regrowth of prostate is possible after TURP.
- Be aware of herbal or “natural” products marketed for “prostate health.”
    - Advise patients that saw palmetto has shown some efficacy in reducing symptoms of BPH in a number of clinical trials.
    - The active ingredient in commercial preparations is lipidosterolic extract of Serenoa repens, and the dosage is 160 mg twice per day.
    - It should be taken with breakfast and an evening meal to minimize GI adverse effects.

- Although it appears safe and there are no known drug interactions, tell patients they must discuss use of saw palmetto with their health care providers.

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