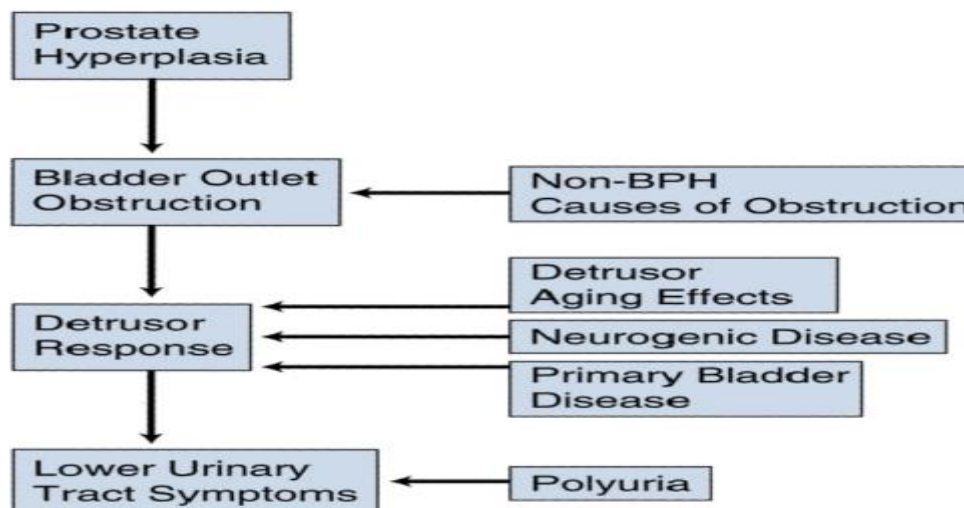


**BLADDER OUTLET OBSTRUCTION (BOO)** : It's urodynamic concept of low flow rates and high intravesical pressures.

**LUTS** : The complex of symptoms referred to as lower urinary tract symptoms is not specific for BPH.

### *Causes of LUTS in male:*

1. Benign prostatic hyperplasia (BPH)
2. Prostatic cancer (Pca)
3. Prostatitis
4. Bladder neck stenosis or contracture.
5. urethral stricture.
6. Urethral stones
7. Bladder tumors (if presents at the bladder neck)
8. Neuropathic bladder.
9. Lower Ureteric stones



# Symptomatology (LUTS)

## Voiding or Obstructive:

Weak stream.  
Straining to void.  
Hesitancy.  
Intermittency.  
Post voiding dribbling.  
Retention of urine.  
Incomplete bladder emptying.

## Storage or Irritative:

Frequency.  
Urgency  
Urge incontinence.  
Nocturia & nocturnal incontinence (enuresis).

## Pathophysiology

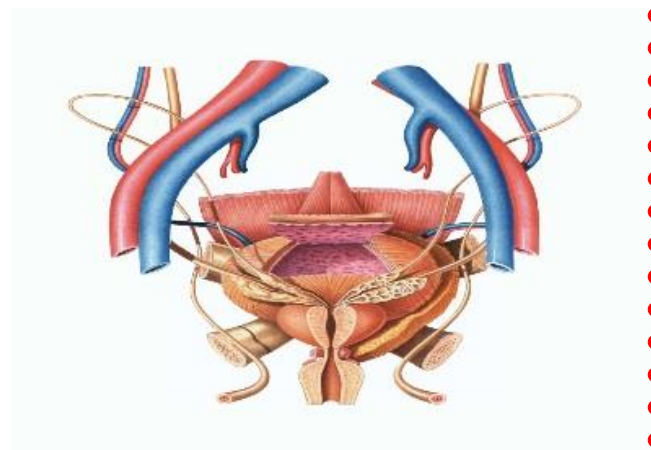
- BOO over time will result in increase in the intravesical pressure, bladder muscle hypertrophy (trabeculation, sacculation and diverticulum formation).
- High pressure may transmit to the upper tract causing hydronephrer, hydronephrosis and renal insufficiency.
- BOO results in incomplete bladder evacuation (residual urine) which predisposes to UTI and stone formation.

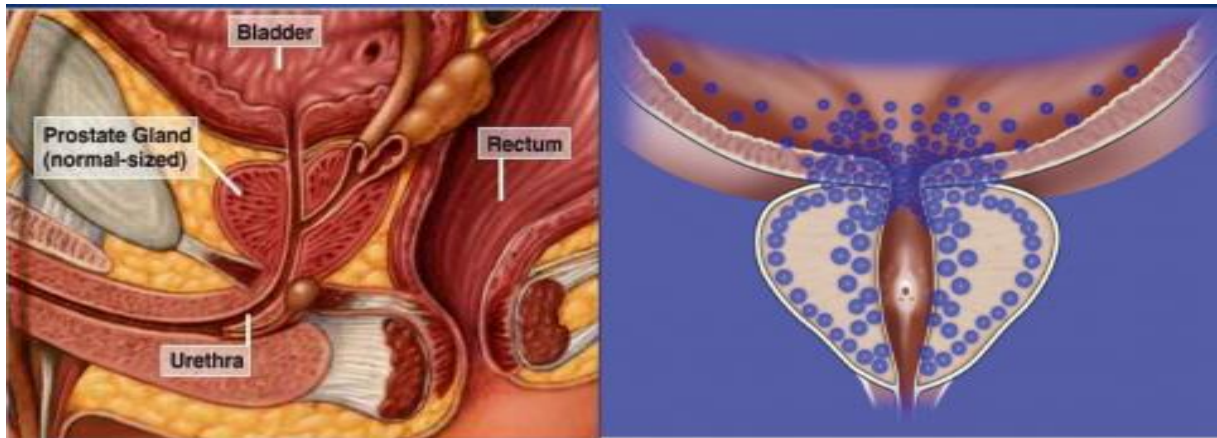
## Benign Prostatic Hyperplasia (BPH)

**Definition:** BPH describes a proliferative process of the stromal and epithelial (stromoglandular) elements of the prostate.

## Anatomy

- fibromuscular & glandular organ
- The bladder neck & prostatic bed is abundantly supplied by  $\alpha$  1a sympathetic receptor
- weighs =size= 20 gm=20 cc



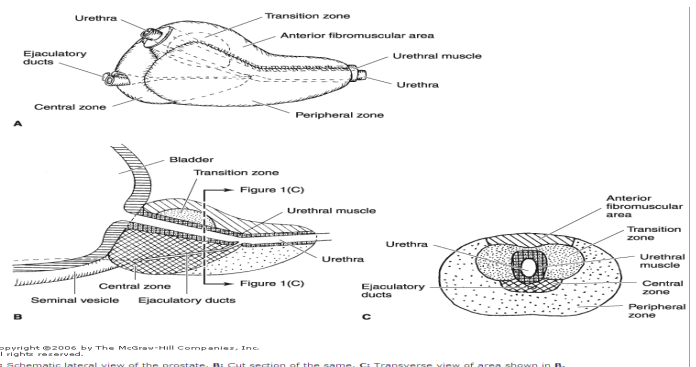


## SURGICAL ANATOMY

**Classification** of the prostate into zones:

1. The central zone
2. The peripheral zone
3. The transitional zone

BPH Typically affects submucosal glands at transitional zone.



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 A: Schematic lateral view of the prostate. B: Cut section of the same. C: Transverse view of area shown in B.

## Etiology:

- Multifactorial and endocrine controlled (Hormonal imbalance)
- Serum testosterone levels decrease with advancing age.
- Estrogenic steroids do not decrease equally (the prostate enlarges because of increased estrogenic effects?)

## Risk factors

1. **Genetic and Familial Factors:**
2. BPH has an inheritable genetic component (autosomal dominant trait).
3. The first-degree relatives of surgically treated BPH carry an increased risk of developing BPH approximately **4-fold** compared with controls.
4. **Racial differences**
5. **Abdominal obesity** may increase the frequency and severity of obstructive symptoms and may increase the likelihood to undergo prostatectomy.

## Incidence & Epidemiology

- ⇒ BPH is the most common benign tumor in men.
- ⇒ Its incidence is age-related (increases with age).
- ⇒ The prevalence of **Histologic BPH** in autopsies:
  - ✓ 20% in men aged 41–50 YEARS.

**Clinical evidence BPH** occurs less commonly:

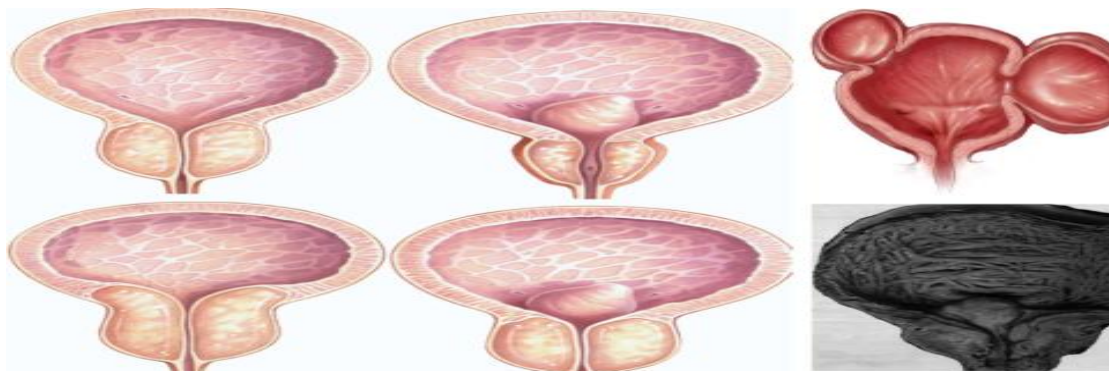
- ✓ 25% at age 55 years
- ✓ 50% at age 75 years

## Pathology

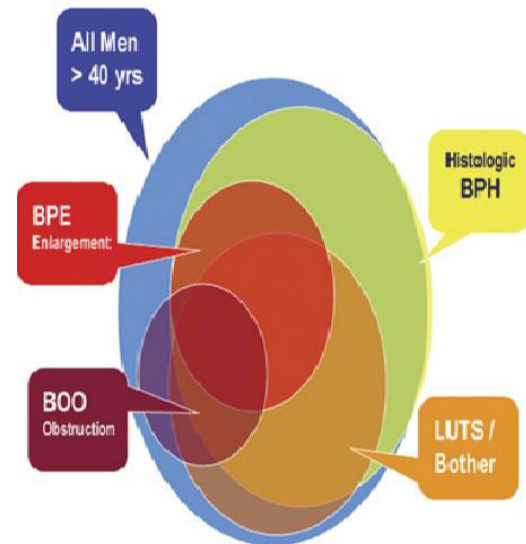
- BPH affects both glandular epithelium and connective tissue stroma to variable degrees causing:
  1. Glandular hyperplasia
  2. Fibromuscular hyperplasia

## PATHOPHYSIOLOGY

- ❖ The symptoms of BPH can be related to either:
  1. The obstructive component of the prostate which is divided into:
    - a. The mechanical obstruction.
    - b. The dynamic obstruction.
  2. The secondary response of the bladder to the outlet resistance (**detrusor instability & low bladder compliance, trabeculation & diverticular formation in the wall of the bladder & ultimately causes bladder decompensation**).



- BPH: Is a histologic diagnosis & doesn't necessarily implies prostatic enlargement (BPE) or presence of symptoms.
- Bladder outlet obstruction(BOO)
- Lower urinary tract symptoms(LUTS) indicate all lower urinary tract symptoms that results from either outlet obstruction or bladder dysfunction & response of the bladder to a pathology in the prostate or urethra.



## Symptomatology

Slowly progressive over years, worsening at winter time.

1. LUTS: irritative and obstructive.
2. Urinary retention: inability to pass urine in spite of full bladder (Acute & chronic)
3. Recurrent UTI
4. Renal failure due to back pressure effect on the kidneys.
5. Hematuria.
6. Pain is not a symptom of BOO: its presence should prompt the exclusion of acute retention, urinary infection, stones.

N.B.: The size of the prostate has no relation to the severity of them symptom but the degree of urethral compression.

## Causes of frequency in BPH

1. Bladder irritation by enlarged prostate.
2. Residual urine.
3. Vesical stone.
4. Cystitis.
5. Vesical diverticulum.
6. Chronic retention and overflow incontinence.

## Precipitating causes for acute retention

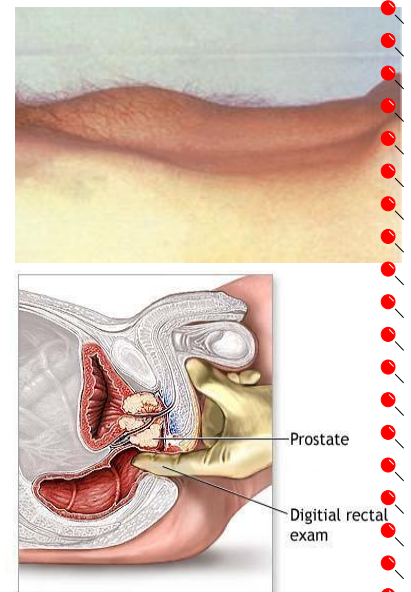
1. Constipation.
2. Anticholinergics, antihistaminic & diuretic medication (sudden bladder over distention).
3. Ignoring first desire for urination.
4. Cold exposure.
5. Severe pain: MI, joint pain, pelvic or perineal pain.
6. Psychological upset.

## Clinical Exam:

- ❖ Usually normal.
- ❖ Distended bladder.
- ❖ A digital rectal examination (DRE) and a focused neurologic examination should usually be performed

## Digital rectal examination (DRE):

- ❖ enlarged prostate, painless, smooth surface, regular, firm consistency, regular, sulcus, and mobile rectal mucosa over the prostate.



## Diagnosis:

### 1. Laboratory

- A. **urinalysis**: to rule out UTI and hematuria
- B. **RFT**: Urea, Creatinine measurement
- C. **Serum PSA** (prostate specific Ag) normal value up to **4.0 g/mL**

### 2. Radiological

- ⇒ **Abdominal U/S**: (conventional): Prostatic enlargement, vesical stone, post void residual urine and hydronephrosis.
- ⇒ **Transrectal (TRUS)**.

### 3. Cystoscopy: enlarged prostate, vesical trabeculation & stones.

### 4. Urodynamic studies: uroflowmetry cystometry

## Complications of BPH

1. Recurrent urinary tract infections.
2. Bladder stones.
3. Recurrent hematuria.
4. Hydroureteronephrosis & renal impairment.
5. Refractory urine retention (failing at least one attempt at catheter removal).

## Treatment:

1. Watchful Waiting (conservative)
2. Medical therapy
3. Surgical Therapy

## Conservative:

- ❖ Indications: mild symptom, reasonable flow rates, and good bladder emptying
- ❖ Waiting for a period of 6 months
- ❖ Avoid precipitating factors:
  1. Treat pains.
  2. Treat UTI.
  3. Avoid constipation
  4. Avoid rapid overfilling of the bladder (diuretics)
  5. Avoid anticholinergics & antihistamines.
  6. Do not postpone micturition
  7. Avoid cold exposure

## Medical therapy

1.  **$\alpha$ -Adrenergic blocking agents:** work quickly eg.: prazosin, terazocin, doxazosin, alfuzocin, tamsulosin  
S/E : hypotension, retrograde ejaculation, 1<sup>st</sup> dose syncope.
2. **5  $\alpha$ - reductase inhibitors:** inhibit the conversion of testosterone to DHT (most active form of androgen). eg. Finasteride, Dutasteride
  - Need to be taken for at least 6 months, and their effect is greatest in patients with large (> 40 g) glands.
  - S/E: Impotence.
3. **Phytotherapy:** eg. Pumpkin seeds.

## *Surgical (Operative) treatment*

❖ Absolute indications for surgical intervention:

1. Refractory urinary retention.
2. Recurrent UTI.
3. Renal insufficiency.
4. Bladder calculi,
5. large bladder diverticula.
6. Recurrent gross hematuria.

### **Surgical treatment includes:**

#### ***A. Endoscopic:***

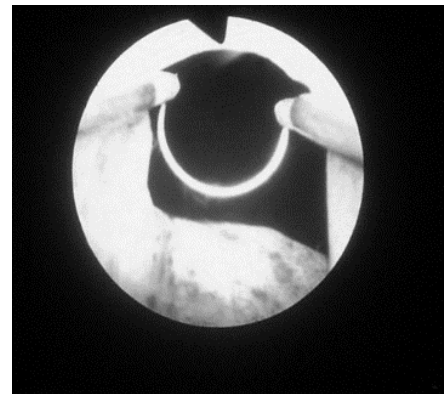
1. TURP (Transurethral Resection of the Prostate).
2. TUIP (Transurethral Incision of the Prostate).

#### ***B. Open simple prostatectomy:***

1. Transvesical prostatectomy.
2. Rertopubic prostatectomy.

#### ***C. Other***

- ▶ TULIP: Transurethral laser-induced prostatectomy



### **Post operative Complications**

#### ***Early:***

- ❖ Bleeding and clot retention.
- ❖ TURP syndrome (water intoxication). Dilutional hyponatremia.
- ❖ Infection: wound infection. Cystitis, prostatic bed, pyelonephritis, Sepsis

#### ***Late:***

- ❖ Urethral stricture & bladder neck contracture.
- ❖ Retrograde ejaculation.
- ❖ Urinary incontinence.
- ❖ Impotence.
- ❖ Recurrence of BPH in 15% after 5-10 years.

**TURP syndrome (water intoxication):Dilutional hyponatremia)**

*Thank You*  
*2021-2022*