

Diseases of the prostate gland

Benign prostatic hyperplasia

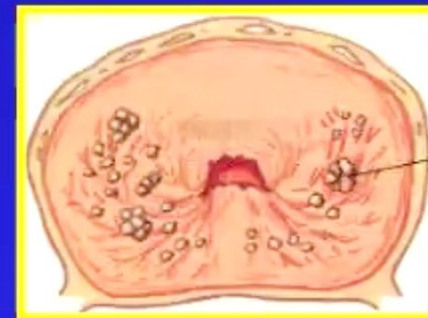


Carcinoma Prostate



Chronic Prostatitis

Prostatic calculi



“ When the hair becomes grey and scanty, when specks of earthy matter begin to be deposited in the tunics of the artery, and when a white zone is formed at the margin of the cornea. At the same period the prostate gland usually- I might say invariably – becomes increased in size”

Sir Benjamin Brodie

Lower urinary tract symptoms (LUTS)

WHII FUN

Voiding symptoms

- Weak stream
- Hesitancy
- Intermittency
- Inadequate emptying

Storage symptoms

- Frequency
- Urgency
- nocturia

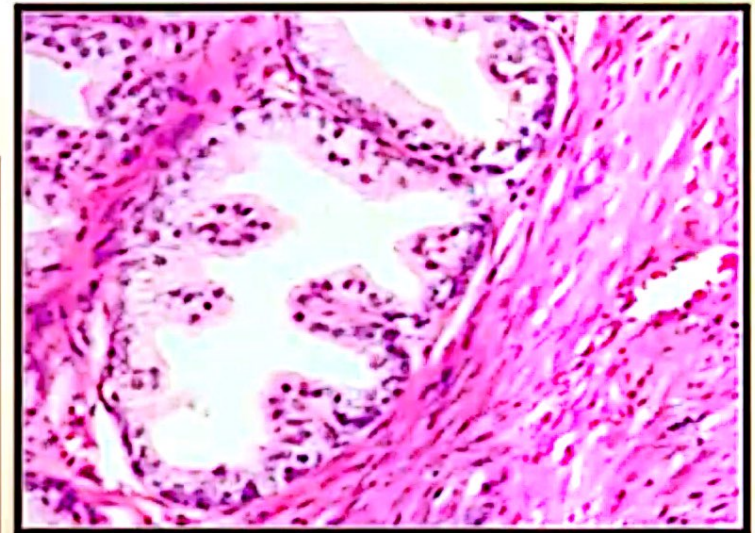
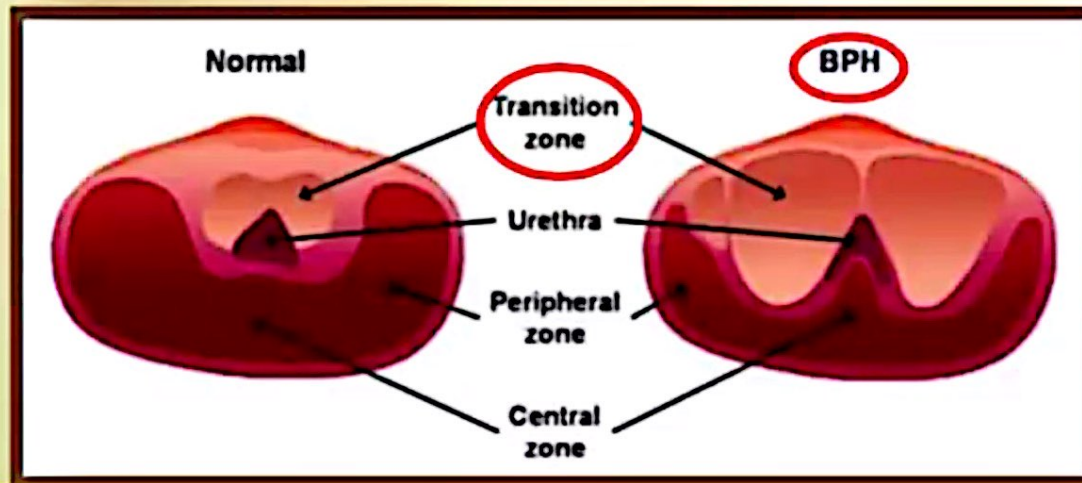
- DYSURIA
- HEMATURIA
- PYURIA
- FLANK PAIN
- PERINEAL TRAUMA

Causes of lower urinary tract symptoms (LUTS)

- BPH
- Urethral Stricture
- Neurogenic Bladder
- Malignant Prostate
- Urethral Carcinoma
- Foreign Body

Benign Prostate Hyperplasia (BPH)

- Benign prostatic hyperplasia (BPH) is a pathologic process that contributes to, but is not the sole cause of, lower urinary tract symptoms (LUTS) in aging men
- Benign prostatic hyperplasia is defined histologically as a disease process characterized by stromal and epithelial cell hyperplasia.
- Originates from transition zone



BPH is characterised by non-malignant enlargement of the prostate

Normal

Bladder →

Prostate →

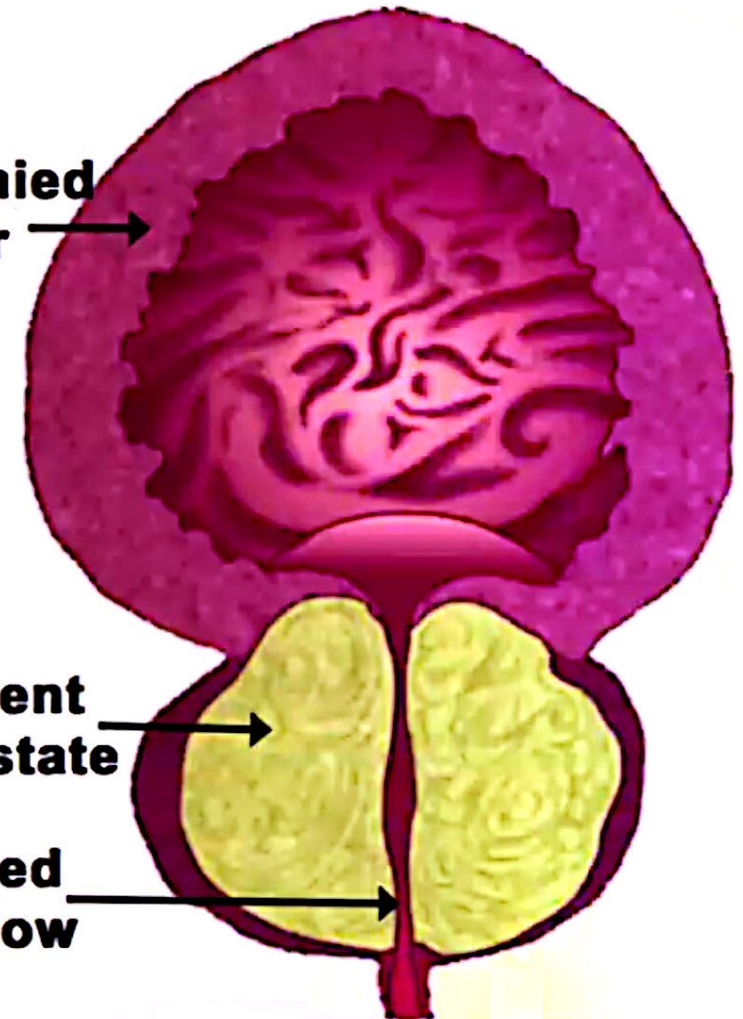
Urethra →

BPH

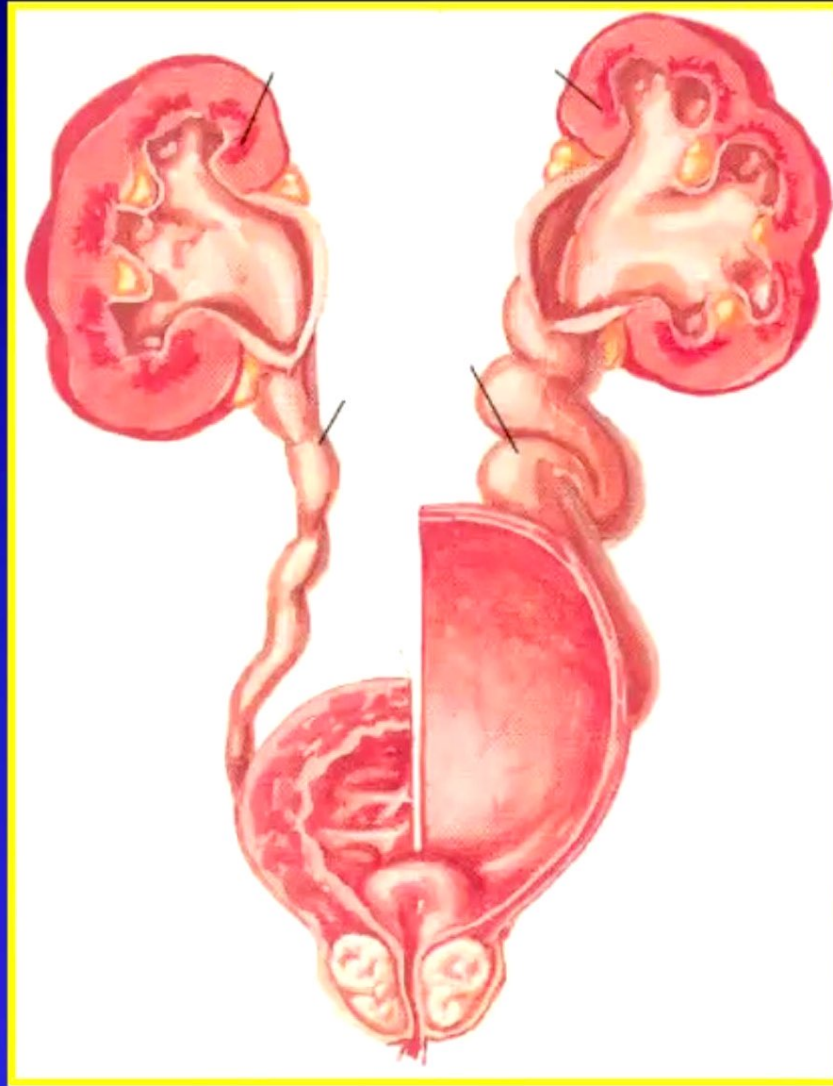
**Hypertrophied
detrusor
muscle** →

**Enlargement
of the prostate** →

**Obstructed
urinary flow** →



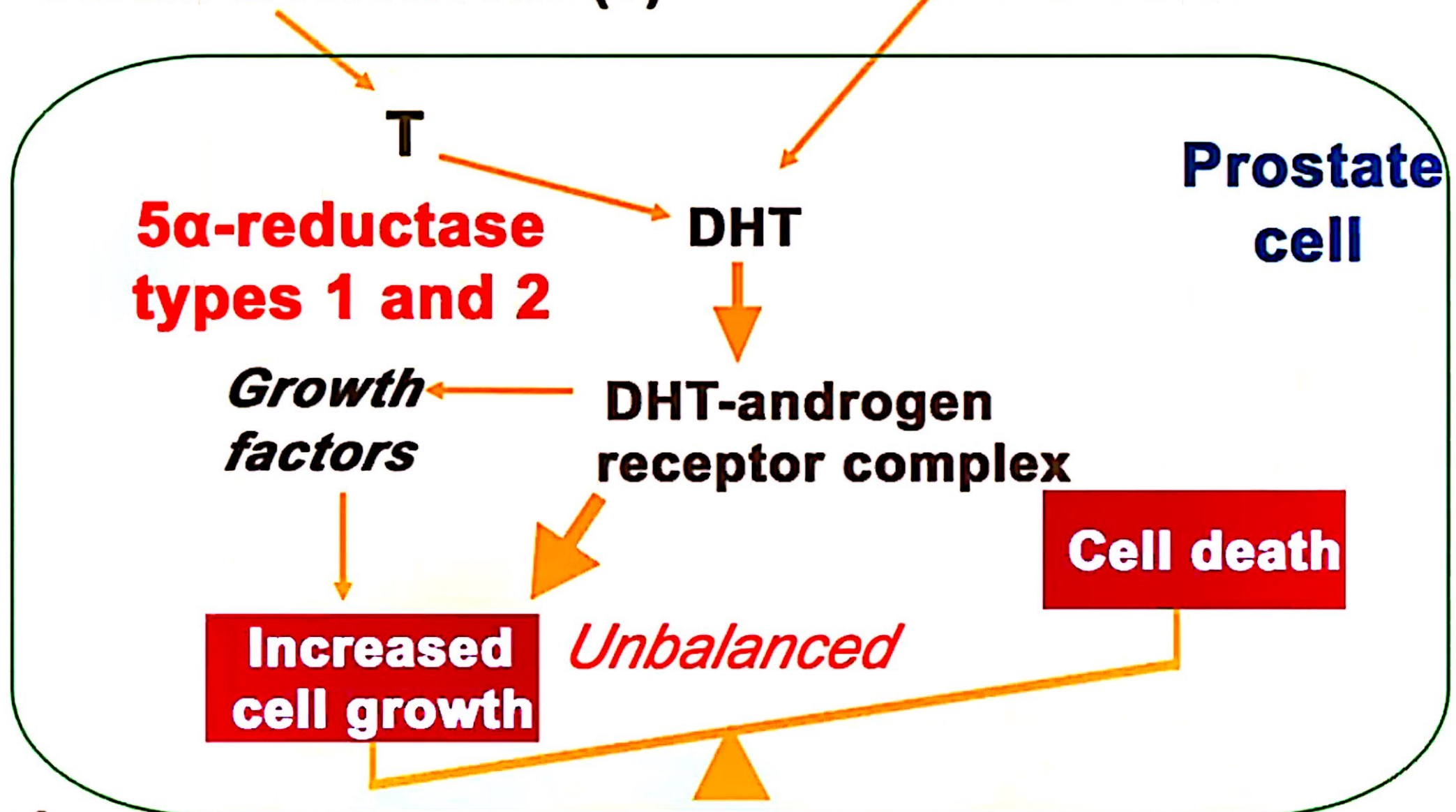
Pathophysiology of BPH



BPH is caused by an imbalance of cell proliferation (growth) and apoptotic (death) signals – leads to increase in number of prostate cells and prostate size

Serum testosterone (T)

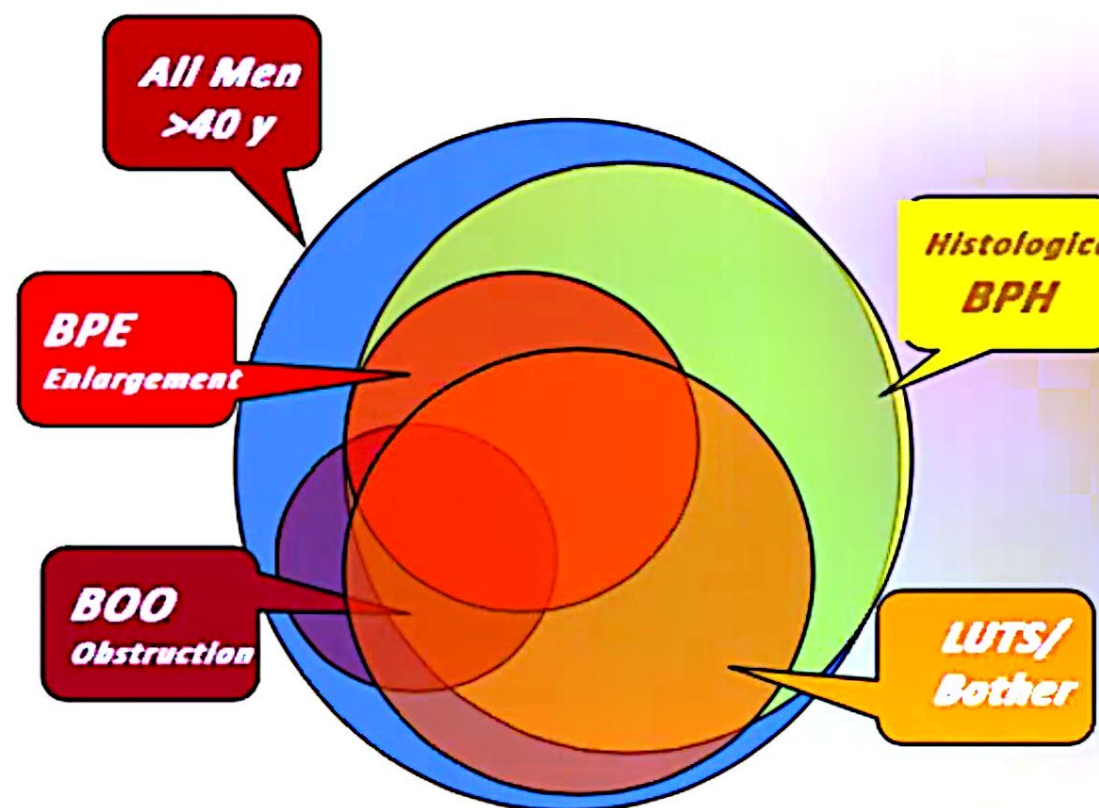
Serum DHT



BPH, LUTS, BPE and BOO

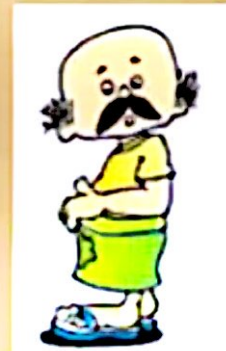
Clinical, anatomical, and pathophysiological changes

- BPH = Benign Prostatic Hyperplasia
 - Histological: stromoglandular hyperplasia
- May be associated with
 - Clinical: presence of bothersome LUTS²
 - Anatomical: enlargement of the gland (BPE = Benign Prostatic Enlargement)²
 - Pathophysiological: compression of urethra and compromise of urinary flow (BOO = Bladder Outlet Obstruction)²



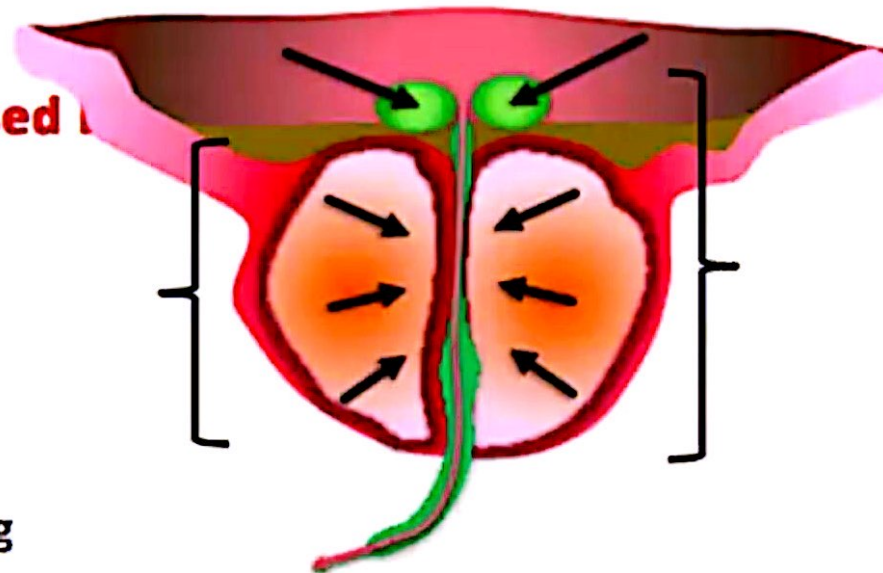
BPH can cause lower urinary tract symptoms (LUTS)

BPH symptoms may include:



Voiding symptoms, caused by an enlarged prostate

- Weak urinary stream
- Prolonged voiding
- Abdominal straining
- Hesitancy
- Intermittency
- Incomplete bladder emptying
- Terminal and post-void dribbling



Storage symptoms, which can result from enlarged prostate or overactive bladder (OAB)

- Frequency
- Nocturia
- Urgency
- Incontinence

Associated symptoms of BPH include

- Dysuria
- Haematuria
- Haemospermia



LUTS are not specific to BPH – not all men with LUTS have BPH and not all men with BPH have LUTS

Complications of BPH

- Bladder decompensation
- Urinary incontinence - 4-6%

Overflow/ Urge incontinence

- Hematuria - 2.5%
- Azotaemia - 13.6%
- Vesical Calculus – 0.7%
- U T I - 12%
- Acute Urinary Retention

Diagnostic tests recommended by the EAU BPH guidelines

- **Medical history**
- **Symptom score**
- **Physical examination (incl. DRE)**
- **PSA**
- **Creatinine measurement***
- **Urinalysis**
- **Flow rate****
- **Post-void residual volume****



*Not recommended by the AUA guidelines

** Considered optional in the AUA guidelines

IPSS questionnaire

Over the past month, how often have you...	Not at all	Less than 1 time in 5	Less than half the time	About half the time	More than half the time	Almost always	YOUR SCORE
1. ...had a sensation of not emptying your bladder completely after you finish urinating?	0	1	2	3	4	5	
2. ...had to urinate again less than two hours after you finished urinating?	0	1	2	3	4	5	
3. ...stopped and started again several times when you urinated?	0	1	2	3	4	5	
4. ...found it difficult to postpone urination?	0	1	2	3	4	5	
5. ...had a weak urinary stream?	0	1	2	3	4	5	
6. ...had to push or strain to begin urination?	0	1	2	3	4	5	
7. Over the past month, how many times did you most typically get up to urinate from the time you went to bed at night until the time you got up in the morning?	None	Once	Twice	3 times	4 times	5 times or more	
						TOTAL	

8. QUALITY OF LIFE DUE TO URINARY SYMPTOMS

If you were to spend the rest of your life with your urinary condition the way it is now, how would you feel about that?

Delighted	Pleased	Mostly satisfied	Mixed – about equally satisfied & dissatisfied	Mostly dissatisfied	Unhappy	Terrible
0	1	2	3	4	5	6

Total IPSS indicates symptom severity

Total IPSS	Symptom severity
0–7	Mild
8–19	Moderate
≥20	Severe

Physical examination

- Physical examination during the initial assessment of a man with LUTS suggestive of BPH should include:
 - Focused neurological examination
 - Digital rectal examination (DRE)
 - To help evaluate prostate size
 - To help exclude the presence of prostate cancer, as well as prostatitis and other pelvic pathologies



Urinalysis

- Although benign prostatic obstruction is the most frequent cause of LUTS in men, LUTS can also be caused by urinary tract infection or bladder cancer
 - The absence of haematuria or pyuria on urinalysis helps to rule out these conditions
- Guidelines recommend urinalysis to aid differential diagnosis

Flow rate determined by uroflowmetry

- Uroflowmetry is a simple non-invasive test that can reveal abnormal voiding.
- Serial flows (two or more) with a voided volume exceeding 150 ml are recommended to obtain a representative flow test.
- LUTS in the presence of a normal peak flow rate ($Q_{\max} = 15 \text{ ml/s}$) are more likely to have a non-BPH-related cause, and men with $Q_{\max} < 10 \text{ ml/sec}$ are more likely to have urodynamic obstruction
- Uroflowmetry is recommended by the EAU as part of the initial assessment of a man with LUTS, as well as being required prior to prostatectomy
 - Uroflowmetry is considered by the AUA to be an option following the initial patient evaluation

Measurement of post-void residual (PVR) volume

- Measurement of PVR urine is recommended by the EAU guidelines and considered optional by the AUA
- PVR volume is calculated by measurement of bladder height, width and length obtained by transabdominal ultrasonography
 - This is a simple, accurate and non-invasive method
- Large PVR volumes (>200 mL) may indicate bladder dysfunction and predict a less favourable response to BPH treatment

Management

Minimal Symptoms

Watchful Waiting

Moderate Symptoms/
Uncomplicated BPH

Medical Therapy/
Minimally invasive
treatment

Management

The following are important components of WW:

- **Education**
- **Reassurance**
- **Periodic monitoring**
- **Lifestyle modifications**

Rationale for medical management

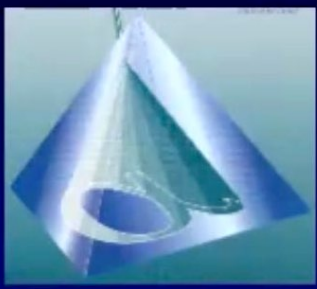
BPH has static & dynamic components

Dynamic : Increase in smooth muscle tone of prostate stroma , capsule & bladder neck (alpha blockers)

Static: Stromal & epithelial growth increasing size & volume (5 alpha reductase inhibitors)

Principal action of alpha blockers

- Decrease smooth muscle tone in the bladder neck, prostatic adenoma and prostatic capsule
- Direct effect on the bladder

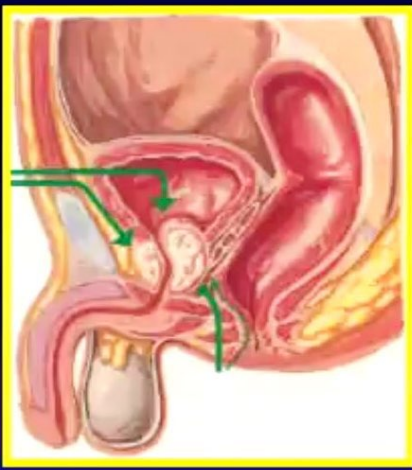


Alpha blockers

- Non specific
 - Phenoxybenzamine
- Selective Alpha 1 blockers
 - Short Acting
 - Prazosin
 - Alfuzosin
 - Long Acting
 - Terazosin
 - Doxazosin
- Selective Alpha 1a blocker
 - Tamsulosin

Indications for surgical intervention

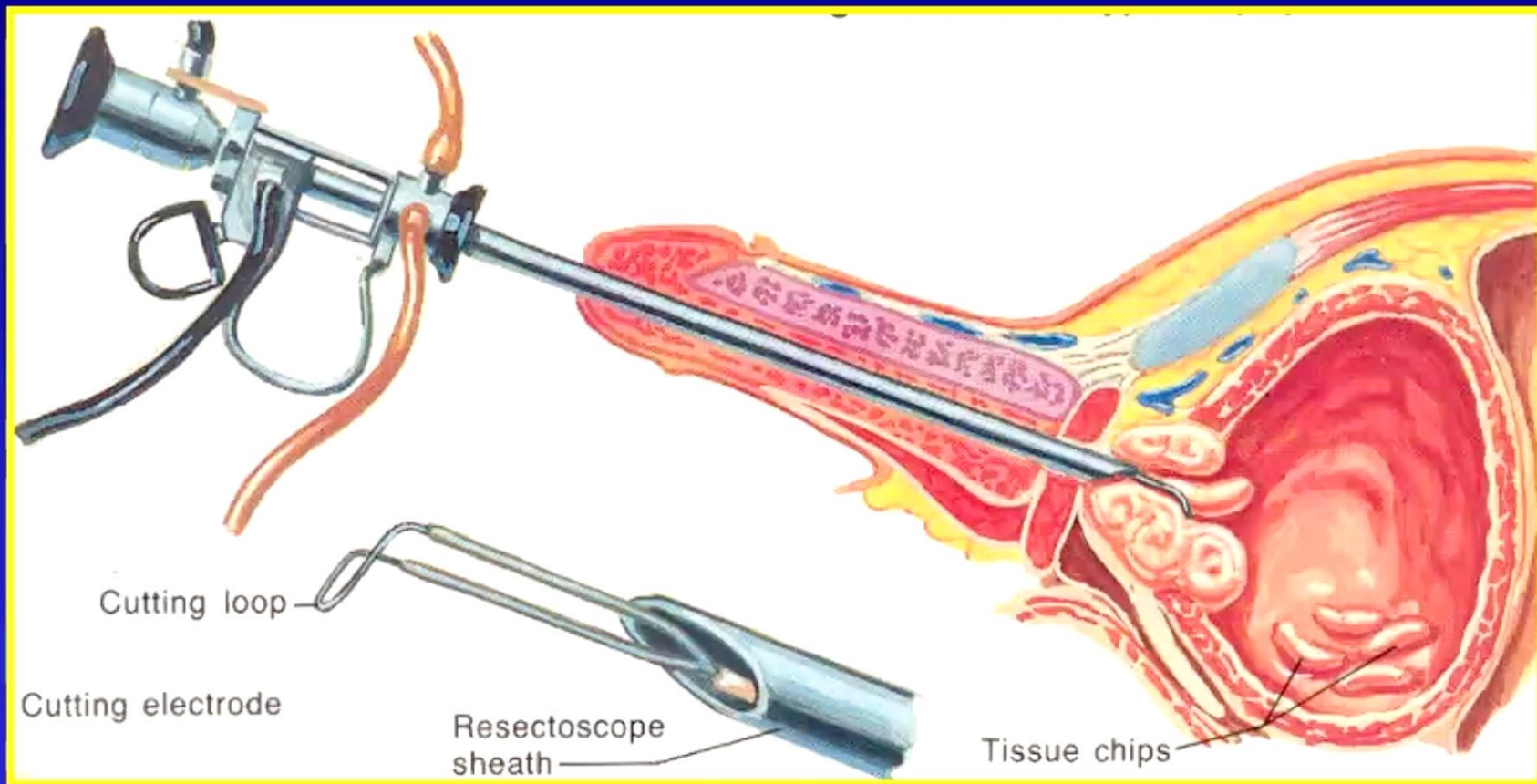
- Symptoms not relieved following medical treatment
- Refractory urinary retention
- Recurrent UTI due to BPH
- Recurrent haematuria due to BPH
- Renal insufficiency due to BPH
- Bladder stones
- Large bladder diverticula



Indications of Open Prostatectomy

- Large prostate > 100 gms > 80 cc
- Associated pathology like bladder diverticulum & large bladder calculi
- Adducted hip deformity
- Urethral pathology

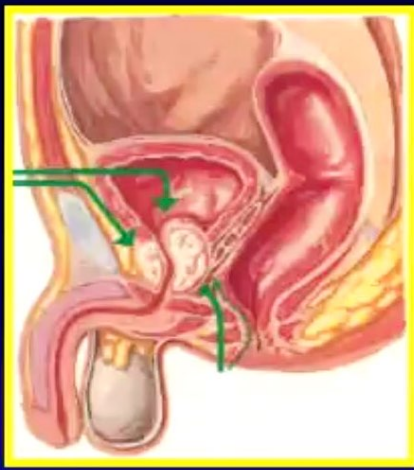
Transurethral Resection of Prostate (TURP)



(TUIP)



- Prostate < 30 Gms
- No median lobe
- Colling's Knife/Laser



Indications of Open Prostatectomy

- Large prostate > 100 gms
- Associated pathology like bladder diverticulum & large bladder calculi
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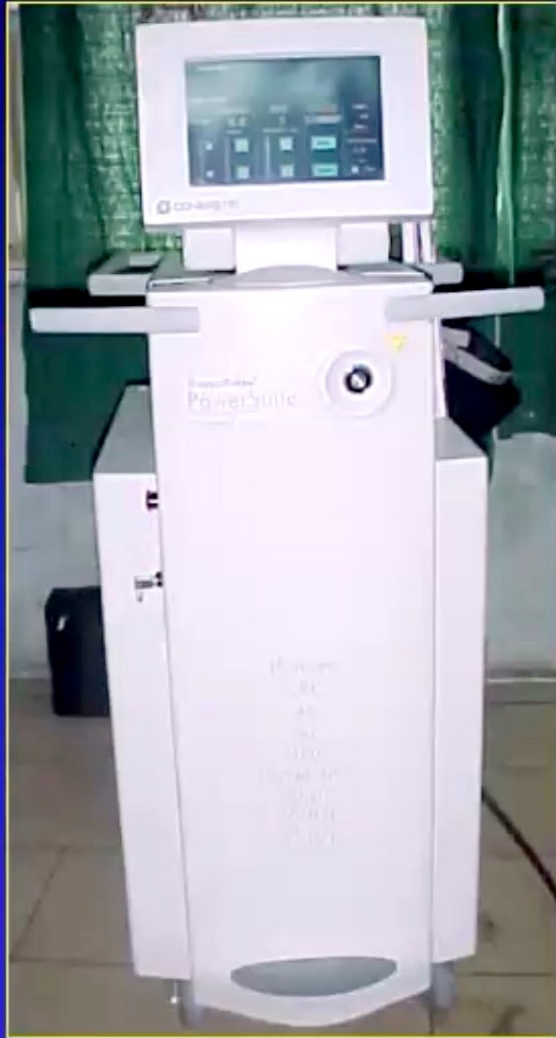
Open Prostatectomy



New therapies in management of BPH

- Hyperthermia
- Cryosurgery
- Transurethral balloon dilatation
- High intensity focussed ultrasound (HIFU)
- Radiofrequency thermal ablation (TUNA)
- Transurethral electrovaporization (TUVP)
- Stents

Holmium Enucleation Of Prostate



Holmium Laser Prostatectomy

Advantages

- *Less bleeding*
- *Saline can be used*
- *Cardiac pacemaker*
- *Large size gland can be enucleated*
- *Associated bladder stone*

Conclusion

- Careful evaluation of symptoms of LUTS is necessary
- Medical management in patients with minimal symptoms and uncomplicated BPH
- If surgery is indicated, TURP is the gold standard
- Holmium laser prostatectomy may replace TURP