CLINICAL OVERVIEW

A FACTSHEET BY SIGMUM

BENIGN PROSTATE HYPERPLASIA

SWIPE TO LEARN MORE

Surgical Interest Group
Monash University Malaysia

DEFINITION

The benign glandular and stromal hyperplasia of the prostate.

EPIDEMIOLOGY

60% of males aged over 60 have BPH.

Serum testosterone levels decrease as a male ages but oestrogen decreases at a much lower rate, increasing oestrogenic effects on the prostate resulting in BPH

BUZZWORDS :

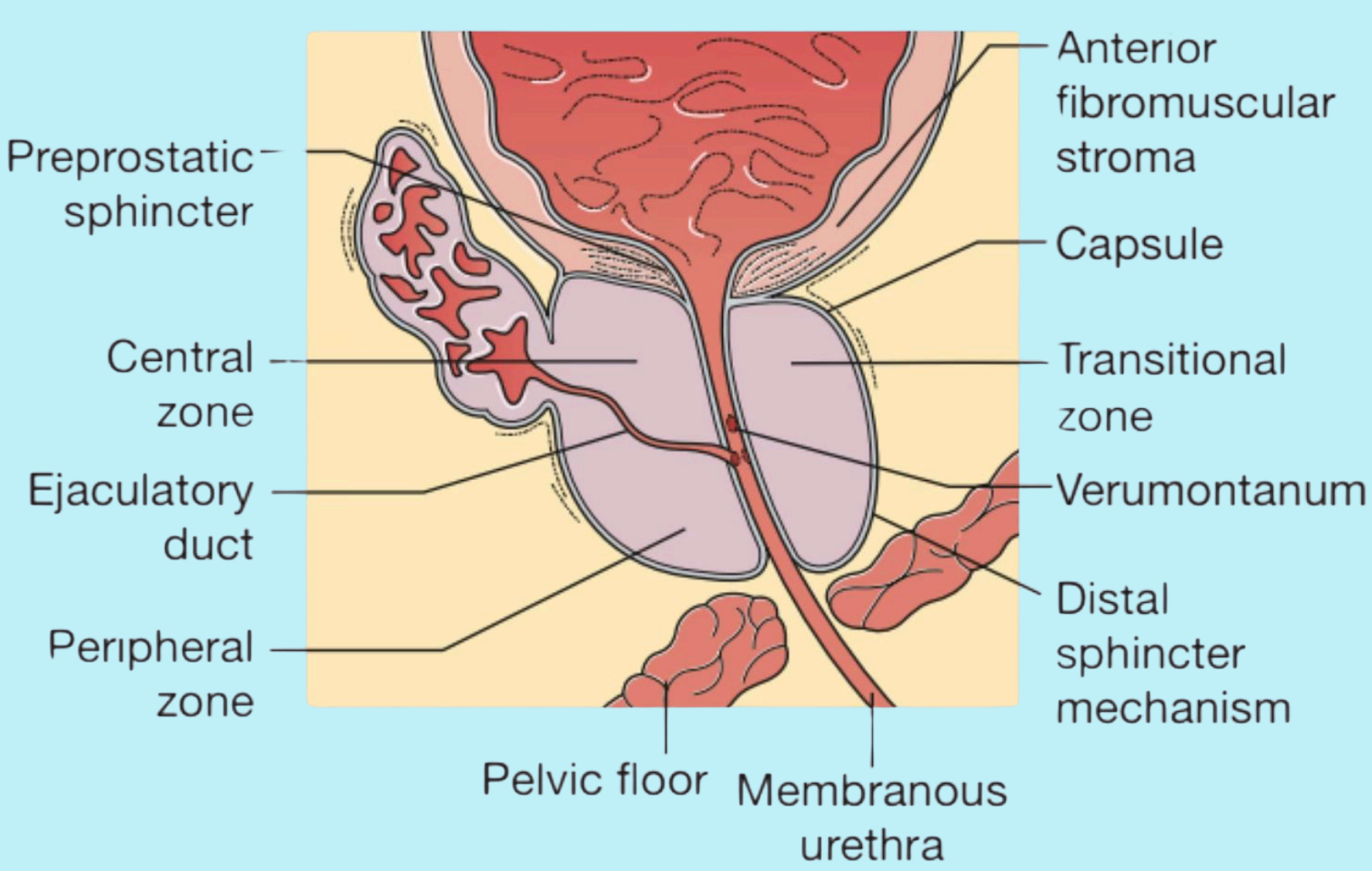
Old Men, Obstructive Uropathy, Transitional Zone

ZONES OF THE PROSTATE

Periurethral Transitional Zone
Most common site of BPH, typically affecting submucous group of glands creating nodular enlargements

Central zone
Posterior to urethral lumen above the ejaculatory ducts

Peripheral zone
Most prostate carcinomas arise from here



CLINICAL FEATURES

Symptoms:

Bladder instability from chronic obstruction causes

- Increased frequency & nocturia
- Urgency & urge incontinence

Bladder outlet obstruction:

- Hesitancy & weak stream
- Intermittency & straining
- Incomplete emptying & post-void dribbling

Findings in BPH:

General Inspection

- Pallor - chronic hematuria causing anaemia
- Dehydration
- Chronic renal impairment

Abdominal Examination

- Palpable Bladder - chronic urinary retention

Digital Rectal Examination

- Smooth, convex and typically elastic posterior surface of the prostate
- Rectal mucosa moves over the prostate
- Residual urine creates a fluctuating swelling above the prostate and can push the prostate down making it look bigger
- Absent median sulcus - malignancy
- Tender upon palpation - prostatitis

INTERNATIONAL PROSTRATE SYMPTOM SCORE (IPSS)

Measures severity of LUTS

INTERNATIONAL PROSTATE SYMPTOM SCORE (I-PSS)

Patient Name: Date:	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. Incomplete Emptying Over the past month, how often have you had a sensation of not emptying your bladder completely after you finish urinating?	0	1	2	3	4	5	
2. Frequency Over the past month, how often have you had to urinate again less than two hours after you have finished urinating?	0	1	2	3	4	5	
3. Intermittency Over the past month, how often have you found you stopped and started again several times when you urinated?	0	1	2	3	4	5	
4. Urgency Over the past month, how often have you found it difficult to postpone urination?	0	1	2	3	4	5	
5. Weak Stream Over the last month, how often have you had a weak urinary stream?	0	1	2	3	4	5	
6. Straining Over the past month, how often have you had to push or strain to begin urination?	0	1	2	3	4	5	

	None	Once	Twice	3 times	4 times	5 or more	YOUR SCORE
7. Nocturia Over the past month how many times did you most typically get up each night to urinate from the time you went to bed until the time you got up in the morning?	0	1	2	3	4	5	
Total I-PSS Score							

Quality of Life due to Urinary Symptoms	Delighted	Pleased	Mostly satisfied	Mixed	Mostly unhappy	Unhappy	Terrible
If you were to spend the rest of your life with your urinary condition just the way it is now, how would you feel about that?	0	1	2	3	4	5	6

The I-PSS is based on the answers to seven questions concerning urinary symptoms. Each question is assigned points from 0 to 5 indicating increasing severity of the particular symptom. The total score can therefore range from 0 to 35 (asymptomatic to very symptomatic).

Although there are presently no standard recommendations into grading patients with mild, moderate or severe symptoms, patients can be tentatively classified as follows: **0 - 7 = mildly symptomatic; 8 - 19 = moderately symptomatic; 20 - 35 = severely symptomatic.**

The International Consensus Committee (ICC) recommends the use of only a single question to assess the patient's quality of life. The answers to this question range from "delighted" to "terrible" or 0 to 6. Although this single question may or may not capture the global impact of BPH symptoms on quality of life, it may serve as a valuable starting point for doctor-patient conversation.

0-7
Mild symptoms

8-19
Moderate symptoms

20-35
Severe symptoms

COMPLICATIONS OF BPH

Acute urinary retention: Sudden, painful inability to urinate. Chronic retention can cause overflow incontinence

Recurrent UTIs: Stasis promotes bacterial growth

Bladder stones: Urinary stasis leads to crystal formation

Hydronephrosis & renal impairment: Back pressure damages kidneys

Hernia: Secondary to chronic straining

INVESTIGATIONS

Laboratory Tests

- Full blood count
- Urinalysis - detects infection or micro/ gross hematuria
- Serum PSA (Prostate specific antigen) - elevated in BPH and prostate cancer - done to eliminate prostate cancer
- Renal function Tests - Creatinine, Urea, eGFR

Imaging

- Ultrasound - check for prostate size and hydronephrosis

Urodynamic Studies

- Uroflowmetry - reduced flow suggests urinary obstruction

LIFESTYLE MODIFICATIONS

- Limiting fluid intake before bed
- Limiting intake of mild diuretics (caffeine, alcohol)
- Increasing exercise & managing weight
- Kegel exercises (strengthening of pelvic floor muscles)

MEDICAL MANAGEMENT

- **Acute urinary retention** - immediate catheterization

- **Alpha blocking drugs** - Prazosin, Tamsulosin - relaxes bladder neck. S/E - postural hypotension

- **5a Reductase Inhibitors** - Finasteride, Dutasteride - inhibits conversion of testosterone to dihydrotestosterone. 25% shrinkage of prostate after one year use. More effective in patients with prostate >50g. S/E - sexual dysfunction, decreased libido and ejaculate volume

- **PDE-5 Inhibitors** - Sildenafil - decrease detrusor, prostate and urethral muscle tone. Improves LUTS. Do not use them together with alpha blockers as it can worsen S/E.

- Opt for **combination therapy** as monotherapy shows no improvement. If there is no improvement after medication, surgery is required.

INDICATIONS FOR SURGERY

- Combination medication therapy failed to relieve the patient's symptoms
- Presence of chronic bladder outlet obstruction (BOO), resulting in recurrent urinary retention, renal failure due to bilateral hydronephrosis, recurrent UTIs, recurrent gross hematuria, and recurrent bladder calculi
- Diagnosed via presence of a benign prostate, paired with low maximum flow rate (<10-12mL/s) for a good voided volume (>200mL)
- Severe symptoms with a large residual volume of urine (>200mL), High-pressure chronic or recurrent urinary retention, ≥2 episodes (absolute indication)
- Prostate abscesses
- Difficulty with clean intermittent catheterization
- Obstructive azoospermia

The size of the prostate alone is not considered an indication for surgery. There should generally be a finding of real or potential permanent harm to the kidneys or bladder.

TRANSURETHRAL RESECTION OF THE PROSTATE (TURP)

- Indication: failed medical treatment
- Involves the use of electrocautery loop to shave off excess prostate tissue, restoring urine flow
- TURP can be performed using either monopolar or bipolar electrocautery techniques, mounted on a resectoscope

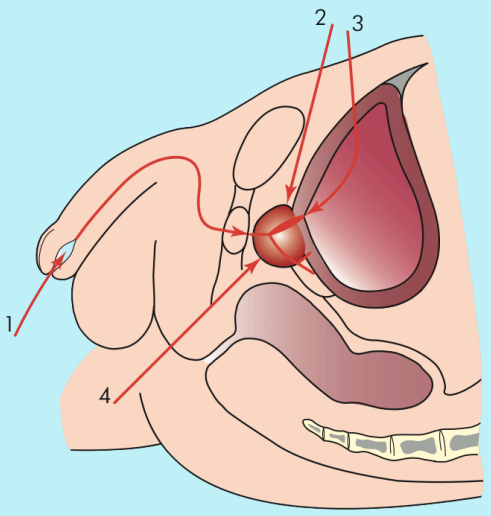


Figure 77.12 The surgical approaches to the prostate.

Methods of performing prostatectomy

The prostate can be approached (1) transurethrally (TURP), (2) retropubically (RPP), (3) through the bladder (transvesical; TVP) or (4) from the perineum (Figure 77.12).

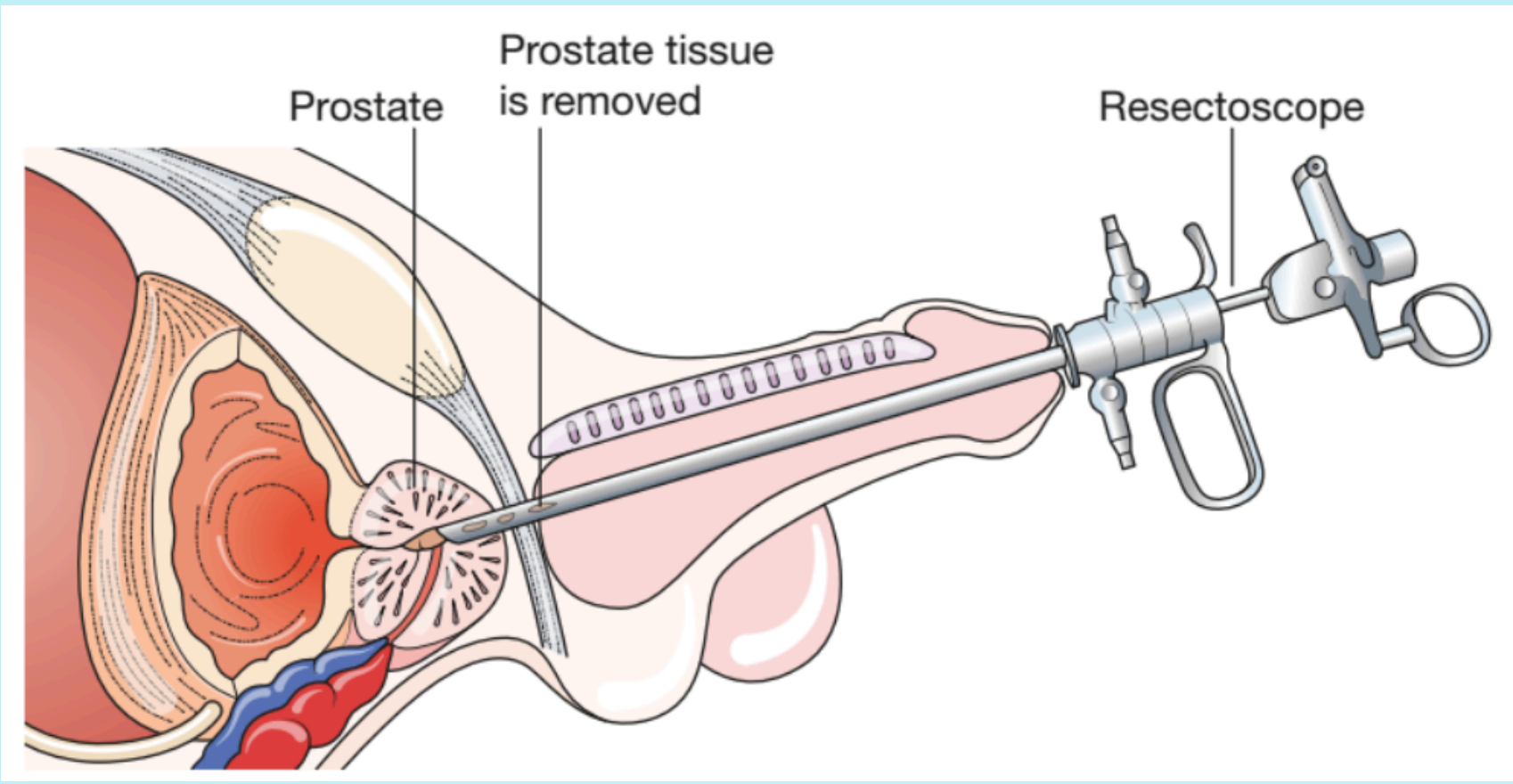
- Monopolar: electrical current flows from resection loop, through the body, to a grounding pad; uses non-conductive irrigation fluids such as glycine, sorbitol, mannitol, or sorbitol/mannitol
- This is to prevent current dispersion which can result in reduced precision and increased tissue damage
- However, due to the use of the aforementioned irrigation fluids, it can cause dilutional hyponatremia or TUR syndrome, especially in prolonged or high blood loss procedures (roughly 20 cases/1,000 monopolar TURP surgeries)

TRANSURETHRAL RESECTION OF THE PROSTATE (TURP)

- Bipolar TURP uses saline irrigation and avoids current passing through the body, reducing TUR syndrome risk. Needs special equipment, slower than monopolar, but outcomes are similar.

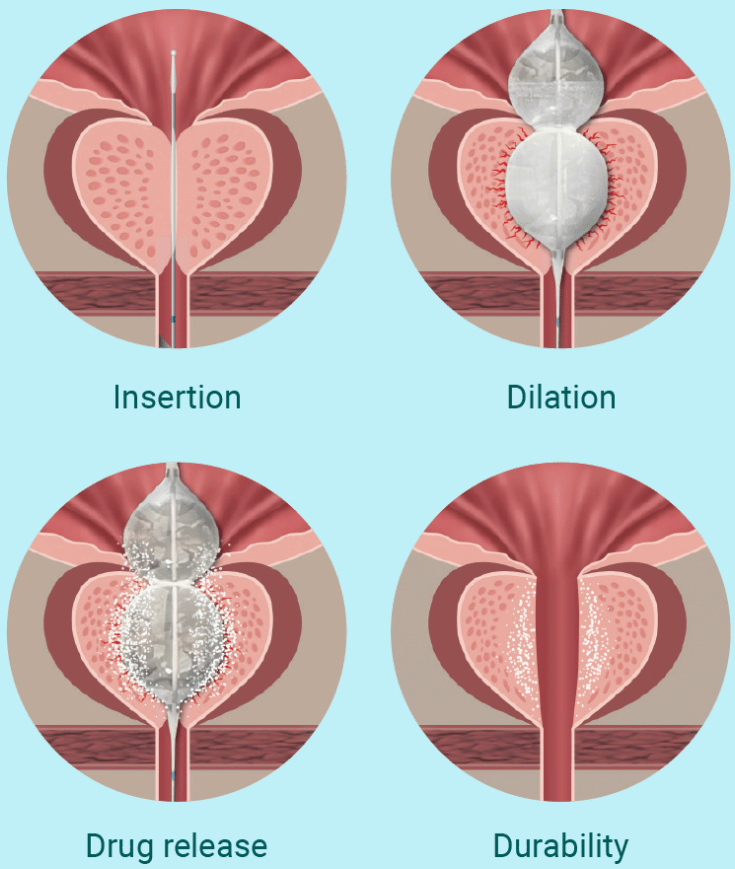
- Risks: saline overload, hyperchloremic acidosis, airway edema.
- Tissue is resected bladder neck → verumontanum, removed with Ellik evacuator. 3-way catheter placed, irrigated until pale pink; removed in 2–3 days.

- Use Collings knife for small prostates or stenosis. Verumontanum prevents sphincter injury. Do pre-op cystoscopy to identify key landmarks for safe resection.



ADVANCES IN MINIMALLY INVASIVE PROCEDURES

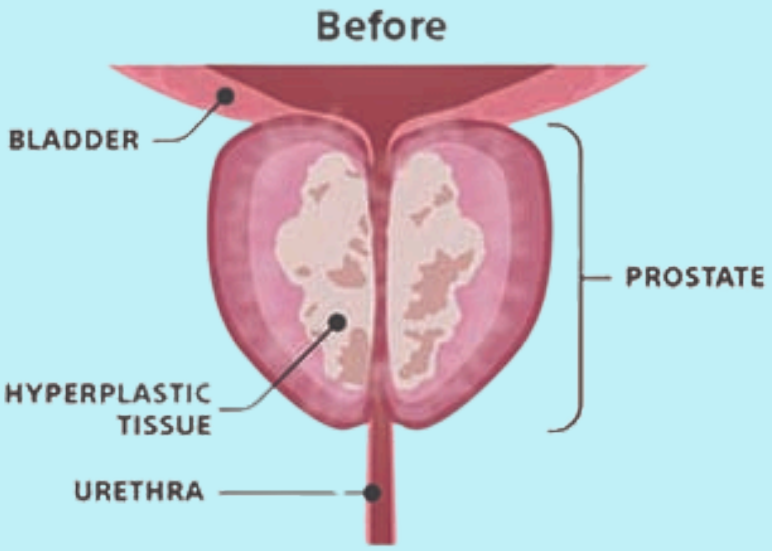
- Lasers can be used to evaporate (e.g. Green light laser) or enucleate the prostate (e.g. HOLEP).
- The advantage of green light laser is that vaporisation is hemostatic and this procedure can be performed even while patients are anticoagulated.
- HOLEP involves the use of a laser to coagulate any of the small vessels crossing the relatively avascular plane between the peripheral and transitional zones of the prostate.
- The enucleated adenoma is pushed into the bladder, where it is morcellated and extracted via the cystoscope.
- Aquablation: performed using Aquabeam system, form of water ablation therapy.
- Optilume: employs the use of a balloon covered in paclitaxel (taxane chemotherapy drug) to dilate the urethra and prevents regrowth of prostatic tissue.

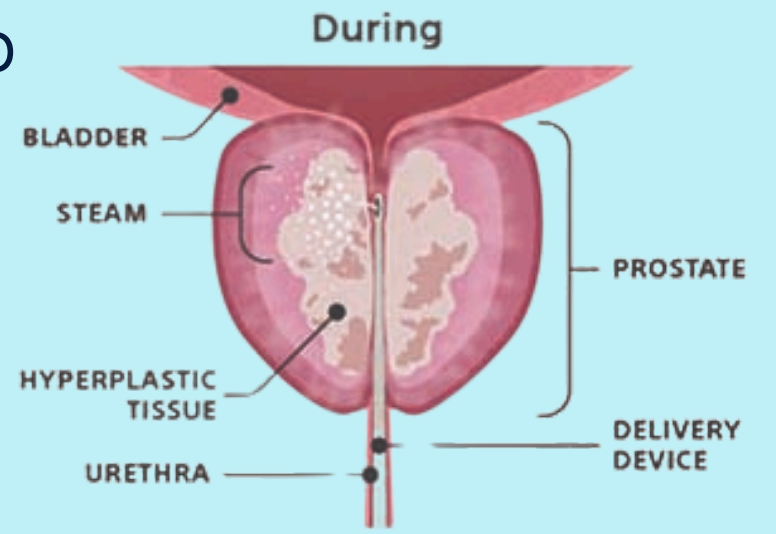


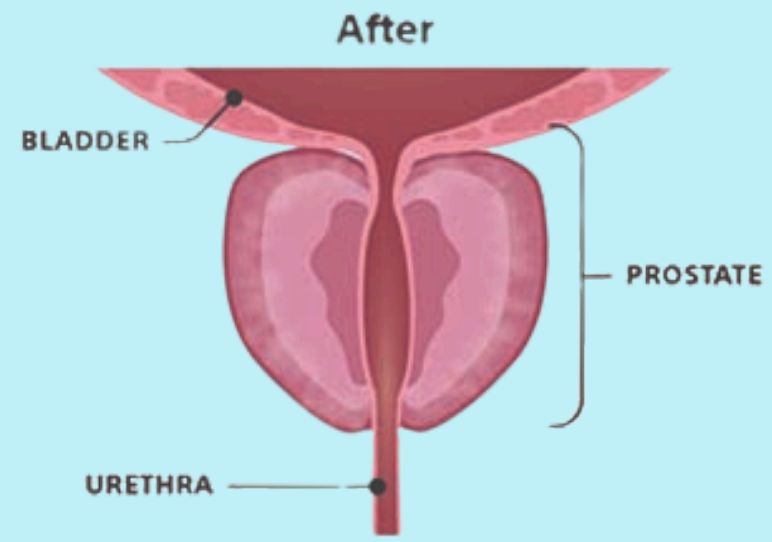
ADVANCES IN MINIMALLY INVASIVE PROCEDURES

Rezūm Water Vapor Therapy:

- Uses the principles of convective heat transfer
- Water vapour is delivered through a retractable vapour needle via emitter holes in the transurethral device
- Done in 9-second bursts to the transition zone of the prostate
- Upon contact with body-temperature tissue, the water vapour then condenses.
- This phase shift to a liquid state dispenses concentrated energy onto the cell membranes of the target tissue, triggering instant cell necrosis.



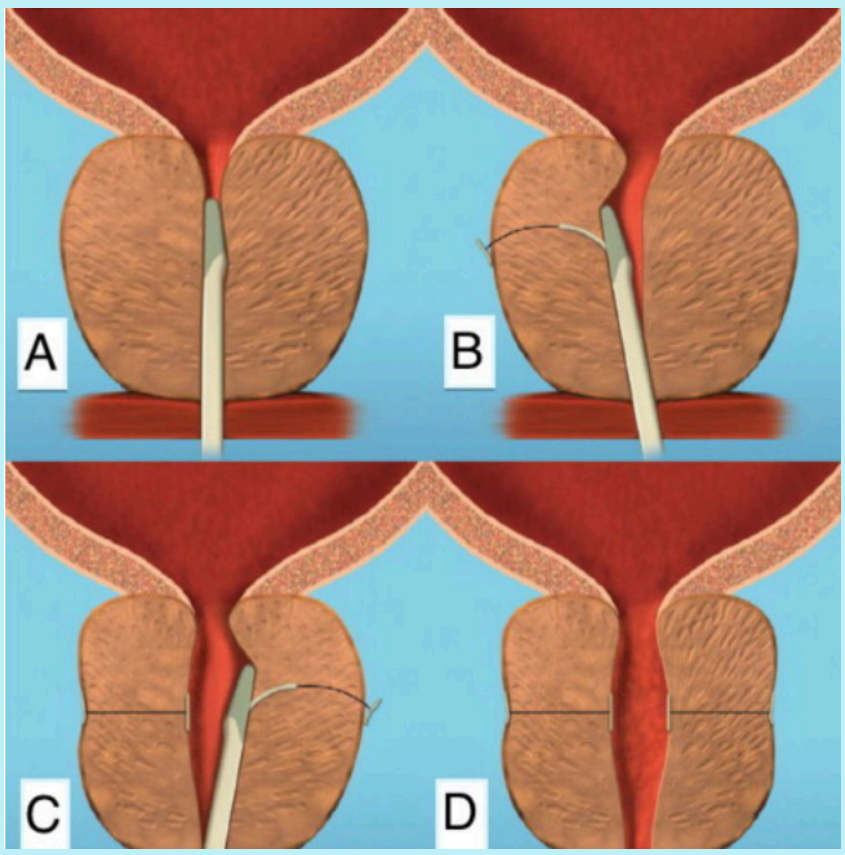




ADVANCES IN MINIMALLY INVASIVE PROCEDURES

UroLift System (Prostatic Urethral Lift):

- The PUL procedure involves the delivery of implants that retract obstructing prostate lobes, thus dilating the urethral lumen
- Nonabsorbable suture that is under tension and draws the prostatic urethra to the prostate capsule.
- Aims to create an anterolateral channel from the bladder neck to the verumontanum



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