

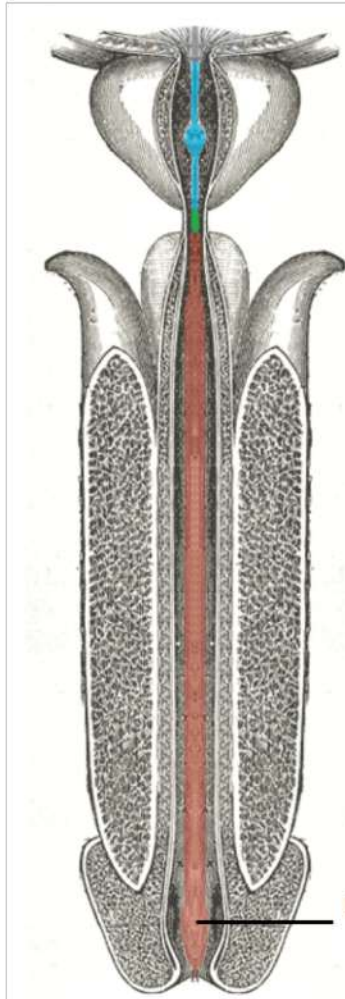
Benign Prostatic Hyperplasia

BPH

= ¹senile prostate enlargement. ²come with old ages. ³late

لا لا في البداية
يأتي
Chronic Prostatitis

↓
Most common benign tumor in Men. → (Not pre cancerous).



- Prostatic
- Membranous
- Penile (bulbous)

Navicular fossa

Urethra

2 anterior

fossa navicularis

bulbar urethra.

2 posterior

prostatic

membranous.

↓
Prostate
from
the
Centre

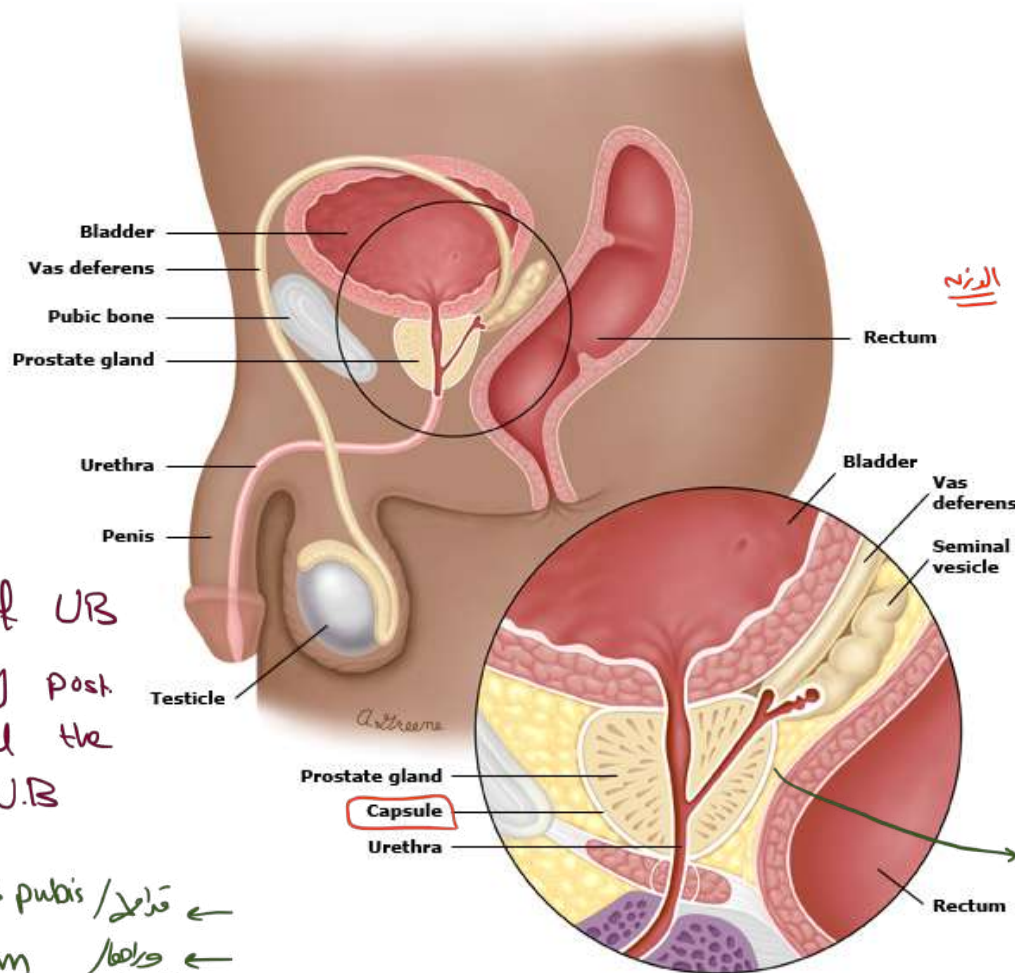
→ prostate surrounded by capsule

severe pain for distension of the

- ① considered as the land mark of the transurethral resection of prostate "TURP"
- ② important in pathophysiology

capsule من هنا ←

Anatomy



→ walnut size and shape
 نصف
 نصف
 صفة كوز

Size of prostate

4x3x2

4x3x2

الوزن → 18 - 25 gram

prostate location



Below the base of UB
 Surrounded by post
 Urethra and the
 Neck of UB

please comment on
 size of prostate
 and post Residual
 volume.
 هذا كذا
 pelvic
 anal
 abdominal
 US

base
 up ward
 and
 the neck (Apex)
 is down ward.

Symphysis pubis / $\frac{1}{2}$ ←

Rectum / $\frac{1}{2}$ ←

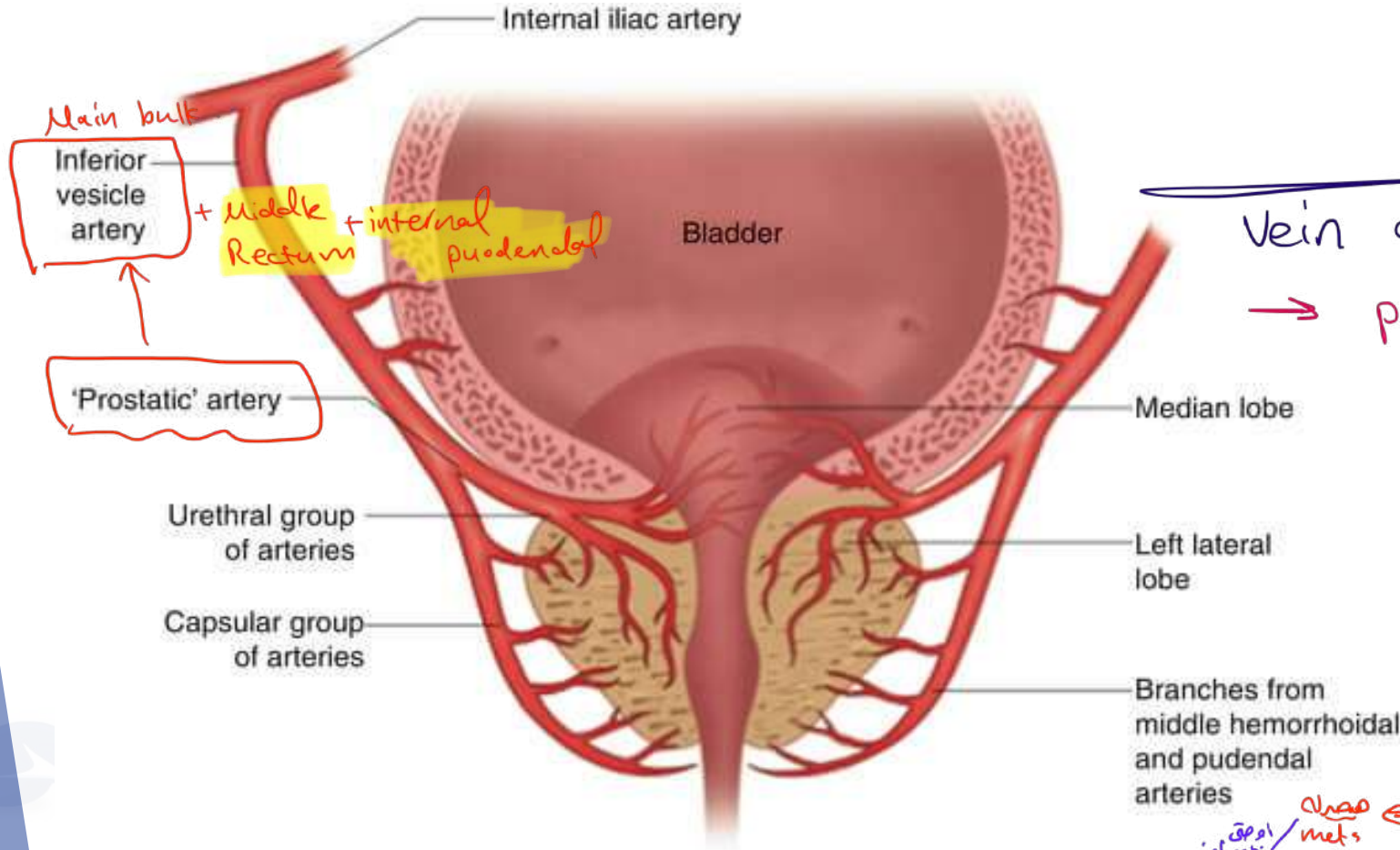
UB / $\frac{1}{2}$ ←

external
 urethral / $\frac{1}{2}$

↓
Main control of continence in males.

Blood supply

is (1-1.5 cm) - apex of
external urethral
sphincter.



Vein drainage :-

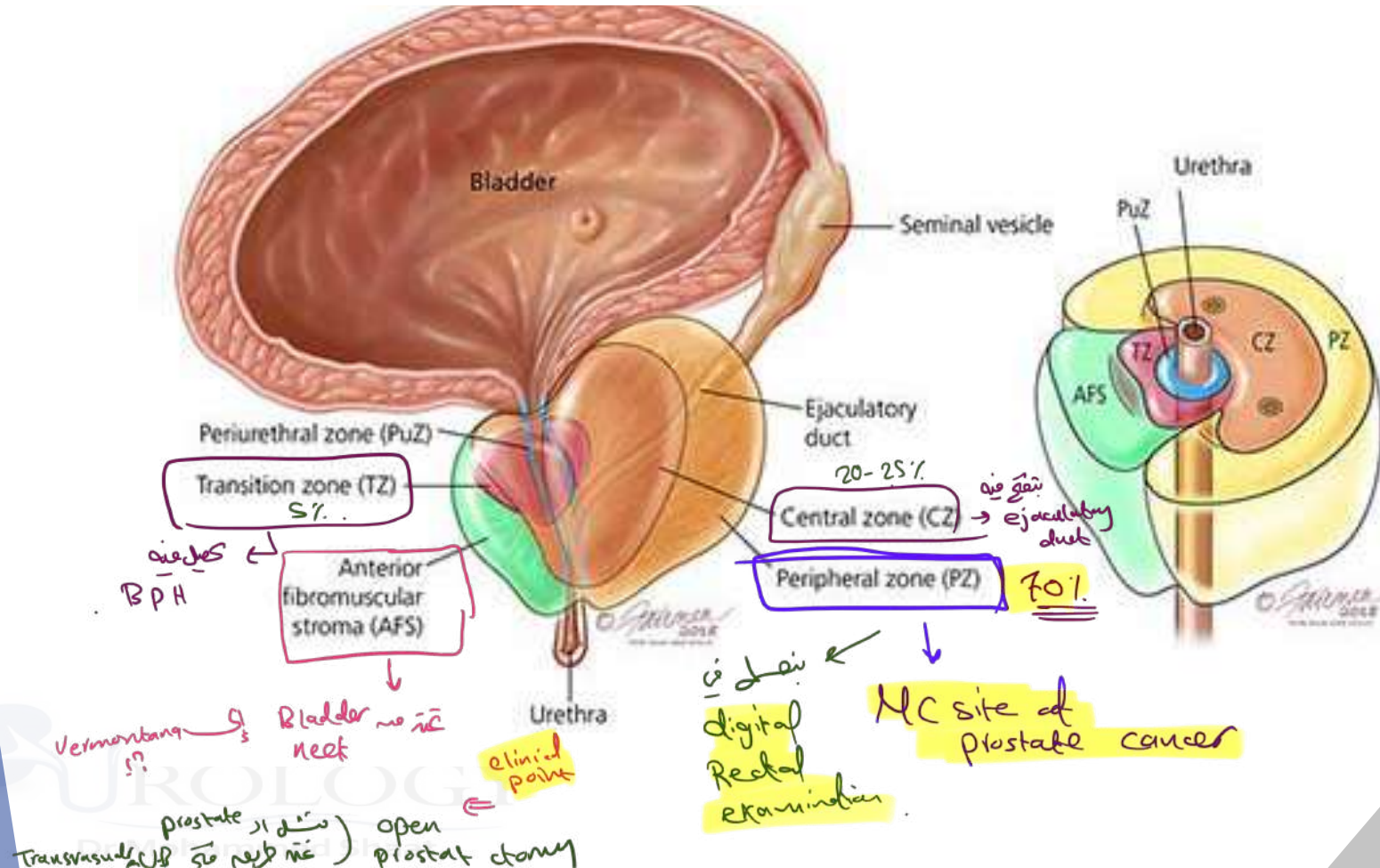
→ Prostatic venous plexus
+ Santorini's plexus

1/2/21

There is communication between prostatic venous plexus and vertebral venous plexus + Batson

Prostatic metastasis
Batsan's vertebral
cancer

Zone (4 zones)



land mark
Vermilion
anterior fibromuscular stroma

BPH ?

[?] Increase in epithelial and stromal cell numbers (**hyperplasia**) in Periurethral (**TZ**) area of the prostate.
other name

← نيجل اعراف نيجل نيجل
(urethra)
periurethral zone



Size of prostate doesn't correlate with symptoms.

Etiology

? **Not totally clear** → (There is Risk factors

? **DHT**

? **Impaired Aptosis and Growth factors**

↓
programmed
cell death.

→ Androgen is necessary for BPH
But not main cause.

① age → 50% 50%
مع 15 عقد
سنة 10%
والتي على
90-100 y.
تقريباً 10% تقريباً.

② Jewish "commonest"

③ smoking.

④ androgen.

Testosterone → dihydro testosterone
5 α reductase enzyme.
↓
best potent form androgen → 10%
أقوى
10%
مركب

DHT

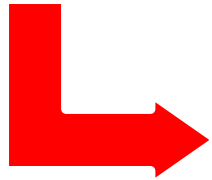
inhibition of this enzyme
↓
BPH

Circulating
Testosterone

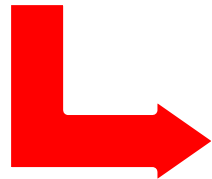


5αR enzyme

Dihydrotestosterone



Binding to nuclear androgen
receptor



Regulate the expression of Genes
which aid in growth of epithelium
and stroma (BPH)

Types 5 α Reductase

? Type I

? Extra-prostatic

? Skin and liver

? Type II (selective)

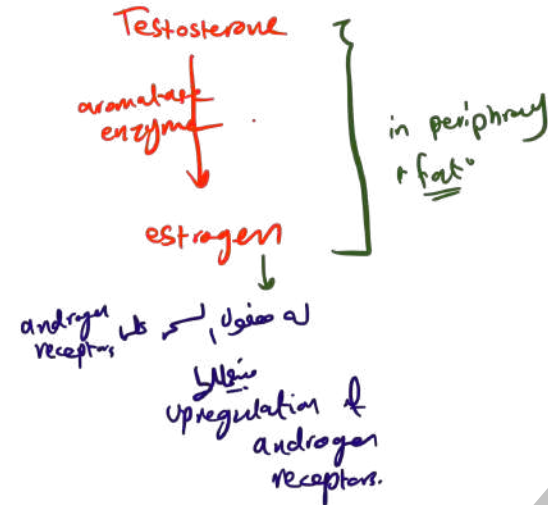
? Prostatic

↓
finasteride

bi
non
selective
↓
as distinct
Type 1
and
2
↓
dutasteride

Risk factors

- ? Religion ✓
- ? Higher socioeconomic groups → Expectancy life ^{عمر} _{متوسط}
- ? Increased sexual activity
- ? Alcohol
- ? HTN
- ? Smoking
- ? Diet
- ? Obesity
- ? Cold medications
- ? No relation between vasectomy and BPH



What after

- ❑ Hyperplasia alone
- ❑ Bladder outlet obstruction secondary to hyperplasia

Pathophysiology

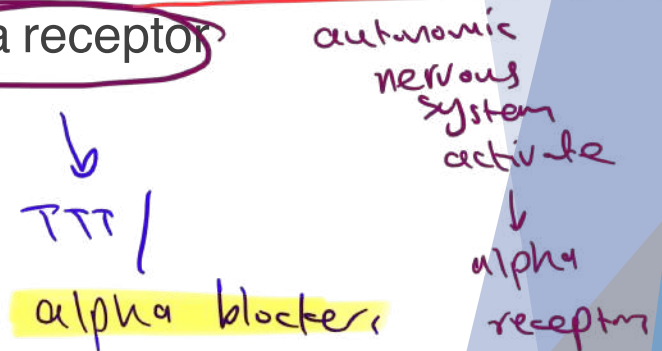
? Dynamic component

? Smooth muscle contraction mediated by alpha receptor

? Static component

? volume itself
"enlargement itself"

• Mechanical obstruction on post. Urethra.



compensated stage.

① Thickening + hypertrophy + due to over contractions

② conversion of fibrous tissue into collagen^{weak.}

appears as **Trabeculation** & **cord like**
= infravesical obst.

③ mucosa of urinary bladder become **herniated**

↓
cellule ?

↓
if left untreated

sacule **may**

↓
if left untreated

diverticulosis **may**

indication for
intervention

Stasis
recurrent infection
+ stones

muscles (to Q) around UB to protect

peritonum **may**



diverticulum هو ك
paraureteral آفة في
orifice

هو
Hutch diverticula.

vasico في مجرى ال و هو نوع من ال diverticulum
ureter
junction



هو
disturbance of the junction.

Kidneys من عبر Urine is من بسبب

hydronephrosis هو

distension
of kidney → Retention of urine.

decompensated stage

* Detrusor failure

↓
detrusor hypotonia

↓
atonic bladder * no contraction

this new art is ←
atonic bladder
as a first phase
* actually

2 sequences

①

Hydroureteronephrosis → azotemia → Renal failure.
due to
urine reflux
back to kidney.

② Chronic Retention with overflow incontinence

Pathophysiology

Dynamic Obstruction: Obstruction due to smooth muscle tone

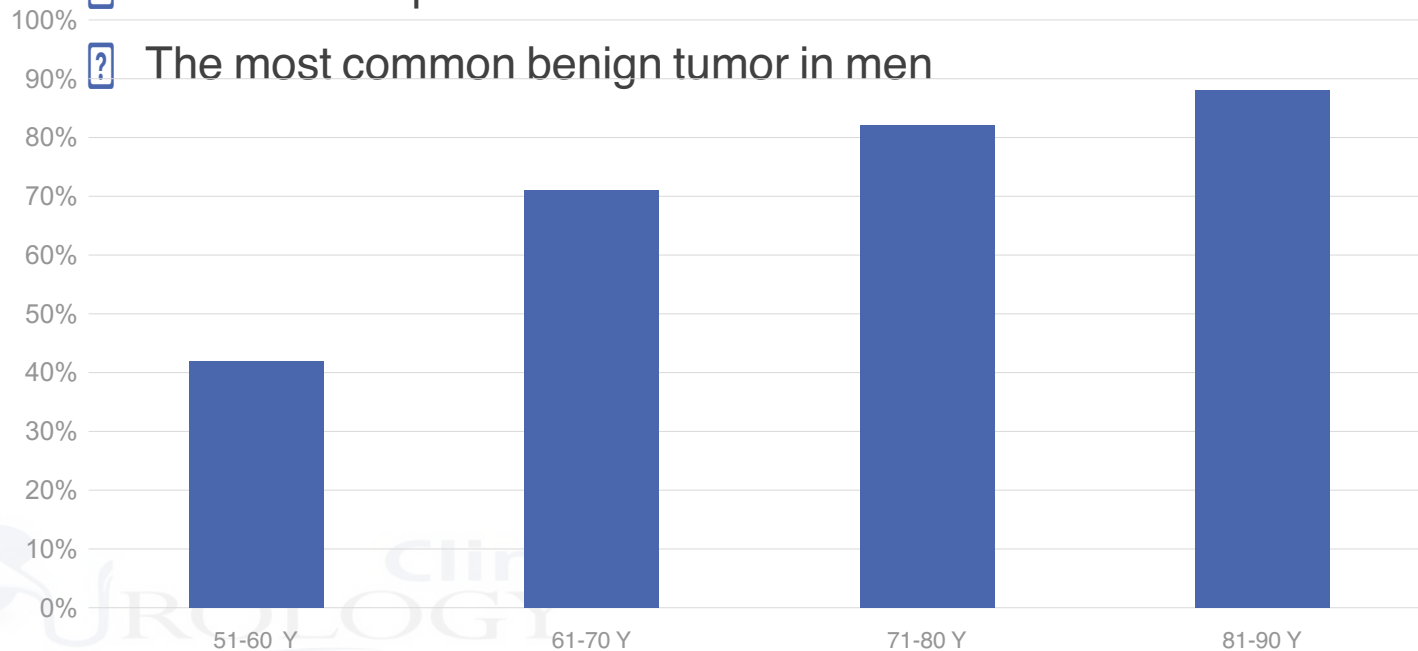
contraction

Static Obstruction: Obstruction due to enlargement of the prostate

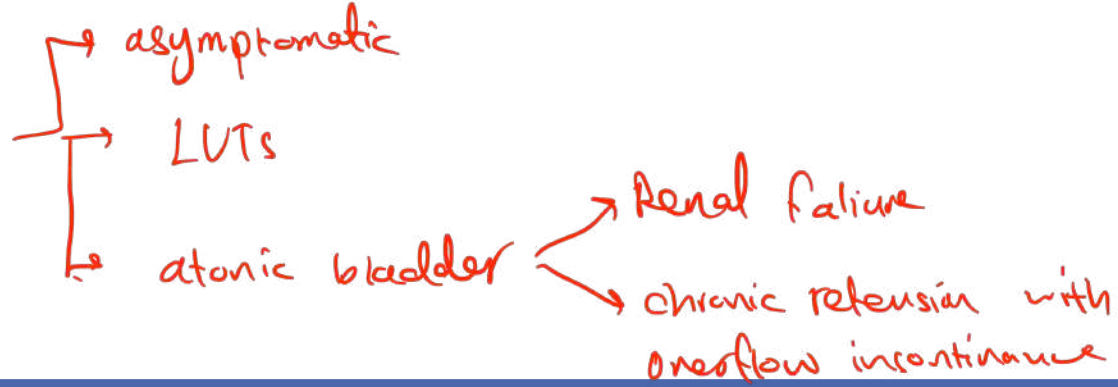


Epidemiology

- ? Age related
- ? No men <30 had evidence of BPH
- ? 25 % men require treatment



Symptoms



LUTS (lower urinary tract symptoms)

Obstructive
voiding

Irritative
storage



WISE

FUN

Obstructive

Irritative *"storage"*

Hesitancy

Frequency

① *weak*
Poor stream

Urgency

③ Straining

Nocturia

② Intermittent flow

④ Incomplete voiding *and empty.*

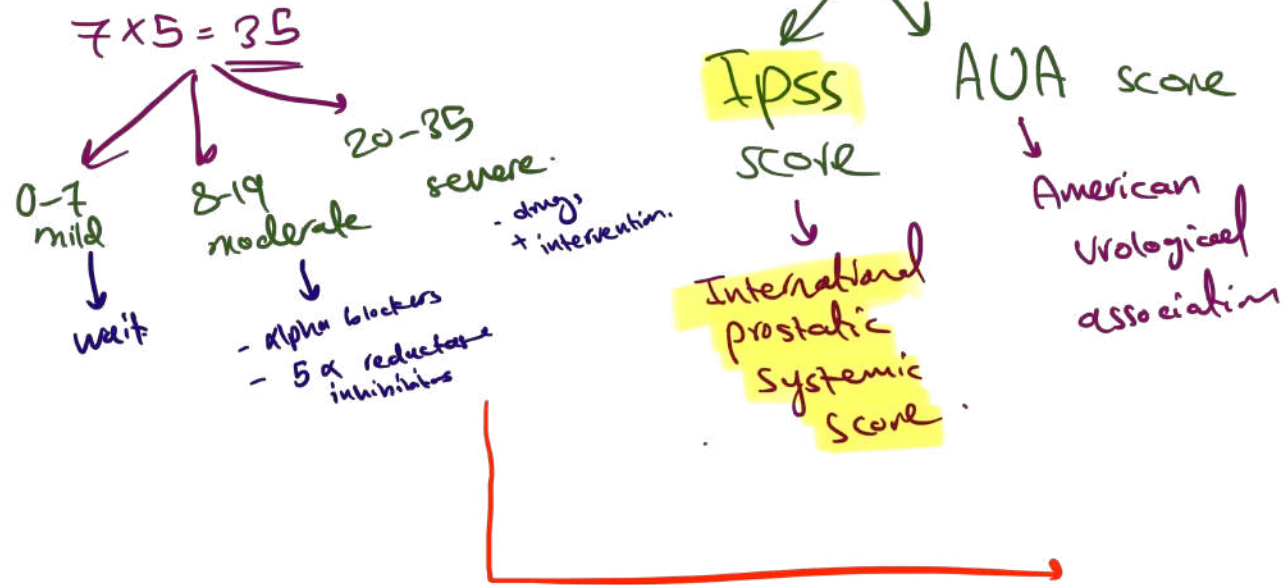
Terminal dribbling

Hematuria

Dysuria

Overflow
Incontinence

← Score 5 7 11 15 19 23 27 31 35 39 43 47 51 55 59 63 67 71 75 79 83 87 91 95 99 100
(zero-5 15 25 35 45 55 65 75 85 95 100)



به تم الإجابة سؤال آخر

↓
Quality of life

ويؤثر على (0-6)

Evaluation

→ history

[?] Focused examination

[?] Abdomen

[?] External Genitalia

[?] DRE

signs of renal failure.

gait.

suprapubic + Renal area + hernial orifices
↓
chronic retention ↓
for
hydronephrosis.

“a”

To see if there's

neurological
problems

Evaluation

- ❑ Focused examination
 - ❑ Abdomen ? Palpable bladder
 - ❑ External Genitalia
 - ❑ DRE



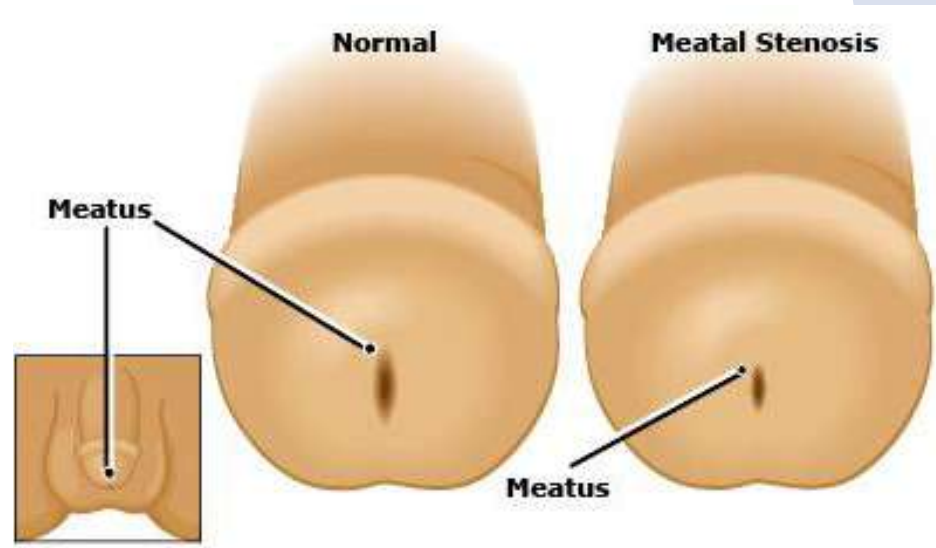
Evaluation

? Focused examination

? Abdomen

? External Genitalia

? DRE



Evaluation

? Focused examination

? Abdomen

? External Genitalia

→ ? DRE "digital Rectal Examination"

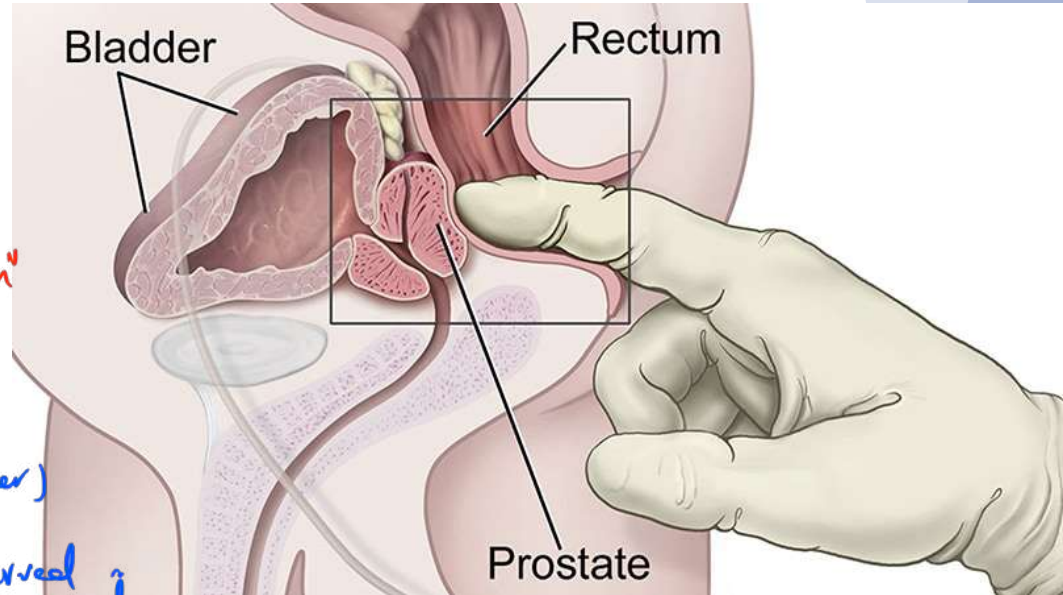
Importance
of
RE /

? Size + exclude malignancy

① Consistency [↓] _{+ surface}
 → firm (BPH)
 → hard (cancer)

② Median sulcus → groove
or preserved & exaggerated

③ Tenderness



→ Bimanual examination → for Bladder tumor .

Investigation

- hematuria. ^{microscopic} _{gross} → if marked enlargement.

? Urine analysis +/- culture

? KFTs

? PSA ? → prostatic specific antigen → for malignancy.

- CBC
- electrolytes.
- abdominal + pelvic ultrasound → To see :-

Normal ^{value} _{no} 4 nanogram/day. ⇒ >4 suspected for malignancy do biopsy.

- ① size
- ② post residual volume.
- ③ Thickening of bladder wall
- ④ hydronephrosis / stones.

Images

? Ultrasound

? Abdomen and pelvis

? kidney

? Bladder

? Prostate size

? Post void residual

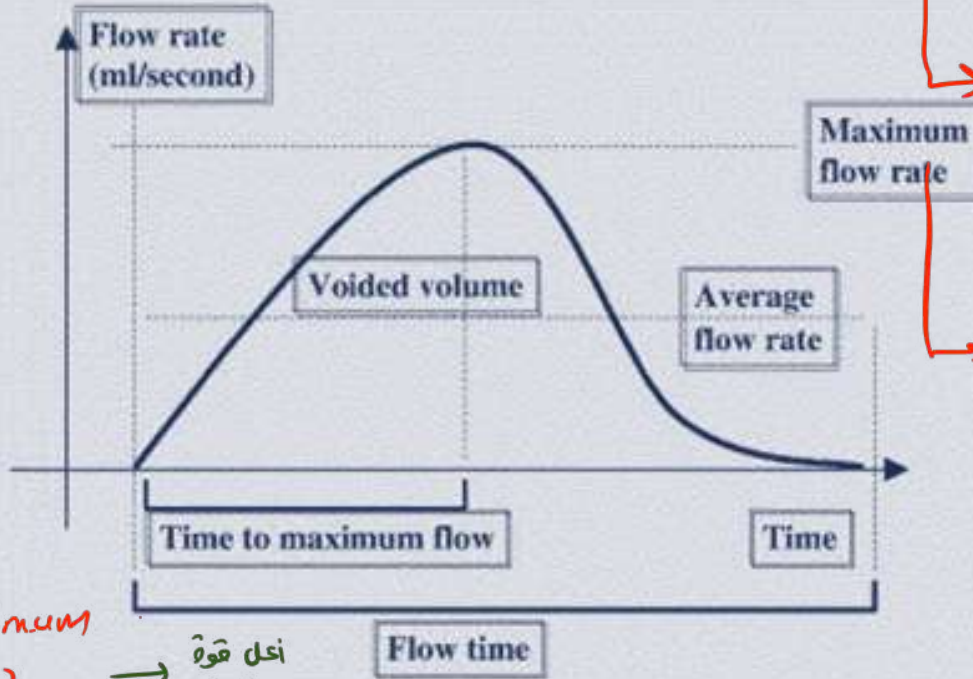
Uroflowmetry and Urodynamic

Autosomal dominant young age + markedly (enlargement) (familial or genetic)
 done for young (< 40 y.)
 ① and extreme ages.

② marked capacity
 "atonic bladder".

③ neurological
 problems.

↓ جهاز وظيفي
 Sensor
 وصف
 حل الجهاز
 الكمبيوتر
 ونظيره
 الحرفي
 to urinate
 in



① mark
 maximum
 flow
 time.

↑ دخل قوة
 دفع البول

> 15 ml/sec → normal
 10 - 15 ml/sec → equivocal
 < 10 ml/sec → obstruction
 سرعة عالية

④ we do CT to exclude malignancy

• hematuria
not the
indication
~ cancer is

diagnostic cystoscopy Cystourethroscopy

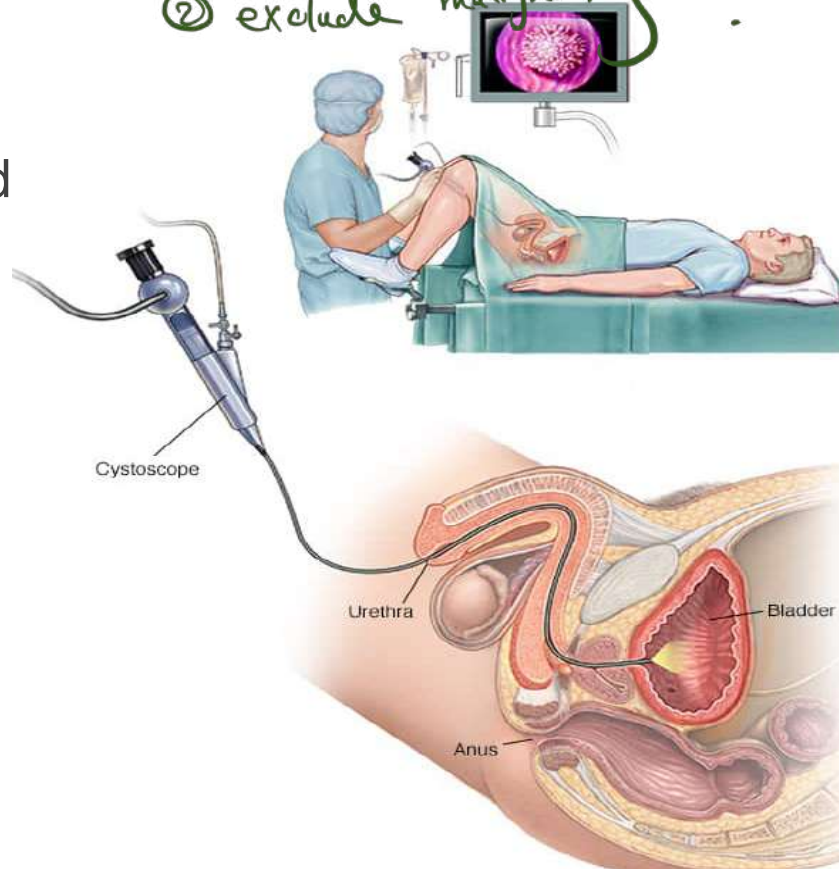
فتظار
تسيف

① confirm size of prostate
② exclude malignancy

وقت العملية

? Not routinely performed

? When ?



IPSS

Mild

0-7

Moderate

8-19

Sever

20-35

Patient Name _____

Date of Birth _____ Date Completed _____

Incomplete Emptying

Over the past month, how often have you had a sensation of not emptying your bladder completely after you finished urinating?

0

1

2

3

4

5

Frequency

Over the past month, how often have you had to urinate again less than 2 hours? After you finished urinating?

0

1

2

3

4

5

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

Urgency

Over the past month, how often have you found it difficult to postpone urination?

0

1

2

3

4

5

Weak Stream

Over the past month, how often have you had to push or strain to begin urination?

0

1

2

3

4

5

Straining

Over the past month, how often have you had to push or strain to begin urination?

0

1

2

3

4

5

None

1-Time

2-Times

3-Times

4-Times

5-Times or more

Nocturia

Over the past month, how many times did you most typically get up to urinate from the time you went to be at night until the time you got up in the morning?

0

1

2

3

4

5

Your Total I-PSS Score

Quality of Life Due to Urinary Symptoms

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?

Delighted

Pleased

Mostly Satisfied

Mixed Mostly

Dissatisfied

Unhappy

Terrible

0

1

2

3

4

5

6

Differential Diagnosis



Treatment

- نضاج + متابعة
- ? Watchful waiting mild (0-7)
 - ? Medical therapy
 - ? Surgical therapy

Watchful waiting

❓ Appropriate management of men with mild symptom IPSS scores (0-7)

❓ Lifestyle Modifications

❓ Avoid fluids prior to bedtime or going out

❓ Reduce caffeine and alcohol

❓ Scheduled urination at least once every 3 hours. "Regular bladder habit"

❓ Double voiding: after urinating, wait and try to urinate again.

• α_1 agonist →
[α agonist]

Medical therapy

? α blocker

? 5 α R I

? PDE5 I *"new drugs"*
phosphodiesterase inhibitor →

(PDE5)
Tadalafil
"Viagra"

Alpha blocker

? Non-selective

? Not used due to high side effect Phenoxybenzamine
postural hypotension.

? Selective

? α 1 : Prazosin , Alfuzosin **xatral®**

super selective ? α 1a : ^{0.44mg + Sildenafil 8mg} tamsulosin **omnic®** → ^{less} Retrograde ejaculation → then dry (No) ejaculation

? Long acting : doxazosin **cardura®**, Alfuzosin SR

Alpha blocker

? Mechanism

Relax smooth muscle in the bladder neck, prostate capsule and prostatic urethra

? Advantage

- ? Non-surgical
- ? Effective in mild to moderate symptoms

? Disadvantage

- ? Life long
- ? Efficacy decrease with time

? Side effect

- ? Hypotension
- ? Retrograde ejaculation
- ? Floppy iris syndrome

5 α RI

selective

? Finasteride **Proscar®**

? 5 α RI type II

? 70% reduction of DHT

non selective

? Dutasteride **Avodart®**

? 5 α RI type I + Type II

? 90 % reduction of DHT

hematuria
origin



Best treatment
is

5 α reductase inhibitors



→ ↓ vascularity
→ ↓ Bleeding during surgery

→ بعد 6 اشهر ينزل حجم
prostate 50%

5 ARI

? Mechanism

- ? Block the conversion of testosterone to DHT.
- ? Affects the epithelial component of the prostate, resulting in a reduction in the size of the gland and improvement in symptoms

? Advantage

- ? Non-surgical
- ? Reduction in size 20 %
- ? Decrease VEGF used for hematuria due to prostate enlargement

? Disadvantage

- ? 6 month therapy to reach max. effect
- ? Side effect
- ? Cancer ?!

? Side effect

- + sexual dysfunction .
- ? Decrease libido
- ? Breast tenderness
- ? Decrease PSA 50 %

false impression of PSA
↓ 50%.



اضرب في prostate في 2

Combination Therapy



Duodart®

PDE5 I (No impotence or erectile dysfunction).

? Mechanism

- ? relaxing of the smooth muscle fibers of the bladder and prostate

? Advantage

- ? Non-surgical
- ? Improve ED

? Disadvantage

- ? Price
- ? Long term

? Side effect

- ? Hypotension
- ? Headache

→ contraindication :- unstable angina + ^{isidh} nitrates.

Surgical therapy

① → ? Minimal invasive

? Invasive

→ ② gold standard (TURP)
Transurethral resection of prostate.

→ ③ open

Indication of intervention :-

→ Complication :-

- ① Recurrent attack of urinary retention.
mis b
- ② Recurrent attacks of UTI.
- ③ Recurrent attacks of hematuria
- ④ Bladder stones.
- ⑤ Renal impairment
- ⑥ patient not compliant to treatment.

Minimal invasive

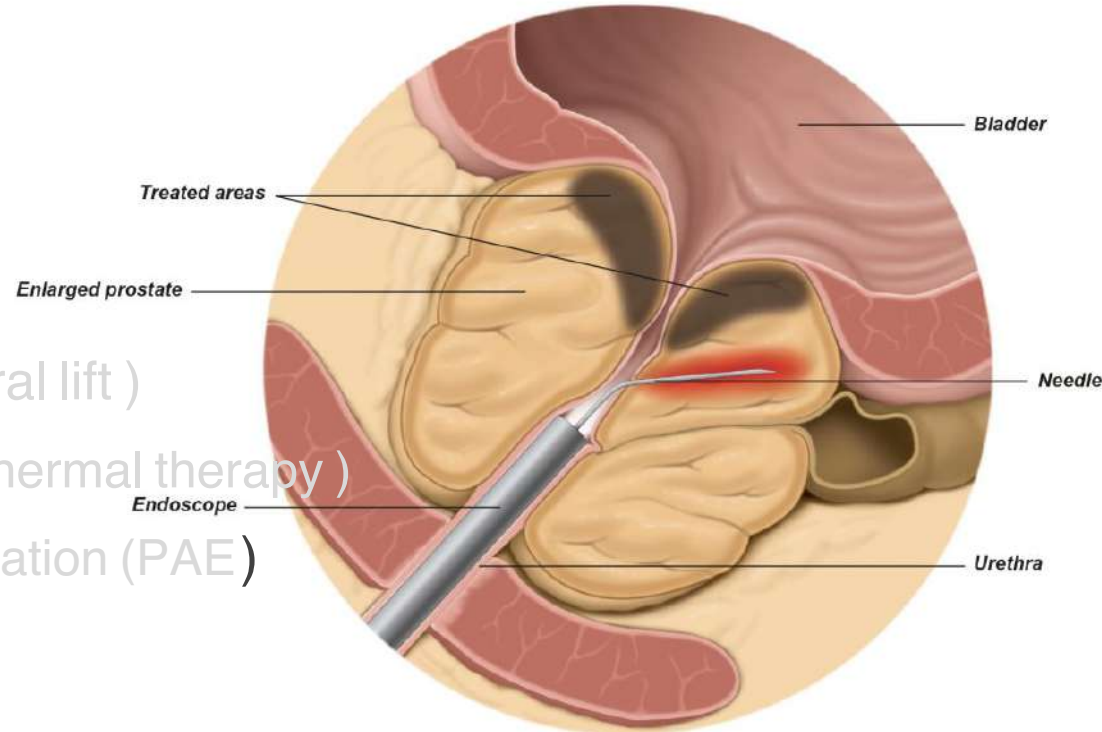
بى ئىنقى

- ? TUNA Transurethral needle ablation
- ? TUMT $\leftarrow$ $\rightarrow$ microwave therapy.
- ? HIFU high intensity focus ultrasound $\rightarrow$ (Transrectal)
- ? Urolift (prostate urethral lift) Stent
- ? Rezum (water ^{ناپ} Vaper thermal therapy)
- ? Prostate artery embolization (PAE)

U +

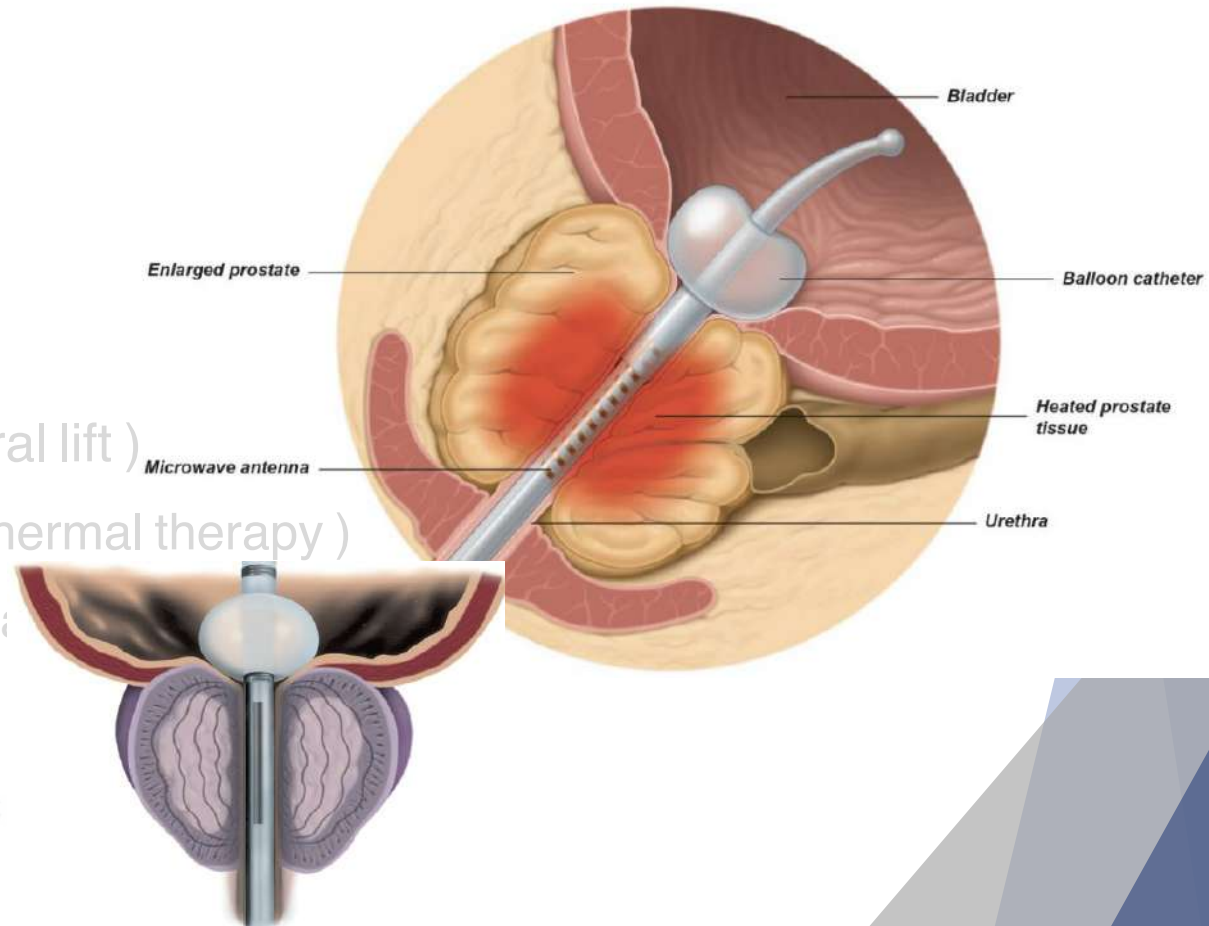
Minimal invasive

- ? TUNA
- ? TUMT
- ? HIFU
- ? Urolift (prostate urethral lift)
- ? Rezum (water Vaper thermal therapy)
- ? Prostate artery embolization (PAE)



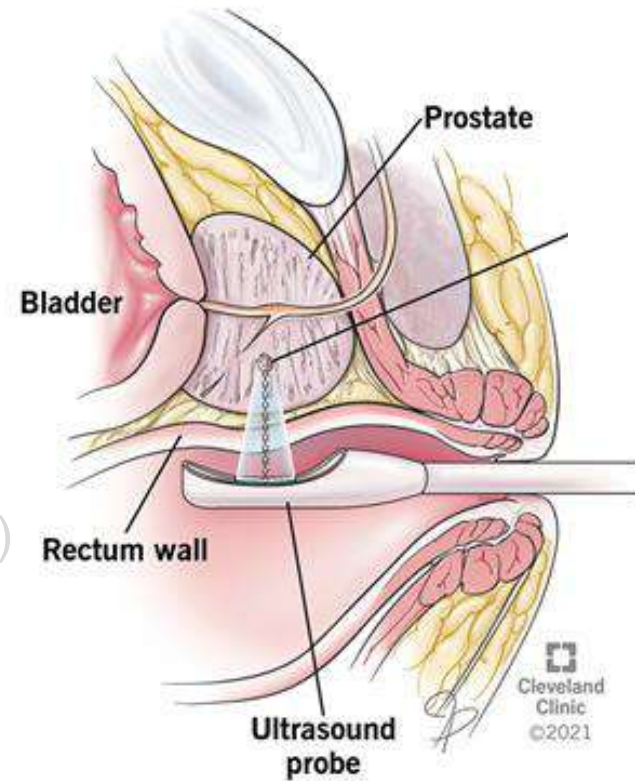
Minimal invasive

- ? TUNA
- ? TUMT
- ? HIFU
- ? Urolift (prostate urethral lift)
- ? Rezum (water Vaper thermal therapy)
- ? Prostate artery emboliza



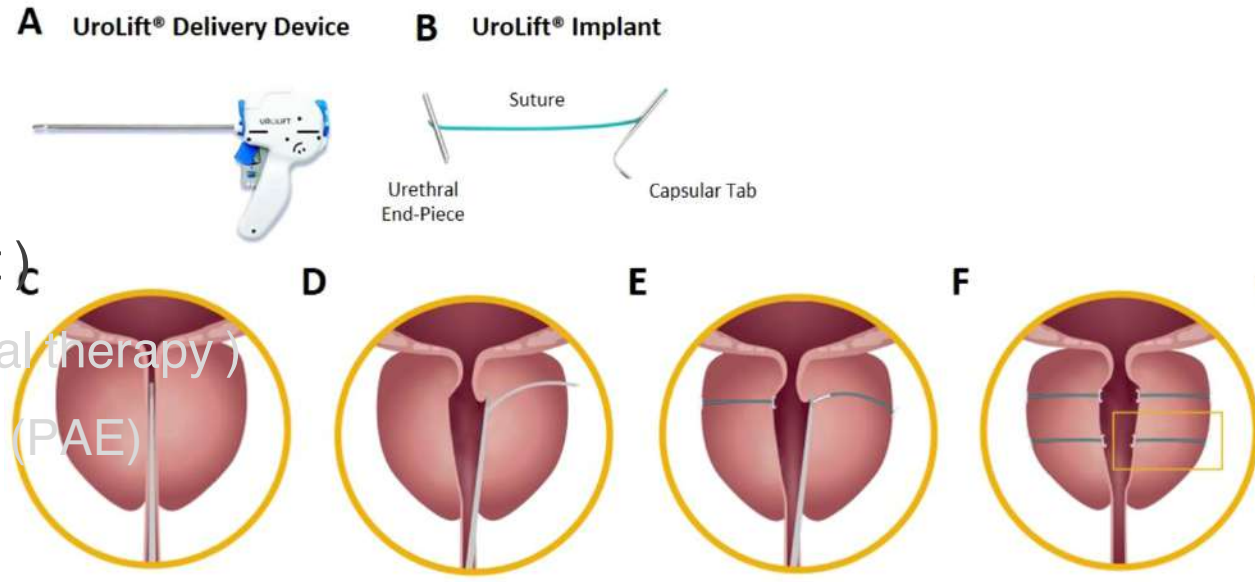
Minimal invasive

- ? TUNA
- ? TUMT
- ? HIFU
- ? Urolift (prostate urethral lift)
- ? Rezum (water Vaper thermal therapy)
- ? Prostate artery embolization (PAE)



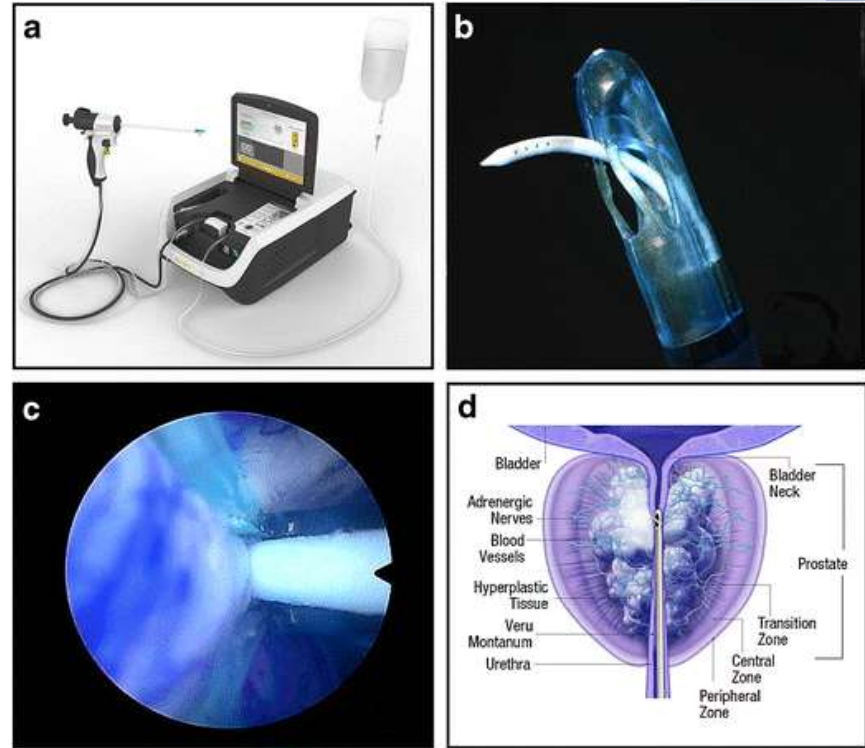
Minimal invasive

- ? TUNA
- ? TUMT
- ? HIFU
- ? Urolift (prostate urethral lift)
- ? Rezum (water Vaper thermal therapy)
- ? Prostate artery embolization (PAE)



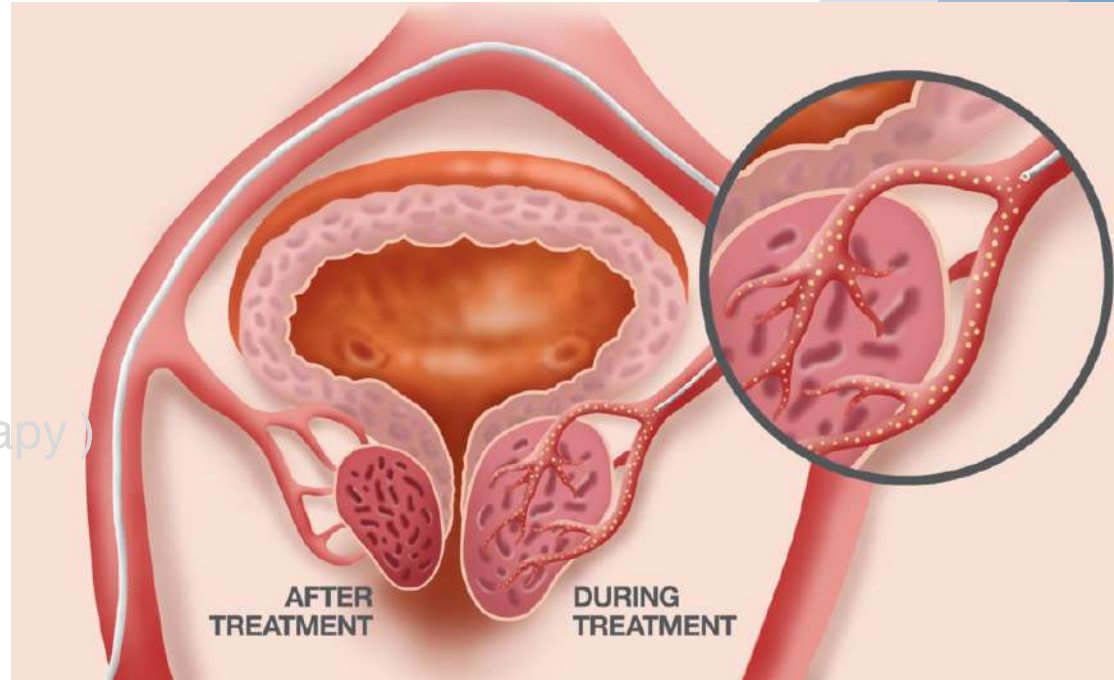
Minimal invasive

- ? TUNA
- ? TUMT
- ? HIFU
- ? Urolift (prostate urethral lift)
- ? Rezum (water Vaper thermal therapy)
- ? Prostate artery embolization (PAE)



Minimal invasive

- ? TUNA
- ? TUMT
- ? HIFU
- ? Urolift (prostate urethral lift)
- ? Rezum (water Vaper thermal therapy)
- ? Prostate artery embolization (PAE)



Invasive surgery

? Transurethral Surgery

? TUVF

? TURP

? Transurethral laser therapy

? TUFP

? Open surgery

? Suprapubic

? Retropubic

? Perineal

Indication of open surgery :-

① size > 80

② associated Bladder pathology $\rightarrow$ diverticulum
big bladder stone

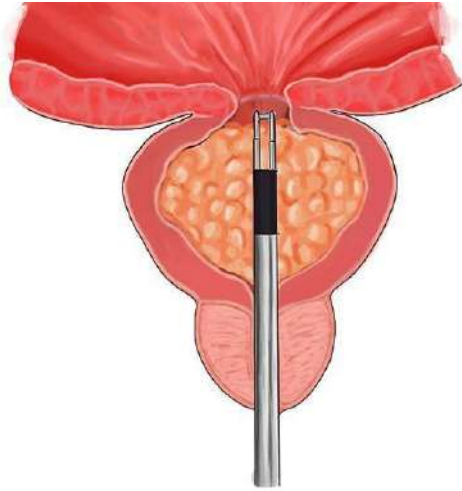
③ complex urethral stricture
best dissection

④ Patient unable to do lithotomy position
in total hip replacement $\leftarrow$

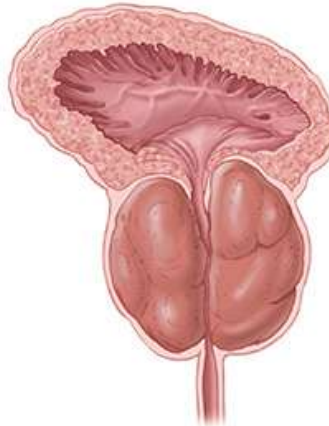
TURP

→ com. lifications :-

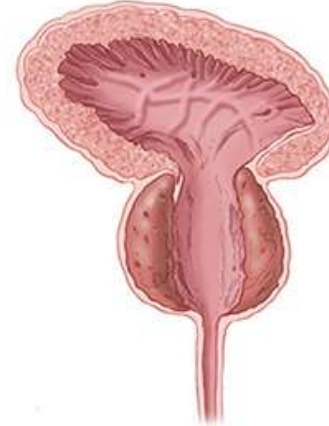
- Bleeding
- Infection
- TURP \$



Normal Prostate



Enlarged Prostate



After Procedure

TURP Syndrome

? Glycine solution used during TURP

? Dilutional hyponatremia

? Fluid overload

? Glycine toxicity

Preventions

- ❓ Fluid Hight
- ❓ Time of surgery < 90 min
- ❓ Bi-polar Vs Mono-polar
- ❓ Use Laser Therapy

Management

Sign & Symptoms

 Mental confusion

 HTN

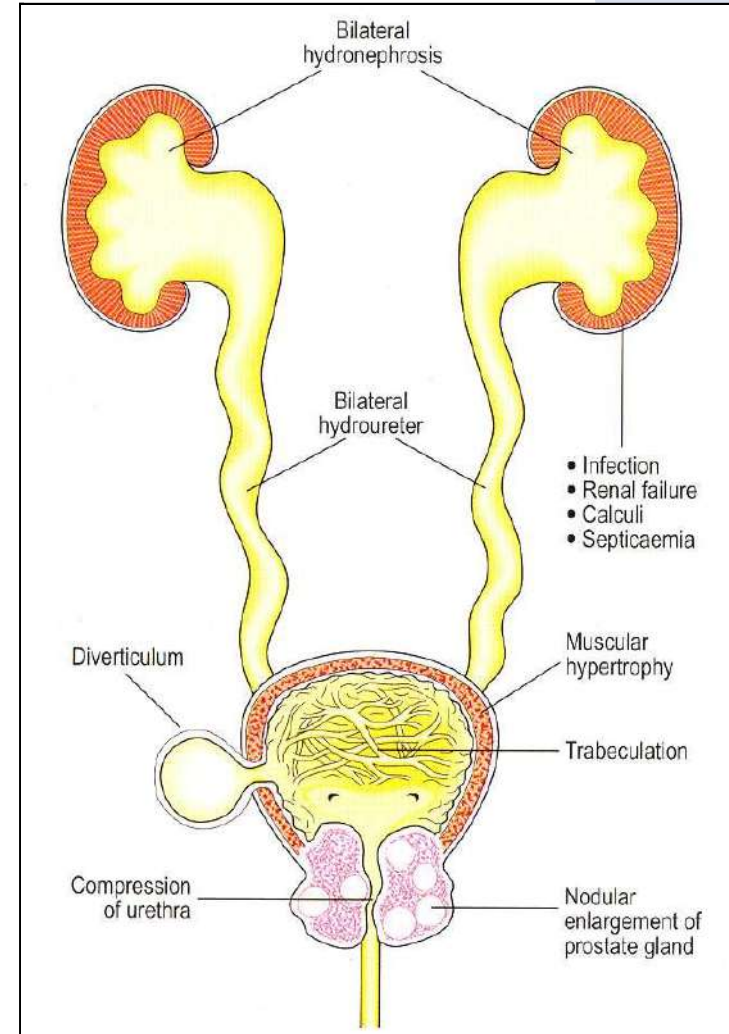
 Visual disturbance

Investigation

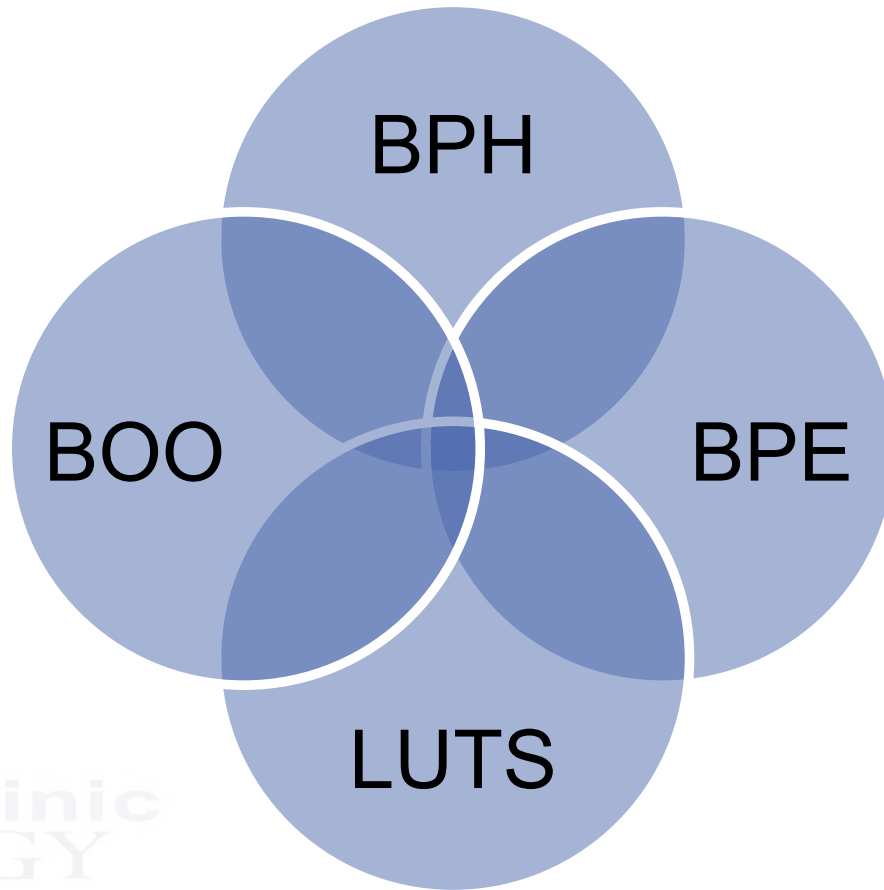
Treatment

Complications

- ? Bilateral hydronephrosis & renal failure
- ? Bilateral hydroureter
- ? Urinary retention
- ? Stone formations
- ? UTI
- ? Epididymitis
- ? Bladder hypertrophy
- ? Trabeculation
- ? Compression of urethra
- ? Diverticulum



They are not the same



أتم بحمد الله ..
- نفهم

Thanks

