

# Common Urologic Problems and Evaluation

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# Objectives

- ▶ Understand prostate cancer screening guidelines
- ▶ Microscopic hematuria evaluation
- ▶ BPH treatment options
- ▶ Testicle Pain

# Prostate Cancer Detection

- ▶ Updated Screening guidelines 2023
- ▶ Provides framework to implement screening

# PSA Screening

1. Engage in shared decision making with patient when screening for prostate cancer
  1. Discourages ordering PSA test without knowledge of patient
  2. Discourages not informing patient of availability of PSA testing



# PSA

- ▶ PSA blood test should be first screening test
- ▶ PSA screening reduces metastasis and prostate cancer death





# Role of Digital Rectal Exam?

- ▶ Should not be used as sole screening method
- ▶ Insufficient evidence to support adding DRE to PSA-based prostate cancer screening
- ▶ U.S.-based cohort study, the risk for finding cancer with PSA < 4 and abnormal DRE was only 3%
- ▶ Greatest utility of DRE in randomized trials is demonstrated in the workup of patients with an elevated PSA

# PSA screening

- ▶ **For people with a newly elevated PSA, clinicians should repeat the PSA prior to a secondary biomarker, imaging, or biopsy.**
- ▶ Normal level in 25% to 40% upon retesting
- ▶ 1,686 biopsied patients in the STHLM-3 study with PSA of 3 to 10 and PSA tests 8 weeks apart, 283 (17%) subsequently had a PSA < 3 ng/mL
- ▶ Clear evidence that PSA tests may normalize

A photograph of a cyclist in a blue and black jersey riding a road bike, positioned on the left side of the slide. The cyclist is wearing a white helmet and is captured in motion, leaning forward over the handlebars.

# PSA Screening

- ▶ Empiric antibiotics should not be utilized to treat an elevated PSA in an asymptomatic person
- ▶ Neither DRE nor bicycle riding appreciably alters the PSA
- ▶ Most studies evaluating ejaculation suggest it does not significantly impact or modestly increases (~10%) PSA



## PSA

- ▶ Infection and instrumentation can increase PSA
  - ▶ Bladder catheterization, cystoscopy, prostate biopsy
- ▶ Repeat PSA in 2-3 months to determine true baseline level

# What is an elevated PSA?

Table 1: Age-Specific "normal" serum PSA levels

Age Group (Years)	Serum PSA (ng/ml)
Less than 49	0 to 2.5
50 - 59	3.0 to 4.0
60 - 69	4.0 to 4.5
Greater than 70	5.0 to 6.5

- ▶ Common threshold is 4 - Not always true
- ▶ PSA generally increases with age

# When to screen?

- ▶ **Clinicians may begin prostate cancer screening and offer a baseline PSA test to people between ages 45 to 50 years**
- ▶ Baseline PSA stronger predictor of prostate cancer risk compared to race and family history
- ▶ The prevalence of prostate cancer is low among patients aged 40 to 45 years
- ▶ 45 versus 50 years (the PROBASE trial) – currently ongoing

# PSA screening

- ▶ PSA screening at 40-45 years for the following
  - ▶ Black ancestry
  - ▶ Germline mutations
  - ▶ Family history prostate cancer



# Ancestry

- ▶ Black individuals have a disproportionate cancer burden and a two-fold higher risk of death from prostate cancer
- ▶ Earlier age of onset and increased risk of metastases before clinical diagnosis
- ▶ Fatal prostate cancer reached the same level as that of the general population three to nine years earlier
- ▶ Should also consider screening more frequently

# What family history is significant?

1. People with one brother or father with one of the following
  1. Diagnosed with prostate cancer at age < 60 years
  2. Any of whom died of prostate cancer
  3. Any of whom had metastatic prostate cancer
  4. Family history of other cancers with two or more cancers in hereditary breast and ovarian cancer syndrome or Lynch syndrome

# Prostate cancer screening every 2 years people aged 50 to 69 years

- Reduces the risk of metastatic prostate cancer and prostate cancer mortality

Study	Screen Ages	Follow up time	Protocol	NNS	NND
ERSPC <sup>18</sup>	55-69	16 years	2-4 years Bx PSA > 3 ng/mL	570	18
ERSPC (2009) <sup>57</sup>	50-74	9 years	2-4 years Bx PSA > 3 ng/mL	1,410	48
Goteborg-1 <sup>37</sup>	50-64	22 years	2 years Bx PSA 2.5-3 + ng/mL	221	9
ERSPC modeling study <sup>58</sup>	55-69	Lifetime horizon	Annual Bx PSA 3 + ng/mL	98	5
			4 years	129	5
U.S. modeling study <sup>34</sup>	50-69	Lifetime horizon	2 years		
			Bx PSA 4 + ng/mL	243	3
			Bx PSA 2.5 + ng/mL	204	4
(Abbreviations: Bx, biopsy; PSA, prostate-specific antigen)					

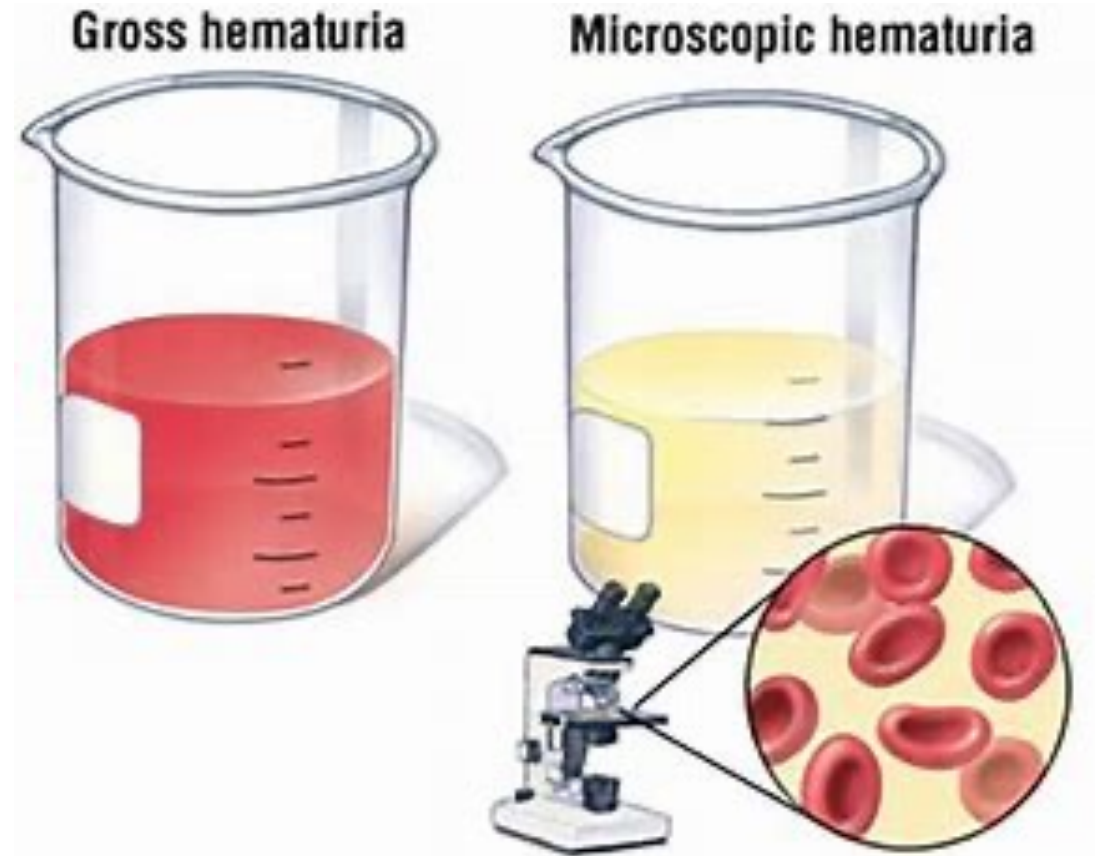
# When to discontinue screening?

- ▶ Discontinuing screening at ages 66 with severe comorbidity and 72 with moderate comorbidity resulted in similar harms and benefits compared to screening people with average health to 74 years of age
- ▶ Shared decision making
- ▶ Discontinue or substantially lengthen the re-screening interval for patients 75 years of age or older if PSA is  $< 3$

# Microscopic Hematuria

# Microscopic Hematuria

- ▶ One of most common diagnoses
- ▶ Accounts for 20% urology evaluations



# Microscopic Hematuria Causes

- ▶ Malignancy
- ▶ Infection
- ▶ Stone disease
- ▶ BPH
- ▶ Anatomic abnormalities

# Microscopic Hematuria

- ▶ Other non-true causes
  - ▶ Gynecologic bleeding
  - ▶ Myoglobinuria
  - ▶ Urine pigmentation





# Malignancy Risk

- ▶ Gross hematuria - 13.2% risk
- ▶ Microscopic hematuria - 3.1% risk

# Definition of Microscopic Hematuria

- ▶  $\geq 3$  red blood cells per high-power field on microscopic evaluation of a single, properly collected urine specimen
- ▶ Random mid stream catch sufficient
- ▶ Collection after cleaning urethral meatus
- ▶ Microhematuria can not be defined by positive blood on dipstick
- ▶ Trace blood or greater on urinalysis → send for microanalysis



# Does anticoagulation matter?

- ▶ Same evaluation should be performed regardless
- ▶ One study: 5.8% detection of bladder cancer in 411 consecutive patients with MH, of whom 15.3% were anticoagulated
- ▶ A series of patients with GH on either anticoagulant or aspirin therapy found tumors in a quarter of patients
- ▶ Population-based cohort study from Ontario reported that patients exposed to antithrombotic medications were significantly more likely to be diagnosed with bladder cancer within six months than patients not exposed to these medications
  - ▶ Unmasked bleeding

# Hematuria from UTI

- ▶ Urine culture
- ▶ Repeat UA after infection clears
- ▶ Some causes may not be treatable
  - ▶ Vaginal atrophy
  - ▶ Prolapse
- ▶ Consider Urologic evaluation at that time for decision making

# Multidisciplinary Approach

- ▶ Consider referral to nephrology for microscopic hematuria if concern for medical renal disease
  - ▶ Proteinuria
  - ▶ Dysmorphic rbc
  - ▶ Casts
  - ▶ Renal insufficiency
- ▶ Patient still needs urologic evaluation
- ▶ Several studies suggest increased risk renal cancer with impaired renal function

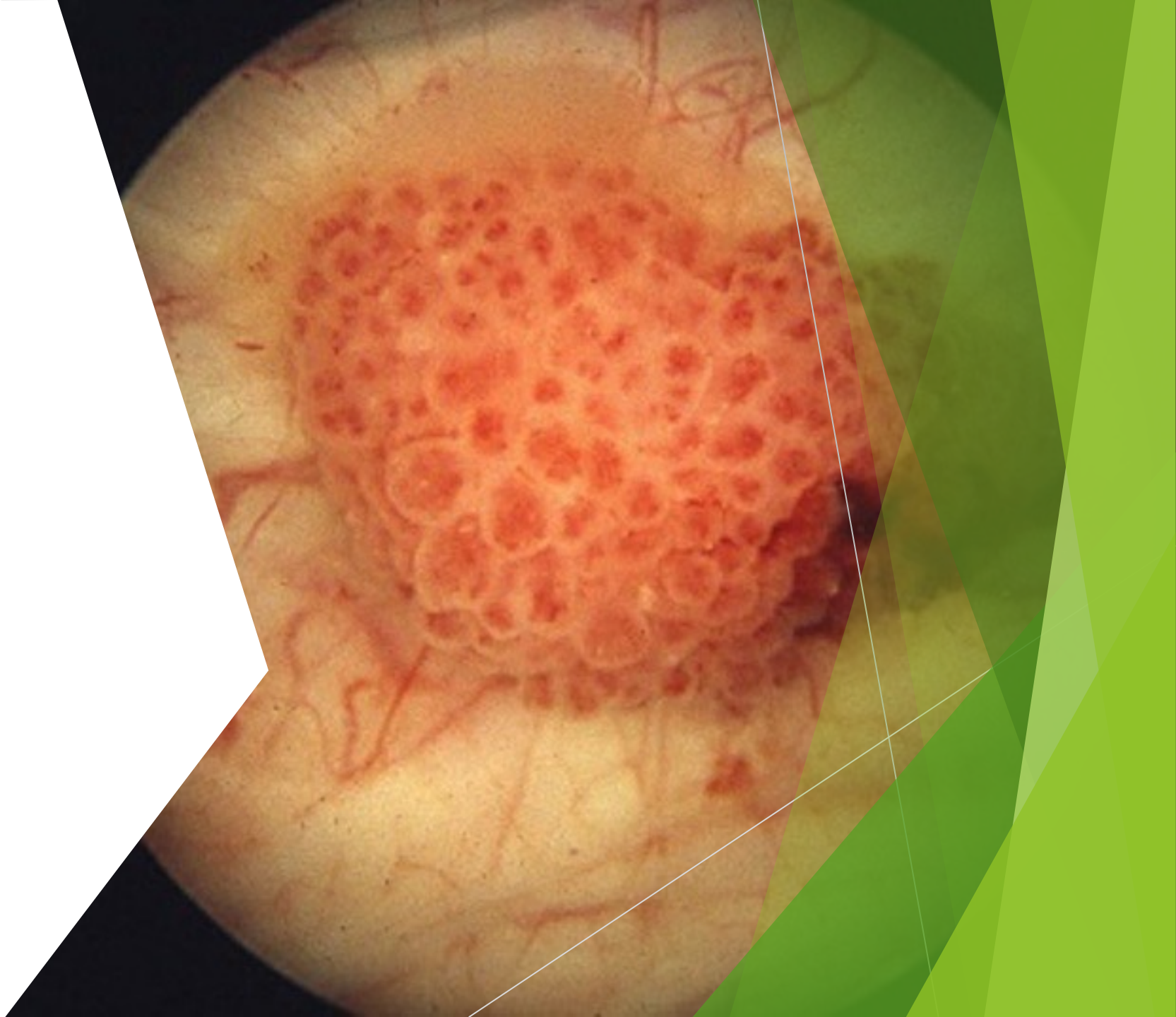
# Risk stratification

## Microscopic Hematuria

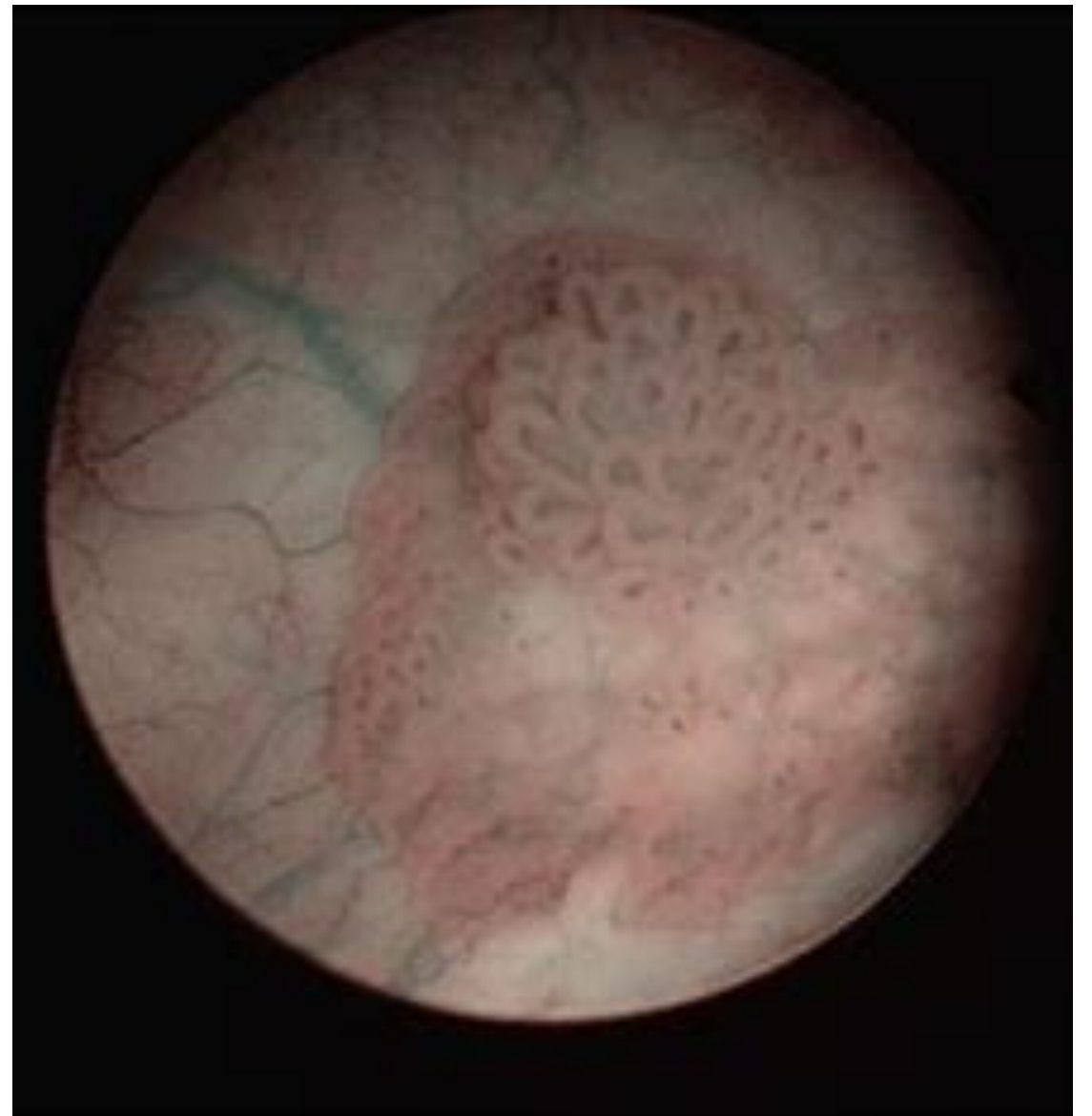
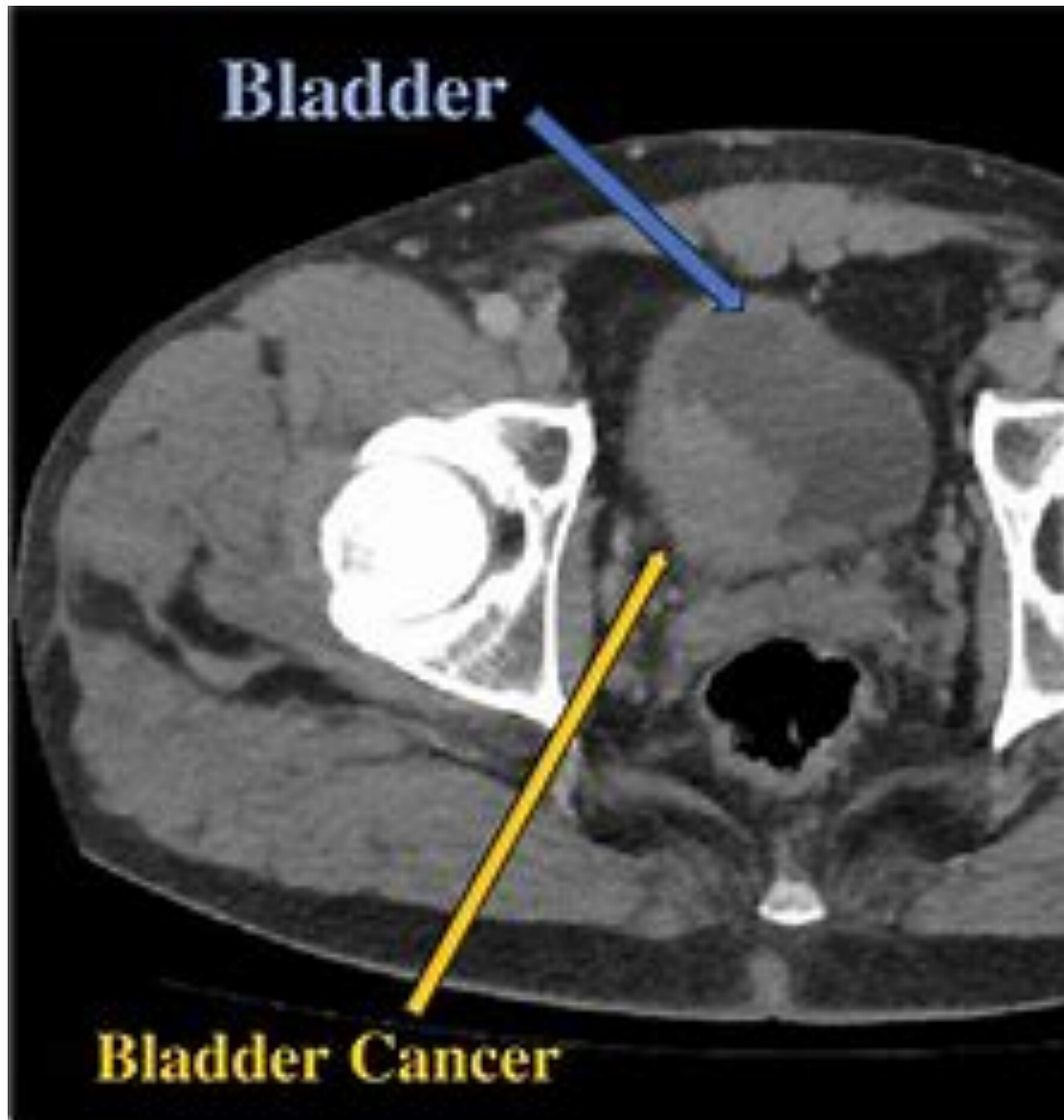
Low (patient meets all criteria)	Intermediate (patient meets any one of these criteria)	High (patient meets any one of these criteria)
<ul style="list-style-type: none"><li>• Women age &lt;50 years; Men age &lt;40 years</li><li>• Never smoker or &lt;10 pack years</li><li>• 3-10 RBC/HPF on a single urinalysis</li><li>• No risk factors for urothelial cancer (see Table 3)</li></ul>	<ul style="list-style-type: none"><li>• Women age 50-59 years; Men age 40-59 years</li><li>• 10-30 pack years</li><li>• 11-25 RBC/HPF on a single urinalysis</li><li>• Low-risk patient with no prior evaluation and 3-10 RBC/HPF on repeat urinalysis</li><li>• Additional Risk factors for urothelial cancer (see Table 3)</li></ul>	<ul style="list-style-type: none"><li>• Women or Men age ≥60 years</li><li>• &gt;30 pack years</li><li>• &gt;25 RBC/HPF on a single urinalysis</li><li>• History of gross hematuria</li></ul>

# Urology workup

- ▶ Cystoscopy
- ▶ Imaging
  - ▶ Renal US or CTAP (CT Urogram)
  - ▶ Retrograde pyelogram

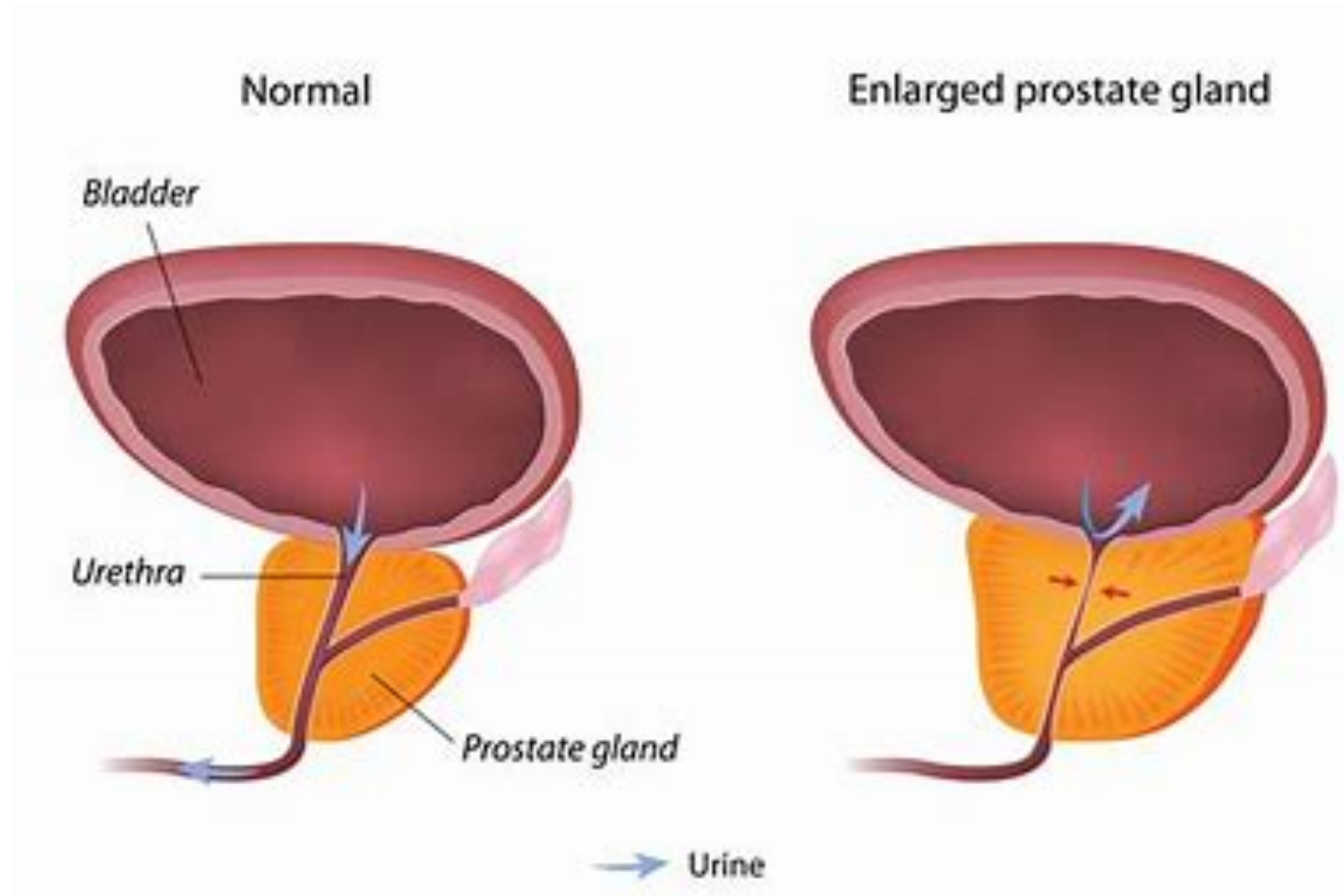






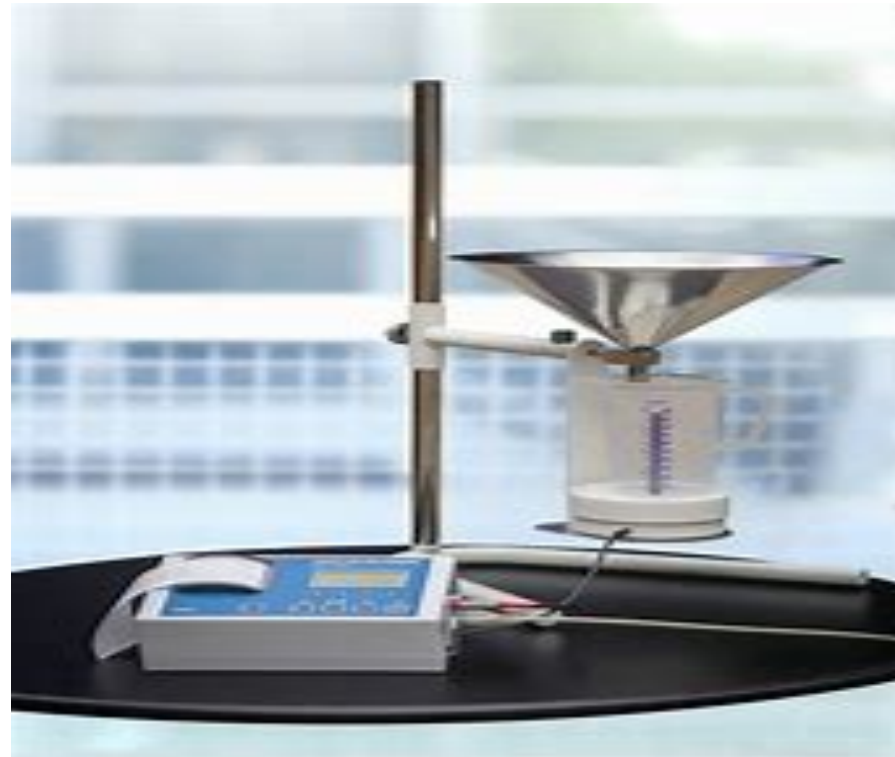


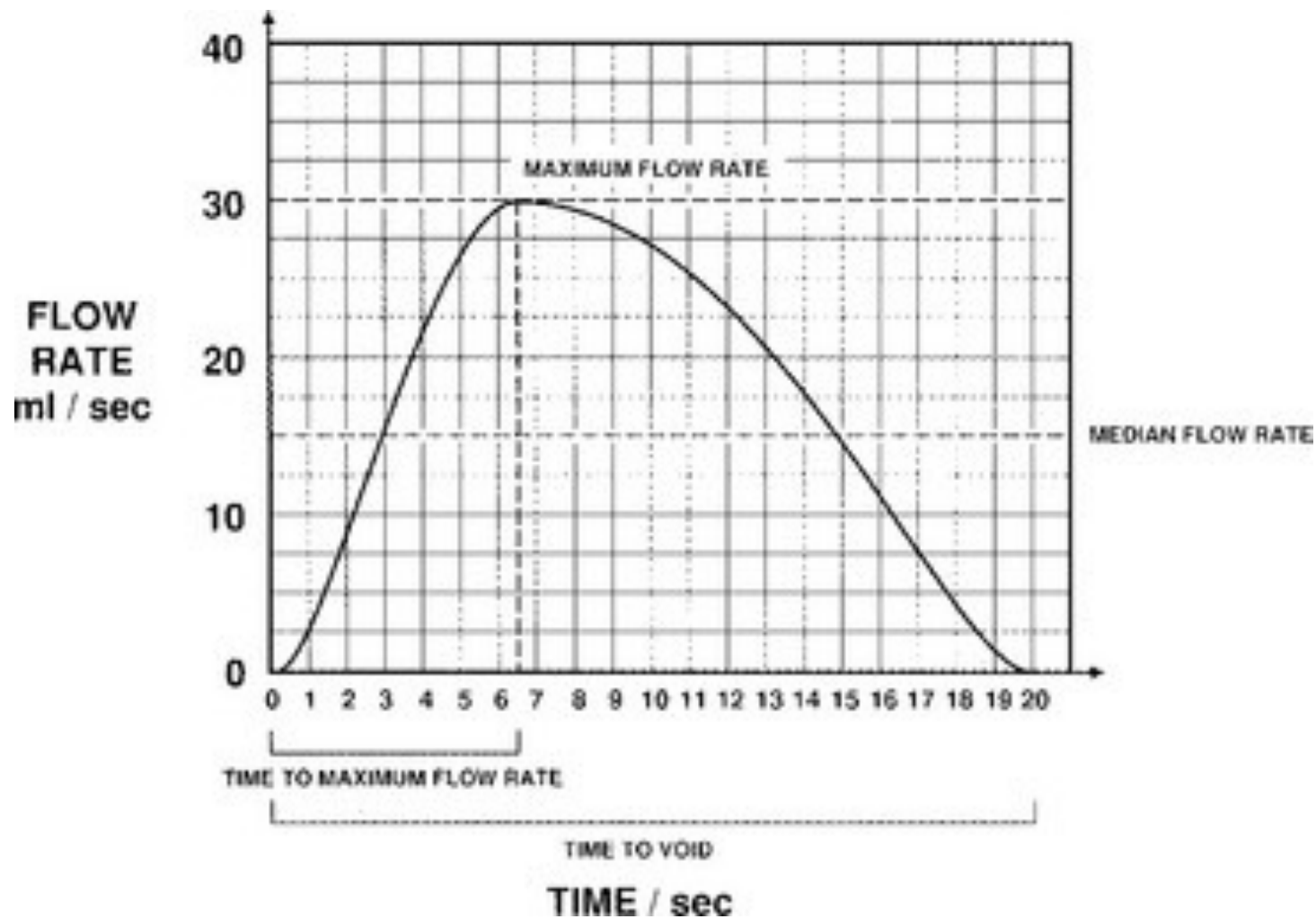
# BPH Management



# How I workup BPH

- ▶ History - Lower urinary tract symptoms
- ▶ PVR (What's normal?)
- ▶ Uroflow
- ▶ IPSS





Normal flow rate

- $Q_{max} > 15\text{mL/s}$

-Voided volume usually around 200-500 mL

-Normal flow pattern

**International Prostate Symptom Score (I-PSS)**

Patient Name: \_\_\_\_\_ Date of birth: \_\_\_\_\_ Date completed: \_\_\_\_\_

In the past month:	Not at All	Less than 1 in 5 Times	Less than Half the Time	About Half the Time	More than Half the Time	Almost Always	Your score
<b>1. Incomplete Emptying</b> How often have you had the sensation of not emptying your bladder?	0	1	2	3	4	5	
<b>2. Frequency</b> How often have you had to urinate less than every two hours?	0	1	2	3	4	5	
<b>3. Intermittency</b> How often have you found you stopped and started again several times when you urinated?	0	1	2	3	4	5	
<b>4. Urgency</b> How often have you found it difficult to postpone urination?	0	1	2	3	4	5	
<b>5. Weak Stream</b> How often have you had a weak urinary stream?	0	1	2	3	4	5	
<b>6. Straining</b> How often have you had to strain to start urination?	0	1	2	3	4	5	
	None	1 Time	2 Times	3 Times	4 Times	5 Times	
<b>7. Nocturia</b> How many times did you typically get up at night to urinate?	0	1	2	3	4	5	
<b>Total I-PSS Score</b>							

Score:      1-7: Mild                      8-19: Moderate                      20-35: Severe

Quality of Life Due to Urinary Symptoms	Delighted	Pleased	Mostly Satisfied	Mixed	Mostly Dissatisfied	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



# First line treatment

- ▶ Lifestyle Changes
  - ▶ Restricting fluids
  - ▶ Diuretics - Caffeine/Alcohol
  - ▶ Irritative foods
- ▶ Physical activity
- ▶ Weight loss



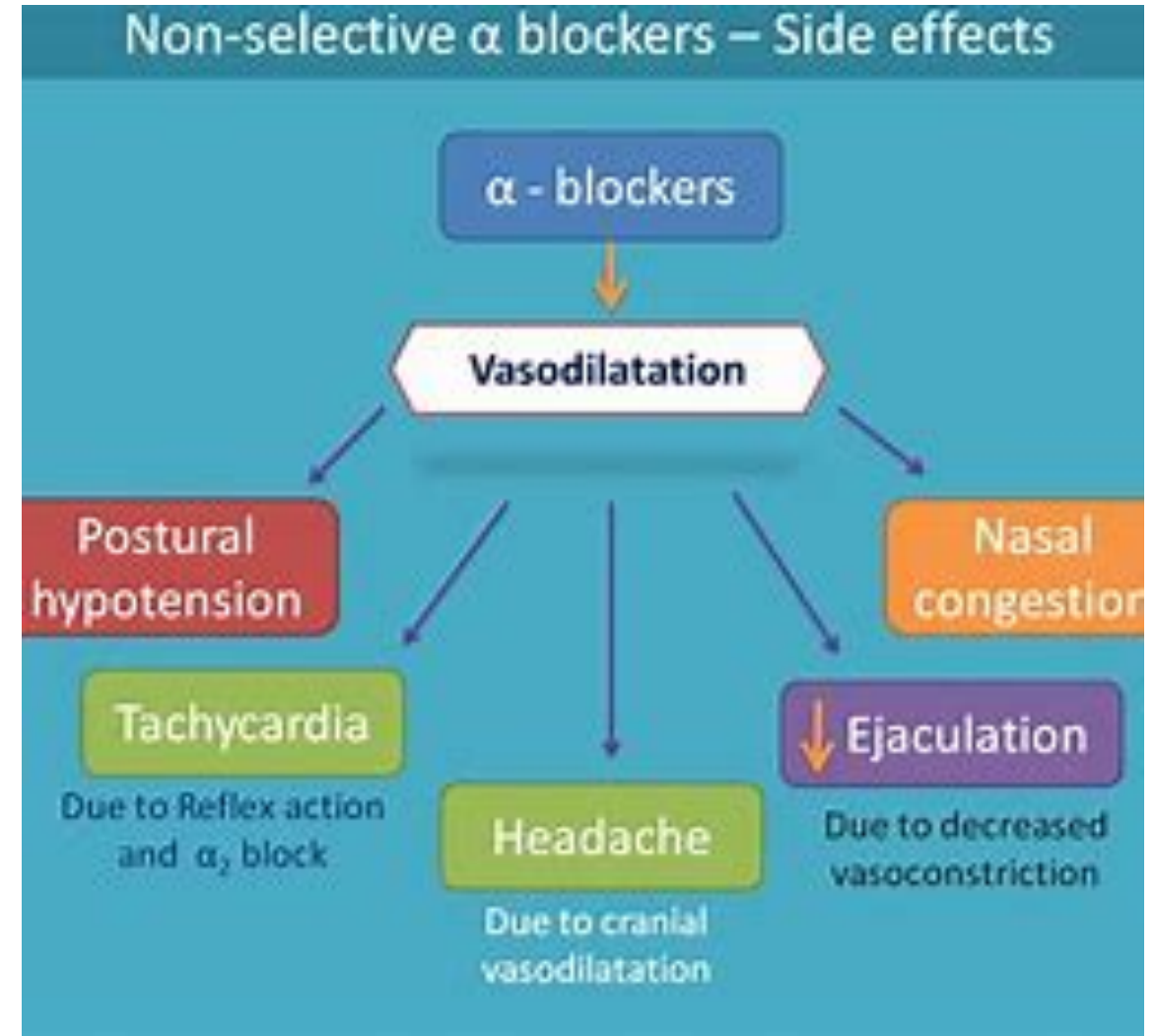
## 2<sup>nd</sup> line treatment BPH

- ▶ >4 weeks of alpha blocker or PDE5 ok to try
- ▶ Consider referral to urology with or without trial of medical management
- ▶ Consider side effects when prescribing medication

# Alpha Blockers

## What choice?

- ▶ Tamsulosin - anejaculation
  - ▶ Alfuzosin
  - ▶ Silodosin - anejaculation
  - ▶ Terazosin - non-selective
  - ▶ Doxazosin - non-selective
- 
- ▶ PDE 5 Inhibitors can potentiate hypotension if given together



# Intraoperative Floppy Iris Syndrome

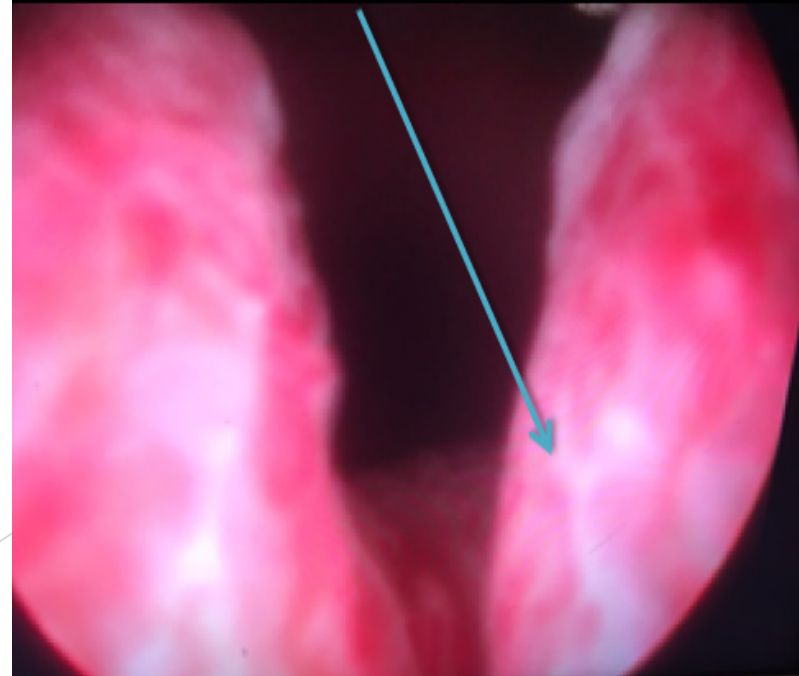
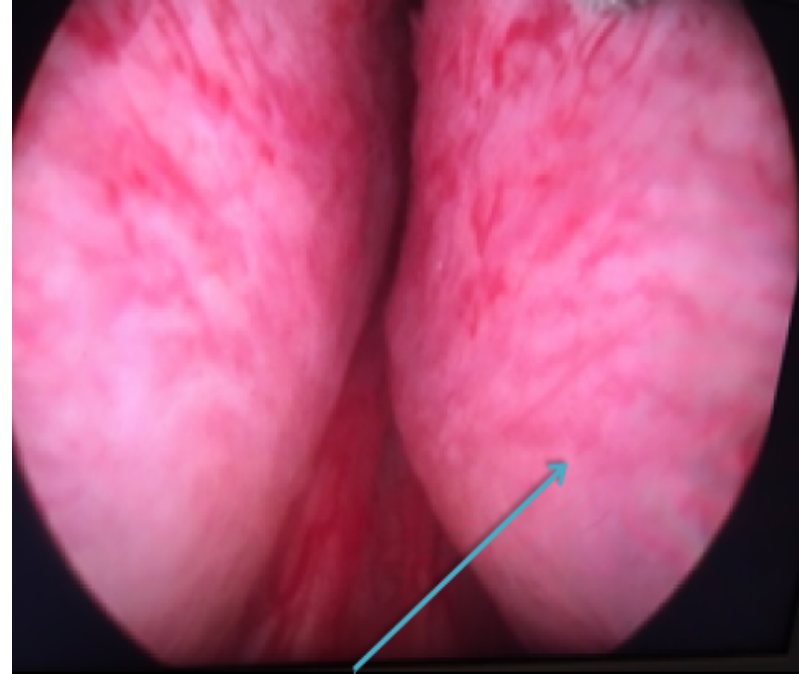
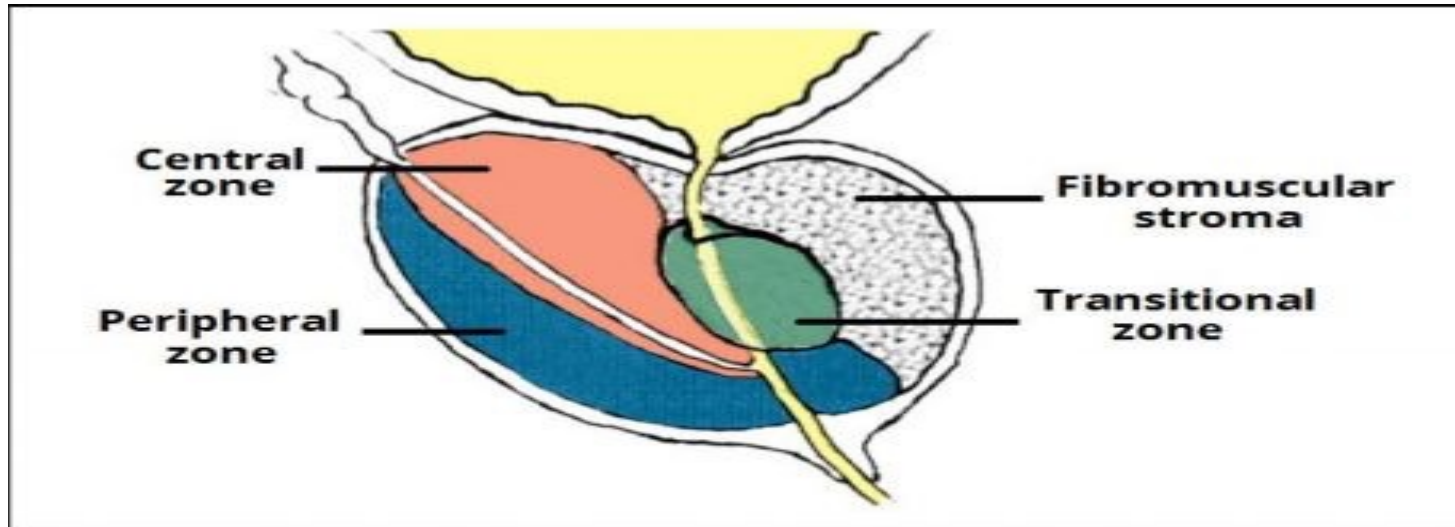
- ▶ Tamsulosin carries highest risk
- ▶ All alpha blockers increase risk to some degree
- ▶ Inquire about plan for cataract surgery before initiation
- ▶ Inform identified patients of risk and delay use





# Anatomy

- ▶ Transition zone - seen endoscopically as lateral lobes of prostate
- ▶ Central zone - can manifest as median lobe on cystoscopy
- ▶ Peripheral zone

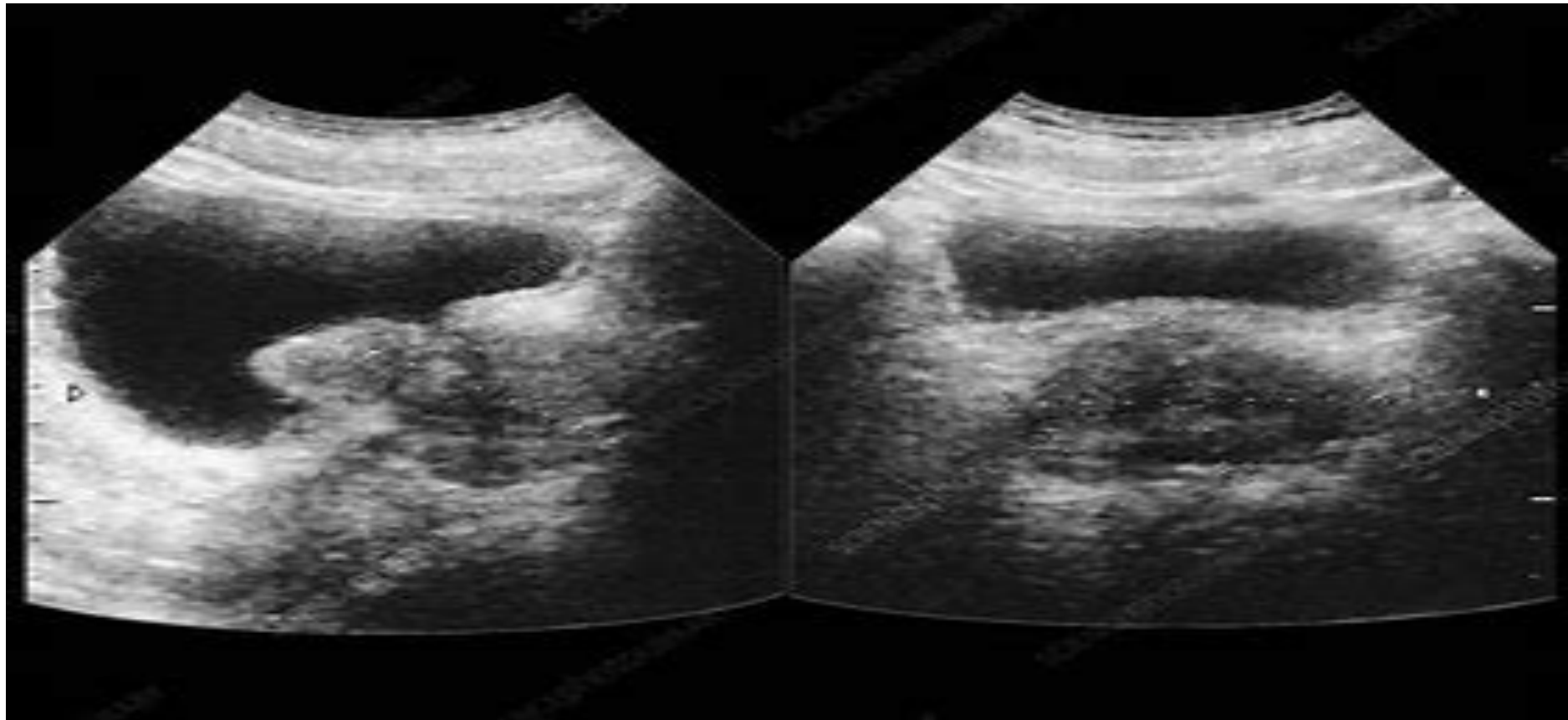


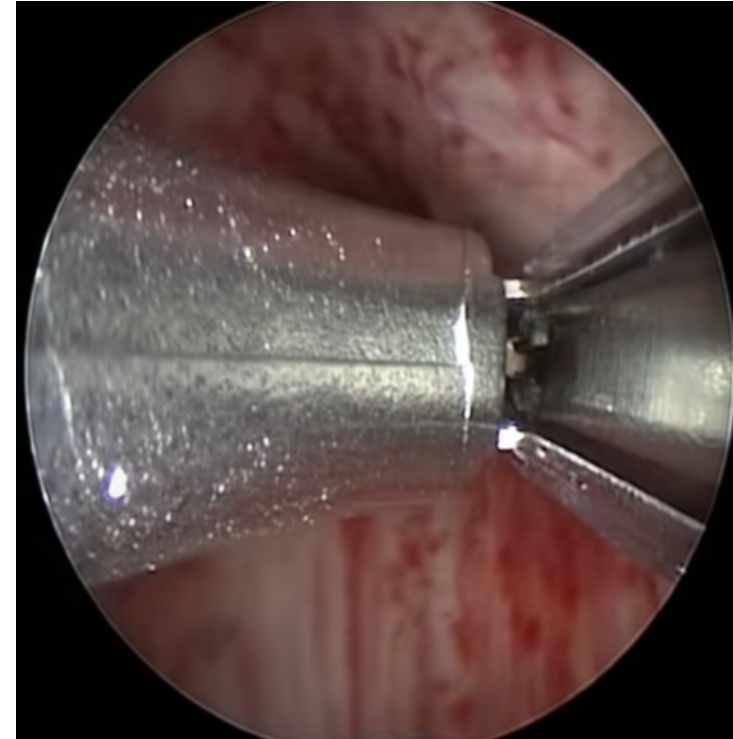
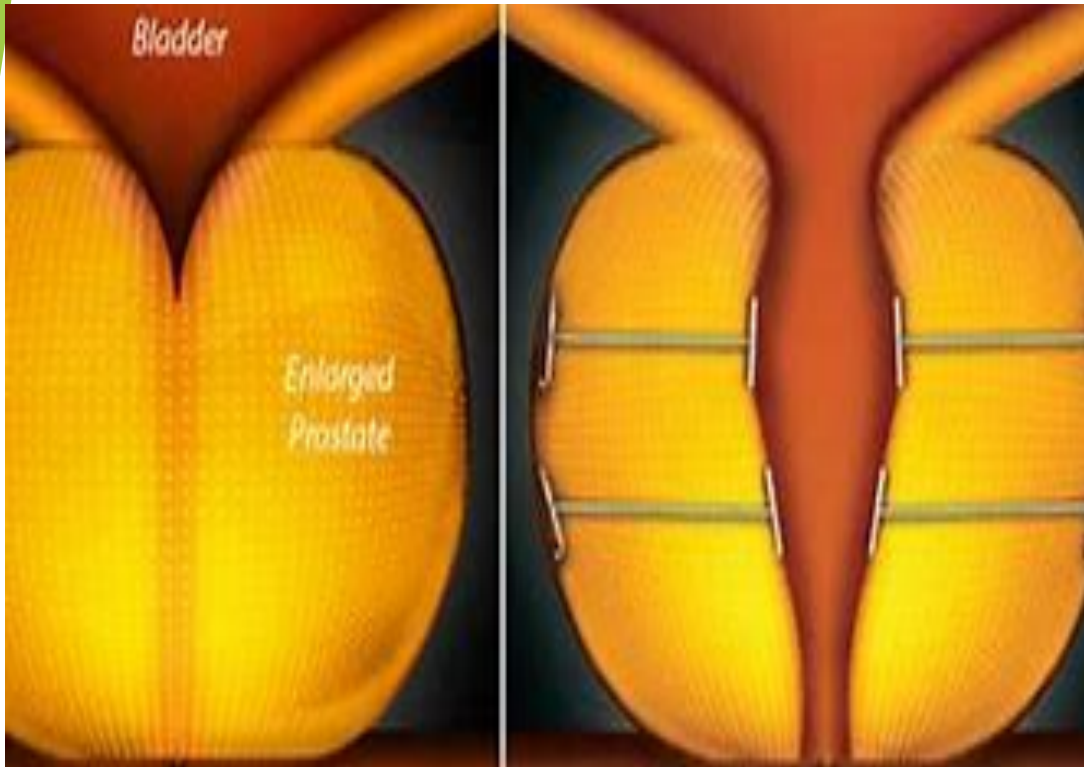
# Prostate Imaging

- ▶ Digital rectal exam and PSA give poor estimation of prostate size
- ▶ Any imaging utilized within 12 months of surgical intervention may be used
  - ▶ Ex. Previous TRUS for elevated PSA/Prostate bx
- ▶ Prostate growth rate 1.6% per year

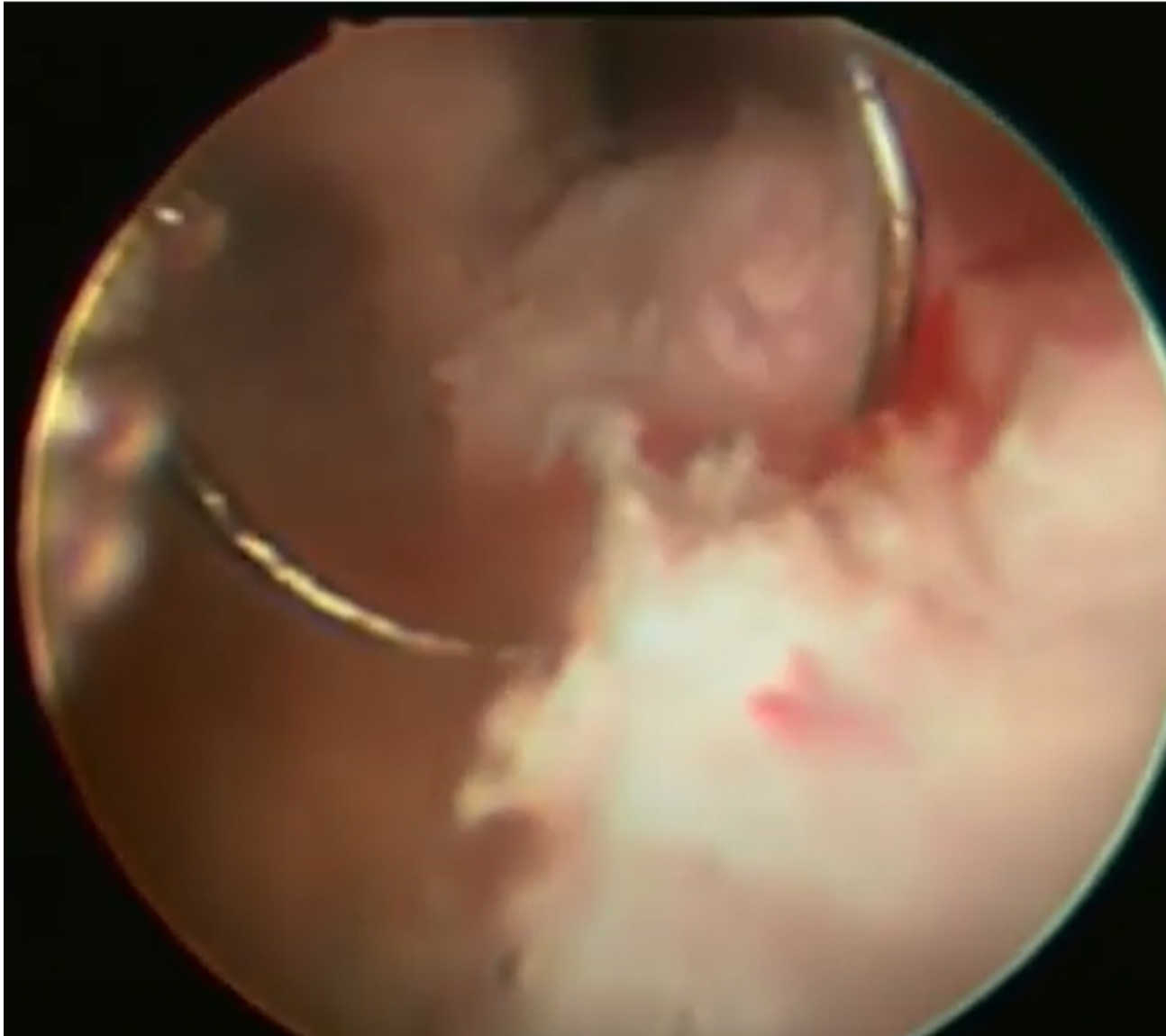
## When medications fail

- ▶ BPH workup - office cystoscopy and transrectal ultrasound





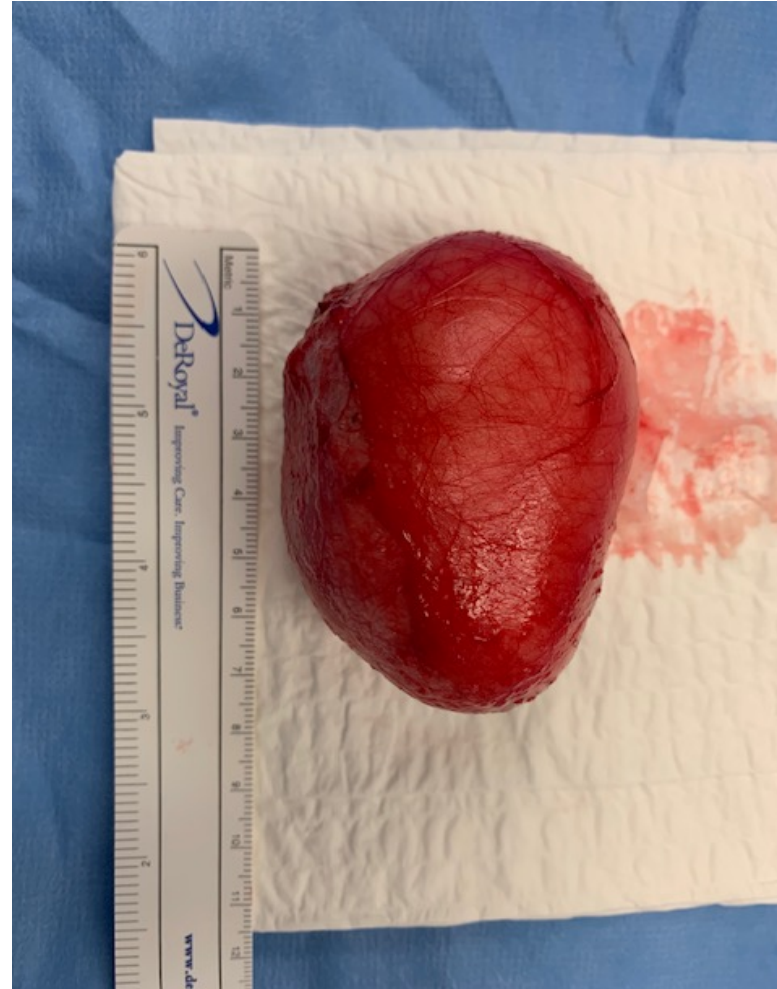
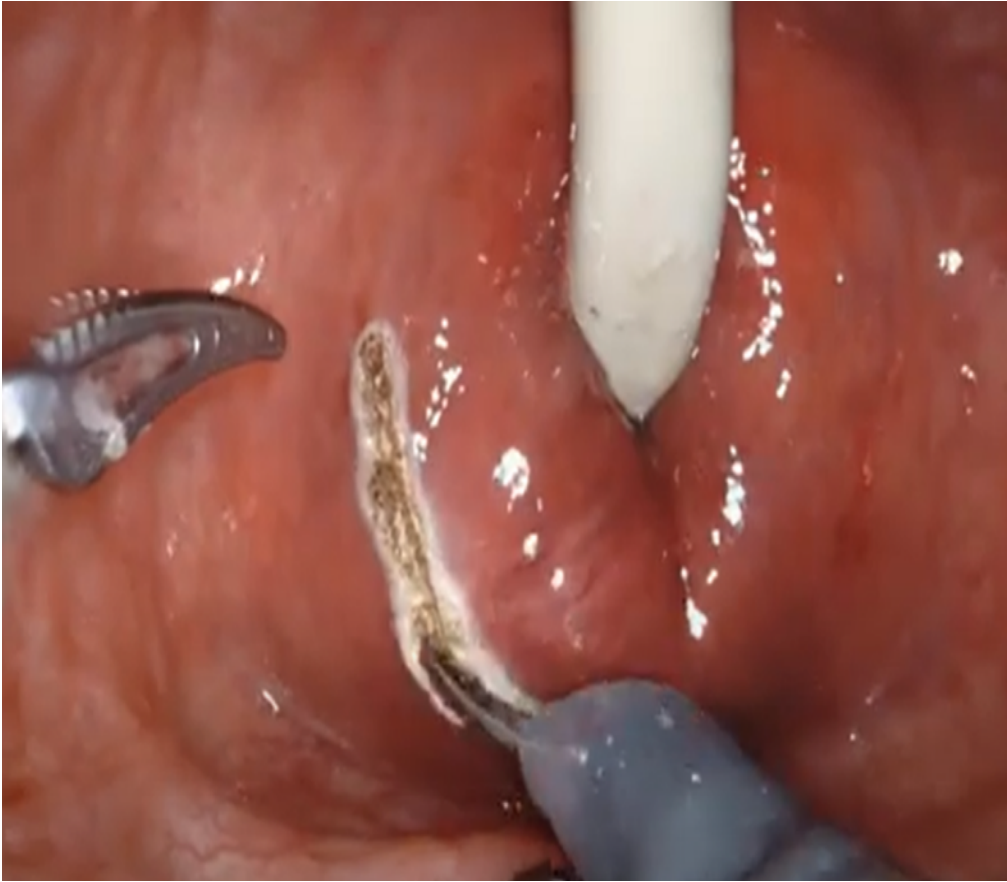
# Urolift



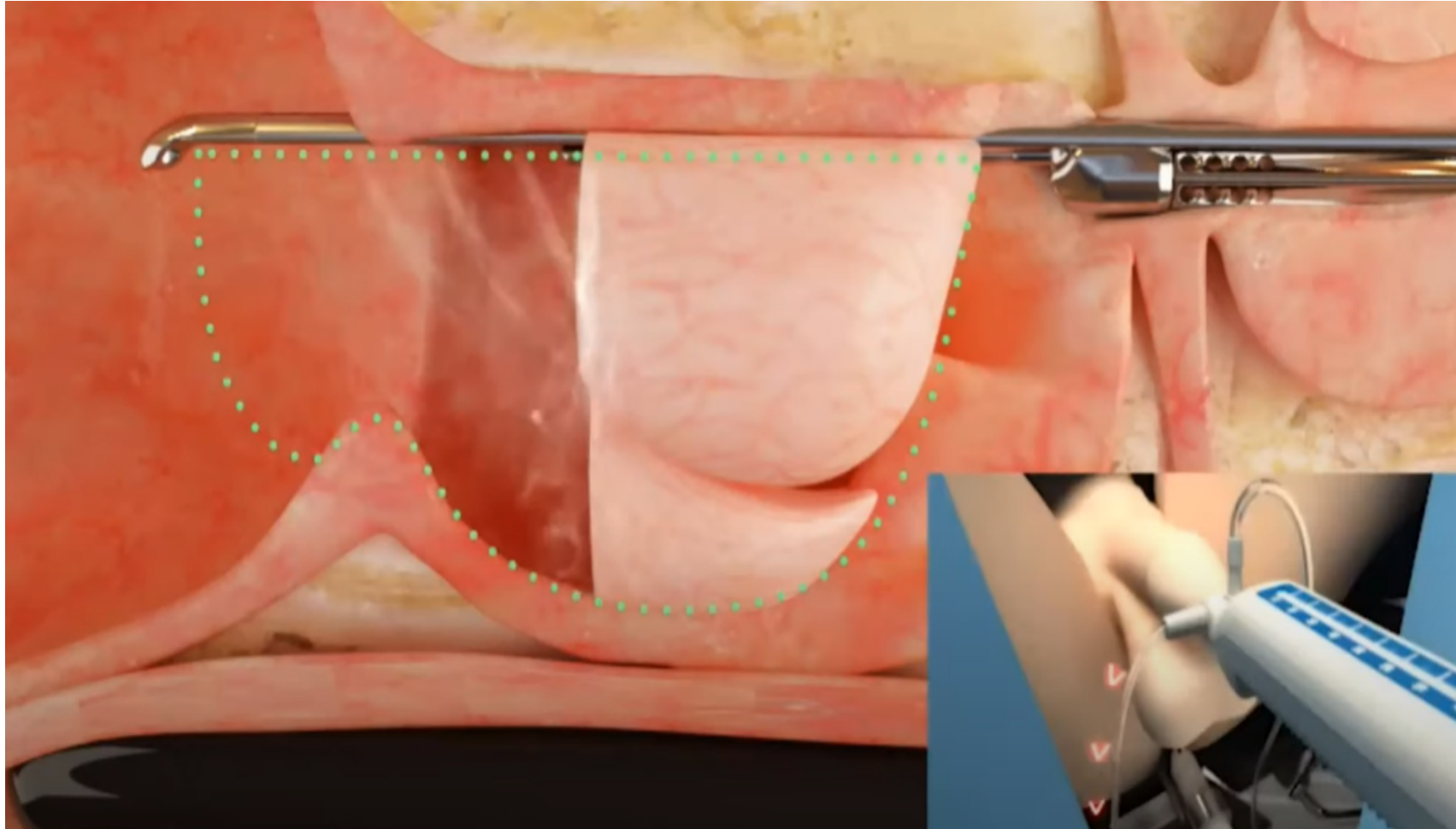
TURP



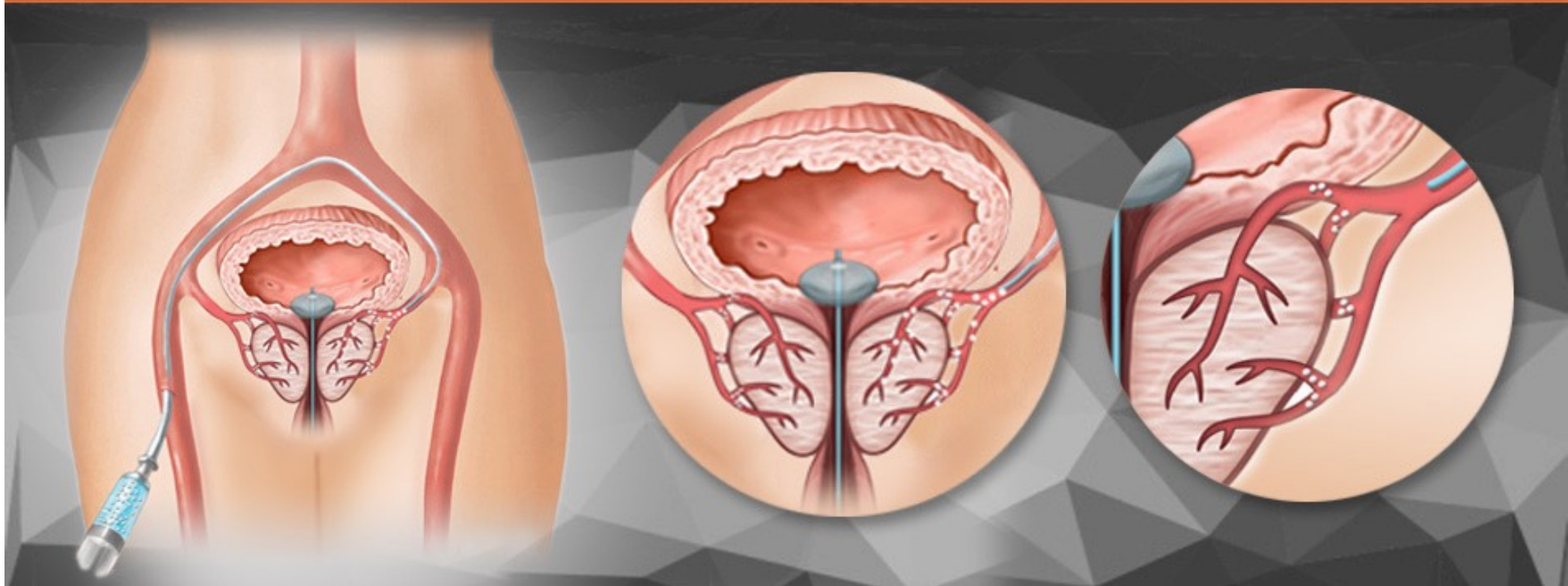
# Simple Prostatectomy



# Aquablation



## PROSTATIC ARTERY EMBOLIZATION



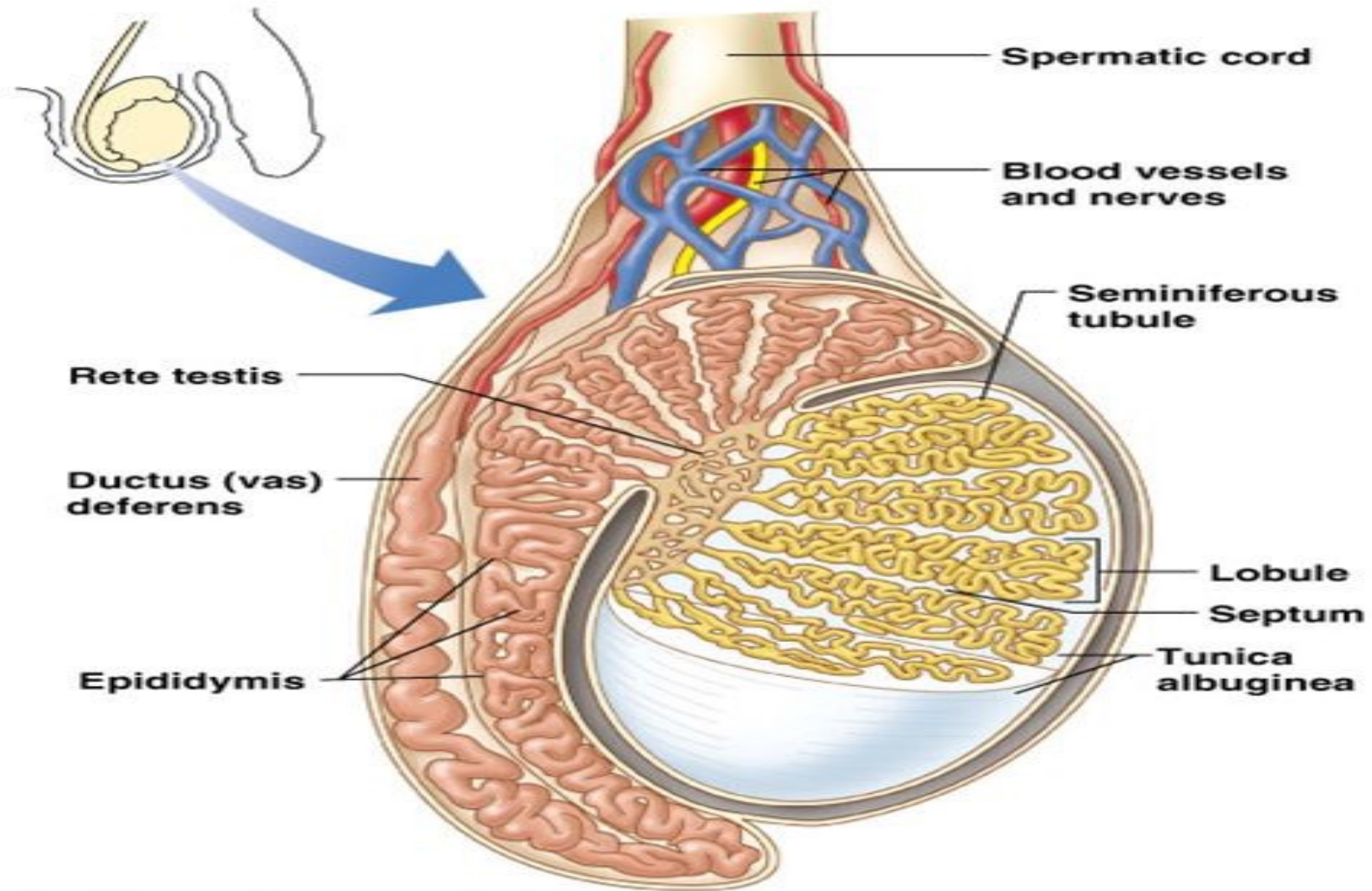


# Scrotal Pain

# Testis

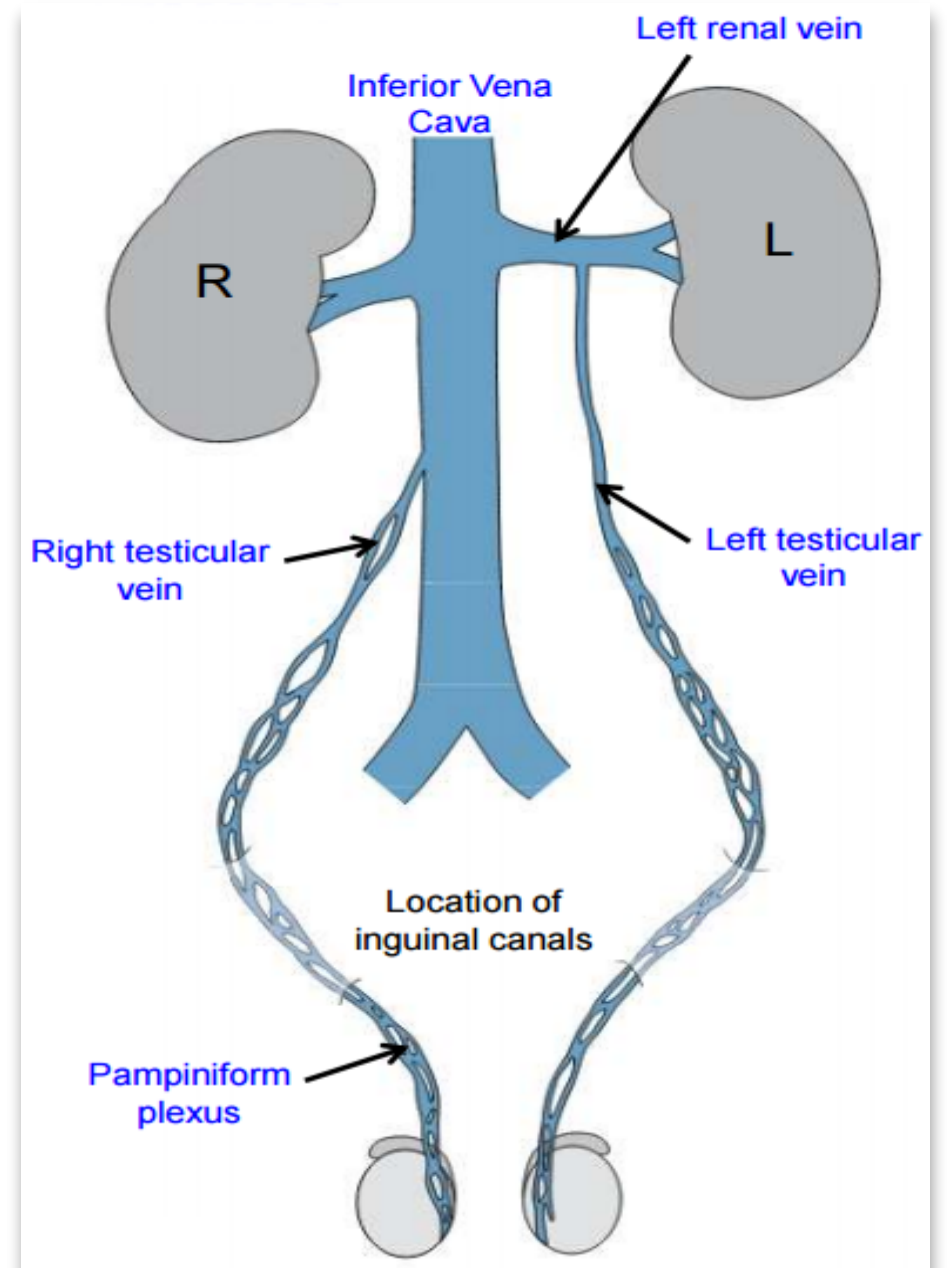
- ▶ Normally 4-5cm long
- ▶ 3cm wide, 2.5cm deep, volume ranging 12-30mL
- ▶ Small firm testicles often from prepubertal testicle insults
- ▶ Normal consistency but <15mL could indicate atrophy or infertility





# Venous Drainage

- ▶ Right gonadal - IVC
- ▶ Left gonadal - Left renal vein
- ▶ Higher incidence varicoceles left
- ▶ Right raises suspicion for proximal malignancy



# Chronic scrotal pain

- ▶ Intermittent or constant pain localized to scrotal structures
- ▶ > 3months duration
- ▶ Significantly interferes with daily activities



## Scrotal Pain

- ▶ All complain of significant discomfort
- ▶ Normal scrotal exam
- ▶ Studies shows patient can see up to 4 urologist and undergo up to 7 diagnostic interventions

# Causes

- ▶ Referred pain
- ▶ Inflammatory
- ▶ Prostatitis
- ▶ Prior Vasectomy



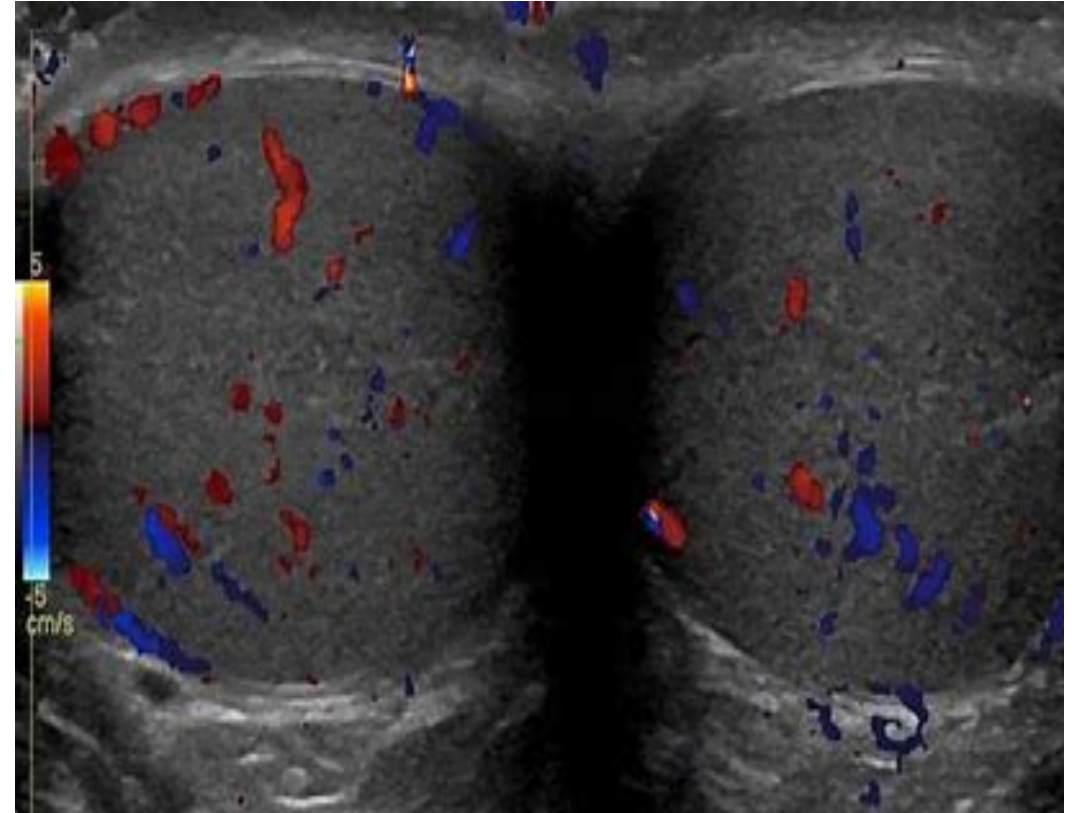
- ▶ Many patients present with distress, > 50% experience depressive symptoms
- ▶ Can lead to self medication
- ▶ Consider urologic and potential mental health referral
  - ▶ Anxiety, depression, mental distress





# Diagnosis

- ▶ Physical Exam
- ▶ Urinalysis
- ▶ Scrotal Ultrasound
  - ▶ Debated
  - ▶ Normal US can reassure patients



# Conservative Therapy

- ▶ Watchful waiting for mild symptoms
- ▶ Reassurance
- ▶ Scrotal support
- ▶ Heat/Cold
- ▶ Avoiding aggravating activity

# Other options

- ▶ Pelvic floor physical therapy
- ▶ Acupuncture
  - ▶ NIH - 2 sessions weekly for 8 weeks reduced pain
- ▶ Psychological therapy
  - ▶ Increase patient awareness, catastrophic thinking



# Medical Management

- ▶ NSAIDS

- ▶ 2-4 weeks
- ▶ Reasonable 1<sup>st</sup> line medical therapy trial

- ▶ Antibiotics

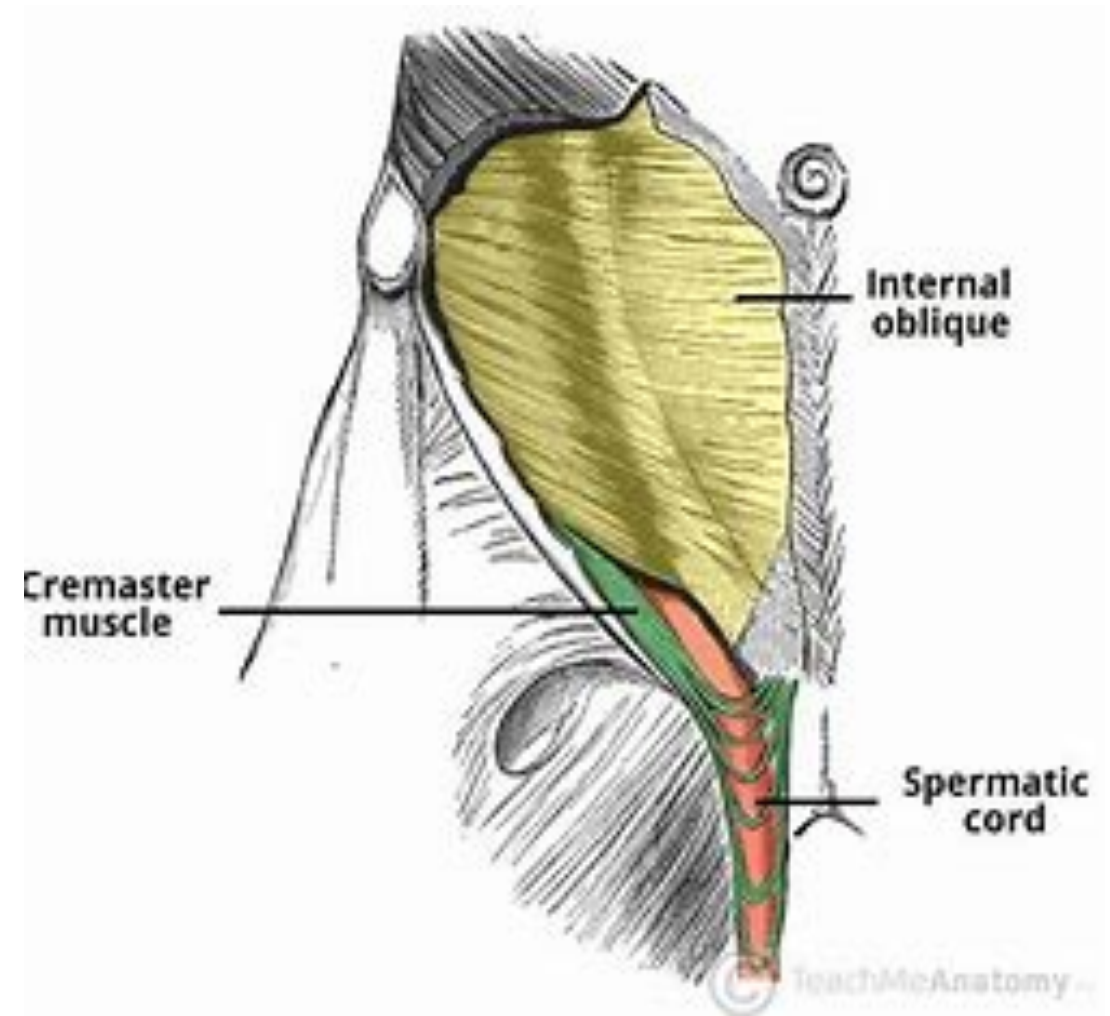
- ▶ 4-week course
- ▶ Rule out STI

- ▶ Neuropathic

- ▶ Gabapentin 300mg daily to 1800mg max
- ▶ Nortriptyline 10mg daily to 150mg max

# Nerve blockade

- ▶ Considered when conservative and medical management fails
- ▶ 10-20mL local anesthetic without epinephrine



# Surgical Management

- ▶ Epididymectomy
- ▶ Varicocele repair
- ▶ Microsurgical denervation spermatic cord
- ▶ Orchiectomy
  - ▶ 20%-75% success rate

# Conclusions

- ▶ Consider PSA screening times and intervals appropriate for age
- ▶ Diagnosing true microscopic hematuria
- ▶ BPH management options available to patients
- ▶ Alternative options to managing testicle pain