Addressing Prostate SBRT Side Effects: A Urologist's Perspectives

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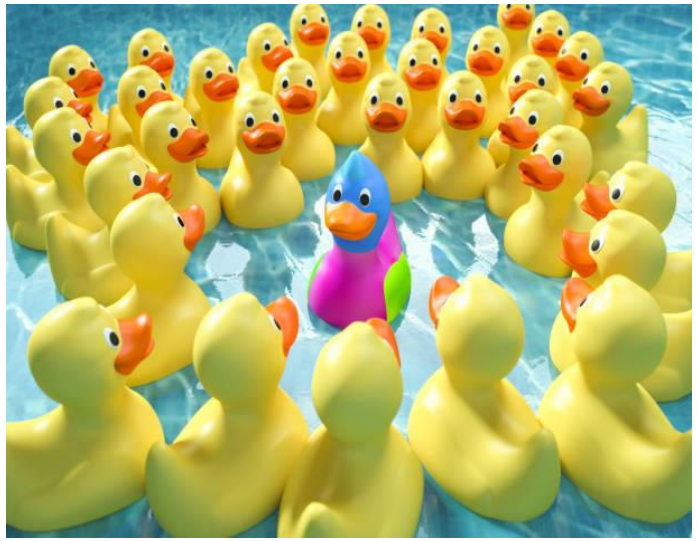
Professor and Chair

Northwell Urology at Lenox Hill Hospital



Disclosures - None

Why Involve Urology in SBRT?

- Shared goals: achieve cure, preserve function
- Urology value: risk stratification, early optimization, co-management
- Standardized approach and triage → lowers morbidity

Urologic Toxicity Following SBRT

- Lower urinary tract symptom (LUTS) (new or exacerbated)
- Pain/dysuria
- Hematuria
- Radiation induced hemorrhagic cystitis
- Erectile dysfunction
- Stricture/contracture/fistula
- Secondary malignancy

Baseline Urinary Symptoms and Evaluation

Urinary and Sexual Evaluation:

- Baseline function: preoperative LUTS - IPSS/IIEF/EPIC
- Uroflowmetry, PVR, UA, UCX
- Consider cysto/UDS with advanced symptoms
- Prostate volume and median lobe – DRE/US/MRI

History:

- Prior TURP/outlet procedure
- Older age, diabetes, smoking, anticoagulation

International Prostate Symptom Score (IPSS)

Name: Date:

	Not at all	Less than 1 time in 5	Less than half the	About half the time	More than half the	Almost always	Your score
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	
Frequency Over the past month, how often have you had to urinate again less than two 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 last month, how difficult have you found it to postpone urination?	0	1	2	3	4	5	
Weak stream Over the past month, how often have you had a weak urinary stream?	0	1	2	3	4	5	
Straining Over the past month, how often have you had to posh or strain to begin urination?	0	1	2	3	4	5	

	None	1 time	2 times	3 times	4 times	5 times or more	Your score
Nocturia Over the past month, many times did you most typically get up 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 IPSS score	

Quality of life due to urinary symptoms	Delighted	Pleased	Mostly satisfied	Mixed – about equally satisfied and dissatisfied	Mostly dissatisfied	Unhappy	Terrible
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?	0	1	2	3	4	5	6

Total score: 0-7 Mildly symptomatic; 8-19 moderately symptomatic; 20-35 severely symptomatic.

Predictors of Urinary Toxicity

- **Poor baseline GU function**
  - IPSS 8-19 → usually treat medically
  - IPSS >19 → medical + consider outlet procedure
  - Cysto/UDS → optional
  - High post-void residual
    - 100-150 → close monitoring, alpha blockers
    - >200 → significant risk for AUR
    - >300 → pre-radiation outlet procedure

Katz et al. Front Oncol 2014
Gurka et al. Radiat Oncol 2015
Jackson et al. PRO 2018
Musunuru et al. IJROBP 2016

Pepin A, Aghdam N, Shah S, et al. Urinary morbidity in men treated with stereotactic body radiation therapy (SBRT) for localized prostate cancer following transurethral resection of the prostate (TURP). *Front Oncol* 2020; **10**: 555.

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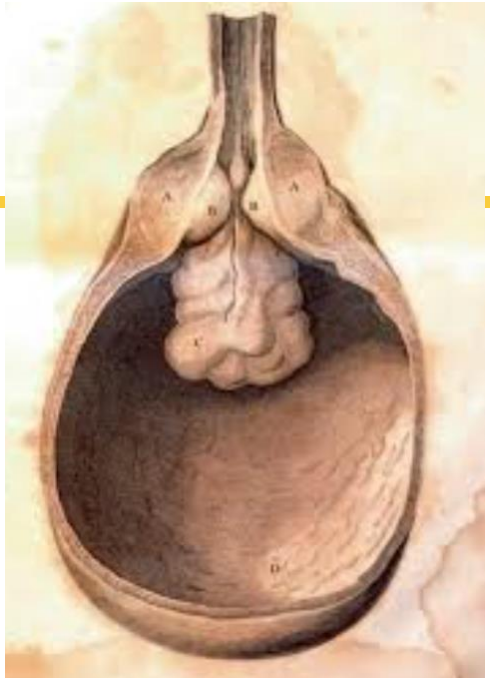
Predictors of Urinary Toxicity



- Large gland size/IPP
  - >60 grams: late grade ≥2 toxicity 15% v. 8%
  - IPP >1.4 cm predictor for catheter placement post SBRT
  - More acute symptoms, dysuria, late GU symptom flares

- Risk factors for bleeding: anticoagulant/antiplatelet, prior TURP, large gland size, cardiovascular disease

Bleeding Risk Following Stereotactic Body Radiation Therapy for Localized Prostate Cancer in Men on Baseline Anticoagulant or Antiplatelet Therapy

Abigail Pepin[1], Sarthak Shah[1], Monica Pernia[1], Siyuan Lei[2], Marilyn Ayoob[2], Malika Danner[2], Thomas Yung[2], Brian T. Collins[2], Simeng Suy[2], Nima Aghdam[3] and Sean P. Collins[2]

Choe KS, Jani AB, Liauw SL. External Beam Radiotherapy for Prostate Cancer Patients on Anticoagulation Therapy: How Significant Is the Bleeding Toxicity? *Int J Radiat Oncol Biol Phys* (2010) 76(3):755–60. doi: 10.1016/j.ijrobp.2009.02.026

Marks LB, Carroll PR, Dugan TC, Anscher MS. The Response of the Urinary Bladder, Urethra, and Ureter to Radiation and Chemotherapy. *Int J Radiat Oncol Biol Phys* (1995) 31(5):1257–80. doi: 10.1016/0360-3016(94)00431-J

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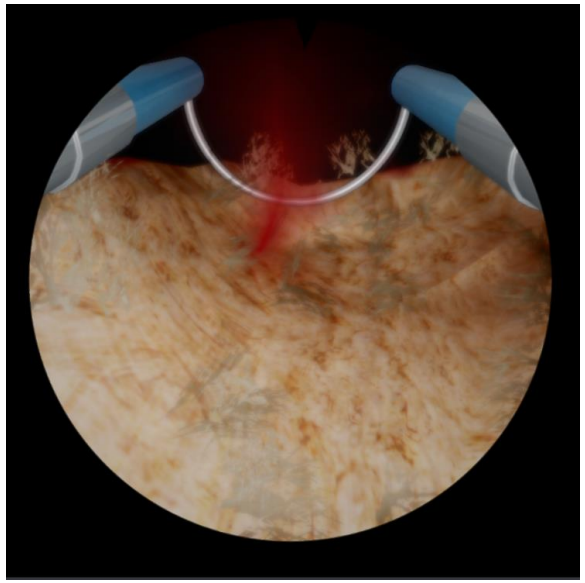
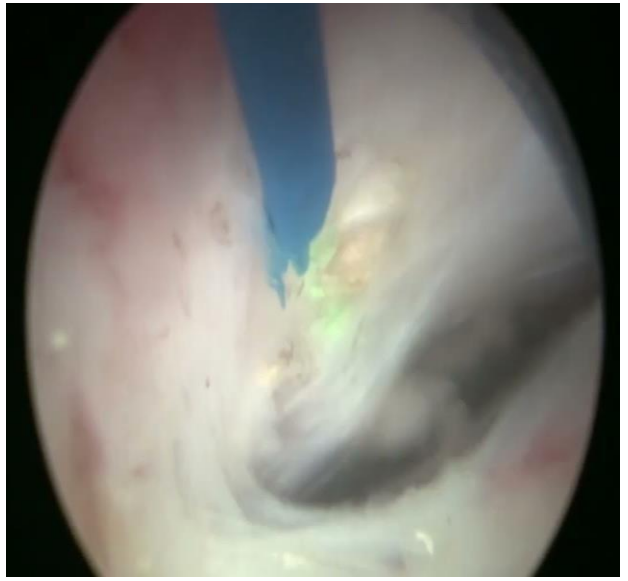
Pre-SBRT: Medical Optimization

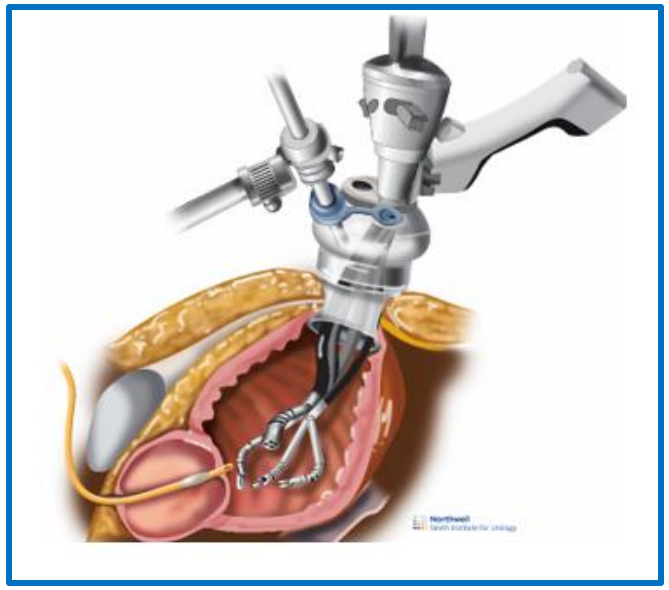
- Moderate baseline LUTS +/- low volume retention?
  - Alpha-blockers: standard of care for lower urinary symptoms
  - 5-Alpha reductase inhibitors: for large glands (LUTS, bleeding) (MTOPS)
  - Tadalafil: limited data in RT setting but can extrapolate

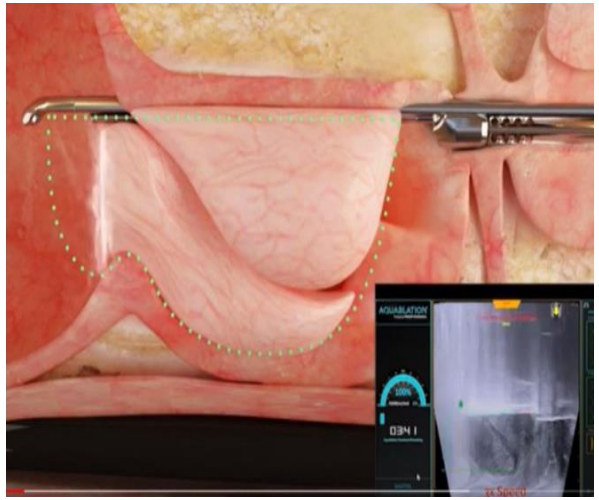
- Predominant irritative symptoms without retention/obstruction?
  - Antimuscarinic & β3 agonist
  - Alone or in conjunction with alpha blockers

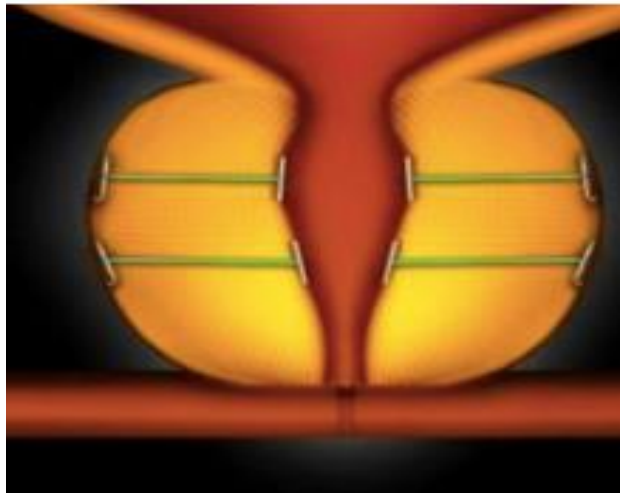
Severe LUTS and/or Retention → Outlet Procedure

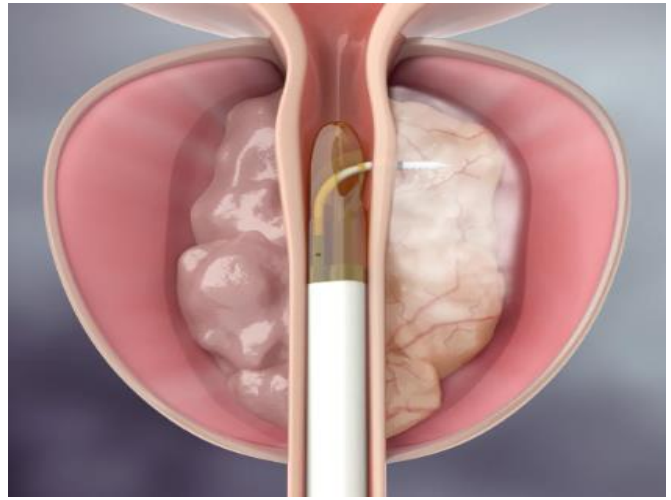












Radiation after Outlet Procedure

- **Prior TURP is a risk factor for GU toxicity**
  - Increases hematuria (20 v. 2%), strictures/BNC, incontinence, late GU toxicity
  - Fragile urethra/BN; heightened stricture/bleeding risk
  - Prepare for late BNC; surveillance with uroflow/PVR
  - Lowered threshold for urologist follow up

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ELSEVIER

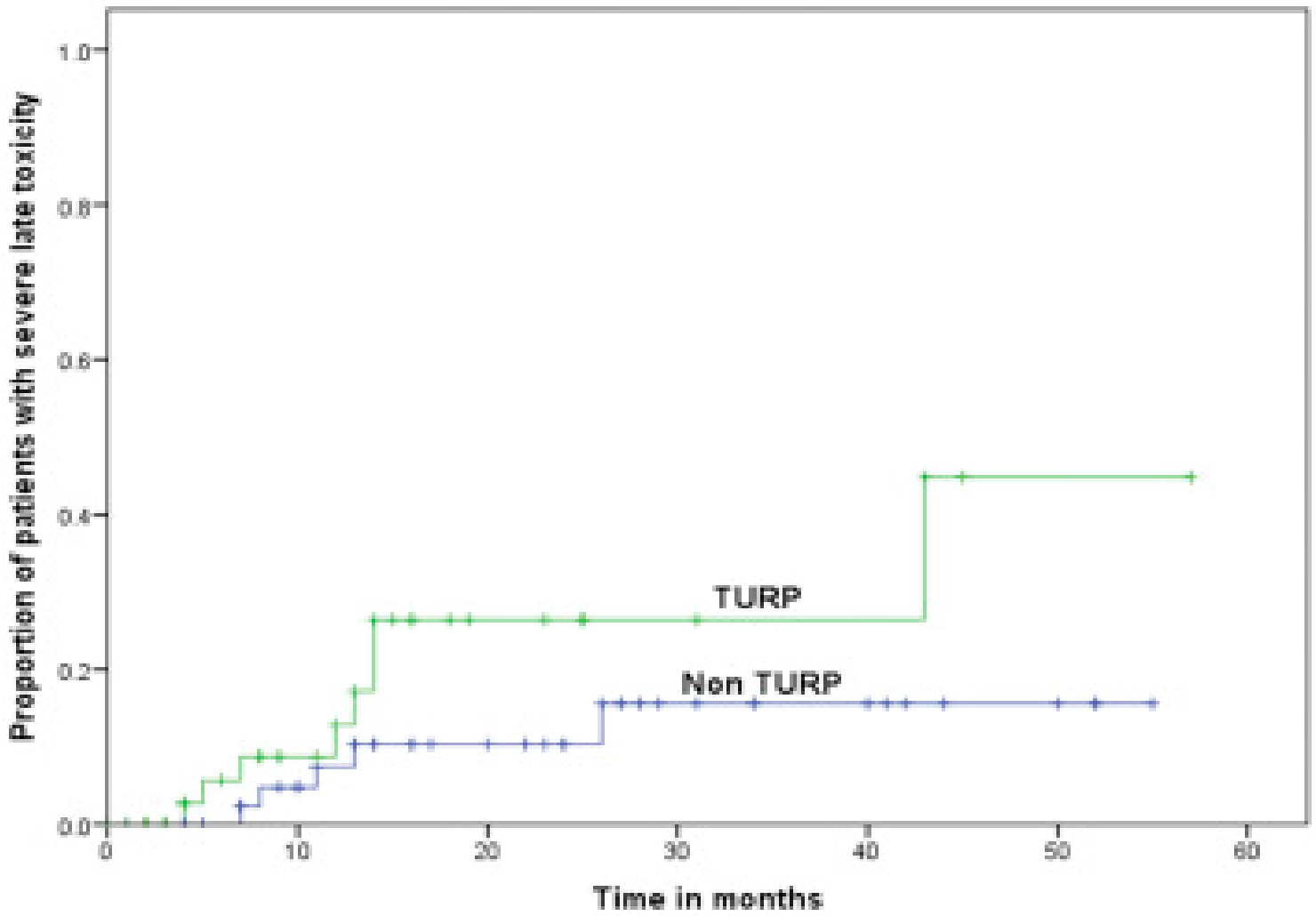
Practical Radiation Oncology

Volume 9, Issue 5, September–October 2019, Pages 347-353

Basic Original Report

Safety of Prostate Stereotactic Body Radiation Therapy after Transurethral Resection of Prostate (TURP): A Propensity Score Matched Pair Analysis

Vedang Murthy MD [a], Shwetabh Sinha MD [a], Sadhana Kannan MSc [b], Debanjali Datta MBBS [a], Rabi Das MBBS [a], Ganesh Bakshi MS [c], Gagan Prakash MS [c], Rahul Krishnatry MD [a]


Proportion of patients with severe late toxicity
1.0
0.8
0.6
0.4
0.2
0.0
0
10
20
30
40
50
60
Time in months
TURP
Non TURP

HoLEP

- **HoLELP**
  - Excellent outlet operation
  - Size-agnostic (up to 300g)
  - Early data suggests safety prior to RT

World Journal of Urology (2024) 42:504
https://doi.org/10.1007/s00345-024-05220-w

RESEARCH

Functional outcomes following external beam radiation therapy for patients with prior holmium laser enucleation of the prostate

Ethan Wajswol[1] · David J. Crompton[2] · Todd Igel[1] · Albert Attia[2] · Chandler Dora[1]

Received: 6 July 2024 / Accepted: 12 August 2024 / Published online: 4 September 2024

European Association of Urology

Review – Benign Prostatic Hyperplasia

Outcomes of Active Treatment for Localised Prostate Cancer After Holmium Laser Enucleation of the Prostate: A Systematic Review and Meta-analysis

Alberto Artiles Medina[a,b,*], *Ana Tagalos Muñoz*[a,b], *Ana Domínguez Gutiérrez*[a,b,*], *Alfonso Muriel García*[c], *José Daniel Subiela*[a,b], *Noelia Álvarez Díaz*[d], *Guillermo Fernández Conejo*[a,b], *Victoria Gómez Dos Santos*[a,b], *Almudena Coloma del Peso*[e], *Francisco Javier Burgos Revilla*[a,b]

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Recruiting

HoLEP Prior to Radiation Therapy for Patients With LUTS/Retention and Concurrent Prostate Cancer (HOLEP-RTPC)

ClinicalTrials.gov ID NCT03802851

Sponsor University of Kansas Medical Center

Information provided by Bristol Whiles, MD, University of Kansas Medical Center (Responsible Party)

Last Update Posted 2025-08-27

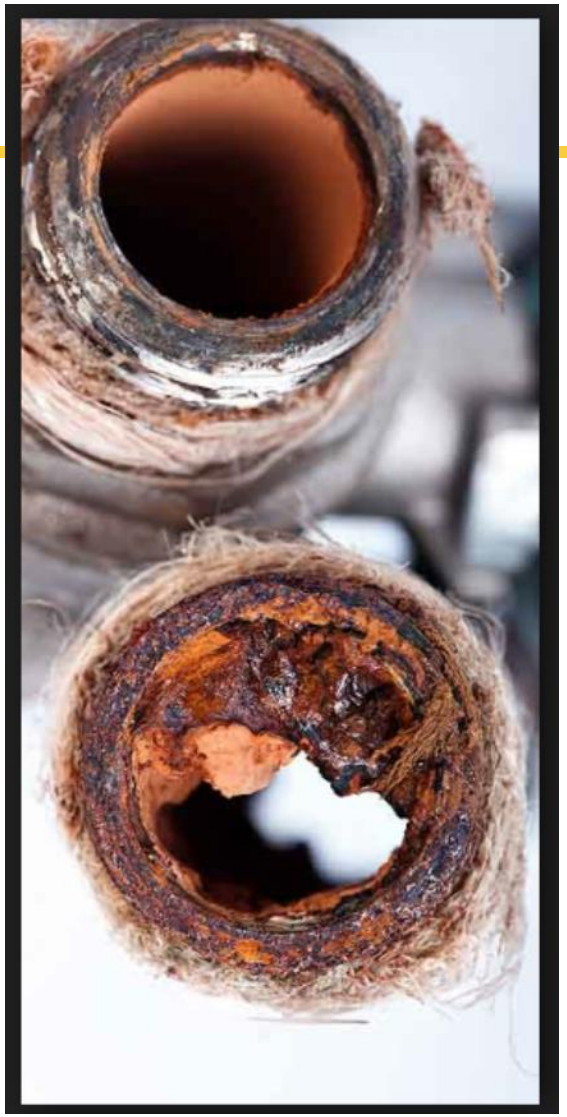
Acute/Subacute GU Toxicity: LUTS

- **LUTS: Irritative <--> storage symptoms**
  - Urothelial damage, later fibrotic and vascular ischemic effects
  - Frequency, urgency ,urge incontinence
  - Nocturia
  - Spasm
  - Dysuria
  - Very common (50%) acutely, with resolution 4-6 weeks

Acute/Subacute GU Toxicy: LUTS

- **LUTS: Obstructive <-> emptying symptoms**
  - Prostatic hyperplasia
  - Acute stromal inflammation

  - Hesitancy, weak stream, straining, intermittency, dribbling
  - Acute urinary retention



Management of LUTS

Alpha blockers

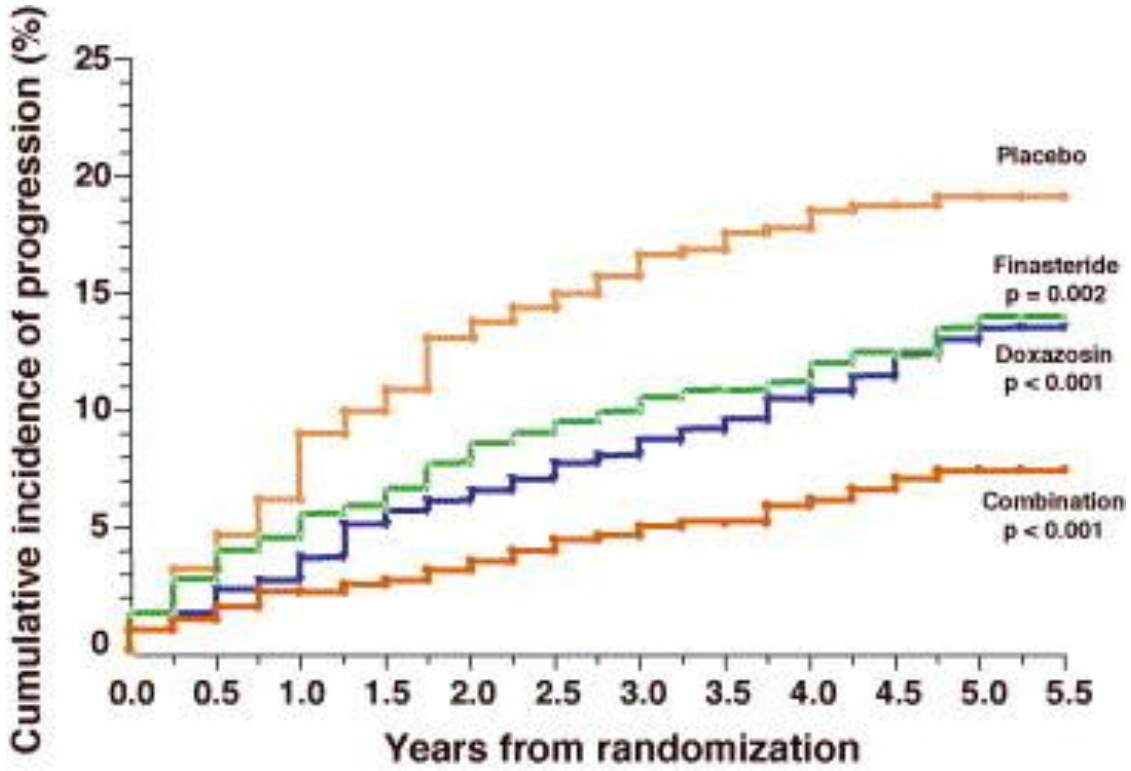
- Relaxation of smooth muscle of bladder neck/prostate
- Most common Rx for LUTS/BPH
- First line for obstructive and irritative symptoms

- Terazosin, doxazosin
- Tamsulosin, alfuzosin, silodosin

- Side Effects:
  - Orthostatic hypotension, dizziness, headache
  - Stuffy nose, rhinitis
  - Retrograde ejaculation

5-Alpha Reductase Inhibitors

- Inhibition of 5AR results in reduction in DHT
- Finasteride, dutasteride
- Side Effects:
  - Reduced libido/ED
  - Ejaculatory disfunction
  - Gynecomastia
  - Orthostatic hypotension



Tadalafil Administered Once Daily for Lower Urinary Tract Symptoms Secondary to Benign Prostatic Hyperplasia: A Dose Finding Study

Claus G. Roehrborn,* Kevin T. McVary, Albert Elion-Mboussa and Lars Viktrup

From the Department of Urology, University of Texas Southwestern Medical Center at Dallas (CGR), Dallas, Texas, Department of Urology, Northwestern University (KTM), Chicago, Illinois, and Lilly Research Laboratories, Eli Lilly and Co. (AEM, LV), Indianapolis, Indiana

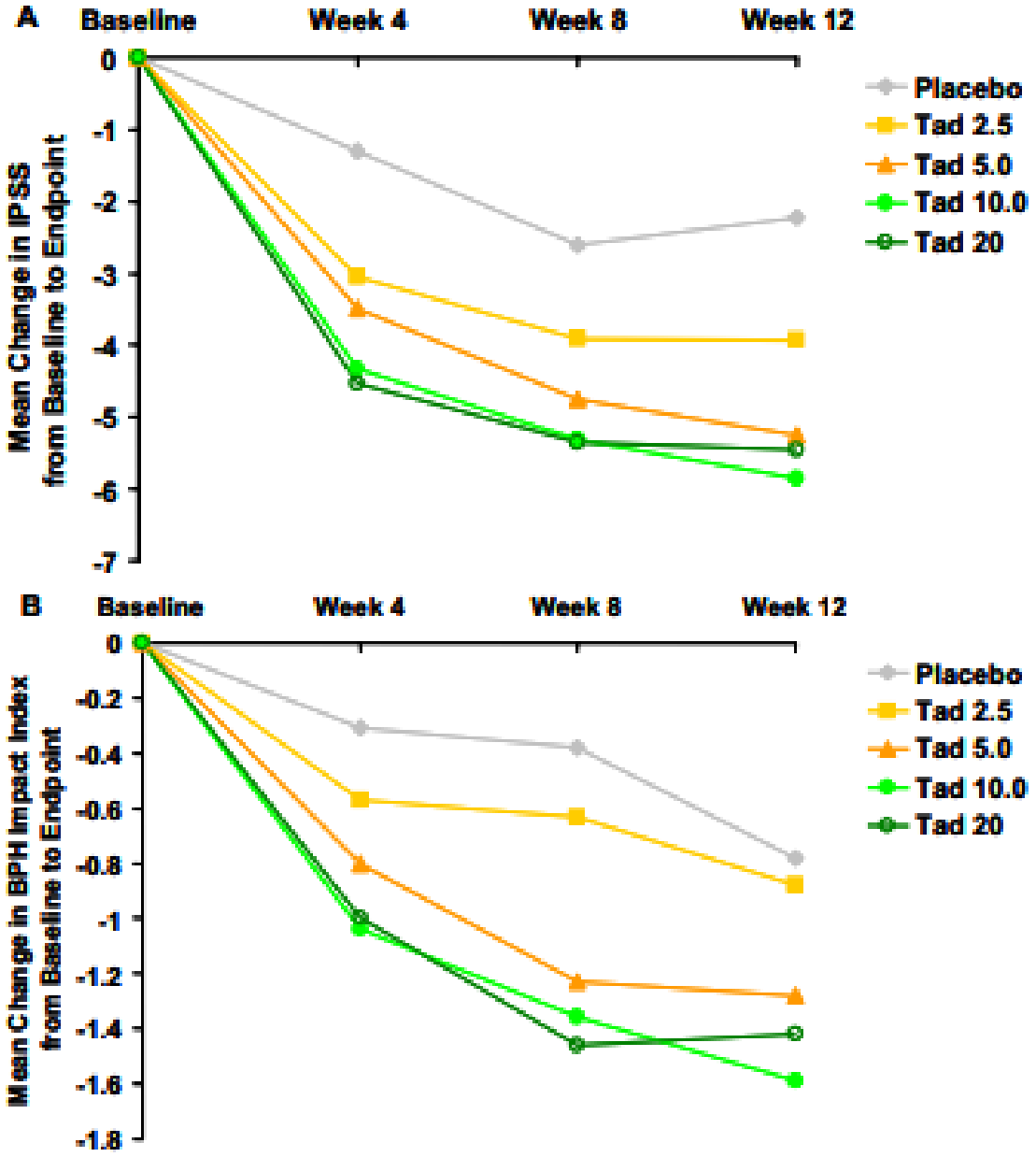
Purpose: Phosphodiesterase type 5 inhibitors are widely used to treat erectile dysfunction. Preliminary data have suggested phosphodiesterase type 5 inhibitor efficacy in men with lower urinary tract symptoms associated with clinical benign prostatic hyperplasia.

Materials and Methods: After a 4-week placebo run-in period 1,058 men with benign prostatic hyperplasia lower urinary tract symptoms were randomly allocated to receive 12-week, once daily treatment with placebo or tadalafil (2.5, 5, 10 or 20 mg).

Results: The International Prostate Symptom Score least squares mean change from baseline to end point was significantly improved for 2.5 (−3.9, $p = 0.015$), 5 (−4.9, $p < 0.001$), 10 (−5.2, $p < 0.001$) and 20 mg (−5.2, $p < 0.001$) tadalafil compared to placebo (−2.3). International Prostate Symptom Score improvements at 4, 8 and 12 weeks were significant for all tadalafil doses and they demonstrated a dose-response relationship. Tadalafil (2.5 mg) significantly improved the International Prostate Symptom Score obstructive subscore and the International Index of Erectile Function-Erectile Function domain, the latter in sexually active men with a history of erectile dysfunction. Statistically significant improvements were noted for 5, 10 and 20 mg tadalafil compared to placebo, as assessed by the International Prostate Symptom Score irritative and obstructive subscores, International Prostate Symptom Score Quality of Life, Benign Prostatic Hyperplasia Impact Index (nonsignificant for 10 mg), Global Assessment Question and International Index of Erectile Function-Erectile Function domain. No statistically significant effect of treatment compared to placebo was noted for peak flow at any tadalafil dose. Treatment emergent adverse events were infrequent in all tadalafil groups.

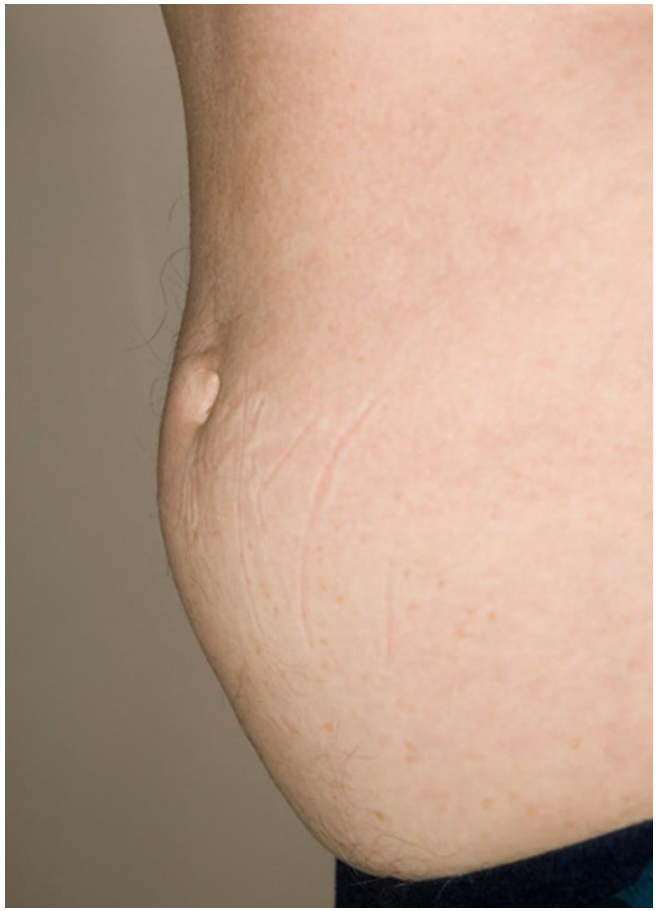
Conclusions: Once daily tadalafil demonstrated clinically meaningful and statistically significant efficacy and it was well tolerated in men with benign prostatic hyperplasia lower urinary tract symptoms. Of the doses studied 5 mg tadalafil appeared to provide a positive risk-benefit profile.

Key Words: prostate; tadalafil; dose-response relationship, drug; prostatic hyperplasia; questionnaires



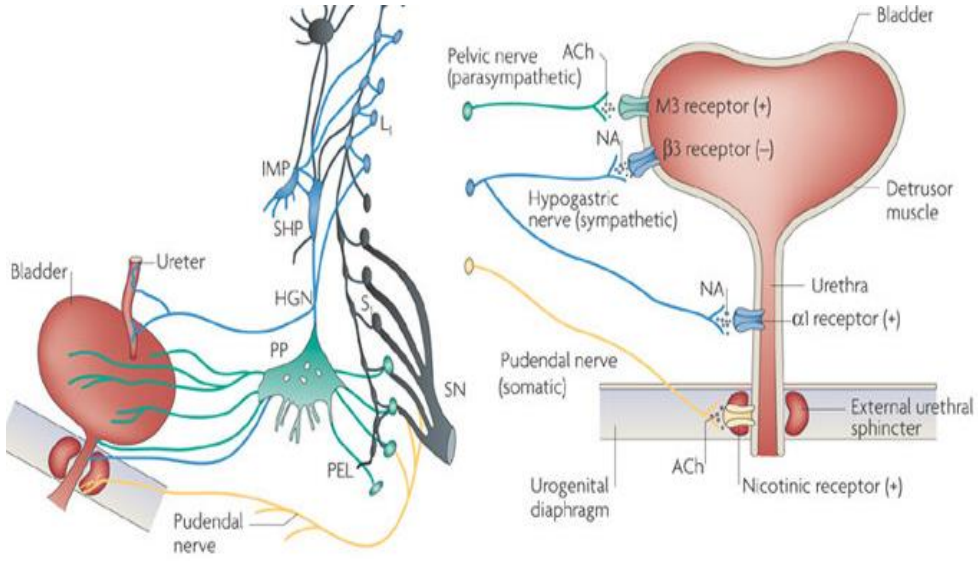
Obstructive LUTS → Retention → Practical Steps

- Diagnosis with history, physical, bladder scan
- Intermittent catheterization vs. indwelling Foley
- Gentle catheterization; avoid traumatic placement
- Cystoscopic placement over a wire if necessary
- Recurrent retention: urology consult
- Consider steroid taper
- Extreme cases can consider SPT
- Avoid outlet procedures as much as possible



OAB Pathophysiology

- Radiation → apoptosis, fibrosis, vascular damage, ischemia
- Dysfunction of the bladder → specifically the bladder trigone and urethra
- Chronic urgency and urge incontinence – under-reported



OAB – Conservative Management

- Behavioral and pelvic floor therapy
  - Fluid management, dietary irritants
  - Bladder training
  - Physical therapy and biofeedback

Avoid these bladder irritants				
All alcoholic beverages	Carbonated Drinks	Cranberries	NutraSweet	Saccharin
Apples	Champagne	Fava beans	Onions (raw)	Sour cream
Apple juice	Cheese	Grapes	Peaches	Soy sauce
Bananas	Chicken livers	Guava	Pickled herring	Strawberries
Beer	Chilies/Spicy foods	Lemon juice	Pineapple	Tea
Brewer's Yeast	Chocolate	Lentils	Plums	Tomatoes
Canned Figs	Citrus fruits	Lima Beans	Prunes	Vinegar
Cantaloupes	Coffee	Nuts	Raisins	Vitamins-buffered with aspartame
	Corned beef	Mayonnaise	Rye bread	Yogurt

- Medical therapy
  - Alpha blockers, antimuscarinic medications, beta-3 agonists
  - Combination therapy generally safe, effective

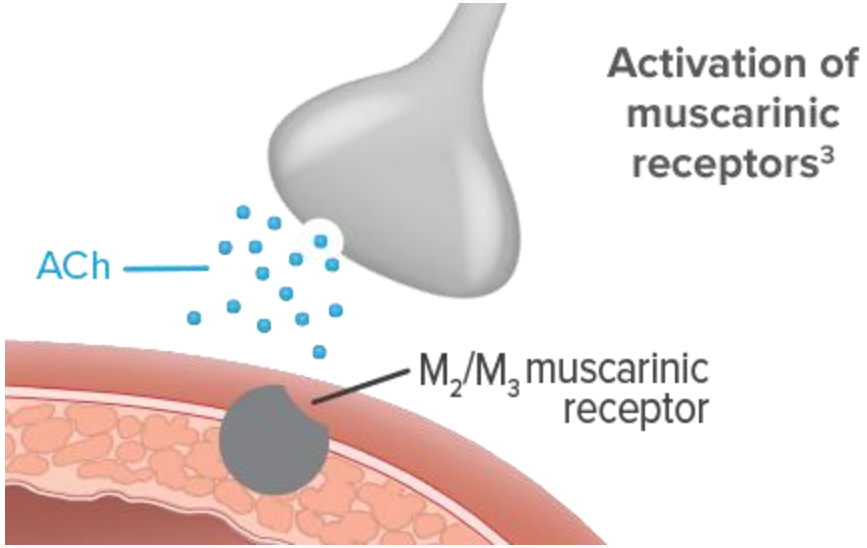
Antimuscarinics

TABLE II

FDA-Approved Antimuscarinic Medications for Treatment of OAB

Drug	Dosing	Metabolism	Adverse Effects
Oxybutynin ER[a]	5 mg bid-qid; 5-30 mg qd	CYP3A4 to active metabolite, desethyloxybutynin	39-61% dry mouth, 7-13% constipation, 2-12% drowsiness
Oxybutynin transdermal[b]	1 patch, twice weekly	Transdermal, minimizing first-pass hepatic effects	10-20% local reactions
Oxybutynin gel[b]	1 packet gel daily, transdermal	Transdermal, minimizing first-pass hepatic effects	> 5% dry mouth and/or skin reaction
Tolterodine ER[c]	1-2 mg bid; 2-4 mg qd	CYP3A4 to active metabolite, 5-hydroxymethyl-tolterodine	23% dry mouth, 6% constipation, 6% headache
Fesoterodine[a]	4-8 mg po qd	Nonspecific esterases	20% dry mouth, 1.5% constipation, 5% headache
Trospium ER[d]	20 mg bid; 60 mg qd	Liver via ester hydrolysis, renal excretion	11-20% dry mouth, 10% constipation, 4% headache
Solifenacin[a]	5-10 mg qd	CYP3A4 to active metabolite, 4R-hydroxy solifenacin	11-28% dry mouth, 5-13% constipation, 4-5% blurred vision
Darifenacin[a]	7.5-15 mg qd	CYP3A4 and 2D6 to inactive metabolites	20-35% dry mouth, 15-21% constipation, 3-9% dyspepsia

[a] *Contains information from U.S. Food and Drug Administration drug monographs at www.drugs.com.*
[b] *Contains information from http://gelnique.com.*
[c] *Contains information from www.detrolla.com and www.pfizer.com/home.*
[d] *Contains information from www.allergan.com.*



OAB – Medical Therapy

- Similar efficacy across antimuscarinics
- Side effects: constipation, dry eyes, dry mouth, mental status changes
- Extended release → lower rates of dry mouth
- Trospium least likely to cross blood-brain barrier

- Avoid use of anti-muscarinics in patients with narrow-angle glaucoma
- Avoid in patients with impaired gastric emptying or urinary retention

- Literature evolving with respect to dementia risk
  - 1.65 (95%CI 1.56-1.75) compared to patients without history of use

Beta Agonists

- Low side effect profile
- Less dry mouth
- Moderate inhibitor of CYP2D6 may potentiate:
  - Digoxin, amitriptyline, and metoprolol
- Low risk of increased BP with Myrbetriq

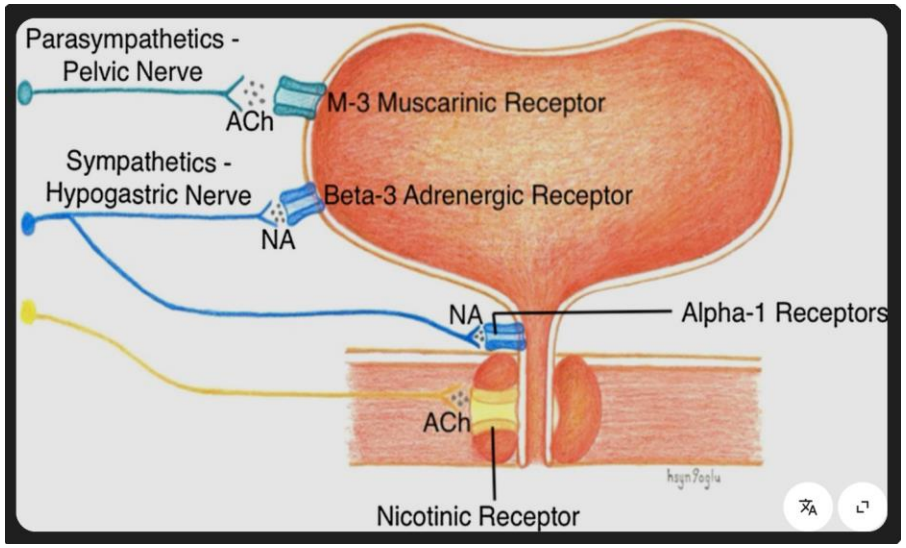


Table 2. Beta-3 Adrenergic Agonists

	Mirabegron (*Myrbetriq*)	Vibegron (*Gemtesa*)
Formulations	25, 50 mg ER tabs	75 mg tabs
Usual maintenance dosage	25-50 mg once/day	75 mg once/day
Dosage in hepatic impairment	Child-Pugh B: 25 mg once/day Child-Pugh C: not recommended	Child-Pugh C: not recommended
Dosage in renal impairment	eGFR 15-29 mL/min/1.73 m^2: 25 mg once/day eGFR <15 mL/min/1.73 m^2: not recommended	eGFR <15 mL/min/1.73 m^2: not recommended
Administration	Tablets must be swallowed whole and taken with water	Tablets can be swallowed whole or crushed and mixed with apple-sauce; must be taken with water
CYP interactions	Moderate CYP2D6 inhibitor CYP3A4 and 2D6 substrate (minor)	CYP3A4 substrate (minor)
Effect on blood pressure	Can increase up to 3.5/1.5 mm Hg	No clinically significant effect
Cost[1]	$417.20	$458.40

ER = extended-release

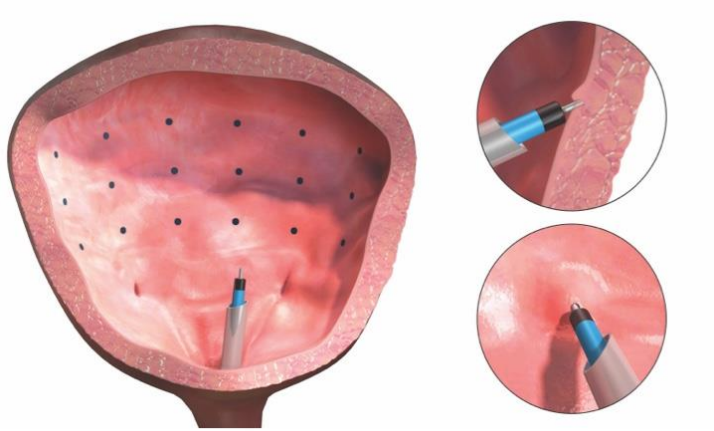
OAB – Botox and Neuromodulation

- Botox
  - 20-30 injection sites
  - 6-12 month efficacy
  - Risk of retention and UTI
  - Limited studies in RT patients demonstrates safety and efficacy

Article

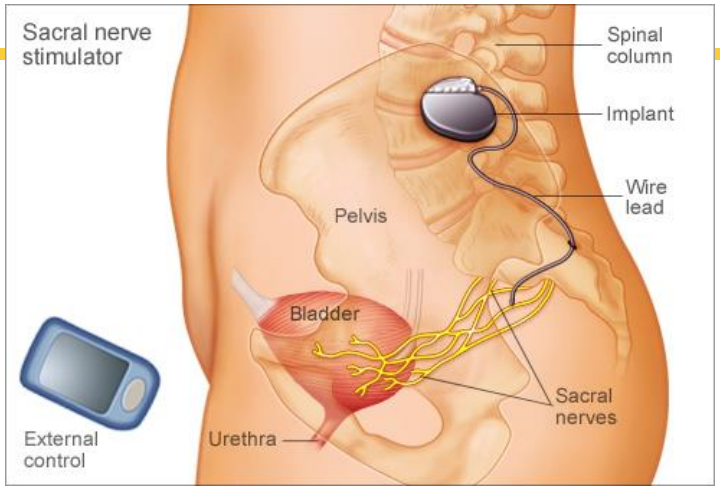
The Effects of Botulinum Toxin A Injections on Patients with Radiogenic Lower Urinary Tract Symptoms

Anke K. Jaekel [1,2,*,†], Ann-Christin Brüggemann [3,†], John Bitter [2], Franziska Knappe [2], Ruth Kirschner-Hermanns [1,2] and Stephanie C. Knüpfer [1,2]

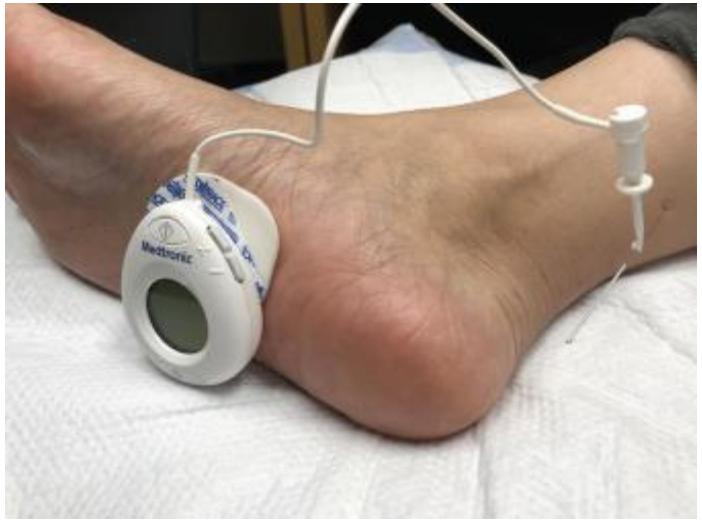


OAB – Botox and Neuromodulation

- Neuromodulation : Poorly studied in RT patients
  - Sacral nerve stimulation
    - Stimulator placed subcutaneously
    - Leads to S2-4



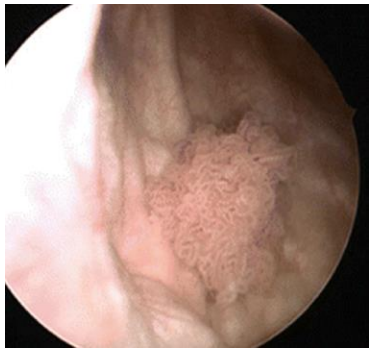
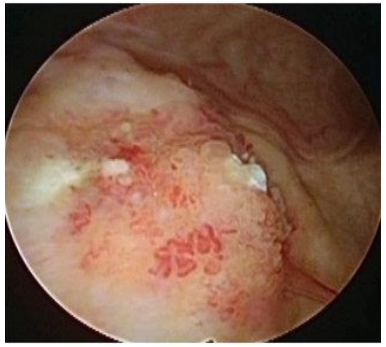
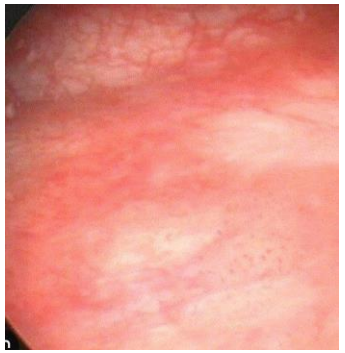
  - Percutaneous Tibial Nerve Stimulation (PTNS):
    - Mild electrical pulses via a needle near the tibial nerve
    - Signaling → sacral nerve plexus S2-S3 → bladder
    - Modulates Inhibit involuntary contractions



Refractory LUTS → Involve Your Friendly Urologist

- Urologic consultation
  - Urothelial cancer can present as refractory frequency/urgency
  - Concomitant hematuria may/may not be present
  - Secondary malignancy (0.1-3.8%) [23]
  - Smoking history and/or occupational exposure

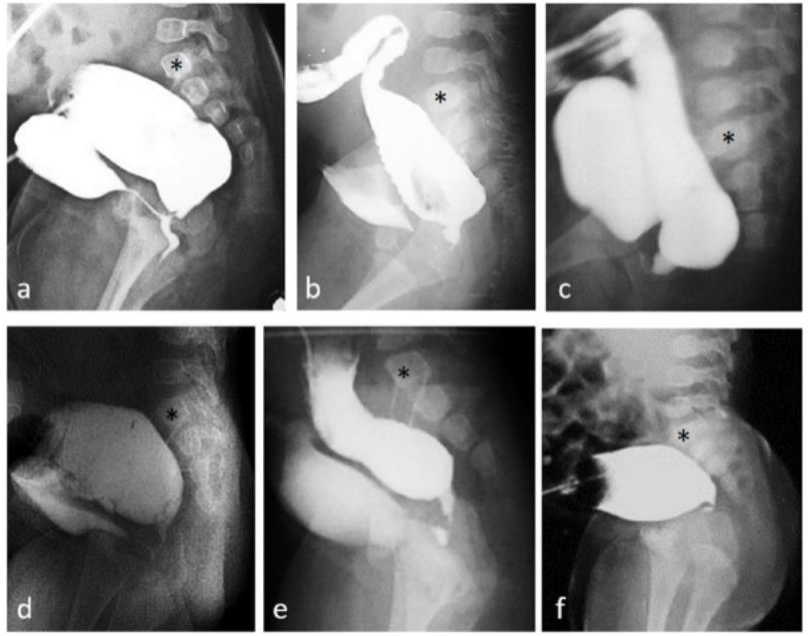
- Cytology/Cystoscopy

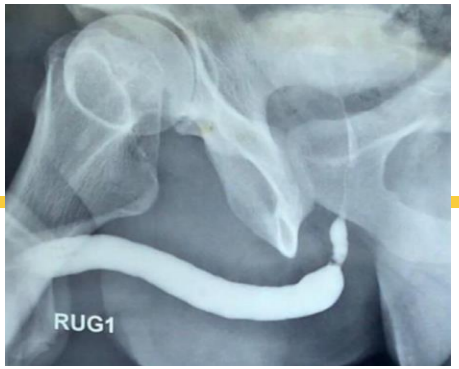
Wallis CJD, Mahar AL, Choo R, et al. Second malignancies after radiotherapy for prostate cancer: systematic review and meta-analysis. *BMJ* 2016; **352**: i851.

Late GU Toxicity

- Radiation-induced hemorrhagic cystitis (telangiectasia)
- Stricture and bladder neck contracture
  - Worsening obstructive symptoms
  - Splaying of urinary stream
- Fistula



Stricture/BNC - Detection

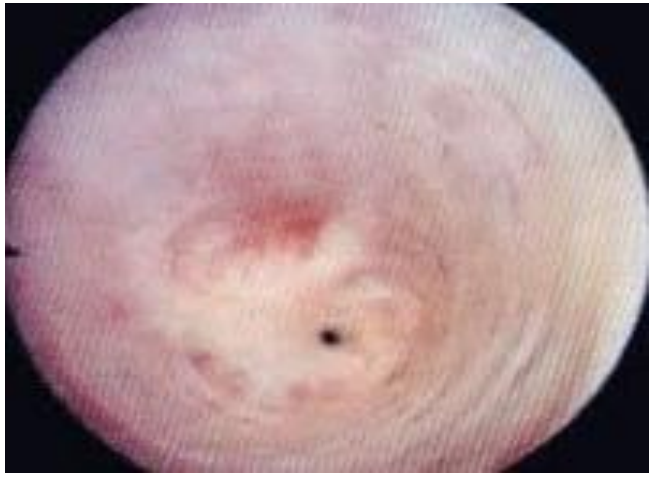


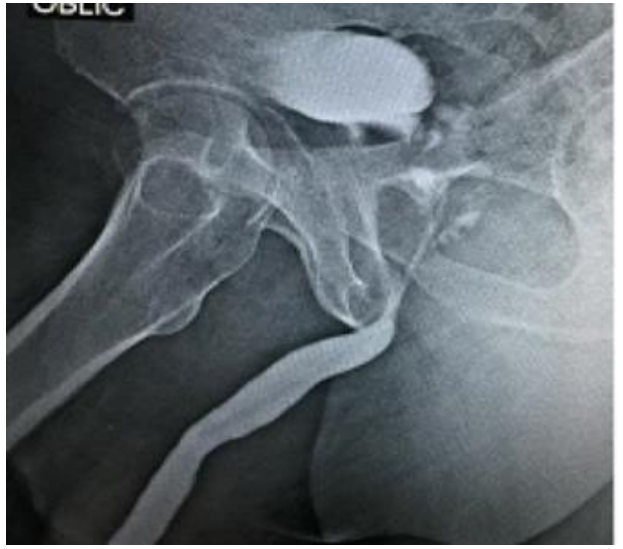
- Higher risk post-TURP or with salvage radiation
- Most commonly bulbomembranous urethra and bladder neck
- Emptying symptoms: weak stream, incomplete emptying, overflow incontinence
- Evaluation: uroflow + PVR, cystoscopy, retrograde urethrography (RUG)

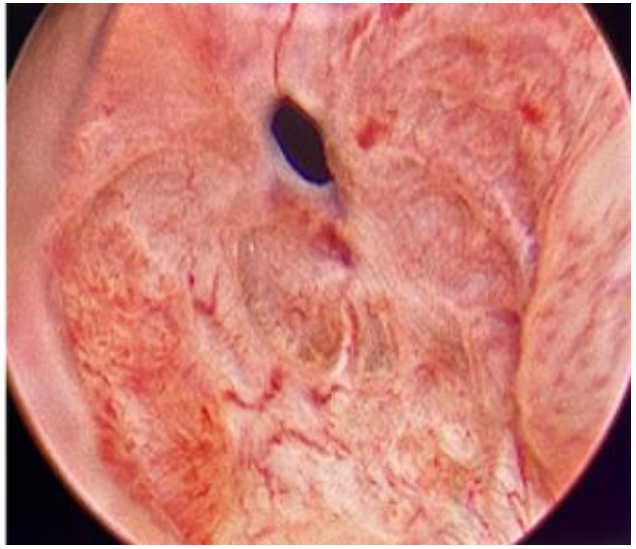
Stricture/BNC - Detection

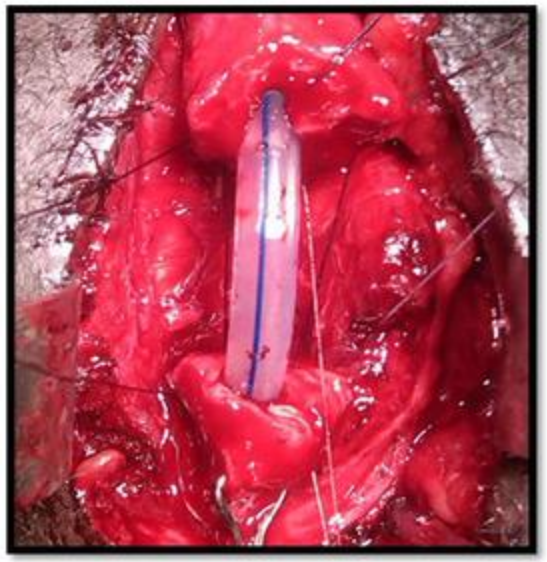
TREATMENT

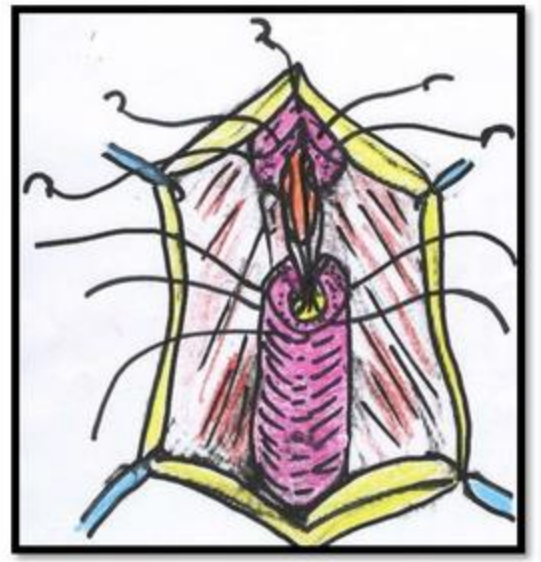
- Dilation and/or incision – start with least invasive approach
- Urethroplasty (excision and primary anastomosis)
  - High success 70-86%
  - High recurrence 30%
- Endoscopic bladder neck reconstruction
- Robotic reconstruction

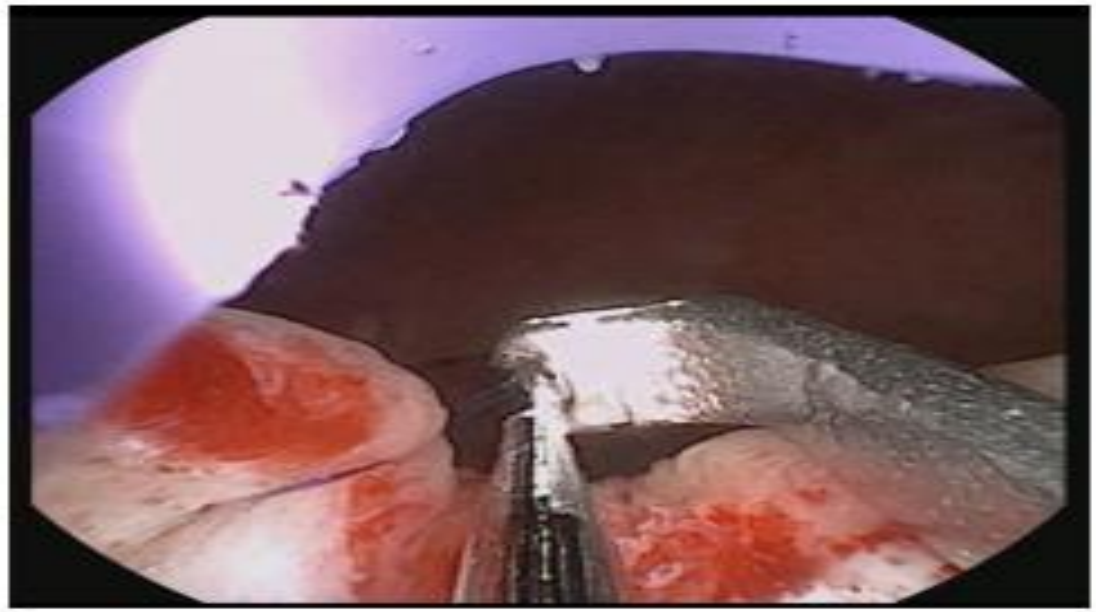


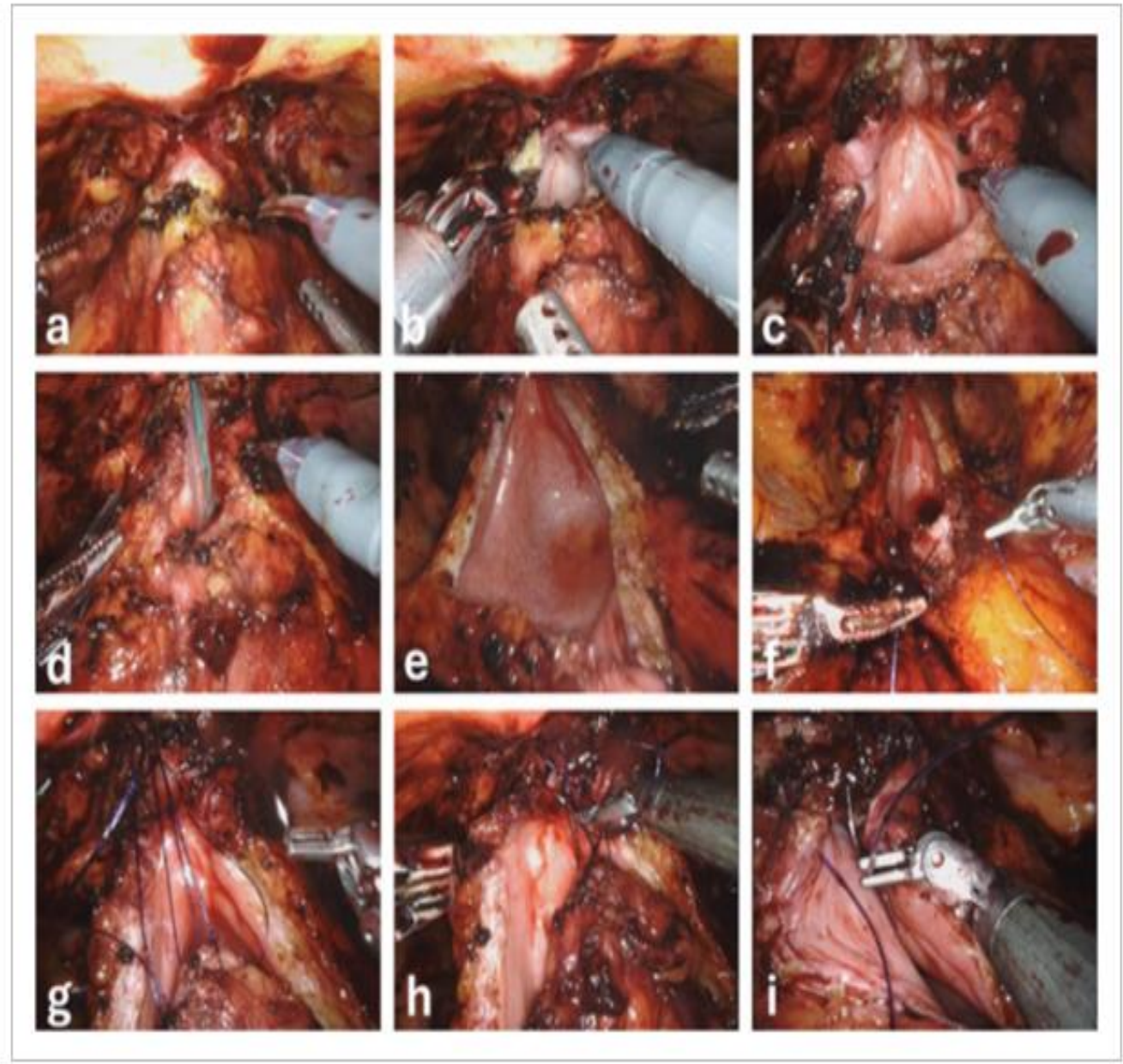








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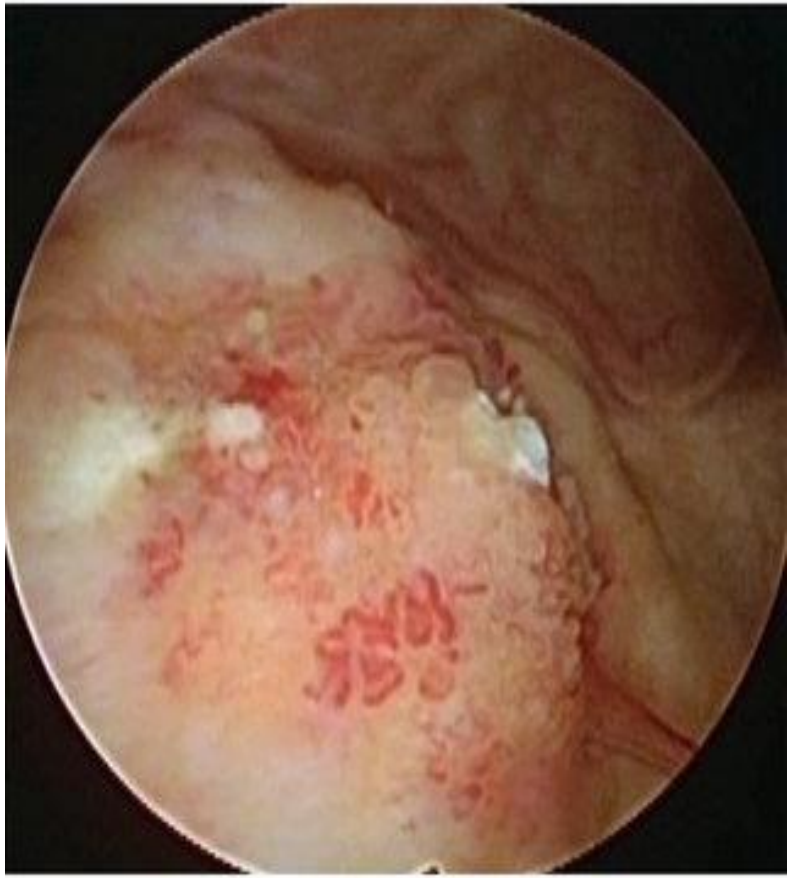
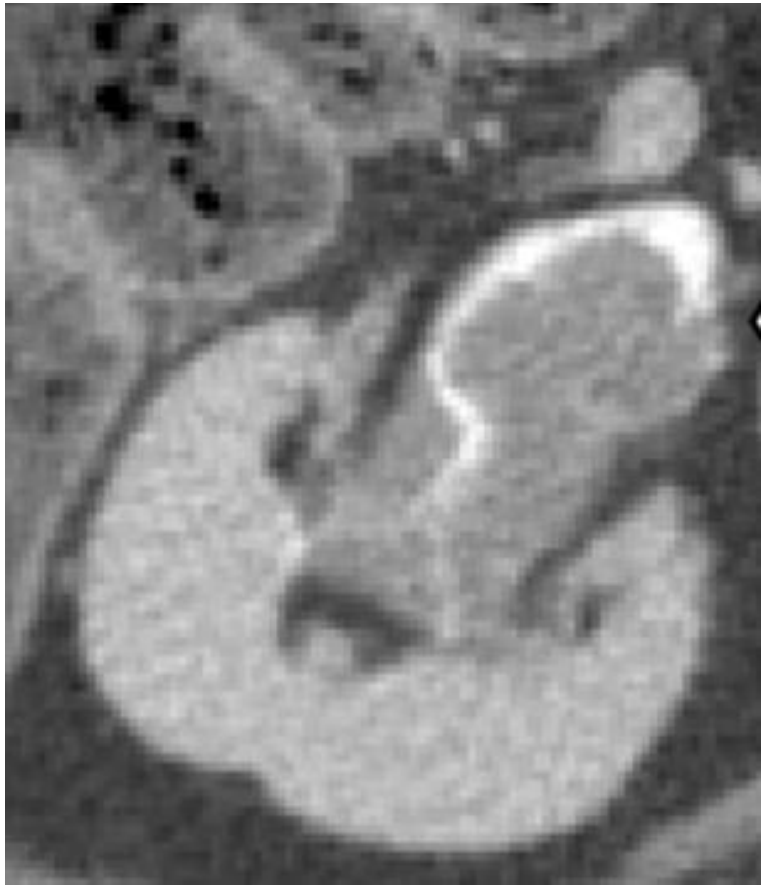
HEMATURIA

- Mild intermittent hematuria
  - Acute/subacute (~3% of patients)
  - Typically self limiting
- Radiation Induced Hemorrhagic Cystitis
  - Typically, between 6 months and 20 years
  - Average latency 3 years
  - Gross hematuria, clots, retention
- Can be severe, even life threatening
- Warrants evaluation: cytology, cystoscopy, CTU

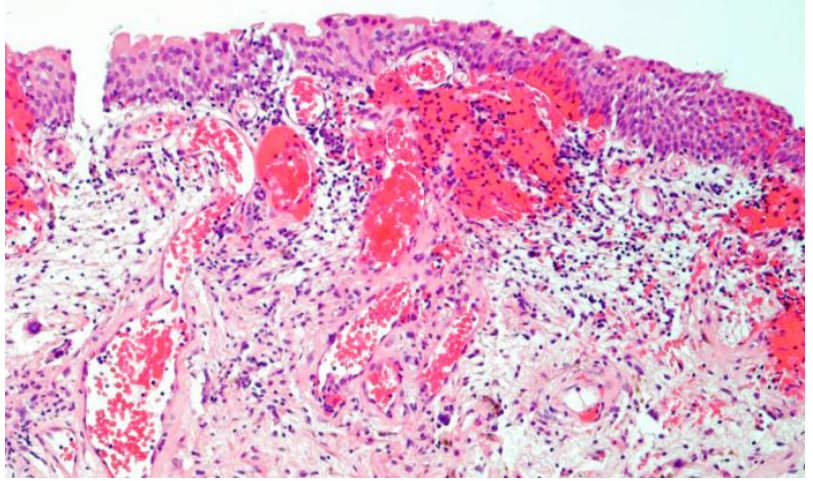
HEMATURIA → Consider Malignancy

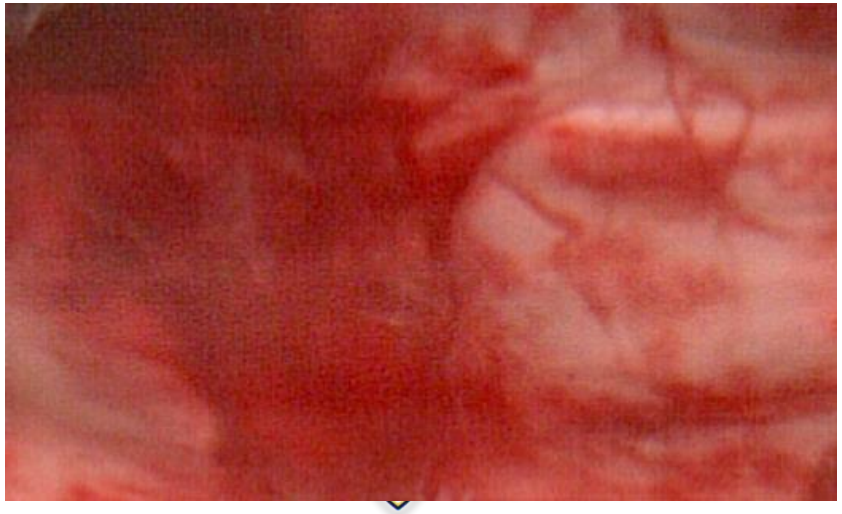




Radiation-Induced Hemorrhagic Cystitis

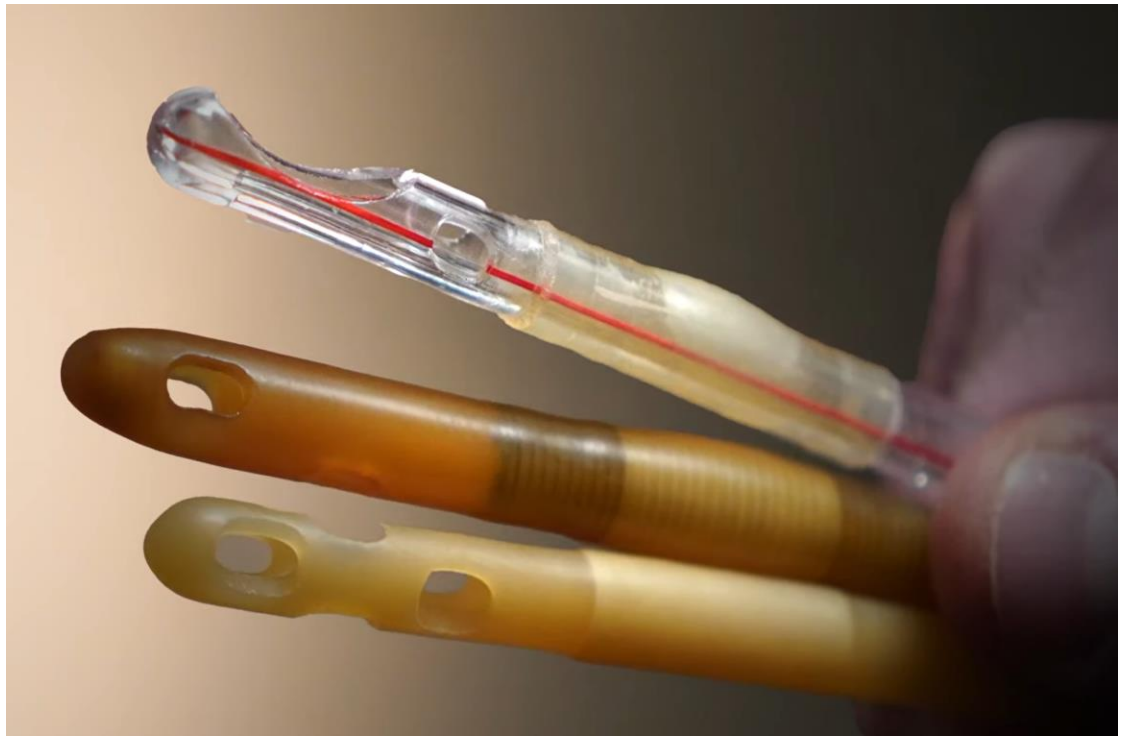
- Cystoscopic findings:
  - Congestion and edema of the bladder mucosa
  - Dilation and disorder of blood vessels
  - Vessels appear engorged or clustered
  - Submucosal bleeding can also be seen
  - Scattered or diffuse bleeding, ulcers, or necrotic lesions
  - Primarily in the posterior wall and trigone

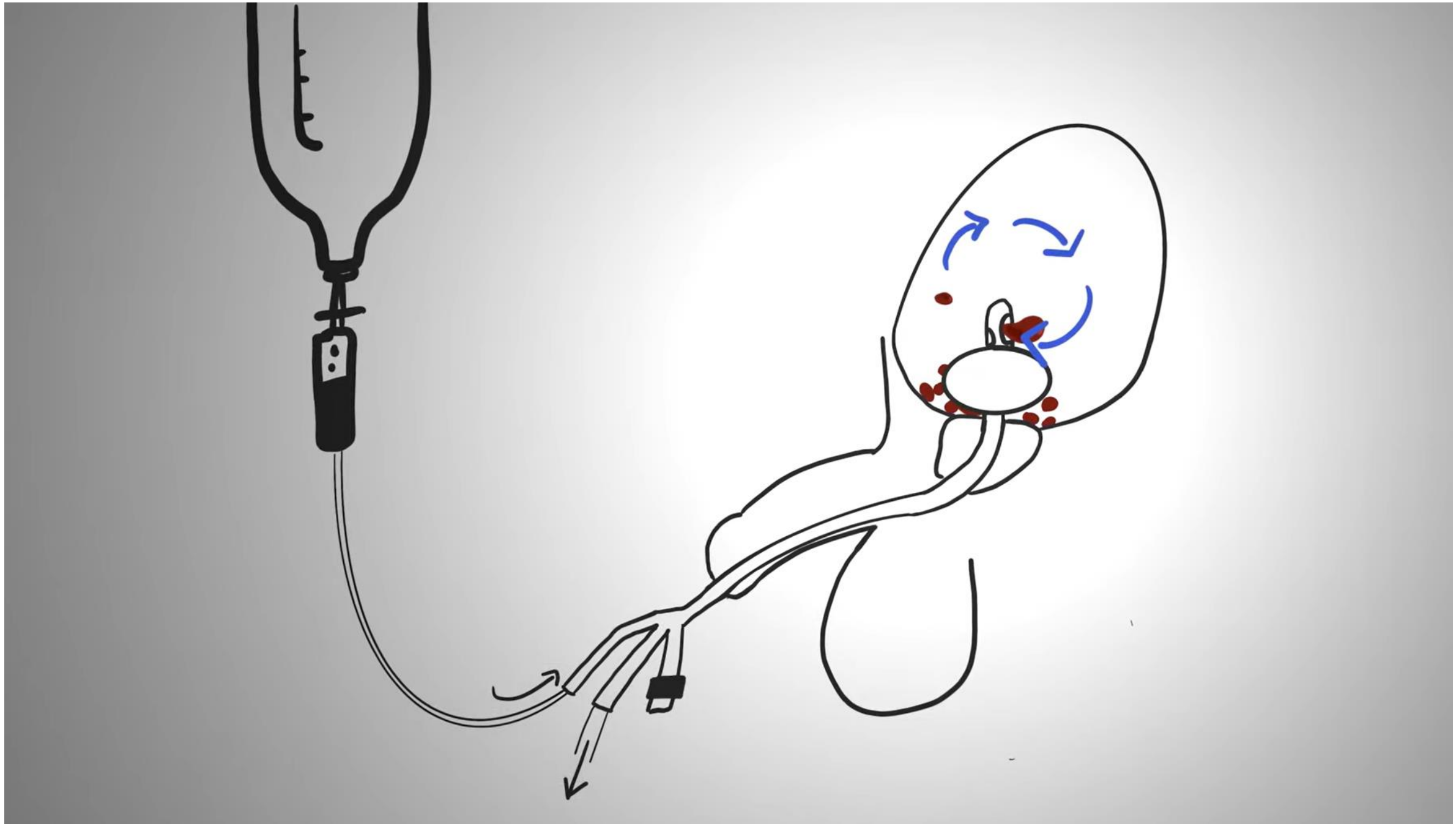


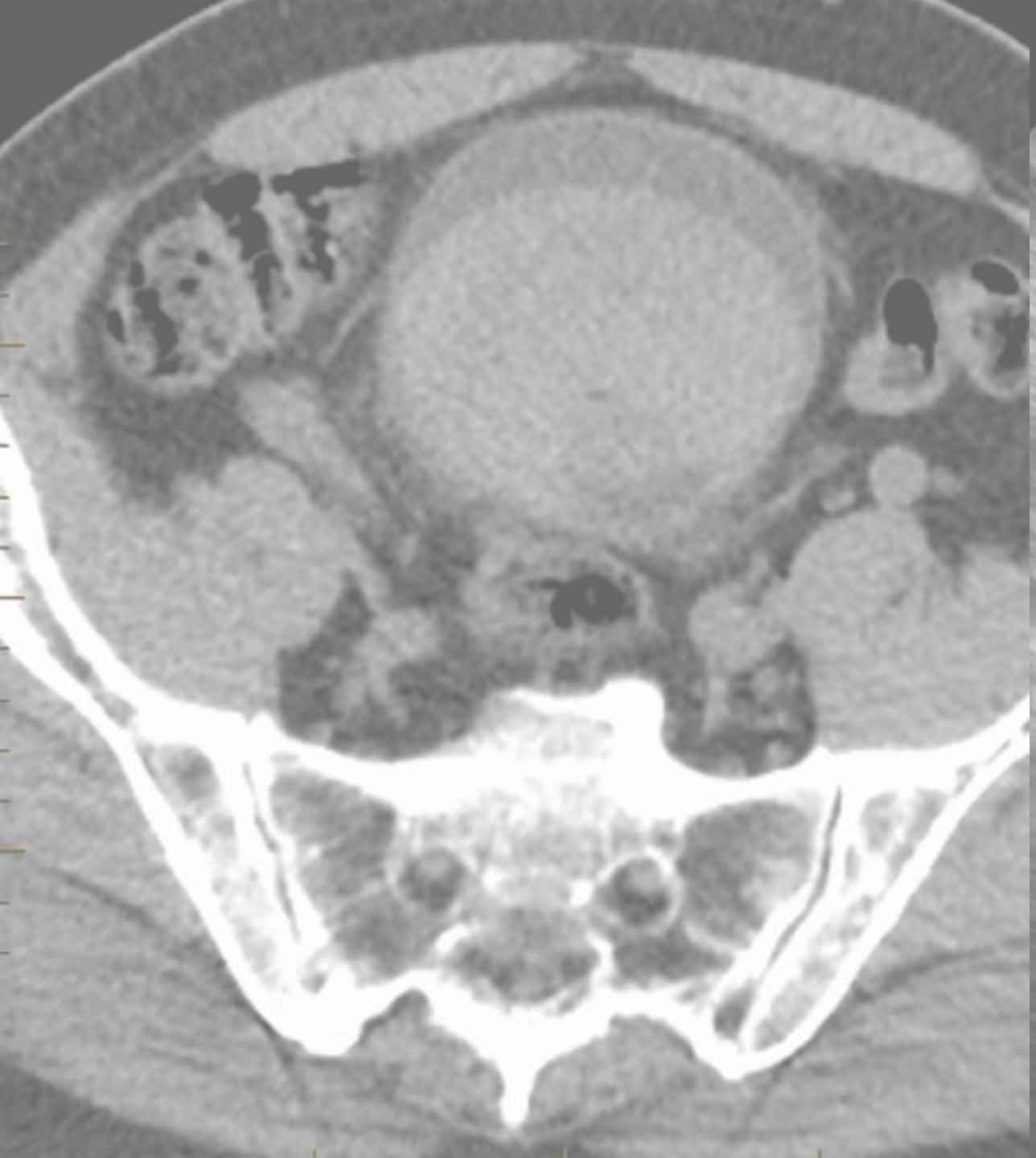


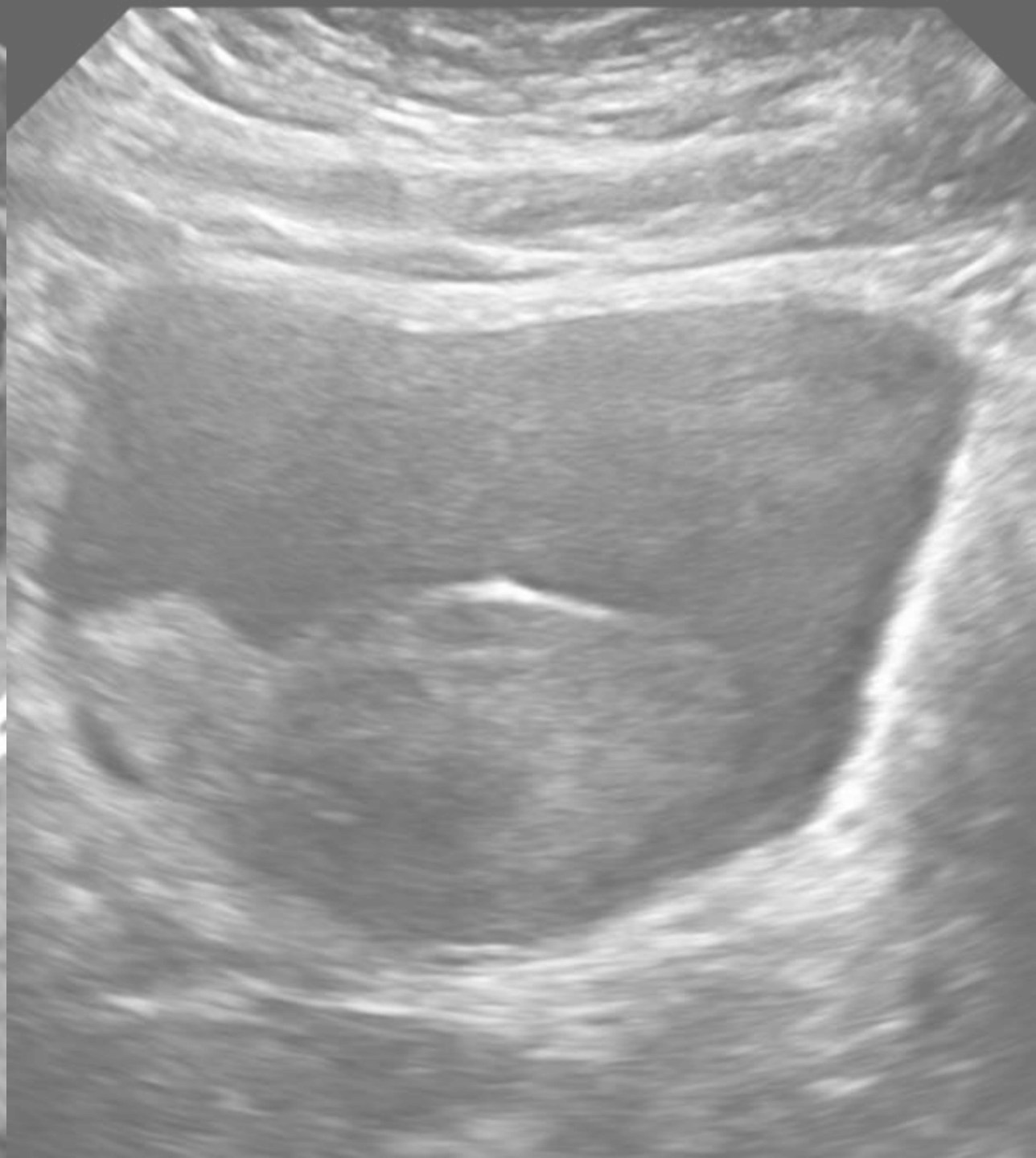
Radiation-Induced Hemorrhagic Cystitis: Supportive Care

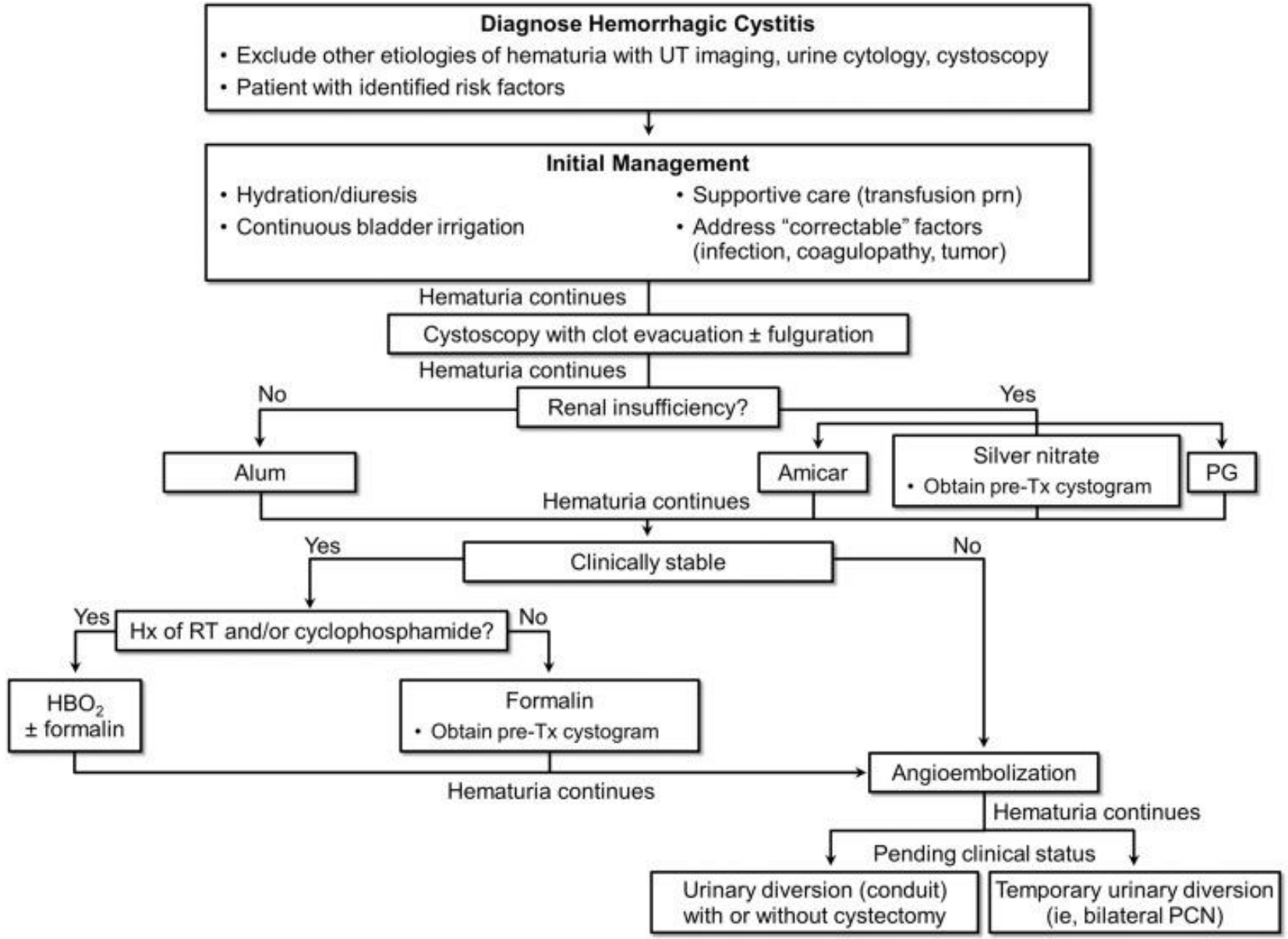
- Irrigation and clot evacuation +/- CBI
- Imaging of bladder/clot burden
- Address coagulopathy +/- transfusion
- OR Cystoscopy: clot evacuation, fulgaration







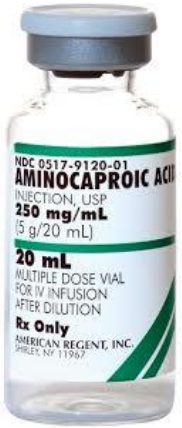


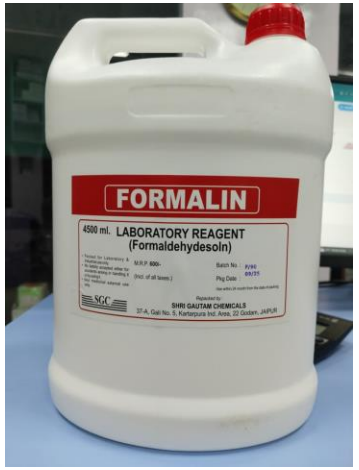


Linder BJ, Boorjian SA. Management of emergency bleeding, recalcitrant clots, and hemorrhagic cystitis. *AUA Update Series*. 2015;34 (Lesson 3).28

Radiation-Induced Hemorrhagic Cystitis

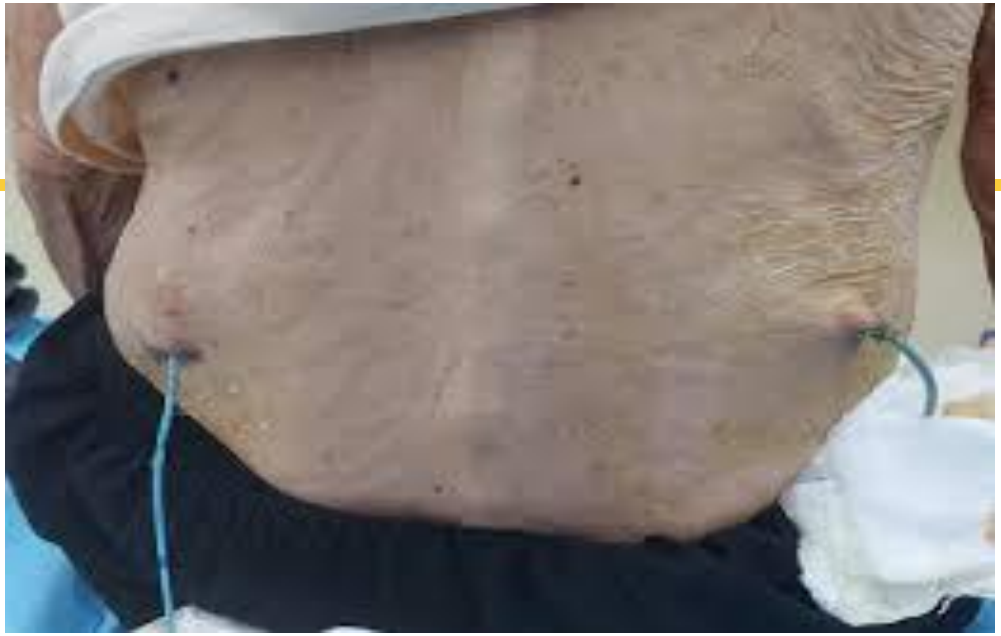
- Medical therapy
  - Oral sodium pentosan polysulfate (Elmiron)
  - Oral/intravesical aminocaproic acid (Amicar; ensure pretreatment clot evacuation)
  - Intravesical sodium hyaluronate
  - Intravesical tranexamic acid (TXA)
  - Intravesical Alum (potassium aluminum sulfate, contraindicated CKD)
  - Intravesical silver nitrate
  - Intravesical formalin (under anesthesia; rule out reflux)





Hemorrhagic Cystitis

- Arterial embolization
- Bilateral nephrostomy
- Urinary diversion +/- cystectomy



Hemorrhagic Cystitis

Open Access Full Text Article REVIEW

Hemorrhagic Cystitis: Making Rapid and Shrewd Clinical and Surgical Decisions for Improving Patient Outcomes

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- Hyperbaric oxygen – commencement within 6 months of onset
  - 100% O2 at pressure 1.8-2.5 ATM for 60-120 min per day x 20-40 treatments
  - Promotes angiogenesis, fibroblast activity, tissue repair
  - Effectiveness rate of HBOT for radiation-induced cystitis is 87.3%
  - Complete remission rate of 65.3%

Erectile Dysfunction

- Baseline assessment is key
- IIEF/SHIM/EPIC sexual domain
- Absent libido → check testosterone
- Assess for psychogenic component

Over the past 6 months:

1. How do you rate your confidence that you could get and keep an erection?	Very low	Low	Moderate	High	Very high
	1	2	3	4	5
2. When you had erections with sexual stimulation, how often were your erections hard enough for penetration?	Almost never/never	A few times (much less than half the time)	Sometimes (about half the time)	Most times (much more than half the time)	Almost always/always
	1	2	3	4	5
3. During sexual intercourse, how often were you able to maintain your erection after you had penetrated (entered) your partner?	Almost never/never	A few times (much less than half the time)	Sometimes (about half the time)	Most times (much more than half the time)	Almost always/always
	1	2	3	4	5
4. During sexual intercourse, how difficult was it to maintain your erection to completion of intercourse?	Extremely difficult	Very difficult	Difficult	Slightly difficult	Not difficult
	1	2	3	4	5
5. When you attempted sexual intercourse, how often was it satisfactory for you?	Almost never/never	A few times (much less than half the time)	Sometimes (about half the time)	Most times (much more than half the time)	Almost always/always
	1	2	3	4	5

Erectile Dysfunction Management

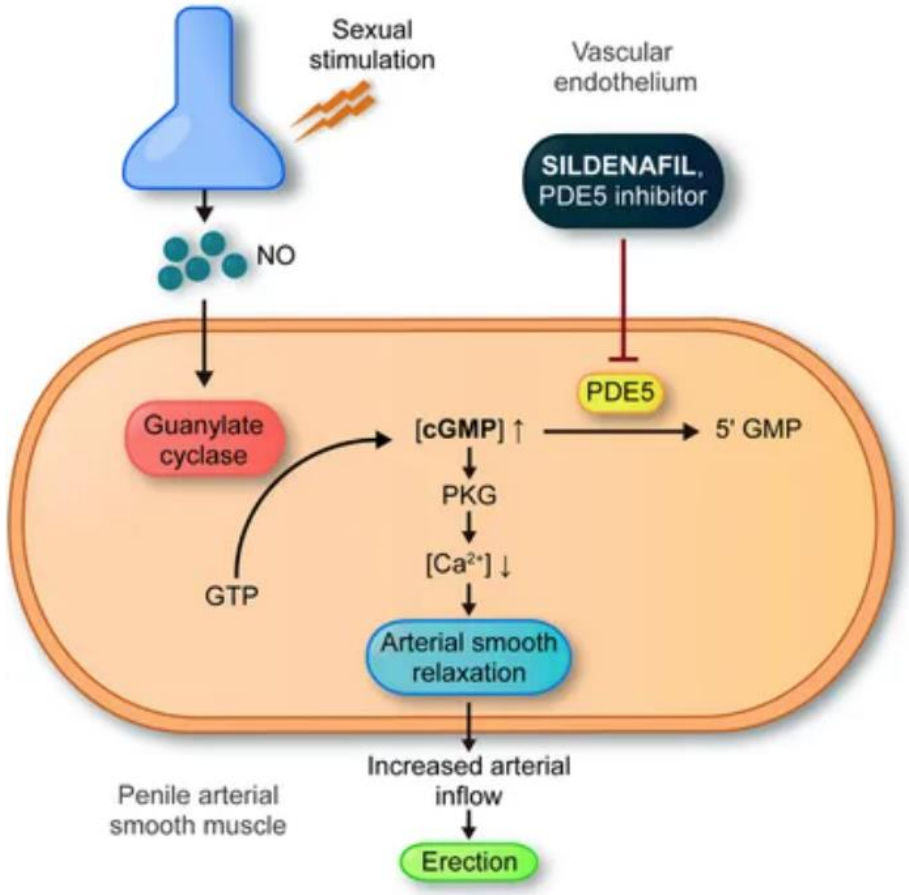
Sildenafil

Tadalafil – longer lasting; daily dosing

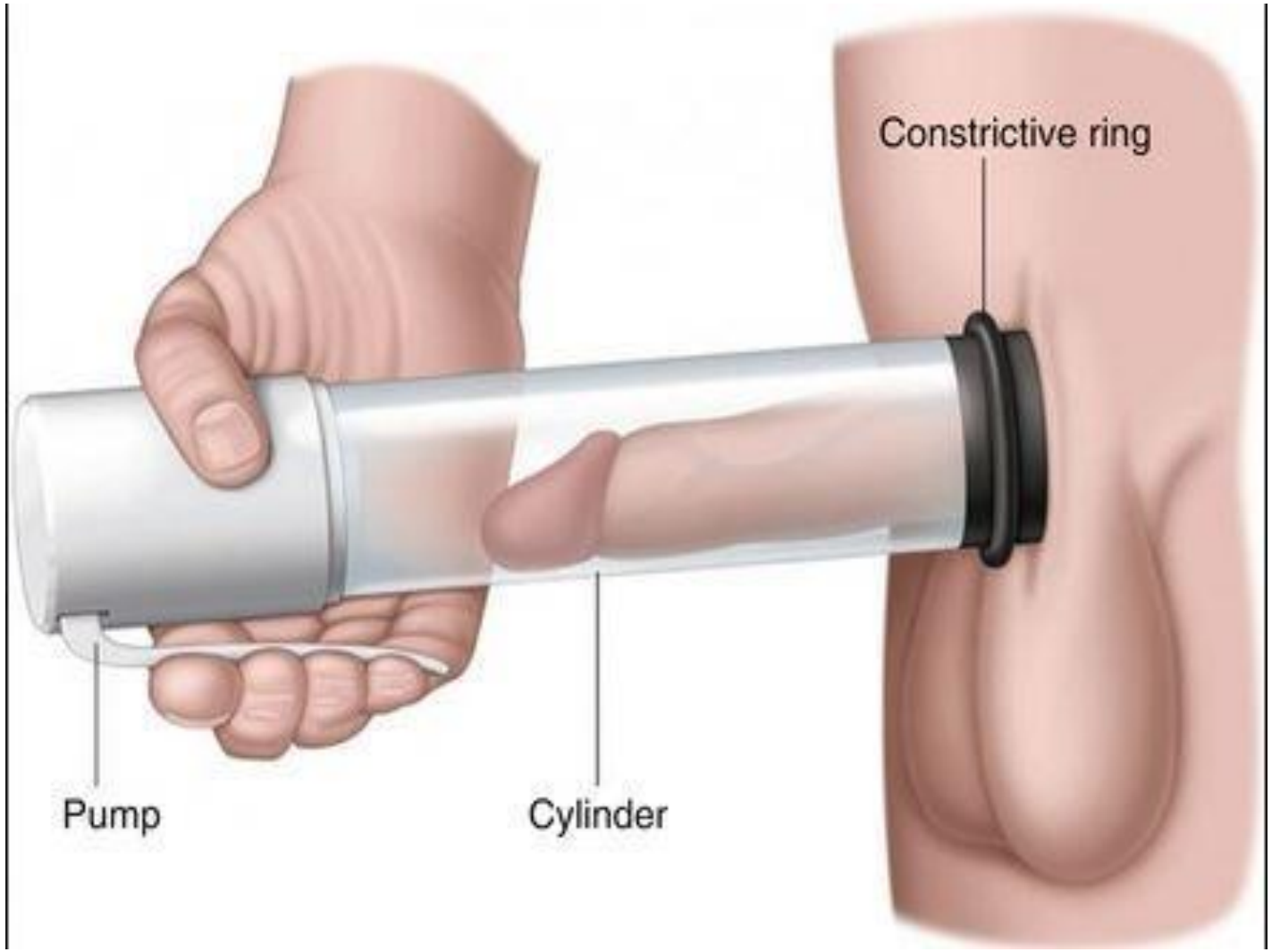
Vardenafil

Avanafil

Side effects:
Headache, flushing, congestion, dyspepsia



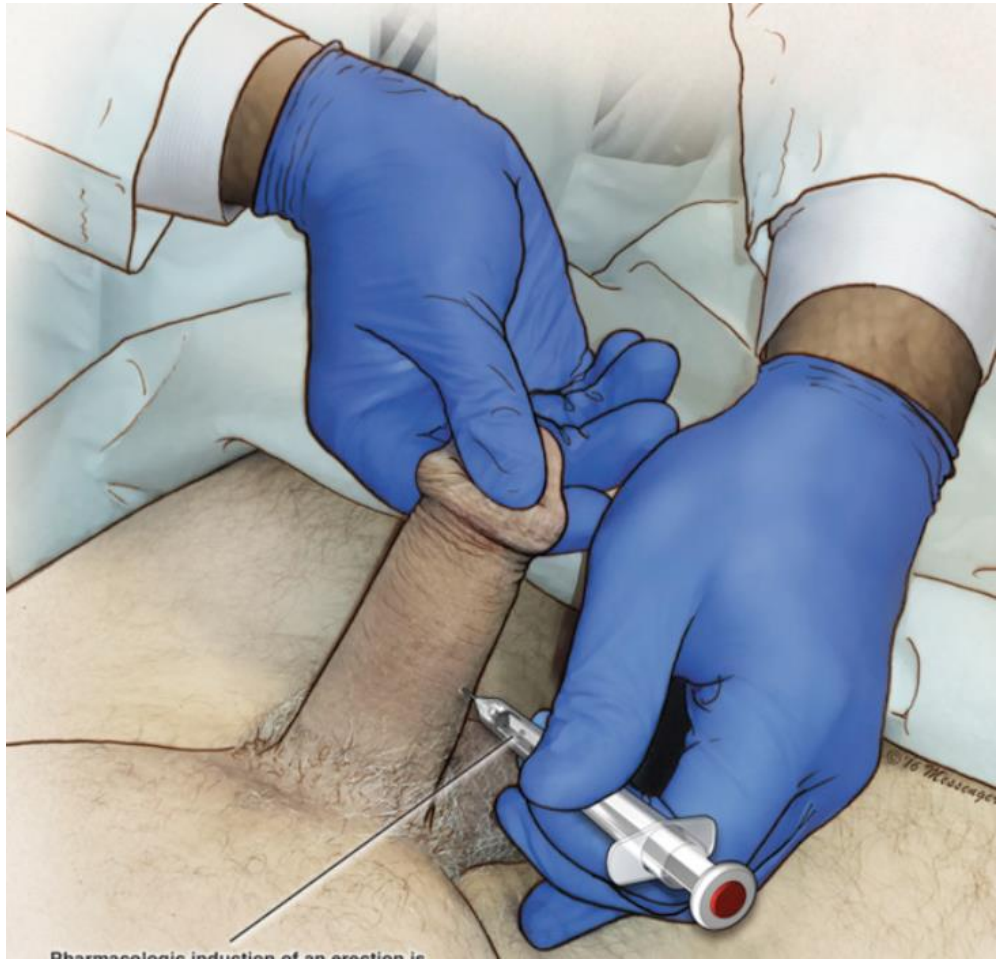
Erectile Dysfunction Management



Erectile Dysfunction Management

TRIMIX

- Papaverine
  - Nonspecific PDE
- Prostaglandin E1
  - stimulating adenylate cyclase
- Phentolamine
  - Alpha-adrenergic blocker



Take-Home: Partership is Key

- **Communication** with urology prior to treatment → Pre-SBRT "huddle"
- **Flag patients** at high risk
  - High-IPSS, retention, large gland, median lobe, prior outlet procedure
- Create a **data loop**: IPSS/uroflow/PVR at 3, 6, 12 months
- Effective **triage**: prompt GU evaluation of hematuria/retention

Thank You!

Lee Richstone, MD, FACS, FRCS

Professor and Chair

Northwell Urology at Lenox Hill Hospital