Getting Your Life Back After Prostate Cancer treatment

Rajveer Purohit MD, MPH
Professor
Director of Reconstructive Urology
Department of Urology

Mount Sinai

Introduction

Treatment Options for Localized Prostate Cancer

- Active Surveillance
- Radical Prostatectomy
- Radiation Therapy
- Other (Cryotherapy, HIFU)

Treatment and Urinary Symptoms

Treatment	Incontinence	Other urinary symptoms	ED	Cure
Surveillance	Low	Low	Best	Depends
Surgery	Moderate	Improves	Not great	High
Radiation	Lower	Moderate	Not great	High

Complications: The Big Picture

Radiation versus Surgery

- types of complications

- rates of complications

- correction of complications

Complications after Treatment

- Sexual Dysfunction
- Urinary Problems
- Other Problems

Sexual Dysfunction

- Erectile dysfunction:
  - Definitions
  - Causes
- Ejaculation problems
- Other

Erectile Dysfunction: Prevention

- Penile “Pre-hab”
  - Prior to surgery starting medications
  - Good data on this
  - Mostly with surgery – not much data on XRT

Erectile Dysfunction: Treatment

- Penile rehabilitation
  - Use it or lose it
  - Prevent penile shrinkage
- Can take up to 2-3 years for full recovery
- Most patients recover sooner
- Risk factors

ED Treatments

- Cialis, Viagra, Levitra
  - What are the differences?
- Injections
- Penile Prosthesis

Ejaculatory Dysfunction

- Ejaculatory dysfunction
- Libido
- Climacturia

URINARY PROBLEMS

Type of Urinary Problems

- Incontinence
- Inflammation and/or urinary symptoms
- Blockage – scar tissue
  - Urethral stricture
  - Bladder neck contracture

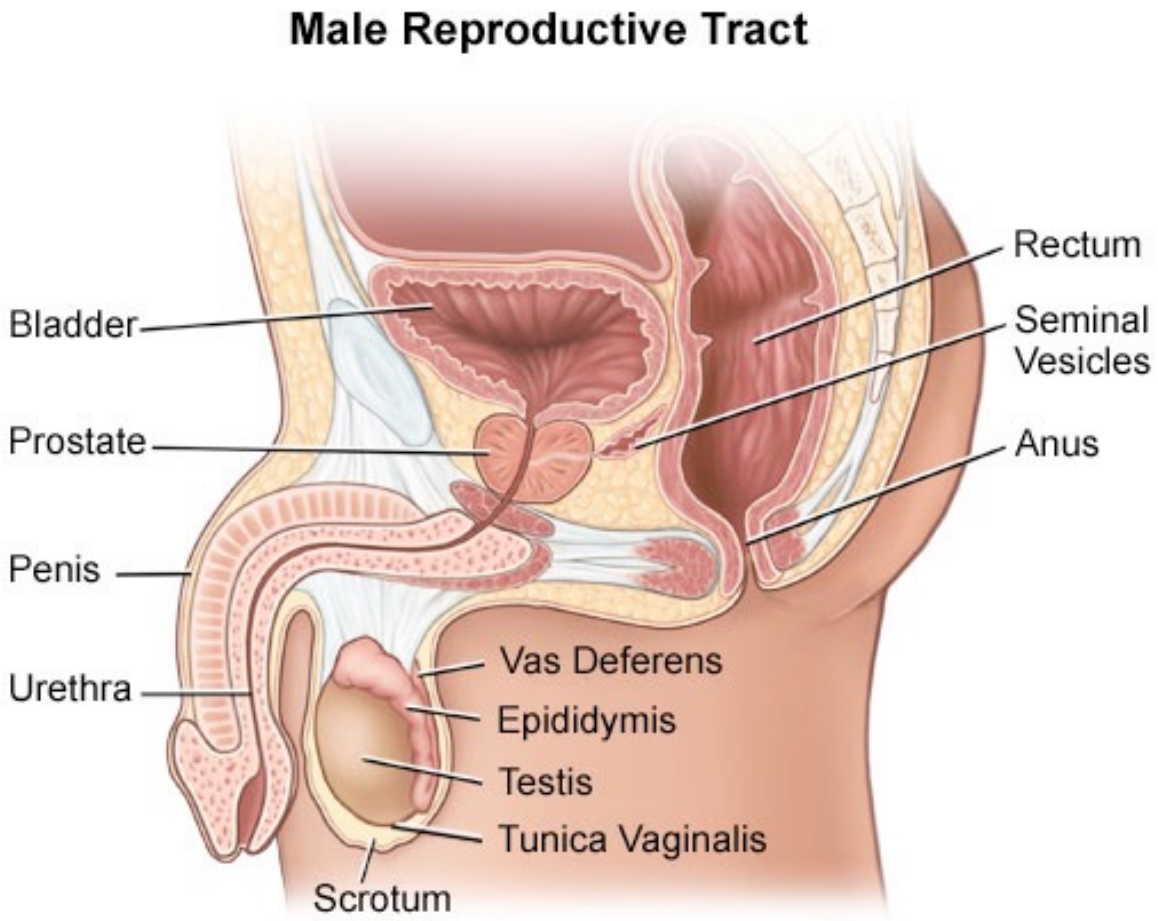
Types of Incontinence

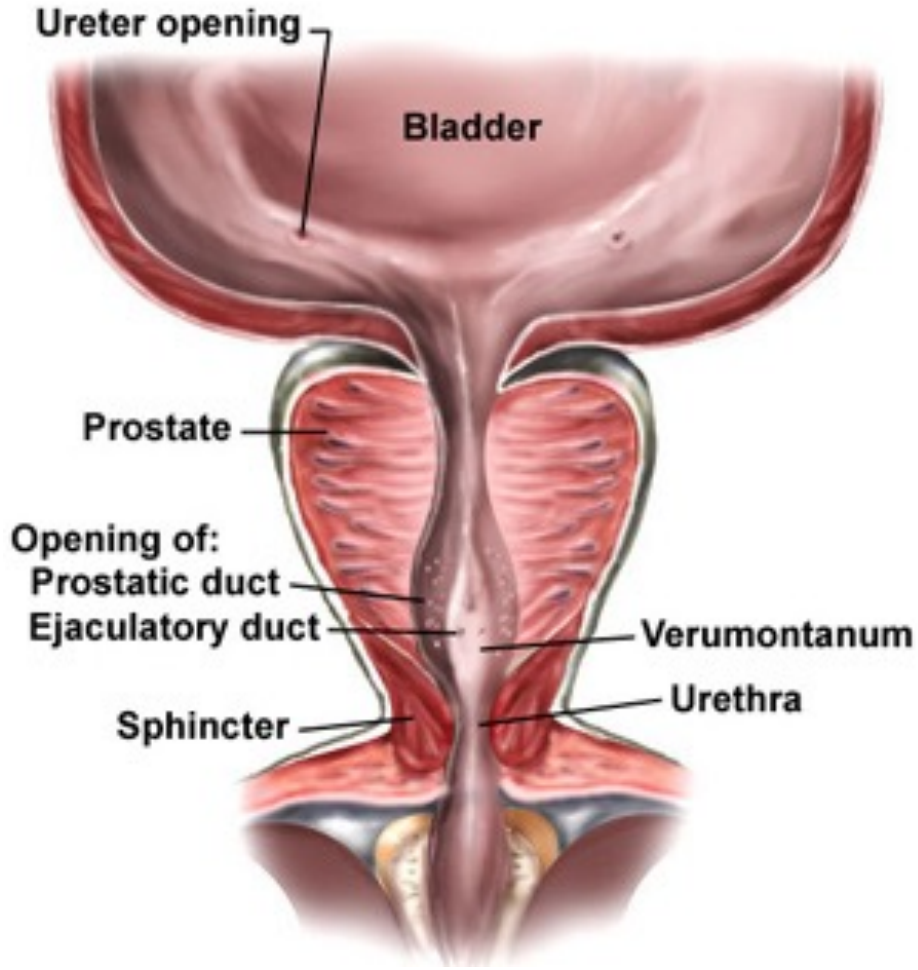
- Stress Incontinence
- Urge Incontinence
- Mixed Incontinence
- Post-Void dribbling
- Overflow Incontinence
- Unaware Incontinence

Types of Urinary Bother

- Radiation cystitis and urethritis (inflammation)
- Overactive bladder and urinary urgency
- Obstructive urinary symptoms
- Urethral scar (Bladder neck contracture or urethral stricture)
- Blood in the urine (Hematuria)

Prostate Anatomy





Evaluation

- History and Physical exam
- Uroflow and Post-void residual
- Bladder Diary
- Pad Test
- Cystoscopy
- Videourodynamics

24 Hour Bladder Diary

- For Each urination
  - Record amount
  - Time
  - Cause of urination i.e. severity of urge
- Helps distinguish polyuria from small bladder capacity
- Useful to distinguish causes of incontinence

Incontinence instrument determines outcomes

Pad Count is a Poor Measure of the Severity of Urinary Incontinence

Johnson F. Tsui, Milan B. Shah, James M. Weinberger,*,† Mazyar Ghanaat, Jeffrey P. Weiss,‡ Rajveer S. Purohit§ and Jerry G. Blaivas||

From the State University of New York Downstate Medical Center (JFT, MBS, MG, JPW), Brooklyn and Weill Cornell College of Medicine (RSP, JGB) and Institute for Bladder and Prostate Research (JFT, MBS, JMW, MG, JPW), New York, New York

Conclusions: There was little correlation between the number of pads used and the severity of urinary incontinence ($r = 0.26$). These data suggest that pad count should not be used as an objective measure of incontinence severity. Instead, pad weight on a 24-hour pad test should be used.

THE JOURNAL OF UROLOGY®

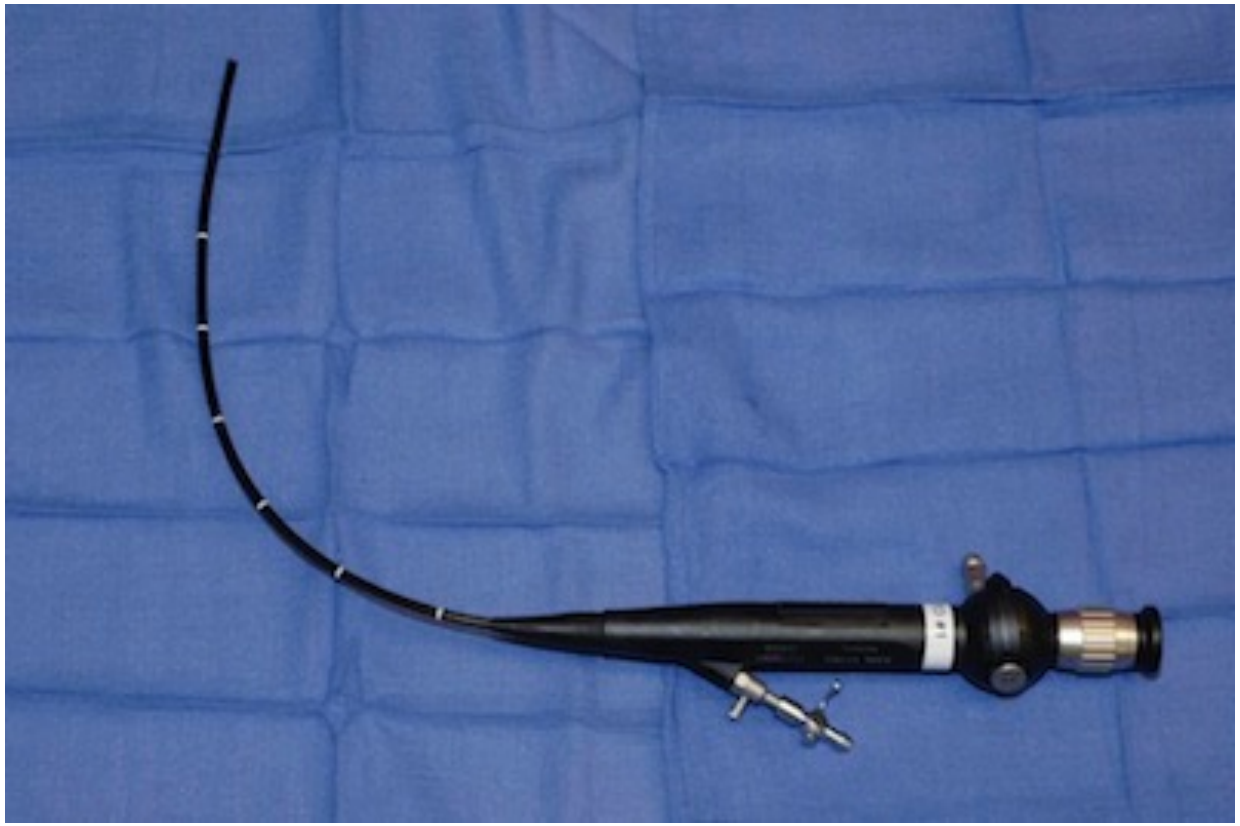
Vol. 190, 1787-1790, November 2013
Printed in U.S.A.

24 Hour Pad test

- All urinary pads used in 24 hour period
- Place pads in plastic bag
- Subtract weight of dry pad
- Assess incontinence
  - <25 gm/day: Mild
  - 25-100 gm/day: Moderate
  - >100 gm/day: Severe

Cystoscopy

- Endoscopic examination of the urethra and bladder
- Evaluate status of sphincter
- other contributing factors e.g urethral stricture or bladder neck contracture



Videourodynamics

Urinary Problems after Prostatectomy

Overview

- Prior symptoms of BPH e.g slow stream, nocturia, urgency frequency often improve
- Post prostatectomy incontinence (PPI) is the major post-surgical urinary symptom
  - Up to 1 year post-op for continence
- Urethral scar tissue (Stricture/Bladder neck contracture) less common

Risk Factors for post-prostatectomy incontinence

- Patients Age and Prior Urinary symptoms
- Experience of Surgeon more important than technique
- Tumor at prostatic apex
- Extent of nerve sparing operation
- Urethral length at time of surgery

Risk of Post-Prostatectomy Incontinence

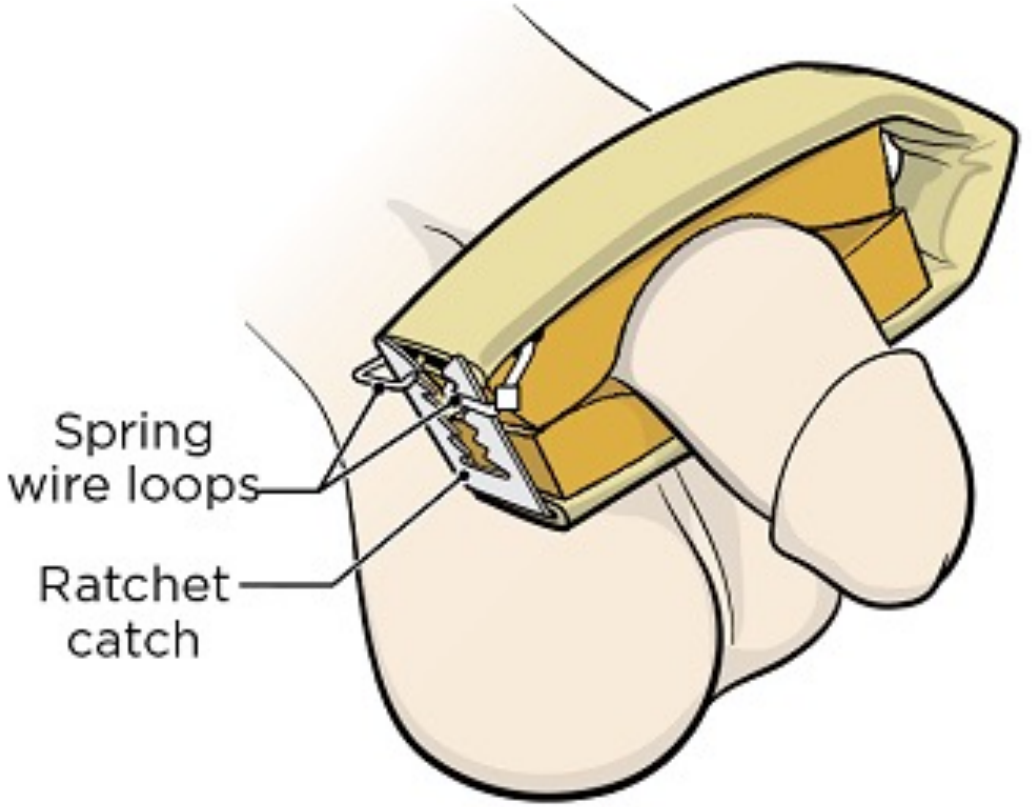
- Depends on how you define it
  - subjective measures
  - pad count
  - 1 hour pad test
  - 24 hour pad test
- Ranges between 1%-30%

PPI Mechanism

- Sphincter Abnormality
  - Sphincter deficiency
  - Stricture or bladder neck contracture
- Bladder abnormality
  - Overactive bladder
  - Other e.g. bladder compliance

“Conservative”Management

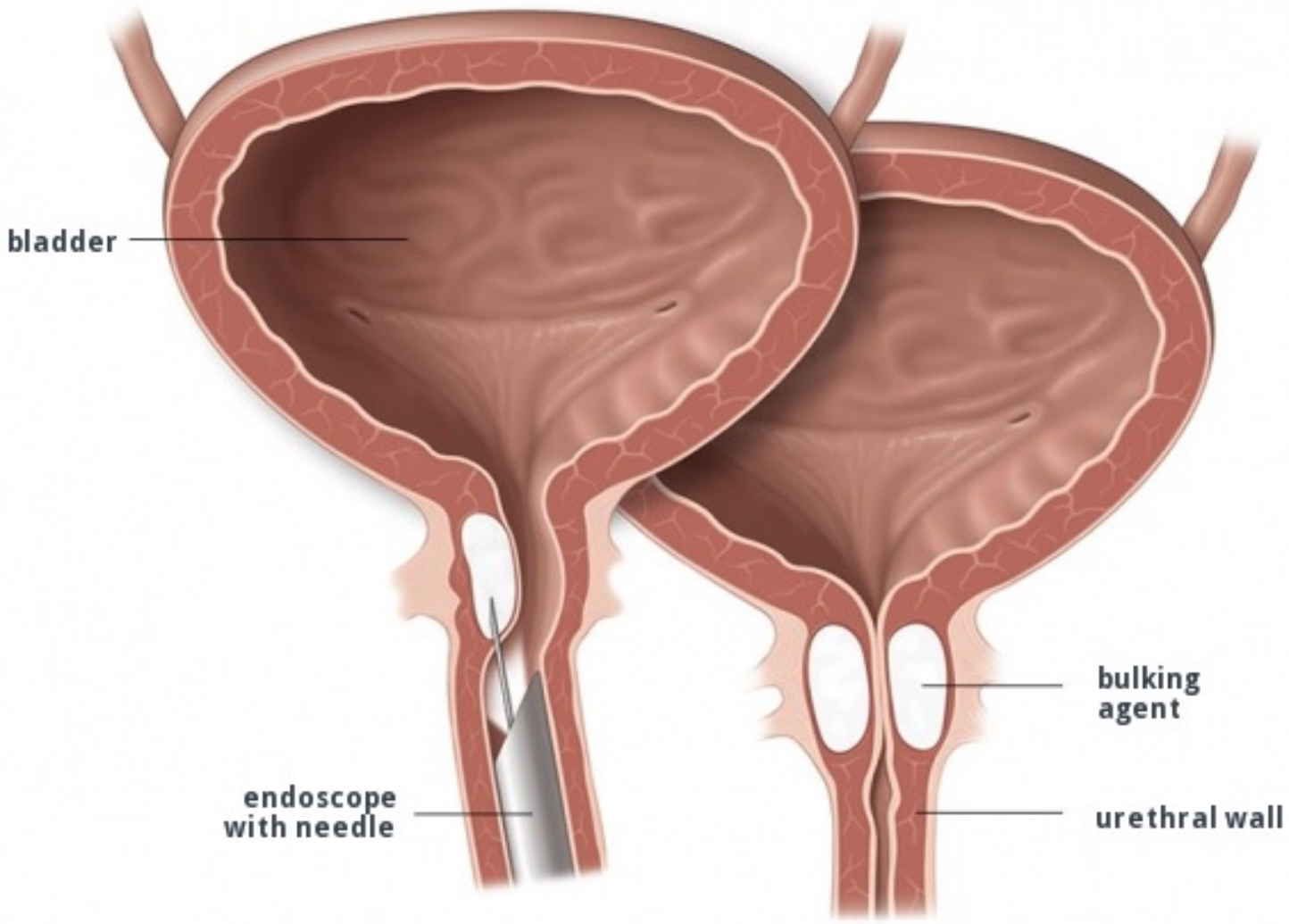
- Surveillance
  - Early continence predicts long term continence
  - Pads and clamps
- Behavioral therapy
  - 24 hour diary
- Biofeedback/Pelvic Floor Physical Therapy



Medical Treatment for Incontinence

- Medicines that Relax the bladder
  - Anticholinergics e.g. Detrol, Vesicare
  - Myrbetriq
- Medicines that tighten the sphincter
  - Imipramine
  - Cymbalta

Urethral Bulking Agents



Bulking Agents Results

Bulking agent and study	No. of patients	Results after first injection	Side-effects
Macroplastique			
Kylmala et al [71]	50	After first injection: 12% continent, 56% improved continence After repeated injections (max. 4): Max. 4: 60% continent, 24% improved continence, 16% no change	Dysuric complaints
Imamoglu et al [70]	25	After 1–2 injections: 80% mild incontinence, 23% severe incontinence	Two urinary tract infections One urinary retention
Deflux			
Alloussi [72]	72	After 4–8 wk: 58% continent, 39% improved	Urinary tract infection
Durasphere			
Secin et al [73]	8	No subjective or objective cure	–

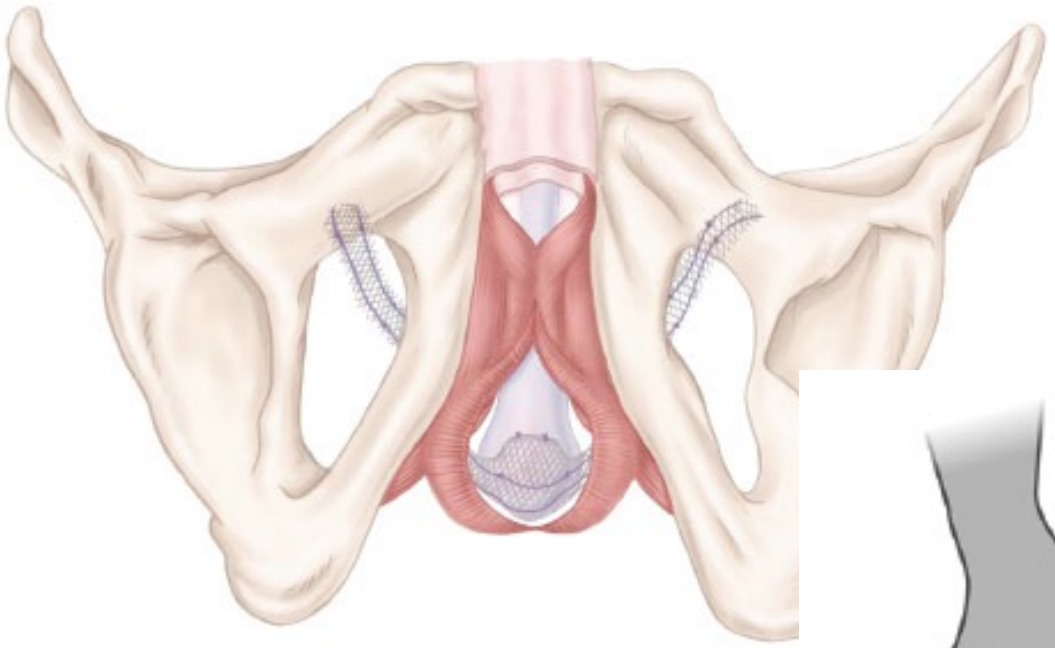
Postprostatectomy Incontinence: All About Diagnosis and Management

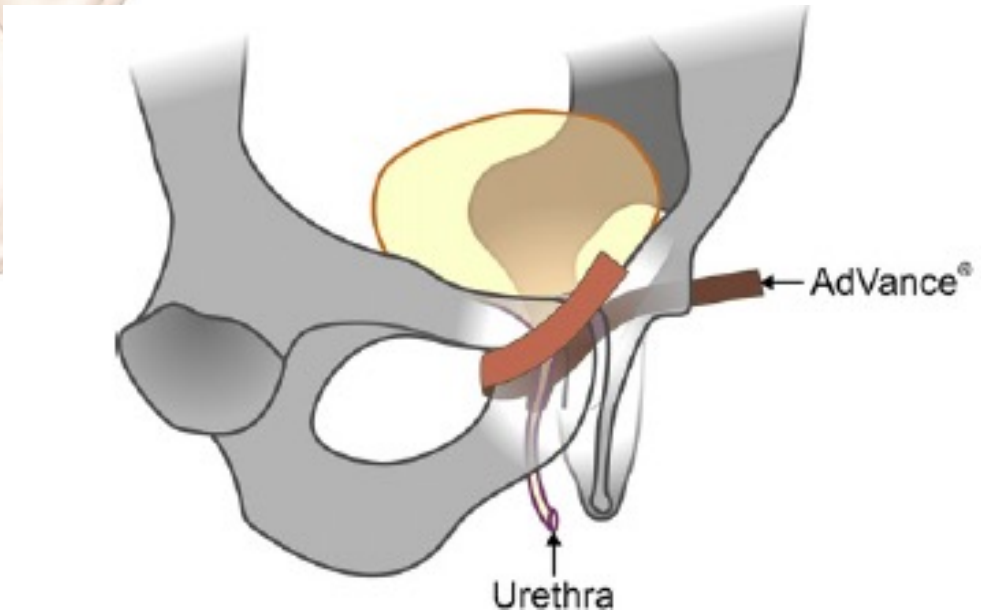
Ricarda M. Bauer, Patrick J. Bastian, Christian Gozzi, Christian G. Stief*

Urologische Klinik und Poliklinik, Ludwig-Maximilians-Universität München, Klinikum Großhadern, Munich, Germany

EUROPEAN UROLOGY 55 (2009) 322–333

Advance Sling

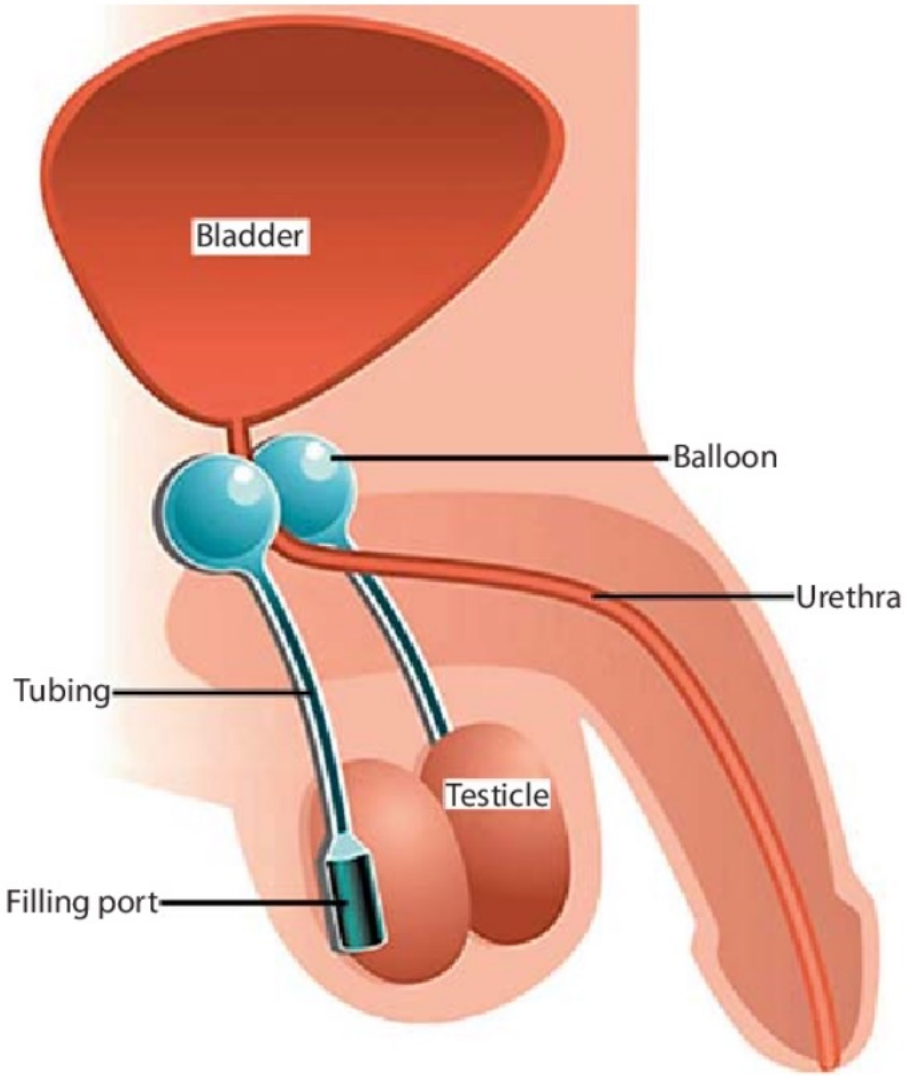




Advance Sling

- Easy to place in OR
  - Best for mild to moderate incontinence
- Concern about polypropylene mesh
  - Removal can be difficult
- Published success between 50-90%
- Patients with prior radiation have higher risk

Pro-ACT: Adjustable Balloon



ProACT % Dry

Reference	Proportion	Estimate	95% Lower Confidence Limit	95% Upper Confidence Limit
Baron et al (2017) [15]	8/14	57.1%	28.9%	82.3%
Crivellaro et al (2008) [16]	30/44	68.2%	52.4%	81.4%
Crivellaro et al (2012) [9]	30/42	71.4%	55.4%	84.3%
Gilling et al (2008) [10]	21/34	61.8%	43.6%	77.8%
Gregori et al (2010) [11]	41/62	66.1%	53.0%	77.7%
Hubner et al (2005) [3]	42/63	66.7%	53.7%	78.0%
Kjaer et al (2012) [17]	46/92	50.0%	39.4%	60.6%
Martens et al (2009) [18]	9/25	36.0%	18.0%	57.5%
Noordhoff et al (2017) [20]	51/112	45.5%	36.1%	55.2%
Roupret et al (2011) [21]	85/128	66.4%	57.5%	74.5%
Trigo-Rocha et al (2006) [22]	15/23	65.2%	42.7%	83.6%
Yiou et al (2015) [24]	6/10	60.0%	26.2%	87.8%
Yiou et al (2014) [25]	12/18	66.7%	41.0%	86.7%
TOTAL	NA	60.2%	54.2%	65.9%

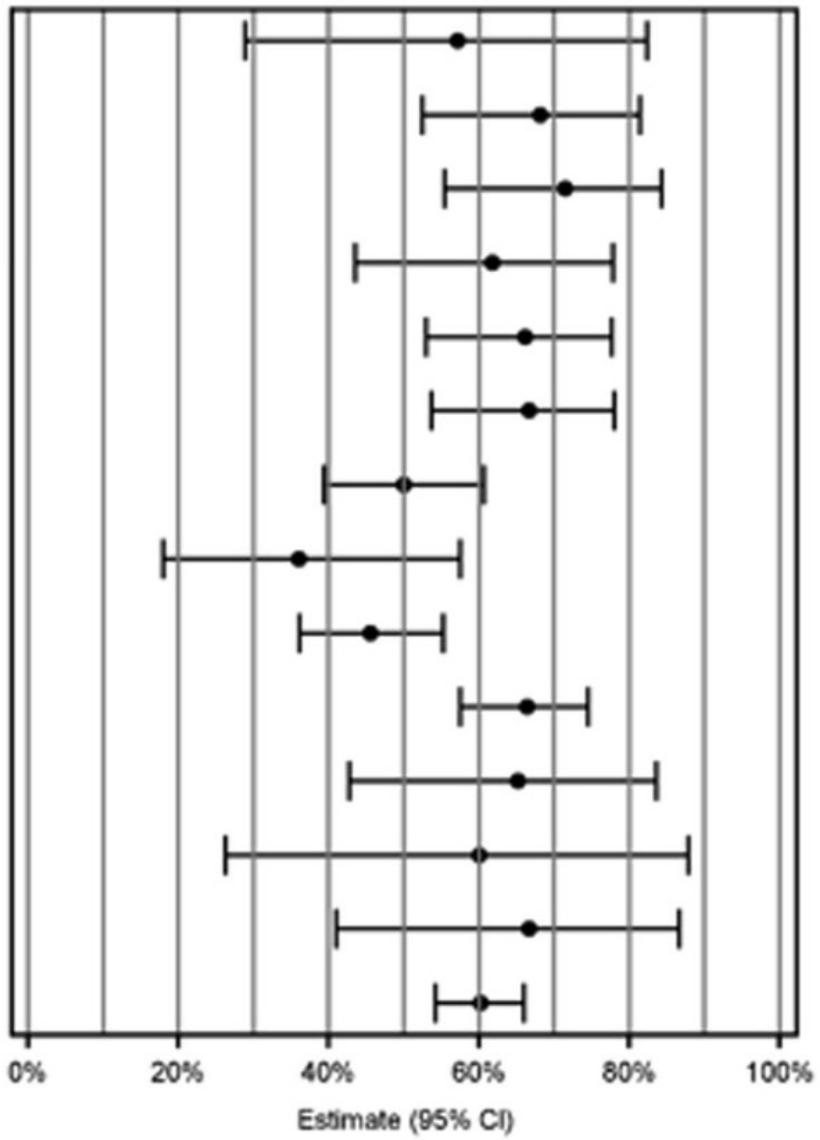
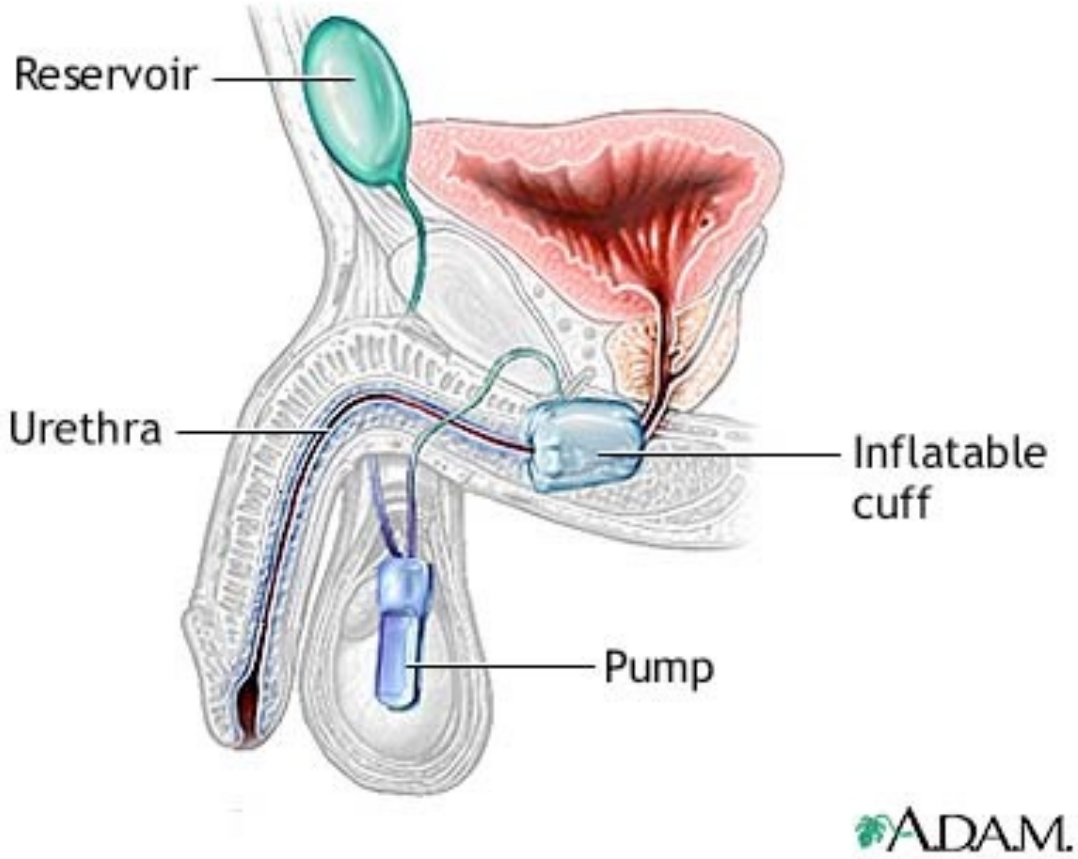


TABLE 1 ProACT common explant causes (estimate 95% CI)

Study	Erosion	Device leaking	Migration	Overall revision rate
Baron et al (2017)[9]	0% (0%-23.2%)	7.1% (0.2%-33.9%)	14.3% (1.8%-42.8%)	28.6% (8.4%-58.1%)
Crivellaro et al (2008)[10]	4.3% (0.5%-14.8%)	2.2% (0.1%-11.5%)	4.3% (0.5%-14.8%)	13% (4.9%-26.3%)
Crivellaro et al (2012)[11]	2.4% (0.1%-12.6%)	0% (0%-8.4%)	2.4% (0.1%-12.6%)	7.1% (1.5%-19.5%)
Gilling et al (2008)[12]	0% (0%-9.5%)	0% (0%-9.5%)	5.4% (0.7%-18.2%)	13.5% (4.5%-28.8%)
Gregori et al (2010)[13]	3.2% (0.4%-11.2%)	0% (0%-5.8%)	4.8% (1%-13.5%)	6.3% (2.1%-14.2%)
Hubner et al (2005)[3]	11.1% (6.1%-18.3%)	3.4% (0.9%-8.5%)	13.7% (8%-21.3%)	46.2% (36.9%-55.6%)
Kjaer et al (2012)[14]	4.4% (1.4%-9.9%)	11.4% (6.2%-18.7%)	5.3% (2%-11.1%)	20.2% (13.2%-28.7%)
Kocjancic et al (2007)[15]	7.8% (2.6%-17.3%)	3.1% (0.4%-10.8%)	3.1% (0.4%-10.8%)	14.1% (6.6%-25%)
Lebret et al (2008)[16]	8.1% (2.7%-17.8%)	3.2% (0.4%-11.2%)	1.6% (0%-8.7%)	30.6% (19.6%-43.7%)
Martens et al (2009)[17]	6.9% (0.8%-22.8%)	10.3% (2.2%-27.4%)	48.3% (29.4%-67.5%)	44.8% (26.4%-64.3%)
Nash et al (2018)[18]	5.7% (2.3%-11.4%)	1.6 (0.2%-5.8%)	10.6% (5.7%-17.4%)	35.8% (27.3%-44.9%)
Nestler et al (2018)[19]	0% (0%-2.7%)	30.6% (22.9%-39.1%)	20.9% (14.4%-28.8%)	47% (38.3%-55.8%)
Noordhoff et al (2017)[20]	1.4% (0.2%-5%)	21.7% (15.2%-29.3%)	4.2% (1.6%-8.9%)	30.1% (22.7%-38.3%)
Roupret et al (2011)[21]	8.6% (4.4%-14.9%)	4.7% (1.7%-9.9%)	5.5% (2.2%-10.9%)	13.3% (7.9%-20.4%)
Trigo-Rocha et al (2006)[22]	0% (0%-14.8%)	4.3% (0.1%-21.9)	0% (0%-14.8%)	17.4% (5%-38.8%)
Venturino et al (2015)[23]	9.1% (1.1%-29.2%)	72.7% (49.8%-89.3%)	40.9% (20.7%-63.6%)	72.7% (49.8%-89.3%)
Yiou et al (2015)[24]	0% (0%-30.8%)	0% (0%-30.8%)	0% (0%-30.8%)	0% (0%-30.8%)
Yiou et al (2014)[25]	0% (0%-16.8%)	0% (0%-16.8%)	0% (0%-16.8%)	[illegible]
Meta-analytic estimate	**3.8% (2.3%-6.2%)**	**4.1% (1.7%-9.6%)**	**6.5% (3.7%-11.1%)**	**22.2% (15.2%-31.2%)**

Abbreviations: CI, confidence interval; ProACT, adjustable continence therapy.
The significance of the bolded numbers is that it is the total point estimate for all the studies combined together.

Artificial Urinary Sphincter



Artificial Urinary Sphincter

- Placed in OR with overnight hospital stay
- Longest experience (introduced in early 1970s)
- Works with any level of incontinence
- With time urethra tends to atrophy
- Radiated patients have higher complication rate

Outcomes and Complication Rates of Surgical Therapy for Male Sphincteric Urinary Incontinence

DEVICE	OUTCOMES (%)				
	Cured or Improved	Cured	Improved	Failed	Infection/ Erosion
AUS	88-89	73-76*	13-16	18-25	11-41
Bone-anchored sling	67-92	37-67†	12-37	8-33	2-15
Transobturator sling	70-84	40-55	27-30	16-30	11

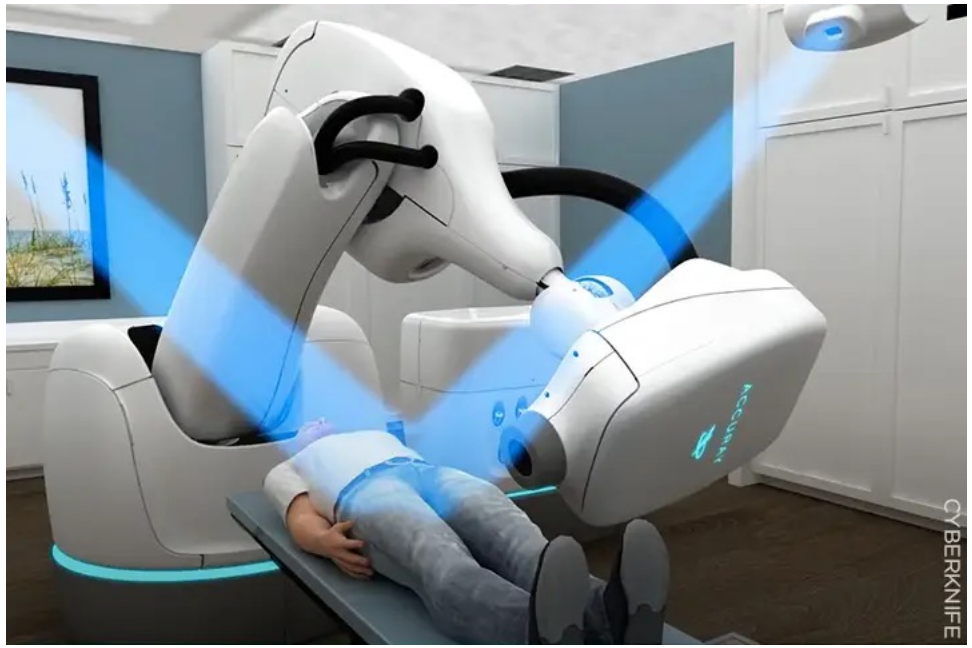
Conclusion

Therapy	Complexity of Surgery	Degree of leakage its used for	Success rate	Risks
Surveillance/Pelvic floor PT/Biofeedback	Office	low to Severe	Depends	Rash, discomfort
Bulking Agents	30 min Office	Very Mild	Low	Infection
AdVance Sling	45 min Hospital	Mild	Moderate	Infection, concern about Mesh
ProACT	30-60 min Hospital	Mild to moderate maybe severe	Moderate	Erosion, bladder injury, migration
Artificial Sphincter	2-3 hours Hospital	Mild to complete	High	20-50% reoperation rate

Urinary Problems after Radiation Therapy

Introduction

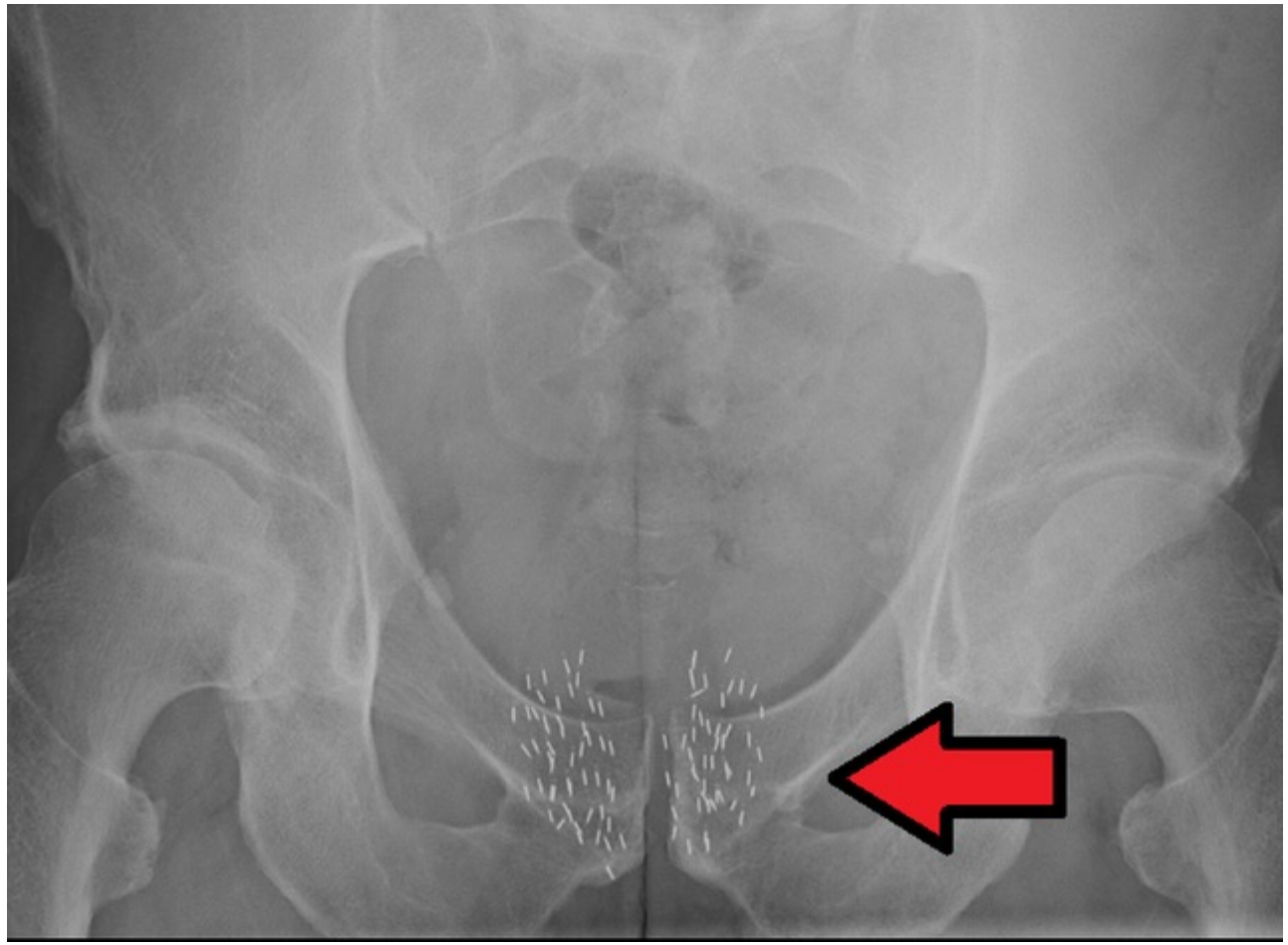
- 37% of CaP in the US treated with RT
  - 26% EBRT and 15% brachytherapy[1]
- Acute complications rate up to 70%[2]
- There can be a flair at 12 months after XRT
- Complications are underreported in my opinion



1. Elliot SP, Malaeb BS World J Urol (2011) 29:35-41
2. Zelefsky et al Cancer 1999 June 1;85(11)

Urinary Problems from Radiation

- Prostatic Obstruction
- Radiation Cystitis or Prostatitis (inflammation)
- Scar tissue (Stricture or bladder neck contracture)
- Low Bladder Compliance (“Stiff” bladder)
- Detrusor Overactivity (overactive bladder)
- Sensory Urgency (abnormal sensation)
- Bladder Cancer
- Other e.g stones, recurrent cancer



Radiation Cystitis

- Inflammation of the bladder caused by radiation
- Can cause urinary urgency, frequency, blood in the urine, pain
- Resistant to easy treatment

Risk of Incontinence

Table 5
Urinary incontinence following brachytherapy

Study	Number	Procedures	Incontinence (%)
Blasko et al[69]	184	Implant	0
Talcott et al[73]	105	Implant	15
Nag et al[74]	32	Implant	19
Gelbum et al[67]	693	Implant	0.7
Wallner et al[71]	92	Implant	6
Storey et al[48]	206	Implant	10
Benoit et al[56]	2124	Implant	6.6
Zeitlin et al[57]	212	Implant	3.8
Kaye et al[52]	57	Implant	11
Stone & Stock[72]	301	Implant	0
Beyer & Priestley[70]	499	Implant	1
Anderson et al[76]	351	Implant	0.9
Talcott et al[73]	13	TURP + implant	85
Ragde & Korb[54]	48	TURP + implant	12.5
Stone & Stock[75]	43	TURP + implant	0
Kaye et al[52]	19	TURP + implant	22
Terk et al[51]	6	Implant + TURP	0
Gelbum et al[67]	28	Implant + TURP	17
Stone & Stock[75]	33	Implant + TURP	6.1
Kollmeier et al[77]	38	Implant + TURP	18

However,

Grade	CTCAE	RTOG—Acute	RTOG—Chronic
0	No change	No change	No change
1	Asymptomatic or mild symptoms; clinical or diagnostic observations only; intervention not indicated		Slight epithelial atrophy, mild telangiectasia (microscopic hematuria)
2	Moderate, local or noninvasive intervention indicated; limiting instrumental activities of daily living (ADL)	Frequency of urination or nocturia less frequent than every hour, dysuria, urgency bladder spasm requiring local anesthetic (for example phenazopyridine hydrochloride)	Moderate frequency, generalized telangiectasia, intermittent macroscopic hematuria
3	Severe or medically significant but not immediately life-threatening; hospitalization or prolongation of existing hospitalization indicated; disabling; limiting self-care ADL	Frequency with urgency and nocturia hourly or more frequently, dysuria, pelvic pain or bladder spasm requiring regular, frequent narcotic, gross hematuria with or without clot passage	Severe frequency and dysuria, severe generalized telangiectasia (often with petechiae). Frequent hematuria, reduction in bladder capacity (<150 cc)
4	Life-threatening consequences; urgent intervention indicated	Hematuria requiring transfusion, acute bladder obstruction not secondary to clot passage, ulceration or necrosis	Necrosis, contracted bladder capacity (<1,000 cc), severe hemorrhagic cystitis
5	Death	Death	

Late grade 2 toxicity 10%,

Late grade 3 toxicity 3% [1]

1. Coen et al, Int J Radiat Oncol Biol Phys. 2011 Nov 15;81(4):1005-9

Urinary Diversion

- Severe crippling problems usually associated with radiation therapy
- Option of last resort and rarely done
- Major surgery with different options

Conclusion

Conclusion

- Assess urinary risks of cancer treatment prior to deciding on treatment
- Some risk to surveillance also
- Most urinary symptoms improve acutely after treatment but some persist

The Big Picture

- Many treatment options available
- Assess not just the rate of urinary complications but the types and curability
  - Complications of XRT
  - Complications of prostatectomy

Thank you

Rajveer Purohit MD, MPH
Professor
Director of Reconstructive Urology
Icahn School of Medicine at Mount Sinai
Twitter: @Drurorecon
212-241-4812