Managing urinary morbidity after brachytherapy

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Themes

- Can we predict urinary morbidity?
- Prevention of urinary morbidity
- Dealing with urinary morbidity
  - Storage LUTS
  - Urinary retention (urethral, s/p catheters and ISC)
  - TURP /TUUP
  - Stress incontinence management post brachytherapy
### Brachytherapy urinary morbidity results

<table>
<thead>
<tr>
<th>Complication</th>
<th>Number of Studies</th>
<th>Median (%)</th>
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<tbody>
<tr>
<td>Flare in I-PSS</td>
<td>&gt;30</td>
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<td>Urinary retention</td>
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<td>Impotence</td>
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Adapted from Vicini
BPH is a progressive disease

The factors that predict progression

1. Symptoms
2. Bother
3. Flow rate
4. Age
5. Prostatic volume
6. PSA
7. Residual volume
8. Inflammation
# Published Predictors for Urinary Symptoms

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<th>Author</th>
<th>Prost vol</th>
<th>TZ vol</th>
<th>Age</th>
<th>IPSS –O</th>
<th>AUR</th>
<th>Prostate dose</th>
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<th>Needles</th>
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# Published Predictors for Urinary symptoms
(Other than acute urinary retention or need for TURP)

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Predicting urinary morbidity

- IPSS
- Prostate volume
- Flow rate
- Urodynamics
- Seed placement

- Patients with high IPSS are frequently offered alternative treatments
IPSS post seed implantation

Steggerda et al, European Urology, 2008, 723-731
Prophylactic tamsulosin in patients undergoing prostate 125I brachytherapy

- Single-institution, double-blind, placebo-controlled, randomized trial, comparing prophylactic tamsulosin versus placebo
- Outcome measures acute retention and AUA symptom score
- All patients started the medication 4 days before PI and continued for 60 days.
- 126 patients enrolled, 58 tamsulosin arm and 60 in placebo group
- Urinary retention rate
  - 17% (10 patients) in the placebo group
  - 10% (6 patients) in the tamsulosin group (p = 0.3161).
- Intolerable urinary symptoms were reported equally (10 patients in each group) with 70% occurring in the first 2 weeks after PI.
- There was a significant difference in mean AUA score in favour of tamsulosin at week 5 after PI (p<0.03)
- Prophylactic tamsulosin (0.8 mg/day) before prostate brachytherapy did not significantly affect urinary retention rates, but had a positive effect on urinary morbidity at week 5 after PI.

The bottom line

• Numerous nonrandomized studies and one randomized study support the proposition that the occurrence of LUTS secondary to RT is effectively mitigated by alpha1-adrenoreceptor blockade.

Corticosteroid use to prevent the development acute urinary retention after prostate brachytherapy


- A retrospective review on 400 consecutive patients. Androgen deprivation was given to 146 patients for 3 months before the implant and 280 received a 2-week course of dexamethasone (4 mg twice daily for 1 week then 2 mg twice daily). Multivariate analysis. Sacco, DE et al. BJU Int 2003 Mar;91(4):345-9.
Irritative symptoms, urgency and urge incontinence post brachytherapy
Bladder overactivity post brachytherapy

- mechanical damage
- placement close to urethra

- Men after brachytherapy have a much higher incidence of detrusor overactivity, prostatic and urethral strictures and prostatic urethral stones  
  Blavias et al, BJU Int. 2006 98(6):1233-7

- Urgency and urge incontinence  6.4%  
  Crook, J.Urol, 179, 141-146, 2008
The effect of antimuscarinic treatments in overactive bladder; An update of a systematic review and meta-analysis
Chapple et al, European Urology, 2008, 54, 543-562

- 83 trials included
- Antimuscarinics safe more effective than placebo
- Tolerability good
- No RCTs post brachytherapy in literature
- Dry mouth most common adverse effect
- Significant differences between antimuscarinics in rates of withdrawal and rates and ranges of adverse events and efficacy outcome
### 4th International Consultation in Incontinence
### Antimuscarinics/Mixed Action Drugs

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<tr>
<th>Drug</th>
<th>Level of evidence</th>
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<td>Trospium</td>
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<td>Propiverine</td>
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Does medication help?

A little, but patients need lifestyle modification

- Urge Inhibition
- Timed Voiding
- Fluid / Dietary Management
- Reinforcement
- Pelvic floor exercises
- Frequency volume chart

Education
Botulinum Toxin (BoNT) /1

• Produced by the gram positive anaerobic and spore forming *Clostridium botulinum*
• Seven different neurotoxins (A–G) produced by *Clostridium botulinum*
• Only A and B in therapeutic use
• Four types of BoNT are on the market

- Use of botulinum neurotoxin type A recommended in
  - Intractable neurogenic detrusor overactivity (NDO)
  - Idiopathic detrusor overactivity (IDO)
- Caution is recommended in IDO, because of the risk of voiding difficulty and duration of effect.
- The depth and location of should be within the detrusor muscle outside the trigone (grade c)
- Recommend larger placebo controlled trials to evaluate efficacy
Results of BoNT in detrusor overactivity

- 300 mU (Neurogenic); 200mU (Idiopathic)
- ↑ max cystometric capacity >150%
- ↓ max detrusor pressure by 60%
- Improves symptoms (subjective and objective)
  - Frequency / Urgency / Incontinence
- Effective for average of 8/12
  - 2nd injection works as well as the first
  - Not clear if this will be so for multiple repeats
Management of acute retention

- Catheter and TWOC
- Suprapubic catheter
- ISC
- TURP
  - Literature rate 1-5%
  - Incontinence rate post TURP 18%
  - Higher incidence 2 years after implantation
  - No correlation with prostate volume or prostate or urethral dose of radiation

Kollmeirer et al; J.Urol.2005173:808-812
Timing of TURP

- Kollmeier 2005
- 2050 patients, 38pts (2%) required one or more TURPs
- 18% urinary incontinence
- Post TURP incontinence higher 2 years post brachytherapy
- ?related to radiation induced fibrosis

Kollmeier et al, J Urol, 2005, 173; 808-812
The patient has developed stress incontinence post TURP
Artificial urinary sphincter insertion
Artificial urinary sphincter insertion
Artificial urinary sphincter insertion
# AUS Continence Rates

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<th>Continence rate at 10 years %</th>
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<td><strong>Overall</strong></td>
<td>89</td>
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<td>Post prostatectomy</td>
<td>91</td>
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<tr>
<td>Neuropaths</td>
<td>86</td>
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<td>Explants</td>
<td>37</td>
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<td>Post radiotherapy</td>
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Complications of AUS

- Device failure – 3% per year
- Infection – 4% in the first year
- Erosion – late erosion /infection 4% per year
  - ?post brachytherapy
Conclusions

- Irritative and obstructive symptoms are common with brachytherapy
- Symptoms return to baseline within 1 year
- Prophylactic use of tamsulosin improves lower urinary tract symptoms
- High pretreatment IPSS predicts high post implant IPSS
  - If in doubt pre-implant urodynamics may help
- Early TURP when required seems appropriate
- On occasion salvage procedures may be required!
Extras
Previous transurethral resection of the prostate is not a contraindication to high-dose rate brachytherapy for prostate cancer.

Does neoadjuvant hormonal therapy improve urinary function when given to men with large prostates undergoing prostate brachytherapy?

- 395 men with 50 cc or greater glands were treated with 3 months of neoadjuvant hormonal therapy (204) or implantation alone (191).
- Urinary function was assessed by the IPSS, retention rate and TURP.
- Mean prostate volume in neoadjuvant hormonal therapy cases was 72.9 cc, which decreased to 54.3 cc after 3 months (p <0.001). Mean prostate volume in cases without hormonal therapy was 60.6 cc (p <0.001).
- Urinary retention 16 of 191 men (8.4%) without vs 25 of 204 (12.3%) with hormones therapy (p = 0.207).
- The median duration of urinary retention was 42 days (range 2 to 243).
- No difference in the retention rate in patients with hormonal therapy with an initial score of 15 or greater vs less than 15 (2 of 25 or 8% vs 11 of 102 or 10.8%, p = 0.614).
- Transurethral prostate resection was done in 11 of 191 men (5.8%) without vs 12 of 204 (5.9%) with hormonal therapy (p = 0.958). There was no difference in biochemical failure in the 2 groups.