Management of Urinary Complications

Prostate Cancer: Current Status & Future Directions
March 27, 2010

Jaspreet S. Sandhu, MD
Department of Surgery/Urology
Memorial Sloan-Kettering Cancer Center

Outline

- Natural history of urinary function after treatment
- Urinary complications of surgery
  - Urinary incontinence
  - Urinary stricture
- Urinary complications of radiotherapy
  - Lower urinary tract symptoms
  - Urinary retention
Natural History of Urinary Function after Prostate Cancer Treatment

Quality of Life and Satisfaction with Outcome among Prostate-Cancer Survivors

Martin G. Sanda, M.D., Rodney L. Dunn, M.S., Jeff Michalski, M.D., Howard M. Sandler, M.D., Laurel Northouse, R.N., Ph.D., Larry Hembroff, Ph.D., Xilong Lin, Ph.D., Thomas K. Greenfield, Ph.D., Mark S. Litwin, M.D, M.P.H., Christopher S. Saigal, M.D., M.P.H., Arul Mahadevan, M.D., Eric Klein, M.D., Adam Kibel, M.D., Louis L. Pieters, M.D., Deborah Kuban, M.D., Irving Kaplan, M.D., David Wood, M.D., Jay Ciezki, M.D., Nikhil Shah, D.O., and John T. Wei, M.D.

Table 1. Characteristics of the Patients.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Radical Prostatectomy (N=609)</th>
<th>External-Beam Radiotherapy (N=1292)</th>
<th>Brachytherapy (N=304)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Median — yr</td>
<td>70</td>
<td>69</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td>70+</td>
<td>30</td>
<td>79</td>
<td>61</td>
<td></td>
</tr>
<tr>
<td>Age group — no. (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;60 yr</td>
<td>304 (50)</td>
<td>43 (34)</td>
<td>67 (22)</td>
<td></td>
</tr>
<tr>
<td>60-69 yr</td>
<td>283 (46)</td>
<td>136 (40)</td>
<td>146 (48)</td>
<td></td>
</tr>
<tr>
<td>≥70 yr</td>
<td>46 (8)</td>
<td>135 (46)</td>
<td>93 (30)</td>
<td></td>
</tr>
</tbody>
</table>

Outcomes: Expanded Prostate Cancer Index Composite (EPIC-26)
Table 3. Factors That Were Associated with Changes in the Quality-of-Life Score after Treatment.

<table>
<thead>
<tr>
<th>Quality-of-Life Domain</th>
<th>Treatment Group</th>
<th>Independent Variable</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urinary incontinence</td>
<td>Prostatectomy</td>
<td>Age</td>
<td>0.005</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Black race</td>
<td>0.03</td>
</tr>
</tbody>
</table>

Racial/Ethnic Differences in Functional Outcomes in the 5 Years After Diagnosis of Localized Prostate Cancer


Table 1. Weighted Percentage Distribution of Demographic Factors in Patients With Clinically Localized Prostate Cancer by Race/Ethnicity and Treatment

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>NHW (n = 988)</th>
<th>AA (n = 238)</th>
<th>H (n = 215)</th>
<th>P</th>
<th>NHV (n = 448)</th>
<th>AA (n = 91)</th>
<th>H (n = 96)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age at diagnosis, years</td>
<td>&lt; 60</td>
<td>27.0</td>
<td>36.8</td>
<td>23.4</td>
<td>&lt; .0001</td>
<td>5.5</td>
<td>22.3</td>
<td>9.3</td>
</tr>
<tr>
<td>60-64</td>
<td>26.8</td>
<td>26.1</td>
<td>30.0</td>
<td>10.1</td>
<td>26.4</td>
<td>9.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>65-74</td>
<td>31.9</td>
<td>35.5</td>
<td>45.6</td>
<td>10.2</td>
<td>46.9</td>
<td>62.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥ 75</td>
<td>28.3</td>
<td>24.4</td>
<td>1.0</td>
<td>24.6</td>
<td>6.5</td>
<td>18.2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Achieving Optimal Outcomes After Radical Prostatectomy
Jeffrey W. Saranchuk, Michael W. Kattan, Elena Elkin, A. Karim Touijer, Peter T. Scardino, and James A. Eastham

JOURNAL OF CLINICAL ONCOLOGY
VOLUME 23 - NUMBER 18 - JUNE 20 2005

Fig 3. Probability of attaining full continence was 87% at 1 year and 93% at 2 years.

Long-Term Urinary, Sexual, and Rectal Morbidity in Patients Treated with Iodine-125 Prostate Brachytherapy Followed Up for a Minimum of 5 Years
Nelson N. Stone and Richard G. Stock

UROLOGY 69 (2), 2007

Table 2. Comparison of preimplant and postimplant urinary symptoms as measured by AUA symptom score

<table>
<thead>
<tr>
<th>Time</th>
<th>n</th>
<th>Preimplant Score</th>
<th>SD</th>
<th>P Value (Compared with Baseline)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>955</td>
<td>7.1</td>
<td>6.3</td>
<td></td>
</tr>
<tr>
<td>6 mo</td>
<td>156</td>
<td>12.6</td>
<td>7.4</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>1 yr</td>
<td>149</td>
<td>9.1</td>
<td>6.8</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>2 yr</td>
<td>169</td>
<td>9.5</td>
<td>7.0</td>
<td>0.012</td>
</tr>
<tr>
<td>3 yr</td>
<td>161</td>
<td>8.1</td>
<td>6.6</td>
<td>0.381</td>
</tr>
<tr>
<td>4 yr</td>
<td>164</td>
<td>7.3</td>
<td>6.0</td>
<td>0.199</td>
</tr>
<tr>
<td>5 yr</td>
<td>176</td>
<td>7.3</td>
<td>6.8</td>
<td>0.855</td>
</tr>
<tr>
<td>Last follow up</td>
<td>213</td>
<td>7.3</td>
<td>6.8</td>
<td>0.855</td>
</tr>
</tbody>
</table>

AUA = American Urological Association. Nelson N. Stone. Table 2. Comparison of preimplant and postimplant urinary symptoms as measured by AUA symptom score. Of the 325 patients, 57 (18%) reported TURP before implantation and 6 (1.8%) reported undergoing TURP after implantation. Incontinence occurred in 9 (1.2%) of 325 men and was greater in all patients (one pad daily) and was associated with TURP (2 [6.1%] versus 2 [0.7%] of 292). OR 8.8, 95% CI 1.3 to 62, p = 0.005.)
Patient and Treatment Factors Associated With Complications After Prostate Brachytherapy

Aishe B. Chen, Anthony V. D’Amico, Bridget A. Neville, and Craig C. Earle

Purpose
To assess the prevalence and predictors of complications after prostate brachytherapy in a population-based sample of older men.

Patients and Methods
We analyzed claims for Medicare-enrolled men older than age 65 years living in Surveillance, Epidemiology, and End Results (SEER) surveillance areas diagnosed with prostate cancer from 1999 to 2004 who received prostate brachytherapy as initial treatment.

Results
Of the 3,965 men who received brachytherapy with at least 2 years of follow-up, 1,064 (26.8%) had complications within 2 years, with 14.1% undergoing an invasive procedure. Urinary, bowel, and erectile morbid ty rates were 32.8%, 31.9%, and 11.7%, respectively, and invasive procedure rates were 20.5%, 9.8%, and 6.4%, respectively. Multivariable analysis, combined urinary diagnosis and invasive procedures (adjusted OR [95% CI]: urinary = 1.01 [0.98, 1.04]; erectile = 1.06 [1.01, 1.11]; invasive = 1.02 [0.99, 1.06]), was associated with older age (OR = 1.03; 95% CI = 1.02, 1.04), lower household income (OR = 1.05; 95% CI = 1.03, 1.07), and prior transurethral resection of the prostate (OR = 1.01; 95% CI = 1.0, 1.02). Invasive morbidity (bleeding/proctitis, injury) was associated with older age (OR = 1.04; 95% CI = 1.03, 1.05), lower household income (OR = 1.01; 95% CI = 1.01, 1.02), and inflammatory bowel disease (OR = 1.01; 95% CI = 1.01, 1.02). Erectile morbidity was associated with younger age (OR = 0.99; 95% CI = 0.98, 0.99) and renal disease (OR = 0.98; 95% CI = 0.97, 0.99). Invasive procedure rates declined with later year of brachytherapy (OR = 0.98; 95% CI = 0.97, 0.99).

Conclusions
Morbidity after prostate brachytherapy was common, though invasive procedures were required infrequently. Invasive procedures for complications declined during the 2000s, suggesting technical improvement with experience.
Management of Post-Prostatectomy Incontinence

- Observation/Pelvic Floor Exercises
  - Best option early
- Behavioral
- Pharmacotherapy
- Bulking agents
- Slings
- Artificial Urinary Sphincter
- Diversion

Effectiveness of Early Pelvic Floor Rehabilitation Treatment for Post-Prostatectomy Incontinence

Maria Teresa Filocamo, Vincenzo Li Marzi, Giulio Del Popolo, Filippo Ceconi, Michele Marrocco, Aldo Toto, Giulio Nicita

Clino Universitario, University of Florence, Male Urology, It. 50134 Florence, Italy

European Urology 48 (2005) 734-738

Fig. 1. Percentage of patients achieving continence of group A and B at 1, 3, 6, and 12 months after RP.

Fig. 2. Correlation between age and continence in group A and B at 1, 3, and 6 months.
Behavioral

- Limit fluids, especially at night
- Avoid caffeine, alcohol
- Timed voiding, double void

Pharmacotherapy

- No FDA approved medication for SUI
  - TCA
    - Dry mouth, constipation, hypotension, falls
  - Alpha-agonist
    - Elevated BP, arrhythmias
- Main treatment for urge incontinence
  - Anticholinergics
    - Multiple agents
    - Differing adverse event profile
    - Multiple dosing regimen
  - Botulinum Toxin A injections
Bulking Agents

- Collagen, Coaptite, autologous fat, Tegress (taken off market)
- Success rates for collagen 20 – 38.7% after prostatectomy
- Similar cost to AUS if 3 or more collagen injections given

**Transurethral Collagen Injections for Male Intrinsic Sphincter Deficiency: The University of Texas-Houston Experience**

O. Lenaide Westney, Jr, Richard Beyan-Thomas, J. Lynn Palmer, R. Duane Cespedes, and Edward J. McGuire

From the University of Texas Houston Health Science Center at Houston (JLP, MR), Department of Urology, University of Texas - M.D. Anderson Cancer Center (JLR), Houston, the Department of Urology, Wilford Hall Medical Center, Lackland Air Force Base, San Antonio (BDC), Texas, and the University of Michigan, Department of Urology, Ann Arbor, Michigan (EDM)

**Table 1: Overview of treatment groups**

<table>
<thead>
<tr>
<th>Treatment Group</th>
<th>No. (%)</th>
<th>Mean No. Injections ± SD</th>
<th>Mean % Improvement ± SD</th>
<th>Mean Max Response ± SD</th>
<th>Mean Max Follow-up ± SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>RP only</td>
<td>100 (100)</td>
<td>4.4 ± 3.02</td>
<td>39.0 ± 38.45</td>
<td>39.4 ± 38.95</td>
<td>40.0 ± 33.58</td>
</tr>
<tr>
<td>RP + MC</td>
<td>41 (23   )</td>
<td>3.4 ± 3.05</td>
<td>33.7 ± 35.06</td>
<td>39.5 ± 36.01</td>
<td>41.3 ± 30.98</td>
</tr>
<tr>
<td>Urothomyourept</td>
<td>10 (5)</td>
<td>6.7 ± 3.05</td>
<td>44.4 ± 3.98</td>
<td>5.0 ± 4.44</td>
<td>25.9 ± 7.31</td>
</tr>
<tr>
<td>Urothomyourept +</td>
<td>15 (10   )</td>
<td>3.0 ± 3.03</td>
<td>30.0 ± 3.03</td>
<td>38.7 ± 3.03</td>
<td>43.2 ± 3.03</td>
</tr>
<tr>
<td>Urothomyourept</td>
<td>11 (7)</td>
<td>5.0 ± 3.05</td>
<td>6.0 ± 3.05</td>
<td>4.0 ± 3.05</td>
<td>3.0 ± 3.05</td>
</tr>
<tr>
<td>Urothomyourept +</td>
<td>5 (3)</td>
<td>2.0 ± 2.50</td>
<td>2.0 ± 2.50</td>
<td>2.0 ± 2.50</td>
<td>2.0 ± 2.50</td>
</tr>
<tr>
<td>RP + MC</td>
<td>5 (3)</td>
<td>3.0 ± 3.03</td>
<td>13.5 ± 3.03</td>
<td>12.5 ± 3.12</td>
<td>12.5 ± 3.12</td>
</tr>
<tr>
<td>RP + MC</td>
<td>5 (3)</td>
<td>6.0 ± 3.05</td>
<td>5.0 ± 3.05</td>
<td>4.0 ± 3.05</td>
<td>3.0 ± 3.05</td>
</tr>
<tr>
<td>Urothomyourept</td>
<td>2 (1)</td>
<td>5.0 ± 3.05</td>
<td>3.0 ± 3.03</td>
<td>2.0 ± 3.03</td>
<td>2.0 ± 3.03</td>
</tr>
<tr>
<td>Urothomyourept +</td>
<td>2 (1)</td>
<td>1.0 ± 2.50</td>
<td>1.0 ± 2.50</td>
<td>1.0 ± 2.50</td>
<td>1.0 ± 2.50</td>
</tr>
<tr>
<td>Total</td>
<td>112 (50  )</td>
<td>4.5 ± 3.04</td>
<td>2.5 ± 3.04</td>
<td>2.5 ± 3.04</td>
<td>2.5 ± 3.04</td>
</tr>
</tbody>
</table>

- 17% dry for mean 11 months
- 44% improved greater than 50% for mean 6 months
Male Bulbourethral Sling – Bone Anchored

• FDA approved 1998

• Based on Kaufman procedure
  - Increase outlet resistance

• Good intermediate term follow-up 25 months (Comiter J Urol July 2004)
  - 67% pad-free rate
  - 92% improvement
THE MALE SLING FOR STRESS URINARY INCONTINENCE: 24-MONTH FOLLOWUP WITH QUESTIONNAIRE BASED ASSESSMENT

NATHAN F. E. ULLRICH AND CRAIG V. COMITER

From the University of Arizona Health Sciences Center and the Southern Arizona Veterans Affairs Health Care System, Tucson, Arizona

1. Incontinence scores before (pre) and after (post) male sling surgery.

- at median 25 month follow-up
- 67% pad free
- 92% improved
Continence - Bulbourethral Sling Procedure for Post-Prostatectomy Incontinence

Table 1. Clinical patient characteristics at the time of BUS placement.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Number of Patients</th>
<th>Median age (IQR)</th>
<th>Pads used per day</th>
<th>No. history of radiotherapy (%)</th>
<th>No. history of bladder neck contracture (%)</th>
<th>No. detrusor overactivity (%)</th>
<th>Median leak point pressure** (cm H20) (IQR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients</td>
<td>63</td>
<td>68 (65, 71)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median age (IQR)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pads used per day</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median (IQR)</td>
<td>2.5 (1.5, 4.0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td>1, 18*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Does not include one patient with continuous incontinence
** Detrusor overactivity was available for 60 patients and leak point pressure was available for 35 patients

- 60% continent at 1st follow-up, 51% at last follow-up
- 78% improved at 1st follow-up, 62% at last follow-up
- 22% needed additional surgery, 6% explanted for infection

BUT

THE MALE SLING FOR POST-PROSTATECTOMY INCONTINENCE: MEAN FOLLOWUP OF 18 MONTHS

ERIK P. CASTLE, PAUL E. ANDREWS, NANCY ITANO, DONALD E. NOVICKI, SCOTT K. SWANSON AND ROBERT G. FERRIGNI

From the Department of Urology, Mayo Clinic, Scottsdale, Arizona
Artificial Urinary Sphincter

- First AUS implanted 1972
- Outflow resistance typically 61-70 cm H$_2$O
- Initial satisfactory continence in 95% adults
- Reoperation rate as high as 35%
  - Infection
  - Erosion
  - Mechanical failure
Three components:

- **Cuff**
  - (4.0 cm – 7.5 cm in .5 cm increments)

- **Pressure Regulating Balloon**
  - (61-70cm H2O Standard/most used)

- **Control Pump**

### ARTIFICIAL URINARY SPHINCTER FOR POST-RADICAL PROSTATECTOMY URINARY INCONTINENCE: LONG-TERM SUBJECTIVE RESULTS

**ANGELO E. GOUSSIE, SHAHAR MADJAR, MARIE-MAY LAMBERT and IVING J. FISHMAN**

from the urology department, university of memphis, college of medicine, memphis, tennessee, and department of urology, barber college of medicine, houston, texas

- 71 pts at a mean follow-up of 7.7 years
- 27%, 32%, 15% and 25% used 0, 1, 1 to 3 and > 3 pads daily
- 29% surgical revision rate
  - Mechanical failure 25%
  - Erosion 4%
  - Infection 1.4%
- 58% very satisfied
- 19% satisfied
- 23% unsatisfied
- Satisfaction related to number of pads used but not with number of surgical revisions
13 Years of Experience With Artificial Urinary Sphincter Implantation at Baylor College of Medicine

H. Henry Luft, Elias I. Isha, Bin S. Teh, E. Brian Butler and Timothy B. Bomm*†

Table 1. Patient demographics

<table>
<thead>
<tr>
<th>No. (%); Median ± SD; Range</th>
<th>Female (%)</th>
<th>Male (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (age)</td>
<td>67.2 ± 8.53 (54-85)</td>
<td>39/39</td>
</tr>
<tr>
<td>Body mass index</td>
<td>33.32</td>
<td></td>
</tr>
<tr>
<td>No. incontinent/male/treatment effort</td>
<td>73/7</td>
<td></td>
</tr>
<tr>
<td>No. on cuff</td>
<td>60/2</td>
<td></td>
</tr>
<tr>
<td>No. with &gt;50% incontinence</td>
<td>15/2</td>
<td></td>
</tr>
<tr>
<td>No. with &gt;70% incontinence</td>
<td>10/2</td>
<td></td>
</tr>
<tr>
<td>No. with &gt;90% incontinence</td>
<td>1/10</td>
<td></td>
</tr>
<tr>
<td>No. with &gt;90% incontinence</td>
<td>1/10</td>
<td></td>
</tr>
<tr>
<td>No. with &gt;90% incontinence</td>
<td>1/10</td>
<td></td>
</tr>
<tr>
<td>No. with &gt;90% incontinence</td>
<td>1/10</td>
<td></td>
</tr>
</tbody>
</table>

Table 2. AUS complications

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No. (%)</td>
<td>25/25</td>
<td>15/15</td>
<td>30/30</td>
<td>20/20</td>
<td>15/15</td>
<td>15/15</td>
</tr>
<tr>
<td>Mean (±SD)</td>
<td>63.9 (±9.1)</td>
<td>63.9 (±9.1)</td>
<td>63.9 (±9.1)</td>
<td>63.9 (±9.1)</td>
<td>63.9 (±9.1)</td>
<td>63.9 (±9.1)</td>
</tr>
<tr>
<td>% Systolic</td>
<td>5.3 (±0.3)</td>
<td>5.3 (±0.3)</td>
<td>5.3 (±0.3)</td>
<td>5.3 (±0.3)</td>
<td>5.3 (±0.3)</td>
<td>5.3 (±0.3)</td>
</tr>
<tr>
<td>% Diastolic</td>
<td>30% (±0.3)</td>
<td>30% (±0.3)</td>
<td>30% (±0.3)</td>
<td>30% (±0.3)</td>
<td>30% (±0.3)</td>
<td>30% (±0.3)</td>
</tr>
<tr>
<td>% Upright</td>
<td>80% (±0.3)</td>
<td>80% (±0.3)</td>
<td>80% (±0.3)</td>
<td>80% (±0.3)</td>
<td>80% (±0.3)</td>
<td>80% (±0.3)</td>
</tr>
<tr>
<td>% Neurapraxia</td>
<td>2% (±0.3)</td>
<td>2% (±0.3)</td>
<td>2% (±0.3)</td>
<td>2% (±0.3)</td>
<td>2% (±0.3)</td>
<td>2% (±0.3)</td>
</tr>
</tbody>
</table>

* Including epidural catheter, spinal injection, bivalve cuff and pelvic fracture.
† Including lumbar puncture, Myodil injection, and intracranial injection.
‡ Including lumbar puncture, intracranial injection, and intracranial injection.
Trans Obturator Male Sling
Incidence of Urethral Stricture After Primary Treatment for Prostate Cancer: Data From CaPSURE

Sean P. Elliott, Maxwell V. Meng, Eric P. Elkin, Jack W. McAninch, Janeen Duchane, Peter R. Carroll and the CaPSURE Investigators

From the Department of Urologic Surgery, University of Minnesota (SPE), Minneapolis, Minnesota, Department of Urology and University of California-San Francisco Comprehensive Cancer Center, University of California-San Francisco, San Francisco, California (HVM, SPE, JWM, PRC), and TAP Pharmaceutical Products, Inc. (JDL), Lake Forest, Illinois

<table>
<thead>
<tr>
<th>Treatment</th>
<th>No.</th>
<th>PsA/No. Stricture (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EP</td>
<td>9,950</td>
<td>277 (2.8)</td>
</tr>
<tr>
<td>EP + EBRT</td>
<td>7,614</td>
<td>212 (2.8)</td>
</tr>
<tr>
<td>Cystoscopy</td>
<td>1,086</td>
<td>26 (2.4)</td>
</tr>
<tr>
<td>EB</td>
<td>8,964</td>
<td>601 (6.7)</td>
</tr>
<tr>
<td>EB + EBRT</td>
<td>8,964</td>
<td>241 (2.7)</td>
</tr>
<tr>
<td>ERT</td>
<td>4,843</td>
<td>133 (2.8)</td>
</tr>
<tr>
<td>ADT</td>
<td>94,129</td>
<td>1,019 (1.1)</td>
</tr>
<tr>
<td>WW</td>
<td>27,874</td>
<td>477 (1.7)</td>
</tr>
<tr>
<td>Total</td>
<td>6,957,564</td>
<td>5,426 (0.8)</td>
</tr>
</tbody>
</table>

Follow up not considered

- Risk Factors – age, BMI, treatment modality

Urethral Stricture - Management

- Staged approach
  - Urethral dilation
  - Internal urethrotoomy
  - Transurethral resection of contracture
  - +/- self catheterization
  - Uroleum
  - Open reconstruction/urinary diversion

- If sphincteric incontinence present, discuss artificial urinary sphincter

- Staging treatment based on degree of scarring also an option
Lower Urinary Tract Symptoms after Radiotherapy

• Medical Therapy
  - Alpha blockers mainstay
  - Anticholinergics in select patients

• Neurotoxin Injections
  - Botulinum toxin A in VERY select patients

• Surgical Therapy
  - Nerve Stimulator or augmentation cystoplasty for poorly compliant bladders
  - TURP for retention or urodynamically obstructed patients
PROPHYLACTIC TAMSULOSIN (FLOMAX) IN PATIENTS UNDERGOING PROSTATE 125I BRACHYTHERAPY FOR PROSTATE CARCINOMA: FINAL REPORT OF A DOUBLE-BLIND PLACEBO-CONTROLLED RANDOMIZED STUDY

MOHAMED A. ELHAKIM, M.D.,* JAMES C. ULRICH, M.D.,† CHANDANA A. REDEY, M.S.,* KENNETH W. ANGERSHELD, M.D.,* ERIC A. KLEIN, M.D.,* NAHIL CHRAIDE, M.D.,† ANDREW ALTMA, M.D.,* AND JAY P. CIEZEL†

1 Department of Radiation Oncology and *Glickman Urological Institute, Cleveland Clinic Foundation, Cleveland, OH; and †Department of Urology, Kaiser Permanente, Cleveland, OH

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Fig. 1. Schematic representation of the study design and randomization procedure. (AUA = American Urological Association; ISC = intermittent self-catheterization; PI = 125I prostate implant).

Fig. 2. Diagramatic representation of the fate of the 126 randomized patients.

Table 3. Fate of the study patients after randomization

<table>
<thead>
<tr>
<th>Fate</th>
<th>Tamsulosin (n = 58)</th>
<th>Placebo (n = 60)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completed 8 weeks</td>
<td>42 (72%)</td>
<td>40 (67%)</td>
<td>0.7893</td>
</tr>
<tr>
<td>Withdrawal due to:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intolerable symptoms</td>
<td>10 (17%)</td>
<td>10 (17%)</td>
<td>0.9337</td>
</tr>
<tr>
<td>Urinary retention</td>
<td>6 (11%)</td>
<td>10 (17%)</td>
<td>0.3160</td>
</tr>
</tbody>
</table>

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Role of Trosplium Chloride in Brachytherapy-Related Detrusor Overactivity

Nathan Bittner, Gregory S. Merrick, Sarah Brammer, Angela Niehaus, Kent E. Wallner, Wayne M. Butler, Zachariah A. Allen, and Robert W. Galbreath

69 patients treated for irritative symptoms (frequency, urgency, nocturia)
Resolution defined as IPSS within 2 of baseline
Median time to start of trosplium – 23.4 months
80% resolution

Table 2. Mean difference in International Prostate Symptom Score (IPSS) scores after initiation of trosplium

<table>
<thead>
<tr>
<th>IPSS Question</th>
<th>Baseline Mean</th>
<th>Initiation Mean</th>
<th>&lt;1</th>
<th>1-2</th>
<th>3-4</th>
<th>5-6</th>
<th>7-8</th>
<th>9-10</th>
<th>11-12</th>
<th>&gt;12</th>
<th>P*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1: Not emptying</td>
<td>0.5</td>
<td>0.4</td>
<td>-0.4</td>
<td>-0.2</td>
<td>-0.1</td>
<td>-0.4</td>
<td>-0.1</td>
<td>-0.3</td>
<td>-0.3</td>
<td>0.011</td>
<td></td>
</tr>
<tr>
<td>Q2: Frequency</td>
<td>1.5</td>
<td>1.6</td>
<td>-0.1</td>
<td>-0.5</td>
<td>-0.9</td>
<td>-0.7</td>
<td>-1.2</td>
<td>-0.5</td>
<td>-1.4</td>
<td>&lt;0.001</td>
<td></td>
</tr>
<tr>
<td>Q3: Inhibition of stream</td>
<td>0.7</td>
<td>0.6</td>
<td>-0.8</td>
<td>-0.4</td>
<td>-0.4</td>
<td>-0.4</td>
<td>-0.1</td>
<td>-0.1</td>
<td>-0.2</td>
<td>0.006</td>
<td></td>
</tr>
<tr>
<td>Q4: Postvoid retention</td>
<td>0.9</td>
<td>3.7</td>
<td>-2.0</td>
<td>-2.6</td>
<td>-2.6</td>
<td>-1.6</td>
<td>-2.6</td>
<td>-2.8</td>
<td>-2.8</td>
<td>&lt;0.001</td>
<td></td>
</tr>
<tr>
<td>Q5: Weak stream</td>
<td>1.0</td>
<td>0.8</td>
<td>-0.4</td>
<td>-0.4</td>
<td>-0.6</td>
<td>-0.1</td>
<td>-0.4</td>
<td>-0.7</td>
<td>-0.3</td>
<td>&lt;0.001</td>
<td></td>
</tr>
<tr>
<td>Q6: Strain</td>
<td>0.5</td>
<td>0.2</td>
<td>-0.1</td>
<td>-0.1</td>
<td>-0.1</td>
<td>-0.2</td>
<td>-0.1</td>
<td>-0.2</td>
<td>-0.1</td>
<td>0.044</td>
<td></td>
</tr>
<tr>
<td>Q7: Nocturia</td>
<td>1.4</td>
<td>2.4</td>
<td>0.2</td>
<td>-0.5</td>
<td>-0.6</td>
<td>-0.8</td>
<td>-0.4</td>
<td>-0.2</td>
<td>-0.2</td>
<td>0.1</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Total</td>
<td>0.5</td>
<td>9.6</td>
<td>-3.4</td>
<td>-4.7</td>
<td>-5.3</td>
<td>-3.0</td>
<td>-3.7</td>
<td>-3.0</td>
<td>-1.1</td>
<td>&lt;0.001</td>
<td></td>
</tr>
<tr>
<td>PVR (mL)</td>
<td>12.3</td>
<td>33.4</td>
<td>41.3</td>
<td>45.6</td>
<td>5.0</td>
<td>12.8</td>
<td>26.7</td>
<td>8.3</td>
<td>5.6</td>
<td>&lt;0.001</td>
<td></td>
</tr>
</tbody>
</table>

PVR = postvoid residual urine assessment.
Neuromodulation – Biological Botulinum Toxin A

• Delivered by transurethral route
  - Detrusor injection
  - Submucosal injection

• Doseage
  - 200 units most common reported for idiopathic detrusor overactivity (IDO)
  - 300 units for neurogenic detrusor overactivity (NDO)

• Concentration varies
  - 200 u/10 ml in 0.5 ml (10 unit) aliquots

• Anesthesia
  - Local
  - IV Sedation
Botulinum Toxin A – Injection Technique

- Trigone Sparing
- Dome Sparing

Rapp et al, Urology 2004
Smith et al, Urology 2005

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Sacral Nerve Stimulator – Permanent Implant

Augmentation Cystoplasty

- “Gold Standard” for poorly compliant bladders
  - Ileal patch applied to bladder
Incidence of Urinary Retention after Brachytherapy

- Bimodal Distribution
  - Immediately after implantation
  - Delayed presentation
- Incidence
  - Up to 20%
  - Learning curve associated with decrease from 17% - 6%
- Prevention
  - IPSS
  - Prostate size
  - Flow rate/post void residual
  - Pre-procedure urodynamic parameters

Williams et al, Radiother Oncol, 2004
Keyes, et al, IJROBP, 2006
Post-Brachytherapy Urinary Retention - Etiology

- Edema
- Clot Retention
- Infection
- Urinary Calculi/Foreign Body
- Bladder Outlet Obstruction
- Detrusor Underactivity

Post Radiation TURP

- Stress urinary incontinence as high as 70%
- Rate reduced to 12% with appropriate patient selection
  - Urodynamically obstructed
  - New onset obstruction without previous voiding symptoms
- Minimize fulguration while resecting posterior prostate to prevent rectal fistula
- Usually dramatic improvement in voiding symptoms and urge incontinence
- Secondary TURPs not recommended
  - Higher rate of rectal fistulas and incontinence
38 patients treated for retention/obstructive symptoms – median 11 months

7 patients incontinent (18%)

MSKCC/NYPH Experience

- 26 patients underwent TURP after radiotherapy between 2002 and 2005 with no preop Stress Urinary Incontinence (SUI)
  - All patients able to void
  - 2 patients with postop SUI (8%) after one TURP
  - All patients with preop urge incontinence reported improvement
  - 4 patients required reoperation within one year

- 1 patient developed recto-prostatic fistula (underwent 2 TURPs)
Summary

• Natural history of voiding dysfunction very important
  – Rule of thumb - wait 12 months prior to any invasive treatment

• Urinary incontinence most common urinary complication after prostatectomy

• Lower urinary tract symptoms/urinary retention common after radiotherapy
  – Treatable with medical or surgical therapy
Thank You