Benign Prostatic Hyperplasia: Update on Innovative Current Treatments

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Disclosures

• Teleflex - Consultant
Outline

• Background of BPH
• Pathophysiology
• Historical minimally invasive procedures
• Urolift
• Rezum
• Aquablation
Epidemiology of BPH

• Prevalence
  – 50-75% of men over age 50 experience BPH/LUTS
  – 80% of men age 70 and older
  – 15 million American men with BPH/LUTS

Egan KB Urol Clin N Amer 2016; 43 289-296
Pathophysiology of BPH

- BPH results from:
  - Proliferation of epithelial cells and smooth muscle within prostatic transition zone
  - Results in direct BOO and increased tone within prostatic smooth muscle

AUA Guidelines; auanet.org
AUA Guidelines for BPH

- Management is focused on the alleviation of bothersome LUTS associated with BPH

- Goals are alteration of disease progression and prevention of complications associated with BPH/LUTS
Medical Management

- Alpha blockers
- 5-alpha reductase inhibitors
- Anticholinergics
- Beta – 3 agonists
- Phosphodiesterase inhibitors - tadalafil
Medical Therapy is Effective….

• 30% of men on medical therapy will discontinue within 2 years
  – Side effects:
    • Orthostasis/dizziness
    • Sexual side effects
  – Lack of perceived benefit
  – Progression of disease and symptoms
• The majority of these men are not discontinuing medical therapy because they have elected to pursue surgical treatment

Kaplan SA Rev Urol 2005; 7: S34-39
Why start w/ medical therapy?

- Surgical side effects
- Fear of transurethral surgery
- Most men will not consider surgery unless LUTS symptoms are severe or have progressed to retention
Minimally invasive surgical techniques - AUA recognized

• TransUrethral Needle Ablation (TUNA)

• TransUrethral Microwave Therapy (TUMT)
Transurethral Radiofrequency Needle Ablation (TUNA)
Transurethral Radiofrequency Needle Ablation (TUNA)

- AUA guidelines
  - Symptom improvement is significant
  - Rates of retrograde ejaculation and Erectile dysfunction are low
  - Retreatment rates are higher than in patients undergoing TURP
Transurethral Microwave Therapy (TUMT)
Transurethral Microwave Therapy (TUMT)

- AUA Guidelines
  - Higher energy devices seem more effective but result in urethral sloughing and dysuria
  - Durability of improvement questioned
Optimal Minimally Invasive Intervention

- Minimal perioperative morbidity
- Rapidly effective improvement in LUTS
- Decreased risk of sexual side effects
- Durable results
“New” Minimally Invasive Intervention

- Urolift
- Rezum
- Aquablation
Neottract - UroLift

- FDA originally cleared 2013, updated clearance in Dec 2017 for treatment of BPH w/ LUTS in men >45 w/ or w/o median lobes
- Prostate volume <80cc (<100cc in Eur., Can., and Aus.)
L.I.F.T. Study

• Inclusion Criteria:
  – >50yo, AUASI >13, Qmx≤12cc/s, PV 30-80cc

• Randomized 2:1 – PUL v. Sham
  – Sham – Rigid cysto and sounds

• 1° Endpoint: Comparison of AUASI at 3mo

Roehrborn CG et al; J Urol 2013; 190, 2161-2167
L.I.F.T. Study

- At 3 months
  - 11 point decrease in IPSS
  - 4 mL/sec improvement in Qmax

<table>
<thead>
<tr>
<th>Outcome Measure</th>
<th>PUL-ITT Group Mean, SD (No. responses)</th>
<th>Control ITT Group Mean, SD (No. responses)</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline</td>
<td>3 Mos</td>
<td>Change</td>
</tr>
<tr>
<td>AUASI</td>
<td>22.2, 5.48 (140)</td>
<td>11.2, 7.65 (140)</td>
<td>-11.1, 7.67 (140)</td>
</tr>
<tr>
<td>Qmax (ml/sec)</td>
<td>8.02, 2.43 (126)</td>
<td>12.29, 5.40 (126)</td>
<td>4.28, 5.16 (126)</td>
</tr>
<tr>
<td>COL</td>
<td>4.6, 1.1 (140)</td>
<td>2.4, 1.7 (140)</td>
<td>-2.2, 1.8 (140)</td>
</tr>
<tr>
<td>BPHII</td>
<td>6.9, 2.8 (140)</td>
<td>3.0, 3.1 (140)</td>
<td>-3.9, 3.2 (140)</td>
</tr>
<tr>
<td>MSQOL-EJD</td>
<td>8.7, 3.1 (94)</td>
<td>10.9, 3.2 (94)</td>
<td>2.2, 2.5 (94)</td>
</tr>
<tr>
<td>MSQOL-Bother</td>
<td>2.4, 1.7 (117)</td>
<td>1.6, 1.7 (117)</td>
<td>-0.8, 1.5 (117)</td>
</tr>
<tr>
<td>IIEF-5</td>
<td>13.3, 8.4 (132)</td>
<td>13.4, 9.2 (132)</td>
<td>0.1, 5.8 (132)</td>
</tr>
<tr>
<td>PVR (ml)</td>
<td>85.5, 69.2 (140)</td>
<td>75.8, 83.9 (140)</td>
<td>-9.7, 85.5 (140)</td>
</tr>
</tbody>
</table>

Roehrborn CG et al; J Urol 2013; 190, 2161-2167
L.I.F.T. Study

- PUL Group over 1 year
  - AUASI ↓ 10.8 (stable from 3 mo)
  - QOL (BI) ↓ 2.4 (stable from 3 mo)
  - BPHII ↓ 4.0 (stable from 3 mo)
  - Qmax ↑ 4.0 (stable from 3 mo)

Roehrborn CG et al; J Urol 2013; 190, 2161-2167
L.I.F.T. 5 yr Results

- At 60 months
  - 7.5 point decrease in IPSS from baseline
  - 3.5 mL/sec improvement in Qmax
L.I.F.T. 5 yr Results

- 10% of patients on meds
  - alpha blocker or 5-ARI
- Retreatment rate is 13.6% (19pts)
  - 6 - additional UroLift procedure
  - 13 – TURP or Laser Ablation

Roehrborn CG et al; J Urol 2013; 190, 2161-2167
UroLift vs. TURP

- 80 pts randomized, prospective 2 yr study
- Overall improvements in IPSS, QoL, BPHII, Qmax
- TURP > PUL – IPSS and Qmax
- PUL < TURP – Ejac Func, periop incontinence

Gratzke C et al; BJUI 2017; 119, 767-775
UroLift as Fiducial

- Case Reports / Case Series
  - All demonstrate effectiveness
  - No procedural related complications
  - No data on IPSS or flow
  - No comparison to standard fiducials
UroLift Procedure
Rezum: Convective Thermal Therapy

- RF device generates sterile water vapor
- Needle deploys into prostatic tissue and 0.5mL water vapor injected in tissue
- Results ~2 cm field with rapid cell death
- Decreased sloughing compared to High energy TUMT
Rezum Trial

• 197 Randomized – 136 active, 61 control
• Inclusion Criteria:
  – Men > 50
  – IPSS > 13
  – Qmax <15mL/sec
  – Prostate volume 30 – 80 cc

McVary KT et al, J Urol, 2016 195, 1529-1538
Rezum Trial

- 3 months
  - 11.3 point decrease in IPSS
  - 6.2 mL/sec improvement in Qmax
  - Minimal change in IIEF
  - 0.3 point decrease in MSHQ – Ejac dysfunction bother index

<table>
<thead>
<tr>
<th>Outcome Measure</th>
<th>Thermal Therapy ITT Group</th>
<th>Control ITT Group</th>
<th>p Value*</th>
</tr>
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<tbody>
<tr>
<td>Mean ± SD Baseline (No. responses)</td>
<td>Mean ± SD 3 Mos (No. responses)</td>
<td>Mean ± SD Change (95% CI)</td>
<td>Mean ± SD Baseline (No. responses)</td>
</tr>
<tr>
<td>I-PSS</td>
<td>22.0 ± 4.8 (136)</td>
<td>10.8 ± 6.5 (136)</td>
<td>−11.2 ± 7.6 (−12.5, −9.9)</td>
</tr>
<tr>
<td>Omax</td>
<td>9.9 ± 2.3 (136)</td>
<td>16.1 ± 7.3 (133)</td>
<td>6.2 ± 7.1 (6.0, 7.4)</td>
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<tr>
<td>PVR</td>
<td>82.0 ± 51.5 (136)</td>
<td>71.8 ± 72.2 (133)</td>
<td>−10.6 ± 88.3 (−22.3, 1.1)</td>
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<tr>
<td>I-PSS QoL score</td>
<td>4.4 ± 1.1 (134)</td>
<td>2.3 ± 1.5 (134)</td>
<td>−2.1 ± 1.6 (−2.4, −1.8)</td>
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<td>BPH II</td>
<td>6.3 ± 2.8 (136)</td>
<td>2.9 ± 2.9 (134)</td>
<td>−3.4 ± 3.5 (−4.0, −2.8)</td>
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<tr>
<td>OAB-q SF: Bother scale</td>
<td>39.6 ± 18.0 (136)</td>
<td>24.9 ± 18.0 (133)</td>
<td>−14.6 ± 18.4 (−17.7, −11.4)</td>
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<td>HRQL</td>
<td>64.5 ± 20.0 (136)</td>
<td>82.0 ± 17.5 (132)</td>
<td>17.5 ± 18.8 (14.3, 20.8)</td>
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McVary KT et al, J Urol, 2016 195, 1529-1538
Rezum Trial

- 36 months
  - 11.0 pt ↓ IPSS from baseline (stable)
  - 2.2 pt ↓ IPSS QoL (stable)
  - 3.5 mL/sec ↑ Qmax (stable)
  - 26.4 mL ↓ PVR (new)
  - 3.7 pt ↓ BPHII (stable)
  - 1.9 pt ↓ in IIEF from baseline (stable)
  - 0.5 point decrease in MSHQ – EjD Bother index

McVary KT and Roehrborn CG, Urol, 2018; 111, 1-9
ReZum
## Rezum vs UroLift

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<th>Baseline</th>
<th>3 months</th>
<th>12 months</th>
<th>24 months</th>
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<td><strong>Qmax</strong></td>
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<td>9.9</td>
<td>16.1</td>
<td>15.1</td>
<td>14.0</td>
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<tr>
<td>UroLift</td>
<td>8</td>
<td>12.3</td>
<td>12.1</td>
<td>12.5</td>
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<td><strong>IPSS</strong></td>
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<td><strong>MSHQ- EjD Function</strong></td>
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Goals of BPH management

- Treatment should focus on the alteration of disease progression and prevention of complications that can be associated with BPH/LUTS