Penile Prosthesis Insertion in the Era of Antibiotic Stewardship: Are Postoperative Antibiotics Necessary?

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Disclosures

• None
Background

- 20,000+ IPP insertions per year in USA

- Majority discharged with postoperative oral antibiotics

- Existing literature: one claims database study found no benefit in explant rate

- Antibiotics can harm the individual and population

- VUMC protocol: postoperative Abx for highest risk patients only
Objective

• Determine if patients discharged without antibiotics after IPP insertion were at increased risk of infectious complications compared to patients discharged with oral antibiotics at our institution and to patients in other contemporary series.
Methods

• Retrospective review

• IPP insertion 2013 – 2017 at VUMC

• Demographics, PMH, PSH, LoS, postoperative antibiotic prescription status, infectious complications, device explantation

• One-way ANOVA, Kruskal-Wallis, mann-whitney U, or T-tests with unequal variance for continuous variables

• Pearson Chi-squared tests for categorical variables
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Methods

Risk Factors for Postoperative Device Infection:
• Diabetes
• Chronic steroid use
• Active smoking status
• Prior IPP insertion
• Spinal cord injury

Methods

<table>
<thead>
<tr>
<th>RISK FACTORS FOR INFECTION</th>
<th>POSTOPERATIVE ANTIBIOTICS PRESCRIBED</th>
<th>GROUP</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO</td>
<td>YES</td>
<td>Excluded</td>
</tr>
<tr>
<td>NO</td>
<td>NO</td>
<td>1</td>
</tr>
<tr>
<td>YES</td>
<td>NO</td>
<td>2</td>
</tr>
<tr>
<td>YES</td>
<td>YES</td>
<td>3</td>
</tr>
</tbody>
</table>
Results

• 222 men included

• Preoperative Antibiotics
  • 191 (86%) Vancomycin/Gentamycin
  • 31 (19%) Other

• Approach
  • 208 (94%) Infrapubic
  • 14 (6%) Penoscrotal

• No Drains
## Results: Demographics

<table>
<thead>
<tr>
<th>Group</th>
<th>Group 1 Low Risk Abx (-) (n = 88)</th>
<th>Group 2 Higher Risk Abx (-) (n = 48)</th>
<th>Group 3 Higher Risk Abx (+) (n = 86)</th>
<th>p-value All Groups</th>
<th>p-value Group 2 vs. Group 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk Factors for Infection, mean ± STD</td>
<td>0 ± 0</td>
<td>1.08 ± 0.28</td>
<td>1.24 ± 0.46</td>
<td>&lt; 0.001</td>
<td>0.013</td>
</tr>
<tr>
<td>Discharged with Antibiotics, count (%)</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>86 (100)</td>
<td>&lt; 0.001</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Age (years), mean ± SD</td>
<td>63.0 ± 8.6</td>
<td>62.8 ± 8.6</td>
<td>60.9 ± 9.8</td>
<td>0.260</td>
<td>0.234</td>
</tr>
<tr>
<td>Surgeon 1, count (%)</td>
<td>16 (18)</td>
<td>11 (23)</td>
<td>17 (20)</td>
<td>0.803</td>
<td>0.667</td>
</tr>
<tr>
<td>BMI (kg/m²), mean ± SD</td>
<td>29.0 ± 4.5</td>
<td>30.0 ± 4.4</td>
<td>29.7 ± 4.9</td>
<td>0.468</td>
<td>0.724</td>
</tr>
<tr>
<td>ASA Score, mean ± SD</td>
<td>2.60 ± 0.49</td>
<td>2.77 ± 0.47</td>
<td>2.84 ± 0.40</td>
<td><strong>0.003</strong></td>
<td>0.413</td>
</tr>
</tbody>
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## Results: Demographics

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</thead>
<tbody>
<tr>
<td>History of HTN, count (%)</td>
<td>54 (61)</td>
<td>34 (71)</td>
<td>65 (76)</td>
<td>0.122</td>
<td>0.549</td>
</tr>
<tr>
<td>Anticoagulation other than ASA 81mg, count (%)</td>
<td>15 (17)</td>
<td>12 (21)</td>
<td>18 (21)</td>
<td>0.534</td>
<td>0.588</td>
</tr>
<tr>
<td>Preoperative Narcotic use, count (%)</td>
<td>13 (15)</td>
<td>10 (21)</td>
<td>24 (28)</td>
<td>0.105</td>
<td>0.367</td>
</tr>
<tr>
<td>History of Prostatectomy, count (%)</td>
<td>57 (65)</td>
<td>16 (33)</td>
<td>28 (33)</td>
<td>&lt; 0.001</td>
<td>0.927</td>
</tr>
<tr>
<td>History of Prostate Radiation, count (%)</td>
<td>6 (7)</td>
<td>3 (6)</td>
<td>4 (5)</td>
<td>0.824</td>
<td>0.690</td>
</tr>
<tr>
<td>Concomitant AUS Placement, count (%)</td>
<td>2 (2)</td>
<td>2 (4)</td>
<td>2 (2)</td>
<td>0.779</td>
<td>0.548</td>
</tr>
<tr>
<td>A1c (mmol/mol), mean + STD</td>
<td>N/A</td>
<td>6.81 + 1.08</td>
<td>7.09 + 1.45</td>
<td>N/A</td>
<td><strong>0.030</strong></td>
</tr>
</tbody>
</table>
## Results: Risk Factors for Infection

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</tr>
</thead>
<tbody>
<tr>
<td>History of Diabetes, count (%)</td>
<td>0 (0)</td>
<td>28 (58)</td>
<td>64 (74)</td>
<td>&lt; 0.001</td>
<td>0.054</td>
</tr>
<tr>
<td>Chronic Steroid use, count (%)</td>
<td>0 (0)</td>
<td>1 (2)</td>
<td>6 (7)</td>
<td>0.028</td>
<td>0.222</td>
</tr>
<tr>
<td>Active Smoker, count (%)</td>
<td>0 (0)</td>
<td>19 (40)</td>
<td>21 (24)</td>
<td>&lt; 0.001</td>
<td>0.066</td>
</tr>
<tr>
<td>History of Prior IPP, count (%)</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>6 (7)</td>
<td>0.008</td>
<td>0.061</td>
</tr>
<tr>
<td>History of Spinal Cord Injury, count (%)</td>
<td>0 (0)</td>
<td>4 (8)</td>
<td>3 (3)</td>
<td>0.029</td>
<td>0.227</td>
</tr>
<tr>
<td>Other High Risk Feature, count (%)</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>6 (7)</td>
<td>0.008</td>
<td>0.061</td>
</tr>
</tbody>
</table>
## Results: Implant Survival and Complications

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</tr>
</thead>
<tbody>
<tr>
<td>Total Length of Follow Up (months), median (IQR)</td>
<td>4.6 (1.8 - 7.2)</td>
<td>3.5 (1.4 - 6.9)</td>
<td>4.5 (1.4 - 7.4)</td>
<td>0.146</td>
<td>0.552</td>
</tr>
<tr>
<td>Non-operative Infectious Complication, count (%)</td>
<td>1 (1)</td>
<td>1 (2)</td>
<td>2 (2)</td>
<td>0.829</td>
<td>0.928</td>
</tr>
<tr>
<td>Device Explant for Any Cause, count (%)</td>
<td>2 (2)</td>
<td>2 (4)</td>
<td>4 (4)</td>
<td>0.682</td>
<td>0.897</td>
</tr>
<tr>
<td>Device Explant for Infection, count (%)</td>
<td>0 (0)</td>
<td>2 (4)</td>
<td>4 (5)</td>
<td>0.130</td>
<td>0.897</td>
</tr>
<tr>
<td>Device Explant for Mechanical Complication, count (%)</td>
<td>2 (2)</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>0.215</td>
<td>N/A</td>
</tr>
</tbody>
</table>
Discussion

• Postoperative Antibiotics have not been shown to improve infection risk

• Consensus Documents do not recommend postoperative antibiotics

• Potential Harms are real
  • Individual Adverse Events:
    • 6-8% for sulfamethoxazole/trimethoprim
    • 10% for amoxicillin/clavulanate
  • Population Effects
    • Increasing antibiotic resistance and virulence
Limitations

• Sample size

• Retrospective design

• Selection bias

• Possibility of missed complications / explants

• Relatively limited follow up
Conclusions

• Low risk patients appear very unlikely to benefit from Postoperative Antibiotics

• Patients with risk factors probably don’t benefit either

• In current era of Antibiotic Stewardship, most patients can be discharged without Postoperative Antibiotics after IPP
Questions
References


