Robotic Prostatectomy: Oncological and Functional Outcomes after 4000 cases

The Donald Smith Lecture

Inception Cohort (2008)

- Nov 2000 - Dec 2008 --- 4200 patients
- Patient 1 to patient 3800
- PSA follow-up ------ 3481 patients (92%)
- Level 1b evidence (Center for Evidence-Based Medicine)

Inception Cohort

A group of patients assembled at the time of onset of disease or treatment

Cohort study: the observation of a cohort over time to measure outcomes (AKA: longitudinal, follow-up studies)

Center for Evidence-Based Medicine, Oxford

http://www.cebm.net/levels_of_evidence.asp

1a. Randomized Control study
1b. Individual inception cohort study with > 80% follow-up
2a. Review of retrospective cohort studies (homogeneous)
2b. Same heterogeneous
2c. Outcomes analysis
3. Case series or poor-quality cohort studies
4. Expert opinion
PLND Complications

<table>
<thead>
<tr>
<th></th>
<th>LND Total Experience (N= 7943)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symptomatic Lymphocoele</td>
<td>9 (0.31%)</td>
</tr>
<tr>
<td>Deep vein thrombosis</td>
<td>2 (0.07%)</td>
</tr>
<tr>
<td>Pulmonary embolism</td>
<td>1 (0.01%)</td>
</tr>
<tr>
<td>Vascular Nerve Injury</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Overall</td>
<td>13 (0.45%)</td>
</tr>
</tbody>
</table>

Internal Iliac Lymphnode Dissection
- High risk patients: extended node dissection...both internal and external iliac
- D’Amico low and intermediate risk patients
- Internal iliac PLND done without dissecting External iliac LN

Extending the template

Bader et. al.
385 Pts
88 Met (+) LN
51 (58%) Int Iliac LN

J Urol 2002; 168:514
Internal iliac PLND

- D’Amico low and intermediate risk patients
- Internal iliac PLND - 58
- Standard Template group matched by the distribution of the variables (Bx. Gleason, PSA and Clinical Stage) - 657

<table>
<thead>
<tr>
<th></th>
<th>LN Met</th>
<th>No LN Mets</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal iliac PLND</td>
<td>4</td>
<td>54</td>
<td>58</td>
</tr>
<tr>
<td>Standard PLND</td>
<td>5</td>
<td>654</td>
<td>657</td>
</tr>
<tr>
<td>Totals</td>
<td>7</td>
<td>708</td>
<td>715</td>
</tr>
</tbody>
</table>

- LN Met + Rates
  - Int. iliac 6.8%
  - Std. template 0.45%

- CI 99%
- Fisher Exact Test Two tailed p-value 0.0001
- OR = 15.1 (2.7-85.1)
AUA BCR Panel guideline for BCR

Overall BCR

BCR by Pathology Gleason

BCR by Pre-Operative PSA
Relationship of BCR to death from cancer

- Johns Hopkins, 1982-2004 (Median = 9y)
- BCR ... PSA > 0.1 = 20%
- 926 BCR, 635 in whom doubling time could be measured
- 118 deaths from prostate cancer (18% of patients with doubling times)
- No deaths without BCR
- 5 of 6 men with BCR will not die of prostate cancer within 6 years after recurrence

Trock et al, 2008, JAMA:299, 2760

Techniques to Improve Continence

Mani Menon
VIP Team

Number of patients with incontinence on follow up

- Posterior reconstruction of the rhabdosphincter (Rocco stitch) 84% 0 pad/1 diaper at 30 d
- Anterior reconstruction (Tewari) 62% 0-1 pad at 6 weeks
- Combined reconstruction?

Primary outcome: Shows pad usage after robotic prostatectomy in patients undergoing either single- or double-layer vesicourethral anastomosis. There is no statistically significant difference in outcomes.

Secondary outcome: Proportion of patients with 0 grams per day urinary loss after single- or double-layer anastomosis.
The median urinary losses, at days 1, 2, 7 and 30 days were 81 grams and 70 grams, 33 grams and 20 grams and 2 grams and 10 grams for the single-layer or the double-layer anastomosis, respectively.

Techniques to improve continence
- "No-touch" sphincteric dissection (Menon) 80% at 30 d
- Posterior reconstruction of the rhabdosphincter (Rocco stitch) 84% at 30 d
- Anterior and post-reconstruction (Tewari) 83% pad at 6 weeks

Technique to Decrease Discomfort
- 80% of patients complained of Foley
- 60% severe discomfort

Mani Menon
VIP Team
Patient Discomfort after RP

Veil
(Intrafascial dissection, High anterior release)
Nerves in lateral pelvic fascia
How radical is a radical prostatectomy?

- Closest distance between cancer and resection margins was 0.5 mm
- Veil closest distance was 0.2 mm
**Histopathology**

*SHIM Scores: Veil of Aphrodite*

*SHIM Scores: Veil of Aphrodite*

Every spoke in this graph represents an individual patient.

**Results**

<table>
<thead>
<tr>
<th></th>
<th>Classical</th>
<th>Veil</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>intercourse</td>
<td>74%</td>
<td>97%</td>
<td>0.002</td>
</tr>
<tr>
<td>Normal Erection PDE5i</td>
<td>26%</td>
<td>86%</td>
<td>0.0001</td>
</tr>
<tr>
<td>Normal Erection (--) PDE5i</td>
<td>17%</td>
<td>51%</td>
<td>0.0001</td>
</tr>
<tr>
<td>Parsons Criteria (SHIM &gt;15)</td>
<td>52%</td>
<td>93%</td>
<td>0.002</td>
</tr>
<tr>
<td>Post-op SHIM Mean (SD)</td>
<td>14.8(8.6)</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>Post-op SHIM Median</td>
<td>19</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td>Mean change in SHIM</td>
<td>9.1(88%)</td>
<td>2.6(11%)</td>
<td>0.0002</td>
</tr>
<tr>
<td>Pts using PDE5i</td>
<td>7(30%)</td>
<td>15(43%)</td>
<td>0.57</td>
</tr>
</tbody>
</table>
Why does the veil work?

- More nerves preserved
- Less traction injury
- Increased maintenance of blood supply to cavernous tissues ...more eNOS

Menon et al. J. Urol, 2005, 174: 2291-

Cost of Robotic Prostatectomy

- No additional cost to patient
- No additional insurance premium
- Hospital cost of capital equipment similar to CT/MRI
- One-half that of IMRT, 10% of proton beam
Patients on PDE5I, (SHIM Scores: Standard Nerve sparing)

Conclusions: Potency rates after radical prostatectomy vary with the measure used to define potency. Irrespective of the definition used patients undergoing prostatic fascia preserving radical prostatectomy have significantly better potency outcomes than patients undergoing conventional nerve sparing robotic prostatectomy at 12 months of follow-up without postoperative therapy to preserve potency.