2014 Best Papers in Robotic Cystectomy

Dr Allen Sim
Introduction

- Over 100 publications since introduction of robotic cystectomy in 2003
- 30+ publications in 2014 alone
Important Issues

• Is it effective?
• Is it safe?
• Intracorporeal vs extracorporeal
• Is it cost-effective?
• How is the quality of life?
Bladder Cancer

Robotic and Laparoscopic Radical Cystectomy for Bladder Cancer: Long-term Oncologic Outcomes

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• Retrospective study of 121 patients undergoing LRC (n=104) or RARC (n=17)

• Length of follow up – 12 years

• Extracorporeal urinary diversion performed with ~70% ileal conduit

• Comparable oncologic outcomes to ORC in terms of LN yield, positive surgical margins.

• Many limitations to the study but it provides a good platform for future studies
• Previous randomized studies of open vs robotic cystectomy has shown lower blood loss, shorter hospital stay and less transfusion in the robotic groups* with similar oncologic outcomes and morbidity.

• Extracorporeal urinary diversion


How about intracorporeal diversion?
• Wiklund et al reported combined experience of RARC with intracorporeal neobladder in 136 patients

• Comparable oncologic outcomes – 1 patient with positive soft-tissue margin, median LN yield of 29 and CSS/OS over 70%

• 5 cases (3.8%) of benign ureteric stricture which is lower than contemporary open or robotic extracorporeal series

• Good functional outcomes – 84% daytime and nighttime continence and 81% potent after undergoing nerve-sparing surgery
• The authors attributed the lower stricture rates to the theoretical advantage of intracorporeal diversion:
  • Minimum ureteral length
  • No need for extra mobilization of ureter
  • Less redundancy or kinking of ureter
Intracorporeal vs extracorporeal

Platinum Priority – Bladder Cancer
Editorial by Matthew Brown and Benjamin Challacombe on pp. 348–349 of this issue

Analysis of Intracorporeal Compared with Extracorporeal Urinary Diversion After Robot-assisted Radical Cystectomy: Results from the International Robotic Cystectomy Consortium
IRCC (International Radical Cystectomy Consortium)

- Initially known as International Robotic Cystectomy Consortium
- First formed in 2006 with 4 participating institutions, with pooled database of 162 patients
- Objective is to have better understanding of outcomes of RARC in a larger cohort of patients
- Currently, IRCC has expanded to 15 countries with 33 participating institutions and over 1400 patients.
Intracorporeal vs extracorporeal?

- Retrospective study
- 935 patients from 18 institutions underwent RARC from 2003 to 2011.
- 768 had ECUD (570 ileal conduits and 198 neobladders)
- 167 ICUD (106 conduits and 61 neobladders)
• Median follow up 9 months

• Comparable perioperative parameters such as operative time, blood loss and length of stay

• No significant difference in high-grade complications between the groups
### Table 3 - Complications according to the organ system involved

<table>
<thead>
<tr>
<th>Complication category, no. (%)</th>
<th>All</th>
<th>ECUD</th>
<th>ICUD</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gastrointestinal*</td>
<td>161 (20)</td>
<td>142 (23)</td>
<td>19 (10)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Infection</td>
<td>136 (17)</td>
<td>114 (18)</td>
<td>22 (12)</td>
<td>0.035</td>
</tr>
<tr>
<td>General</td>
<td>30 (4)</td>
<td>27 (4)</td>
<td>3 (2)</td>
<td>0.119</td>
</tr>
<tr>
<td>Wound/skin</td>
<td>42 (5)</td>
<td>35 (6)</td>
<td>7 (4)</td>
<td>0.353</td>
</tr>
<tr>
<td>Hematologic/vascular</td>
<td>75 (9)</td>
<td>56 (9)</td>
<td>19 (10)</td>
<td>0.667</td>
</tr>
<tr>
<td>Pulmonary</td>
<td>24 (3)</td>
<td>21 (3)</td>
<td>3 (2)</td>
<td>0.324</td>
</tr>
<tr>
<td>Metabolic</td>
<td>8 (1)</td>
<td>8 (1)</td>
<td>0</td>
<td>0.209</td>
</tr>
<tr>
<td>Endocrine</td>
<td>3 (0.4)</td>
<td>2 (0.3)</td>
<td>1 (0.5)</td>
<td>0.546</td>
</tr>
<tr>
<td>Head/neck</td>
<td>4 (0.5)</td>
<td>3 (0.5)</td>
<td>1 (0.5)</td>
<td>1.000</td>
</tr>
</tbody>
</table>

ECUD = extracorporeal urinary diversion; ICUD = intracorporeal urinary diversion.

* Defined as “acute abdomen whether resulting from a mechanical or nonmechanical cause. It also includes other complications like injuries, strictures, ischemia, perforations and leakages from anastomotic sites.”
• ICUD technique is hypothesized to reduce fluid loss from intestines and minimizes trauma and resultant wall edema to the intestinal wall (secondary to its handling, retraction and mobilization)

• Perioperative blood transfusion rate also lower in ICUD group
Morbidity & Cost-effectiveness

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European Association of Urology

Bladder Cancer

Propensity-Matched Comparison of Morbidity and Costs of Open and Robot-Assisted Radical Cystectomies: A Contemporary Population-Based Analysis in the United States

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a Center for Surgery and Public Health, Brigham and Women’s Hospital, Harvard Medical School, Boston, MA, USA; b Division of Urology, Brigham and Women’s Hospital, Harvard Medical School, Boston, MA, USA; c Dana-Farber/Brigham and Women’s Hospital Cancer Center, Harvard Medical School, Boston, MA, USA; d Department of Urology, Stanford University Medical Center, Stanford, CA, USA.
• 36773 patients who underwent either ORC or RARC in 279 hospitals from 2004 to 2010

• No significant differences in terms of major complications, mortality and readmissions with lower minor complications (Clavien grade I & II) and shorter LOS (1.51 days shorter) in RARC group
$26681

$31007

*Significantly different ($p < 0.0001$)
• **NO** cost difference between RARC and ORC in subgroup analysis of highest-volume surgeons (≥7 cases per year) and highest-volume hospitals (≥19 cases per year)

• Reducing either operating time or LOS substantially decrease cost of RARC
380 min

LOS 7 days

RARC operating room time, min

RARC LOS, d

RARC less costly

ORC less costly
Lastly…..

- Evaluation of health-related quality of life (HRQL) using validated bladder-specific Bladder Cancer Index (BCI) and EORTC Body Image Scale (BIS) between ORC and RARC*
- RARC has comparable outcomes to ORC using BCI and BIS.
- Diversion technique does not affect patients’ QOL

Take Home Messages

- RARC is comparable to ‘gold standard’ ORC in terms of oncologic and functional outcomes
- Also comparable in terms of morbidity and mortality
- Superior in terms of blood loss and hospital stay
- Intracorporeal urinary diversion (ICUD) superior to extracorporeal urinary diversion (ICUD) in terms of lower bowel and wound complications
- RARC more costly than ORC unless done in high volume centers
- Similar HRQL between RARC and ORC
References:


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Thank You