THE ROLE OF ROBOTIC SURGERY IN UROLOGY: PAST, PRESENT AND FUTURE

Mani Menon, M.D.
The Raj and Padma Vattikuti Chair in Oncology
Director, Vattikuti Urology Institute
Henry Ford Health System
How we did surgery traditionally
Advantages of the Robot:

• Improved vision: 3D view and magnification

• Minimally invasive

• Greater surgical dexterity

• Less intra-operative bleeding
Origami Using
da Vinci® Surgical System
WHY WAS I INVOLVED WITH ROBOTIC SURGERY?

VUI Program Development
‘Perfect Storm’

• Emerging technique
  – Laparoscopic prostatectomy
• Promising technology
  – Robotic system
• Funding
  – Raj and Padma Vattikuti
• Inspiration
  – My patients
  – My wife, Shameem Menon
Robotic Surgery
New Tools for Operating on a Beating Heart
Raj and Padma Vattikuti
LAPAROSCOPIC RADICAL PROSTATECTOMY: INITIAL SHORT-TERM EXPERIENCE

WILLIAM W. SCHUESSLER, PETER G. SCHULAM, RALPH V. CLAYMAN, AND LOUIS R. KAVOSSI

Original Articles

LAPAROSCOPIC RADICAL PROSTATECTOMY: THE MONTSOURIS EXPERIENCE

BERTRAND GUILLONNEAU AND GUY VALLANCION

From the Department of Urology, Institut Mutualiste Montsouris, Paris, France

LAPAROSCOPIC AND ROBOT ASSISTED RADICAL PROSTATECTOMY: ESTABLISHMENT OF A STRUCTURED PROGRAM AND PRELIMINARY ANALYSIS OF OUTCOMES

MANI MENON, ALOK SHRIVASTAVA, ASHUTOSH TEWARI, RICHARD SARLE, ASHOK HEMAL, JAMES O. PEABODY AND GUY VALLANCION

From the Vattikuti Urology Institute, Henry Ford Health System, Detroit, Michigan, and the Department of Urology, Institut Mutualiste Montsouris, University Pierre et Marie Curie, Paris, France
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>LRP (USA)</th>
<th>LRP (Montsouris)</th>
<th>LRP (VUI)</th>
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<tbody>
<tr>
<td>Cases</td>
<td>9</td>
<td>120</td>
<td>40</td>
</tr>
<tr>
<td>Body mass index (mean); kg/m²</td>
<td>N/A</td>
<td>~25</td>
<td>27.7</td>
</tr>
<tr>
<td>Operative time (without pelvic lymph node dissection) (mean)</td>
<td>9.4 hours</td>
<td>4 hours</td>
<td>~4.3 hours</td>
</tr>
<tr>
<td>Blood loss</td>
<td>580 cc</td>
<td>400 cc</td>
<td>390 cc</td>
</tr>
<tr>
<td>Blood transfusion</td>
<td>N/A</td>
<td>10%</td>
<td>1 (2.5%)</td>
</tr>
<tr>
<td>Length of stay (mean)</td>
<td>9.3 days</td>
<td>6 days</td>
<td>~1.5 days</td>
</tr>
<tr>
<td>Return of spontaneous erections (in preoperatively potent men)*</td>
<td>2/4 (50%)</td>
<td>9/20 (45%)</td>
<td>3/12 (25%)</td>
</tr>
<tr>
<td>Urinary continence*</td>
<td>6 (66%)</td>
<td>44/60 (73%)</td>
<td>N/A</td>
</tr>
<tr>
<td>Complications</td>
<td>3 (33%)</td>
<td>7 (5.8%)</td>
<td>4 (10%)</td>
</tr>
<tr>
<td>Conversion to open RP</td>
<td>N/A</td>
<td>7 (5.8%)</td>
<td>1 (2.5%)</td>
</tr>
</tbody>
</table>

* At least 6 month follow-up
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>LRP (VUI)</th>
<th>ORP (VUI)</th>
<th>VIP (VUI)</th>
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<tbody>
<tr>
<td>Cases</td>
<td>40</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Body mass index (mean); kg/m²</td>
<td>27.7</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Operative time (without pelvic lymph node dissection) (mean)</td>
<td>~4.3 hours</td>
<td>2.3 hours</td>
<td>4.8 hours (including 55-minute setup time)</td>
</tr>
<tr>
<td>Blood loss</td>
<td>390 cc</td>
<td>970 cc</td>
<td>330 cc</td>
</tr>
<tr>
<td>Blood transfusion</td>
<td>1 (2.5%)</td>
<td>17%</td>
<td>7%</td>
</tr>
<tr>
<td>Length of stay (mean)</td>
<td>~1.5 days</td>
<td>~2.3 days</td>
<td>1.5 days</td>
</tr>
<tr>
<td>Complications</td>
<td>4 (10%)</td>
<td>5 (16.7%)</td>
<td>6 (20%)</td>
</tr>
<tr>
<td>Conversion to open RP</td>
<td>1 (2.5%)</td>
<td>N/A</td>
<td>1 (3.3%)</td>
</tr>
</tbody>
</table>
RAP Time (Min) = 490.89 (Chronological order)^{-0.2537}
(RAP) R^2 = 0.5477

LRP Time (Min) = 228.08 (Chronological order)^{0.0153}
(LRP) R^2 = 0.0021
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>VIP (First 30)</th>
<th>VIP (31- 230)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body mass index (mean); kg/m²</td>
<td>30</td>
<td>28</td>
</tr>
<tr>
<td>Operative time (without pelvic lymph node dissection) (mean)</td>
<td>4.8 hours (including 55-minute setup time)</td>
<td>160 min</td>
</tr>
<tr>
<td>Blood loss</td>
<td>330 cc</td>
<td>150 cc</td>
</tr>
<tr>
<td>Blood transfusion</td>
<td>7%</td>
<td>0%</td>
</tr>
<tr>
<td>Length of stay (mean)</td>
<td>1.5 days</td>
<td>1.2</td>
</tr>
<tr>
<td>Return of spontaneous erections (in preoperatively potent men)*</td>
<td>5/17 (29.4%)</td>
<td>~80%</td>
</tr>
<tr>
<td>Urinary continence*</td>
<td>8/22 (36.4%)</td>
<td>96%</td>
</tr>
<tr>
<td>Complications</td>
<td>6 (20%)</td>
<td>8/200 (6.2%)</td>
</tr>
<tr>
<td>Conversion to open RP</td>
<td>1 (3.3%)</td>
<td>0 %</td>
</tr>
</tbody>
</table>
EVOLUTION OF VIP

Nerve Sparing Prostatectomy 1983

Laparoscopic Prostatectomy 1998

Vattikuti Institute Prostatectomy 2000
“IF I HAD ASKED PEOPLE WHAT THEY WANTED, THEY WOULD HAVE SAID: FASTER HORSES...”

Henry Ford
Robotic Systems in the US (>500,000 cases)
Robotic Prostatectomy: a decade of publications

2001-2015: No. of indexed publications on “robotic prostatectomy” = **2024**

Early adopters, between 2001-2005 = **14**

No. of centers publishing 5-year follow-up data = **4**

No. of centers publishing 10-15 year follow-up data = **1**
Median hospitalization time = 1 d.
Overall complication rate = 9.8% (Medical 2.4%; Surgical 8.0%)
Minor (Clavien 1–2) 7.2%; Major (Clavien 3–5) 3.8%.
299 (81.3%) complications occurred within 30 d.
15-year outcomes after robot-assisted radical prostatectomy

Cancer control
VUI: Trends in tumor profiles of PCa undergoing RARP
Oncologic Outcomes at 10 Years Following Robotic Radical Prostatectomy

Mireya Diaz a,b,*, James O. Peabody a, Victor Kapoor a, Jesse Sammon a, Craig G. Rogers a, Hans Stricker a, Zhaoli Lane c, Nilesh Gupta c, Mahendra Bhandari a, Mani Menon a,d

a Vattikuti Urology Institute, Henry Ford Hospital, Detroit, MI, USA; b Public Health Sciences, Henry Ford Hospital, Detroit, MI, USA; c Department of Pathology, Henry Ford Hospital, Detroit, MI, USA; d Case Western Reserve University, Cleveland, OH, USA; New York University, New York, NY, USA; University of Toledo School of Medicine, Toledo, OH, USA

Results and limitations: There were 108 patients with BCR at a median follow-up of 121 mo (interquartile range: 97–132). Actuarial BCRFS, MFS, and CSS rates at 10 yr were 73.1%, 97.5%, and 98.8%, respectively. On multivariable analysis, D'Amico risk groups or pathologic Gleason grade, stage, and margins were the strongest predictors of BCR depending on whether preoperative or postoperative variables were considered. The value of the detectable PSAs together with disease severity were independent predictors of receipt of salvage therapy, together with a persistent PSA for metastases.

Conclusions: In contemporary patients with localized prostate cancer, RARP confers effective 10-yr cancer control. Disease severity and PSA measurements can be used to guide more personalized and cost-effective postoperative surveillance regimens.
Overall Biochemical recurrence-free survival (BCRFS) for Clinically Localized Diseased after RARP (VUI)

* Unpublished data, VUI
Biochemical recurrence-free survival (BCRFS) for Clinically Localized Disease after RARP, stratified by D'Amico risk group (VUI)

* Unpublished data, VUI
Overall Metastases-free survival (MFS) for Clinically Localized Diseased after RARP (VUI)

* Unpublished data, VUI
Metastases-free survival (MFS) for Clinically Localized Diseased after RARP, stratified by D Amico risk group (VUI)

* Unpublished data, VUI
Overall cancer specific survival (CSS) for Clinically Localized Diseased after RARP (VUI)

* Unpublished data, VUI
Cancer specific survival (CSS) for Clinically Localized Disease after RARP, stratified by D'Amico risk group (VUI)

* Unpublished data, VUI
The future of prostate cancer surgery

Cancer-specific survival

Abdollah et al. BJUI 2015 [In press]
1100 patients with D'Amico HIGH RISK PCa undergoing RARP, at three academic centers, between 2002 and 2013

Biochemical recurrence and clinical recurrence free survival

Abdollah et al. EU 2015 [In review]
PSM rate dropped significantly with NeuroSAFE (overall 16% vs 24%)


Absolute risk reduction by 26.6% in PSM rate in patients with pT3a disease.

Jeong et al. BJU Int. 2014 Dec;114(6):955-7
VUI: 15-year outcomes after robot-assisted radical prostatectomy

Continence
Continence (0-1 pads) after Robot-assisted radical prostatectomy (VUI)
Improve Continence

Suprapubic tube

~98% patients achieved social continence by 1 yr follow-up.

Retzius sparing prostatectomy

~90% patients achieved social continence (0-1 pad); 1 week post catheter removal


Recovery of urinary continence with and without PST

**FIG. 2.** Continence outcomes at 1 year after PST bladder drainage after UVA. The median time to 0-1 pad/day was 2 weeks; median time to total urinary control was 6 weeks.

<table>
<thead>
<tr>
<th>Time (weeks)</th>
<th>0-1 pad/day (%)</th>
<th>Total Urinary Control (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>25.4</td>
</tr>
<tr>
<td>1</td>
<td>44.2</td>
<td>43.1</td>
</tr>
<tr>
<td>4</td>
<td>68.7</td>
<td>57.2</td>
</tr>
<tr>
<td>8</td>
<td>82.6</td>
<td>67.0</td>
</tr>
<tr>
<td>12</td>
<td>90.0</td>
<td>77.9</td>
</tr>
<tr>
<td>24</td>
<td>93.8</td>
<td>82.0</td>
</tr>
<tr>
<td>32</td>
<td>95.6</td>
<td>86.4</td>
</tr>
<tr>
<td>52</td>
<td>97.3</td>
<td></td>
</tr>
</tbody>
</table>
Recovery of social continence (0-1 pad per day); VIP vs. RSP

<table>
<thead>
<tr>
<th>Time since surgery</th>
<th>Number at risk</th>
<th>Urinary continence recovery rate; (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>VIP</td>
<td>RSP</td>
</tr>
<tr>
<td>1 week</td>
<td>40</td>
<td>41</td>
</tr>
<tr>
<td>2 week</td>
<td>32</td>
<td>24</td>
</tr>
<tr>
<td>4 weeks</td>
<td>18</td>
<td>4</td>
</tr>
</tbody>
</table>

p<0.001
RCT: RETZIUS SPARING VS. CONVENTIONAL RARP (IDEAL PHASE 3)

ClinicalTrials.gov
A service of the U.S. National Institutes of Health

Comment Period Extended to 3/23/2015 for Notice of Proposed Rulemaking (NPRM) for FDAAA 801 and NIH Draft Reporting Policy for NIH-Funded Trials

Impact of Robot-assisted Radical Prostatectomy Technique on Short-term Continence Recovery

This study is currently recruiting participants. (see Contacts and Locations)

Verified January 2015 by Henry Ford Health System

Sponsor:
Henry Ford Health System

Information provided by (Responsible Party):
Mani Menon, Henry Ford Health System

ClinicalTrials.gov Identifier:
NCT02352103

First received: January 22, 2015
Last updated: January 27, 2015
Last verified: January 2015
History of Changes

Purpose

To assess and compare the short-term post-operative continence recovery rate in two cohorts of men undergoing Robot Assisted Radical Prostatectomy (RARP), each randomized to undergo RARP with Vattikutti Institute technique or Retzius sparing technique.
VUI: 15-year outcomes after robot-assisted radical prostatectomy

Potency
Continence (0-1 pads) after Robot-assisted radical prostatectomy, stratified by Nerve Sparing*

* Unpublished data, VUI
Improve erectile function

Intra-operative ICI

Chorionic membrane

Faster return to potency (SHIM>19) with chorio-allantoic graft (1.34 mo), compared to without (3.39 mo; p=0.007)

“At the prostate apex and the urethral levels, the NVBs have two divisions: cavernous nerves (CNs) and corpus spongiosum nerves (CSNs). The CNs were a continuation of the anterior and anterolateral fibres around the apex of the prostate, travelling towards the corpora cavernosa. The CSNs were a continuation of the posterolateral NVBs, and they eventually reached the corpus spongiosum.”
Minimally invasive surgery: Superior perioperative outcomes?

Predictions (2005)

1. “Robotics will become more popular.”

1. “As the robot is replaced by its sons and daughters, cost will decrease.”

1. “Younger generations will be more comfortable with the robot.”
A Decade of Follow-up: Robotic Prostatectomy
What have we learnt?

1. Over 95% of patients these days choose robotic prostatectomy. Yet, debate about its benefit still continues.

2. No da Vinci offsprings as yet. Cost is still high.

3. Outcomes appear better than with open surgery.

4. Cancer control and continence are excellent. However, ED remains an issue.
First case of robot assisted radical prostatectomy: Nov 29, 2000

Total number of robot-assisted radical prostatectomies: >8,000

Surgeons: 6

Trainees: 32
Our people and our home

The VCORE office

Quoc-Dien Trinh, Brigham and Women’s hospital

Dr Mireya Insua Diaz, head of biostatistics
The journey from fall of 2000 to the spring of 2014 has been a process of learning, of informed conjecture, and above all, the will to do the same thing a 1000 times and yet not be afraid to change it...
Age <40: No screening

Age 40-54: No routine screening for men at average risk; individualize decisions for men at higher risk

Age 55-69: Screen only after shared decision making

Ages 70+ or those with LE <10-15 years: No routine screening

In those who choose to undergo screening after shared decision making, screen bi-annually to reduce harms of overdiagnosis and overtreatment

ROBOTICS IN KIDNEY SURGERY
Laparoscopy

Da Vinci-Assisted Robotic Partial Nephrectomy: Technique and Results at a Mean of 15 Months of Follow-Up

Sanjeev Kaul*, Rajesh Laungani, Richard Sarle, Hans Stricker, James Peabody, Ray Littleton, Mani Menon

Vattikuti Urology Institute, Henry Ford Hospital, Detroit, MI, USA

Table 2 – Comparison of contemporary series of robotic partial nephrectomy

<table>
<thead>
<tr>
<th>Series</th>
<th>No. of patients</th>
<th>Mean tumor size, cm</th>
<th>Operative time, min</th>
<th>Warm ischemia time, min</th>
<th>Median hospital stay, d</th>
<th>Mean blood loss, ml</th>
<th>Mean Follow-up, mo</th>
<th>Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gettman et al.</td>
<td>13</td>
<td>3.5</td>
<td>215</td>
<td>22</td>
<td>4.3</td>
<td>170</td>
<td>NR</td>
<td>NR</td>
</tr>
<tr>
<td>Phillips et al.</td>
<td>12</td>
<td>1.4</td>
<td>265</td>
<td>26</td>
<td>2.7</td>
<td>240</td>
<td>NR</td>
<td>NR</td>
</tr>
<tr>
<td>Present study</td>
<td>10</td>
<td>2.3</td>
<td>155</td>
<td>21</td>
<td>1.5</td>
<td>92</td>
<td>15</td>
<td>0</td>
</tr>
</tbody>
</table>

NR = not reported.
Robotic extended pyelolithotomy for treatment of renal calculi: a feasibility study
Robotic Partial Nephrectomy with Cold Ischemia and On-clamp Tumor Extraction: Recapitulating the Open Approach

Craig G. Rogers *, Khurshid R. Ghani, Ramesh K. Kumar, Wooju Jeong, Mani Menon

Vattikutti Urology Institute, Henry Ford Hospital, Detroit, MI, USA

Abstract

We describe a reproducible technique for achieving cold ischemia with intraoperative tumor assessment during robotic partial nephrectomy (RPN) that recapitulates the open approach: intracorporeal cooling and extraction (ICE).

A total of seven patients underwent the ICE modification of RPN by transperitoneal (n = 5) and retroperitoneal (n = 2) approaches. A Gelpoint access port was used for the camera and assistant ports. Following hilar clamping, ice slush was introduced through the Gelpoint via syringes and applied over the kidney surface. The excised tumor was immediately extracted through the Gelpoint, allowing gross margin assessment by pathology during the renorrhaphy.

RPN was achieved in all cases with successful introduction of ice slush and tumor extraction while on clamp. Median RENAL nephrometry score was 8 (range: 6–10), and there was one solitary kidney. Mean cold ischemia time was 19.6 min (range: 8–37) and mean estimated blood loss was 296.4 ml (range: 50–1000). Renal parenchymal temperatures <16 °C were achieved within 7 min of cold ischemia and there was no drop in core body temperature >0.5 °C during any procedures. Intraoperative assessment of the excised tumor showed adequate gross margins in all cases and final pathology confirmed negative surgical margins.
Renal Disease

Robotic Kidney Transplantation with Regional Hypothermia: Evolution of a Novel Procedure Utilizing the IDEAL Guidelines (IDEAL Phase 0 and 1)

Mani Menon \(^a\), Ronny Abaza \(^b\), Akshay Sood \(^{a,*}\), Rajesh Ahlawat \(^c\), Khurshid R. Ghani \(^a\), Wooju Jeong \(^a\), Vijay Kher \(^c\), Ramesh K. Kumar \(^a\), Mahendra Bhandari \(^a\)

\(^a\)Vattikuti Urology Institute, Henry Ford Hospital, Detroit, MI, USA; \(^b\)Department of Urology, Ohio State University, Columbus, OH, USA; \(^c\)Kidney and Urology Institute, Medanta-The Medicity, Gurgaon, India

Surgery in Motion

Robotic Kidney Transplantation with Regional Hypothermia: A Step-by-step Description of the Vattikuti Urology Institute–Medanta Technique (IDEAL Phase 2a)

Mani Menon \(^a\), Akshay Sood \(^{a,*}\), Mahendra Bhandari \(^a\), Vijay Kher \(^b\), Prasun Ghosh \(^b\), Ronny Abaza \(^c\), Wooju Jeong \(^a\), Khurshid R. Ghani \(^a\), Ramesh K. Kumar \(^a\), Pranjal Modi \(^d\), Rajesh Ahlawat \(^b\)

\(^a\)Vattikuti Urology Institute, Henry Ford Hospital, Detroit, MI, USA; \(^b\)Kidney and Urology Institute, Medanta–The Medicity, Gurgaon, India; \(^c\)Department of Urology, Ohio State University, Columbus, OH, USA; \(^d\)Department of Urology, H.L. Trivedi Institute of Transplantation Sciences, Ahmedabad, India
Nerve-sparing robot-assisted radical cystoprostatectomy and urinary diversion

Vattikuti Urology Institute, Henry Ford Hospital, Detroit, MI, USA and *Urology and Nephrology Center, Mansoura, Egypt
Accepted for publication 22 April 2003

OBJECTIVE

To develop a technique of nerve-sparing robot-assisted radical cystoprostatectomy (RRCP) for patients with bladder cancer.

PATIENTS AND METHODS

Robotic assistance should enhance the ability to preserve the neurovascular bundles during laparoscopic radical cystectomy. Thus we undertook RRCP and urinary diversion using a three-step technique. First, using a six-port approach and the da Vinci Surgical System (Intuitive Surgical, Sunnyvale, CA, USA), one surgeon carried out a complete pelvic lymphadenectomy and cystoprostatectomy using a technique developed specifically for robotic surgery. The neurovascular bundles were easily identified and dissected away, the specimen entrapped in a bag and removed through a 5–6 cm suprapubic incision. Second, a different surgical team exteriorized the bowel through this incision and created a neobladder extracorporeally. Third, the neobladder was internalized, the incision closed and the primary surgeon completed the urethro-neovesical anastomosis with robotic assistance.

RESULTS

RRCP was carried out in 14 men and three women by the primary surgeon (M.M.). The form of urinary reconstruction was ileal conduit in three, a W-pouch with a serosal-lined tunnel in 10, a double-chimney or a T-pouch with a serosal-lined tunnel in two each. The mean operative duration for robotic radical cystectomy, ileal conduit and orthotopic neobladder were 140, 120 and 168 min, respectively. The mean blood loss was <150 mL. The number of lymph nodes removed was 4–27, with one patient having N1 disease. The margins of resection were free of tumour in all patients.

CONCLUSIONS

We developed a technique for nerve-sparing RRCP using the da Vinci system which allows precise and rapid removal of the bladder with minimal blood loss. The bowel segment can be exteriorized and the most complex form of orthotopic bladder can be created through the incision used to deliver the cystectomy specimen. Performing this part of the operation extracorporeally reduced the operative duration.

KEYWORDS

robot, laparoscopy, bladder carcinoma, radical cystectomy, urinary diversion
Robotic radical cystectomy and urinary diversion in the management of bladder cancer.

Hemal AK¹, Abol-Enein H, Tewari A, Shrivastava A, Shoma AM, Ghoneim MA, Menon M.

Author information

Abstract
The authors have explored the versatility of the da Vinci robot for pelvic surgery to develop the technique of robotic radical cystectomy in conjunction with the Urology and Nephrology Center in Mansoura, Egypt, a world leader in conventional (open) cystectomy. This approach, which is designed to minimize the time required for surgery, is a sandwich technique in which the cystectomy and the neobladder-urethral anastomosis are performed with robotic assistance and the urinary diversion is performed extracorporeally. This article reviews the published literature and details the authors' current technique of robotic radical cystectomy and urinary diversion.

PMID: 15474598 [PubMed - indexed for MEDLINE]

Robot-assisted radical cystectomy and urinary diversion in female patients: technique with preservation of the uterus and vagina.

Menon M¹, Hemal AK, Tewari A, Shrivastava A, Shoma AM, Abol-Ein H, Ghoneim MA.

Author information

Abstract
BACKGROUND: After performing more than 500 robotic radical prostatectomy and robotic radical cystoprostatectomy in men, we attempted to develop the technique of robot-assisted radical cystectomy in women. This article describes two techniques of robot-assisted radical cystectomy for women, conventional and with preservation of the uterus and vagina. To the best of our knowledge, this is the first case series of robot-assisted radical cystectomy and urinary diversion in women.
Bladder Cancer

Long-term Oncologic Outcomes Following Robot-assisted Radical Cystectomy: Results from the International Robotic Cystectomy Consortium

Syed Johar Raza, Timothy Wilson, James O. Peabody, Peter Wiklund, Douglas S. Scherr, Ali Al-Daghmin, Shiva Dibaj, Muhammad Shamim Khan, Prokar Dasgupta, Alex Mottrie, Mani Menon, Bertram Yuh, Lee Richstone, Matthias Saar, Michael Stoeckle, Abolfazl Hosseini, Jihad Kaouk, James L. Mohler, Koon-Ho Rha, Gregory Wilding, Khurshid A. Guru

Results and limitations: Pathologic organ-confined (OC) disease was found in 62% of patients. Soft tissue surgical margins (SMs) were positive in 8%. Median lymph node (LN) yield was 16, and 21% of patients had positive LNs. Median follow-up was 67 mo (interquartile range: 18–84 mo). Five-year RFS, CSS, and OS were 67%, 75%, and 50%, respectively. Non-OC disease and SMs were associated with poorer RFS, CSS, and OS on multivariable analysis. Age predicted poorer CSS and OS. Adjuvant chemotherapy and positive SMs were predictors of RFS (hazard ratio: 3.20 and 2.16; p < 0.001 and p < 0.005, respectively). Stratified survival curves demonstrated poorer outcomes for positive SM, LN, and non-OC disease. Retrospective interrogation and lack of contemporaneous comparison groups that underwent open radical cystectomy were major limitations.

Conclusions: The largest multi-institutional series to date reported long-term survival outcomes after RARC.
VIDEO CLIP OF INTRA-CORPOREAL DIVERSION