



# 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?

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## 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

\*Parekh DJ, Messer J, Fitzgerald J, Ercole B, Svatek R. Perioperative outcomes and oncologic efficacy from a pilot prospective randomized clinical trial of open versus robotic assisted radical cystectomy. J Urol. 2013 Feb;189(2):474-9.

Nix J, Smith A, Kurpad R et al: Prospective randomized trial of robotic versus open radical cystectomy for bladder cancer: perioperative and pathologic results  
Eur Urol 2010;57:196





How about intracorporeal diversion?

# ROBOTIC INTRACORPOREAL ORTHOTOPIC NEOBLADDER DURING RADICAL CYSTECTOMY IN 132 PATIENTS

- 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

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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**

Complication category, no. (%)	All	ECUD	ICUD	<i>p</i> value
Gastrointestinal*	161 (20)	142 (23)	19 (10)	<0.001
Infection	136 (17)	114 (18)	22 (12)	0.035
Genitourinary	17 (2)	22 (3)	13 (7)	0.172
General	30 (4)	27 (4)	3 (2)	0.119
Wound/skin	42 (5)	35 (6)	7 (4)	0.353
Hematologic/vascular	75 (9)	56 (9)	19 (10)	0.667
Pulmonary	24 (3)	21 (3)	3 (2)	0.324
Metabolic	8 (1)	8 (1)	0	0.209
Endocrine	3 (0.4)	2 (0.3)	1 (0.5)	0.546
Head/neck	4 (0.5)	3 (0.5)	1 (0.5)	1.000

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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## Bladder Cancer

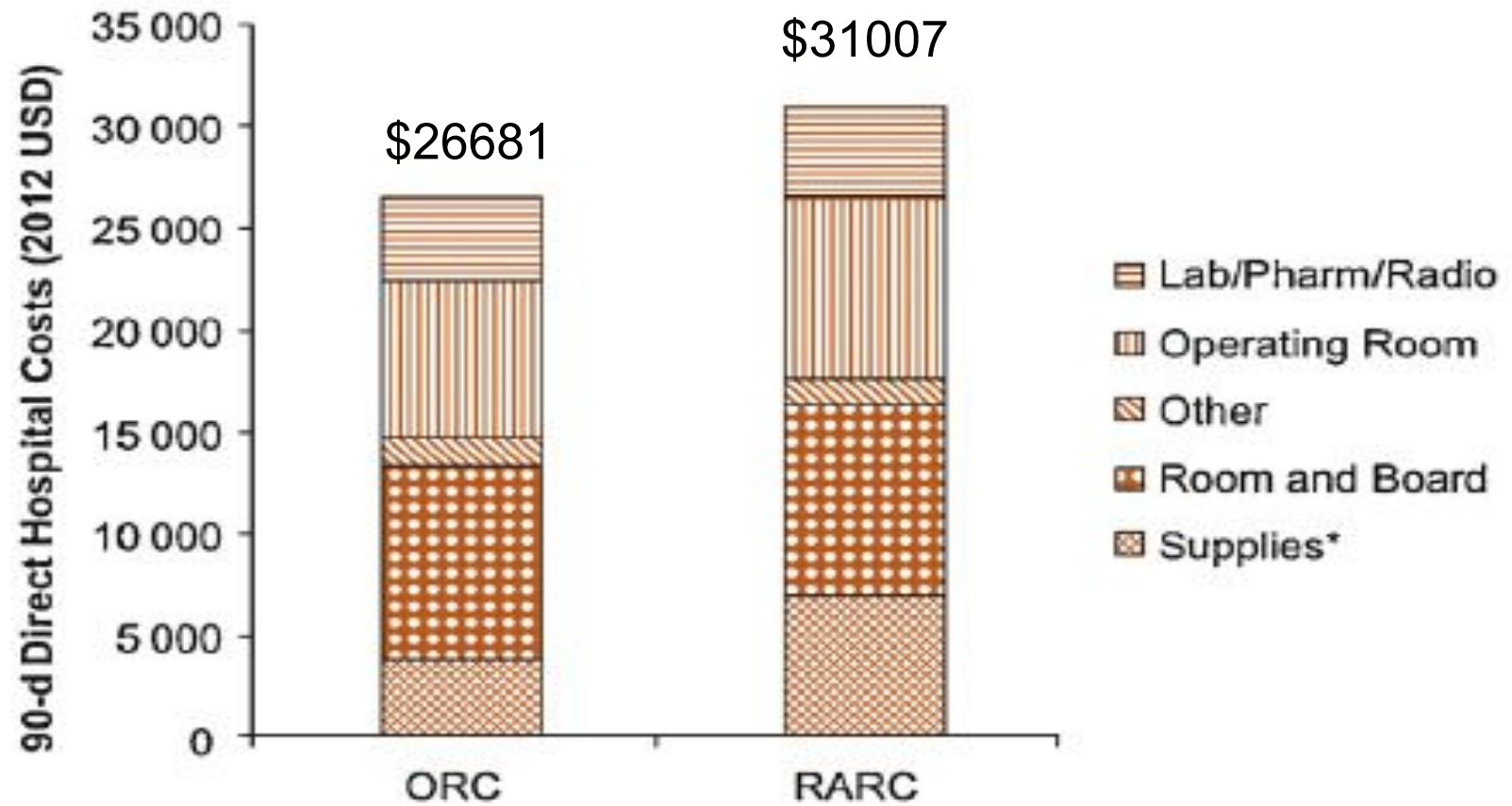
### Propensity-Matched Comparison of Morbidity and Costs of Open and Robot-Assisted Radical Cystectomies: A Contemporary Population-Based Analysis in the United States

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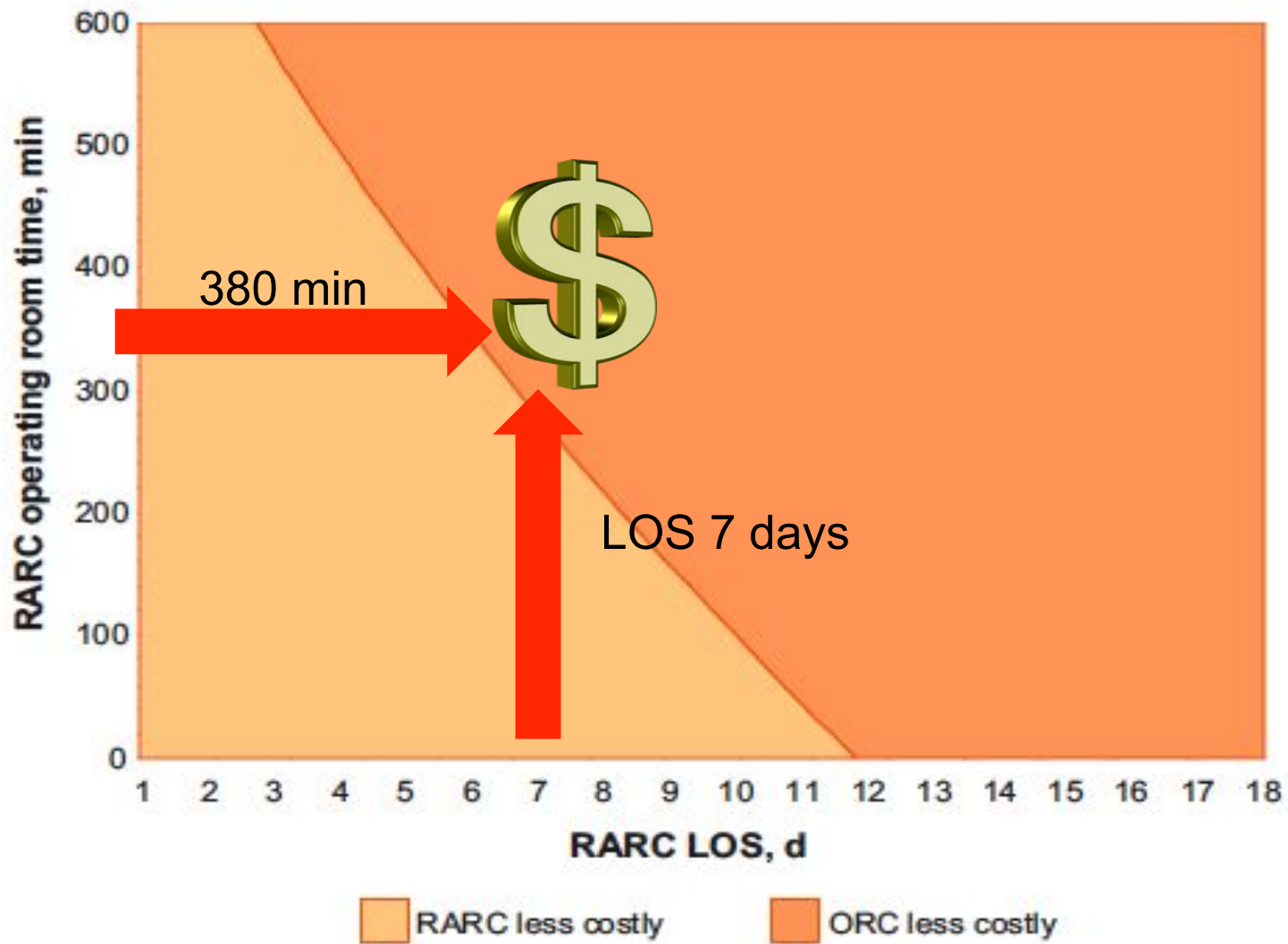


- 36773 patients who underwent either ORC or RARC in 279 hospitals from 2004 to 2010
- No significant differences in terms of major complications, mortality and readmissions with lower minor complications (clavien grade I & II) and shorter LOS (1.51 days shorter) in RARC group



\*Significantly different ( $p < 0.0001$ )

- **NO** cost difference between RARC and ORC in subgroup analysis of highest-volume surgeons ( $\geq 7$  cases per year) and highest-volume hospitals ( $\geq 19$  cases per year)
- Reducing either operating time or LOS substantially decrease cost of RARC



# 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

\*Aboumohamed AA, Raza SJ, Al-Daghmin A, Tallman C, Creighton T, Crossley H, Dailey S, Khan A, Din R, Mehedint D, Wang K, Shi Y, Sharif M, Wilding G, Weizer A, Guru KA. Health-related quality of life outcomes after robot-assisted and open radical cystectomy using a validated bladder-specific instrument: a multi-institutional study. Urology 2014 Jun;83:1300-8.



# 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



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*Thank You*