

RECURRENCES AFTER ROBOT-ASSISTED RADICAL CYSTECTOMY: RESULTS FROM THE INTERNATIONAL ROBOTIC CYSTECTOMY CONSORTIUM

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Introduction

- There have been concerns about higher incidence of local recurrence after robot-assisted radical cystectomy (RARC) compared to open RC.
- We sought to report and detail relapses following RARC utilizing a multinational database.

Methods

- Retrospective review of the International Robotic Cystectomy Consortium database.
- Data were reviewed for demographics, perioperative, pathologic and oncologic outcomes.
- Relapse rates and patterns were described.
- Multivariate models were fitted to evaluate variables associated with relapse-free (RFS), local recurrence free (LRFS), and distant metastasis free survival rates (DMFS).

Perioperative outcomes

	No Recurrence	Recurrence	p-value
N of patients (%)	1586 (75)	521 (25)	-
Age at cystectomy, mean (SD) (yr)	67 ± 10	68 ± 11	0.10
Sex, Males n (%)	1203 (76)	394 (76)	0.95
Body Mass Index, mean (SD) (kg/m ²)	28 ± 6	27 ± 5	0.05
ASA score ≥ 3, mean (%)	675 (50)	192 (42)	<0.01
Prior abdominal/pelvic surgery, n (%)	526 (47)	196 (49)	0.45
Prior irradiation, n (%)	66 (6)	28 (8)	0.33
Clinical T stage, ≥cT3, n (%)	140 (10)	56 (13)	0.19
Neo-adjuvant chemotherapy, n (%)	349 (23)	100 (20)	0.17
Type of diversion, ileal conduit, n (%)	1228 (78)	438 (85)	0.02
Operative time, median (IQR) (min)	368 (305,446)	374 (310,452)	0.66
Estimated blood loss, median (IQR) (ml)	300 (150,500)	300 (175,500)	0.01
Blood Transfusion, n (%)	108 (7)	65 (12)	<0.01
Any complication	855 (62)	306 (68)	0.02
30-d complications	592 (43)	195 (43)	0.91
0-90 d complications	683 (49)	227 (50)	0.79
Adjuvant treatment, n (%)	101 (8)	217 (45)	<0.01
Inpatient stay, median (IQR) (days)	8 (6,12)	9 (7,14)	<0.01
Intensive Care Unit stay, median (IQR) (days)	0 (0,1)	1 (0, 1)	0.26

Pathologic outcomes

	No Recurrence	Recurrence	p-value
Urothelial carcinoma, n (%)	925 (76)	374 (81)	0.06
Pathologic T stage, ≥pT3, n (%)	442 (28)	329 (63)	<0.01
Lymph node yield, mean (SD)	17 (12,25)	18 (13,26)	0.46
pN positive, n (%)	218 (14)	208 (40)	<0.01
Positive soft tissue surgical margins, n (%)	75 (5)	60 (12)	<0.01

Summary of Recurrences Rates and Patterns After Radical Cystectomy

	Present	Venkatramani et al	Bochner et al	Collins et al	Albisinni et al	Ngyuen et al	Hautmann et al	Madersbacher et al	Stein et al
Year	2020	2019	2018	2017	2015	2015	2012	2003	2001
Type of the study	Retro	RCT	RCT	Retro	Retro	Retro	Retro	Retro	Retro
# of patients	2107	152 vs 150	58 vs 60	717	503	383	1100	507	1054
RC Type	RARC	ORC vs RARC	ORC vs RARC	RARC	Laparoscopic	ORC vs RARC	ORC	ORC	ORC
Any Follow up, (months)	26	36	59	31	50	30 vs 23	38	31	122
Urothelial Carcinoma. %	62	76 Vs 82	95 vs 95	95	98	89 vs 95	100	100	100
≥pT3, %	37	32 vs 31	35 vs 28	33	42	43 vs 34	19	33	29
% +ve margins	6	5 vs 6	5 vs 3	4.8	6	13 vs 6	NR	NR	NR
% PN+ve	20	16 vs 23	16 vs 17	18	23	26 vs 20	17	24	23
RFS	66 at 5 yrs	65 vs 58 at 3 yrs	NR	75 at 2 yrs	62 at 10 yrs	60 vs 70	66 at 5 yrs	50 at 10 yrs	66 at 10 yrs
LRFS	84 at 5 yrs	NR	NR	NR	NR	NR	NR	NR	NR
DMFS	74 at 5 yrs	NR	NR	NR	NR	NR	NR	NR	NR
Any recurrence, (%)	25	26 vs 26	43 vs 33	25	27	42 vs 36	NR	43	30
Local recurrence, (%)	11	3 vs 4		11	4	23 vs 18	NR	8	7
Commonest site of local recurrence	Pelvis	Cystectomy bed	Pelvic soft tissue	Pelvic lymph nodes	NR	Cystectomy bed	NR	NR	NR
Distant Metastases, (%)	18	23 vs 22		18	23	36 vs 29	NR	25	22
Commonest site of distant metastases	Lungs	Extra-pelvic lymph nodes and bone vs bone	Extra-pelvic lymph nodes	Bone	NR	Bone	NR	NR	NR
% of peritoneal carcinomatosis	1.2	0.01 vs 0.01	3 vs 3	0.7	NR	8 vs 21	NR	NR	NR
Abdominal wall / Port-site metastases, (%)	1	0.01 vs 0	0 vs 8	0.3 for port-site only	NR	NR	NR	NR	NR
% of extra-pelvic lymph nodes	5	0.06 vs 0.06	17 vs 8	7	NR	15 vs 23	NR	NR	NR

Local Recurrence and Distant Metastases sites

	n, (%)		N, (%)
Lung	116 (6)	Pelvis	101 (5)
Nodal (extra-pelvic)	109 (5)	Vagina	3 (0.1)
Liver	70 (3)	Rectum	15 (0.7)
Bowel	7 (0.3)	Perineum	12 (0.6)
Bone	97 (4.6)	Urethra	11 (0.5)
Brain	12 (0.6)	Penile	3 (0.1)
Abdominal wall / Port-site	25 (1.2)	Neobladder/Conduit	7 (0.3)
Multiple distant	35 (1.7)	Kidney/Renal Pelvis /Ureter	18 (0.9)
Unidentified site	119 (5.6)	Multiple Local	33 (1.6)
Peritoneal carcinomatosis	26 (1.2)	Unidentified site	48 (2.3)

Multivariate Model

	Hazard Ratio	95% Confidence Interval	p-value
RFS			
African American Race	1.61	1.03 – 2.51	0.04
Preoperative Hydronephrosis	1.31	1.03 – 1.68	0.03
Blood Transfusion	1.69	1.21 – 2.38	<0.01
≥pT3	3.03	2.39 – 3.84	<0.01
pN+ve	2.44	1.92 – 3.10	<0.01
LRFS			
Preoperative Hydronephrosis	1.44	1.02 – 2.04	0.04
≥pT3	3.67	2.54 – 5.30	<0.01
pN+ve	2.29	1.63 – 3.22	<0.01
Positive surgical margin	1.79	1.14 – 2.80	0.01
DMFS			
Preoperative Hydronephrosis	1.47	1.11 – 1.94	<0.01
Blood Transfusion	1.55	1.05 – 2.29	0.03
≥pT3	3.14	2.37 – 4.17	<0.01
pN+ve	2.47	1.87 – 3.26	<0.01

Conclusion

- Disease stage remains the main variable associated with disease relapse following RC.
- Compared to large open radical cystectomy series, RARC was not associated with different patterns or higher relapse rates.