

Cardiopulmonary exercise testing does not predict complications following robotic radical cystectomy with intracorporeal diversion

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Background

- Minimal access surgery = reduced post operative adverse events and earlier return to normal activity.
- Lack of prospective randomised control data for cystectomy
- RARC associated with reduced major adverse event rate, blood loss and requirement for transfusion.
- Majority of studies report cases converted to open for urinary diversion, masking benefits of truly minimally invasive surgery

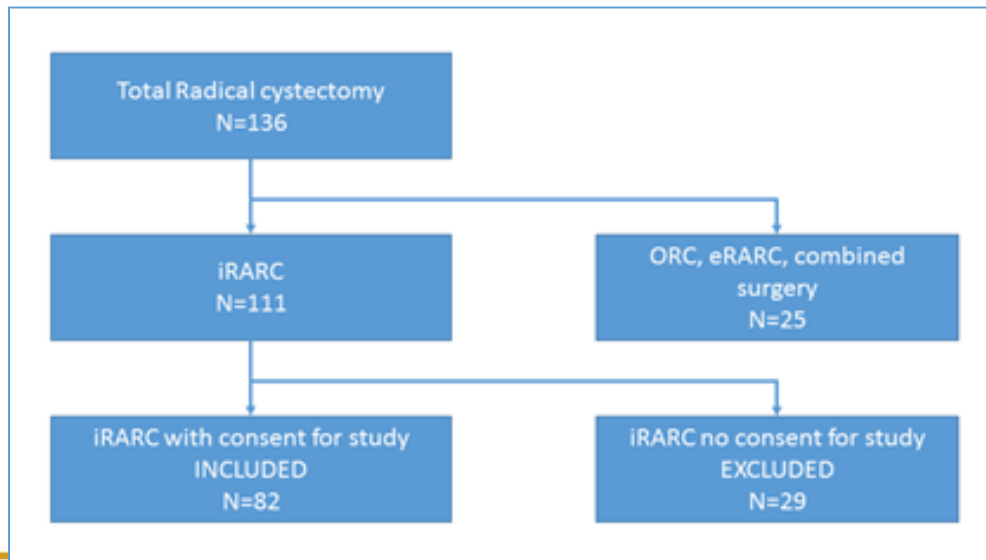
Objectives

- We test whether CPET parameters predict postoperative adverse events for iRARC.
- Hypothesis: iRARC is better tolerated by patients with poor performance status



Materials and Methods

- Unselected cohort undergoing iRARC with pre-operative CPET
- Outcomes: major adverse event rate, mortality and Hospital LOS



CPET

- Cycle ergometer, gas exchange analysis, Spirometry, ECG, pulse oximeter
- Two minutes rest: VO_2 , VCO_2 , RER and respiratory rate are monitored
- Three minutes of unloaded cycling at 60 RPM
- Ramp increases until test termination criteria are attained
- All tests stopped due to symptoms or volitional fatigue or ECG changes



Results 1: Patient demographics

		N	Range/%
Patients	Total Radical cystectomy	133	
	Intracorporeal Robotic Cystectomy	111	
	iRARC with CPEX for analysis	82	
Demographic	Age at treatment (mean, range)	64.9	45.3–86.2
	BMI (mean, range)	27.06	16.6–40.8
	Neoadjuvant chemotherapy (n,%)	30	36.6%
Diversion type	Ileal conduit (n,%)	62	75.6%
	Continent diversion (n,%)	20	24.4%
CPEX	AT (mean, range)	10.35	7.0–19.0
	Peak VO2 (mean, range)	16.11	7.0–43.0
	VE/VC02 (@AT) (mean, range)	33.92	23.0–48.0

Results 2: Outcome measures

Length of stay (days), median (IQR)	10.0 (7–13)
Major complications at 30 days, n (%)	14 (12.6%)
Death	2
Multi organ failure	2
Abscess	2
Gastrointestinal	2
Renal failure	6
90 day mortality, n (%)	3 (2.70%)
Bleed/Sepsis/DIC	1
Myocardial infarction	1
Carcinomatosis	1

Results 3: Major adverse events

Major adverse events within 30 days	CD
Anastomotic stricture, nephrostomy and stent insertion	3a
Migrated stents, nephrostomy insertion	3a
Small bowel injury and wound infection	3b
Migrated stents, burst catheter balloon	3b
Incision and drainage of port site abscess under GA	3b
PE, Parastomal hernia requiring open reduction	3b
Urinary Sepsis, multiorgan failure	4b
Urinary Sepsis, multiorgan failure, nephrostomies	4b
Colostomy for rectal injury	4b
Ureteric obstruction, candidaemia, PICC line associated VTE	4b
Prolonged Ileus, AKI	4a
Blocked stent, ileus, wound dehiscence, laparotomy	4a
Sepsis, bleed, DIC, Hyperkalaemia, Death	5
MI, death	5

Results 4: Outcomes and CPET

CPET measure	30 day major complication				Length of stay			
	Yes (Med)	No (Med)	P	MLogR	Rho	95% CI	P	MLinR
Anaerobic Threshold	10	10	0.762	NS	-0.172	-0.37–0.04	0.122	NS
Peak VO2	16	15	0.642	NS	-0.231	-0.43--0.03	0.035	NS
VE/VC02 (@AT)	34	33.35	0.927	NS	0.092	-0.1–0.28	0.412	NS

Summary

- Post operative major complications 12.6% is similar to previous series
- CPET parameters not a predictor of outcome in terms of LOS, or major adverse events
- Possibly this study underpowered to detect difference
- Possibly more ‘technical’ adverse events than those related to ‘physiology’

Conclusions

- Safety profile of iRARC in keeping with other series
- Benefits of iRARC may be greatest in unfit patients
- May still be on a learning curve for robotic cystectomy

References

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Thank you

- Any questions?