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Research Letter

Urinary retention after laparoscopic low rectal cancer resection: post-hoc analysis of predictive factors in the GRECCAR 10 trial

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According to a recent literature review, the optimal duration of urinary drainage after rectal cancer surgery is unclear[1], particularly for male patients. Early catheter removal probably reduces the risk of urinary tract infection[2], but Lee *et al.*[3] showed that urinary catheter removal on day 1 or 2 is an independent risk factor for acute urinary retention when compared with removal on day 5.

In a multicentre, prospective, open-label, two-parallel-group, randomized trial, the rate of urinary tract infection in two groups of male patients having undergone laparoscopic total mesorectal excision for cancer with low anastomosis and bladder drainage by transurethral or suprapubic catheterization in an enhanced recovery after surgery (ERAS) programme was compared[4]; the GRECCAR 10 study found that 19 of the 208 patients (9.1%) with pretherapeutic normal voiding had urinary tract infection at postoperative day 4, with a median catheterization duration of 4 (interquartile range 3–5) days. Precise daily data on urinary symptoms, urinary complications, and urinary function after the operation were prospectively collected.

This post-hoc analysis compares patient, tumour, treatment, and outcome characteristics among patients who had urinary retention and those who did not (*Table S1*). Out of 236 patients, 23 patients (9.7%) experienced acute urinary retention (defined as the inability to void adequately after catheter removal); 20 patients were treated with transurethral recatheterization and 3 patients were treated with suprapubic recatheterization. Only 1 of these 23 patients had urinary tract infection. Univariable and multivariable logistic regression analyses showed that diabetes was the only risk factor for postoperative acute urinary retention among all the factors usually considered in studies with a lower level of evidence (*Table 1*)[1–3].

The present study gives a good estimate of the acute urinary retention rate after laparoscopic total mesorectal excision for low rectal cancer in male patients with no preoperative voiding dysfunction in an ERAS programme. All participating expert centres (belonging to the GRECCAR Group) had experience in mini-invasive rectal cancer surgery and total mesorectal excision with autonomic nerve preservation. As patients had normal voiding function, none of them received alpha-blockers after surgery. A recent Cochrane systematic review highlighted the uncertainty of the effect of prophylactic alpha-blockers before catheter removal on the risk of requiring recatheterization[5]. No patient in the present study underwent epidural anaesthesia, which is a recognized risk factor for urinary retention[1].

A limitation of the GRECCAR 10 study is the design of the trial, the primary outcome being urinary infection and not acute urinary retention. This could introduce bias, as the true acute retention rate after removal before the fourth postoperative day is not known, but would presumably be higher[3]. A second limitation is measurement bias owing to the subjective definition of acute urinary retention. However, all patients presenting with difficult or impossible micturition had a bladder scan to assess bladder content, prompting the physician to propose recatheterization. The strengths of the GRECCAR 10 trial are the homogeneous population of patients with tumours (that is male patients, total mesorectal excision for low rectal cancer after chemoradiotherapy, laparoscopic surgery, normal preoperative voiding, in an ERAS programme, no epidural anaesthesia, no antibiotherapy, no alpha-blocker use, and a daily report of urinary symptoms) and the expertise of the GRECCAR centres.

In conclusion, in a full ERAS programme in expert centres, the risk of urinary retention in male patients without a pretherapeutic voiding problem is nearly 10% after chemoradiotherapy and total mesorectal excision for low rectal cancer, with the highest risk being in diabetic patients.

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Table 1 Risk factors for urinary retention: univariable and multivariable analysis

Factor		Univariable analysis		Multivariable analysis	
		OR (95% c.i.)	P	OR (95% c.i.)	P
Age (years)	<65	Reference			
	≥65	2.44 (0.97,6.2)	0.059		
BMI (kg/m^2)	<30	Reference			
	≥30	0.95 (0.40,2.27)	0.910		
Medical history	Diabetes				
	No	Reference		Reference	<0.001*
	Yes	6.04 (2.30,15.87)	<0.001*	6.04 (2.30,15.87)	
	Hypertension				
	No	Reference			
	Yes	0.86 (0.34,2.20)	0.752		
	Smoking				
	No	Reference			
	Yes	1.72 (0.67,4.45)	0.261		
ASA grade	I–II	Reference			
	≥III	2.17 (0.84,5.56)	0.108		
Neoadjuvant chemotherapy	No	Reference			
	Yes	1.02 (0.40,2.60)	0.969		
Neoadjuvant radiotherapy	No	Reference			
	Yes	1.04 (0.33,3.22)	0.953		
IPSS before surgery	0–7	Reference			
	8–19	0.44 (0.12,1.57)	0.204		
Duration of operation (h)		0.89 (0.69,1.16)	0.406		
Type of catheterization	TUC	Reference			
	SPC	0.51 (0.21,1.25)	0.141		
Urinary treatment before day 4	No	Reference			
	Yes	2.31 (0.61,8.79)	0.220		
Day of catheter removal	Day 0 or 1	0.98 (0.18,5.45)	0.983		
	Day 2	1.80 (0.44,7.30)	0.411		
	Day 3	1.35 (0.34,5.40)	0.671		
	Day 4	0.89 (0.24,3.22)	0.853		
	After day 4	Reference			

IPSS, International Prostate Symptom Score; TUC, transurethral catheterization; SPC, suprapubic catheterization. *Statistically significant.

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Author contributions

Jean-Luc Faucheron (Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Supervision, Validation, Visualization, Writing—original draft, Writing—review & editing), Fatah Tidadini (Data curation, Formal analysis, Funding acquisition, Project administration, Software, Resources, Validation, Writing—review & editing), Antoine Vilotitch (Formal analysis, Methodology, Software, Funding acquisition, Validation, Writing—review & editing), Alison Foote (Methodology, Supervision, Validation, Writing—review & editing), and Bertrand Trilling (Data curation, Formal analysis, Investigation, Validation, Visualization, Writing—review & editing)

Disclosure

The authors declare no conflict of interest.

Supplementary material

Supplementary material is available at *BJS* online.

Data availability

The data collected and analysed in this study are available for academic use upon reasonable request to the corresponding author and will be the object of a data release contract signed by the applicant and Grenoble Alpes University Hospital.

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