

The Outcome of Trial Off Catheter after Acute Retention of Urine

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Abstract

The aim of this study was to analyse the outcome of trial off catheter for patients who were admitted to the Department of Urology, Singapore General Hospital (SGH) for acute retention of urine (ARU) due to benign prostatic hypertrophy (BPH). From 1 June to 15 October 1997, 150 patients were admitted for ARU. Seventy-one patients were excluded from our study due to our exclusion criteria such as chronic retention, patients with bladder stones and cancer of the prostate.

Our results showed that 58% (n = 46) had a successful trial off catheter. The risk factors for failure were: high residual urine (more than 800 ml) and high prostatic specific antigen (PSA) value (10.9 versus 21.5). All patients with normal PSA value (<4 ng/l) had successful trial off catheters. There was no difference between trial off catheter 24 hours versus 48 hours after admission,

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Introduction

Acute retention of urine (ARU) is the commonest urological condition requiring emergency admission to hospital and is usually managed by urethral catheterisation. Previously, patients with long-standing bothersome symptoms and who present with first episode of ARU were offered transurethral resection of prostate (TURP).

However, for some patients with ARU, micturition can be re-established following removal of the catheter, thus avoiding or at least deferring operation.^{1,2} This is especially true in areas where there is a long waiting list for surgery. On the other hand, there are others who are unable to micturate after trial off catheter and require recatheterisation. This results in discomfort, urethral trauma and increased risk of infection. This study was performed to determine how often a trial off catheter is successful, to identify risk factors for failure of trial off catheter and to establish an optimum time for removal of catheters.

Materials and Methods

From 1 June 1997 to 15 October 1997, 150 patients were admitted with ARU to the Department of Urology, Singapore General Hospital. ARU was diagnosed on the basis of sudden painful inability to void with a tender palpable bladder on clinical examination. After diagno-

sis, a Foley's catheter was inserted per urethra and the volume of residual urine was recorded.

The International Prostate Symptom Score (IPSS) questionnaire was used to evaluate the patients' symptoms by a single observer in this series. The serum creatinine, urea, electrolytes and prostatic specific antigen (PSA) were measured on admission.

The patients were randomised into 2 groups according to time of removal of catheters. The first group (n = 35 or 44.9%) had their catheters removed within 24 hours of admission and the second group (n = 43 or 55.1%) had their catheters taken out after 24 hours. The trial off catheter was judged to have been successful if the patient was able to re-establish satisfactory micturition without a palpable bladder upon discharge.

The exclusion criteria for this study included those patients who were less than 50 years of age, residual volume less than 200 ml, high creatinine level (>200 mmol/l) or clot retention, clinical diagnosis of prostatic carcinoma, patients with bladder stone and bilateral hydronephrosis. In our study of this 150 patients, 6.7% (n = 10) already had bilateral hydronephrosis on first presentation of ARU.

Results

The trial off catheter was successful in 58.2% of patients (n = 46); 41.8% patients (n = 33) were considered as

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TABLE I: PATIENTS' PROFILE

	Successful (%)	Failed (%)	Total (%)
Number	46 (58.2%)	33(41.8%)	79(100%)
Mean age (years)	69.8	70.5	
Range (years)	51 to 95	57 to 92	
Race			
Chinese	38 (82.6%)	25(75.8%)	63 (79.7%)
Malay	3 (6.5%)	4(12.1%)	7 (8.9%)
Indian	4 (8.7%)	4(12.1%)	8 (10.1%)
Others	1 (2.2%)	0	1 (1.3%)
Duration			
< 1 month	12 (26.7%)	11(33.3%)	23 (29.5%)
1 to 6 months	3 (6.7%)	7(21.2%)	10 (12.8%)
> 6 months	30 (66.6%)	15(45.5%)	45 (57.7%)

failure and required recatheterisation (Table I). In our analysis, the risk factors were high residual volume and raised PSA value. Interesting to note is the fact that all the patients with normal PSA value assay (<4 ug/l) had a successful trial off catheter. The mean duration of symptoms and lifestyle score were not significantly different between the two groups.

Of the 35 patients whose catheters were removed within 24 hours of admission, 18 (51.4%) successfully restarted micturition. Of the 44 patients whose catheters were removed after 24 hours, 28 (63.6%) were successful. However, there was no significance between the two ($P=0.36$) (Table II).

With a mean follow up of 9 months, 5 patients were readmitted for ARU and underwent TURP out of the 46 who were deemed to be successfully trial off catheter. Of the remaining 41, 27 underwent watchful follow up and 14 were started on oral medication (12 on alpha-1 blockers and 2 were given Proscar). Of the 33 patients who failed trial off catheter, 29 underwent TURP and the rest had transurethral bladder neck incision (TURBNI). All were successfully off their catheters eventually (Table III).

Discussion

To date, the mechanism of acute retention of urine in males is still ill defined. Prostatic infarction, alpha adren-ergic overactivity and detrusor decompensation were thought to be contributory factors. Although the first episode of ARU is usually an indication for prostatectomy, up to 23% of them may not need surgery.²

The lower urinary tract symptoms are a complex relationships between the bladder and the enlarged prostate. Many studies were done in an attempt to define any relationship between severity of symptoms, prostate size, peak urinary flow rate and risk of acute retention with conflicting results.³⁻⁶

This study refutes the common understanding that a successful trial off catheter is less likely when there is a

TABLE II: RESULTS

Prostatic Specific Antigen*	Successful	Failed	Total
< 4 ug/l	10	0	10
4 - 10 ug/l	11	9	20
10 - 20 ug/l	12	6	18
20 - 50 ug/l	10	14	24
> 50 ug/l	3	4	7
Mean	18.9 ug/l	26.2 ug/l	
Median	10.9 ug/l	21.5 ug/l	
Residual volume**			
< 500 ml	6	1	7
500 to 1000 ml	35	24	59
> 1000 ml	2	7	9
Mean	674.4 ml	867.2 ml	
Median	600 ml	800 ml	
Range	400 to 1600 ml	400 to 1700 ml	
Symptoms score			
Mild (0 to 7)	17 (39.5%)	10 (32.2%)	27 (36.5%)
Moderate (8 to 19)	16 (37.2%)	19 (61.3%)	35 (47.3%)
Severe (20 to 35)	10 (23.3%)	2 (6.5%)	12 (16.2%)
Lifestyle score			
0	0	0	0
1	10	7	17
2	14	12	26
3	6	8	14
4	6	2	8
5	7	2	9
6	0	0	0
< 24 hours***	18 (51.4%)	17 (48.6%)	35 (44.9%)
> 24 hours	27 (62.8%)	16 (37.2%)	43 (55.1%)
	45 (57.7%)	33 (42.3%)	

* Mann-Whitney U test, $P = 0.0074$

** Mann-Whitney U test, $P = 0.0051$

*** Fisher's exact test, $P = 0.361$

All figures are absolute numbers unless otherwise stated.

TABLE III: RESULT OF SUBSEQUENT FOLLOW UP AT 9 MONTHS

	% (n)
Readmitted with urinary retention	10.9 (5)
Alpha- 1 blocker	26.1 (12)
Proscar	4.3 (2)
Watchful waiting	58.7 (27)
Total	100 (46)

long history of lower urinary tract symptoms (>6 months). Instead, it has shown that patients most likely to benefit from trial off catheter are those with low residual urine volume and PSA value.

Large volumes of retained urine cause overdistension of the bladder and loss of detrusor tone.⁷ Prolonged bladder distension may result in ischaemia and axonal degeneration.⁸ This eventually leads to bladder failure and it ceases to contract adequately.

The PSA had also been widely investigated with re-

gard to correlation between its level and age of patient, prostate size, degree of inflammation and severity of symptoms. There were direct relationships between serum PSA levels and estimated prostate volume as well as degree of inflammation.⁹⁻¹¹ In this study, the higher PSA value in the failure group might be due to either severe acute infarction or infection or simply a larger prostate.

The symptoms and lifestyle score had been widely evaluated to determine the outcome of benign prostatic hyperplasia.^{10,11} There were much within patient variability as well as poor correlation between symptoms and severity of bothersomeness.¹² In our study, the symptoms and lifestyle score do not correlate with outcome of trial off catheter and hence appears not helpful in determining those patients likely to benefit from trial off catheter.

The timing of catheter removal was also shown to be insignificant. Similar rates of success occurred in both groups. This result is consistent with the findings of a previous study.¹ Presently, our department generally remove urethral catheters within 24 hours of admission before deciding the course of action.

Conclusion

In conclusion, 50% of the patients with ARU do not require surgery at least in the short term. This is especially true if the residual volume is less than 800 ml and the PSA value is normal.

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