

ORIGINAL ARTICLE

TRIAL WITHOUT CATHETER: WHAT PREDICTS THE OUTCOME IN ACUTE URINARY RETENTION?

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Objective: To assess the outcome of conservative management by trial without catheter (TWOC) of patients subsequent to acute urinary retention due to bladder outlet obstruction caused by benign prostatic enlargement and to identify factors favouring positive result thereof. **Methods:** Cross sectional prospective case review study was conducted in Urology Department of PNS Shifa, Karachi, from August 2016 to March 2018. All patients presenting in emergency department with primary acute urinary retention caused by benign prostatic enlargement underwent trial without catheter, after initial catheterization to relieve retention. The variables recorded were: the duration and type of any previous lower urinary tract symptoms, prior retention episodes, associated anticholinergic medication, any precipitating cause of AUR, urine drained on catheterization and prostate size. Those who voided successfully after removal of catheter were followed up and their urinary flow rate measurement and ultrasonographic measurement of the post-void residual urine were recorded. **Results:** Of the 99 patients with AUR, 68 (68.6%) voided spontaneously after removing the catheter and continued to do so with mean peak flow rates of 10.3 mL/s and mean PVRs of 114 mL over a follow-up period of 5 to 13 months. These men had a mean prostate size of 39.2gm and a mean catheterized residual volume of 731 mL, while in those who had unsuccessful TWOC the mean prostate size was 63.7 gm ($p=0.006$) and a mean post catheterized residual volume of 1153 mL ($p=0.08$). Prostate size as assessed by the DRE was the most significant factor in predicting the outcome of trial without catheter. **Conclusion:** Trial without catheter is an acceptable protocol in the management of patients after an episode of acute urinary retention due to benign prostatic enlargement. The most significant factor for predicting the outcome of such a trial is size of prostate.

Keywords: acute urinary retention, conservative management, trial without catheter, TWOC

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INTRODUCTION

Acute urinary retention (AUR) remains the most frequent emergencies presenting to a urology department. Though the immediate management requires a Foley's catheter passage for drainage of the bladder and relief of pain, the subsequent management is usually not consistent in different centres. Hastie *et al*¹ documented that trial without catheter is not justified in acute retention of urine and definitive treatment should be instituted at an early stage as delay in surgery unnecessarily adds to the morbidity of these patients. Many other studies determined the outcome of men with AUR undergoing prostatectomy and compared them with those who later underwent elective prostatectomy for symptoms alone. They found that patients presenting with AUR had an excess risk of death at 30 days due to more complications.^{2,3} However, Emberton *et al*⁴ in their Reten-World survey of the management of AUR documented that there is far greater morbidity and mortality associated with emergency surgery (within a few days after AUR) as against potential morbidity associated with prolonged catheterization (bacteriuria, fever, urosepsis). This led to an increasing use of trial without catheter (TWOC) and that too preferably within 3 to 4 days. Due to the diversity of approach in this regard, some units proceed directly to bladder outlet surgery

during the same admission, based on the postulation that in the natural history of obstruction caused by enlarged prostate AUR is the endpoint and delay can be more catastrophic. Others, including our unit, offer patients TWOC. Most patients void successfully with TWOC but studies supporting their long-term well-being are few.

The objective of this prospective study was to evaluate the long term outcome of a strategy of conservative management by TWOC after acute urinary obstruction and to identify the variables that may be linked with the successful voiding resumption.

PATIENTS AND METHODS

All male patients presenting in Emergency Department from Aug 2016 to Mar 2018 with primary AUR caused by benign prostatic enlargement underwent TWOC after 5 days of catheterization, while they were put on Tamsulosin (an α -blocker). To achieve a standardized population with AUR only as a result of benign prostatic enlargement (BPE), those patients were omitted who had concomitant lower urinary tract pathology that might have swayed the natural course of BPE (Table-1). The AUR was defined as an occurrence of painful inability to void which was treated by passage of urethral catheter that ensued the urine drainage from the bladder. The following variables were documented: the duration and type of any previous lower urinary tract symptoms, prior

retention episodes, associated anticholinergic medication, coexisting constipation, urine holding episodes as a precipitating cause of AUR, earlier prostatectomy, established urinary tract infections, urine drained on catheterization and prostate size (assessed by DRE carried out by the same consultant urologist). The chi-squared test was used to analyze the results. Those who voided successfully were followed up 3 monthly and their quality-of-life score, International Prostate Symptom Score (IPSS), urinary flow rate measurement and ultrasonographic measurement of the post-void residual urine were recorded. A successful endpoint was defined as maximum flow-rate of >9 mL/sec; voided volume >300 mL; post-void residue <150 mL; and voiding within 6 hours of catheter removal. The PSA level was also recorded in all those voiding successfully on subsequent visits, to ensure the exclusion of potential prostatic carcinoma in the study.

Table-1: Reasons for eliminating 20 patients from the study

Diagnosis	Number
Prostate carcinoma	3
Carcinoma of the Bladder	4
Meatal stenosis	3
Stricture urethra	5
Clot retention	2
Neuropathic bladder	3

RESULTS

In this study, 119 male patients with primary AUR were registered for the analysis, 18 were excluded from the study after first review and a further 2 during the follow-up due to various lower urinary tract pathology (Table-1), leaving 99 men who were diagnosed as having AUR caused by BPE alone. All the patients were started on a selective alpha-blocker (Tamsulosin 0.4 mg OD). Those who were already on other alpha blocker were shifted

also on Tamsulosin. After initial catheterization for 3–5 days 68 patients voided successfully with an acceptable flow rate and low PVR while 31 failed to void or voided with a high PVR (>300 mL). Of these, 26 subsequently underwent a transurethral resection of prostate (TURP) and 5 were trained effectively for CISC. The 68 patients voiding successfully were followed at 3-monthly intervals for a mean period of 9.3 months (range 5 to 13 months).

Prostate size was the only variable that differed significantly between those voiding successfully on TWOC protocol and those who failed to void on TWOC. The mean prostate size was 39.2 gm for the former group and 63.7 gm for the latter group ($p=0.006$), (Table-2). Other factors namely UTI, concomitant constipation, anticholinergic medication and recent urine holding episode were distributed equally between the two groups (Table-2). There was no significant difference in either the PVR or the nature and duration of preceding urinary symptoms between the two groups (Table-2). Patients with history of voiding having lower urinary tract symptoms (LUTS) or those with large prostate on the DRE were more likely to require prostatectomy. Patients more than 75 years old with a history of voiding having LUTS of >6 months duration before the onset of AUR, and a high PVR (>1 L) were more common among those who failed voiding; although these differences were not statistically significant (Table-2). Likewise, the presence of constipation, concomitant UTI, previous bladder neck surgery and a previous episode of retention were equally distributed between the two groups. In those voiding effectively the mean peak flow rates remained relatively steady at 10.3 mL/s at 3 months to 11.2 mL/s at 9 months and beyond. This was reflected by a low and steady IPSS (11.2) and quality-of-life scores (1.6) over the same period.

Table-2: The clinical findings at presentation, demographics and associated risk factors in those voiding or not voiding on TWOC

Variables	Voiding		<i>p</i>
	Successful	Unsuccessful	
Clinical			
Mean (range):			
Catheterized residual (mL)	731 (350–1,550)	1,153 (550–2,650)	0.08
Prostate size (g)	39.2 (23–48)	63.7 (44–87)	0.006*
Demographics			
Mean (range) Age (years)	73.6 (53–89)	76.4 (54–91)	0.07
Number with:			
Duration of symptoms (>6 months)	20	17	0.08
Previous TURP	3	3	0.79
Previous AUR	12	14	0.61
Contributory Factors			
UTI	4	3	0.53
Constipation	10	6	0.34
Urine holding episode	12	11	0.37
Anticholinergic medicine	6	7	0.41

*Significant

DISCUSSION

There is no general agreement as to how AUR triggered by BPE should be managed because it is usually considered to represent the late stages of bladder outlet

obstruction and the common teaching has been that early prostatectomy (with no TWOC) is indicated in those patients with previous voiding LUTS.⁵ This strategy may sometimes end up in many unscheduled admissions, thus

putting an extra burden on the already drained resources and long operation list of an overloaded urology department like ours. Thus it has been the policy in our unit for patients to have a TWOC while on an alpha blocker as it increases the chances of successful TWOC⁶⁻⁹ and to offer TURP electively to those patients having persistent troublesome LUTS.

In the present study prostate size was assessed (subjectively) by DRE by the same urologist to reduce observational errors. Causes of AUR other than BPE were also excluded, as they might affect the course of the follow-up, e.g., in patients with concomitant meatal stenosis would require repeated dilatations that could alter the natural course of BPE.

The authors were mindful of the probability of rising of successful voiding resumption after a TWOC with the delay in catheter removal from 44% on day 0 to 62% on day 7.^{10,11} Nonetheless, to maintain uniformity all patients underwent the TWOC after 5 days. Former studies have shown that 23–28% of patients with AUR will successfully void on TWOC and have no requirement for a TURP in the short to medium term.^{1,12} Others have proposed that one can predict to some extent the probability to void after a TWOC by the presence of risk factors, including urinary tract infections, anticholinergic medication, constipation and the post-void residual urine.¹⁰ Pandit *et al* retrospectively analyzed the management of patients presenting with AUR due to BPE and found that age (Mean>70 yrs), symptom score (Mean>18) and prostate volume (Mean>65.8) were higher for patients with unsuccessful TWOC.¹³ Soo Lee *et al* also documented the predictors of successful TWOC for postoperative urinary retention following non-uurological surgery and found similar parameters for spontaneous AUR episodes.¹⁴ Mahadik *et al* identified factors affecting TWOC for first spontaneous AUR and concluded that there is a significant association between TWOC outcome, age (63.13±8.58 years), and Prostate size (≤ 45 mL).¹⁵ Bansal *et al* evaluated the predictors of successful TWOC following AUR in BPE in 2,188 men and concluded that patients with IPP >9 mm, age >65 years, baseline AUA score>20, Prostate Volume>56 cc, or Residual Volume>750 mL have less probability of successful TWOC.¹⁶ All these parameters were not validated by our study. The only factor that we found that can affect the risk of developing AUR was prostate size. Our cut-off line for Prostate size for those who would fail TWOC was 63.7 gm. Kumar *et al* in a prospective study of conservatively managed AUR also concluded that TWOC is justified in the long-term for these patients and the mean prostatic size of 15.9 g was the most important factor for predicting the success of such a trial.¹⁷ McNeill *et al* also found prostate size (Mean<50 gm) to influence the successful outcome of TWOC after presenting with AUR.¹⁸

In our study it was somewhat also established that the presence and duration of previous LUTS were more common in those who failed the TWOC, however, they were not statistically significant in predicting long-term successful voiding. In addition, while younger men (<65 years) had a tendency towards more positive outcome this was not statistically significant ($p=0.06$). Taube *et al* studied 60 patients with AUR for TWOC and found it useful, but stated that it should not be tried in patients with a residual volume of more than 900 ml.¹² However, we could not validate the predictive value in our present study. Moreover, there was no significant difference in the distribution of other risk variables between the groups. The significant conclusion of this study is that 68.8% of men with AUR caused only by BPE with a prostate in the range of 39.2 gm will continue to void successfully on TWOC. The vast majority of these patients do so with no significant LUTS and have no impairment in their quality of life up to and beyond 13 months. These results are significant, especially because TURP performed specifically for urinary retention (with an indwelling catheter) carries an increased risk of morbidity and mortality.²

CONCLUSION

TWOC is acceptable in the long-term for men presenting with AUR arising from BPE. Prostate size is the most significant factor that predicts the successful outcome of such a trial. The decision to offer TURP must to be based only on the presence of disturbing LUTS or impairment of quality of life, rather than on the diagnosis of AUR alone.

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