

# A Study of Etiology, Clinical Profile and Outcome of Patients Presenting with Acute Urinary Retention to a Tertiary Care Hospital

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## Abstract

**Introduction:** Acute urinary retention (AUR) is defined as the sudden inability to pass urine even with a distended bladder. A population-based study reported the incidence AUR of 2.2 to 6.8 per 1000 men per year. One in 10 men over the age of 70 may experience AUR within 5 years. In contrast, AUR is rare in women. Definitive management of AUR depends on the precipitating cause which can be medical or surgical. Immediate treatment of AUR is to drain the urinary bladder either by urethral catheterization or by a suprapubic cystostomy. Prospective studies on AUR are few in India, and very less is known regarding its prevalence. In view of this, there is a need to formulate a baseline data in the area of acute urinary retention. **Aims and Objectives:** 1. To study etiology of Acute Urinary Retention in patients presenting at Tertiary Care Hospital. 2. To study the clinical profile of patients presenting with Acute Urinary Retention to a Tertiary Care Hospital. **Material and Methods:** It is a Prospective Observational Study conducted on patients visiting the Emergency department, OPD and/or cases admitted in the IPD for Acute Urinary Retention in the department of General Surgery at Tertiary Care Hospital. Relevant history was taken and detailed clinical examination along with appropriate investigation including ultrasonography, etc. were carried out in all cases. Appropriate medical (including medication, urethral catheterization or suprapubic catheterization) or surgical treatment (like surgeries for urethral stricture, phimosis, urethral calculus etc.) was given to the patient as per standard hospital protocols. **Results:** Mean Age of the study group was 61.54 years with majority of the patients 68% were more than 60 years of age. Male preponderance was observed in the study group with prevalence ratio of 48 (96%) males to only 2 (4%) females. Most common etiology of acute urinary retention was benign prostatic hyperplasia (44%) followed by urethral stricture (26%), carcinoma prostate (6%), phimosis (6%) and bladder neck calculi (4%). Foley's catheterization was done in 41 cases (82%) while supra-pubic catheterization was done in 9 cases (18%) cases. Out of the 36 cases in which trial without catheterization was attempted, 32 were successful. Out of the 45 cases with surgical management, TURP was done in 22 cases while Urethrotomy and Cystolithotripsy was done in 12 and 4 cases. TURP + bilateral orchidectomy and circumcision was done in 3 and 2 cases respectively. **Conclusion:** The most common age for presentation with Acute Urinary Retention is 51-70 years and with male predominance. In our study we can conclude that the most common etiology for AUR is Benign Prostatic Hyperplasia followed by Urethral Stricture, Carcinoma of Prostate and Phimosis. The primary management to relieve the retention in an emergency situation is mainly by urethral catheterization failing which Suprapubic catheterization is done but definitive management for AUR is surgical.

**Keywords:** Acute Urinary Retention, Benign Prostatic Hyperplasia, Suprapubic Catheterization, Transurethral Resection of Prostate, Trial Without Catheter, Urethral Stricture

## 1. Introduction

Acute urinary retention (AUR) is defined as the sudden inability to pass urine even with a distended bladder.

It is generally preceded by a history of reduced force of stream of urine over a period of time<sup>1</sup>. AUR is a very uncomfortable and potentially life-threatening condition.

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There is the need to seek immediate medical intervention in order to relieve the severe discomfort due to AUR.

A population-based study reported an incidence of AUR between 2.2 to 6.8 per 1000 men per year. One in 10 men above the age of 70 can have an incident of acute urinary retention within five years. On the contrary, AUR is rare in females. According to estimates, there are 3 cases of AUR per 100,000 women per year. The female to male incidence ratio of AUR is 1:13<sup>2</sup>.

Immediate treatment of AUR is drainage of the bladder either by urethral catheterization or by a suprapubic cystostomy<sup>3</sup>. Definitive management of AUR depends on the precipitating cause and may be medical or surgical.

In men, AUR is most often as a result of benign prostatic hyperplasia (BPH). The causes of AUR are<sup>4</sup>: (i) Mechanical obstruction (e.g. Benign Prostatic Hyperplasia (BPH), stricture urethra, retention of clot,) or dynamic obstruction (e.g. raised  $\alpha$ -adrenergic activity); (ii) Inflammatory (e.g. prostatitis, Balanitis xerotica obliterans, gonococcal infection etc.) ; (iii) Secondary to the action of drugs (e.g. anticholinergic drugs inhibiting bladder contraction, opiates or opioids as a result of decreased bladder fullness); and (iv) Neuropathic causes (e.g. diabetic cystopathy).

There is a high versatility within as well as among countries in the definitive and emergency management of AUR. This could in actual practice be in areas such as regarding duration of catheterization, hospital admission, and management after a failed trial without catheter, emergency or delayed surgery. This can be due to differences in access to primary care but also by a lack of harmonization and consensus in the management of complications from BPH<sup>5</sup>. According to studies chances of successful TWOC increase with the duration of catheterization. Studies showed that catheterization for more than 3 days was associated with higher TWOC success rates<sup>6</sup>.

Prospective studies on AUR are less in India, and very less is known regarding its prevalence in the area. In view of this, there is a need to formulate a baseline data in the area for acute urinary retention. Present study is aimed at determining the presentations, causes, management and outcome of AUR in adults coming to a tertiary care hospital and to find out the prevalence of AUR in the area and the treatment modality outcome on follow up. This will help us to better understand the predisposing factors of AUR and compare the outcome of different treatment options

## 2. Aims and Objectives

1. To study etiology of Acute Urinary Retention in patients presenting at Tertiary Care Hospital.
2. To study the clinical profile and outcome of patients presenting with Acute Urinary Retention to a Tertiary Care Hospital.

## 3. Materials and Methods

### Type of study:

Prospective Observational Study

### Study period:

From August 2017 to November 2019.

### Study setting:

The study group will be obtained from patients visiting the Emergency department, OPD &/or cases admitted in the IPD for Acute Urinary Retention in the department of General Surgery at Tertiary Care Hospital.

### 3.1 Inclusion Criteria

1. Cases of acute urinary retention coming to Surgery OPD or Emergency department.
2. Patients above the age of 18 years both males and females presenting with Acute Urinary Retention.

### 3.2 Exclusion Criteria:

1. Cases who have history of chronic urinary retention due to prior surgery or instrumentation.
2. History of pelvic irradiation for cancer.
3. Prior pelvic surgery or spinal surgery that was likely to interfere with normal bladder function.

Written informed valid consent was taken from each patient willing to be a part of this study after approval from Ethics Committee. Data was collected in the proforma prepared with relevant information from the patient and relatives. Relevant history was taken and detailed clinical examination along with appropriate investigation including ultrasonography, etc., were carried out in all cases. Appropriate medical (including medication,

urethral catheterization or suprapubic catheterization) or surgical treatment (like surgeries for urethral stricture, phimosis, urethral calculus etc.) was given to the patient as per standard hospital protocols.

Cases were followed up for a period of 1 month post intervention (via OPD visit or telephonically) and the data was compiled and processed to determine the presenting complaints, causes and clinical profile of patients presenting with Acute Urinary Retention.

### 3.3 Statistical Analysis

The quantitative data was represented as their mean  $\pm$  SD. Categorical and nominal data was expressed in percentage. All analysis was carried out by using SPSS software version 21.

## 4. Results

Mean Age of the study group was 61.54 years with majority of the patients 68% were more than 60 years of age [Table 1].

Male preponderance was observed in the study group with 48 (96%) males to only 2 (4%) females.

Mean duration of urine retention was 10.7 hours with retention of over 12 hours being reported in 20% cases.

All the cases of urinary retention were presented with inability to pass urine and suprapubic pain, three cases with inability to retract prepuce while one case each reported scrotal swelling, constipation and respectively [Table 2].

On examination, suprapubic fullness & tenderness was seen in all cases. Enlarged prostate was observed in 54% while ballooning of prepuce and inability to retract prepuce respectively was noted in 6% cases.

Most common etiology of acute urinary retention was benign prostate hyperplasia (44%) followed by urethral stricture (26%), carcinoma prostate (6%), phimosis (6%) and bladder neck calculi (4%) [Table 3].

Foley's catheterization was done in 41 cases (82%) while supra-pubic catheterization was done in 9 cases (18%) cases [Figure 1].

Trial without catheterization was attempted in 72% cases. Out of the 36 cases in which trial without catheterization was attempted, 32 were successful.

Out of the 45 cases with surgical management, TURP was done in 22 cases while Urethrotomy and Cystolithotripsy was done in 12 and 4 cases. TURP +

bilateral orchidectomy and circumcision was done in 3 and 2 cases respectively [Chart 1].

**Table 1.** Distribution of study subjects as per Age group

Age group (years)	N	%
18-30	3	6%
31-40	6	12%
41-50	0	0.0%
51-60	7	14.0%
61-70	20	40.0%
71-80	13	26.0%
>81	1	2%
<b>Total</b>	<b>50</b>	<b>100%</b>
<b>Mean age - 61.54 +/- 15.6 years</b>		

**Table 2.** Distribution of study subjects as per Presenting Complaints

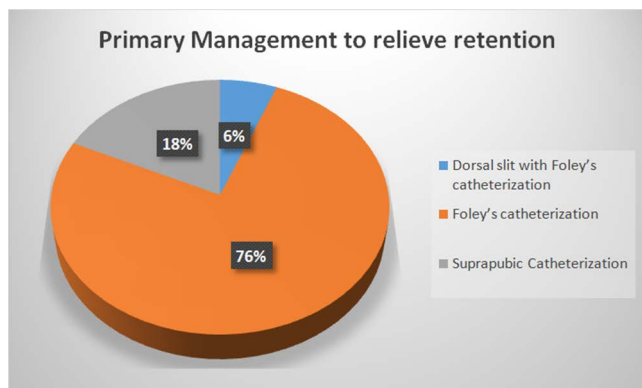
Presenting Complaint	N	%
Unable to pass Urine	50	100.0%
Suprapubic pain	50	100.0%
Unable to retract prepuce	3	6.0%
Scrotal Swelling	1	2.0%
Constipation	1	2.0%

**Table 3.** Distribution of study subjects as per Aetiology

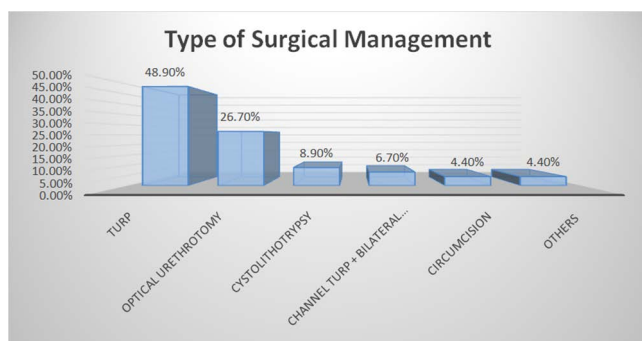
Diagnosis	N	%
BPH	22	44.0%
Urethra stricture	13	26.0%
Ca Prostate	3	6.0%
Phimosis	3	6.0%
Bladder neck calculi	2	4.0%
Clot Retention	1	2.0%
Constipation	1	2.0%
Drug intake (levodopa)	1	2.0%
Grade 4 uterine prolapse	1	2.0%
Post urethra calculi	1	2.0%
Severe cystitis due to bilateral renal calculi	1	2.0%
Vesical calculus at neck of bladder	1	2.0%
<b>Total</b>	<b>50</b>	<b>100.0%</b>

## 5. Discussion

Present study is aimed at determining the presentations, causes and management of AUR in adults coming to



**Figure 1.** Distribution of study subjects as per Primary Management.



**Chart 1.** Distribution of study subjects as per Type of Surgical Management.

our tertiary care hospital and to find out the prevalence of AUR in the area and the treatment modality for the management. This has helped us to better understand the etiology of AUR and compare the outcome of different treatment options.

A total of 50 patients were included in this study who presented with Acute Urinary Retention to Emergency or OPD. Complete General and Local examination was done for all patients after due consent and management modalities were applied accordingly and retention was relieved. Definitive surgical management was done thereafter.

## 6. Demographic Details

Mean Age of the study group in the present study was 61.54 years with majority of the patients (68%) were more than 60 years of age. We observed male preponderance with 48 (96%) males to only 2 (4%) females.

Similar demography has been observed by other authors as well, Abdullahi M *et al.*,<sup>7</sup> observed, Acute

Urinary retention was found to be common among middle aged and the elderly. The age group 55-74 years constitute the largest (25.5% + 23.6% = 49.1%). 49.1%. Patients within the ages of 35 - 44 years and 45 - 54 years accounted for 12.7% each. The much older age group ( $\geq 85$  years) and the younger ( $\leq 24$  years) had the lowest rate of developing UR. The patients within the age group of 20 - 29 years accounted for 12.7%.

The largest age group in this study was also similar to the findings by John ME, *et al.*,<sup>8</sup> in "Management of Acute Urinary Retention: a Worldwide Survey of 6074 Men with Benign Prostatic Hyperplasia". In their study 39.3% of the patients who presented with AUR were between the ages of 65 - 74 years. Others were 33.3% those above the age of 75 years and 27.4% were less than 65 years.

## 7. Signs and Symptoms

In the present study all the cases were of urinary retention who presented with inability to pass urine and pain in suprapubic region. Mean duration of urine retention was 10.7 hours with retention of over 12 hours being reported in 20% cases. On examination, supra-pubic fullness & tenderness was seen in all cases. Enlarged prostate was observed in 54% while ballooning of prepuce and inability to retract prepuce was noted in 6% cases in present study.

Similar symptoms are reported by Thomas K *et al.*,<sup>9</sup> who found that Acute urinary retention (AUR) generally presents as an inability to pass urine, usually associated with lower abdominal and/or suprapubic discomfort.

## 8. Aetiology

Most common etiology of acute urinary retention in present study was benign prostate hyperplasia (44%) followed by urethral stricture (26%), carcinoma prostate (6%), phimosis (6%) and bladder neck calculi (4%).

In a study of 310 men by Choong S *et al.*,<sup>10</sup> over a two-year period, urinary retention was caused by BPH in 53% of patients whereas urethral stricture was seen in 3.5% and carcinoma prostate in 7% of the patients.

These results of the present study were also in agreement with Abdullahi M *et al.*,<sup>7</sup> in which the most common cause of AUR from this study was BPH in 51.8% of the patients. This was followed by urethral stricture in 20%, carcinoma of prostate in 7.3% of the cases.

Similar findings were observed in studies conducted by Yenli, *et al.*, at Komfo Anokye Teaching Hospital,

Kumasi, Ghana on 206 patients<sup>3</sup>. They also found BPH to be the most common cause with (58.1%) followed by urethral stricture (14.7%) and prostatic cancer 13.1%.

## 9. Management and Outcome

In present study for primary management Foley's catheterization was performed in 41 cases (82%) while supra-pubic catheterization was done in 9 (18%) cases.

Our results are in agreement with those of a UK survey by Manikandan R *et al.*,<sup>11</sup> conducted among 410 consultant urologists showing that primary management was done by urethral catheterization in 98% of cases and Suprapubic Catheterization in 2% of the cases.

Similar findings were observed in study by Desgrandchamps *et al.*,<sup>12</sup> that a urethral catheter was inserted in most cases (82.7%) while only 16.7% had a suprapubic catheter.

In this study Trial without catheterization was successful in 32 cases (64%)

Similar results have also been reported by Mohamed SH *et al.*,<sup>13</sup>. After catheter removal, 65% of patients voided successfully while 35% failed TWOC.

In another prospective study of patients admitted with AUR as emergencies to a single institution by Kumar V *et al.* 22 of 40 (55%) were able to void spontaneously after TWOC.<sup>14</sup>

Surgical management is the definitive treatment of AUR.

In the present study, surgical management was performed on 90% cases within 30 days or so. Out of the 45 cases with surgical management, TURP was done in 22 cases while Optical Urethrotomy and Cystolithotripsy was done in 12 and 4 cases respectively. TURP + bilateral orchidectomy and circumcision was done in 3 and 2 cases respectively. As most of the cases were of BPH, TURP was performed. TURP still remains the 'gold standard' surgical treatment for patients with AUR due to BPH.

## 10. Conclusion

The most common age for presentation with Acute Urinary Retention is 51-70 years and with male predominance. The most common presenting complains is inability to void urine and pain in lower abdomen or suprapubic region. In our study we can conclude that the most common etiology for AUR is Benign Prostatic

Hyperplasia followed by Urethral Stricture, Carcinoma of Prostate and Phimosis. The primary management to relieve the retention is mainly by urethral catheterization to relieve retention failing which Suprapubic catheterization is done but definitive management is surgical. Surgical management in the form of Trans Urethral Resection of Prostate (TURP) was performed in majority of patients as the most common cause was Benign Prostatic Hyperplasia.

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**How to cite this article:** Bhamre S and Verma D. A Study of Etiology, Clinical Profile and Outcome of Patients Presenting with Acute Urinary Retention to a Tertiary Care Hospital. *MVP J. Med. Sci.* 2020; 7(2):155-160.