

# The Causes and Complications of Urinary Retention in Adult Males Managed at Pakistan Institute of Medical Sciences Islamabad Pakistan

SHAHID SIRAJ<sup>1</sup>, AMJAD SALEEM<sup>2</sup>, RAZA UL HASSAN<sup>3</sup>, AJMAL KHAN<sup>4</sup>, IFTIKHAR AHMAD<sup>5</sup>, RAJA NAEEM<sup>6</sup>

<sup>1</sup>Registrar Urology, Pakistan Institute of Medical Sciences Islamabad

<sup>2,3,4,5,6</sup>PGR Urology, Pakistan Institute of Medical Sciences Islamabad

Corresponding author: Amjad Saleem, Email: [dramjadsaleemkhattak@gmail.com](mailto:dramjadsaleemkhattak@gmail.com), Cell: +92 335 5841627

## ABSTRACT

**Background:** urinary retention is characterized as body inability to empty the bladder completely by voluntary micturition. The UR is highly observed in the male adult. But the limited and sufficient knowledge is present about its causes and associated complication.

**Objective:** It is most common urological emergency in hospitals. The study aimed to evaluate the causes and associated complications of urinary retention.

**Material and Methods:** This prospective hospital based study was conducted on 176 patients visited the emergency department of Pakistan Institute of Medical Sciences Islamabad over a period of 06 months. The review board and ethical committee of the hospital approved the study. Informed consent was taken from all patients included in study. A brief history and examination was done to establish the diagnosis. Urinary retention was relived either by per urethral or supra-pubic catheterization followed by detailed history, examination and investigations. The urine sample of each patient was taken for urinalysis. Baseline investigations were done on every patients. Depending on the clinical impression the investigations were individualized. The results were retrieved from the collected data. The data was statistically analyzed by using SPSS software.

**Results:** 176 patients were recruited during this research time. The patients mean age was  $58.81 \pm 17.36$ SD. The maximum number of patients encountered in age group of 55-74 years. Most common cause of urinary retention was enlarge prostate 67.04%, followed by urethral stricture 18.75% and impacted urethral/Urinary bladder stone 14.20%. Acute urinary retention was diagnosed in 62.50% while 37.50% were diagnosed as chronic urinary retention. The 65.34% patients were treated with per urethral catheterization and 34.66% were treated with supra-pubic catheterization. In 62.50% patients no complication were observed while in other 19.88% were diagnosed with urinary tract infection and 17.62% with the renal insufficiency.

**Conclusion:** Urinary retention is common in adult patients. Enlarge prostate was the one of the main cause of urinary retention. The most common type of retention was acute urinary retention. Complications were mostly associated with chronic urinary retention.

**Keywords:** Urinary retention, Complications, adult male, Enlarge Prostate and acute urinary retention.

## INTRODUCTION

Urinary retention (UR) is the most common urological emergency, it may be acute urinary retention or chronic urinary retention. The sudden inability to pass urine is known as acute urinary retention. This type is painful and also required the emergency medical with a per urethral supra pubic catheter. The acute urinary retention incidence is approximately 3/1,000 men per annum.<sup>1</sup> It is observed to be affecting males ten time more than in women. It has highest incidence in men having age over 70. Chronic urinary retention is a long lasting urological problem, patient usually urinate, but they are unable to empty their urinary bladder completely.<sup>2</sup> There are different causes of urinary retention, It may be due to enlarge prostate, urethral stricture, bladder/urethral stone, urethral trauma, blood clots, neurogenic component or certain drugs.<sup>3-4</sup> The most common complication of urinary retention is infection which results due to stasis of urine.

The organism responsible for urinary tract infection is Escherichia Coli. As a result of urine stasis and invasion of urea splitting organisms the urine become alkaline, which is a favorite media for calcium salts precipitation and results in bladder stone. Due to chronic urinary retention dilatation of upper urinary tract occur, which results in pyonephrosis. In chronic urinary retention as there is no adequate urine output which results in renal insufficiency.<sup>5-6</sup> Deranged renal function and upper urinary tract dilatation is also cause of chronic urinary retention secondary to enlarge prostate. Post urinary retention hematuria, 2-16% occur due to rapid decompression of urinary tract with catheter, which is usually self-limiting. Urinary retention results an increase in the intra vesicle pressure that is responsible for changes in the urinary bladder wall known as detrusor muscle hypertrophy, in which there is increase in the ratio of connective tissue to smooth muscle.<sup>7-8</sup>

The UR is highly observed in the male adult. It is a prevalent and highly painful disorder affecting a number of people around the globe. But the limited and sufficient knowledge is present about its causes and associated complication. The need of hour is to study the epidemiology of the UR in detail. The study aimed to find the

cause of the urological emergency. The objective of this research was to assess the complications associated with urinary retention.<sup>9-10</sup>

## MATERIALS AND METHODS

In this study the 176 patients who presented to the Urology emergency department of Pakistan Institute of medical sciences Islamabad over a period of 06 months from August 2021 to January 2022 were included. The review board and ethical committee of the hospital approved the study. Informed consent was taken from all patients included in study. A brief history and examination was taken to diagnose the types of Urinary retention. Per urethral catheterization was attempted in all the patients to relieve the retention, when it failed then suprapubic catheterization was done, where indicated under a septic measures.

A detail history was obtained once retention is relived, regarding Luts, Trauma, Previous history of stone passage, History of instrumentation and any medical condition like DM, HTN, CVA and drugs to establish provisional diagnosis. Detail physical, urological and neurological examination was done. The urine sample of each patient was taken for urinalysis. Baseline investigation were done on every patients. Depending on the clinical impression the investigations were individualized. The results were retrieved from the collected data. The data was statistically analyzed by using SPSS software.

## RESULTS

The 176 patients were recruited during the study period. The mean age was  $58.81 \pm 17.36$ SD years. The maximum numbers of patients were seen between 55-74 age group, which is 49.08%. In this age group enlarge prostate was the main cause of urinary retention (85.04%), followed by urethral stone (9.20%) and urethral stricture (5.74%).

The table 1 showed that the overall enlarge prostate was observed in the majority of the patients, followed by urethral stricture and bladder/urethral stone.

Table 1: Causes of urinary retention(n=176)

Cause of urinary retention	No of cases	percentage
Enlarge Prostate	118	67.04%
Urethral Stricture	33	18.75%
Bladder/Urethral stone	25	14.20%
Total	176	

Table 2: Age distribution of 176 patients based on the cause of urinary retention;

Cause of urinary retention	Mean Age(Years)	Standard Deviation(SD)
Enlarge Prostate	65.12	10.54
Urethral Stricture	41.82	19.12
Urethral/Bladder stone	51.48	22.84

The results showed that the most of the patients were diagnosed with acute urinary retention, where other were diagnosed as chronic urinary retention. Regarding the management of these patients 65.34% were managed with per urethral catheterization while 34.66% were managed with supra pubic catheterization.

Table 3: Complication of urinary retention in 176 patients;

Complication	No of patients	Percentage %
No Complication	110	62.5
Urinary tract infection	35	19.88
Renal insufficiency	31	17.62

The table 3 showed that 62.50% of the urinary retention patients were observed with no complication, while urinary tract infection was the main complication in 35 patients. In urinary tract infection group 22.85% of the patients there was no growth seen on culture and sensitivity, while 51.42% showed E.coli, 14.28% showed Klebsilla and 11.42% showed pseudomonas auriginosa. Renal insufficiency was seen in 17.62% of patients.

## DISCUSSION

Urinary retention is a common urological emergency, having different causes and complication.

According to the finding of the study conducted by Muzzamil et al.,<sup>11</sup> the patients mean age was observed to be 56 years. The patients within the age group ranging from 55-74 years have more chances to be effected by the urinary retention. The urethral stricture was observed as cause of urinary retention in 20% patients. The 53% patients were presented with acute urinary infection and other 30% with chronic urinary infection. Similar to the findings of this research our study reported the acute urinary retention in 62.50% while 37.50% were diagnosed as chronic urinary retention. The 65.34% patients were treated with per urethral catheterization and 34.66% were treated with supra-pubic catheterization. The prostatic hyperplasia was observed in 51% patients comparable to our study the prostate enlargement was observed in the 67% patients

Age has a close association with the urinary retention whether it is acute or chronic. Different studies in literature has reported difference in the mean age. But the study conducted in the west reported that the mean age of the patient was between 57-69 years. It is comparable to the mean age of our study that is 58.81± 17.36 SD years<sup>12</sup>. The maximum number of patients were related to age group 55-74 years, which is 49.08%. Another study reported that the almost 10% of the men affected from urinary retention at the age of 70 while other one third effected by the urinary retention at the age of eighty. These results are also comparable to the findings of our research. According to the study conducted at Ghana the most common cause of urinary retention is enlarge prostate, urethral stricture. The findings of our research also reported that the enlarge prostate followed by urethral stricture is the most commonly observed cause of urinary retention<sup>13</sup>.

The urethral stricture is mainly effected by the traumatic urethral injury. The study conducted at Nigeria, also reported that

the prostate carcinoma and urethral stricture are the main causes of the urinary retention. In our study the urethral stricture has effected almost 18% patients. In the current study 62.50% of the patients presented with acute urinary retention, where as it is 71% in the study conducted by John et al., in 2011. The difference in these two figures is because of the larger sample size which is 6074 men and multi centers were included in the study as compare to our study which include only 176 men and a single center study. The mean age for urethral stricture in our study is 41.82± 19.12 SD years and this figure is almost similar to the figure of the study conducted by Ahmed in 1998. Regarding the complications of urinary retention, there were no complications in 62.50% of our patients Urinary tract infection was seen in 19.88% of patients and renal insufficiency was seen in 17.62% of patients.

These findings of the study conducted by Imam et al., are also comparable to our results that the 66% patients were observed with chronic obstruction while other 34% with acute obstruction. The causative organisms responsible for urinary tract infection is Gram negative bacteria.<sup>14-17</sup> According to our study, the bacterial spectrum involve is 51.42% E.coli, 14.28% Klebsilla and 11.42% Pseudomonas auroginisa, while 28.85% showed no growth. These finding were similar to the study of F.M.E Wagenlehner et al.<sup>14</sup> Another study carried out by Christian et al.,<sup>17</sup> in 2012 has concluded the results for urinary tract infection as 51.5% E.coli, 22% Klebsilla and 7.8% Pseudomonas, which is similar to our study. In a study conducted by E.M.T et al., published in 2015 the acute urinary retention was observed in 83.5% and chronic urinary retention was 37.5%, comparable with our study which is 62.5% and 37.5% respectively.<sup>18-19</sup>

In their study 70.9% of the patients were manage with per urethral catheterization and 29.1% were managed with supra pubic catheterization, comparable with our study which is 65.34% and 34.66% respectively. The mean age for enlarge prostate patients was 69.2±10.3 years, which is also comparable to 65.12±10.54 in our study. Enlarge prostate(58.1%) was the leading cause of urinary retention in their study, that is the same finding in our study which is 67.04%. Urethral stricture was representing 14.7% causes of urinary retention, which remain 18.75% in our study. According to their study 16.5% of the patient presented with renal insufficiency which remain 17.62% in our study.

Urinary retention is very commonly observed in adult patients. Enlarge prostate is the major cause associated with the urinary retention. The most common type of retention was acute urinary retention. Complications were mostly associated with chronic urinary retention<sup>20-21</sup>.

## CONCLUSION

The middle adult males are more prone to be effected by urinary retention. The age is the significant risk factor while taking into consideration the urinary retention. The leading cause of urinary retention is BPH while other bladder and urethral stones and urethral stricture are also the associated with the infection. The urethral catheterization relieved a number of urinary retention but when it failed or contraindicated the only possible substitute is supra-pubic catheterization.

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