Asian Journal of Research and Reports in Urology

Volume 6, Issue 1, Page 95-103, 2023; Article no.AJRRU.104266

A Comparative Study of Post Turp Outcomes and Complications between Benign Prostatic Hyperplasia Patients, Presenting with and without Acute Urinary Retention

Lingesh Sairam Chelliah [a*] and Sathish Kumar G. [a*]

[a] Government Medical College Thiruvananthapuram Hospital Medical College Junction, Chalakkuzhi, Thiruvananthapuram, Kerala 695011, India.

Authors' contribution

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

Article Information

Open Peer Review History:
This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: https://www.sdiarticle5.com/review-history/104266

Original Research Article

Received: 12/06/2023
Accepted: 15/08/2023
Published: 01/09/2023

ABSTRACT

Introduction: Benign Prostate Hyperplasia, BPH most common in elderly people are most common causes of lower urinary tract symptoms. Failure to recognize these symptoms leads to progression of disease process that may ultimately lead to Acute urinary retention. An analysis of post TURP complications between patients presenting with and without AUR was done. And found that early intervention helped in preventing better recovery of patients with minimal acceptable complications than in those who had acute urinary retention and this study provides an educational insight to patients about the need of early intervention in patients presenting with LUTS.

Aim and Objective of the Study: To compare the post TURP outcome and complications of Benign Prostatic Hyperplasia patients presenting with and without Acute Urinary Retention.

**Corresponding author: Email: lingeshchelliah@gmail.com;*

Materials and Methods: This is a prospective study. Patients with LUTS secondary to Benign Prostatic Hyperplasia and who presented with and without Acute Urinary Retention were included in the study. Patients were analyzed with detailed History & Physical examination, Digital Rectal Examination, S.PSA, USG KUB, Bladder Wall Thickness Uroflow & Post Void Residual urine. Patients who were more than 75 years, men with neurological disease, prostate cancer, urethral stricture, previous prostate or urethral surgery were excluded.
Post operative variables which were evaluated are Post op UTI, sepsis, Re-catheterisation rate, resurgery, onset of TUR syndrome, persistent hematuria requiring blood transfusion, post op stricture, LUTS, Q max, PVR and length of hospital stay, were compared between the two groups.
Results: The study finding includes significant distribution in age distribution in patients presenting with and without acute urinary retention with patient in acute urinary retention being of advanced age and since they presented late they tend to have higher prostate volume with an associated increase in S.PSA and when these patients when undertaken for surgery tend to have increased post operative incidence of UTI and need for recatheterisation rate thereby causing prolonged hospital stay. Incidence of TUR syndrome Hematuria and need for blood transfusion were comparable between two groups.
Conclusion: Thus this study act as educational insight to patients stressing on the need for early intervention in BPH as incidence of age and associated complications like Post operative UTI and an increased need for Recatheterisation and prolonged hospital stay.

Keywords: Prostatic hyperplasia; lower urinary tract symptoms; post TURP complications.

1. INTRODUCTION

Males in the older age range are frequently affected by the urological disorder known as benign prostatic hyperplasia (BPH) [1]. In men under the age of 40, it affects roughly 10% of them, while in men over 80, it affects 80% of them [2]. Despite the fact that other factors are now being taken into account, benign prostatic hyperplasia still continues to be one of the most frequent reasons in men of lower urinary tract symptoms, with or without bladder outlet obstruction (BOO) [3,4]. In comparison to Western nations, the Asia Pacific region had a higher age-related division of men with symptoms, according to a multicenter study. The reason still needs to be elucidated [5].

The pathological process involved in Benign Prostatic Hyperplasia is a pathological hyperplasia (and not hypertrophy) affecting both stromal and glandular elements of the gland. The condition considerably affects the quality of life(QOL).

BOO was found in 60% in those symptomatic and 52% in those asymptomatic [6,7].

Bothersome symptoms of Lower urinary tract symptoms affect the patient's quality of life. Intervention may be sought for 30% of men above 65 yrs [8].

Theories have been proposed in the etiopathogenesis of BPH. These include

- Age-related changes,
- Metabolic syndrome
- Alteration in hormonal status,
- Inflammation [9].

Although BPH is not caused by the androgens, it is suggested that presence of androgens is needed for growth of prostate and its pathogenesis. There is considerable association between metabolic syndrome and the development of BPH. Recent evidences suggest that BPH might be secondary to inflammatory-based disorder.

TURP still considered the gold standard in management of BPH. TURP with glycine as irrigation fluid still there is a chance of TURP syndrome when resection progresses beyond 90minutes and can further lead to electrolyte imbalance especially in high-risk cardiac patients. The complications rates were decreased with the development of bipolar diathermy with normal saline as irrigant fluid.

1.1 Acute Urinary Retention

One of the worst symptoms of BPH in males is acute urinary retention. A sudden, excruciating inability to void voluntaril. AUR can have a variety of reasons, but BPH is by far the most frequent. In males with BPH, the frequency of AUR is thought to be as high as 53%. AUR is a distressing condition. Previous investigations have noted higher rates of death and morbidity in men who present with AUR.

AUR was the primary complaint in 20–42% of the males who underwent TURP[16] in Western nations. In men with BPH who develop AUR, surgical consequences are getting worse and hospital stays are getting longer. AUR patients have a significant mortality rate in the first three years.

In our study we evaluated and compared the post turp complications between patients who presented with and without AUR.

1.2 Rationale

TURP is the second most frequently performed procedure on males older than 50, behind only cataract surgery. Although numerous innovative therapy strategies for benign prostatic hyperplasia have been created, TURP remains the gold standard for BPH management [10]. The TURP is gradually being replaced by the development of LASERs in endourology for the treatment of BPH. Although many urologists are hesitant to adopt the holmium laser (HoLEP) as the gold standard, it is claimed to be the best available technology [11,12]. The main drawback is how expensive these lasers are.

1.3 Research Question

To evaluate the outcomes and side effects following TURP in BPH patients who presented with and without Acute Urinary Retention.

1.4 Objectives

1.4.1 Primary objective

To Compare the post TURP outcome of Benign Prostate Hyperplasia patients presenting with and without Acute Urinary Retention.

1.4.2 Secondary Objective

To Compare the post TURP complications of Benign Prostate Hyperplasia patients presenting with and without Acute Urinary Retention.

2. METHODOLOGY

2.1 Study Design

Prospective observational study

2.2 Study Setting

The patients with bothersome LUTS symptoms secondary to benign prostatic hyperplasia (BPH) and those who presented with and without acute urinary retention to Department of Urology were included in study.

2.3 Study Period

Period of 10months after getting clearance from institutional ethical committee.

2.4 Study Population

The patients with complaints suggestive of LUTS were thoroughly evaluated with History & Physical examination, Digital Rectal Examination, S PSA, International Prostate Symptom Score (IPSS), USG KUB, Bladder Wall Thickness, Uroflow & Post Void Residual Urine and those patients with Benign Prostate Hyperplasia were selected. Patients who presented with and without Acute Urinary Retention were assigned as Group A and Group B respectively.

2.5 Inclusion Criteria for Both Groups

1. IPSS suggestive of moderate and severe LUTS.
2. Prostate size between >30gms to 110gms
3. Maximum flow rate (Qmax) less than 10ml/s,
4. Men more than 55 years and less than 75years
5. Patients who gave informed consent for the study were included

2.6 Exclusion Criteria for Both Groups

1. Urethral stricture,
2. Neurogenic bladder,and
3. Previous prostate or urethral surgery
4. Unwilling patients
5. Prostate cancer.

2.7 Sampling Methods

All patients satisfying the inclusion - exclusion criteria would be included for Study.

2.8 Sample Size

Calculated using the formula

$$n = \frac{[Z_{1-\alpha/2} + Z_{1-\beta}]^2[p_1(1-p_1) + p_2(1-p_2)]}{(p_1 - p_2)^2}$$

$Z_{1-\alpha/2}\ Z_{1-\alpha/2}$ = 1.96 for 5% level of significance

$Z_{1-\beta}Z_{1-\beta}$ = 0.84 for 80% power

p_1p_1 = 22.9% proportion of recatheterisation in Acute Urinary Retention group

p_2 p_2 = 3.8% proportion of recatheterisation in group without Acute Urinary Retention

N = 50 samples in each group

p_1 = (17/74)*100 = 22.9%
p_2 = (2/52)*100 = 3.8%
$z_{1-\alpha/2}$ = 1.96
$z_{1-\beta}$ = .84

2.9 Study Tools

Patient proforma containing patients particulars, operative details and one month follow-up.

2.10 Study Procedure

After obtaining hospital ethics committee clearance, the study will commence. Patients with symptoms of BPH-Benign Prostate Hyperplasia will be evaluated and will be categorized into two distinct groups. Group A patients who presented with Acute urinary Retention and Group B who presented without Acute Urinary Retention. Preoperative workup and pre anaesthetic checkup will be done. Patient will then undergo TURP under Regional Anaesthesia During post operative period the patient will be monitored. Once recovery is satisfactory patient will be discharged. Follow up visits at 1 week, 2 week and 1 month post operative. Any complications during the perioperative period will be noted and graded. A proforma (ANNEXURE A) including all the study variables will be filled. All data will be tabulated in Excel chart. Statistical analysis will be done as mentioned. A comparative study of post turp outcomes and complications between benign prostatic hyperplasia patients, presenting with and without acute urinary retention is made. References will be drawn from the analysis to get results and conclusion.

2.11 Study Variables

2.11.1 Demographic factors

(a) Age
(b) BMI
(c) Co-morbidity

(a) HTN
(b) CKD
(c) T2DM
(d) CAD

(d) Ecog Score
(e) ASA Score

2.11.2 Preoperative parameters

a) IPSS International Prostate Symptom Score
b) DRE (Digital Rectal Examination)
c) USG KUB
d) Bladder Wall Thickness
e) S PSA (PROSTATE SPECIFIC ANTIGEN)
f) Uroflow
g) Trial Voiding- for pt with Acute Urinary Retention Group even if they void successfully they are included in Group A(With Acute Urinary Retention)

2.11.3 Operative

a) Mean operative duration
b) Mean estimated blood loss
c) Blood Transfusions

2.11.4 Post operative outcome

(a) Recatheterisation rate in Both Groups

2.11.5 Post operative complications

a) Age distribution
b) Post operative UTI
c) LUTS
d) Lower urinary tract stricture
e) Re surgery
f) Mean length of hospital stay
g) Post operative PVR
h) Q max

2.12 Plan of Statistical Analysis

a) Data will be analysed using Statistical Package for Social Sciences (SPSS) 27 Inc.
b) Qualitative variables will be expressed in proportion & its confidence interval.
c) Quantitative variables will be expressed in mean, standard deviation & its confidence interval.
d) A p value < 0.05 will be considered as statistically significant.

2.13 Ethical Concerns

1. Institutional research committee clearance will be obtained before starting the study.

2. Informed consent will be taken in local language before their participation.
3. Confidentiality will be adhered to.
4. Each patient has the right not to participate in the study.
5. No additional financial burden on the patients.
6. The study design is adequate to answer the research question.
7. Identity of the patient would not be revealed at any step in the study period.
8. The consent form (both in Malayalam and in English) is attached here with.
9. Participants will be informed that the results of the study will be published if found to have potential community implications.
10. Data analysis and interpretation will be honest and accurate.

3. RESULTS AND DISCUSSION

The study was conducted in Urology Department Government Medical College-Thiruvananthapuram. 100 patients with complaints suggestive of LUTS were included in the study. Patients were categorized as those with and without AUR.

An increasingly common urological condition affecting men in their elder years is benign prostatic hyperplasia. The primary symptom could be acute urine retention. AUR is more or less common in men with BPH. The incidence rate was lower in western nations, ranging from 20 to 40%. In contrast, the rate was considerably greater in emerging nations and might possibly exceed 50%. The lack of understanding of the symptom of BPH, the fear of surgery, and cost considerations are the causes of the higher incidence of AUR in men with BPH in developing nations. Taiwanese researchers Chen JS, Chang CH, and others carried out a retrospective investigation and found that post TURP complications were more in patients who presented with acute urinary retention when compared to those who presented without retention. Sajjad Ahmed from post graduate institute from Lady reading hospital Peshawar, Pakistan conducted a study and found that the chance of post TURP complication are more with those patients who present with acute urinary retention . There are few more studies which found that the complication rates are more for the patients with acute urinary retention. The purpose of this study is to find whether there is any difference in the Post TURP complications and outcome of surgery for BPH for patients with and without acute urinary retention in our population, so that we can prevent and make ourselves as well as the patient to get ready to tackle these complications and create awareness among people.

In our study we enrolled 100 patients diagnosed as BPH with their symptoms, clinical examinations, uroflowmetry and USG. Of these patients, 50 presented with AUR and 50 present without retention. We compared the following factors of preoperative variables like age, presence of any co morbid illness, gland size, grade of the gland by DRE, serum PSA. And post operative variables like haematuria, need for blood transfusion, UTI, sepsis, recatheterisation rate, PVR, length of hospital stay, lower urinary tract stricture , re surgery rate, TUR syndrome, Q max.

3.1 Age Distribution

Proportion of patients of age group 61-70 years, 71-75 years was significantly higher in with AUR group as compared to without AUR group. (61-70 years:- 78% vs 76% respectively, 71-75 years:- 20% vs 0% respectively).

Proportion of patients of age group 51-60 years was significantly lower in with AUR group as compared to without AUR group. (51-60 years:- 2% vs 24% respectively). (p value <0.0001). So AUR occur more common in older age group. Study done by Kuritaet al also showed that there is no statistical difference.

3.2 Co-Morbid Illness

Distribution of co-morbidities was comparable between with and without AUR group. (Hypertension:- 22% vs 20% respectively (p value=0.806),Diabetes mellitus:- 22% vs 20% respectively (p value0.806), Ischemic heart disease:- 12% vs 8% respectively (p value=0.741)). Few studies showed that presence of co morbid factors may be confounding factors.

3.3 Volume

The mean volume of prostate in patients with AUR was 69.42ml and without retention is 56.16ml thus people with AUR has higher volume of prostate than compared without AUR group and it is statistically significant p value is 0.0001. Numerous studies have showed that AUR occur more common with larger volume of prostate.

3.4 Grade of the Gland by DRE

Proportion of patients with DRE: - grade 3 was significantly higher in with AUR group as compared to without AUR group. (Grade 3:- 46% vs 10% respectively).

Proportion of patients with DRE: - grade 1, grade 2 was significantly lower in with AUR group as compared to without AUR group. (Grade 1:- 10% vs 20% respectively, Grade 2:- 44% vs 70% respectively). (p value=0.0003).

3.5 S. Psa

The mean PSA of patients presenting with AUR is 3.63ng/ml significantly increased compared to patients presenting without AUR 3.13ng/ml the p value is statistically significant p 0.003

3.6 TUR syndrome

One patient in the AUR group experienced TUR syndrome right away after the surgery. Clinical suspicions led to the measurement of serum electrolytes, which revealed hyponatremia and required correction. The AUR minus group had no patients who experienced this syndrome.

3.7 Haematuria

After TURP 12% of the patients who presented with acute urinary retention had persistent hematuria, where as in without AUR minus group only 6% had significant hematuria. Hematuria is not statistically significant in AUR group as evidenced by the P value of 0.487.which is comparable to study done by Mebust et al study showed hematuria and blood transfusion in 6.4%, Kuntz et al showed 2%, where as it was higher in a study done by Doll et al- 22%

3.8 Blood Transfusion

In our study 4% of patients in AUR group needed blood transfusion due to persistent hematuria, whereas 2% of patients without AUR needed blood transfusion, which is not significant.

Jeng- Sheng- Chen et al study showed blood transfusion rate of 3.2% and 1.5%for patients who presented with and without AUR.

3.9 Post Operative UTI

We did urine culture and sensitivity for all our patients post operatively. Proportion of patients with post-operative UTI was significantly higher in with AUR group as compared to those without AUR group. (24% vs 4% respectively). (p value=0.008)

3.10 Sepsis

In our study only one patient (2%) with AUR developed sepsis after TURP. No patient without AUR had sepsis. Patient was treated intensively with IV fluids and higher antibiotics. Jeng- Sheng-Chen et al study reported sepsis in1.4% only in patients with AUR group. Mebust et al and Haupt et al showed urosepsis in 0.2% of patients after TURP. Doll et al showed 3% urosepsis.

3.11 Recatheterisation

In our study 24% of patients with AUR developed urinary retention after catheter removal in TURP, which was quiet higher when compared to 4% of patients without AUR. This is statistically significant with a p value of 0.008. If the patient develops urinary retention, we will re-catheterise the patient and start him on alpha blocker and plan for trial void after 1 week. All of our patients responded well in trial voiding.

3.12 LUTS

12 (24%) patients in the AUR group developed irritative lower urinary tract symptoms like incontinence, increased frequency and urgency. In without AUR group only 8(16%) patients developed irritative LUTS. P value 0.317. The difference between the two groups is not statistically significant as evidenced by p value as for as the irritative LUTSis concerned

3.13 Stricture

In our study totally 2 patients developed lower urinary tract stricture 1(2%) in the AUR arm and 1(2%) in the non AUR arm. This was diagnosed 2 to 3 months after TURP, when the patient c/o thin stream and strain to void. We did AUG for these patients and diagnosed the stricture. We advised optical internal urethrotomy for these patients. These 2 patients were not willing for urethrotomy; hence dilatation was done.

3.14 Re Surgery

In our study only one patient in AUR group required re surgery for clot retention. Distribution of resurgery was comparable between with and without AUR group. (2% vs 0% respectively) (p value=1).

3.15 Mean Length of Hospital Stay

Duration of stay was 7.04 and 4.58 days for patients with and without AUR. It is statistically significant. P 0.001

3.16 Post Operative PVR

Mean ± SD of PVR(mL) in with AUR group was 14.52 ± 2.95 which was significantly higher as compared to without AUR group (13.32 ± 2.55).(p value=0.032). The p value was 0.032 was not significant statistically.

3.17 Q Max

Post operative uroflowmetry was done at 2wks post surgery Mean ± SD of Q max (mL/sec) in with AUR group was 19.26 ± 1.27 and without AUR group was 19.22 ± 1.43 with no significant difference between them. (p value=0.883) The p value is 0.883 which was not significant.

4. CONCLUSION

Study was Prospective Observational study conducted between two groups. The study clearly shows that patients with advanced age has increased risk of presenting with Acute Urinary Retention and these patients had higher prostate volume as detected by USG and by DRE and increased S.PSA and. When these patients underwent surgery, it was associated with complications like hematuria, need for postoperative blood transfusion, incidence of post op UTI, sepsis, and need for recatheterisation, and there was also slightly less but presentation of Urinary stricture post procedure, and need for resurgery, moribund and devasting complications like TUR syndrome, and need for prolonged hospital stay were seen in patients of both who presented with AUR and without AUR. Of these complications, incidence of post TURP UTI, need for recatheterisation, significant prolonged length of hospital stay were statistically significant in AUR group when compared to patients without AUR group. So it is better to intervene earlier before the patients develop AUR in order to minimize the complications and to maximize the outcome.

CONSENT

As per international standard or university standard, patient(s) written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Song Y, Gu Y, Guo H, Yang H, Wang X, Wu H, Wang A, Wang M, Wang H, Zhang Q, Liu L. Association between mean platelet volume and benign prostatic hyperplasia: A population study from the TCLSIH cohort study. Journal of Inflammation Research. 2023:3259-69.
2. Sung H, Ferlay J, Siegel RL, Laversanne M, Soerjomataram I, Jemal A, Bray F. Global cancer statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA: A Cancer Journal for Clinicians. 2021;71(3):209-49.
3. De Nunzio C, Kramer G, Marberger M, Montironi R, Nelson W, Schröder F, Sciarra A, Tubaro A. The controversial relationship between benign prostatic hyperplasia and prostate cancer: The role of inflammation. European urology. 2011;60(1):106-17.
4. Zhang L, Wang Y, Qin Z, Gao X, Xing Q, Li R, Wang W, Song N, Zhang W. Correlation between prostatitis, benign prostatic hyperplasia and prostate cancer: a systematic review and meta-analysis. Journal of Cancer. 2020;11(1):177.
5. Devlin CM, Simms MS, Maitland NJ. Benign prostatic hyperplasia–what do we know? BJU international. 2021;127(4):389-99.
6. Chen JS, Chang CH, Yang WH, Kao YH. Acute urinary retention increases the risk of complications after transurethral resection of the prostate: A population-based study. BJU Int. 2012;110(11 Pt C):E896-901.
DOI: 10.1111/j.1464-410X.2012.11471.x Epub 2012 Oct 4
PMID: 23035623
7. Hutchison A, Farmer R, Chapple C, et al. Characteristics ofpatients presenting with LUTS/BPH in six European countries. Eur Urol. 2006;50:555–62

8. Briganti A, Capitanio U, Suardi N, et al. Benign prostatic hyperplasia and its aetiologies. European Urology Supplements. 2009;8:865–871.
9. McConnell JD, Barry MJ, Bruskewitz RE, et al: Benign prostatic hyperplasia: Diagnosis and Treatment. Clinical Practice Guideline; 8.
10. Tan et al, Tan AH, Gilling PJ, Kennett KM, et al: A randomized trial comparing holmium laser enucleation of the prostate with TURP in large glands (40 to 200 grams). J Urol. 2003;170:1270-1274.
11. Westenberg A, Gilling P, Kennett K, et al: Holmium laser resection of the prostate versus transurethral resection of the prostate: Results of a randomized trial with 4-year minimum long-term follow-up. J Urol. 2004;172:616-619. 85
12. Huang LK, Chang YH, Shao IH, Lee TL, Hsieh ML. Clinical outcome of immediate transurethral surgery for benign prostate obstruction patients with acute urinary retention: More radical resection resulted in better voiding function. J. Clin. Med. 2019;8:1278.
DOI: 10.3390/jcm8091278

ANNEXURE A: APROFORMA

NAME:	AGE:	SEX:
ADDRESS:		IP.NO:
D.O.A:	D.O.S:	D.O.D:
PRESENTING COMPLAINTS:		
H/O AUR		
IPSS SCORE:		
GENERAL EXAMINATION:		
P.R:	B.P:	

PER ABDOMEN:
PER RECTAL:
INVESTIGATIONS:
HB%: PCV%
BLOOD: UREA- SUGAR SERUM CREATININE-
Sr ELECTROLYTESURINE C/S:
USG KUB: PROSTATE SIZE:
Sr PSA
PVR
UROFLOW: Qmax: AFR: Voided Volume:
CYSTOSCOPY:
Presence of lateral and median lobes – Grade
Presence of intravesical extension Length of prostatic urethra

OPERATIVE PROCEDURE:

Operative time:
POST OP.PERIOD:
CATHETER REMOVAL:
USG:
FOLLOW UP:
IPSS SCORE:
UROFLOW: Qmax AFR VoidedVolume
BIOPSY

Peer-review history:
The peer review history for this paper can be accessed here:
https://www.sdiarticle5.com/review-history/104266