Case study

A COMPARATIVE STUDY OF POST TURP OUTCOMES AND COMPLICATIONS BETWEEN BENIGN PROSTATIC HYPERPLASIA PATIENTS, PRESENTING WITH AND WITHOUT ACUTE URINARY RETENTION

ABSTRACT

Introduction: - The prevalence rate of Acute Urinary Retention in men with Benign Prostatic Hyperplasia is reported as high as 53%. Higher mortality and morbidity rates following TURP have been reported in previous studies. In our study we tried to analyze the post TURP complications between patients presenting with and without AUR

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.

Materials and methods:-This is a prospective study. Patients with LUTS due to Benign Prostatic Hyperplasia with and without Acute Urinary Retention are included in the study. Patients evaluated with History & Physical examination, DRE, S.PSA, USG KUB, Bladder Wall Thickness Uroflow & Post Void Residual

urine. Patients who were more than 70 years, men with neurological disease, prostate cancer, urethral stricture, previous prostate or urethral surgery were excluded.

Post operative variables like Recatheterisation rate, TUR syndrome, persistent haematuria, need of blood transfusion, Post op UTI, sepsis, , resurgery, post op stricture, LUTS, Q max, PVR and length of hospital stay were compared between these groups

INTRODUCTION

Benign prostatic hyperplasia (BPH) is a very common urological condition affecting men in older age group. It occurs in about 10 % of men of the age of less than 40 years, and increased to 80 % in age group of 80. Even though there are other causes now being considered, Benign prostatic hyperplasia still remains one of the most common cause in men that can give rise to lower urinary tract symptoms, with or without bladder outlet obstruction(BOO). It has been documented in a multicenter study that the age-related division of men with symptoms was higher in the Asia Pacific when compared to the Western countries The reason behind this is unknown.

The pathological process in Benign Prostatic Hyperplasia is a hyperplasia (and not

hypertrophy) which affects both the stromal and glandular elements of this gland. This condition affects the quality of life(QOL) in a significant way in many of the patients.

Even though most seek medical intervention because of bothersome symptoms, BOO was found in 60% in those symptomatic and 52% in those asymptomatic[1,2.] Lower urinary tract symptoms affect the patient's quality of life. Intervention may be needed for bothersome symptoms in around 30% of men who are older than 65 years [3].

Several theories have been proposed in the etiopathogenesis of BPH. These include

- Age-related tissue changes,
- Metabolic syndrome
- Hormonal alterations,
- Inflammation[4].

Although BPH is not caused by the androgens, the postulated theory is that the presence of androgens is needed for the pathogenesis. It should be borne in mind that the association between metabolic syndrome and the development of BPH exist. Recent evidences suggest that BPH maybe due to an inflammatory-based disorder.

TURP has become a relatively safer procedure due to the advent of newer

technologies in diathermy and visual scopes. But still there is a chance of TURP syndrome and electrolyte imbalance especially in high-risk cardiac patients. The risk is accentuated by the use of glycine for irrigation. The complications rates were decreased with the development of bipolar diathermy with normal saline as irrigant fluid.

ACUTE URINARY RETENTION

Acute retention of urine is a severe symptom of men who developed BPH. It is defined as a sudden and painful inability to void voluntarily. Even though there are many causes of AUR, the most common cause being BPH. The prevalence rate of AUR in men with BPH is estimated to be as high as 53% AUR is a painful condition. Higher mortality and morbidity rates in men presenting with AUR have been reported in previous studies.

In Western countries, AUR was the chief compliant in 20 – 42% of men who underwent TURP [16]. Escalating postoperative complications and longer Hospital stays in men with BPH who develop AUR have been reported. Patients who presented with AUR had a high mortality rate in the first 3 years after prostatectomy[18]. There are many studies available describing the complications of BPH. Comprehensive comparative analysis of post-TURP complications between patients with and without AUR is lacking.

In our study we tried to compare the post turp complications between patients who presented with and without AUR

RATIONALE:

For male older than 50 years of age, TURP is the second most commonsurgery performed next only to cataract surgery. Even though many new modalities of management for the Benign Prostatic Hyperplasia have been developed, TURP is still the gold standard as for as the management of BPH is concerned[5.] The development of LASERs in endourology is gradually replacing the TURP in the management of BPH. Holmium laser(HoLEP) is said to be the gold standard though many urologists have reservation in accepting this as the gold standard. The major disadvantage is the prohibitive cost of these lasers.

RESEARCH QUESTION:

To compare the post TURP outcome and complications of BPH patients presenting with and without ACUTE URINARY RETENTION

OBJECTIVES

PRIMARY OBJECTIVE:

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

SECONDARY OBJECTIVE:

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

METHODOLOGY

A. Study Design

Prospective observational study

B. Study Setting

The patients with lower urinary tract symptoms (LUTS) due to benign prostatic hyperplasia (BPH) with and without acute urinary retention who presented in Department of Urology.

C. Study Period

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

D. 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.

E. Inclusion Criteria for both groups

1. Prostate sizes >30gms and less than 110gms
2. Maximum flow rate (Qmax) less than 10ml/s,
3. Men more than 45 years and less than 75years
4. Patients who gave informed consent for the study were included

F. Exclusion Criteria for both groups

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

G. Sampling method

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

H. Sample Size

Calculated using the formula

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

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

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

$\mathbf{p_1}$ = 22.9% proportion of recatheterisation in Acute Urinary Retention group

$\mathbf{p_2}$ = 3.8% proportion of recatheterisation in group without Acute Urinary Retention

n = 50 samples in each group

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p_1 = (17/74)*100 = 22.9%

p_2 = (2/52)*100 = 3.8%

$z_{1-\alpha/2}$ = 1.96

$z_{1-\beta}$ = .84

I. Study tools

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

J. 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.

K. Study Variables

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. 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)

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

4. Post operative outcome
   a) Recatheterisation rate in Both Groups

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

L. 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.

M. 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.

RESULT & DISCUSSION

Benign prostatic hyperplasia is a common urological problem affecting men in older age group. Acute urinary retention may be the presenting symptom. The prevalence rate of AUR in men with BPH varies. In western countries, the incidence rate was lower, ranging from 20 to 40%. Where as in developing countries the rate was quiet higher, can reach even more than 50%. The reason for the increased incidence of AUR in men with BPH in developing countries is unawareness of the symptom of BPH, fear of surgery, and cost factors. Chen JS and Chang CH et al from Taiwan conducted a retrospective study 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 readinghospital 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 found that 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 urinarytract stricture , re surgery rate, TUR syndrome, Q max.

Age distribution

In our study men aged between 45 to 75 years were included. Of these themean age for men who presented with AUR was 67.2 and for men without AUR were 63.64. The p value for the mean age is 0.001 which is significant. So AUR occur more common in older age group. Study done by Kuritaet al also showed that there is no statistical difference

Co-morbid illness

Regarding the co morbid factors, HT occurs in 22% of patients with AUR and 20% of patients without AUR. The two groups are comparable as for as the HT is concerned as the p value is 0.806 which is not significant. DM occurs is 22% of patients with AUR and in 20% of patients without AUR. The p value here is 0.806 Not significant. 6% of the patients with AUR and 4% of patients without AUR had IHD with a P value of 0.741 So in our studyboth groups are comparable in co morbid illness. Few studies showed thatpresence of co morbid factors may be confounding factors.

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 as the p value is 0.0001 Few studies like Olmsted county study, Meigs et al study and the study done by Berges et al showed that AUR occur more common with larger volume of prostate.

Grade of the Gland by DRE

Patients presenting with AUR had higher Grades by DRE Grade-3 when compared to patients without AUR Grade-2 the mean number of patients with Grade 3 DRE is 46% where as in patients presenting without AUR majority of them 44% had Grade-2 prostate by DRE which is statistically significant p 0.0003.

S.PSA

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

TUR syndrome

Only one patient in the AUR group developed TUR syndrome immediately at the end of the procedure**.** It was suspected clinically and serum electrolytes were done which showedhyponatremia and it was corrected. No patients in AUR minus group developed this syndrome.

Haematuria

In our study 12 % of patients with AUR and 6% of patients without AUR had persistent haematuria after TURP. The p value is 0.487 which is not significant. **Jeng- Sheng- Chen** et al study showed haematuria in 8.1% of patients with AUR and 7.4%of patients without AUR. Our study is more or less similar to this one. Mebust et al study showed haematuria 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%

Blood transfusion

Blood transfusion rate was 4% and 2% for patients with and withoutAUR respectively with a p value of 1.00 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.

Post operative UTI

We did urine culture and sensitivity for all our patients post operatively.In our study 24% of patient with AUR and only 4% of patients without AUR had UTI as documented by urine culture. These patients were given a course of culture specific antibodies. The occurrence of UTI is higher in patientswith AUR with a p value of 0.008 which is significant. The reason for this increased occurrence of UTI may be due to prolonged catheterization and hospital stay in patients with AUR.

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.

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 recatheterise the patient and put him on alpha blocker and give trial void after 1 week. All of our patients responded well in trial voiding.

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 value0.317. The difference between the twogroups is not statistically significant as evidenced by p value as for as the irritative LUTSis concerned

Lower urinary tract 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.

Re surgery

Only one patient (2%) in our study developed clot retention. Cystoscopic clot evacuation was attempted, which could not be possible. Then open surgical evacuation was done and prostatic fossa was packed. The pack was removed after 2days, bleeding has stopped.

Mean length of hospital stay

It was 7.04 and 4.58 days for patients with and without AUR. This was statistically significant. P 0.001

Post operative PVR

Mean post operative PVR for patients with and without AUR was 14.52ml and 13.32ml respectively. The p value was 0.032 which was not significant statistically.

Q max

We did Uroflow for all of our patients who voided after TURP to compare the flow pattern of urine. The mean Q max was 19.26ml/sec and 19.22ml/sec for patient withand without AUR. The p value is 0.883 which was not significant

CONCLUSION

Our study is a prospective observational analytical study to compare the post TURP complication and outcome of patients with and without AUR. Our 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., post TURP complications like persistent haematuria, blood transfusion rate, post op UTI, sepsis, recatheterisation, lower urinary tract stricture, resurgery, TUR syndrome, length of hospital stay were higher inpatients who presented with AUR than patients without AUR. Of these complications, post TURP UTI, recatheterisation rate, length of hospital stay and Post Void Residual urine were statistically significant in AUR group when compared to pateints 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.

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