Outcomes of Transurethral Resection of the Prostate in Benign Prostatic Hyperplasia Comparing Prostate Size of more than 80 Grams to Prostate Size less than 80 Grams.

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ABSTRACT

Background

Benign prostatic hyperplasia is a condition occurring in elderly men in which the prostate gland is enlarged, hence the condition also known as benign enlargement of prostate. Benign hyperplasia can lead to both obstructive and irritative symptoms. Transurethral resection of prostate (TURP) still remains the gold standard modality of surgical treatment of obstructive lower urinary tract symptoms due to Benign hyperplasia.

Objectives

The objective of this study was to evaluate the outcomes of TURP in large prostate (>80 grams) in comparison to small prostate (<80 grams) in terms of efficacy, safety and complications.

Methods

A total of 65 cases included in this prospective study, which were operated by a single surgeon with conventional monopolar TURP using standard technique. Intra -operative and post-operative complications, pre and post- operative quality of life (QoL) and international prostate symptom score (IPSS), operative time, time to removal of catheter and hospital stay were evaluated between small and large prostate gland volumes.

Results

Out of 65 cases, 30 were with large prostate size i.e. 80 grams or more (group 1), and 35 cases were with small prostate size than 80 grams size (group 2). Mean age was 71.8 SD ± 6.9 years in group 1 and 68.2 SD ± 12.7 years in group 2. The mean preoperative volume of prostate was 88.8 grams (range 80-115 grams) in group 1 and 40.3 (range 20-65 grams) in group 2. The mean preoperative post void residual volume of urine (PVRU) was 244 ml SD ± 190.8 ml in group 1 and 117 ml ± 70.3 ml in group 2. Mean resection time in group 1 was 110 (range 90-130) minutes and in group 2 it was 90 minutes (range 55-115) minutes. There were quite satisfactory improvements in IPSS and QoL. No significant complications were observed except TUR syndrome in 2 cases from group 2, which were managed well in postoperative period.

Conclusion

With meticulous resection and intra-operative haemostasis using continuous out flow resectoscope, conventional monopolar TURP is equally safe and effective in large size prostate as compare in small size.

KEY WORDS

Benign prostatic hyperplasia, obstructive lower urinary tract, prostate, transurethral resection of prostate.

INTRODUCTION

Benign Prostatic hyperplasia (BPH) is the most common benign pathological condition in male, and its incidence increases with the age.[1,2,3] It is one of the most common causes of lower urinary tract symptoms (LUTS) in men and starts after the age of 50 and by the age of 60 years 50% of men have histological evidence of BPH.[4] The Important recommended tool used in the evaluation of patients with BPH is American Urological Association (AUA) symptom score questionnaire that determine the severity of urinary symptoms, extent of the problems due to symptoms and level of quality of life due to urinary problems.[3] The Transurethral Resection of Prostate (TURP) is the most popular established modality in BPH treatment and superior to that of any minimally invasive therapy which still remains the gold standard in the operative management of BPH.[5] Normally, in large size prostate, adenoma has to be enucleated by open surgery however the interpretation of the size of prostate may varies depending up on the surgeon's experience and skill. There is still a controversy in the treatment modality of BPH on the basis of its size. A study has suggested that the prostate size more than 60 gram should be dealt with open prostatectomy while others argued that the size above 80 gram or 100 gram should be treated by open prostatectomy.[5-7]

Hence, the present study has aimed to assess the outcome of TURP in the treatment of BPH with large prostate (more than 80 grams) in comparison to smaller prostate (less than 80 grams) in terms of its efficacy and safety, intra-operative complications, postoperative complications and improvement in quality of life.

METHODS

This is an observational study carried out in Dhulikhel Hospital Kathmandu University hospital after approval from Institutional Review Committee, Kathmandu University School of Medical Sciences (IRC-KUSMS). This study has included those patients presented in Surgical Outpatient Department (OPD) from January, 2011 to July, 2014 with complaints of LUTS and having PVRU> 100 ml, flow rate < 10 ml/sec, and IPSS > 15 or acute retention of urine (ARU) due to BPH treated with monopolar TURP. Patients were grouped based on prostate gland less or greater than 80 gram. Patients were adequately counseled regarding success rate, erectile impotence and retrograde ejaculation. The written informed consent was taken prior to TURP in all cases.

The diagnostic workup included history of voiding symptoms and quality of life (QoL) according to International Prostate Symptom Score (IPSS) and clinical examination including digital rectal examination,[8] routine and microscopic urine analysis, urine culture and sensitivity test, blood examination for: full blood count, renal function test, serum sodium and potassium level and prostate specific antigen (PSA), Ultrasonography (USG) of Kidney Ureter Bladder (KUB) and prostate, Transrectal Ultrasound with measurement of prostate size.

Preoperative post void residual volume of urine (PVRU) measurement and uroflowmetry was performed in all patients except those who were treated with a Foley's catheter due to acute retention of urine (ARU). Patients having LUTS due to bladder cancer, neurogenic bladder, high bladder neck and with history of previous surgical treatment for BPH were excluded from this study.

All patients were given 1 gram of Cefotaxim intravenously just before starting procedure and two more postoperative doses at 12 hours interval as prophylactic antibiotic. Patients with having UTI were given 7 days course of sensitive antibiotic according to urine culture report.

All TURPs were performed by single surgeon under spinal anesthesia with 26 Fr. Karl-Storz working element having continuous out flow channel and Valleylab diathermy set with setting of 140-150 Watts for cutting and 100-110 Watts for coagulation. During procedure 1.5% isotonic glycine (3 liter bottle) was used for irrigation using in 45-60 cm height which was just sufficient for free flow.

Resection was started from middle lobe, then left lobe from 4-5 O'clock position anti-clock wise to 1 O'clock position followed by right lobe starting from 7-8 O'clock position clock wise to 11 O'clock position. Finally the anterior part of the prostate adenoma was resected. Prostatic tissue was resected until the transverse fibers of capsule appear. Haemostasis was maintained as much as possible by coagulation. At the end of surgery after evacuation of all prostatic chips from bladder 22 or 24 Fr three way Foley's catheter was inserted followed by continuous irrigation with isotonic normal saline till clear drain noticed in the collection bag. The catheters were removed when urine was clear without blood.

Intra- and post-operative complications (transurethral resection syndrome, bleeding, clot retention, postoperative urethral strictures), operation time, weight of resected prostatic tissue, hospital stay were recorded. After discharge follow up check up for assessment of improvements of symptoms, quality of life, any new complaints and repeat USG abdomen with PVRU measurement was done after 2-3 months.

Data were analyzed by SPSS 13.0 and expressed as mean ± standard deviation (SD). The qualitative data were compared using Chi Square test. For comparison of mean, independent sample t-test is performed. P value less than 0.05 is considered as level of significance.

RESULTS

A total of 65 patients who underwent TURP were evaluated: 30 with prostate size of more than 80 grams (Group 1) and 35 with prostate size less than 80 grams (Group 2). The mean age was 71.80 ± 6.93 years in group 1 and 68.20 ± 12.70 years in Group 2. The mean prostate

volume was 88.80 ± 8.70 grams in Group 1 versus 40.30 ± 11.80 grams in Group 2. Mean volume of preoperative post voided residual volume of urine was 244.00 ± 190.90 ml in Group 1 and 117.00 ± 70.30 ml. in Group 2. Preoperative lower urinary tract symptoms (LUTS) in two groups show that there is higher percentage of patients having poor flow, incomplete feelings of voiding and dribbling in group 1 compared to Group 2 (p <0.05; Table 1). Preoperatively mean IPSS was 27.00 ± 3.00 in Group 1 and 22.00 ± 4.00 in Group 2. The mean duration of the symptoms in Group 1 was 22.40 ± 33.70 months (range 3 months to 10 years) and in Group 2 was 19.10 ± 38.30 (range 1 month to 15 years) months.

Table 1. Preoperative symptoms in two groups

	Group 1 (> 80 gram N=30)	Group 2 (< 80 gram N=35)	P value
Poor flow	30	27	<0.05
Straining	30	30	0.06
Incomplete voiding	30	28	<0.05
Frequency	30	35	
Urgency	30	33	0.18
Intermittency	30	31	0.10
Hesitancy	30	31	0.10
Dribbling	30	28	<0.05
Nocturia	30	30	0.06
Acute urinary retention	11	10	0.43

The mean resection time (starting of resection to removal of resectoscope) in Group 1 was 110 ± 15 (range 90-130) minutes and in Group 2 was 90 ± 20 (range 55-115) minutes. Two cases from group 1 developed features of Transurethral Resection (TUR) syndrome with hyponatremia (sodium level dropped up to 120 mmol/Lt) with neurological symptoms which was corrected in ICU and shifted in general ward after 2 days.

Mean hospital stay in Group 1 was 6.08 ± 4.01 and in group 2 was 4.80 ± 1.47 days.

Comparison of pre operative and post operative quality of life and symptom improvement along with postoperative complications are shown in Table 2 and Table 3 respectively. Regarding the QoL there is significant difference in preoperative QoL in two groups (4.26 vs. 3.22 in group 1 and 2 respectively, p<0.01). However, following TURP there is no significant difference in QoL between two groups. Postoperative evaluation showed no statistical difference in persistent complaints of poor urinary flow nor in other complications.

DISCUSSION

The main aim of any surgical modality for treatment of BPH is to reduce unwanted symptoms, improve quality of life with

Table 2. Comparison of quality of life in two groups.

	Group 1 (> 80 gram N=30)	Group 2 (< 80 gram N=35)	P value
Preoperative QoL (Mean, SD)	4.26, 0.18	3.22, 0.16	<0.01
Postoperative QoL (Mean, SD)	2.03,0.55	1.87, 0.69	0.26

Table 3. Postoperative outcome in two groups.

Outcomes	Group 1 (> 80 gram N=30)	Group 2 (< 80 gram N=35)	P value
Complaints of Poor stream of Urine	0 (0%)	2 (5.71%)	0.18
TURP syndrome	2 (6.66%)	0 (0%)	
Bleeding with clot retention	0 (0%)	0 (0%)	
Post-operative urethral stricture	0 (0%)	2 (5.71%)	0.18
Post-operative LUTS	0 (0%)	2 (5.71%)	0.18

good urinary flow, less postoperative complications, high cure rate, long symptom free interval and low frequency of reoperation. TURP is one of the most common operative procedures in elderly people.[9,10] It has largely replaced other method of operative management for BPH and still is regarded as gold standard treatment for LUTS due to BPH.[5] Over 95% of men with BPH are being treated by TURP and indication for which may be moderate to severe irritative and or obstructive symptoms not responding to medical therapy, or acute or chronic retention of urine leading to obstructive uropathy interfering in quality of life.[11] For large prostates (>80 gm) an open prostatectomy is still considered as a treatment of choice.[12,13] However, the qualification "large'' is subjective and the limitation of the maximum prostate size for TURP varies up on the surgeon's skill, experience and resection speed.[5]

There is always a risk of complication during the surgical management of larger prostate. Complications like intra-operative or post operative bleeding and TUR syndrome are discouraging factors to perform TURP in large prostate.[5] Although the use of improved instruments, modern irrigation fluids with improved surgical techniques has significantly decreased the incidence of TUR syndrome during the past few decades from 3-5% to < 1%, but still remains one of the major peri-operative complication.[9,10,13-15] In a study done on large population of patients (n=3885) who were treated by TURP, it was clearly seen that the complication rate was higher in patients having large prostate and incidence of TUR syndrome was higher (2%) with resection time more than 90 minutes.[15] The present study shows TUR syndrome in two patients (6.6%) from large prostate group in which the resection time was more than 90 minutes.

Another major complication of monopolar TURP in large prostate is intra-operative and post-operative bleeding leading to post-operative clot retention, which may require clot evacuation or re-intervention. However, such

complications were not noticed in the present because of proper intra-operative haemostasis and systematic organized resection. The present study shows the post-operative catheterization time was 5 days for large prostate size group while 3 days in small prostate size. The catheter was removed only when clear urine flow was noticed in prior to discharging the patients.

Major late postoperative complications of TURP are urethral stricture, meatal stenosis and bladder neck contracture. In the previous studies the incidence of post TURP urethral stricture has been reported from 2.2% to 9.2% and bladder neck contracture occurred in 0.3 to 9.2%.[15-17] Despite the regular use of internal urethrotomy (Otis) a post TURP urethral stricture occurred in our study in 2 patients (5.7%) from small prostate size group who required further intervention by Optical Internal urethrotomy (OIU). This result is consistent with the similar study done previously.[18] This complication may be due to a prolonged operative time. In our study no post-operative bladder neck contracture was observed. In two patients (5.7%) there was poor stream of urine despite of normal cystoscopic finding without urethral stricture which may be due to bladder dysfunction.

There is no consensus regarding the exact amount of the prostatic tissue that should be resected during TURP. Some studies suggested complete resection should be performed for better result.[19,20] while others have suggested that a partial resection is adequate for short term functional results.[21,22] The recommended TURP technique consists of a complete resection of adenomatous tissue inside the surgical capsule for better result in terms of quality of life and symptom improvement.[23] However prolonged TURP in medically compromised patients with large prostate may be associated with increased bleeding and TUR syndrome development.[23]

We found the significant difference in preoperative QoL in patients having smaller prostate in comparison to that of patient group having large (> 80 grams) prostate size. However after complete resection of adenomatous tissue in both groups, the QoL score after TURP shows no difference between both groups. In present study we observed a significant improvement in IPSS from severe to mild or zero score level. Similar results with long term efficacy of TURP were found in other studies.[5,9,16]

The results of present study show that monopolar TURP can be performed in large size prostate (>80 grams). It is equally effective as in small size prostate in terms of safety and complications. Nevertheless, this study should be extended to large populations with longer follow up time.

CONCLUSION

TURP with meticulous resection and proper maintaining of intra-operative haemostasis by using conventional monopolar resection using an endoscope with continuous outflow channel is equally safe and effective in larger size prostate glands (80-110 grams) compared to smaller size prostate glands.

CONTRIBUTION

HNJ has conceptualized and designed this study whereas, BS has contributed in assisting HNJ during the study period. RMK has helped in statistical analysis. Similarly, RS has contributed in data interpretation as well as in discussion writing including reviewing of manuscript. IJdJ guided throughout the study period and helped in reviewing the manuscript.

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