ORIGINAL RESEARCH PAPER

Volume-7 | Issue-6 | June-2018 | PRINT ISSN No 2277 - 8179

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

TO STUDY OUTCOMES OF TRANSURETHRAL RESSECTION OF PROSTATE IN PATIENTS OF BHP COMPARING PROSTATE SIZE >70 GRAMS VS PROSTATE SIZE <70 GRAMS: A PROSPECTIVE OBSERVATIONAL STUDY

Urology

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ABSTRACT

OBJECTIVE: To study the outcomes of transurethral resection of prostate in treatment of BHP with prostate (more than 70 grams) in comparison with prostate (less than 70 grams) in terms of efficacy & safety, intra-operative complications, and improvement of life.

METHODS: A total of 60 cases were included in this prospective observational study, which were operated in acharya shri chander college of medical sciences and hospital,sidhra jammu, department of surgery ,by a single surgeon with conventional monopolar TURP using standard technique. Intra-operative and post-operative complications (transurethral resection syndrome, bleeding, clot retention, postoperative urethral strictures),pre and post-operative quality of life (QoL) and international prostate symptom score (IPSS), operation time, 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 and uroflowmetry with PVRU measurement was done after 6 weeks and 6 months between prostate size less than 70 grams and more than 70 grams.

RESULTS: Out of 60 cases, 30 were with large prostate size i.e. 70 grams or more (group A), and 30 cases were with small prostate size i.e. less than 70 grams (group B). Mean age was 69.03 ± 9.94 years in group A and 68.57 ± 9.40 years in group B. The mean preoperative volume of prostate was 89.46 grams (range 71-135 grams) in group A and 50.70 (range 26-69 grams) in group B.

CONCLUSION: TURP for large prostate glands is a safe procedure without showing a different complication rate compared with TURP for recommended volumes. In appropriately selected patients TURP has an excellent record of efficacy and safety. Conventional TURP can now be performed with excellent long-term efficacy combined with reduced complications.

KEYWORDS

Benign prostatic hyperplasia, obstructive lower urinary tract.

INTRODUCTION:

Benigh prostatic hyperplasic is an enlarged gland that replicates proliferation of smooth muscle and epithelial cells within the prostatic transition zone. It results in lower urinary tract symptoms (LUTS) due to direct bladder outlet obstruction (BOO) from enlarged tissue and from increased smooth muscle tone and resistance within the enlarged gland (1,2). With increase in age prostate gets larger in most men. It is estimated that prevalence rate of BPH is 2.7% for men aged 45 to 49 which increases to 24% by the age of 80 years. For 1000 man-years, incidence rate is 3 cases for 45 to 49 years age group and 38 cases for 75 to 79 years age group (3). The diagnostic tool recommended for evaluation of patients with BPH is American Urological Association (AUA) symptoms score questionnaire. It determines the severity of urinary symptoms, extent of problems and level of quality of life due to urinary problems (4). To treat BPH, transurethral resection of prostate (TURP) is regarded as the benchmark by the AUA (5). For prostates 30 to 80 grams, European Urological Association considers TURP as the treatment of choice (6). For prostate >70 gm, treatments available are open prostatectomy and TURP. Only few studies have shown that TURP is a good alternative to open prostatectomy for managing prostate >70 gm (7). Open prostatectomy has many limitations compared to TURP as in open prostatectomy there are chances of pulmonary embolism, hemorrhage , long hospital stay, high morbidity and mortalily. However over the last decade, open prostatectomy has gradually diminished in favour of endoscopic techniques, based largely on short term results for most new endoscopic techniques (8).

Hence, the present study has aimed to assess the outcome of TURP in the treatment of BPH with large prostate (more than 70 grams) in comparison to smaller prostate (less than 70 grams) in terms of its efficacy and safety, intraoperative complications, postoperative complications and improvement in quality of life.

MATERIAL AND METHODS:

This is a prospective observational study conducted in Deptt. Of Surgery in Acharya Shri Chander College Of Medical Sciences and Hospital, Sidhra, Jammu after approval from institutional ethical committee. This study has included those patients presented in urological Outpatient Department (OPD) from November, 2015 to October, 2016 with complaints of LUTS and having PVRU> 100 ml, flow rate < 7 ml/sec, and IPSS > 15 or acute retention of urine (ARU) due to BPH treated with monopolar TURP. Patients with LUTS due to either bladder cancer or neurogenic bladder were excluded from the study.

Patients were grouped based on prostate gland more or lesser than 70 gram into two groups.

Group "A" (n=30) prostate size >70 grams
Group "B" (n=30) prostate size<70 grams

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, routine and microscopic urine analysis, urine culture and sensitivity test, blood examination for: full blood count, renal function test, serum sodium and potassium level, ultrasonography of kidney ureter bladder (KUB) and prostate and uroflowmetry. Preoperative post void residual volume of urine (PVRU) measurement was performed in all patients except those in retention with a Foley's catheter due to acute retention of urine (ARU).

All patients were given injection cefoperozone plus sulbactun 1.5 gm and injection netlimicin intravenously just before starting procedure and two more postoperative doses at 12 hours interval as prophylactic antibiotic. Patients 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 outflow channel and Valleylab diathermy set with setting of 120 Watts for cutting and 80 Watts for coagulation. During TURP procedure, 1.5% isotonic glycine (3 liter bottle) was used for irrigation using in 45-60 cm height.

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 20 or 22 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.

Mean duration of surgery, mean hospital stay, mean post-operative prostatic weight, postoperative improvement of uroflow rates, postoperative post void residual urine (PVRU), post surgery improvements in voiding symptoms and quality of life. Intraoperative and postoperative complications like transurethral resection (TUR) syndrome, clot retention, meatal narrowing, stricture were also recorded. . After discharge,follow-up check up for assessment of improvements of symptoms, quality of life, any new complaints and repeat USG abdomen and uroflowmetry with PVRU measurement was done after 6 weeks and 6 months.

Data was analyzed by SPSS ver. 21.0 and expressed as mean ± standard deviation (SD). The qualitative data was compared using chi-square test. For comparison of mean, independent sample t-test was performed. A p-value <0.05 was considered as level of significance.

RESULTS:

A total of 60 patients who underwent TURP were evaluated: 30 with prostate size of more than 70 grams (Group A) and 30 with prostate size less than 70 grams (Group B).

The mean age was 69.03 ± 9.94 years in group A and 68.57 ± 9.40 years in group B **(Table 1)** . Overall the mean age of 60 patients was 68.8 ± 9.59 (range, 50 to 95) years.

The mean prosatic volume was 89.46 (71-135) grams group A and 50.70 (26-69) grams in group B. Twenty-five patients (83.33%) each in both the groups had an indwelling catheter before TURP because they had a history of retention of urine.The mean pre-operative post-void residual volume was 165 (150-200) cc in the 5 patients in group A without a catheter and the mean uroflow rate was 4.11 (3-5) ml/s. The mean post-void residual volume was 158 (150-170) cc in the 5 patients in group B without a catheter and the mean uroflow rate was 4.21 (3-5) ml/s **(Table 2), (Table 3).**

Mean duration of surgery was significantly more in group A versus group B (66 versus 41.50 minutes, (p<0.0001), with a range of 60 to 75 minutes in the former group and 30 to 55 minutes in the latter group **(Table 4).**

Mean hospital stay in both the groups was comparable. In group A it was 2.07 ± 0.25 days and in group B it was 2.00 ± 1.00 days **(Table 5)** Postoperatively, mean prostate weight in group A was 18.00 ± 1.46, with a range of 16 to 20 grams, while in group B it was 12.07 ± 1.39, with a range of 10 to 15 grams . Also, all patients in both the groups on catheter were decatheterised postoperatively with PVRU either <50 cc or nil. The improvement was significant in both the groups **(Table 6)** Post-operatively, mean serum sodium and mean serum potassium decreased in both the groups, which is normal **(Table 7).** In our study, two (6.67%) patients with prostate size 125 and 135 grams respectively showed transient loss of vision. Three patients (10%) in group A developed features of clot retention and two patients (6.67%) developed meatal narrowing. There was one case (3.33%) of stricture in group A. In group B two patients (6.67%) developed clot retention and one patient (3.33%) had meatal norrowing **(Table 8)** In this group, no patient developed TUR syndrome or stricture. Moreover, there was significant improvement in uroflow level postoperatively in the both the groups

DISCUSSION:

Transurethral resection of the prostate (TURP) is one of the most common operative procedures in elderly people (9). It has largely replaced other method of operative management for BPH and is regarded as gold standard surgical treatment for lower urinary tract symptoms (LUTS) due to benign prostate hyperplasia (BPH) (10).

In the present study, there were not any significant differences between the two groups in mean patient age, 69.03 with a range of 50-95 years in prostate size >70 grams group versus 68.57 with a range of 50-89 years in prostate size <70 grams group. The mean prostate weight was 89.46 (71-135) grams in >70 grams group and 50.70 (26-69) grams in <70 grams group. Twenty-five patients (83.33%) each in both the groups had an indwelling catheter before TURP because they had a history of retention of urine.

Similar to our study, Joshi *et al.* (11) also evaluated the outcomes of TURP in large prostate (>80 grams) in comparison to small prostate (<80 grams) in terms of efficacy, safety and complications. The mean age was 71.80 ± 6.93 years in prostate size >80 grams group and 68.20 ± 12.70 years in prostate size <80 grams group. The mean prostate volume was 88.80 ± 8.70 grams in >80 grams group versus 40.30 ± 11.80 grams in <80 grams. However, in this study no mention was made of indwelling catheter before TURP.

Results from population-based studies have shown that the prevalence of moderate-to-severe LUTS and reductions in mean uroflow both increase with patient age (12). Because the development of LUTS and prostatic enlargement are both age-dependent, the development of LUTS in the aging male population has often been attributed to the enlarging prostate or BPH. In fact, the constellation of obstructive and irritative symptoms observed in aging men was termed as “prostatism” (13).

Duration of surgery ranged from 30-55 minutes in <70 grams group and 60-75 minutes in >70 grams group. The difference in mean duration of surgery of 41.50 minutes in <70 grams group and 66 minutes in >70 grams group was statistically significant (p<0.0001). Mean hospital stay in both the groups was comparable. In prostate size <70 grams group was 2.00 ± 1.00 days and in >70 grams group was 2.07 ± 0.25 days. Overall, catheter was removed successfully in 49 of 50 patients (98%) and they were discharged within 48 hours. One patient, aged 62 years old with prostate size of 125 grams had retention of urine due to clots and he was recatheterized and the catheter was removed 48 hours after TURP.

Muzzonigro *et al.* (14) also observed that operative time was significantly longer in 56 patients with prostate volume between 70 and 150 ml as compared to 57 patients with prostate volume less than 70 ml.

Joshi *et al.* (11) in their study on outcomes of TURP in BPH reported mean resection time of 110 (range 90-130) minutes in group of patients with prostate size >80 grams and 90 (55-115) minutes in prostate size <80 grams group, which is much longer as compared to our study. They also reported mean hospital stay as 6.08 ± 4.01 days in prostate size >80 grams group and 4.80 ± 1.47 days in prostate size <80 grams group, which is longer duration of hospital stay as compared to our study.

Similar to our results, Khan (15) also reported successful removal of catheter in 98.33% patients in their study of 60 patients. In his study also, one patient had retention of urine due to clots and he was recatheterized and the catheter was removed 24 hours after TURP.

In the present study, in prostate size <70 gms group, 2 (6.67%) patients had clot retention and 1 (3.33%) patient showed meatal narrowing. There was no case of TUR syndrome or stricture in this group. In prostate size >70 gms group, clot retention was observed in 3 (10%) patients, transient loss of vision and meatal narrowing was observed in 2 (6.67%) patients each and stricture in 1 (3.33%) patient. However, there was no significant difference in complications observed in the two groups (p>0.05).

Mebust *et al.* (16) carried out a study in a large population of patients (n=3885) who were treated by TURP. They reported that complication rate was higher in patients having large prostate and incidence of TUR syndrome was higher (2%) with resection time more than 90 minutes. Joshi *et al.* (11) found TUR syndrome in two patients (6.6%) from large prostate group (>80 grams) which is similar to our study.

Observations similar to our study were made by Al-Abbadi *et al.* (19), who reported significant improved peak flow from 4.8 ml/sec (preoperative) to 20.4 ml/sec (postoperative).

CONCLUSION

TURP for large prostate glands is a safe procedure without showing a different complication rate compared with TURP for recommended volumes. In appropriately selected patients TURP has an excellent record of efficacy and safety. Conventional TURP can now be performed with excellent long-term efficacy combined with reduced complications.

Table 1 : Comparison of mean age (years)

Prostate	Age of patients (years)	
	Range	Mean ± SD
<70 gms	50-89	68.57 ± 9.40
>70 gms	50-95	69.03 ± 9.94
p- value	0.852	
Remarks	NS	

NS = Non – significant

Table 2 : Comparison of PVRU (cc) between two groups

PVRU (cc)	No. of patients (%)	
	<70 gms	>70 gms
On catheter	25 (83.33)	25 (85.33)
150-160	4 (13.34)	3 (10.00)
>160	1 (3.33)	2 (6.67)
p-value	0.451	
Remarks	NS	

NS = Non – significant

Table 3 : Comparison of mean uroflow (ml/s)

Prostate	Uroflow (ml/s)	
	Range	Mean ± SD
< 70 gms	3.0 – 5.0	4.21 ± 0.80
>70 gms	3.0 – 5.0	4.11 ± 0.74
p-value	0.679	
Remarks	NS	

Table 4 : Comparison of mean duration of surgery (mins)

Prostate	Duration of surgery (mins)	
	Range	Mean ± SD
<70 gms	30-55	41.50 ± 7.76
>70 gms	60-75	66.00 ± 5.48
p-value	<0.0001	
Remarks	S	

S = Significant

Table 5 : Comparison of mean hospital stay (days)

Prostate	Hospital stay (days)	
	Range	Mean ± SD
<70 gms	2.0 – 2.0	2.00 ± 0.00
>70 gms	2.0 – 3.0	2.07 ± 0.25
p-value	0.161	
Remarks	NS	

Table 6 : Comparison of efficacy and safety (PVRU in cc) in two groups

Variables	Mean ± Standard deviation			
	Prostate < 70 gms		Prostate > 70 gms	
	Pre-operative	Post-operative	Pre-operative	Post-operative
On catheter	25 (83.33)	0 (0.00)	25 (83.33)	0 (0.00)
<50 cc	0 (0.00)	19 (63.33)	0 (0.00)	23 (76.67)
>50 cc	5 (16.67)	0 (0.00)	5 (16.67)	0.00
Nil	0 (0.00)	11 (36.67)	0 (0.00)	7 (23.33)
p-value	0.001		0.001	
Remarks	S**		S	

Table 7 : Comparison of efficacy and safety in two groups

Variables	Mean ± Standard deviation			
	Prostate < 70 gms		Prostate > 70 gms	
	Pre-operative	Post-operative	Pre-operative	Post-operative
Serum sodium (mEq/L)	138.73 ± 3.96	135.73 ± 3.74	140.30 ± 3.69	136.30 ± 3.74
p-value	0.003**	0.0001**		
Serum potassium (mEq/L)	3.95 ± 0.34	3.74 ± 0.21	3.91 ± 0.36	3.74 ± 0.24
p-value	0.011**	0.034**		
Prostate weight (gms)	50.70 ± 10.24	12.07 ± 1.39	89.46 ± 15.75	18.00 ± 1.46
p-value	<0.0001**	<0.0001**		
Uroflow (ml/s)	4.21 ± 0.80	20.62 ± 0.65	4.11 ± 0.74	21.15 ± 1.10
p-value	<0.0001**	<0.0001**		

Table 8 : Comparison of two groups according to intra and post – operative complications observed

Complications	No. of patients (%)				p-value
	< 70 gms		> 70 gms		
	Yes	No	Yes	No	
TUR syndrome	0 (0.00)	30 (93.33)	2 (6.67)	28 (93.33)	0.491*
Clot retention	2 (6.67)	28 (93.33)	3 (10.00)	27 (90.00)	1.000*
Meatal narrowing	1 (3.33)	29 (96.67)	2 (6.67)	28 (93.33)	1.000*
Stricuture	0 (0.00)	30 (100.00)	1 (3.33)	29 (96.67)	1.000*

***Not significant**

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