

Transvesical Prostatectomy Versus Transurethral Resection of Prostate For Treatment of Benign Prostatic Hyperplasia More Than 100 Gms: A Randomized Control Trial

Mukesh Chandra Arya¹, Yogendra^{2*}, Abhiyutthan Singh Jadaon², Bheru Singh Hariyawat², Vivek Vasudeo², Ajay Gandhi², Ankur Singhal²

¹MS, M.Ch., Senior Professor & Head, ²M.Ch. Resident, Department of Urology, SP Medical College, Bikaner, Rajasthan, India.

ABSTRACT

Purpose: To compare the functional effects and complications of transvesical prostatectomy (TVP) and bipolar transurethral resection of prostate (TURP) in patients with benign prostatic hyperplasia (BPH) more than 100 gms.

Method: Hundred and five patients participated at the SPMC Medical College, Bikaner, India with complaints of BPH with prostate size of 100-150 gm over study duration from June 2015 to May 2018. Patients were grouped according to their eligibility for the two surgical procedures namely TVP (n=56) and bipolar TURP (n=49).

Results: Of the total 105 patients, 56 (53.33%) patients were surgically treated with TVP while the remaining 49 (46.67%) were managed with TURP. We did not observe any statistically significant difference between the two groups with regards the IPSS, Qmax, residual urine volume. The numbers of post-operative complications were higher in TURP group (n=9) as compared to TVP (n=3). Even the late complications such as stricture formation, need for redoing the surgery were higher in TURP group compared to TVP group.

Conclusion: Open prostatectomy is a safer and more effective

surgical treatment option for patients with BPH more than 100 gms as compared to bipolar TURP. Even the reports of post-operative complications were higher in TURP group.

Keywords: Transvesical Prostatectomy, Transurethral Resection Of Prostate, Benign Prostatic Hyperplasia, Prostate Gland.

*Correspondence to:

Dr. Yogendra,
M.Ch. Resident,
Department of Urology,
SP Medical College, Bikaner, Rajasthan, India.

Article History:

Received: 09-02-2019, Revised: 05-03-2019, Accepted: 19-03-2019

Access this article online

Website: www.ijmrp.com	Quick Response code 
DOI: 10.21276/ijmrp.2019.5.2.048	

INTRODUCTION

Benign prostatic hyperplasia (BPH) is a non-malignant enlargement of the prostate gland in elderly males. BPH is an extremely common condition in aging males. Failure of medical management is an indication for surgery.¹ There has been a remarkable increase in the percentage of BPH cases that are managed with surgery from being zero in 1988 to 36% in 1998 and to 87% in 2008.¹

Since patients start with medicinal management, there is already a delay in the age at which surgery is done.² This also brings in other comorbidities of advancing age and larger prostate gland (>100 gm). Amongst the surgical interventions transurethral resection of prostate (TURP) is the gold standard treatment owing to its long-term efficacy. For prostate size of upto 70-80 gm, TURP is the treatment of choice amongst majority of the urologists.³⁻⁵ The other option which was practiced extensively since decades is the transvesical prostatectomy or open prostatectomy (TVP)

which still has its importance in modern urology. This study was aimed to compare the efficacy and the degree of complications between TVP and bipolar TURP procedures.

MATERIALS AND METHODS

This was a single-centre, prospective randomised study performed at the SP Medical College Bikaner, India between June 2015 and May 2018. Patients aged between 50 and 75 years with complaints of BPH (prostate size of 100-150 gm before surgery) and were eligible for the surgeries were enrolled in the study. Patients were randomized for either TVP or TURP. Institutional ethics committee approval was taken for the study and a written informed consent was obtained from the enrolled cases after explaining them the entire surgical procedure and the probable complications involved. The study was conducted in accordance with the principles that have their origin in the Declaration of

Helsinki. Patients with previous prostate or urethral surgery, voiding disorders, which were not due to BPH (e.g., neurogenic bladder disorder), prostate and bladder carcinoma, bladder calculi or diverticula were not included in the study.

Preoperative assessment was done for all patients which included digital rectal examination, urine analysis, transrectal ultrasound (TRUS) along with measurement of transitional zone of prostate and post-void residual assessment (PVR). Routine blood chemistry, maximum flow rate (Qmax) by uroflowmetry and International Prostate symptom score (IPSS) were recorded. Urine culture was done in all patients and accordingly the culture sensitive antibiotic was prescribed 24 hours prior to surgery. Biopsy was done in all patients for histopathology.

Surgical Procedure

A. Freyers/ transvesical: The procedure was done under spinal anesthesia. Dissection and removal of the adenoma was done by inserting the index finger into the prostatic fossa and breaking the anterior commissure. Dissection of the distal apical adenoma is done along with blunt enucleation in the cleavage plane between

the surgical capsule and adenoma. Sharp removal of the tissue tags caused bleeding for which tamponade was used. A 24 Fr 3-way Foleys catheter is used. After 48 hours, Foleys 24 fr was replaced by 16 Fr. Catheter and sutures were removed on seventh day.

B. Bipolar TURP: It was performed using a standard Mauermyer technique. A Karl Storz Fr 26 continuous flow resectoscope with bipolar loop electrode was used for TURP. Continuous saline irrigation of the bladder was done in all post op cases till urine became clear.

During post-operative follow-up visit IPSS score, Qmax and PVR were assessed.

Statistical analysis was done by SPSS software (Statistical Package for the Social Science, version 16.0, Chicago, Illinois, USA). Categorical variables were analyzed by Chi-square or Fisher exact test as was appropriate. Quantitative variables were analyzed using T test or Mann-Whitney test. Intention-to-treat population was considered for all analyses. No subgroup analysis were done or are planned. Two-sided P values <0.05 were considered as significant.

Table 1: Baseline characteristics

Variable	TVP (N=56)	TURP (N=49)	P-value
Age	63.08 +/- 12.05	62.79 +/-10.93	NS
Prostate Volume (ml)	122.1 +/- 11.9	125.70 +/- 12.97	NS
IPSS (10)	25.32 +/- 2.62	24.88 +/- 5.20	NS
PVR(ml)(10)	96.40 +/- 20.10	94.7 +/- 19.06	NS
Qmax (10)	6.10 +/- 1.80	6.50 +/- 1.70	NS
Haemoglobin	12.90 +/- 1.10	13.10 +/- 1.20	NS

Table 2: Post-operative variables

Variable	TVP (N=56)	TURP (N=49)	P-value
Operative time (mins)	43.06 +/- 10.90	102.60 +/- 20.80	<0.05
Resected tissue weight (gms)	104.60 +/- 13.80	65.40 +/- 15.60	<0.05
Postoperative irrigation time (days)	2.1 +/- .70	1.70 +/- .50	
Postoperative days of catheter (days)	7	2.1 +/- .50	
Admission duration (days)	3-8	2-8	
IPSS (baseline)	25.32 +/- 2.62	24.88 +/- 5.20	
3 month	11.60 +/- 1.90	13.20 +/- 2.10	
6 month	6.50 +/- 1.20	11.10 +/- 3.60	
Qmax (baseline)	6.20 +/- 1.80	6.50 +/- 1.70	
3 month	18.30 +/- 3.70	14.40 +/- 2.60	
6 month	21 +/- 2.20	15.30 +/- 1.80	
PVR (baseline)	96.40 +/- 20.10	94.70 +/- 19.60	
3 month	12.70 +/- 14.10	34.60 +/- 12.10	
6 month	9.40 +/- 5.80	29.06 +/- 3.80	

Table 3: Adverse events

Variables	TVP	TURP
Blood transfusion	5	7
Clot retention	2	6
Fever	4	5
Incontinence (>3 months)	0	0
Redo	0	3
Stricture	0	7
Wound infection	1	N.A.

RESULTS

Of the total 105 patients, 95 presented with retention of urine and failed to void on catheter free trial despite being on medical management. While the remaining 10 patients had significant LUTS due to bladder outlet obstruction, which was non-responsive to medical therapy. Patients' demographic and baseline characteristics are presented in Table 1. There was no statistically significant difference in pre-operative variables between TVP and TURP groups. Overall, the mean age was 63.08 and 62.79 years in TVP and TURP groups respectively and the prostate volume was 122.1 and 125.7ml, respectively.

Operative time was significantly ($p < 0.05$) lower in patients undergoing TVP (43.6 minutes) compared to TURP (102.6 minutes). The resected tissue weight was significantly ($p < 0.05$) higher in TVP (104.6 gm) compared to TURP (65.4 gm). The postoperative irrigation time and duration of admission was comparable between the two groups; however, the median postoperative days of catheter was higher in TVP group (7 days) than TURP group (2.1 days). Overall, the improvement in IPSS score, Qmax, and PVR was significantly better in TVP group than TURP group.

Early postoperative complications (Table 3) (during hospitalization) were observed in three patients in TVP group (clot retention in two cases and wound infection in one case) and in nine patients in TURP group (clot retention in six and three cases developed urinary retention after urethral catheter removal on postoperative day 2). No episodes of transurethral resection syndrome and no documented thromboembolic events were observed. During 8 to 12-month follow-up, re-operation was performed in ten patients from TURP group (three patients underwent repeat TURP and seven patients were diagnosed with urethral stricture, so a suprapubic catheter was inserted in those patients because of urinary retention and failure to pass a urethral catheter). No case of re-operation or any stricture urethra was found in TVP patients. No evidence of incontinence was observed in any patients from both groups.

DISCUSSION

Benign prostatic hyperplasia is a very common urinary tract condition seen in elderly males from 50 – 70 years of age. The average age in our study was found to be 63.08 and 62.79 years in TVP and TURP group respectively. Similar findings were seen in another study by Salim K where the average age was 61.44 years.⁶ Benign prostatic hyperplasia causes obstruction to the flow of urine causing symptoms of acute or chronic retention and LUTS. Even in our study 95 cases complained of urinary retention while ten patients had symptoms of LUTS prior to surgery.

Transvesical prostatectomy is still considered as the only surgical option for completely relieving prostatic obstruction caused due to prostate diseases.⁷⁻⁹ Though many newer interventions are available and practised, the management of large prostate and other pathologies requiring open intervention such as multiple bladder stones, TVP is the treatment of choice.¹⁰ TURP is also the most commonly used management option for relieving the obstruction with almost 60% to 97% prevalence of prostate surgeries.^{11,12}

At present newer methods such as laser vaporization technology and Holmium laser enucleation of the prostate seem to be more promising with lesser morbidity and equivalent success as TVP or

TURP.¹³⁻¹⁵ These techniques are even not dependant on the prostate size or weight. But the main drawbacks for laser technology is its higher cost.^{14,15}

Transurethral resection of the prostate is the treatment of choice of majority of urologists for prostate size less than 70 to 80 g^{3-5,16}; however, there have being notable complications such as TURP syndrome, bleeding and urethral stricture at the rate of 11.1% as observed in an multicentre study which included 10,654 men.¹⁷ Since the comparison between TVP and TURP is difficult as the criteria for selecting them is different, the ideal way to compare them would be through a randomised control trial.

In this study, patients in TVP and TURP groups were comparable at baseline except for age. We did not observe any statistically significant improvement in IPSS, Qmax or residual urine volume from the baseline between the two study groups. Some reports suggest having better IPSS improvement and less residual urine volume in TVP operations.^{4,5,16,18-20}

Immediate postoperative complications were observed in three patients in TVP group (clot retention in two patients and wound infection in one patient) and in nine patients from TURP group (clot retention in six and three cases developed urinary retention after urethral catheter removal). Thus, 3.57% cases had clot retention in TVP group which is less as compared to a study by Sagarkumar et al where around 12% patients had clot retention.²¹ Around 12.24% cases of clot retention were seen in TURP group in the present study which is less as 8% cases were seen in Sagarkumar's study.²¹

Higher rate of stricture urethra has been reported in our patients who underwent TURP as compared to TVP. Similar findings of more cases of stricture formation in TURP group were observed in a study by Rubiao et al where 5.71% of patients were observed in TURP group as compared to no case in TVP.²²

From economic points of view, the initial cost of instruments as well as the consumables in each surgery of TVP is much cheaper as compared to TURP, which could be one the reasons why still TVP is the treatment of choice in developing countries despite newer available options. Regarding ergonomics there is significant stress and strain to eyes, shoulders and back in bipolar TURP, leading to inability for a single operating surgeon to perform more than one large (>100 gm) resection in a day, which in comparison to Freyer's surgery can easily perform 5-6 cases in a day. So even the surgeons would prefer Freyer's surgery considering the patient load.

Resected tissue weight was significantly less in TURP group as compared to TVP. Though its implication was not reflected with any significant difference in postoperative improvement in IPSS, Qmax or residual urine volume between the two study groups.

Although TVP seems more invasive due to the low midline incision (though it is extraperitoneal, without incising any muscles), but on the other hand, the following advantages should also be considered, a) can simultaneously deal with bladder stone/bladder diverticulum; b) much safer in patients with other comorbid cardiopulmonary conditions; c) less complicating in intrinsically narrow urethra and lesser incidence of stricture urethra; d) can be performed for gland of any size more than 100 gm; and e) can be performed in patients who can't attain lithotomy position f) no TUR syndrome g) complete enucleation therefore less chances of redo surgery.

CONCLUSIONS

Open transvesical prostatectomy is a safer option in larger prostates with fewer complications in comparison with TURP. While TURP requires costly instruments, skilled urologists and adequate set-up, it is widely used for smaller glands. TVP can be used in set-ups where resectoscope is not available, cases with large gland and BPH associated with bladder pathology and high volume government setups. Ergonomically TVS is better than bipolar TURP.

REFERENCES

1. Wein AJ, Kavoussi LR, Partin AW, Peters CA, MD. Campbell – Walsh urology, 11th edition. Philadelphia, PA: Elsevier. 2016.
2. Wong MY, Lim YL, Foo KT. Transurethral resection of the prostate for benign prostatic hyperplasia – a local review. Singapore Med J. 1994; 35: 357-9.
3. J. de la Rosette, S. Madersbacher, G. Alivizatos, C. Rioja Sanz, M. Emberton, J. Nordling. Guidelines on Benign Prostatic Hyperplasia. European Urology Association. 2009; 35.
4. Jepsen JV, Bruskewitz RC. Recent developments in the surgical management of benign prostatic hyperplasia. Urology. 1998; 51: 23-31.
5. Reich O, Gratzke C, Stief CG. Techniques and longterm results of surgical procedures for BPH. Eur Urol. 2006; 49: 970-8.
6. Salim K, Asghar K, Aziz MK. Surgical treatment of benign prostatic hyperplasia: outcome of transvesical prostatectomy. Biomedica. 2004; 20 (2): 122-26.
7. Jepsen JV, Bruskewitz RC. Recent developments in the surgical management of benign prostatic hyperplasia. Urology. 1998; 51: 23-31.
8. Tubaro A, Carter S, Hind A, Vicentini C, Miano L. A prospective study of the safety and efficacy of suprapubictransvesical prostatectomy in patients with benign prostatic hyperplasia. J Urol. 2001; 166: 172.
9. McConnell JD, Barry MJ, Bruskewitz RC. Benign prostatic hyperplasia: diagnosis and treatment for Health Care Policy and Research. ClinPractGuidel Quick Ref Guide Clin. 1994; 1-17.
10. Servadio C. Is open prostatectomy really obsolete? Urology. 1992; 40: 419-21.
11. Ahlstrand C, Carlsson P, Jonsson B. An estimate of the life-time cost of surgical treatment of patients with benign prostatic hyperplasia in Sweden. Scand J Urol Nephrol. 1996; 30: 37-43.
12. Mozes B, Cohen YC, Olmer L, Shabtai E. Factors affecting change in quality of life after prostatectomy for benign prostatic hypertrophy: the impact of surgical techniques. J Urol. 1996; 155: 191-6.
13. Fried NM. New laser treatment approaches for benign prostatic hyperplasia. CurrUrol Rep. 2007; 8: 47-52.
14. Kuntz RM. Current role of lasers in the treatment of benign prostatic hyperplasia (BPH). Eur Urol. 2006; 49: 961-9.
15. Kuntz RM. Laser treatment of benign prostatic hyperplasia. World J Urol. 2007; 25: 241-7.
16. Fitzpatrick JM. Millinretropubic prostatectomy. BJU Int. 2008; 102: 906-16.
17. Rassweiler J, Teber D, Kuntz R, Hofmann R. Complications of transurethral resection of the prostate (TURP)-incidence, management and prevention. Eur Urol. 2006; 50: 969–80.
18. Meyhoff HH, Nordling J, Hald T. Clinical evaluation of transurethral versus transvesical prostatectomy. A randomized study. Scand J Urol Nephrol. 1984;18: 201-9.
19. Varkarakis I, Kyriakakis Z, Delis A, Protogerou V, Deliveliotis C. Long-term results of open transvesical prostatectomy from a contemporary series of patients. Urology. 2004; 64: 306-10.
20. Meyhoff HH, Nordling J. Long term results of transurethral and transvesical prostatectomy. A randomized study. Scand J Urol Nephrol. 1986; 20: 27-33.
21. Gupta S, Solanki M, Maharaul H. A Comparative Study of Post-operative complications of open prostatectomy (Fryer's) versus trans urethral resection of prostate. IJBR.2015;6(09):712-7.
22. Ou R, You M, Tang P, Chen H, Deng X, Xie K. A randomized trial of transvesical prostatectomy versus transurethral resection of the prostate for prostate greater than 80 mL. Urology. 2010; 76(4): 958-61.

Source of Support: Nil. **Conflict of Interest:** None Declared.

Copyright: © the author(s) and publisher. IJMRP is an official publication of Ibn Sina Academy of Medieval Medicine & Sciences, registered in 2001 under Indian Trusts Act, 1882. This is an open access article distributed under the terms of the Creative Commons Attribution Non-commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

Cite this article as: Mukesh Chandra Arya, Yogendra, Abhyutthan Singh Jadaon, Bheru Singh Hariyawat, Vivek Vasudeo, Ajay Gandhi, Ankur Singhal. Transvesical Prostatectomy Versus Transurethral Resection of Prostate For Treatment of Benign Prostatic Hyperplasia More Than 100 Gms: A Randomized Control Trial. Int J Med Res Prof. 2019 Mar; 5(2):228-31. DOI:10.21276/ijmrp.2019.5.2.048