

# Uroflowmetric Study Before and After Suprapubic Transvesical Prostatectomy in the Patients of Benign Prostatic Hyperplasia

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## Abstract-

**Aims:** To study uroflowmetric changes before and after Suprapubic Transvesical Prostatectomy in the patients of Benign Prostatic Hyperplasia.

**Material and methods:** This study was carried out at Department of Jarahat, Ajmal Khan Tibbiya College A.M.U Aligarh from year 2015-16. In our study out of 58 BPH patients, 10 patients underwent suprapubic transvesical prostatectomy and uroflowmetric changes were evaluated.

**Results:** Mean voided volume before prostatectomy was  $46.1 \pm 100.5$  mL with a mean maximum flow rate of  $2.5 \pm 5.3$  mL/s and mean average flow rate of  $0.8 \pm 1.7$  mL/s. After suprapubic prostatectomy mean voided volume was  $229.9 \pm 43.4$  mL, mean maximum flow rate was  $24.0 \pm 8.5$  mL/s and mean average flow rate was  $8.2 \pm 3.5$  mL/s.

**Conclusion:** It is concluded that post suprapubic prostatectomy, all uroflowmetry parameters return towards normal levels. There is an excellent improvement in both obstructive and irritative symptoms post operatively.

**Index terms-** Uroflowmetry, Benign Prostatic Hyperplasia and Suprapubic Transvesical Prostatectomy.

## I. INTRODUCTION

Benign prostatic hyperplasia (BPH) has been known as a cause of urinary obstruction and the most common disease effecting the aging men. Almost 50% of the men aged 51-60 years and 90% of men over aged 80 years have histological evidence of BPH[1]. Clinical diagnosis of BPH is made by the assessment of the IPSS, prostate size or volume and reduced urinary flow rate. Patients with BPH have early clinical features of frequency, nocturia, urgency, terminal dribbling, polyuria, difficulty in micturition, weak urinary stream, pain, acute retention of urine, overflow incontinence, sometimes haematuria, and renal insufficiency [2]. Late clinical features will develop more serious sequelae of disease with urinary retention, recurrent urinary tract infection, bladder stone, bladder failure, and renal dysfunction [3]. These symptoms may be due to bladder outflow obstruction caused by BPH or due to detrusor hyper-reflexia.

In BPH patients, uroflowmetry is a basic investigation of urodynamic study. It is the most physiologic and non-invasive assessing method of lower urinary tract obstruction. It is a way of integrating the activity of the bladder and the outlet during the emptying phase of micturition. The flow rate and pattern represent the recorded variables; if these are both normal, it is unlikely that there is any significant disorder of emptying. Mean and peak flow rate, the actual pattern, and the relationship of each rate to the volume voided are all important. Uroflowmetry is a useful clinical tool in the diagnosis and follow-up of males with BPH. It is a method to evaluate prostatic obstruction by measuring the maximum distance reached by the urinary flow [4].

Elective prostatectomy for severe symptoms like increasing difficulty in micturition, with considerable frequency day and night, delay in starting and a poor stream are the usual symptoms for which prostatectomy is advised [2]. Prostatectomy is considered satisfactory in relieving symptoms and improving urodynamic measurements in most men having BPH [5].

## II. MATERIAL AND METHODS

This study was carried out at Department of Jarahat, Ajmal Khan Tibbiya College A.M.U Aligarh. 58 patients with BPH from OPD and IPD of Jarahat, AKTC were included in the study from year 2015-1610 and 10 patients underwent suprapubic transvesical prostatectomy. All the patients were well informed about the study. Informed written consent was taken from patients who were willing to participate in this study. A careful history, especially about the symptoms was taken in all patients.

A thorough physical digital rectal examination of the prostate gland was done. All the necessary investigations including ultrasound KUB, X-ray KUB, blood CP and group, urine R, urine C/S, renal function tests, and blood sugar were carried out. Fitness for anaesthesia was assessed. Foley’s catheter removed on tenth day postoperatively and Patients were discharged with adequate urinary flow.

All the data were tabulated and evaluated statistically by using paired t-test.

## III. OBSERVATION AND RESULTS

Suprapubic prostatectomy was done in 10 patients in this study. The mean voided volume before prostatectomy was  $(46.1 \pm 100.5)$  mL, mean maximum flow rate was  $(2.5 \pm 5.3)$  mL/s, mean average flow rate was  $(0.8 \pm 1.7)$  mL/s and mean voiding time was  $(11.6 \pm 24.5)$  sec as shown in table 1 (a) and graph 1 (a), 1 (b), 1(c) and 1 (d).

**Table 1(a)- Uroflowmetry in Patients Before Suprapubic Prostatectomy**

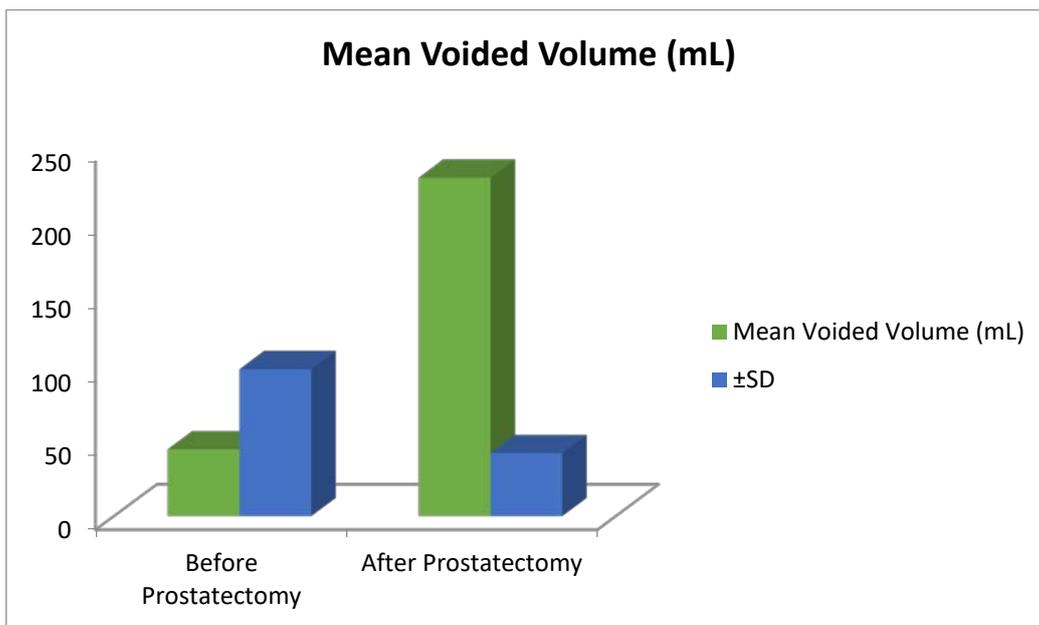
No. of Cases	Uroflowmetric Parameters	Voided Volume (mL)	Maximum Flow Rate (mL/s)	Average Flow Rate (mL/s)	Voiding Time (sec)
10	Mean	46.1	2.5	0.8	11.6
	SD	$\pm 100.5$	$\pm 5.3$	$\pm 1.7$	$\pm 24.5$

After suprapubic prostatectomy, mean voided volume was recorded to be  $(229.9 \pm 43.4)$  mL, mean maximum flow rate was  $(24.0 \pm 8.5)$  mL/s, mean average flow rate was  $(8.2 \pm 3.5)$  mL/s and mean voiding time was  $(31.5 \pm 12.1)$  sec as shown in table 1 (b) and graph 1(a), 1 (b), 1 (c), and 1(d).

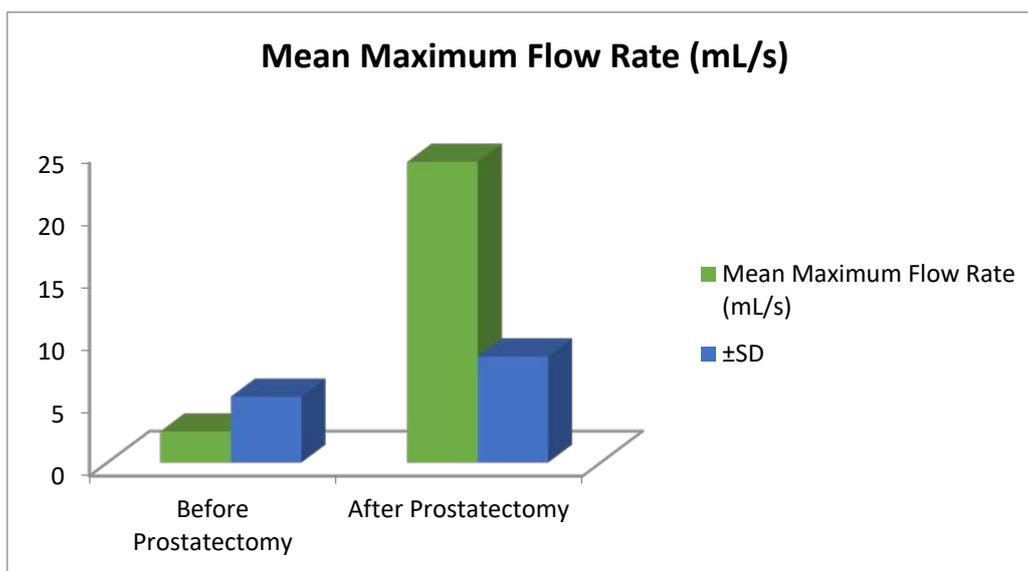
**Table 1 (b)- Uroflowmetry in Patients After Suprapubic Prostatectomy**

No. of Cases	Uroflowmetric Parameters	Voided Volume (mL)	Maximum Flow Rate (mL/s)	Average Flow Rate (mL/s)	Voiding Time (sec)
10	Mean	229.9	24.0	8.2	31.5
	SD	$\pm 43.4$	$\pm 8.5$	$\pm 3.5$	$\pm 12.1$
<b>t &amp; p values</b>		t=5.8 p=0.0003	t=8.4 p<0.0001	t=9.0 p<0.0001	t=2.0 p=0.07

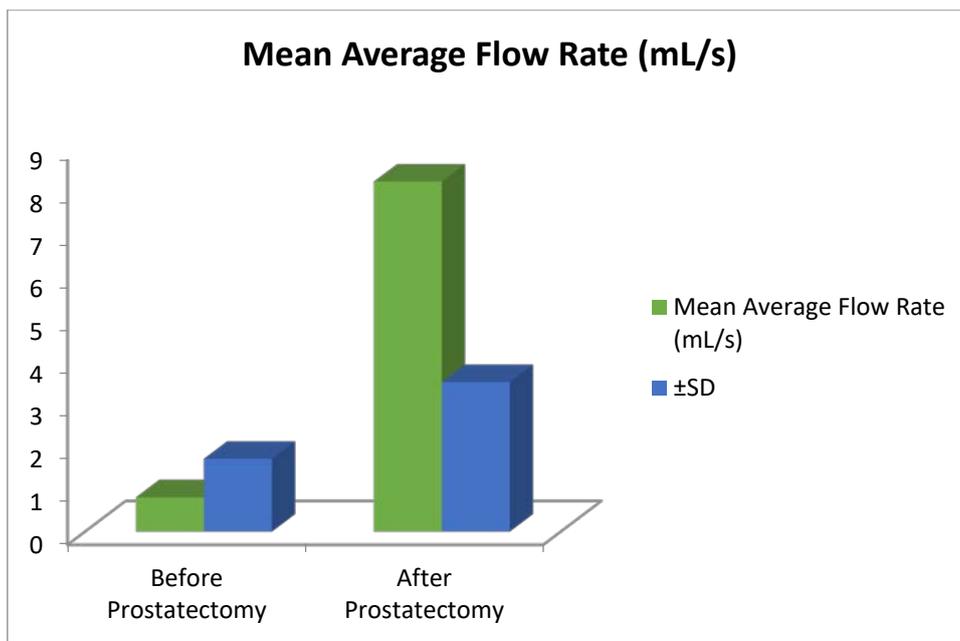
**Graph 1 (a)**



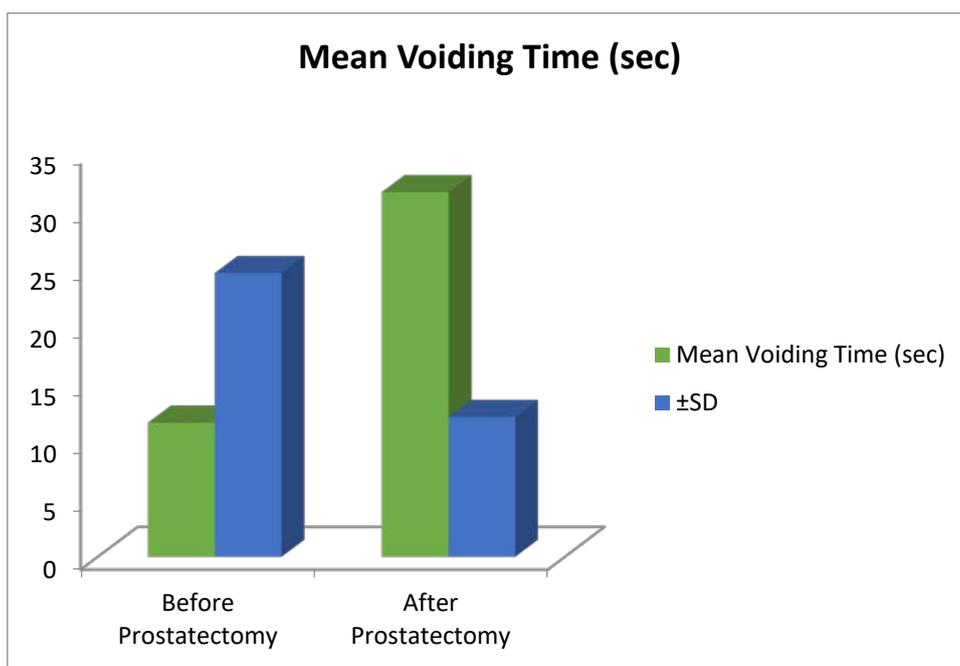
**Graph 1 (b)**



**Graph 1 (c)**



Graph 1 (d)



#### IV. DISCUSSION

Uroflowmetry is a frequently used and simple urodynamic test for both diagnosis and follow-up of obstructive lower urinary tract symptoms. The maximum flow rate, average flow rate, voided volume and voiding time are important parameters for interpretation.

The mean age of 58 BPH patients included in the study was found to be  $62.0 \pm 9.0$  years (range 45-90 years). Data suggest that the incidence of symptomatic BPH is 23% in men aged 50 years and 78% in men aged 60-70 years [6]. Akin et al., [7] on 48 BPH patients, reported mean age of  $60.17 \pm 1.18$  years. Pethiyagoda et al., [8] in their study on 185 patients showed mean age of  $65.2 \pm 11.46$  years. Thus, our findings appear to be in conformity with the findings of other researchers. In our study, most of the patients (36.2%) were in the age group of 60-70 years. In this study 10 patients underwent suprapubic transvesical prostatectomy. Mean voided volume before prostatectomy was  $46.1 \pm 100.5$  mL with a mean maximum flow rate of  $2.5 \pm 5.3$  mL/s and mean average flow rate of  $0.8 \pm 1.7$  mL/s. Among these patients who were catheterized and uroflowmetry could not be performed. So the pre-operative uroflowmetric parameters were considered 0 in all these patients for statistical evaluation. After suprapubic prostatectomy mean voided volume was  $229.9 \pm 43.4$  mL, mean maximum flow rate was  $24.0 \pm 8.5$  mL/s and mean average flow rate was  $8.2 \pm 3.5$  mL/s. Mean maximum flow rate and mean average flow rate after prostatectomy were similar to normal cases of our study in which the mean maximum flow rate was  $23.8 \pm 7.3$  mL/s and mean average flow rate was  $8.7 \pm 2.9$  mL/s. Abedinzadeh et al., [9] on 350 normal men showed maximum flow rate of 26ml/s and mean average flow rate 15ml/s. Amjadi et al., [10] on 31 male volunteers who were asymptomatic of urological disorder. They had the mean Q max of 23.4 mL/s and the mean average flow rate of 13.4 mL/s. Jalbani et al., [11] showed preoperatively mean maximum flow rate of  $7.60 \pm 2.41$  ml/sec, average flow rate of  $4.44 \pm 1.28$  ml/sec and voided volume of  $165.54 \pm 49.60$  ml. Three months after TURP, mean maximum flow rate was  $27.24 \pm 5.11$  ml/sec, average flow rate was  $13.48 \pm 2.08$  ml/sec and voided volume was  $240.32 \pm 49.91$  ml.

Rahman et al., [12] reported a significant improvement in terms of Qmax, voided volume and voiding time in all patients after TURP. It is concluded that post TURP or suprapubic prostatectomy, all uroflowmetry parameters return towards normal levels. There is an excellent improvement in both obstructive and irritative symptoms post operatively.

## V. CONCLUSION

It is evident from this study that the effects of suprapubic transvesical prostatectomy on uroflowmetry parameters are significantly improved postoperatively. This study indicates that there is excellent improvement in the maximum flow rate, average flow rate in all postoperative follow up visits.

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## REFERENCES

1. B.A Nicholas, R.N Colledge, R.B Walker, A.A.J Hunter, Davidson's Principles and Practice of Medicine, 20<sup>th</sup>ed, International Edition, Churchill Livingstone, 2006, pp510-511.
2. A.J.H Rains, C.V Mann, Baily And Love's Short Practice of Surgery. 20th ed. Hadder Arnold, 1988, pp- 1299-308.
3. P.C Peters, T.B Boone, I.N Frank, J.D McConell, G.M Preminger, Editors- Preminger. Schwartz, Principles of surgery. 6th ed. McGraw Hill; 1753-55.
4. E. G Ballenger, O.F Elder and H. P McDonald. "Voiding distance as important early symptom of prostatic obstruction", South. M.J., 25:863-864, Aug. 1932.
5. D.E Neal, P.D Ramsden, L Sharples, A Smith, P.H Powell, R.A Styles, R.J Webb. "Outcome of elective prostatectomy". Br Med J. 299:762-7. 1989
6. M Gai, G Corona, M Salvi, L Vignozzi, K.T McVary, S.A Kaplan, et al. "A systematic review and meta-analysis on the use of phosphodiesterase 5 inhibitors alone or in combination with  $\alpha$ -blockers for lower urinary tract symptoms due to benign prostatic hyperplasia". Eur Urol. 61:994-1003. 2012
7. Y Akin, H Gulmez, Ucar, S Yucel. "The effect of first dose of tamsulosin on flow rate and its predictive ability on the improvement of LUTS in men with BPH in the mid-term". Int Urol Nephrol. 45:45-51. 2013.
8. A.U.B Pethiyagoda, K. Pethiyagoda. "Correlation between prostate volume and Lower Urinary Tract Symptoms (LUTS) as measured by International Prostate Symptom Score (IPSS)". International Journal of Scientific and Research Publications, 6(4), 2016.
9. A.M Amdjadi. "Determination of Normal Range of Uroflowmetry in 15-45 Years Old Males in Tabriz". JSSU, 12(4): 22-39. 2005.
10. M Amjadi, S Hajebrahimi, F Soleimanzadeh. "The Effect of Voiding Position on Uroflowmetric Parameters in Healthy Young Men". UroToday Int J; 4 (3), June- 2011.
11. J. Hussain, S.R. Memon, R.A. Dinari, N.A Shaikh, A.K Oad and K.C Rohra. "Effects of Transurethral Resection of Prostate on Flow Rate and Voided Volume on Patients with Benign Prostatic Hyperplasia". JLUMHS; 8(2), May-August 2009.

12. M.H Rahman ,M.A Islam, A.I Joarder , M Mannan , M.A Bhuiyan, B.K Paul. "Uroflowmetry before and after transurethral resection of prostate for bladder outlet obstruction". Mymensingh Med J.,19 (4):601-7,Oct-2010.

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