

# Comparison of The Urinary Flow Rate Improvement After Transurethral Incision and Transurethral Resection of Prostate for Small Sized Symptomatic Benign Enlargement

Muhammad Naeem, Ihsan Ullah, Asad Shamsheer, Naqib Ullah, Jamshid Wazir, Bakhtawar Gul Wazir

## ABSTRACT

**Objective:** To compare the mean improvement in urinary flow rate after transurethral resection of prostate (TURP) and transurethral incision of prostate (TUIP) for small sized symptomatic benign prostatic enlargement (SBE). **Study design:** Randomized controlled trial. **Duration of study:** January 2016 to December 2017. **Setting:** Department of Urology Institute of Kidney Diseases Hayatabad Peshawar. **Methodology:** A total of 216 patients presenting to our OPD having lower urinary tract symptoms due to benign prostatic enlargement were included in the study. Their medical history, physical and digital rectal examination were performed. Urine analysis, urine C/S, Blood Complete, Serum Creatinine Prostate Specific Antigen, Uroflowmetry and Ultrasound were performed. All patients were randomized into two groups; Group A (TURP) and Grouped B (TUIP). **Results:** Our study shows that in Group A (TURP) mean age was 57 years with standard deviation  $\pm 3.78$  while in Group B (TUIP) mean age was 60 years with standard deviation  $\pm 3.13$ . The status of uroflowmetry (post-operative) among two groups was analyzed as in Group A (TURP) 5(5%) patients had uroflowmetry  $<15$  ml while 103(95%) patients had uroflowmetry  $>15$  ml. Mean uroflowmetry was 17 ml with standard deviation  $\pm 3.64$ . Where as in Group B (TUIP) 9(8%) patients had uroflowmetry  $<15$  ml while 99(92%) patients had uroflowmetry  $>15$  ml. Mean uroflowmetry was 16 ml with standard deviation  $\pm 3.55$ . Mean urinary flow rate was compared between TURP and TUIP in which showed that there is no significant difference between the two surgical procedures in term of urinary flow rate. **Conclusion:** Our study concludes that there was no significant difference between TURP and TUIP in term of mean urinary flow rate for small sized symptomatic benign prostatic enlargement.

**Keywords:** Transurethral resection of prostate, Transurethral incision of prostate, Urinary flow rate, Urinary obstruction, Uroflowmetry.

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## INTRODUCTION

The aim of treating “benign prostatic enlargement” (BPE) is to improve bothersome lower urinary tract symptoms (LUTS) and has effects on quality of life, and prevention or minimizing complications such as urinary retention, urinary tract infections and renal function deterioration<sup>1,2</sup>. Therapeutic modalities offered to the patients range from watchful waiting and medical manipulation to minimally invasive procedures.

Surgical treatment of clinical BPE is in practice since the work of Guthrie (19th century) with the development of various newer endoscopic techniques having some advantages and disadvantages. Two of such techniques are “transurethral resection of prostate (TURP)” the gold standard for the treatment of “benign prostatic hyperplasia (BPH)” and “transurethral incision of prostate (TUIP)”. However, TURP is associated with a high failure rate and approximately 15-20% of patients may require a second surgery with-in 10 years<sup>3</sup>. It leaves 3-35% pre-operatively sexually active men impotent and around 50-59% patients develop retrograde ejaculation after the surgery, while 1% becomes incontinent and 20-25% are not satisfied with the effects of the operation<sup>4,5,9</sup>.

Similarly, small volume BPH usually does not cause a predominant bladder outlet obstruction (BOO) and even an adequate resection of prostate tissue is associated with only a limited improvement. As a single therapy, TURP does not adequately address the multiple causes of BOO due to small volume BPH. In addition, a simple TURP cannot resolve the issues of bladder neck contracture due to local fibrosis, increased tension caused by circular fibers in the bladder neck, and associated chronic prostatitis, which are the commonest pathophysiological causes of small volume BPH<sup>6,7,8</sup>.

TUIP is equally effective to TURP, regarding symptomatic improvement in small volume prostate, besides less side effects, short operative time, less hospital stays (three days for TUIP and five days for TURP) and catheterization<sup>4,7,8,13</sup>.

As TUIP is equally effective to TURP with less operative time and hospital stay (three days for TUIP and five days for TURP)<sup>4,6</sup> and less complications and less cost on health system, the rationale of my study is to exactly determine the relief of obstruction by measuring improvement in urinary flow rate for the TUIP, and if it turns to be comparable to TURP, in small volume prostate (less than 35gm). So, if there is no significant difference in these two procedures, then we can recommend

TUIP as a standard procedure for prostate less than 35 gm rather than TURP<sup>4,6,13</sup>.

## METHODOLOGY

**Study design:** Randomized controlled trial

**Place of study:** Institute of Kidney Diseases, Peshawar

**Duration of study:** January 2016 to December 2017

### Methods:

This study was conducted at Institute of Kidney Diseases Hayatabad Peshawar. This Randomized Controlled trial (RCT) was completed in 2 years duration from Jan 2016 to Dec 2017 including a total of 216 patients according to WHO sample size estimation using open EPI calculator, mean  $\pm$ SD of TUIP=7.5 $\pm$ 1 and mean  $\pm$ SD of TURP=7.1 $\pm$ 0.8 with power of test=90% and 95% confidence level. More over non-probability consecutive sampling technique was used for sample collection.

Prior permission from the hospital research and ethical committee of Institute of Kidney Diseases Hayatabad Peshawar was sought. Patients with benign prostatic hyperplasia presented to the urology OPD having < 35 gm prostate were included in the study. The procedure was explained to the patients and they were informed that their inclusion in the study is purely for research purpose which will benefit other patients as well, and an informed written consent was obtained on their agreement.

Patients having lower urinary tract symptoms (LUTS) due to BPE were enrolled in the study. Their medical history, physical examination, digital rectal examination (DRE) was performed. "Urinalysis, microscopy, bacterial culture, Serum Creatinine, prostate specific antigen, Uroflowmetry, and Ultrasound measurement of post void residual urine volume were performed. Patients with estimated prostate size of 35 gm or less determined by DRE and ultrasonography were included in the study. Patients having prostate more than 35 gm or CA prostate were excluded from the study. Patients were randomized into two groups where one group "A" undergone conventional TURP and group "B" was subjected to TUIP.

After preliminary Urethro-cystoscopic evaluation, a 26-Fr continuous flow "Karl Storz" Resectoscope was used in all cases using spinal regional anesthesia and 1.5% glycine solution was used for irrigation.

In TURP group, a standard procedure was applied by resecting circumferentially up to anatomic capsule. In TUIP group, the standard procedure used was deep incisions, at 5 and 7 o'clock positions using "Collin's knife". Incisions were made from trigone just below the ureteral orifices, cutting the bladder neck and prostate to the sides of proximal end of verumontanum. Finally, a 22-Fr three-way "Foleys catheter" was passed, balloon inflated with distilled water and connected to a closed drainage system.

Continuous bladder wash was performed with normal saline postoperatively till it became clear. Uroflowmetry was performed at third month postoperatively to study the maximum flow rate improvement of urine. Data were recorded in a proforma and analyzed accordingly. A comparison of improvement in urinary flow rate was made in both TURP and TUIP.

## RESULTS

Out of total 216 patients, 108 were distributed into TURP (Group A) and the same number in to TUIP (Group B) for comparison purpose. Age wise distribution of patients in both groups was analyzed as; Group A (TURP) 46(43%) patients were in age range 50-60 years, 33(31%) were in age range 61-70 years, 25(23%) in age range 71-80 years and 4(3%) were in age range 81-90 years. Mean age of group A was 57 years with standard deviation  $\pm$  3.78. Where as in Group B (TUIP) 48(45%) patients were in age range 50-60 years, 36(33%) were in age range 61-70 years, 22(20%) in age range 71-80 years and 2(2%) were in age range 81-90 years. Their mean age was 60 years with standard deviation  $\pm$  3.13. (Table no. 1).

Prostate size among two groups was analyzed as, Group A (TURP) 78(72%) patients had prostate size range 25-30 ml while 30(28%) patients had prostate size range 31-35 ml. Mean prostate size was 29 ml with standard deviation  $\pm$  2.52. Where as in Group B (TUIP), 81(75%) patients had prostate size range 25-30 ml and 27(25%) patients had prostate size range 31-35 ml. Mean prostate size was 27 ml with standard deviation  $\pm$  2.02 (Table no. 2).

Status of uroflowmetry (pre –operative) among two groups was analyzed as in Group A (TURP) all the patients had uroflowmetry in the range 5-10 ml. Mean uroflowmetry was 7 ml with standard deviation  $\pm$  2.77. Where as in Group B (TUIP) all the patients had uroflowmetry in the range 5-10 ml. Mean uroflowmetry was 8 ml with standard deviation  $\pm$  2.23. (Table 3) Status of uroflowmetry (post –operative) among two groups was analyzed as in Group A (TURP) 5(5%) patients had uroflowmetry <15 ml while 103(95%) patients had uroflowmetry >15 ml. Mean uroflowmetry was 17 ml with standard deviation  $\pm$  3.64. Where as in Group B (TUIP) 9(8%) patients had uroflowmetry <15 ml while 99(92%) patients had uroflowmetry >15 ml. Mean uroflowmetry was 16 ml with standard deviation  $\pm$  3.55. (Table no 4) Stratification of uroflowmetry with age and prostate size is given in Table No. 5 and 6.

**Table 1: Age distribution (n=216)**

Age	Group A (TURP)	Group B (TUIP)
50-60 years	46(43%)	48(45%)
61-70 years	33(31%)	36(33%)
71-80 years	25(23%)	22(20%)
81-90 years	4(3%)	2(2%)
<b>Total</b>	108(100%)	108(100%)
<b>Mean and SD</b>	57 years $\pm$ 3.78	60 years $\pm$ 3.13

**Table 2: Prostate size (n=216)**

Prostate size	Group A	Group B
25-30 ml	78(72%)	81(75%)
31-35 ml	30(28%)	27(25%)
<b>Total</b>	108(100%)	108(100%)

Mean and SD	29 ml ± 2.52	27ml ± 2.02
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**Table 3: Uroflowmetry (Pre-operative) (n=216)**

Uroflowmetry	Group A	Group B
5-10 ml	108(100%)	108(100%)
10-15 ml	0(0%)	0(0%)
Total	108(100%)	108(100%)
Mean and SD	7 ml ± 2.77	8 ml ± 2.23

**Table 4: Uroflowmetry (Post-operative) (n=216)**

Uroflowmetry	Group A	Group B
<15 ml	5(5%)	9(8%)
>15 ml	103(95%)	99(92%)
Total	108(100%)	108(100%)
Mean and SD	17 ml ± 3.64	16 ml ± 3.55

**Table 5: Stratification of uroflowmetry with age**

Age	Uroflowmetry	TURP	TUIP
50-60 years	<15 ml	0	0
	>15 ml	46	48
Total		46	48
61-70 years	<15 ml	0	3
	>15 ml	33	33
Total		33	36
71-80 years	<15 ml	2	3
	>15 ml	23	19
Total		25	22
81-90 years	<15 ml	3	2
	>15 ml	1	0
Total		4	2

**Table 6: Stratification of uroflowmetry with prostate size**

Prostate size	Uroflowmetry	TURP	TUIP
25-30 ml	<15 ml	0	2
	>15 ml	78	79
Total		78	81
31-35 ml	<15 ml	5	6
	>15 ml	25	21
Total		30	27

## DISCUSSION

The basic aim of surgical resection in BPE is to improve lower urinary tract symptoms and improve quality of life<sup>1,2</sup>. Different therapeutic modalities have benefits as well as weaknesses and as a surgeon we have to choose the one which is more beneficial for our patients<sup>3,4</sup>. The present study was done to compare both TURP and TUIP to choose the best option for future recommendation. In this study, Group A (TURP) and Group B (TUIP) were studied to look the status of uroflowmetry

(post-operative) among the two groups and was analyzed as; Group A (TURP) 5(5%) patients had uroflowmetry <15 ml while 103(95%) patients had uroflowmetry >15 ml. Mean uroflowmetry was 17 ml with standard deviation ± 3.64. Where as in Group B (TUIP) 9(8%) patients had uroflowmetry <15 ml while 99(92%) patients had uroflowmetry >15 ml. Mean uroflowmetry was 16 ml with standard deviation ± 3.55. Mean urinary flow rate was compared between TURP and TUIP which showed that there was no significant difference between the two surgical procedures in term of urinary flow rate.

Surgical management of small volume prostate is a topic of frequent debate; TURP is the gold standard and TUIP is considered equally effective, with less complications<sup>12</sup>. A study done in Egypt showed changes in maximum urinary flow rate for TURP 8.4 ± 0.6 to 18.4 ± 1, and for TUIP 8.4 ± 0.6 to 16.6 ± 0.8 ml/sec and average flow rate for TURP 4.1 ± 0.7 to 7.5 ± 1 and for TUIP 3.8 ± 0.6 to 7.1 ± 0.8 ml/sec with no significant changes in p value<sup>7</sup>. In a study done by Aamer Nadeem et al. showed improvement in urinary flow rate from less than 10 to 17.58 ml/sec for TUIP and 17.36 ml/sec for TURP at 3 months follow up<sup>4</sup> showing nearly similar results to the present study.

Complications were less in group A (08) and more in group B (n=28, < 0.05) in the above study and they have concluded that TUIP and TURP were equal in terms of improvement in flow rate, but operative time was shorter in TUIP with less post-operative complications. So, TUIP is a better choice in prostates weighing less than 35 grams as was the case in the present study.

Though generally, flow improved more in TURP but the difference was statistically in significant which is comparable with a study conducted by Roehner born and colleagues<sup>11</sup>. The comparatively smaller flow was due to the fact that a single incision was made and even that was comparatively short and shallow, as compared to the long and deep bilateral incisions. But this had a beneficial effect on sexual function that not even a single sexually active patient had retrograde ejaculation post operatively<sup>8</sup> rationalizing its use especially in the younger age group. A geriatric and psychosocial problem along with lack of some proper scientific way was a limitation to assess the sexual activity of the patient pre and post operatively. It was likely to produce a bias in the study which was countered by a meticulous interview of the patients.

Moreover, though we drew the line that a prostate less than 35 gram should be treated like that, but do we have a margin, above or below this line? Further studies need to be conducted in terms of prostate weight to draw a line after which the TUIP might not be as useful.

Studies regarding other minimally invasive procedures like transurethral vaporization of prostate (TUVP) and microwave thermotherapy are still underway and long-term results are awaited.

## CONCLUSION


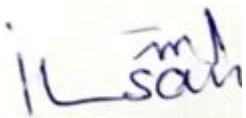

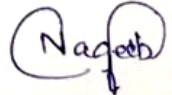

Our study concludes that there was no significant difference between TURP and TUIP in term of mean urinary flow rate for

small sized symptomatic benign prostatic enlargement. TUIP could be a better choice in terms of minimum surgical complications and less hospital stay.

## REFERENCES

- Marszałik M, Ponholzer A, Pusman M, Berger I, Madersbacher S. Transurethral resection of the prostate. Eur Urol Supplements. 2009;(8):504-12.
- Huh JS, Kim YJ, Kim SD. Prevalence of benign prostatic hyperplasia on Jeju Island: analysis from a cross-sectional community-based survey. World J Mens Health. 2012;30(2):131-7.
- JatN, Ghauri AQ, khokar PB, Qurishi MA, Azmi MA. Transurethral incision versus transurethral resection of prostate for small sized benign prostatic hyperplasia, Med C. 2011;17(3):18-20.
- Nadeem A, Ahmad H, Rana SM, Mahmood A, Alvi M, Akmal M. Transurethral Incision of Prostate (TUIP) for Minimally Enlarged Prostates. J Coll Physicians Surg Pak. 2010;20(1):51-4.
- Lourenco T, Shaw M, Fraser S, MacLennan G, Dow GN, Pickard R. The clinical effectiveness of transurethral incision of the prostate, a systematic review of randomized controlled trials. World J Urol. 2010;28(1):23-32.
- Li X, Pan J H, Liu Q G, He P, Song S J, Jiang T, Zhou Z S. Selective Transurethral resection of the prostate combine with transurethral incision of the bladder neck for bladder outlet obstruction in Patients with small volume benign prostate hyperplasia. A prospective randomized study. PLoS One. 2013;14(8(5):e63227.
- Kader OA, Mohy K, Denb E, Nashar AI, Hussein A, Yehya E. Transurethral incision versus Transurethral resection of the prostate in small prostatic adenoma, Long-term follow-up. African J Urol.2012;(18):29-33.
- Stranne J, Damber J-E, Fall M, Hammarsten J, Knutson T, Peeker R. One-third of the Swedish male population over 50 years of age suffers from lower urinary tract symptoms. Scand J Urol Nephrol. 2009;43(3):199-205.
- McVary K. Lower urinary tract symptoms and sexual dysfunction: epidemiology and pathophysiology. BJU Int. 2006;97(S2):23-8.
- Park HK, Park H, Cho SY, Bae J, Jeong SJ, Hong SK, Yoon CY, Byun SS, Lee SE, Kim KW. The prevalence of benign prostatic hyperplasia in elderly men in Korea: a community-based study. Korean J Urol. 2009;50:843-7.
- Roehrborn CG, Siami P, Barkin J, Damião R, Becher E, Miñana B, et al. The influence of baseline parameters on changes in international prostate symptom score with dutasteride, tamsulosin, and combination therapy among men with symptomatic benign prostatic hyperplasia and an enlarged prostate: 2-year data from the CombAT study. Eur Urol. 2009;55(2):461-71.
- Slater S, Dumas C, Bublely G. Dutasteride for the treatment of Prostate-related conditions. Expert Opin Drug Saf. 2012;11(2):325-30.
- Montorsi F, Henkel T, Geboers A, Mirone V, Arrosagaray P, Morrill B, et al. Effect of dutasteride, tamsulosin and the combination on patient-reported quality of life and treatment satisfaction in men with moderate-to-severe benign prostatic hyperplasia: 4-year data from the Comb AT study. Int J Clin Pract. 2010; 64(8):1042-51.

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