

# Transurethral Incision of Prostate (TUIP) for Minimally Enlarged Prostates

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## ABSTRACT

**Objective:** To compare the efficacy of Transurethral Incision of Prostate (TUIP) with Transurethral Resection of Prostate (TURP), in terms of improvement in peak flow rate (Q-Max) and number of complications.

**Study Design:** It was an interventional, quasi-experimental study.

**Place and Duration of Study:** This study was conducted at the Armed Forces Institute of Urology (AFIU), Rawalpindi, from November 2006 to December 2007.

**Methodology:** A total of 60 patients were inducted in the study with thirty patients in each group undergoing TUIP (Group A) and TURP (Group B). Patients of any age with prostate less than 35 grams needing surgical interventions were included in the study. Patients with recurrent disease, multiple co-morbid conditions, higher center dysfunctions, neurogenic bladder and associated strictures were excluded. In TUIP, a single median incision was made at 6 'O clock position, starting from interureteric ridge upto verumontanum, going upto prostatic capsule. In group B, standard TURP was done. All the cases were operated by the same consultant under spinal anaesthesia. Follow up was done at the end of the 1st week and 1st, 3rd and 6th months.

**Results:** Mean operative time was shorter ( $17.01 \pm 1.97$  minutes) in group A as compared to group B ( $27.06 \pm 23.06$  minutes,  $p < 0.05$ ). There was no statistically significant difference between the two groups regarding peak flow. Complications were less in group A (08) and more in group B ( $n=28$ ,  $< 0.05$ ).

**Conclusion:** 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.

**Key words:** Benign Prostatic Hyperplasia (BPH). Transurethral Incision of Prostate (TUIP). Transurethral Resection of Prostate (TURP).

## INTRODUCTION

Benign prostatic hyperplasia (BPH) is one of the most common disease processes affecting aging males. It is an over growth of the epithelium and fibromuscular tissue of the transitional zone and periurethral area.<sup>1</sup>

Theories have been proposed about its etiology amongst which genetic predisposition and a positive correlation between the level of free testosterone and estrogen are the most commonly accepted.<sup>2</sup> A significant portion of the symptoms are due to obstruction as well as secondary response of bladder to outlet obstruction, which leads to detrusor muscle hypertrophy, hyperplasia, deposition of collagen (extra cellular matrix), alteration in contractile protein expression and impairment in cell to cell signaling. These dynamic events ultimately lead to lower urinary tract symptoms (LUTS).

The management of bladder outflow obstruction (BOO) due to BPH has acquired multiple dimensions.

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Therapeutic modalities offered to the patients range from watchful waiting and medical manipulation to minimally invasive procedures (like laser therapies), transurethral resections and open surgical procedures.<sup>3-5</sup> Each case needs to be managed on its own merit. Although transurethral resection has acquired the gold standard status in obtaining relief for an obstructing prostate,<sup>6,7</sup> sometimes mildly enlarged prostates also need to be treated due to obstruction and symptoms secondary to dense stromal fibrous structure. Management of these relatively small prostates has remained a frequent topic of debate. Orandi introduced transurethral incision of prostate (TUIP), advocating its usefulness in minimally enlarged prostates requiring intervention.<sup>8</sup>

Since there was no significant published national data on this subject, this study was conducted to compare the applicability and efficacy of TUIP with time tested TURP in terms of improvement in peak flow rate (Q Max) and number of complications associated with the procedures.

## METHODOLOGY

This clinical trial was conducted at Armed Forces Institute of Urology from November 2006 to December 2007. It was an interventional (quasi-experimental)

study in which a total number of 60 patients were included, with 30 patients in each group undergoing either TUIP or TURP. The sampling was purposive.

All male patients of any age, having indication of surgical intervention with prostate size less than 35 grams were included in this study. Patients with recurrent disease, multiple co-morbid conditions, those concomitantly found to be having urethral stricture, higher centre dysfunctions (stroke, dementia etc.) and neurogenic bladder dysfunctions; suspicion of carcinoma prostate determined by digital examination findings and Prostate Specific Antigen (PSA) and estimation and those with chronic retention leading to detrusor failure were excluded from the study.

A few patients initially recruited in the study, were found to be having prominent median lobe peroperatively. So, on technical grounds, they also had to be excluded as well.

Patients were thoroughly counseled before inducting them to the study groups explaining to them in detail the pros and cons of each procedure. Aging patients with definitive outflow obstruction and with enlarged prostate (< 35 grams) were booked from the OPD as well as from peripheral hospitals. A detailed history and clinical exam was carried out to rule out other causes of BOO.

Non catheterized patients underwent uroflometry to have an objective evidence of BOO and also for record keeping and comparison (before and after the procedure). Moreover, all patients underwent a battery of investigations including complete blood picture, routine urine examination, serum urea and creatinine estimation, blood sugar (random), ECG and chest X-ray PA view, as a pre-requisite for anaesthesia assessment. Hepatitis (HCV and HbsAg) screening was also routinely performed in all the patients.

The patients were distributed in two groups. Group A patients underwent TUIP and group B patients underwent TURP. All patients were admitted a day before surgery. One unit of blood was kept in reserve on average.

All the procedures were performed under spinal anaesthesia by the same surgeon. During TUIP, an incision was made at the 6 o'clock position in the bed of the prostate starting from the interureteric ridge upto to the pre-sphincteric area just proximal to the verumontanum. The depth of incision was kept upto circular fibers of prostatic capsule. In group B patients, standard TURP was performed. Operative time was noted and recorded in the proforma. Post-operatively, patients were nursed in the high dependency unit for at least 24 hours undergoing continuous irrigation.

Patients were discharged on the second post operative day after removal of catheter maintaining record on the proforma. Follow up was done at the end of the 1st

week, 1st, 3rd and 6th months. Each time uroflometry was done to assess 'Q max' and complications if any, were noted as well.

The results were statistically analyzed, applying SPSS 10.0. T-test was as employed to analyze the results regarding comparison of peak flow rate and number of complications between two groups with significance at  $p < 0.05$ .

## RESULTS

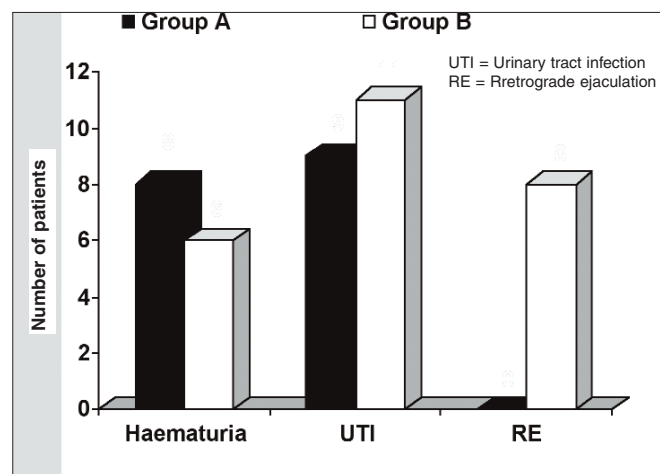
Initially 66 patients were inducted in the study. Two patients had to be excluded, as they were had a prominent median lobe (though overall prostate size was < 35 gm) and three patients had irregular follow up. So finally, there were 60 patients with 30 patients in each group.

There was no statistically significant difference between the groups regarding age. Mean operative time in group A was  $17.01 \pm 1.97$  minutes and in group B, it was  $27.06 \pm 23.06$  minutes with  $p < 0.05$ .

Though peak flow rate (Q Max) was generally better in group B, the difference was not statistically significant ( $p > 0.05$ , Table I).

**Table I:** Peak flow rate in group A and B.

Group	Number of patients	Mean Q-max (ml/s)	Std. deviation	p-value
One week				
A	25	16.0360	2.9726	0.336
B	30	15.4233	1.6188	
One month				
A	30	17.2333	1.4606	.674
B	30	17.4033	1.6435	
Three months				
A	25	17.5800	1.1843	.577
B	23	17.3609	1.5135	
Six months				
A	14	15.7571	1.1189	.279
B	22	16.2000	1.2138	



**Figure 1:** Main post operative complications in group "A" and "B".

The total number of post operative complications was 36, with 8 complications occurring in group A and 28 in group B. On a comparative basis, postoperative complications in group B were significantly high as compared to group A ( $p < 0.05$ ). The main post operative complications are shown in Figure 1.

## DISCUSSION

The management of relatively small prostate has been a focus of discussion, especially when they become refractory to medical treatment.<sup>13</sup> Such symptomatic prostates then also are likely to cause complications necessitating surgical intervention. The gold standard for the treatment of BPH is TURP. But despite its supremacy, it leaves 3-35% pre-operatively sexually active men impotent. Fifty to fifty nine percent develop retrograde ejaculation after the surgery, 1% becomes incontinent and 20-25% are not satisfied with the effects of the operation.<sup>9,10</sup> On the other hand, TUIP seems an appropriate surgical technique for the treatment of patients with relatively small prostate. It is a good alternative to TURP, with a lower rate of complications in well selected patients. This study dealt with those prostates by a well known but underutilized technique, transurethral incision of prostate (TUIP), comparing it with standard transurethral resection of prostate (TURP).

With TUIP, operative time significantly reduced with significant improvement in peak flow rate. A short operative time gives the additional benefit of decreased systemic stress response with a better post operative recovery of the patients.<sup>11</sup> This gives an opportunity to select an appropriate treatment modality according to the patient's physical and functional status,<sup>12</sup> especially in aged patients with geriatric problems who are otherwise not fit enough to undergo general anaesthesia. This would open avenues for further studies to perform the procedure under local anaesthesia.

Though generally, flow improved more in TURP but the difference was statistically insignificant ( $p$  value  $< 0.05$ ) which is comparable with this study conducted by Riehmman and colleagues.<sup>13</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.<sup>14</sup> But this had a beneficial effect on sexual function that not even a single sexually active patient had retrograde ejaculation post operatively,<sup>15</sup> rationalizing its use especially in the younger age group.<sup>16</sup>

Geriatric and psychosocial problems 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 (TUVAP) and microwave thermotherapy are still underway and long term results are awaited.<sup>17,18</sup>

## CONCLUSION

TUIP is an effective modality to deal with relatively small prostates which need surgical intervention, with a fewer number of a complications especially for sexually active patients at a younger age group to avoid retrograde ejaculation with almost the same improvement in flow rate (Q max) comparing with TURP.

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