

# Comparison of Outcome of Removal of Three Way Foley's Catheter After Transurethral Resection of Prostate On 1<sup>st</sup> Versus 4<sup>th</sup> Post-Operative Day

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## ABSTRACT

**Background:** Benign enlargement of the prostate involves increase in the number of the epithelial & the stromal cells of the prostate which results in the formation of discrete, large nodules in the prostatic transition zone. Following prostatic resection, we insert a Foley's catheter from the urethra into the bladder with aim of draining the urine from the bladder. Time duration for indwelling catheter after TURP is not fixed. So we conducted a study to find whether early or delayed removal of catheter is associated with complications.

**Aim :** To compare the outcome of 1<sup>st</sup> versus 4<sup>th</sup> postoperative day removal of 3 way Foley's Catheter in terms of frequency of urinary tract infection and need for re-catheterization after prostatic resection for management of benign prostate enlargement.

**Methods:** This study was conducted in our ward for six months from January 01, 2018 to June 30, 2018. The patients were segregated into 2 groups. All TURP surgeries were performed by a senior surgeon under spinal anesthesia. Postoperatively, catheter irrigation with Normal Saline was applied. On the 1<sup>st</sup> POD Catheter was removed in one group in which we removed catheter earlier while on 4<sup>th</sup> post-operative day in late catheter removal group. Urine sample was obtained to assess UTI and need for re-catheterization was assessed.

**Results:** Mean age of the participants was 66.28±9.16 years and mean duration of obstruction of the patients was 6.99±3.11 months. UTI was found in 16(16%) cases and re-catheterization was required in 14% patients. In the 2 groups statistical difference was significant for outcome i.e. p-value less than 0.05.

**Conclusion:** The early removal of catheter group patients showed better results and less need of re-catheterization as compared to late removal of catheter group after TURP for treatment of BPH.

**Keywords:** Benign prostatic hyperplasia, BPH, Foley's catheter, TURP, TRUS, UTI, POD

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## INTRODUCTION

Clinical benign prostatic hyperplasia is a common disease. Almost sixty percent of the patients by the age of sixty years have some symptoms of prostatic enlargement<sup>1</sup>. Around 210 million males (six percent of men) worldwide, develop this disease<sup>2</sup>. The size of the prostate gland increases with advancing age in most men. For a man of 46 years with no symptoms, the chance of developing symptoms of prostatic enlargement over the next thirty years is forty five percent. Increment in incidence occurs from 3 cases for each 1000 man-years at age 45–49 years, to 38 cases for every 1000 man-years by the period of 75–79, while the prevalence rate is 2.7% for men matured 45–49, it increments to 24% by the age of 80 years<sup>3</sup>.

Different alterations in the invasive management of prostatic enlargement have risen in the course of the most recent decade. Most methods at first claimed good results, proved to be average with time.<sup>4</sup> TURP has been the surgical procedure of choice for BPH for a long time. However, to improve clinical result after TURP, continuous work is still going on. These include innovative advances,

for example, bipolar resection for better hemostasis and decreased rate of TUR syndrome<sup>5,6</sup>. It is a typical clinical practice to keep the Foley's catheter, after TURP, in patients for as long as 4 days<sup>7</sup>.

It is well known that prolong Foley catheterization leads to UTI. In fact, a recent study has identified span of catheterization, together with diabetes, as the most significant hazards for urinary tract infection<sup>8</sup>. Choudhury et al., has come to conclusion after a randomized trial that re-catheterization was significantly high in short term catheterization i.e. 10% as compared to long term catheterization i.e. 3% (p=0.04). But UTI was significantly lower in short term catheterization i.e. 6% as compared to long term catheterization i.e. 16% (p=0.02).<sup>9</sup> Şahin and Kalkan conducted a randomized trial and reported that re-catheterization was significantly high in short term catheterization i.e. 22.7% as compared to long term catheterization i.e. 0% (p<0.05).<sup>10</sup> However, Nakagawa and Toguri, through a randomized trial observed controversial results and reported that postoperatively 43.8% patients with long term catheterization required re-catheterization, which on comparison with short term catheterization (2.2 percent, p less than 0.001) was quite high. Moreover, UTI was 1.2% with short term catheterization and 6.3% with long term catheterization (P>0.05).<sup>11</sup>

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The purpose of this analysis is to compare the result of 1st postoperative day versus 4th postoperative day removal of 3 way Foley's Catheter after TURP for management of BPH. In routine, long term placement of catheterization is practiced. In literature, it has also been noticed that if catheter would be removed on early basis, it can also prevent complications but controversial evidences are also noticed. Moreover, we did not find any local evidences, which can help in planning the proper duration of catheter placement. So through this study we want to confirm whether short term catheterization has better outcome than long term catheterization.

The objective of the study was to compare the outcome of 1<sup>st</sup> versus 4<sup>th</sup> postoperative day removal of 3 way Foley's Catheter in terms of frequency of urinary tract infection and need for re-catheterization after TURP for management of BPH.

**MATERIAL AND METHODS**

This randomized controlled trial was conducted in the Department of Urology, Mayo Hospital, Lahore for a period of six months months from 1<sup>st</sup> of January to 30<sup>th</sup> of June 2018. Total of 100 patients were selected; 50 patients in either group were calculated with 80% power of test, 5% level of significance and assigning anticipated percentage of recatheterization 0% after long term and 22.7% after short term removal of 3 way Foley's Catheter after TURP for management of BPH. Non-Probability, Consecutive Sampling technique was used.

**Inclusion Criteria:** Persons in between 50 to 80 years of age presenting with Benign Prostate Enlargement (history of difficulty in micturition for at least 1 month) undergoing Transurethral Resection of Prostate.

**Exclusion Criteria:** Abnormal coagulation profile (PT>15 sec, APTT>35 sec), patients with systemic problems like BP>140/90mmHg, BSR>200mg/dl, abnormal ECG and Ejection fraction <55% on echocardiography, very large prostate (>100gm)

**Data Collection Procedure:** 100 patients fulfilling the selection criteria were incorporated in the study. Informed consent was obtained. Demographic profile was recorded. Then patients were randomly assigned in two sets by utilizing lottery technique. TURP was carried out using a tungsten cutting loop with a cutting current of 160 watts and a coagulating current of 140 watts. All surgeries were carried out by a senior surgeon, while patients were anesthetized with spinal anesthesia. After the surgery, irrigation of bladder with Foley catheter was applied to all participants. Per-operatively, 5% dextrose water irrigation was used while Normal Saline irrigation was used post-operatively. In group 1, Catheter was removed on day 1 after surgery while in late catheter removal group it was done on day 4 after surgery. Urine sample was obtained to assess UTI (bacterial colony count >10<sup>5</sup> cfu/mL on Urine culture after removal of catheter assessed on day 7) and need for re-catheterization was assessed (if patient is unable to void urine after removing Foley catheter and has post void residual urine volume above 100ml on ultrasound during first post-operative week). A proforma was used to collect all this data.

**Data Analysis:** SPSS 20 was used to analyze and enter all the obtained information. Quantitative variables e.g. age were calculated as mean+SD. Qualitative variables like outcome i.e. urinary tract infection and re-catheterization were presented as frequency and percentage. Chi-square test was used to make comparison between both sets of patients. P-value less than or equal to 0.05 was considered significant.

**RESULTS**

Participants in group A were having 67.0±9.11 years of mean age while 65.56±9.25 years in other group. The 1<sup>st</sup> group was having mean prostate volume of 37.26±4.02mm whereas mean prostate size in other group was 35.60±4.03mm. In group A, mean duration obstruction was 6.22±3.13months while in group B, mean duration obstruction was 5.76±3.09months (Table 1). In early group, UTI was present in 3 (6%) cases while in delayed group, UTI was present in 13 (26%) cases. The difference turned out to be highly significant i.e. p value = 0.006. The re-catheterization was done in 14 cases, 2 in early catheter removal group and 12 in late catheter removal group. Statistically noteworthy difference was observed between two sets of patients i.e., p - value = 0.008 (Table 2).

Table1: Baseline characteristics of patients

	Group A	Group B
n	50	50
Age (Years)	67.00±9.11	65.56±9.25
Size of prostate	37.26±4.02	35.60±4.03
Duration of Obstruction (month)	6.22±3.13	5.76±3.09

Table 2: Difference of UTI between two sets of patients

	Group		Total	p-value
	Early removal (n=50)	Late removal (n=50)		
<b>UTI</b>				
Yes	3	13	16	0.006
No	47	37	84	
<b>Recatheterization</b>				
Yes	2	12	14	0.008
No	48	38	86	
Yes	3	13	16	0.006
No	47	37	84	

**DISCUSSION**

Old age patients quite often suffer from symptoms of enlarged prostate. Various modalities of treatment like conservative (watchful waiting, medical therapy) and invasive (minimally invasive treatment, TURP, open surgery) are available for BPH.<sup>12</sup> For elderly patients, TURP has been considered as a gold standard therapy for lower urinary tract symptoms (LUTS) resulting from Benign Prostatic Enlargement (BPE) and Benign Prostatic Obstruction (BPO).

In our study the re-catheterization was done in 14% of patients, 2 in early catheter removal group and 12 in other group. Statistically, noteworthy difference was observed between two sets of patients in terms of re-catheterization with p value=0.008. We inferred from this study that the early removal of catheter showed better results in comparison to late removal. Results of some other studies

are in accordance with our results whereas few have different outcome. Aslan et al stated that on day 1 after surgery Foley catheter was removed in 79.6% patients and average duration of hospitalization in this group was 1.4 days<sup>13</sup>. Nakagawa et al stated that on day 1 after TURP Foley catheter was removed in 96.3% patients and on the same day 80% got discharged from hospital<sup>14</sup>.

Durrani et al<sup>15</sup> concluded in their analysis that risk of adverse surgical events does not increase if Foley catheter is removed on 1<sup>st</sup> day after doing TURP in particular subset of patients and with this duration of hospitalization can be reduced. Choudhury et al., deduced from a randomized trial that re-catheterization rate was significantly higher in short term catheterization i.e., 10% as compared to long term catheterization i.e., 3% (p=0.04). But UTI was significantly lower in short term catheterization i.e. 6% as compared to long term catheterization i.e., 16% (p=0.02)<sup>9</sup>.

Şahin & Kalkan conducted a randomized trial and reported that re-catheterization was significantly high in short term catheterization i.e., 22.7% as compared to long term catheterization i.e. 0% (p<0.05).<sup>10</sup> Numerous researchers narrate that early removal of catheter saves a lot of money as it decreases the duration of hospitalization of patient more over with this regimen patients resumes his job sooner<sup>14,17,18,19</sup>. On the contrary few researches describe more complications in the form of more re-catheterization percentage and unable to pass urine due to clots associated with early removal of Foley cathete<sup>20-22</sup>.

However, Nakagawa and Toguri, through a randomized trial observed controversial results and reported that postoperatively 43.8% patients with long term catheterization required re-catheterization, and this was quite high in comparison to the short term catheterization (2.2%, p less than 0.001). Moreover, UTI was 1.2% with short term catheterization and 6.3% with long term catheterization (p more than 0.05)<sup>11</sup>.

## CONCLUSION

The results of this research concluded that early removal of catheter group patients showed better results and less need of re-catheterization as compared to late removal of catheter group after TURP for management of BPH. From now onwards, we will recommend that Foley's catheter after TURP should be removed 1 day after surgery to prevent the patients from developing postoperative complications.

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