

A COMPARISON OF EARLY VERSUS CONVENTIONAL PRACTICE OF FOLEY'S CATHETER REMOVAL AFTER TRANSURETHRAL RESECTION OF PROSTATE" –AN OBSERVATIONAL STUDY

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Abstract

Background: Transurethral resection of the prostate is the standard surgical treatment for patients with benign prostatic hyperplasia. Postoperative urethral catheterization is a routine procedure. Time of removal of the urethral catheter varies after the TURP. Main aim of our study is to assess the safety and feasibility of catheter removal on POD-2 after TURP. There is no data from our environment on when to remove the catheter after TURP. This study seeks to compare early and delayed catheter removal after TURP for benign prostatic hyperplasia. **Materials and Methods:** This was a hospital-based observational prospective study carried out at Mahatma Gandhi Hospital, Jaipur, comparing the outcomes of delayed (conventional) catheter removal with early removal of the catheter after TURP for BPH. All the consenting patients who have to undergo TRUP were blocked randomized into two groups: Group A- Early Catheter Removal (POD 2) and Group B- Delayed Catheter Removal (POD 5). The intraoperative and postoperative parameters were compared using appropriate statistics. **Result:** A total of 60 Patients participated in the research overall. In group A 2 patients were Re-Catheterized, due to hematuria and Urinary retention respectively, and the difference was not statistically significant ($p = 0.150$) post-operative complication were found to be in 4 patients in Group A and 7 patients in Group B, with no statistical difference ($p = 0.316$). **Conclusion:** Either early or delayed removal of catheter post TURP doesn't affect the overall patient satisfaction outcome. Early catheter removal reduces catheter related morbidity and reduces overall burden of cost of hospital stay.

INTRODUCTION

Benign Prostatic Hyperplasia (BPH) is the most common disease in male and its incidence is age related. Prevalence of BPH is 88% in 80 years and reaching nearly 100% in 90 years of age.^[1] BPH conveys its morbidity through lower urinary tract symptoms (LUTS) and complications such as acute urinary retention, obstructive uropathy, urinary tract

infections, renal insufficiency. To prevent complications intervention is necessary. Although the management of BPH has been dramatically modified during the past decade, transurethral resection of prostate (TURP) remains the gold standard.^[2] Time of removal of the urethral catheter varies after the TURP. While some urologists remove the catheter on day 1 or 2, most wait for 4- 7 days before removing the catheter.^[3,4] The keeping

of urethral catheter for 4 -7 days is a significant drawback for TURP patient because that usually requires additional days of hospital stay. Moreso, urinary catheter leads to a significant increase in the rate of urinary tract infection (UTI) and epididymis-orchitis.^[5] Again, urinary catheter constitutes significant anxiety for men, and patients usually appreciate its early removal after surgery. But its removal should not negatively affect the surgical outcome. In recent years issues of cost, morbidity and complications have led to the development of new surgical treatment modalities such as transurethral needle ablation, microwave thermotherapy, laser ablation and vaporization.^[6] Conventional catheterization period (3-5 days) after TURP and prolong hospital stay is an obstacle, as patient cannot be able to resume his normal life early. Length of hospital stay after TURP due to prolong post operative catheterization is considered to be cost disadvantage when compared with new treatment methods. This disadvantage can be overcome by means of early catheter removal (<48 hours) after TURP when it is appropriate and safe.^[7,8]

There is no data from our environment on when to remove the catheter after TURP. Our practice is to remove the urethral catheter on day 4-5 after TURP. This study has been designed to compare the result of catheter removal within 48 hours and conventional catheter removal (3-5 days) following TURP.

MATERIALS AND METHODS

This was a hospital-based observational prospective study carried out at Mahatma Gandhi Hospital, Jaipur, comparing the outcomes of delayed (conventional) catheter removal with early removal of the catheter after TURP for BPH Between February 2022 to July 2022. Patients with BPH who met the indications for TURP as well as consented to the study formed the subject of the study.

Institute Ethics Committee approval was obtained before starting the study. Written and informed consent were taken from all the participants before enrollment into the study. Statistical analysis was done using SPSS version 16.0 with the help of statistician; we have calculated Chi square test for finding out relation between qualitative variables and used paired T test to compare quantitative variables.

All the consenting patients who had the TURP for various indications were blocked randomized into the two groups:

Group A: early catheter removal (postoperative day 2)

Group B: delayed catheter removal (postoperative day 5).

The intraoperative and postoperative parameters were compared using appropriate statistics

Inclusion Criteria

1. Patients of BPH with clinical features of bladder outlet obstruction.
2. Patients with moderate to severe symptoms with failed medical management.
3. Recurrent gross hematuria of prostatic origin.

Exclusion Criteria

1. Patients who request medical line of management and are refuse surgical treatment
2. Patients with prostate cancer
3. Patients with bleeding diathesis or on anticoagulant therapy
4. Patients of BPH who responded well to medical line of management
5. Significant medical illness that would increase the anesthetic risk

Following study variables were recorded during the study and compared in patients with both the groups:

1. Patient's age,
2. Grams of resected tissue,
3. Length of post-operative stay,
4. Re-catheterization for inability to void or bleeding,
5. Hospital discharge with catheter, and
6. Post-operative complications

All patient were evaluated by history, physical examination including DRE, IPSS Score (in non-catheterized patients), urine- R/M/E & C/S, serum electrolytes, serum creatinine, serum PSA, USG of KUB and prostate size and PVR, uroflowmetry, RBS, CXR, ECG with Echocardiography-2D in selected cases, blood grouping and Rh-typing with screening & cross matching. Patients with documented UTI were treated with appropriate antibiotic and became culture negative before surgery. Prophylactic injectable antibiotic was given according to urine C/S just before induction of anesthesia. After urethroscoposcopy evaluation TURP was done by Nesbit technique. A 26 Fr. Resectoscope with continuous sheath (Storz) was used during TURP and 1.5% W/V Glycine were used as irrigation solution during procedure in all cases.

At the end of resection, interior of the prostate was inspected thoroughly and all bleeding vessels were coagulated and hemostasis was ensured. Operation was completed if color of effluent was almost clear or faint pink. A 22 Fr. Tri-channel urethral Foley catheter was introduced into bladder and its balloon was inflated with 40-60 ml distilled water. Continuous bladder irrigation started immediately with normal saline. Catheter traction was applied for overnight.

In the post-operative period, all patients were monitored closely for vital parameters, color of catheter effluent to assess degree of hematuria, clot retention and transurethral resection syndrome. Patient resume a normal diet and ambulated as soon as recovered from anesthesia. Patients were given a

stool softener and cautioned to avoid straining at defecation.

Criteria for catheter removal included normal vital signs, Adequate urine output, absence of clots, the color of catheter effluent (clear) and physical status which permits independent voiding. In immediate postoperative period (within 6 hours) who met the criteria for catheter removal irrigation was decreased at 10 drops/min and urethral catheter was removed within 48 hours in group A and within 3-5 days in group B after TURP.

Most of the patients were discharged with advice after they could pass urine freely and with a good stream of 2-3 times. Discharge was delayed until the next day if there is any complication such as voiding difficulties, fever or if the urine is unexpectedly

bloody. All cases were followed up at 14th POD and at 1 month for further clinical evaluation. During postoperative period every patient was instructed to report in urology ward/opd if there is any bleeding, urinary retention, and fever after discharge from hospital.

RESULTS

A total of 60 cases of benign enlargement of prostate patients were selected for the purpose of the study. All of them were treated with TURP and 30 patient's catheter was removed within 48 hours in Group- A and 30 patients' catheter was removed conventionally 3-5 days in Group- B.

Table 1: Comparison of mean age in years among groups

Group	Mean Age	Std. Deviation
Early Catheter Removal	72.43	10.747
Conventional Catheter Removal	67.13	10.411
t-value= 1.94	d.f.= 58	P-value= 0.057

Table 2: Comparison of mean weight of resected tissue among groups

Group	Mean weight of resected tissue	Std. Deviation
Early Catheter Removal	18.67	5.074
Conventional Catheter Removal	19.93	4.586
t-value= 1.014	d.f.= 58	P-value= 0.315

Table 3: Re-catheterization after removal of catheter among two groups

Re-catheterization	Early Catheter Removal	Conventional Catheter Removal	Total
Yes	2	0	2
No	28	30	58
Total	30	30	60
χ^2 value= 2.069	d.f.= 1		P-value= 0.150

Table 4: Post Operative complications among the groups

Post-operative Complications	Early Catheter Removal	Conventional Catheter Removal	Total
Yes	4	7	11
No	26	23	49
Total	30	30	60
χ^2 value= 1.0019			P-value= 0.316

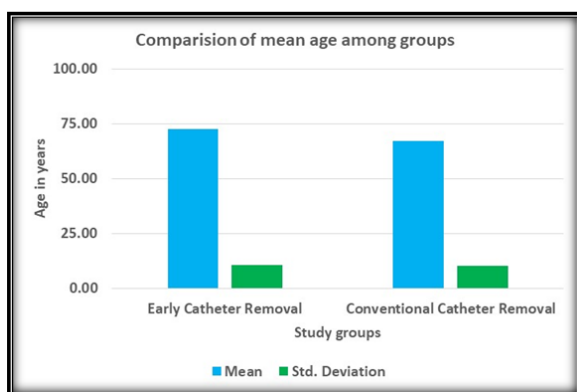


Figure 1: Bar graph depicts comparison of mean age



Figure 2: Bar Graph depicts comparison of mean weight of resected tissue

No statistically significant difference found regarding age [Figure 1], weight of prostate,

resection time, weight of resected prostatic tissue [Figure 2], preoperative UTI, IPSS, PVR and Qmax as well as postoperative hematuria, urinary retention and UTI after catheter removal.

Postoperative IPSS, PVR and Qmax after catheter removal were improved significantly in both groups in 14th POD and 1 month after operation. But there was no statistically significant difference among the groups.

DISCUSSION

Over the past decades, there are many various technical improvements in prostate disease and its surgical treatment. TURP though not without complications is a safe and more acceptable surgery for benign prostatic hyperplasia.

TURP is gold standard for management of BPH. Urethral catheter placement after TURP not only facilitates bladder irrigation but also prevent clot retention. It is also believed to reduce burning sensation and ease the irritation of the prostatic fossa.

There is nearly 100% consensus amongst urologist on the necessity of using a foley catheter, but are not unanimous in identifying when the catheter should be removed. The placement of urethral catheter for 4-7 days is a significant drawback for TURP undergoing patient as it usually requires additional days of hospital stay and therefore added cost to the patient.

In our study, the mean age 72.4 (± 10.747) years were in group A and 67.13 (± 10.411) years were in group B which was not statistically significant [Table 1]. In present study comparison of mean weight of resected prostatic tissue was 18.67 (± 5.074) gm in group A and 19.93 (± 4.586) gm in group B that was not statistically significant [Table 2]. Our study findings were almost near to previously published study.^[9]

Surprisingly, we found that bleeding was negligible after catheter removal in both the groups. i.e., early vs late. Some authors have reported that early catheter removal leads to higher re-catheterization rate and bleeding and clot retention compared to delayed catheter removal.^[10-12]

Re-Catheterization was required for 2 patients in early group [Table 3]. In our study hematuria was found only in 1 patient in group A which got resolved by conservative management and none in group B that was not statistically significant. Similar results were found in study published by Chander and colleagues.^[13] Study by I.C.Akpayak (2020) also did not find significant bleeding or clot retention following early removal of catheter in their study.

One variable that can predispose to perioperative bleeding is UTI.^[14] We made sure that all our patient who had UTI preoperatively were treated before surgery. We also gave all our patients intraoperative prophylactic antibiotic and continued it in postoperative period.

In our study there was no statistically significant difference in number of patients who developed urinary retention in either group. Nakagawa and colleagues concluded early catheter removal safe and some authors also did not find any difference in both early and delayed catheter removal.^[15-17]

In our study, 4 patients had post operative peri catheter leak and 3 had pain/discomfort due to catheter in late group [Table 4].

The limitation of our study was

1. To Recommend which group is safe – conducting a study with long term follow-up will enlighten us about the long-term complications of early catheter removal - though it will increase the financial burden to the patients for getting follow-up procedures and investigations
2. Though non-significant, we would like to continue our study over a period of time with more follow up & more sample size with multicentric studies looking forward to get good encouraging results.

CONCLUSION

- Either early or delayed removal of the catheter after TURP doesn't affect the overall patient satisfaction outcome.
- Early catheter removal by 48 hours following TURP reduces catheter related morbidity.
- Removal of urinary catheter on post-operative day 2 reduces the burden of cost of hospital stay.

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