

Comparison of Early Versus Late Foley Catheter Removal after TURP- Our Experience

Abu Sufyan, Muhammad Sarwar Alvi, Anwaar Ahmed, Muhammad Fawad

Department of Surgery, Armed Forces Institute of Urology/National University of Medical Sciences (NUMS) Rawalpindi Pakistan

ABSTRACT

Objective: To compare early versus late catheter removal after Transurethral resection of prostate for benign prostatic hyperplasia in terms of postoperative complications.

Study Design: Cross sectional Study.

Place and Duration of Study: Urology Department, Armed Forces Institute of Urology, Rawalpindi Pakistan from Jan 2022 to Aug 2022.

Methodology: A total of 100 patients undergoing monopolar Transurethral resection of prostate fulfilling the inclusion criteria were included in study after written informed consent. They were randomized in two equal Groups (50 patients each) by lottery method, Group A-catheter removed on day 2 and Group B-catheter removed on day 5, postoperative complications including urinary retention, hematuria, urinary tract infection and urethral stricture were recorded on proforma.

Results: Both Groups had no statistically difference in demographic profile. In Group-A, 4(8%) patients had urinary retention and in Group-B, 3(6%) patients had urinary retention (p -value 0.438). The number of patients that had UTI in Group A and Group B were 1(2%) and 7(14%) respectively which was statistically significant ($p < 0.001$). However, hematuria, urethral stricture and epididymo-orchitis were not statistically significant among Groups with p -values of 1.00, 0.24 and 0.36 respectively.

Conclusion: Early catheter removal after Transurethral resection of prostate resulted in decreased urinary tract infection rate as compared to delayed catheter removal without any other significant postoperative complications.

Keywords: BPH, Early Catheter removal, Late catheter removal, TURP.

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INTRODUCTION

Transurethral resection of prostate (TURP) is gold standard surgical treatment of benign prostatic hypertrophy and widely practiced due to excellent outcome approx. 80-90%.¹ The other treatment modalities includes watchful waiting, medical management, holmium laser enucleation of prostate (HoLEP) and open prostatectomy depending on the severity of symptoms measured by International Prostate Symptoms Score (IPSS) and prostate size.² But due to cost of equipment and difficulty in learning the procedure, HoLEP has not been widely accepted despite of very less complications.^{3,4,5} TURP also carries significant risk of bleeding, erectile dysfunction and retrograde ejaculation.

The indications for surgery include severe lower urinary tract symptoms (LUTs) despite of medical therapy, recurrent attacks of acute urinary retention, Bladder Stone secondary to bladder outlet obstruction, High pressure chronic urinary retention with impaired renal functions and hematuria. There are two types of

TURP modalities, monopolar TURP and bipolar TURP. Monopolar TURP utilizes wire loop where current flows in one direction and requires non conducting fluid (Dextrose or glycine). Non conducting fluid can cause TUR syndrome after prolonged surgery. Bipolar TURP is a new technique in which current travel from one terminal to second terminal of bipolar electrode, saline irrigation is used with less chances of TUR syndrome.⁶

Three way Foley catheter is placed after TURP surgery to allow monitoring of bleeding as well as bladder irrigation and drainage of urine. It also helps in hemostasis if traction is applied. But duration of catheter varies among different centers from 2-7 days.^{7,8} Prolonged catheterization not only increases hospital stay but also results in complications including UTI, stricture and epididymo-orchitis.⁹ It is also a source of anxiety among these patients post operatively.

Despite international data favoring early catheter removal, still catheter is being removed around 5th post-operative day in most of the Centers. Therefore, aim of this study was to compare early and delayed catheter removal in terms of postoperative

Correspondence: Dr Abu Sufyan, Department of Surgery, Armed Forces Institute of Urology, Rawalpindi Pakistan

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complications including urinary retention, UTI, hemorrhage and urethral stricture.

METHODOLOGY

The cross-sectional study was conducted at Armed Forces Institute of Urology, Rawalpindi Pakistan, from January to August 2022 after approval of hospital ethical committee (Uro-Adm-Trg-1/IRB/2022/011 dated 10 Jan 2022). Sample size was calculated by open Epi calculator by keeping prevalence of post operative complications in Early Catheter Removal Group was 13.3% and Conventional Catheter Removal 23.3%.⁶

Inclusion Criteria: Patients having age from 60 to years with BPH who met the criteria for TURP (failed medical therapy, recurrent acute urinary retention, recurrent urinary tract infection and vesical stones due to bladder outlet obstruction) and consented for study and surgery (TURP) were included in the study.

Exclusion Criteria: However, patients with chronic retention before TURP and those who had significant capsular perforation during surgery were excluded.

Abdominal ultrasound used to assess size of prostate. Patients randomized into two Groups by lottery method. Group A: early catheter removal (day 2) Group B: late catheter removal (day 5). Patients base line investigations including Blood complete picture, liver function test, renal function test, urine analysis, urine culture and sensitivity, fasting blood sugar levels, coagulation profile, ECG , chest X ray and serum PSA levels were carried out as outdoor case and pre-anesthesia assessment done preoperatively. Patients were admitted day before surgery and standard surgical protocol followed, standard technique (monopolar TURP using Karl Storz resectoscope with 26 Fr sheath) used , 5% Dextrose used as continuous irrigation fluid during the surgery. Satisfactory hemostasis achieved during surgery, all patients were given spinal/general anesthesia with peroperative antibiotic prophylaxis as per institute protocol (Injection ceferazone plus sulbactam 2gm). 24 Fr, 3-way latex Foley catheter placed and normal saline used as irrigation solution postoperatively and patient observed for hematuria or clots along with vital signs post operatively. Irrigation continued till effluent was either clear or light pink.

Catheter removed on day 2 in Group A and patients were allowed to void before discharge, while in Group B, patients were reviewed on day 2 and if there was no need of irrigation , were discharged with

catheter and called for follow up on day 5 and catheter was removed. Patients were allowed to go home if voided successfully. Patients were advised fortnightly follow up for 30 days and suggested early follow up if they develop lower urinary tract symptoms (LUTs) including frequency, urgency, dysuria, fever, hematuria or urinary retention. After 30 days patients were followed on monthly basis for 6 months.

Patients having storage LUTs were evaluated for UTI through urine R/E and managed conservatively as per C/S, while patients having voiding LUTs were evaluated for clot retention and urethral stricture by Ultrasound KUB with pre and post void volume and Retrograde urethrogram (which also confirmed the site of stricture too) .Demographics including hospital registration number, age and prostate size noted in performa.

Data analyzed using Statistical Package for the social sciences (SPSS) version 23.00 and MS Excel 2016 software. Mean±SD was calculated for continuous variable. Frequency and percentage were calculated for categorical variables. Chi square test/ Fisher exact test and independent t test were used. The *p*-value ≤ 0.05 was considered significant

RESULTS

A total of 100 patients were included in the study. Both Groups had no statistically difference in Age and Prostate size (Table-I). Mean age among Group A was 71.84±4.863 years and 70.88±4.805 years in Group B (*p*-value=0.932). Also, there was no statistically significant difference between Groups with respect to prostate size (*p*-value 0.850) as mean prostate size was 75.00±7.14 gm in Group-A and 74.88±7.27 gm in Group-B.

Table-I: Comparison of Age and Prostate size Between Groups (n=100)

Variables	Group A (n=50)	Group B (n=50)	<i>p</i> -value
Mean Age (Years)	71.84±4.86	70.88±4.80	0.932
Prostate size (Grams)	75.00±7.14	74.88±7.27	0.850

Table-II showed that, In Group-A, 4(8%) patients had urinary retention and in Group B, 3(6%) patients had urinary retention with *p*-value 0.438. The number of patients that had UTI in Group A and Group B were 1(2%) and 7(14%) respectively (*p*-value<0.001) which was statistically significant and there was no statistically significant difference in developing hematuria (2% in each Group) and epididymo-orchitis

(4 vs 6%) with *p*-value of 1.00 and 0.363 respectively. One patient from Group A and two patients from Group B developed urethral stricture (*p*-value 0.245) at 3rd and 5th months and treated with direct visual internal urethrotomy with good urine flow rates after surgery.

Table-II: Comparison of Complications Between Groups (n=100)

Complications	Group A (n=50)	Group B (n=50)	<i>p</i> -value
Urinary retention	4(8%)	3(6%)	0.438
Urinary tract infection	1(2%)	7(14%)	<0.001
Hematuria	1(2%)	1(2%)	1.000
Epididymo-orchitis	2(4%)	3(6%)	0.363
Urethral stricture	1(2%)	2(4%)	0.245

DISCUSSION

Due to various technical innovations TURP is considered safe surgical treatment for BPH due to less complications. However bladder irrigation facilitates to reduce clot retention and burning sensation post operatively. Prolonged catheterization increases complication and cost of treatment due to increased hospitalization and also causes anxiety among patients.^{8,9}

Although patients diagnosed as having UTI preoperatively were treated with antibiotics and also antibiotics were administered during surgery and postoperatively. Our study revealed more UTI (statistically significant *p*-value<0.001) in delayed catheter removal Group, similar findings were observed by Durrani and colleagues in evaluation of 320 patients. Even more patients developed epididymo-orchitis in delayed catheter removal Group although it was not statistically significant (*p*-value 0.363).¹⁰ Chander and colleagues,⁷ did not find significant retention due to early catheter removal as in our study, they removed Foley catheter in 7.5 hours (92%) and within 10 hours(8%). Nakagawa and colleagues,¹¹ removed catheter in 24 hours (93.6%) of 431 patients without any significant urinary retention and reported that early catheter removal is safe.^{12,13}

In our study bleeding was negligible in both Groups, however in some studies early catheter removal resulted in re-catheterization due to clot retention as compared to late catheter removal,¹⁴⁻¹⁶ which was attributed to UTI.¹⁷ In our study there were,⁷ patients among both Groups who were re-

catheterized possibly because of primary detrusor failure which was not statistically significant as it has been found in past studies.¹⁸

Late catheter removal also increases chances of urethral stricture formation and urinary incontinence.¹⁹ In our study it was around 1% and statistically not significant *p*-value 0.24 and also similar findings were noted by Rassweiler and colleagues¹, as found urethral stricture in 2-9% patients after delayed catheter removal.

LIMITATION OF STUDY

This study has few limitations as the result cannot be generalized to whole population as this hospital has specific Group of population as dependent clientele and only those cases of TURP were included in study having age between 60 to 70 years and cases who had chronic urinary retention and sustained prostatic capsule perforation were excluded from study.

CONCLUSION

Early catheter removal after TURP resulted in decreased urinary tract infection rate as compared to delayed catheter removal without any other significant postoperative complication.

Conflict of Interest: None.

Authors' Contribution

Following authors have made substantial contributions to the manuscript as under:

AS & MSA: Conception, study design, drafting the manuscript, approval of the final version to be published.

AA & MF: Data acquisition, data analysis, data interpretation, critical review, approval of the final version to be published.

5,6: Conception, data acquisition, drafting the manuscript, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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