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Original Research Article

Post-operative day 2 versus post-operative day 4 foley catheter removal after trans urethral resection of prostate

Vedamurthy Reddy Pogula[1], Ershad Hussain Galeti[1]*, Mriganka Deuri Bharali[2], Bhargava Reddy Kanchi[1]

[1]Department of Urology, Narayana Medical College, Nellore, Andhra Pradesh, India
[2]Department of Urology, Dr. Pinnamaneni Siddhartha Institute of Medical Sciences, Andhra Pradesh, India

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***Correspondence:**
Dr. Ershad Hussain Galeti,
E-mail: dr.ershadhussain@gmail.com

ABSTRACT

Background: Usually after TURP surgery for BPH, a three-way foleys catheter is placed transurethrally and removed post-operative day 4. This study done at our institute is to help decide the interval for removal of foley catheter following TURP, which is most beneficial to the patients. The objective is to know whether the POD-2 removal of the catheter in post TURP patients will be beneficial compared to the traditional POD-4 removal.
Methods: This is a prospective study on 100 patients with BPH who underwent TURP. Patients were assigned to POD-2 and POD-4 groups. A standard TURP was performed on all the patients. After removing the catheter on POD-2 and POD-4, the patients were observed, and outcomes were carefully recorded in the two groups.
Results: The highest incidence of the disease was in the age group of 60 - 75 years (70%). The majority of patients had nocturia present in 80 out of 100 patients (80%).55% of patients had grade III prostatomegaly. Most of the patients, 55 (55%), had prostate volume between 30 and 50 grams. No statistical significance noted in terms of retention of urine, post-void residual urine. The average duration of hospital stay post-surgery for group I was 3.7 days, and in group II was 5.1 days which is statistically significant.
Conclusions: Our study shows that early catheter removal after two days following Transurethral Resection of Prostate (TURP) is safe, cost-effective to the patient, reduces the post-operative hospital stay.

Keywords: Benign prostatic hyperplasia, Transurethral resection of prostate, Catheter removal, Urinary retention

INTRODUCTION

sBenign prostatic hyperplasia (BPH) is a common problem that affects older men.[1] The incidence of histopathological BPH in autopsy series rises from 20% in men between 45-50 years, 50% in men aged 51-60 years and over 90% in men older than 75. The symptoms of BPH are related to increasing age. 30% of men report obstructing voiding symptoms at the age of 55, and at the age of 75, 60% of men are symptomatic. The symptoms of BPH are divided into obstructive and voiding complaints. Obstructive symptoms of BPH include hesitancy, narrow stream, a sensation of incomplete bladder emptying, double voiding, straining to urinate and post-void dribbling. Irritative voiding symptoms include frequency, urgency and nocturia.[2] A good understanding of the aetiology and pathology of this common disease has expanded the treatment options available to us. α adrenergic blockers, 5α reductase inhibitors, transurethral resection of the prostate (TURP), transurethral microwave therapy, transurethral needle ablation of the prostate (TUNA), laser therapy are some of the treatment options currently available.[3] Despite the availability of many treatment modalities, the Transurethral resection of the prostate (TURP) introduced in the 1920s has revolutionised the treatment of BPH. It is currently regarded as the 'gold standard' treatment for

BPH, against which all other surgery modalities are compared and evaluated. Now, TURP is the choice of treatment for BPH in over 90% of cases. Usually, after this surgery, a three-way foleys catheter is placed transurethrally and removed post-op day 44. Post-operative placement of a catheter after TURP provides efficient bladder irrigation and drainage after surgery to prevent any blood clots and acts as a tamponade on bleeding points. Urinary retention developing after foley catheter removal after TURP may be due to urethral obstruction or decreased detrusor contractility. Although literature reports failure to void following post-TURP catheter removal (1-10% of cases), there is very little or no mention of the exact duration of catheter removal following TURP. There are no standardized criteria for the removal of foley catheter after TURP in the literature. Traditionally on the post-op day 4, the catheter is removed. This study done at our institute is to help decide the interval for removal of foley catheter following TURP, which is most beneficial to the patients.

Objectives

To assess which modality (POD-2 removal versus POD-4 removal of the catheter) has overall benefits for the patient undergoing TURP. Parameters in both groups like post-operative PVR, uroflowmetry and the complications are measured. To know whether the POD-2 removal of the catheter in post TURP patients will be beneficial compared to the traditional POD-4 removal since keeping a large diameter of 22F foley catheter is often very inconvenient for the patient.

METHODS

This is a prospective study conducted in the Department of Urology, Narayana Medical College, Nellore over a period of 2 years from April 2018 to March 2020 after institutional ethical board clearance. Inclusion criteria are all BPH patients admitted to the ward and planned for TURP were counselled, and patients giving consent for the study were selected. Exclusion criteria are patients with diabetes, a history of cerebrovascular disease, Concomitant stricture urethra, and those subjected to an additional endoscopic procedure like cystolitholapaxy or internal urethrotomy were excluded. A total of 100 patients were enrolled in the study. Age, size of the prostate (as determined by USG KUB), DRE grade of the prostate, cystoscopic grade at TURP were recorded. Patients were assigned to POD-2 and POD-4 groups. A standard TURP was performed on all the patients. A 24 FR resectoscope was used with all the precautions taken to achieve the haemostasis without any prolongation of resection time. After the surgery, all patients had a three-way Foley catheter placed with saline irrigation and drainage. After removing the catheter on POD-2 and POD-4, the patients were observed, and outcomes were carefully recorded in the two groups. Parameters like PVR and uroflowmetry recorded post-op, evaluated and compared. Data of both groups were compared and analysed for statistical significance with Chi-square test and Student 't' test using IBM Statistical package for social sciences (SPSS) Statistics version 20 software. p-value of less than 0.05 was considered significant.

RESULTS

Our study included patients between age 52-75 years. The youngest patient being 52 years and the oldest being 75 years old. The highest incidence of the disease was in the age group of 60-75 years (70%) (Table 1).

Table 1: Age distribution of patients.

Age group (years)	Group I (POD-2)	Group II (POD-4)	P value
52-60	10	12	0.81(Not significant)
61-68	18	20	
69-75	22	18	

The majority of patients had nocturia present in 80 out of 100 patients (80%). The second most common presentation mode was a poor urine stream present in 72 out of 100 patients (72%).

Table 2: Comparative parameters between the two groups.

Parameter	Group I (POD-2)	Group II (POD-4)	P value
Catheter removal (no of pts)	50	50	-
Age (years) Mean±SD	63.5±9.4	65.2 ± 8.79	0.81
PVR Mean±SD	14±12.2	12±13.3	0.65
Urinary Retention requiring re-catheterisation	07	05	0.5
Haematuria requiring re-catheterisation	01	Nil	0.31
Hospital Stay after Surgery (days) Mean±SD	3.7±0.42	5.1±0.61	<0.01
Discharged with catheter	03	02	0.55

The third most common symptom was the frequency of micturition, which was seen in 65 out of 100 patients (65%). Urgency was present in 60 (60%), dysuria were present in 57 (57%), incomplete emptying in 51 (51%), dribbling in 44 (44%), hesitancy in 36 (36%), urgency incontinence in 25 (25%), intermittent stream in 19 patients (19%).

A total 40 patients had grade II, 55 patients had grade III, and 5 patients had grade IV prostatomegaly on digital rectal examination. Most of the patients, 55 (55%), had

prostate volume between 30 and 50 grams,30 (30%) patients had between 51 - 75 grams and 15 (15%) patients had prostate volume more than 75 grams.

A total 7 (14%) patients in group I developed retention of urine, and 5 (10%) patients in group II developed urinary retention after catheter removal who needed to be re-catheterised. 3(6%) patients in group I and 2 (4%) patients in group II were discharged with a catheter. No statistically significant re-catheterisation rate was noted in both groups.

In the post-operative period, the average post-void residual volume in group I was 14 ml compared to 12 ml in group II. In both groups, there was no statistical significance noted.

The average duration of hospital stay post-surgery for group I was 3.7 days, and in group II, it was 5.1 days. Post-operative hospital stay was significantly lower ($p<0.001$) in patients who underwent early catheter removal after TURP (Table 2).

DISCUSSION

The duration of postoperative hospitalization and indwelling urethral catheterization has been significantly reduced during the past decade.[5-7] Studies reported that early catheter removal has significantly reduced the length of hospital stay, which in turn would be beneficial to health care costs.[8,9] In addition to cost savings, early catheter removal and early discharge thereafter may bring advantages for patients for whom an early return to their work is required. Short-term urinary catheterization can also reduce the risk of urinary tract infections associated with an indwelling catheter.[10]

In our study, the maximum incidence of benign prostatic hyperplasia was seen on an average in the sixth decade of life, which comprised 70% of total patients. In our study, the youngest patient was of 52 years, and the oldest was 75 years. Age-specific incidence in our study can be compared with the study of Glynn et al.[11] The average age of presentation in our study was 65 years, comparable with Gordon et al and Mamo et al, where the average age of presentation was 68.8 years and 69.8 years, respectively.[5,12]

In the present study mean weight of resected prostatic tissue 30.72 (±3.44) gm were in group I, and 31.37 (±3.32) gm were in group II ($p>0.05$) that was not statistically significant. In a study carried out by Nakagawa et al it was 15.5±11.0 versus 18.9±15.0 g, $p=0.230$ and study by Gordon et al reported 12.5 gm.[5,13] It was greater to a study by Chander et al which reported a mean resection weight of 22.1 gm.[14]

The duration of catheterisation after TURP depends primarily on the colour of the urine in the catheter. As there was either a clear or mild tinged colour at the end of TURP, the duration of catheterisation was 2 days in 50 patients. This is compared to the study by Srinivasan et al, in which the mean duration of catheterisation in the POD-2 group was 2 days.[4] Borboroglu et al study had mean duration of catheterization of 3.2 days, few patients reported with incidence of bladder neck contracture, urethral stricture and bleeding after hospital discharge, however there were no such complications in our group II patients.[15]

The average duration of hospital stay post-surgery for group I was 3.7 days, and in group II, it was 5.1 days. Post-operative hospital stay was significantly lower ($p<0.001$) in patients who underwent early catheter removal after TURP. This could be explained due to the early mobilisation of patients, lesser post-operative pain, early discharge and reduced cost burden to the patient and the hospital. Kirollos et al reported the mean hospital stay was 6.4 days.[16] Nakagawa and other studies said that early removal of Foley catheter reduced the hospital stay and proved to be cost-effective for the patients.[13]

A total 7 (14%) patients in group I developed retention of urine, and 5 (10%) patients in group II developed urinary retention after catheter removal who needed to be re-catheterised. 3 (6%) patients in group I and 2 (4%) patients in group II were discharged with a catheter. This patient's catheters were removed on an outpatient basis around one week later. No statistically significant re-catheterisation rate was noted in both groups, which suggested that urine retention did not develop due to early removal of the catheter after TURP. Re-catheterisation was needed in 12% of patients in our study, compared with 12% to 14% of patients requiring re-catheterisation in the Dodds et al study.[17] There were no cases of TUR syndrome in our study. One patient in the POD-2 removal group needed re-catheterisation for persistent bleeding, which might be due to inadequate intra-operative haemostasis and was adequately managed conservatively. Nakagawa et al removed catheter in 24 hours in 93.6% of 431 patients. All the patients did not develop urinary retention. They concluded that early catheter removal is safe.[13]

No patient in either group developed any late complications like stricture urethra or bladder neck contracture. Muzzonigro et al reported a 1.8% stricture rate after TURP, and Venrooij et al reported a 2.27% stricture rate.[18,19] Urethral stricture is a major late complication of TURP. Rassweiler and colleagues in their review of complications of TURP recorded that the rate of urethral stricture was 2- 9%.[3]

Patients were followed up on the first month and third month after surgery.

CONCLUSION

Our study shows that early catheter removal after two days following TURP is safe, cost-effective to the patient, reduces the post-operative hospital stay. With analysis of various parameters like post-operative retention,

recatheterisation rates, post op PVR, we find that earlier removal of urinary catheter at POD2 as compared to POD4 is not detrimental to the patient and had a better patient satisfaction rate.

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