OUTCOME OF EARLY REMOVAL OF URINARY CATHETER AFTER TRANSURETHRAL RESECTION OF PROSTATE

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Abstract

Background: Transurethral resection of the prostate is still the gold standard for preventing complications. It has been the subject of ongoing discussion among urologists.

Objective: The aim of the study was to conclude the Outcome of early removal of urinary catheter after transurethral resection of prostate.

Material and method: This quasi-experimental study was carried out at the urology department MTI KGN Bannu KPK Pakistan from January-2024 to June-2024 after taking permission from the ethical board of the institute. 64 individuals with benign prostatic hyperplasia (BPH) who had bladder outlet obstruction were treated with transurethral resection of the prostate (TURP) were included in the study. Group A (N=32) had been allocated to remove the catheters early (before forty-eight hours), and group B (N=32) to remove the catheters conventionally (between three to seven days). TURP was performed using an A26 Fr. Resectoscope using a continuous sheath (Storz). The removal of the catheter was dependent upon normal vital signs.

After TURP, the urethral catheter was withdrawn from group A within 48 hours and from group B within 3-5 days for those who satisfied the requirements for catheter removal. Urine samples were taken for sensitivity and culture in each patient right before the catheter was removed. At the 14th Postoperative day and one month, all patients were monitored for further clinical assessment. Data was analyzed through SPSS version 16 and represented in mean and standard deviation.

Results: For the research, 60 participants with benign prostate enlargement were chosen. All of them received TURP treatment, and 32 patients in Group A had their catheters removed in 48 hours, while 32 patients in Group B had their catheters removed in 3-5 days using a more conventional procedure. After catheter removal both groups revealed experienced hematuria which was not statistically noteworthy. Group A's post-operative hospital stay was 48.13 ($\pm$8.93) hours, whereas Group B's was 114.25 ($\pm$10.9) hours (p<0.001). This difference was statistically significant. Each participant was followed up on 14 Post-operative day Group A mean International Prostate Symptom Score, mean Post-Void Residual, and mean Qmax were calculated All differences were not statistically significant (p >0.05).

Conclusion: The study concluded that it is safe to remove a catheter early after transurethral resection of the prostate which also lowers postoperative hospital stays and catheter-related morbidity.

Key words: Outcome; Urinary catheter: Transurethral resection; Prostate

Introduction

The most prevalent condition affecting men is benign prostatic hyperplasia (BPH), which is correlated with age. Its prevalence is 88% in those aged 80 and nearly 100% in people aged 90.[1]Although the treatment of BPH has changed significantly over the past ten years, transurethral resection of the prostate (TURP) is still the gold standard for preventing complications, which include acute urinary retention, obstructive uropathy, urinary tract infections, and renal insufficiency. BPH manifests its morbidity through lower urinary tract symptoms (LUTS).[2]Recently, innovative surgical treatment techniques such transurethral needle ablation, microwave thermotherapy, laser ablation, and vaporization have been developed in response to concerns about cost, morbidity, and consequences.[3] When compared to new treatment methods, the length of hospital stay following TURP due to prolonged post-operative catheterization is thought to be a cost disadvantage. Early catheter removal (<48 hours) after, transurethral resection of the prostate, when appropriate and safe, can overcome these disadvantages.

Conventional catheterization period (3-5 days) after TURP and prolonged hospital stay are obstacles because the patient cannot resume his normal life early.[4-5] After , transurethral resection of the prostate, the urologist often removes the catheter between the third and fifth POD. However, an early catheter removal policy has emerged in recent years. In particular individuals, catheter removal on the second Post -operative day , first POD, and day case, transurethral resection of the prostate has been reported to be effective as well as safe.[4-6] The absence of a clot, sufficient urine flow, normal vital signs, and an acceptable catheter effluent character are the most crucial factors in deciding whether to remove the catheter.[4] The post-, transurethral resection of the prostate catheterization phase has been the subject of ongoing discussion among urologists in Pakistan. Therefore the current study was conducted to determine the   Outcome of early removal of urinary catheter after transurethral resection of prostate.

Material and method

This quasi-experimental study was carried out at the urology department MTI KGN Bannu KPK Pakistan from January-2024 to June-2024 after taking permission from the ethical board of the institute. 64 individuals with benign prostatic hyperplasia (BPH) who had bladder outlet obstruction were treated with transurethral resection of the prostate (TURP) were included in the study. The cases were numbered chronologically based on their data and the time of surgery after being selected from the hospitalized BPH participants using a simple purposive sampling approach. Group A (N=32) had been allocated to remove the catheters early (before forty-eight hours), and group B (N=32) to remove the catheters conventionally (between three to seven days). History, physical examination (including DRE and IPSS Score for non-catheterized patients), urine analysis, serum electrolytes, creatinine, Phosphate , ultrasound scan of the prostate and KUB with MCC and PVR, uroflowmetry, RBS, chest X ray , Echocardiography-2D in certain cases, blood grouping, and Rh-typing with screening and cross-matching were all used to evaluate each patient.

Before surgery, individuals with a history of UTIs received the proper antibiotic treatment and tested negative for the infection. Prior to inducing anesthesia, injectable antibiotic was administered based on urine C/S as a prophylactic. Following the urethrocystoscopic assessment, TURP was performed using the Nesbit method. TURP was performed using an A26 Fr. Resectoscope using a continuous sheath (Storz). In all cases 1.5% W/V glycine was applied as the irrigation solution. The prostate's contents was carefully examined following surgical removal, and all bleeding channels were plugged up to ensure hemostasis. If the water test was positive and the effluent's color was nearly clear or faintly pink, the operation was complete. Following inserting an A22 Fr. Trichannel urethral Foley catheter into the bladder, 40–60 ml of distilled water was pumped into the catheter's balloon. Using regular saline, continuous bladder irrigation was initiated right away. For six hours, catheter traction was used. Following surgery, each individual were thoroughly followed for clot retention, transurethral resection syndrome, color of catheter effluent to gauge the degree of

hematuria, and vital factors. After recovering from anesthesia, the patient resumed a regular diet and began walking. Patients were advised not to strain when defecating and received a stool softener. The removal of the catheter was dependent upon normal vital signs.

Sufficient urine production, the lack of clots, the clear catheter effluent colour, and physical condition that facilitates self-voiding. After TURP, the urethral catheter was withdrawn from group A within 48 hours and from group B within 3-5 days for those who satisfied the requirements for catheter removal. Irrigation was reduced to 10 drops per minute in the early postoperative phase (within 6 hours). Urine samples were taken for sensitivity and culture in each patient right before the catheter was removed. Data was analyzed through SPSS version 16 and represented in mean and standard deviation.

After being able to pass urine freely while producing a good stream two or three times, the majority of those treated were allowed to go with provide guidance. Discharge was postponed until the following day in case of complications including fever, difficulty voiding, or suddenly bloody urine. At the 14th Postoperative day and one month, all patients were monitored for further clinical assessment. Following the procedure, all patients were told to go to the urology ward if they had any bleeding, fever, or urine retention.

Results
For the research, 60 participants with benign prostate enlargement were chosen. All of them received TURP treatment, and 32 patients in Group A had their catheters removed in 48 hours, while 32 patients in Group B had their catheters removed in 3-5 days using a more conventional procedure. The mean age in this study was 70.58 ($\pm$5.87) years for group B and 69.59 ($\pm$6.77) years for group A. When comparing the mean prostate weights of the two groups, group A had a mean weight of 46.7 ($\pm$12.76) grams, whereas group B had a mean weight of 45.8 ($\pm$11.84) (with a p>0.05), which was not statistically significant. The mean prostate resection time for groups A and B was 59.4 ($\pm$1 1.49 and 57.8 ($\pm$10.84) minutes, respectively (with a p>0.05), which was not of statistical significance. The mean weight of the resected prostate tissue was 35.83 ($\pm$3.93) gm in group A versus 34.68 ($\pm$4.24) in group B (p>0.05), which was not considered statistically noteworthy. Preoperative infection in the urinary tract were 10 (31.2%) within group A and 11(34.3%) in the second group (p>0.05) that wasn't statistically noteworthy. The mean Qmax, post-void residual and international prostate symptom score was compared which were not statistically significant as presented in **table .1**

Outcomes of the study
After catheter removal 6 (18.7%) in group A and 5 (15.3%) in group B experienced hematuria. 5 (15.6%) in group A and 2 (6.2%) in the second group had urine retention, which was not statistically noteworthy. After a urine culture and sensitivity test, 16 patients had a colony count more than 1X 105 CFU/ml, indicating substantial bacterial growth. Nine (28.1%) were in conventional and seven (21.8%) were in early group (value of p >0.05). Group A's post-operative hospital stay was 48.13 ($\pm$8.93) hours, whereas Group B's was 114.25 ($\pm$10.9) hours (p<0.001). This difference was statistically significant and might result in lower hospital costs. Each participant was followed up on 14 Post -operative day Group A mean International Prostate Symptom Score, mean Post-Void Residual, and mean Qmax were 08.24$\pm$1.42, 24.48$\pm$3.18 ml, and 17.11$\pm$1.72 ml/sec, respectively, while group B had 6.95$\pm$1.80, 23.45$\pm$4.14 ml, and 18.84$\pm$2.43 ml/sec, respectively. All differences were not statistically significant (p >0.05). Major outcome of the study is presented in **table 2.**

Table 1. Demographic features of the study population			
Variables	Group A N=32	Group B N=32	Value of P
Age in years Mean (SD)	69.59 (±6.77	70.58(±5.87)	-
Mean weight of prostate in gram	46.7 (±12.76)	45.8 (±1 1.84)	> 0.05
Prostate resection time (minutes)	59.4 (±1 1.49)	57.8 (±10.84	> 0.05
Mean Weight of resected prostate in gram	35.83 (±3.93)	34.68 (±4.24)	> 0.05
Pre-operative UTIs	10 (31.2%)	11(34.3%)	> 0.05
Mean International prostate symptom score	score 31.14 (±2.93)	32.24(±2.81	> 0.05
Mean Post-void –residual ml	137.8 (±25.19)	139.35(±24.15)	> 0.05
Mean Qmax milliliter per second	09.21(±2.62)	8.59(±3.14	> 0.05

Table 2. Outcomes of urinary catheter after transurethral resection of prostate in the study population			
Outcomes after catheter removal	Group A	Group B	P value
Hematuria	6(18.7%)	5(15.3%)	>0.05
Urinary retention	5(15.6%)	2(6.2%)	
Urine culture	**7**(21.8%)	**9**(28.1%)	
Mean hospital stay (hours)	48.13 (±8.93)	114.25(±10.9)	(p<0.001)
International prostate symptom score	08.24±1.42	6.95±1.80	>0.05
Mean Post-void –residual ml	24.48±3.18	23.45±4.14	
Mean mean Qmax ml /sec	17.11±1.72	18.84±2.43	

Discussion

Transurethral resection of the prostate is still the gold standard for preventing complications.[2] The absence of a clot, sufficient urine flow, normal vital signs, and an acceptable catheter effluent character are the most crucial factors in deciding whether to remove the catheter.[4] In this study we evaluated the Outcome of early removal of urinary catheter after transurethral resection of prostate. The mean age in this study was 70.58 (±5.87) years for group B and 69.59 (±6.77) years for group A. It is similar to the age group in former research in which mean age was 69.9 years.[7]When comparing the mean prostate weights of the two groups, group A had a mean weight of 46.7 (±12.76) grams, whereas group B had a mean weight of 45.8 (±11.84) (with a p>0.05). Our study is comparable with Chalise[8] results in which the mean prostate weight in two groups was not statistically significant. In the present study the mean prostate resection time for groups A and B was 59.4 (±1 1.49 and 57.8 (±10.84) minutes, respectively (with a p>0.05). these are similar to the findings of previous research.[8] The mean weight of the resected prostate tissue was 35.83 (±3.93) gm in group A versus 34.68 (±4.24) in group B in our investigation (p value greater than 0.05). In a research by T. Oguri and Nakagawa[9] (2006), the difference between 15.5 ± 11.0 vs. 18.9 ± 15.0 g, p = 0.230, was noted. Our analysis yielded a different outcome. Due to the fact that the prostate was smaller and weighed less than the study. In this study the preoperative infection in the urinary tract were 10 (31.2%) within group A and 11(34.3%) in the second group (p>0.05) that wasn't statistically noteworthy. Pre-operative urinary infections were noted in 83 patients in a prospective study conducted by Agarwal & Kumar [7], which was comparable to my research. In our study after catheter removal 6 (18.7%) in group A and 5 (15.3%) in group B experienced hematuria. Studies by Iderpol L. T. Oscano et al.[10], noted similar findings. Early catheter removal after TURP did not significantly raise the frequency of hematuria, according to all of these investigations, including the current one. in the current research 5 (15.6%) in group A and 2 (6.2%) in the second group had urine retention, which was not statistically noteworthy. Reinsertion of the catheter, which was necessary in 12–14% of patients in one study by Dodds et al. [11] and 17.5% in another by Gordon, was the most common method of managing complications in earlier research.. Early catheter removal after TURP is not significantly associated with the rate of urine retention, according to the studies above and mine. After a urine culture and sensitivity test in our study , 16 patients had a

colony count more than 1X 105 CFU/ml, indicating substantial bacterial growth. Nine (28.1%) were in conventional and seven (21.8%) were in early group (value of p >0.05). The UTI rate did not differ substantially across the groups in the research by Nakagawa and T. Oguri[9] (1.2 vs. 6.3%, p = 0.547). The current study's higher prevalence than previous studies might be caused by hospital-acquired infections, severe preoperative UTIs, prolonged preoperative indwelling catheter use, and inadequate sterilization of the operating room, postoperative ward, and tools. In the early removal group in this study hospital stay was 48.13 (±8.93) hours, whereas in the other Group was 114.25 (±10.9) hours (p<0.001). The mean duration of stay following TURP was 1.4 ± 1.0 days for the early removal group and 6.2 ± 3.3 days for the late removal group, according to a research by Nakagawa [9] which comparable to our findings . The average post-operative hospital stay after TURP was 2.86 days for group I (early catheter removal) and 4.23 days for group II (traditional catheter removal) in the Mamo and Cohen (1991) research (p<0.001). All trials, including mine, found no increase in morbidity associated with early catheter removal.[12] Each participant was followed up on 14 Post -operative day Group A mean International Prostate Symptom Score, mean Post-Void Residual, and mean Qmax were 08.24±1.42, 24.48±3.18 ml, and 17.11±1.72 ml/sec, respectively, while group B had 6.95±1.80, 23.45±4.14 ml, and 18.84±2.43 ml/sec, respectively. All differences were not statistically significant (p >0.05).these findings are similar to the previous study.[13]

Conclusion
The study concluded that it is safe to remove a catheter early after transurethral resection of the prostate which also lowers postoperative hospital stays and catheter-related morbidity.

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