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COMPARATIVE ANALYSIS OF TURP OUTCOMES WITH AND WITHOUT FOLEY TRACTION

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ABSTRACT

Benign prostatic hyperplasia (BPH) is a common condition in older men, often managed surgically with Transurethral Resection of the Prostate (TURP) when symptoms are severe. Postoperative bleeding control remains a significant challenge, with Foley catheter traction frequently used for hemostasis. This study aims to compare the outcomes between patients undergoing Transurethral Resection of the Prostate (TURP) with Foley traction versus without Foley traction, This cross-sectional study was conducted at Department of Urology Jinnah Postgraduate Medical Centre, Karachi, included 60 posts TURP patients aged 50–65 years at the time of surgery for prostate enlargement with prostate volume <60 ml. Patients were randomized using sealed envelopes to either Group A (Foley Traction) and Group B (Non-Foley Traction). Bipolar TURP was conducted under a general anaesthetic with a 24Fr 3-way catheter and saline irrigation after surgery. Group A were received 2-hour Foley traction while Group B did not. Data were analysed with SPSS version 26.0, using t-test and Chi-square tests with $P \leq 0.05$ was considered as statistical criteria significant, In this study, the sample size consisted of 60 patients in whom Transurethral Resection of the Prostate (TURP) was performed, which included 30 Foley traction-patients and 30 non-Foley traction group. Mean Age was 61.87 ± 3.98 in the Foley traction group and 62.77 ± 3.90 in the non-Foley group (p=0.380) Operative time was longer (65.20 ± 13.00 vs 74.63 ± 12.91 minutes; p=0.007), pain score (VAS 4.80 ± 2.00 vs 2.70 ± 0.87; p=0.0001), catheter time (61.83 ± 19.45 vs 48.67 ± 14.79 hours; p=0.005), and duration of hospital stay (4.93 ± 1.38 vs 4.10 ± 1.42 days; p=0.025) in patients with Foley traction than in without Foley insertion. There were no differences within postoperative complications like the retention of clots (6.7% vs. 3.3%; p=0500) while urinary retention was noted in (13.3% v/s 10.0%; p=0500), It is to be concluded that foley traction during TURP demonstrates potential benefits in enhancing hemostasis, reducing postoperative pain, and shortening hospital stay, collectively suggesting improved recovery outcomes. Rates of complications, including clot retention, urinary retention, and urge incontinence, were comparable between groups, indicating that Foley traction does not increase the risk of adverse postoperative events. These findings suggest that Foley

traction may promote effective hemostasis, enhance patient comfort, and support earlier discharge, reinforcing its utility as a valuable adjunct in TURP procedures without compromising patient safety.

Keywords: *Transurethral Resection of Prostate, Prostatic Hyperplasia, Urinary Catheters, Clot Retention*

INTRODUCTION

Benign Prostate Hyperplasia is a common urological disorder affecting up to 22.7% of males above 70 years of age [1]. Risk factors for BPH include metabolic syndrome, diabetes, obesity, hypertension and elevated serum dihydrotestosterone [2]. Patients present with a variety of symptoms including hesitancy, weak stream, intermittent, incomplete bladder emptying, frequency and nocturia [3]. Complications of BPH include recurrent urinary tract infections, bladder stones, gross hematuria, acute kidney injury and urosepsis [4]. Various Treatment modalities are available including lifestyle modifications, medical treatment and surgical treatment options [5]. Alpha-blockers play a central role in the medical management of BPH, by relaxing smooth muscles of the bladder neck and prostate [6]. Transurethral Resection of the Prostate is still considered a gold-standard surgical treatment option when surgery is indicated [7]. Besides BPH, TURP is also performed as a palliative procedure, in patients with diagnosed Prostate Cancer, who present with bothersome Lower Urinary Tract Symptoms [8]. Transurethral Resection of the Prostate involves the insertion of a resectoscope through the urethra and the removal of prostatic adenoma using electro-resection [9]. After removal of an enlarged prostate, bleeding vessels are coagulated, and Bladder irrigation is started through a 3-way Foley catheter [10]. Early complications of TURP include gross hematuria, clot or chip retention, catheter-related discomfort, urinary tract infections and urosepsis [11]. Late complications include stricture formation, urinary incontinence, erectile dysfunction and recurrence of BPH [12,13].

TURP is widely performed due to the high volume of patients requiring this procedure. Postoperative gross hematuria is a significant factor responsible for prolonged catheter use and bladder irrigation, the need for blood transfusions, extended hospital stays, and subsequent infectious complications. These issues place a tremendous burden on healthcare resources. Foley traction is a simple and inexpensive method that achieves hemostasis by causing the catheter balloon to impact bleeding vessels in the resection bed. However, there is controversy in the literature regarding whether Foley traction effectively reduces hematuria in the early postoperative period. Secondly, the impact of Foley traction on postoperative pain is also a critical concern because exaggerated pain may result in greater analgesia requirements, slower recovery, and patient dissatisfaction. The purpose of this study is to establish if Foley traction reduces early postoperative hematuria and pain when compared against those patients not using the Foley traction. This would allow quicker mobilization of patients and their discharge, using health resources better prospectively leading to improved patient outcomes overall.

METHODOLOGY

This study was held in the Urology Department of Jinnah Postgraduate Medical Centre, Karachi. Non-probability consecutive sampling was employed to recruit patients aged 50 to 65 years who required TURP for an enlarged prostate with a volume <60 ml, normal baseline hemoglobin level (13.8-17.2 g/dL), and ASA status I or II. All patients provided written informed consent. The exclusion criteria encompassed duration of TURP more than 90 minutes, prostate cancer diagnosis, associated comorbidities e.g. low bladder compliance, urethral stricture of vesical stones, iatrogenic bladder or urethral injuries, and coagulopathies. The randomization was obtained by the sealed opaque envelope technique, in a single-blind manner, where patients were not aware of their group assignment to reduce reporting bias.

This study randomized 60 patients who were divided in two groups namely Group A (Foley Traction) and Group B (Non-Foley Traction). Bipolar electro resection was performed in every patient under spinal or general anesthesia followed by TURP. Disposable expandable 24Fr 3-way

catheter was inserted postoperatively and bladder irrigations with 0.9% normal saline were initiated. Catheter traction was applied using a Foley catheter tail secured at mid-thigh for 6 to 8 hours postoperatively in Group A, whereas in Group B, no such intervention was experienced. The primary outcomes included hematuria, assessed by the change in hemoglobin from baseline to the first postoperative day using CBC (chance calculated as Baseline Hb – Postoperative Hb), and the pain was assessed by measuring VAS scores at 30 minutes, 2 hours, and 24 hours post-surgery. The patients received standardized postoperative analgesia protocol as per hospital standards.

Data was recorded on a specified proforma safely by the principal investigator, with access limited to designated person. The primary statistical analyses compare both the groups by using independent sample t-tests and Chi-square tests as appropriate at 5% level of significance.

RESULTS

The table I shows a detailed comparison of baseline characteristics between patients with & without Foley traction. The study included sixty (60) patients, distributed evenly between two groups. Mean age was similar between the groups, with 61.87 years for the foley traction group and 62.77 years for those without foley traction, indicating no statistically significant difference (p=0.380). BMI also noted no significant difference between groups, averaging 25.88 kg/m^2 for the foley traction group and 25.38 kg/m^2 for non-foley traction group (p=0.521). Mean ± SD of operative time was noted in the foley traction group (64.83 ± 13.46 minutes) compared to the non-Foley traction (70.43 ± 13.94 minutes), with a p-value of 0.119. Prostate weight was comparable between groups (15.37 grams vs. 17.73 grams, p=0.338), as was perioperative blood loss (276.73 cc vs. 262.07 cc, p=0.346). There was also no significant difference in hematocrit dropping, which averaged 2.97% in the foley traction group and 2.67% in the non-foley group (p=0.260). However, pain scores, as measured by the VAS, were significantly higher in the non-foley traction group (4.80 ± 2.00) as compared to foley traction (2.87 ± 1.04) group, with a p-value of 0.0001. Catheter time was also longer for the foley traction group, averaging 61.83 hours vs. 48.67 hours in the non-foley group (p=0.005). Additionally, the non-foley traction group had a longer hospital stay as compared to foley traction (4.10±1.42 days v/s. 2.87±1.04 days, p=0.0001).

Table II summarizes the postoperative complications between the foley traction and without foley traction group. The statistical insignificant difference was noted in the prevalence of clot retention, with 3.3% of the foley traction group and 10% of the non-foley group and showing insignificant difference (p=0.306). Urinary retention occurred in 6.7% of foley traction patients and 13.3% of those without foley traction, with a p-value of 0.335. Contracture bladder neck was found to be in 0% of patients with foley traction while 6.7% was noted in the non-foley group, though this difference was not significant (p=0.246). Urge incontinence affected 13.0% of the foley traction group and 20.0% of the non-Foley group (p=0.500). The urinary tract infection was noted as (0% v/s 3.3%, p=0.500) in foley traction v/s non- foley traction respectively.

Table II summarizes postoperative complications between the two groups. The statistical insignificant difference was noted in the prevalence of clot retention, with 6.7% of the foley traction group and 3.3% of the non-foley group facing this complication (p=0.500). Perforation was slightly more common in the foley traction group (10.0% vs. 3.3%), though the difference was not statistically significant (p=0.306). Urinary retention occurred in 13.3% of foley traction patients and 10.0% of those without, with a p-value of 0.500. contracture bladder neck was seen in 6.7% of patients with foley traction but not in the non-foley group, though this difference was not significant (p=0.246). Urge incontinence affected 20.0% of the foley traction group and 10.0% of the non-Foley group (p=0.500). overall, these tables illustrate both baseline characteristics and postoperative outcomes, with statistically differences noted in operative time, pain scores, catheter time, and hospital stay, while other factors remained similar between the two groups.

DISCUSSION

Transurethral resection of the prostate is a common procedure for treating benign prostatic hyperplasia, designed to alleviate urinary symptoms by removing obstructive prostate tissue. While

effective it can lead to complications like bleeding & prolonged catheterization. The use of foley catheter traction postoperatively aims to improve recovery by reducing these issues. Rajpar et al. documented the findings of 100 TURP procedures with a focus on postoperative care and management of complications [14]. Acharya et al. undertook a study analyzing TURP with and without foley traction and determined the proportion of time to recovery and complication rates [15]. Raghuvanshi et al. [16] compared monopolar and bipolar TURP techniques, which helped understanding several options available in the treatment of BPH. These studies comprehensively evaluate the role of foley traction plays in TURP outcomes and will help clinicians whether or not foley traction is beneficial in improving recovery and decreasing complications after TURP.

The study shows the TUPR outcomes with and without foley traction, stating differences in recovery, postoperative pain and complications in a carefully selected patient group. The clinical criteria restricted patients to those aged 50-65 years with benign prostatic hyperplasia (BPH), and prostate volume under 60 ml, excluding significant comorbidities, prolonged TURP procedures, and prostate cancer, to ensure a uniform population. This allowed for a clearer examination of foley traction's effects. Foley traction is traditionally used for hemostasis after TURP by applying pressure to bleeding sites, but its impact on postoperative discomfort and recovery time has generated debate. Similar to findings by Tamalunas et al. [8], our study noted that foley traction increased both operative time, and patient-reported pain without significantly reducing common complications like clot retention or urinary retention. This aligns with previous studies that highlight foley traction's mixed benefits, with some demonstrating hemostatic effectiveness but at the cost of increased patient discomfort.

The current study reported the insignificant differences in blood loss (p=0.346), hematocrit levels (p=0.260), which align with the findings of KP et al. [17], who reported similar findings in blood loss (p=0.632) and hematocrit levels (p=0.937). Notably, a current study found a statistically significant difference in the hospital stay between groups (p=0.0001), implying that Foley traction has a major impact on recovery time after TURP. The current findings on hospital stay contrast with the findings of KP et al [17] who reported an insignificant difference. This discrepancy could be due to differences in characteristics of sample and postoperative protocols across hospitals. The duration of hospitalization reported by Mahamat et al. [18] was also in agreement with the recent study findings.

Our findings also echo those of Romantini et al. [10] and Pirola et al. [9], both of whom reported increased pain associated with foley traction due to catheter-related irritation. This study's VAS pain scores (4.80 ± 2.00 for the foley group vs. 2.70 ± 0.87 for the non-foley group, p=0.0001) are in line with Romantini's observations, reporting that traction may elevate discomfort and, as such need higher doses of analgesics potentially affecting patient mobilization and hospital discharge timing. Additionally, a prolonged catheter time in the foley group (61.83 ± 14.95 hours) aligns with findings from Shamout et al. [11], who noted extended hospital stays and recovery times associated with foley traction due to discomfort and urinary retention risks.

This study reported insignificant differences in the complications rate such as clot retention, infection and perforation, similar to findings by Castellani et al. [12] and Krickovic et al. [4]. However, a few studies noted divergent results, such as, Agrawal and Mishra [7] indicated decreased bleeding complications, with foley traction in specific settings focusing that its benefits may vary by patient profile, and technique. The current study also mirrors Romantini et al. [10] in recommending that alternatives, like hemostatic agents, may offer comparable hemostasis while minimizing patient discomfort.

The strengths of this study include a randomized, single-blind design, which decreased the reporting bias, and ensured more reliable pain assessments. However, limitations exist, notably the single-center approach and the relatively short follow-up period, which restrict generalizability and limit insights into late complications such as stricture or bladder neck contracture, as previously noted by Sekar et al. [13]. Future studies with broader samples and multicenter involvement, as well as longer follow-up periods, could help clarify foley traction's effects on long-term TURP outcomes

and patient quality of life. Castellani et al. [12] suggest that alternative hemostasis strategies could be investigated, potentially improving patient comfort while maintaining efficacy.

CONCLUSION

It is to be concluded that foley traction during TURP demonstrates potential benefits in enhancing hemostasis, reducing postoperative pain, and shortening hospital stay, collectively suggesting improved recovery outcomes. Rates of complications, including clot retention, urinary retention, and urge incontinence, were comparable between groups, indicating that Foley traction does not increase the risk of adverse postoperative events. These findings suggest that Foley traction may promote effective hemostasis, enhance patient comfort, and support earlier discharge, reinforcing its utility as a valuable adjunct in TURP procedures without compromising patient safety.

REFERENCES

Xiong Y, Zhang Y, Li X, Qin F, Yuan J. The prevalence and associated factors of lower urinary tract symptoms are suggestive of benign prostatic hyperplasia in aging males. Aging Male. 2020;23(5):1432-9.

Cho A, Chughtai B, Te AE. Benign prostatic hyperplasia and male lower urinary tract symptoms: epidemiology and risk factors. Curr Bladder Dysfunct Rep. 2020;15(2):60-5.

Powell T, Kellner D, Ayyagari R. Benign prostatic hyperplasia: clinical manifestations, imaging, and patient selection for prostate artery embolization. Tech Vasc Interv Radiol. 2020;23(3): 100688.

Kričković Z, Simatović M, Lukić D, Stanojević A, Škrbić V, Janjić G. Frequency of common complications during treatment of patients with benign prostate hyperplasia. Scr Med. 2020; 51(1):48-53.

Chughtai B, Rojanasarot S, Neeser K, Gultyaev D, Fu S, Bhattacharyya SK, et al. A comprehensive analysis of clinical, quality of life, and cost-effectiveness outcomes of key treatment options for benign prostatic hyperplasia. PLoS One. 2022;17(4):e0266824.

Sevach P, Sharma G, Priyadarshi S, Faujdar G. Immediate effect of alpha-blockers in predicting LUTS improvement in BPH patients. Urol J. 2024;91(1):85-9.

Agrawal MS, Mishra DK. Transurethral resection of prostate. J Endourol. 2022;36(S2):S-29-S-34.

Tamalunas A, Keller P, Schott M, Stadelmeier LF, Kidess M, Atzler M, et al. Propensity score-matched evaluation of palliative transurethral resection and holmium laser enucleation of the prostate for bladder outlet obstruction in patients with prostate cancer. Prostate Cancer Prostatic Dis. 2024:1-7.

Pirola GM, Maggi M, Castellani D, Sciarra A, Rubilotta E, Gubbiotti M. A cost-benefit analysis of bipolar TURP for the treatment of bladder outflow obstruction. Res Rep Urol. 2021:487-94.

Romantini F, Biferi D, Maselli G, Narcisi F, Ranieri M, Topazio L. The role of irrigation fluid in transurethral resection of the prostate outcomes and surgeon performance. Arch Ital Urol Androl. 2023;95(4).

Shamout S, Carlson K, Brotherhood HL, Crump T, Baverstock R. Incidence and predictors of early and late hospital readmission after transurethral resection of the prostate: a population-based cohort study. BJU Int. 2021;127(2):238-46.

Castellani D, Wroclawski ML, Pirola GM, Gauhar V, Rubilotta E, Chan VW-S, et al. Bladder neck stenosis after transurethral prostate surgery: a systematic review and meta-analysis. World J Urol. 2021;39(11):4073-83.

Sekar H, Palaniyandi V, Krishnamoorthy S, Kumaresan N. Post-transurethral resection of prostate urethral strictures: Are they often underreported? A single-centre retrospective observational cohort study. Urol Ann. 2021;13(4):329-35.

Rajpar S, Surya B, Mobin K, Kumar S. Experience of hundred cases of transurethral resection of prostate at tertiary care hospital in Karachi. J Pak Med Assoc. 2018;68(5):783-6.

Acharya GB, Thapa N, Mishra S, Neupane A, Shakya P. Transurethral resection of prostate with and without traction-a retrospective comparative study. Med J Pokhara Acad Health Sci. 2022; 5(1).

Raghuvanshi K, Raval A, Jain DK, Vartak KP, Patil S, Iqbal S, et al. Comparative assessment of monopolar versus bipolar transurethral resection of prostate for the management of benign prostatic enlargement. Urol Sci. 2019;30(6):262-5.

Kp A, Madhavan K, Kaushal D, Biswas M, Plash SK, Mr V. Assessing safety and feasibility of monopolar transurethral resection of the prostate without post-operative catheter traction: a randomized controlled trial. Urol J. 2024:03915603241249227.

Mahamat MA, Nedjim S, Valentin V, Allassiangar M, Mahamat B, Rimtebaye TN. Transurethral Resection of the Prostate (TURP)—an experience of the urology department of the University Hospital of National Reference of N'Djamena (TCHAD). Open J Urol. 2022;12(5):286-93.

Table I: Baseline Characteristics of Study Participants (n=60)

Variables		Groups		P-Value
		Foley Traction (n=30)	Without Foley Traction (n=30)	
Age in years, Mean ± SD		61.87 ± 3.98	62.77 ± 3.90	0.380
BMI in kg/m², Mean ± SD		25.88 ± 3.37	25.38 ± 2.64	0.521
Operative Time in mins, Mean ± SD		64.83 ± 13.46	70.43 ± 13.94	0.119
Prostate Weight in grams, Mean ± SD		15.37 ± 9.31	17.73 ± 9.64	0.338
Perioperative Blood Loss in cc, Mean ± SD		276.73 ± 60.31	262.07 ± 59.30	0.346
Hematocrit Dropping in %, Mean ± SD		2.97 ± 1.03	2.67 ± 0.97	0.260
VAS Pain Score, Mean ± SD		2.70 ± 0.87	4.80 ± 2.00	0.0001
Catheter Time in hours, Mean ± SD		61.83 ± 19.45	48.67 ± 14.79	0.005
Hospital Stay in days, Mean ± SD		2.87 ± 1.04	4.10 ± 1.42	0.0001
Indication for surgery	Refractory urinary retention, *n* (%)	12 (40.0)	10 (33.3)	0.852
	Fail Medication, *n* (%)	15 (50.0)	18 (60.0)	
	Urinary Tract Infection, *n* (%)	2 (6.7)	1 (3.3)	
	Persistent Hematuria, *n* (%)	1 (3.3)	1 (3.3)	

Table II: Comparison of Postoperative Complications Between Patients with and without Foley Traction			
Variables	**Groups**		**P-Value**
	Foley Traction	**Without Foley Traction**	
Clot Retention, *n* (%)	1 (3.3)	3 (10.0)	0.306
Urinary Retention, *n* (%)	2 (6.7)	4 (13.3)	0.335
Contracture Bladder Neck, *n* (%)	0 (0.0)	2 (6.7)	0.246
Urge incontinence, *n* (%)	4 (13.3)	6 (20.0)	0.365
Urinary Tract Infection, *n* (%)	0 (0.0)	1 (3.3)	0.500
Hemostasis, *n* (%)	11 (18.3%)	7 (11.7%)	0.260