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ORIGINAL ARTICLE

Comparison of frequency of postoperative requirement of additional analgesia and mean length of hospital stay in patients undergoing transurethral resection of prostate with and without postoperative catheter traction.

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ABSTRACT… Objective: To determine and to compare the frequency of postoperative requirement of additional analgesia and mean length of hospital stay in patients undergoing TURP with and without postoperative catheter traction. **Study Design:** Analytical Cross Sectional Study. **Setting:** Department of Urology, Allied Hospital, Faisalabad. **Period:** Dec 2023 to March 2024. **Methods:** After ERC approval & informed consent a total of 48 patients with comparable baseline characteristics such as age and preoperative prostate size who underwent TURP and were having significant postoperative hematuria (≥ grade 2 on a standardized hematuria colorimetric card) were enrolled in the study & were divided into two groups i.e. group A and group B, each having 24 patients. **Results:** Group A patients were subjected to postoperative catheter traction with thigh using an adhesive band that was maintained over the night, while group B patients were not subjected to this postoperative intervention. Patients of both the groups received a single shot of IM diclofenac sodium 75mg in the recovery room and later on oral diclofenac sodium 50mg was given twice a day. All Patients were presented with a visual analogue scale (VAS) every 6 hourly during the first 24 hours postoperatively and were given additional IM diclofenac sodium 75mg if the reported pain was of moderate-severe intensity as indicated by the VAS score and an entry was made on the pro forma. Also, at the time of discharge total days spent in the hospital by patients of both the groups after undergoing TURP and any postoperative complications were noted. **Conclusion:** 79.16% of group A patients required additional postoperative analgesia as compared to a value of 29.16% of group B patients (p= 0.0001). The mean hospital stay of group A and group B was 4.04 ± 0.65 days and 3.25 ± 0.65 days respectively (p=0.0001).

Key words: Additional Analgesia, Length of Hospital Stay, Postoperative Catheter Traction, Transurethral Resection of Prostate (TURP).

INTRODUCTION

Benign prostatic hyperplasia (BPH) is a very frequent cause of an enlarged prostate leading to bladder outlet obstruction (BOO), which manifests as lower urinary tract symptoms (LUTS) in men. It has been found that 50% of men with age greater than 50 years and up to 80 percent of men with age greater than 80 years, experience LUTS which are attributed to an enlarged prostate.[1]

Treatment options for BPH related LUTS include life style modifications, pharmacological management and surgical management. If LUTS do not improve with life style modifications, pharmacological management using alpha-blockers as mono therapy or in combination with an anti-muscarinic is usually the first line treatment. Surgical management is reserved for patients with persistent or severe LUTS that are refractory to the pharmacological management or when further complications arise due to BOO.[2] Among surgical options, transurethral resection of prostate (TURP) has long been considered the gold standard for the surgical treatment of BPH.[2] Although today we have numerous advanced surgical and minimally invasive options available but TURP has maintained its importance as the gold standard of surgical therapy for benign

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prostate enlargement.[3,4] For this reason in the contemporary times most urologists perform TURP when it comes to the prostatic resection as a surgical treatment for BPH related LUTS.[5]

Although TURP is a relatively safe procedure but postoperative hematuria is its one of the commonest complications. It ranges in frequency from 3.5% to 15.7% and which in turn may cause postoperative clot retention which has a frequency in the range of 4.9% to 7.2%.[6] Both of these complications may lead to a drop in hemoglobin level to the extent mandating intraoperative or postoperative blood transfusions in 2-34% of patients.[3]

To address this issue, application of postoperative traction on the urethral catheter has been advocated as one of the potential strategies to control postoperative bleeding of mainly unidentified venous origin.[3] This involves inducing mechanical pressure on the neck area of the urinary bladder by applying traction on an indwelling urethral catheter. It is one of the most frequently used techniques to control hematuria following TURP.[5] Distal end of the urethral catheter is fixed to the thigh using an adhesive band after applying adequate traction. It can be maintained for 30 minutes, 6 hours or overnight as per the requirement of clinical condition.[7] Balloon is inflated with fluid. The volume of fluid used should be 20 cc more than the resected volume of the prostate.[8] Resultant pressure over the bladder neck caused by the traction of the overinflated Foley catheter balloon occludes the veins and arteries that enter the prostate capsules through the vesico-prostatic junction.[9] Other strategies that have a potential role in reducing TURP related hemorrhage include the preoperative use of oral 5-alpha reductase inhibitors, intraprostatic injection of diluted epinephrine and intravenous tranexamic acid.

There is a paucity of studies in the contemporary literature about the definitive role of catheter traction which have mainly focused on the role of traction in reducing postoperative hematuria but its role in increasing morbidity has been less studied.[7] Despite the popularity of this technique it has some serious draw backs which increase postoperative morbidity for example increased chances of DVT because of restricted postoperative mobility and there are some case reports of penile tissue pressure necrosis following the use of postoperative catheter traction.[5,10] Moreover, patients receiving catheter traction after TURP frequently feel more pain and discomfort in the genital and supra pubic area and perineum as compared to those without the traction which increases their demand for additional analgesia and prolongs their stay in hospital.[7] In one study 80.4% patients with catheter traction after TURP required additional analgesia as compared to patients without traction among whom 9.4% required additional analgesia.[7] In the same study mean length of hospital stay ± SD was increased to 5.48±0.68 when postoperative catheter traction was applied, as compared to 3.80±0.5 when no postoperative catheter traction was applied.[7] To date, there are no conclusive and definitive guidelines available about the criteria for catheter traction after TURP.[1] The practice of applying traction after completion of TURP varies institution to institution and it is mainly the preference of the individual surgeon. Some surgeons prefer to apply traction even in cases when they are anticipating hematuria when there is no perceivable bleeding at the completion of the procedure.

The aim of this study is to evaluate the morbidity associated with the application of postoperative catheter traction. It is very important to address this topic because the traction related morbidity increases healthcare cost for the patients without providing any significant benefits in terms of reducing postoperative hemorrhagic complications.

METHODS

After securing approval of the ethical review committee {(48-ERC/FMU/2022-23/355)27/11/23)} and documenting informed consent, a total of 48 male patients with bladder outlet obstruction due to an enlarged prostate of volume ≥60g and aged ≥50 years, were included in the study with an objective to determine and to compare the frequency of postoperative

requirement of additional analgesia and mean length of hospital stay with and without post-TURP catheter traction. Only those patients were selected who were having postoperative hematuria of grade ≥2 as determined by visual comparison with a standard hematuria colorimetric card (Figure-1).[11] Patients with uncontrolled diabetes/ hypertension, taking any medications that are known to alter the TURP associated bleeding and with malignancy suspicious DRE findings/ Prostate specific antigen (PSA) levels were excluded from the study.

Out of the total study sample consisting of 48 patients, 24 patients with an odd serial number in the sample were placed in group A and postoperative catheter traction with thigh using an adhesive band was applied and was maintained over the night. Remaining 24 patients with an even serial number in the sample were placed in group B and no postoperative catheter traction was applied to patients in this group. All the cases of TURP were performed using a 26FR continuous flow resectoscope using monopolar current and procedure was concluded once meticulous electro-fulguration of all the visible spurts of bleeders was done. 5% dextrose water was used as the irrigation fluid intraoperatively while Normal Saline postoperatively. All the patients received a single preoperative dose of IV ceftriaxone 1g and the same was continued for 2 days postoperatively twice a day.

All patients were transfused one pint of whole blood intraoperatively in compliance with the local guidelines. Single dose of IM diclofenac sodium 75mg was given in the recovery room and oral diclofenac sodium 50mg was given twice a day afterwards. Patients were presented with a visual analogue scale (VAS) every 6 hourly during the first 24 hours postoperatively and were given additional IM diclofenac sodium 75mg if the reported pain was of moderate-severe intensity as indicated by the VAS score and the entry was made on the research pro forma. Also, at the time of discharge total days spent in the hospital after undergoing TURP and any postoperative complications were noted on the pro forma. Data was analyzed using SPSS V-25. Frequency and percentage were calculated for qualitative variable i.e requirement of additional analgesia and both groups were compared using chi square test. Mean ± SD were calculated for quantitative variable i.e length of hospital stay and t test was used for comparing both the groups. P value ≤ 0.05 was taken as significant.

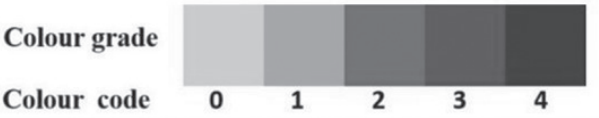

Figure-1. Hematuria colorimetric card

RESULTS

Each of the groups A and B consisted of 24 patients and both the groups were comparable in terms of the baseline characteristics like age of the patients (p= 0.4056) and preoperative prostate size (p=0.357). Statistical analysis of the postoperative data revealed that both the groups differed significantly in terms of the postoperative analgesia requirement (p=0.0001) having frequency of 79.16% and 29.16% respectively for group A and group B. The mean length of postoperative hospital stay for group A and group B was 4.04 ± 0.65 days and 3.25 ± 0.65 days respectively (p=0.0001). Table-I shows the calculated values for the frequency of additional analgesia requirement and the mean length ± SD of the hospital stay for patients of both the study groups. No adverse event or complication occurred in any of the patients postoperatively regardless of whether postoperative traction to the urethral catheter was applied or not.

DISCUSSION

Lower urinary tract symptoms (LUTS) because of the benign prostate hyperplasia (BPH) are very common among the ageing male population worldwide. BPH causes LUTS because of the bladder outlet obstruction (BOO) and the pathophysiology involves two distinct mechanisms. The first is the bulkiness of the prostatic tissue which physically narrows the lumen of the prostatic urethra (static component), and the second is the result of enhanced smooth muscle tone, leading to further narrowing of the lumen (dynamic component). Routinely, a combination of both these mechanisms is

responsible for bladder outlet obstruction and in producing BPH related LUTS.[2]

Variable	Group A (Catheter Traction Applied) n=24	Group B (Catheter Traction Not Applied) n=24	P-Value
Age (Years) Mean ± SD	70.12 SD 4.46	71.12 SD 3.73	0.4056
Prostate volume (grams) Mean ± SD	68.04 SD 5.63	69.91 SD 8.14	0.357
Additional Analgesia Requirement %	79.16	29.16	0.0001
Length of Hospital Stay (days) Mean ± SD	4.04 SD=0.65	3.25 SD=0.65	0.0001

Table-I. Baseline characteristics and postoperative data

Transurethral resection of prostate (TURP) when properly indicated offers a significantly high success rate as a minimally invasive surgical treatment option for BPH related LUTS. Generally it is a safe procedure but even in expert hands the associated hemorrhage is a significant cause of the morbidity associated with the procedure. To avoid these complications meticulous hemostasis during and after the completion of TURP in the prostatic fossa by electro-fulguration is necessary. Arterial bleeding is easy to locate because it appears as either a direct spurt or a bouncing spurt and can be easily electro-fulgurated.[5] However, identifying venous bleeding is very challenging as it often vanishes when the bladder is full with the irrigation fluid, because of the resultant hydrostatic pressure on the prostatic venous channels.[5] Rapid influx of the irrigation fluid also makes localizing of venous bleeding more difficult.[5] This is why the application of the postoperative catheter traction has been theoretically proposed as one of the potential strategies to address this problem. However in practice this does not help with controlling hematuria of arterial origin, for which surgeon has to identify the arterial spurt and electro-fulgurate it. This can only help in controlling hematuria by providing a tamponade like effect on venous oozes which theoretically can stop on itself own after clots form around those continuously bleeding venous channels.[7] Because of these reasons no specific indications regarding the application of postoperative urethral catheter traction exist and the decision to apply catheter traction depends on the choice of the individual surgeon, but while making this decision it is important to consider the traction related morbidity in mind which has significant impact on postoperative recovery and the healthcare cost.

There are only a few studies available which have tried to find out magnitude of the morbidity associated with the practice of applying postoperative catheter traction. In this study we report our clinical experience at Urology department, Allied Hospital Faisalabad, of the above mentioned practice in terms of the postoperative analgesia requirement and the length of hospital stay. Allied Hospital Faisalabad is a tertiary care teaching hospital and the urology department is a high volume center offering a very good opportunity to study these adverse aspects associated with catheter traction. In our study involving 48 patients with significant postoperative hematuria, we divided the patients into two equal numbered groups called group A (subjected to the application of catheter traction) and group B (not subjected to the application of catheter traction), each having 24 patients. Despite having comparable age and preoperative prostate size the patients in group A required significantly more analgesia (P= 0.0001) and their length of hospital stay after TURP was significantly prolonged (P= 0.0001) as compared to that of the patients in group B.

The results reported by our study are consistent with a recent Nepalese study by Acharya et al.[7] They reported a frequency of additional analgesia requirement of 80.4% vs. 9.4% when postoperative catheter traction was applied and when not applied respectively. Similarly, mean ± SD of the days spent in hospital was reported to be 5.48±0.68 when catheter traction was applied

as compared to 3.80±0.5 when no traction was applied. Despite this statistically significant difference of additional analgesia requirement and length of hospital stay, the difference between frequencies of postoperative clot retention was not significant between these two groups which were 5.4% and 1.6% respectively with and without traction. Also there was no significant difference in postoperative requirement of blood transfusions, frequencies being 3.6% and 1.6% respectively with and without traction.

TURP associated hemorrhage being a significant cause of concern mandates that strategies to reduce the blood loss should be put in place, but it is of equal importance that the strategy applied while reducing the hemorrhage should have minimal adverse effects on the postoperative recovery of the patient. The decision whether to apply or not the postoperative catheter traction should be based on case to case individual circumstances. Applying the catheter traction for a relatively shorter period of time might prevent or at least reduce the associated morbidity however; further studies are needed to determine the magnitude and also to explore its potential complications in the long run.

CONCLUSION

Postoperative catheter traction after TURP despite being a popular technique to reduce the postoperative hemorrhage carries significant morbidity associated with its application. Therefore it is advisable to utilize other less morbid and well-studied interventions to reduce the TURP related hemorrhage.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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