

Effect of Short-term Preoperative Dutasteride on Bleeding after Transurethral Resection of the Prostate

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ABSTRACT

Introduction: Transurethral resection of the prostate is the gold-standard surgical treatment for moderate to severe lower urinary tract symptoms due to benign prostatic hyperplasia unresponsive to medical therapy. Bleeding is the most frequent postoperative complication, leading to clot retention, prolonged hospitalization, and increased morbidity. Dutasteride, a 5-alpha-reductase inhibitor, reduces dihydrotestosterone levels, suppresses Vascular Endothelial Growth Factor expression, and decreases prostate vascularity, thereby potentially reducing perioperative bleeding. **Aims:** To evaluate the effect of 2-weeks preoperative dutasteride therapy on bleeding during TURP. **Methods:** This prospective interventional study was conducted at Nepalgunj Medical College from September to November 2025. Fifty patients were divided into two groups: Group A received dutasteride 0.5 mg/day for two weeks before Transurethral resection of the prostate, and Group B underwent surgery without dutasteride. All patients underwent standard preoperative evaluations and surgery was performed using a uniform technique by blinded surgeons. Postoperative outcomes were assessed based on hemoglobin and hematocrit changes, clot retention, and hospital stay. **Results:** Baseline characteristics were similar between groups. Group A showed significantly less postoperative drop in Hemoglobin (0.66 ± 0.55 g/dl vs 1.12 ± 0.72 g/dl; $P=0.016$) and Hematocrit ($4.53 \pm 3.09\%$ vs $8.75 \pm 2.02\%$; $P=0.02$). No patients in Group A developed clot retention, whereas two cases in Group B needed clot evacuation. Hospital stay was significantly shorter in Group A (2.28 ± 0.54 vs 3.08 ± 0.91 days; $P=0.000$). **Conclusion:** Short-term preoperative dutasteride therapy significantly reduces bleeding during Transurethral resection of the prostate and shortens hospital stay.

Keywords: 5-Alpha-reductase inhibitor, Benign Prostatic hyperplasia, Dutasteride, Transurethral Resection Of Prostate, Vascular endothelial Growth Factor

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INTRODUCTION

Transurethral resection of the prostate (TURP) is the gold standard surgical treatment for patients who have moderate to severe Lower Urinary Tract Symptoms (LUTS) due to benign prostatic hyperplasia (BPH) not responding to pharmacological treatments.¹⁻³ Post-operative bleeding is one of the prevalent and severe complications of TURP. It increases the risk of postoperative clot retention, longer hospital stay, blood transfusion, clot evacuation and sepsis which increases the morbidity and mortality.^{4,5} Finasteride and dutasteride are 5-ARIs administered to inhibit the conversion of testosterone (T) to dihydrotestosterone (DHT). Apart from the daily use as pharmacologi-

cal treatments for BPH, they are also used to manage hematuria associated with the disease. This effect is achieved by reducing the growth of prostatic tissue and suppressing the androgen-controlled vascular endothelial growth factor (VEGF), which results in reduced angiogenesis and less prostatic bleeding.⁶ The available 5-ARIs, namely finasteride and dutasteride, suppress DHT levels, prostate vascularity, and growth. Finasteride inhibits only type II 5-AR, whereas dutasteride blocks both types I and II 5-ARs.⁷ Several studies have shown that pretreatment with finasteride has resulted in decreased blood loss during TURP.⁸⁻¹⁰ However study on effect of Dutasteride are limited. This study was planned to compare the effect of the short-term pretreatment (2 weeks) with Dutasteride on bleeding after TURP.

METHODS

This prospective interventional study was carried out in the department of urology, Nepalgunj Medical College during the period of September to November 2025. This study was approved by the Ethical Review Committee, NGMC. Written informed consent was taken from every case. Each study subject was evaluated by history, physical examination and investigations. History was taken regarding lower urinary tract syndrome (LUTS), urinary tract infection, bronchial asthma, diabetes mellitus, hypertension, ischemic heart disease, any hematological disorders and any prostatic or urethral surgery. Physical examination included general examination, examination of the renal region and other parts of the genitourinary system. All patients were investigated properly by-Urine for R/M/E and C/S to identify urinary tract infection (UTI); Serum prostate-specific antigen (S. PSA); S. Creatinine; S. Electrolyte; Complete blood count (CBC) was done to see Hemoglobin (Hb) levels, Hematocrit (Hct) levels, Platelet counts, etc; Blood for Bleeding time (BT), Clotting Time (CT), Prothrombin time (PT) and Activated partial thromboplastin time (APTT) ; Ultrasonogram of KUB with post void residue (PVR) was done to evaluate the size, volume and echo-texture of prostate and any hydronephrotic change or hydroureter or any other pathology in the KUB region; Uroflowmetry to see urinary flow rate.

Total Fifty (50) patients were allocated in study. Among them, group A (TURP with dutasteride) consisted of 25 patients who received preoperative dutasteride 0.5 mg/day for 2 weeks before TURP and group B (TURP without dutasteride) consisted of 25 patients who directly underwent TURP.

Monopolar TURP procedure was conducted following a standardized surgical protocol under spinal anesthesia with the patient in the dorsal lithotomy position. After performing urethrocystoscopy to visualize anatomical landmarks and assess prostate enlargement, urethral dilation was carried out using an Otis urethrotome up to 28 Fr. The resection was done using a continuous-flow 26 Fr resectoscope with 1.5% glycine irrigation. Resection began at either the 11 o'clock position for the right lobe or the 1 o'clock position for the left lobe, progressing downward toward the 6 o'clock position. Once one lobe was completed, the other was resected in the same manner. If the median lobe was enlarged, it was addressed first to enhance irrigation flow. Resection depth extended to the prostatic capsule. Systemic hemostasis was then achieved, beginning at the bladder neck, especially around the mucosal margins at the 5 and 7 o'clock positions, followed by re-evaluation of each lobe.

After resection, all prostatic tissue chips were removed using an Elik evacuator, and the prostate volume was measured and sent for histopathological evaluation. The procedure was performed by urologists, and surgeons remained blinded to the patients' preoperative dutasteride therapy status to eliminate bias. Postoperatively, a 24 Fr tri-channel Foley catheter with a 40 ml balloon was inserted, and continuous bladder irrigation with 0.9% normal saline was maintained until hematuria resolved. During the postoperative period, the two groups were

assessed and compared based on clot retention and length of hospital stay. Patients were discharged once they were able to void clear urine. Blood loss was evaluated by measuring reductions in hemoglobin (Hb) and hematocrit (Hct) levels, with comparisons made between preoperative values and those obtained 24 hours after the surgery.

Statistical Analysis

Data collected were entered into and analyzed using SPSS version 24. Mean, standard deviation and Median were calculated. P-values were generated using Mann Whitney U test and Independent T test. For all statistical tests, P-value of less than 0.05 was considered significant.

RESULTS

Patient's age ranged from 55 to 85 (69.76±9.46) years in group A and 56 to 86 years (70.2±6.61 years) in group B. Mean prostate volume (55.68 ± 10.97 grams vs 56.72 ± 11.04 grams, P=0.859), mean preoperative IPSS score (25.88 ± 5.27 vs 24.56 ± 4.06, P=0.213), mean post-void residual urine (49.68 ± 62.05 ml vs 39.6 ± 62.7 ml, P=0.158), mean PSA (2.62 ± 1.18 ng/ml vs 2.43 ± 1.19 ng/ml, P=0.836), mean preoperative Q-max (6.67 ± 2.67 ml/s vs 7.27 ± 2.86 ml/s, P=0.512) were similar in between group A and group B. (Table I)

Parameters	Group A (TURP with Dutasteride)	Group B (TURP without Dutasteride)	P-value
Mean Age (Range) (Years)	69.76±9.46 (50-85)	70.2±6.61 (56-86)	0.859
Mean Prostate Volume (Range) (Grams)	55.68 ± 10.97 (40-80)	56.72 ± 11.04 (42-80)	0.711
Mean Post void residual Urine (PVRU in ml) (Range)	49.68 ± 62.05 (0-200)	39.6 ± 62.7 (0-185)	0.158
Mean PSA (Range) (ng/ml)	2.62 ± 1.18 (0.5-4)	2.43 ± 1.19 (0.58-4)	0.836
Mean Preoperative IPSS score (Range)	25.88 ± 5.27 (15-33)	24.56 ± 4.06 (18-32)	0.213
Mean Preoperative Qmax (Range) (ml/sec)	6.67 ± 2.67 (2.5-11)	7.27 ± 2.86 (2-12)	0.512

Table I: Preoperative Patient's characteristics

The intraoperative duration ranged from 35 to 55 (45.16 ± 27) mins in group A and from 36-57 (46.6 ± 26.2) mins in group B

and amount of irrigation fluid used ranged from 12-25 liters (18.8 ± 5.97) in group A and 12-28 liters (20.48 ± 5.22)

(P=0.988) in group B which showed no statistical significance and were comparable in both groups. The mean preoperative hemoglobin was 13.96±1.83 gm/dl and 13.89±1.22 gm/dl in group A and group B and postoperative hemoglobin was 13.232±1.24 gm/dl and 12.844± 1.67 gm/dl simultaneously. The mean drop in hemoglobin was 0.66 ± 0.55 gm/dl in group A and 1.12 ± 0.72 gm/dl in group B. The drop in hemoglobin level was less in group A and the change was statistically significant (P=0.016).

In the other hand, preoperative Hct was 42.50% ± 3.11% and 42.04% ± 3.24%, respectively in group A and group B. On the other hand, postoperative Hct was 37.97% ± 2.02 % and 33.29% ± 2.12% respectively between the groups. Mean difference of pre-postoperative change of Hct was 4.53 ± 3.09% and 8.75± 2.02% respectively in between group A and group B which was statistically significant(P=0.02). Two patients in group B needed clot evacuation retention whereas no patients in group A developed clot retention which was not statistically significant. No patient in both groups needed blood transfusion.

The mean hospital stay was comparatively shorter in group A (2.28 ± 0.54 days vs 3.08 ± 0.91 days, P=0.000) and was statistically significant as shown in Table II.

Parameter	Group A	Group B	P value
Drop in Hemoglobin (gm/dl)	0.66 ± 0.55	1.12 ± 0.72	0.016
Drop in Hematocrit(Hct)	4.53 ± 3.09%	8.75± 2.02%	0.02
Clot evacuation	0	2	0.651
Hospital stay (in days)	2.28 ± 0.54 (2-4)	3.08 ± 0.91 (2-6)	0.000

Table II: Operative outcomes

DISCUSSION

TURP has long been regarded as the standard surgical approach for managing symptomatic BPH not responding to medical management. Among the complications associated with this procedure, bleeding is the most frequent, occurring both during surgery and in the postoperative phase. In severe cases, excessive bleeding can obstruct urination because of clot retention within the urinary tract.

BPH itself involves an increased growth of stromal and acinar cells surrounding the urethra, a process that is supported by enhanced glandular angiogenesis. This increased blood vessel formation contributes to the substantial bleeding that may occur during and after TURP. Finasteride, a commonly prescribed BPH medication, is a 5-alpha-reductase inhibitor that blocks the conversion of testosterone to DHT, thereby reducing the activation of growth factors that promote angiogenesis.

Studies have shown that administering finasteride before surgery can help minimize bleeding complications.^{11,12} It achieves this by lowering VEGF expression and reducing the microvessel density beneath the urethra within the prostate, ultimately improving surgical outcomes. Kim et al in their study reported reduced surgical bleeding and hospitalization days after TURP with preoperative treatment with dutasteride for two weeks before TURP.¹³ In our study the mean drop in hemoglobin was 0.66 ± 0.55 gm/dl in group A and 1.12 ± 0.72 gm/dl in group B. The drop in hemoglobin was less in group A and the change was statistically significant (P=0.016).

Similarly, the Mean difference of pre-postoperative change of Hct was 4.53 ± 3.09% and 8.75± 2.02% respectively in between group A and group B which was statistically significant(P=0.02). Two patients in group B needed clot evacuation due to clot retention whereas no patients in group A developed clot retention which was not statistically significant.

The mean hospital stay was comparatively shorter in group A (2.28 ± 0.54 days vs 3.08 ± 0.91 days, P=0.000) and was statistically significant. In a study by Rahman et al they reported Preoperative dutasteride therapy reduces blood loss related to TURP in patients with BPH.¹⁴ Martov et al found a significant reduction in blood loss in patients by using dutasteride for at least one month before TURP compared to the control group.¹⁵ Kravchick demonstrated that 6 weeks of treatment with dutasteride reduced prostatic vascularity, especially in the periurethral area.¹⁶

In this study, preoperative dutasteride reduced blood loss in terms of pre-postoperative change of hemoglobin and hematocrit levels in the dutasteride group. There was no significant difference in clot retention and no blood transfusion was needed in both groups. Total hospital stay was shorter in dutasteride group.

LIMITATION

It was a single center study with relatively small sample size. All complications of TURP were not included in the study.

CONCLUSION

Short-term preoperative dutasteride therapy significantly reduces bleeding during Transurethral resection of the prostate and shortens hospital stay.

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