

Effect of Pre-operative Finasteride Therapy on Perioperative Blood Loss in Transurethral Resection of Prostate for Benign Prostatic Hyperplasia-A Prospective Randomized Study

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Abstract

Background: Benign prostatic hyperplasia (BPH) is the common benign tumor in men more than 50 years of age. 5 α -reductase inhibitors such as finasteride and dutasteride are commonly used in the medical management of BPH due to its prostatic volume reduction properties secondary to inhibition of the androgen dihydrotestosterone. Studies have reported that short course of pre-operative finasteride reduces perioperative blood loss following transurethral resection of prostate (TURP) for BPH. However, this is not practiced widely. Therefore, we conducted this study to evaluate the effect of finasteride on intraoperative and post-operative blood loss following TURP, which could resolve some of the controversies over the use of this drug.

Materials and Methods: One hundred patients undergoing TURP for BPH were randomly allocated into two groups with 50 patients in each group. Group A patients received tablet finasteride 5 mg once a day 2 weeks before surgery and Group B patients received only placebo. Intraoperative blood loss, post-operative hemoglobin (HB), packed cell volume drops and operative time, resected tissue weight and tissue microvessel density (MVD) were assessed. Post-operative follow-up was done at 1 month maximum urinary flow rate and international prostate symptom score score was assessed.

Results: The demographic parameters were comparable in two groups. The mean HB drop in Groups A and B was 1.7 and 2.8 g, respectively. The mean operative time and resected tissue weight in both Groups A and B were 46 min, 27.7 g and 53 min, 24.1 g, respectively. In finasteride group, there was a significant reduction of intraoperative blood loss, MVD, and post-operative complications such as clot retention, need for blood transfusion, and urinary tract infection.

Conclusion: Pre-operative short course finasteride therapy definitely reduces the perioperative blood loss following TURP for BPH.

Key words: Benign prostatic hyperplasia, Finasteride, Perioperative blood loss

INTRODUCTION

Benign prostatic hyperplasia (BPH) is an abnormal stromal and glandular proliferation of the prostate gland.^[1] BPH is

characterized by the proliferation of the prostatic epithelial and stromal cells within the prostatic transition zone, which results in enlargement of the prostate gland which in turn leads to compression of the prostatic urethra, and restriction of urinary flow.^[2] The pathophysiology and etiology of BPH is multifactorial, and they are yet to be known.^[3] However, the proliferation of prostatic stromal cells is dependent on androgens, the most important being dihydrotestosterone.^[3] Management of patients with BPH is based on the clinical symptoms and complications associated with BPH.^[4] Although transurethral resection of prostate (TURP) is considered the worldwide accepted gold

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standard tool in the management of BPH,^[5] it is associated with significant complications such as intraoperative and perioperative bleeding, which may be life-threatening.^[6] There have been few studies that have suggested the 5 α -reductase inhibitors finasteride and dutasteride to have anti-angiogenic properties and cause reduction of intraprostatic and suburethral microvessel density (MVD)^[7] that may reduce blood loss following TURP. Even though several studies have shown that pre-operative short course of finasteride for BPH reduces perioperative blood loss following TURP, this is not practised routinely. The goal of this study is to evaluate the effect of finasteride on intraoperative and post-operative blood loss following TURP, which could resolve some of the controversies over the use of this drug.

MATERIALS AND METHODS

In this randomized double-blind placebo-controlled study, approved by the Institutional Ethical Committee, we included 100 patients (50 patients in each group) who underwent TURP for symptomatic BPH in Sri Ramachandra Medical College and Research Centre from August 2016 to June 2017. Exclusion criteria were including prior prostatic surgery, prostatic carcinoma and patients with bleeding disorders or those were on anticoagulants. These patients were randomized into Groups A and B. In Group A, patients received 2 weeks of Tablet finasteride 5 mg once a day dose before surgery. In Group B patients received only placebo. The surgeon and the patients were blinded to the nature of pre-operative therapy. Surgery was performed only by the experienced senior consultants. Pre-operative hemoglobin (HB), and hematocrit were checked. Operating time, need for intraoperative and post-operative blood transfusion and resected prostatic tissue weight were assessed.

Statistical Analysis

Results were analyzed using student *t*-test with $P < 0.05$ considered to indicate statistical significance.

RESULTS

All 100 patients who were randomized into Groups A and B underwent TURP. There was no difference in baseline characteristics (age, prostate volume HB, and hematocrit) between two groups. After TURP a mean decrease of HB and hematocrit in Group A was 1.7 g and 1.9% and in Group B was 2.8 g and 3.5%, respectively. Mean operating time and resected prostatic weight in Groups A and B were 47 min and 28 g and 53 min and 24 g, respectively. Post-operative maximum urine flow rate in Groups A and B was 14.2 ml and 13.1 ml. 3 patients in Group A and 6 patients in Group B had clot retention required clot evacuation.

The calculated intraoperative blood loss in Groups A and B 175 ml and 220 ml, respectively. 2 patients in Group A and 6 patients Group B required post-operative blood transfusion. The mean MVD of resected prostatic tissue from Groups A and B was 14 and 18 units, respectively [Table 1].

DISCUSSION

Intra- and post-operative bleeding is one of the major dreaded complication following TURP. 5 α -reductase inhibitors such as finasteride and dutasteride have anti-angiogenic properties. This has been analyzed in recent randomized trials. One meta-analysis reported that finasteride effectively controls perioperative blood loss following TURP.^[8,9] However, their data lacks sufficient details regarding their analysis of the anti-angiogenic properties of finasteride. The primary aim of this randomized, double-blind, placebo-controlled study was to assess whether pre-treatment with finasteride reduces the blood loss during TURP. In our study, patients on short course pre-operative finasteride group have a significant reduction in post-operative blood loss and operating time and reduced MVD in resected prostatic chips. Hence, finasteride has anti-angiogenic properties that indirectly reduce prostatic vascularity. Few studies have also reported that finasteride inhibits the vascular endothelial growth factor-the vascular growth factor.^[7,10] Furthermore, patients on finasteride group have a significant reduction in pre-operative prostate size that contributes to less blood loss following TURP. Due to less bleeding in finasteride group that gives better optics to the operating surgeon and that may be the reason for less resection time. In our study finasteride group, patients had significant improvement

Table 1: Comparison of Group A and Group B

Parameters	Group A	Group B	P
Post-operative HB loss	(11.7–10=1.7 g)	(12.2–9.4=2.8 g)	0.000
Resection time	46 min	52.8 min	0.002
Resected tissue weight	27.7 g	24.1	P=0.024
Intraoperative blood loss	175 ml	220 ml	P=0.000
Post-operative IPSS	Mild (0–7)-94%	Mild (0–7)-88%	P=0.034
MVD	18.04	24.3	P=0.03
Persistent hematuria	2%	6%	
Blood transfusion	4%	12%	Significant
Clot retention	6%	18%	Significant
USG-weight loss	45.6–18.3=27.3 g	45.6–19.9=25.7 g	P=0.054
UTI with culture positive	6%	12%	-
Failure to void	6%	10%	Significant

$P < 0.05$ is significant. HB: Hemoglobin, IPSS: International prostate symptom score, MVD: Microvessel density, USG: Ultrasonography, UTI: Urinary tract infection

in post-operative Q max and a significant reduction in international prostate symptom score during follow-up.

CONCLUSION

From our study, we conclude that pre-operative short course of finasteride therapy (Tablet finasteride 5 mg OD) definitely reduces the perioperative complications such as intra- and post-operative blood loss, persistent hematuria, need for blood transfusions, clot retention, and post-operative voiding failure. It also decreases operative time, tissue MVD, and post-operative urinary tract infection. It aids removal of more prostatic tissue and also improves the urinary flow rate (Q max). However, we need larger studies and meta-analysis to suggest stronger recommendations regarding the definite use of finasteride before TURP in the treatment of BPH.

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