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# To do or not to do? Is acetylsalicylic acid a safe drug to continue in bipolar turp?

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Benign prostatic hyperplasia is the fourth most commonly reported disease in elderly men (>50) following coronary heart disease, hypertension, and diabetes. This study aims to assess the effect of aspirin upon intraoperative & post-operative complications for TURP, one group with cessation of aspirin before procedure while the other one with the continuation of the medicine. This is a prospective, randomized Cohort study. The patients were randomly allocated within two groups, Group A had 40 patients who continued aspirin treatment during surgery and group B had 40 patients who had stopped taking aspirin the week before surgery. Data analysis was performed with the help of the statistical package of social sciences 22. The comparison of groups was analyzed as odds ratio and Student's t-test. P-value of < 0.05 was considered significant. This study evaluated 80 patients, group A (on-aspirin) and group B (Off-aspirin) respectively. International prostate symptom score (IPSS) was filled before and after TURP, to assess the difference in results. The difference after TURP was significant with 37 (74%) and 38 (76%) patients in the mild symptoms category, 3 (6%) and 2 (4%) in moderate and none complaining of severe symptoms in group A and group B respectively. There was no significant difference in post-operative complications in both groups. Cessation of aspirin before transurethral resection of the prostate is not necessary and aspirin can be continued during surgery without any risk of complications such as bleeding, need for transfusion, adverse cardiovascular events, or hematuria.

**Keywords: Benign prostate hyperplasia, transurethral prostate resection, Aspirin**

## INTRODUCTION

Benign prostatic hyperplasia is a progressive, pathological enlargement of the prostate. It has higher prevalence rates in the fourth decade of life with 30% to 40% while the prevalence is much higher in older men with 70% to 80%. It is the fourth most commonly reported disease in elderly men (>50) following coronary heart disease, hypertension, and diabetes (Madersbacher S, 2019). The most common manifestation of (BPH) is of lower urinary tract symptoms (LUTs), these are further divided into (i)storage symptoms, which includes frequency, urgency, urge incontinence, Nocturia and (ii) obstructive symptoms, which includes hesitancy, intermittency, straining, incomplete emptying and weak stream (Lokeshwar SD, 2019). If BPH avoids treatment for long it may cause more severe complications such as recurrent urinary tract infections, formation of bladder stones, hematuria, acute & chronic urinary retention, sexual dysfunction including erectile dysfunction, and in severe cases renal function impairment. A few studies indicated the sexual problems related to BPH resulting in disturbance in marital life (Rosen RC, 2009 – Calogero AE, 2019). Despite its increased prevalence and socioeconomic effect, the pathophysiology of BPH is only moderately implicit. It's still mostly unidentified why some men grow a 40-g prostate and others a 200-g prostate. BPH with minor symptoms can be treated with lifestyle modifications, vigilant waiting can intimate healthcare providers about the progress of BPH and the requirement of medical intervention. Patient with bothersome symptoms (refractory to lifestyle changes and medical treatment), recurrent hematuria, and recurrent acute urinary retention, renal impairment due to bladder outlet obstruction and bladder stone formation due to prostatic obstruction required definitive procedure which is surgery. A procedure known as transurethral resection of the prostate (TURP) is the gold standard surgical treatment for BPH (Hussain M, 2021). TURP has been developed over the years, European Association of Urology (EAU) guidelines, established the fact based on evidence that TURP is recommended for medium-sized prostates measuring between 35ml to 80ml (Persu C, 2010). TURP may help in improving urine flow by 75% by increasing maximum urine flow(Qmax) by approximately 9.7 ml/s. Quality of life (QoL) and International Prostate symptom score (IPSS) is a reliable, authentic, and most commonly used technique to measure BPH symptoms and severity before and after TURP, the scores are reportedly improved by 70.6% after TURP (Teng TC,

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2021). Post-operative complications of TURP range from the most commonly reported problem of hematuria, urinary tract infection and less reported, TUR syndrome, Irritative LUTs, acute testicular pain, penile fracture, and sepsis ( Tamhankar AS, 2018). The risk of bleeding has been evaluated as minimal in endoscopic and laser prostatectomy while transurethral resection of the prostate (TURP), Renal biopsy, extracorporeal shockwave lithotripsy (ESWL), and transurethral resection of bladder tumor (TURBT) are procedures with moderate risk of hematuria. Nephrectomy, cystectomy, and penile implant are high-risk procedures. There is limited data to establish an evidence-based opinion about the continuation or cessation of aspirin before TURP (Carneiro A, 2019 – Nikoobakht MR, 2020). Aspirin (acetylsalicylic acid) is a non-selective COX inhibitor resulting in inhibition of platelet aggregation and because of this effect, it has been recommended as a prophylaxis in patients at high risk of cerebrovascular and cardiovascular disorders. Aspirin is crucial for the prevention of cardiovascular complications and are prescribed to 25% elderly to treat cardiovascular issues, many cases are on treatment for more than decades and receiving life-long treatments. As TURP patients are usually those on blood thinners and anti-platelet treatments, it is important to ensure the interaction of these drugs and complications caused by them during and after surgical procedures. Literature has different studies indicating diverse results; a few stated that aspirin has no significant effect upon intraoperative bleeding, hematuria and cardiovascular complications after TURP while other studies proved that aspirin may enhance the chances of excessive bleeding and hematuria with adverse cardiovascular events (Nikoobakht MR, 2020). Literature is not sufficient to create a concrete fact about aspirin effect upon adverse hematological and cardiovascular events after TURP. On other hand, studies proved the importance of post-operative self-care training on declining complications and improving quality of life in patients. TURP patients' needs self-care training and instruction manual to be able to manage the complications, understand post-operative events, exercises, nutrition, and hygienic upkeep are all very significant nursing practices before discharge (Khalil A, 2021). This study aims to assess the effect of aspirin upon intraoperative & post-operative complications including the risk of hematuria, adverse cardiovascular events and need of blood transfusion for TURP patients by analyzing two randomly controlled groups of patient undergoing TURP; one group with cessation of prescribed aspirin before procedure while the other one with the continuation of the medicine.

## MATERIALS AND METHODS

This is a prospective, randomized Cohort study conducted in the urology department of Tabba kidney institute, Karachi Pakistan. After getting ethical approval from the institutional research committee, from January 2021 till December 2021, a total of 88 patients were registered for TURP out of which 80 accepted the study and got enrolled. Informed consent was explained to all study participants by the primary investigator, the inclusion criteria was a clinical diagnosis of BPH and LUTs with an International prostate symptom score ranging from 15-35, under-treatment of aspirin, prostate size of >40 grams but no more than 100 grams on ultrasound, and planned for TURP surgery. Patients with end-stage renal disease (ESRD), those on dual antiplatelet therapy, at high risk of thromboembolic complications, EF < 35, and with previous history of prostatic surgery, bladder stones and needing associated hernia repair and hydrocelectomy were excluded from the study. The patients were randomly allocated within two groups with the help of computer-based randomization software, where specific case numbers were allotted to each patient. Group A had 40 patients who continued aspirin treatment during surgery and group B had 40 patients who had stopped taking aspirin the week before surgery and resumed the treatment after being discharged from the hospital. Demographic details including pre-operative complaints, radiological investigations, IPSS score, QoL score, and laboratory investigation were recorded, Intra-operative documentation such as duration of surgery, bleeding and complications were documented along with post-operative IPSS and QoL score and blood loss, etc. The span of hospital stay, hemoglobin drop, the need for blood transfusion, duration of Foley's catheterization, and any other cardiovascular complications were recorded. The post-operative irrigation of the bladder was stopped once hematuria settled, foley's catheter was mostly removed on 3rd post-op day. Data analysis was performed with the help of the IBM statistical package of social sciences (SPSS) version 22. Descriptive variables were analyzed as frequency, percentage, mean, and standard deviation. The comparison of groups was analyzed as odds ratio and Student's t-test. P-value of < 0.05 was considered significant.

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## RESULTS

This study evaluated 80 patients, with a mean age of 65.9 ± 7.0 and 66.2 ± 7.1 years in group A (on-aspirin) and group B (Off-aspirin) respectively, the p-value of age distribution was insignificant (0.56). The number of children was asked from study participants and the mean value was documented as 3.6 ± 1.7 and 4.2 ± 1.8 children in Group A and group B respectively, Mean prostate size upon presentation was 66.8 ± 20.1 in group A and 65.1 ± 21.4 in group B. All required laboratory investigations were performed upon admission for surgery and post-operative labs were also conducted.

Table I: Subjective details of study participants.

| TURP | | | |
|---|---|---|---|
| Variables | **Group A n=40 (Aspirin)** | **Group B n= 40 (non-Aspirin)** | **P value** |
| | **Results** | | |
| Age | 65.9 ± 7.0 | 66.2 ± 7.1 | 0.56 |
| Weight | 74.6 ± 10.5 | 68.9 ± 14.2 | 0.13 |
| # of Children | 3.6 ± 1.7 | 4.2 ± 1.8 | 0.81 |
| Prostate size | 66.8 ± 20.1 | 65.1 ± 21.4 | 0.9 |
| Pre Op Urea | 37.7 ± 15.3 | 27.7 ± 6.9 | 0.04 |
| Pre Op Creatinine | 1.3 ± 0.4 | 1.0 ± 0.2 | 0.7 |
| Pre Op Hemoglobin | 13.0 ± 1.6 | 14.2 ± 1.3 | 0.59 |
| Pre Op Platelets | 251.3 ± 97.1 | 218.5 ± 64.2 | 0.5 |
| Pre Op TLC | 9.6 ± 2.4 | 8.2 ± 2.3 | 0.37 |
| Pre Op Na | 138.8 ± 2.4 | 138.3 1 ± 3.1 | 0.62 |
| Pre Op K | 4.2 ± 0.4 | 4.3 ± 0.4 | 0.42 |
| Pre Op HCO3 | 22.4 ± 1.8 | 23.7 ± 1.7 | 0.5 |
| Post Op Urea | 38 ± 15.1 | 31.3 ± 9.0 | 0.05 |
| Post Op Creatinine | 1.3 ± 0.4 | 1.3 ± 0.3 | 0.73 |
| Post Op Hemoglobin | 12.4 ± 1.8 | 12.6 ± 2.4 | 0.88 |
| Post Op Platelets | 258.6 ± 106.8 | 211.3 ± 80.2 | 0.73 |
| Post Op TLC | 13.7 ± 3.1 | 11.4 ± 3.7 | 0.89 |
| Post Op Na | 138.3 ± 2.0 | 137.8 ± 1.5 | 0.71 |
| Post Op K | 4.0 ± 0.5 | 4.0 ± 0.5 | 0.98 |
| Post Op HCO3 | 24.1 ± 1.9 | 23.5 ± 2.0 | 0.81 |

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Presenting complaints were documented, the most commonly reported complaint was of lower urinary tract symptoms reported in 40 (100%) and 36 (90%) followed by urinary retention as the second most prevalent complaint with 18 (45%) and 28 (70%) patients in group A (on-aspirin) and group B (off-aspirin) respectively. Hematuria was reported in 4 (10%) and 10 (25%) of patients while positive family history was present in 10 (25%) and 8 (8%) in groups A and B respectively (Figure I).

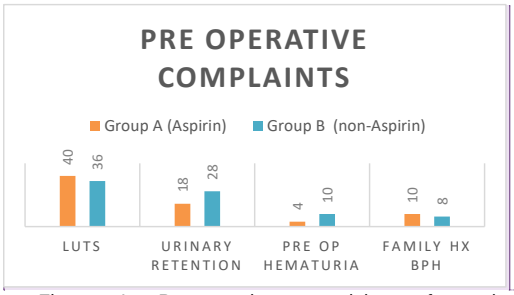


Figure I: Pre-operative complains of study participants.

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The Post void residual urine was documented before and after surgery, mean value of pre-operative, pre void urine was 514 ± 299.3 and 495.3 ± 259.4, and post-void residual urine was 264.7 ± 243.4 and 257.8 ± 226.6 in group A and Group B respectively. After the procedure of TURP, a clear decline in post void residual was recorded with a mean value of 45 ± 42.5 and 48 ± 46.0 in group A & B respectively, mean value of post-operative irrigation was 24 ± 12 and 22 ± 10 in group A and group B respectively. Foley's catheter was removed after settlement of post-operative hematuria, days were distributed as 3rd day, 4th day and 5th day after surgery and 35 (70%), 4 (8%) and 1 (2%) patients of group A and 36 (72%), and 4 (8%) patients from group B had their catheter removed on documented days respectively. A noticeable difference in Q max value was seen after TURP, with no patient ranging from 16 to 20 pre-operatively to 10 (20%) and 11 (22%) patients ranging 16 to 20 on Q max after the procedure in group A and group B respectively.

Hemoglobin drop was one of the most important variables in our study, the mean value of HB drop-in group A (on-aspirin) was 1.0 ± 0.8 and group B (off-aspirin) was 1.1 ± 1.0 with a difference of 0.2 and p-value of 0.61. Operative time was similar in both groups with a mean value of 81.5 ± 20.7 and 81.1 ± 22.5 minutes, along with hospital stay

with a mean value of 2.0 ± 0.2 and 2.0 ± 0.1 days in group A and Group B respectively.

Table II: Comparison of pre-operative and post-operative details between groups.

| TURP | | | | |
|---|---|---|---|---|
| Variables | | **Group A n=40 (Aspirin)** | **Group B n= 40 (non-Aspirin)** | P value |
| | | **Results** | | |
| Pre-Operative pre & post void | Pre void | 514 ± 299.3 | 495.3 ± 259.4 | 0.61 |
| | Post void | 264.7 ± 243.4 | 257.8 ± 226.6 | 0.6 |
| Post-Operative pre & post void | Pre void | 500.5 ± 302.1 | 490.5 ± 265.8 | 0.6 |
| | Post void | 45 ± 42.5 | 48 ± 46.0 | |
| Post OP Irrigation | | 24 ± 12 | 22 ± 10 | 0.08 |
| Post OP catheter removal | 3rd day | 35 (70%) | 36 (72%) | 0.9 |
| | 4th day | 4 (8%) | 4 (8%) | |
| | 5th day | 1 (2%) | 0 | |
| Pre OP Q max | 01 to 05 | 25 (50%) | 23 (46%) | 0.9 |
| | 06 to 10 | 12 (24%) | 13 (26%) | |
| | 11 to 15 | 3 (6%) | 4 (8%) | |
| | 16 to 20 | 0 | 0 | |
| Post OP Q max | 01 to 05 | 2 (4%) | 1 (2%) | 0.12 |
| | 06 to 10 | 3 (6%) | 2 (4%) | |
| | 11 to 15 | 25 (50%) | 26 (52%) | |
| | 16 to 20 | 10 (20%) | 11 (22%) | |
| HB drop | | 1.0 ± 0.8 | 1.1 ± 1.0 | 0.61 |
| OT Time | | 81.5 ± 20.7 | 81.1 ± 22.5 | 0.43 |
| Hospital Stay | | 2.0 ± 0.2 | 2.0 ± 0.1 | 0.52 |

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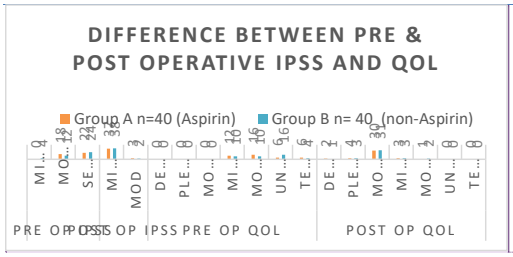
International prostate symptom score (IPSS) and quality of life score (QoL) were filled by study participants before and after TURP, to assess the difference in results. As the IPSS score has three categories of mild symptoms, moderate symptoms, and severe symptoms, the pre-operative IPSS score of group A (on-aspirin) indicated no mild symptoms, 18 (45%) patients with moderate symptoms and 22 (55%) patients with severe symptoms, while group B (off-aspirin) showed 4 (10%) patients with mild symptoms, 12 (30%) with moderate symptoms and 24 (60%) patients with severe symptoms. The difference after TURP was significant with 37 (74%) and 38 (76%) patients in the mild symptoms category, 3 (6%) and 2 (4%) in moderate and none complaining of severe symptoms in group A and group B respectively. The QoL score had seven categories as delighted (0), pleased (1), mostly satisfied (2), mixed (3), mostly dissatisfied (4), unhappy (5), and terrible (6). QoL results pre-operatively indicated 12 (30%) and 10 (25%) patients with mixed QoL and 16 (40%), 10(25%) in mostly dissatisfied category, while unhappy and terrible category had 6(15%) and 16(40%) and 6(15%) and 4(10%) participants within group A and B respectively. The Post-operative QoL scale indicated remarkable difference with 2(5%) and 1(2.5%) in delighted category, 4(10%) and 3(7.5%) in pleased, 30(75%) and 31(77.5%) in mostly satisfied category, 3(7.5%) and 3(7.5%) in mixed category while 1(2.5%) and 2(5%) in mostly dissatisfied categories in group A and B respectively. Figure II: Pre-operative and post-operative difference between IPSS and QoL scale.

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## DISCUSSION

Our study was conducted to evaluate the effect of continuing aspirin on blood loss and hematuria during TURP by comparing two groups simultaneously, the similar setting has been used in other studies too (Tamhankar AS, 2018 – Nikoobakht MR, 2020). Our results showed no significant difference in patients continuing aspirin during the procedure and no adverse cardiovascular events were recorded in any group as well. Presenting complaints of patients enrolled in the study included lower urinary tract symptoms with 100% and 90% frequency in group A and B respectively. Similar results with 92%, 88%, and 97%, were recorded in other studies conducted for benign prostatic hyperplasia patients (SApeakman M, 2015 – Xiong Y, 2021). While urinary retention was the second most commonly reported complaint in our study participants with 45% and 70% in group A and B respectively, urinary retention has been reported as the most prevalent complication of benign prostatic hyperplasia and studies have shown that patients with BPH presented with urinary retention and results showed 60%, 26% and 74% (Prakash AR B, 2019) of acute urinary retention ( Wager MGT, 2011). Prostate size measured in our study participants was 66.8 ± 20.1 and 65.1 ± 21.4 in group A and group B respectively, with insignificant p-value, other study results indicated the similar distribution of prostate size with 41.63 ± 5.8 and 44.37 ± 5.42 in off aspirin and on-aspirin groups respectively to avoid any biases. Patients who presented with acute urinary retention due to benign prostate hyperplasia showed other complications such as hematuria, urinary tract infection and sepsis more than those who presented without acute urinary retention (Pogula VMR, 2021). Hemoglobin drop was comparable in both groups of our study; blood transfusion was not required in any group, a similar study has mentioned increased hemoglobin drop in the on-aspirin group as compared to off-aspirin group, while many studies indicated the requirement of blood transfusion with 7.1%. [18] Qmax scoring was remarkably improved after TURP with 20% in the aspirin group and 22% in the non-aspirin group reaching level of 16-20 Qmax, the improvement after the procedure has been documented as 18% in a similar study (Porru D, 2002). Improvement in International prostate symptom score has also been mentioned in previous studies of TURP, although there was no significant difference in improvement between both groups (He Q, 2020). The impact of TURP on the quality of life of patients has been determined with the help of QoL score and results showed enhancement of quality of life after the procedure with 72% in the aspirin group and 70% in the non-aspirin group. Other studies showed similar results, although better results were achieved after 3 months of follow-up after TURP (Hossian MA, 2019), Hematuria was under control after TURP in both groups, grading of hematuria was between mild to moderate and any intervention to settle hematuria was not required. Although, other studies mentioned secondary hematuria after the procedure (Hussain M, 2021). dverse cardiovascular events were not reported in any study participant, (Iscaife A, 2018) Duration of hospitalization was similar in both groups with no significant postoperative complication: patients were discharged from hospital after hematuria settlement, and mean value of hospital stay was 2.0 ± 0.2 in group A (aspirin) and 2.0 ± 0.1 in group B (non-aspirin), this result is similar to other studies where no difference was recorded in hospitalization duration of groups taking blood thinners. (Shih HJ, 2018). Likewise, operative time was not diverse within groups & results were coherent (Ray AF, 2018). Before TURP, prevoid was 514 ± 299.3 and 495.3 ± 259.4, with post-void volume of 264.7 ± 243.4 and 257.8 ± 226.6 in group A and B respectively. After the procedure, a significant decrease in post-void residual volume capacity was measured with 45 ± 42.5 and 48 ± 46.0 in groups A and B respectively. The drop in postvoid residual capacity after TURP has been mentioned in previous studies, although our study results showed that there is no significant difference in POST void residual urine after TURP in the group taking aspirin as compared to the group not taking aspirin (Sazuka T, 2020 – Sahu S, 2021). Post-Operative irrigation was indifferent within groups, measured as 24 ± 12 and 22 ± 10 in group A and B respectively. Foley's catheter removal duration was also similar and no significant difference was noted. (Tsai C-H, 2018).

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## CONCLUSION

Our study results proved that cessation of aspirin before transurethral resection of the prostate is not necessary and aspirin can be continued during surgery without any risk of complications such as bleeding, need for transfusion, adverse cardiovascular events, or hematuria.

## CONFLICT OF INTEREST

None declared.

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**AUTHOR CONTRIBUTIONS**
**HA: Objective, Manuscript writing**
**SS: Final approval of manuscript, Surgery**
**S.SQ: Surgery**
**JH: Ethical approval, results interpretation**
**DA: Data collection,**
**AA: Data analysis, Surgery assistance**
**NK: Data collection, Surgery assistance**
**ME: Data collection, Surgery assistance**



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