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EVALUATION OF THE RISK OF POST EXTRACTION BLEEDING IN PATIENTS USING ASPIRIN

Ziad Muhammad[1*], Muhammad Wasim Ibrahim[2], Nadia Zaman[3], Iram Rasheed[4], Sadaf Raffi[5]

[1*,4]BDS, FCPS, Post Graduate Registrar, Department of Oral and Maxillofacial Surgery, Foundation University College of Dentistry, Islamabad, Pakistan
[2]BDS, MCPS, FCPS, OMFS, Professor, Dean of Foundation University College of Dentistry, Islamabad, Pakistan
[3]BDS, FCPS, Professor, HOD, Department of Endodontics, Foundation University College of Dentistry, Islamabad, Pakistan
[5]BDS, MCPS, Senior Registrar, Department of Oral Medicine, Foundation University College of Dentistry, Islamabad, Pakistan

***Corresponding author:** Ziad Muhammad
*Email: ziyadkhan455@gmail.com

ABSTRACT

Introduction: Antiplatelet medications, including aspirin, play a crucial role in preventing thrombotic events by reducing platelet aggregation. Aspirin is commonly used for long-term cardiovascular protection but is often discontinued before invasive dental procedures due to concerns about excessive bleeding. However, the necessity of stopping aspirin before dental extractions remains unclear.

Objectives: This study aimed to evaluate the risk of post-operative bleeding after dental extractions in patients on aspirin therapy and to determine whether discontinuation of the medication is necessary before the procedure.

Methods: This cross-sectional study was conducted in the Department of Oral & Maxillofacial Surgery at Foundation University College of Dentistry and Hospital (FUCD&H), Islamabad, from December 1, 2021, to November 30, 2022. A total of 390 patients requiring dental extractions were included. Patients on aspirin (75–100 mg) continued their medication. Tooth extractions were performed under local anesthesia, and post-extraction bleeding was assessed at 30 minutes and after 24 hours. Persistent bleeding was managed with additional pressure packs.

Results: The mean age of participants was 65.74 ± 10.52 years, with 184 (47.2%) males and 206 (52.8%) females. The mean duration of aspirin use was 4.23 ± 2.09 years. No cases of post-operative bleeding were observed among patients taking aspirin.

Conclusion: The findings suggest that aspirin can be safely continued during dental extractions without increasing the risk of post-operative bleeding, preventing unnecessary discontinuation and reducing the potential for thromboembolic complications.

Keywords: Dental extraction, Post-extraction bleeding, Aspirin.

INTRODUCTION

Aspirin, a commonly prescribed antiplatelet medication, plays a pivotal role in the prevention and management of cardiovascular and cerebrovascular diseases. As an irreversible inhibitor of

cyclooxygenase-1 (COX-1), aspirin prevents the formation of thromboxane A2, a crucial mediator of platelet aggregation.[1] This mechanism effectively reduces the risk of arterial thrombosis, making aspirin a cornerstone therapy in patients with ischemic heart disease, stroke, and peripheral vascular disease.[2] Due to its efficacy in preventing thromboembolic events, aspirin is frequently used as a lifelong medication, particularly in elderly individuals and those with high cardiovascular risk.[3] However, its blood-thinning properties raise concerns among clinicians and dental professionals regarding the potential for excessive bleeding during and after surgical procedures, including dental extractions.[3]

Dental extractions are one of the most frequently performed invasive procedures in oral and maxillofacial surgery. While post-extraction bleeding is a common occurrence, most cases involve mild to moderate bleeding that resolves with standard local hemostatic measures. However, in patients on anticoagulant or antiplatelet therapy, including aspirin, the risk of prolonged bleeding is often perceived to be higher.[4] This has led to a widespread practice of discontinuing aspirin before dental extractions to minimize potential hemorrhagic complications. Despite this practice, there is growing evidence suggesting that the actual risk of significant post-extraction bleeding in patients on aspirin therapy is relatively low and that routine discontinuation may not be necessary.[5]

The primary concern associated with discontinuing aspirin before a dental extraction is the risk of rebound hypercoagulability. Abrupt withdrawal of aspirin can lead to an increased risk of thrombotic events, including myocardial infarction, stroke, and deep vein thrombosis. This phenomenon is particularly concerning in high-risk patients who rely on aspirin for cardiovascular protection.[6] Several studies have reported that stopping aspirin even for a short duration can significantly elevate the risk of adverse cardiovascular outcomes, sometimes leading to life-threatening complications. Given this risk, it is crucial to weigh the benefits of aspirin continuation against the potential bleeding risks associated with dental extractions.[7]

Current evidence suggests that most cases of post-extraction bleeding in aspirin users can be effectively managed using local hemostatic techniques. Simple measures such as applying pressure with gauze, using absorbable gelatin sponges, suturing extraction sites, or applying hemostatic agents like tranexamic acid can control bleeding without necessitating the discontinuation of aspirin[8]. Moreover, studies have shown that the bleeding time in aspirin users may be slightly prolonged but remains within a clinically manageable range. In most cases, the bleeding is not severe enough to require medical intervention or hospitalization.[8]

A review of existing literature indicates that patients who continue aspirin therapy during dental extractions do not experience significantly greater post-operative bleeding compared to those who are not on aspirin. The American Heart Association (AHA) and the American College of Cardiology (ACC) recommend continuing aspirin in patients undergoing minor surgical procedures, including dental extractions, due to the high risk of thromboembolic events associated with its discontinuation.[9] Similarly, the American Dental Association (ADA) has issued guidelines suggesting that for most patients, aspirin therapy should not be interrupted before dental procedures unless there is a clear contraindication.[10]

The dental community holds different opinions about caring for patients taking aspirin despite existing official guidelines. The absence of confirmed scientific data compels numerous clinicians to take either of two approaches toward aspirin therapy during surgery by stopping medication entirely or making changes to dosage amounts. Medical professionals avoid continuing aspirin therapy due to their concern about legal and medical consequences linked to post-extraction bleeding which underscores the necessity of standardized guidelines research.

The research examines the potential for bleeding after dental extractions among aspirin users to determine whether aspirin usage must cease before dental procedures. The analysis of bleeding complications in this study generates evidence which helps develop recommendations for clinical decision guidance. Aspirin use can proceed without substantial postoperative bleeding consequences which eliminates the need for medication interruptions to decrease cardiovascular risks during dental procedures while maintaining treatment safety.

METHODOLOGY

This cross-sectional study was conducted to evaluate the risk of post-extraction bleeding in patients using aspirin. The research was carried out in the Department of Oral & Maxillofacial Surgery at Foundation University College of Dentistry and Hospital (FUCD&H), Islamabad, over a period of one year, from December 1, 2021, to November 30, 2022.

The sample size was determined using the WHO sample size calculator, considering a confidence level of 95%, an anticipated population proportion of 3.808%, and an absolute precision of 1.9%. Based on these parameters, a total of 390 patients were included in the study. A non-probability consecutive sampling technique was employed to recruit participants who met the eligibility criteria. Patients of both genders, aged between 40 and 60 years, and on aspirin therapy at a dose of 100 mg/day or less for at least six months were included in the study. Patients were excluded if they had psychiatric disorders, systemic conditions such as anemia, polycythemia, or liver disease, or bleeding disorders such as hemophilia or von Willebrand disease. The research excluded patients who experienced epistaxis or had uncontrolled hypertension (blood pressure >150/90 mmHg) or other active antiplatelet medication usage.

The Ethical Review Committee of FUCD&H approved the study and patients undergoing dental extractions in OPD were assessed for eligibility before being referred to Oral & Maxillofacial Surgery Department. The procedure started with medical and dental history documentation then continued with a thorough clinical examination of patients. Patient extraction procedures started only after taking relevant radiographs and measuring blood pressure. All participants granted written consent about the study after being fully informed before their study enrollment.

All dental extractions received local anesthesia through 2% lignocaine that contained 1: 100,000 epinephrine. The patients received instructions to use gauze with saline that needed to be applied under firm pressure for a minimum of thirty minutes after extraction. Those who exhibited no active bleeding were discharged with post-extraction written instructions and scheduled for a follow-up evaluation after 24 hours. If bleeding persisted beyond 30 minutes, an additional pressure pack was applied for another 30 minutes, after which the patient was reassessed. Any case of active bleeding beyond this period was classified as prolonged bleeding and managed using additional local hemostatic measures.

Postoperatively, patients were prescribed paracetamol (500 mg every six hours) for pain relief, but no antibiotics were administered. Those already on aspirin therapy were instructed to continue their medication as usual. All observations and procedural details were meticulously documented on a structured proforma. The hospital covered the cost of study materials, and all procedures were carried out by the principal investigator under the direct supervision of a senior faculty member.

Data analysis was performed using SPSS version 27. Descriptive statistics were calculated for both qualitative and quantitative variables. Qualitative variables, such as gender, were presented as frequencies and percentages, while quantitative variables, including age and bleeding duration, were expressed as Mean ± Standard Deviation (SD). Effect modifiers such as age, gender, medical conditions, and duration of aspirin use were controlled through stratification. Post-stratification analysis was conducted using the Chi-square test, with a p-value of less than 0.05 considered statistically significant.

RESULTS

Data was entered and analyzed in SPSS version 27.0. Total 390 patients were included according to the inclusion criteria of the study. A complete history was taken and thorough oral examination, after which consent was taken (Annexure-B). Required radiographs taken where necessary. The blood pressure was measured. On the basis of these information the patients were selected for the study according to the exclusion and inclusion criteria. Table 1 presents the descriptive statistics for the age of the patients and the duration of aspirin use. The study included 390 patients, with an age range of 41 to 88 years (Mean = 65.74, SD = 10.52). The duration of aspirin use varied between 1 to 10 years, with a mean duration of 4.23 years (SD = 2.09). This data highlights the patient demographic and

their exposure to aspirin therapy, which is crucial for assessing bleeding risks and other clinical outcomes.

Table 1: Descriptive Statistics of Age and Duration of Aspirin Use

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Age (years)	390	41	88	65.74	10.52
Duration (years) of Aspirin (75,150 mg)	390	1.0	10.0	4.233	2.09

Distribution of gender was calculated in terms of frequency and percentages of male and female patients. There were 184 (47.2) male patient and 206 (52.8) female patients who were included in the study, as shown in figure 1.

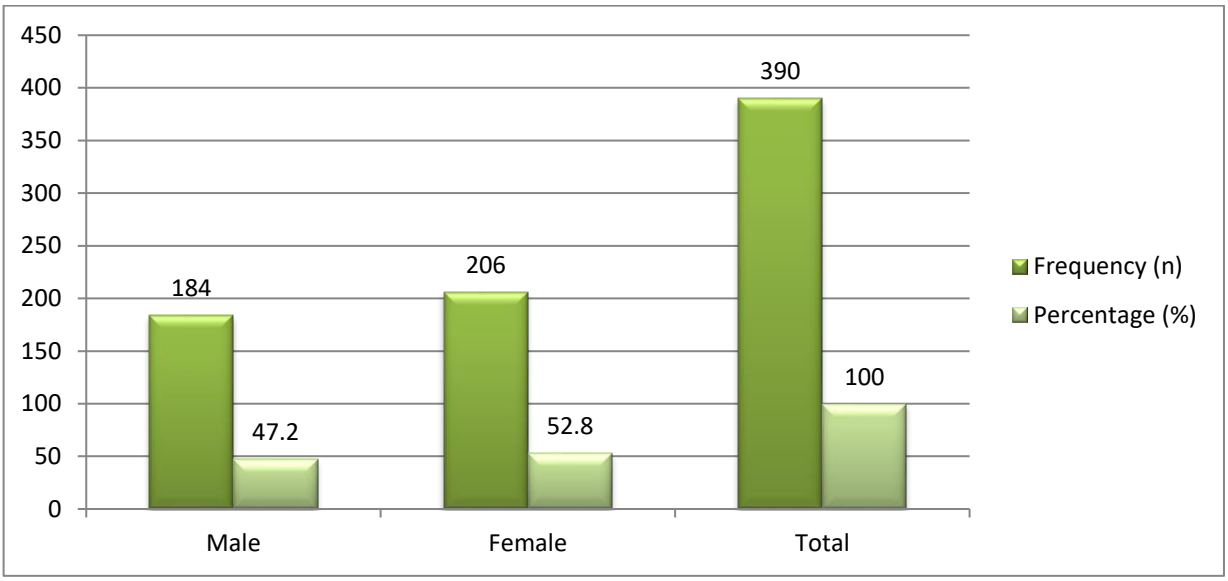

Figure 1: Distribution of Gender in Both Groups

Table 2 details the post-extraction bleeding at different time intervals. None of the 390 patients experienced bleeding after 30 minutes, 60 minutes, or even 24 hours following tooth extraction. This finding suggests a complete absence of prolonged bleeding complications in the study population, indicating that aspirin use did not contribute to post-extraction hemorrhage.

Table 2: Descriptive Statistics of Post-Extraction Bleeding

Time Interval	Frequency (n)	Percentage (%)
Post-extraction bleeding (after 30 mins)	**No** = 390	100.0
	Yes = 0	0.0
Post-extraction bleeding (after 60 mins)	**No** = 390	100.0
	Yes = 0	0.0
Bleeding after 24 hrs (for those who bled after 30 mins)	**No** = 390	100.0
	Yes = 0	0.0

Table 3 evaluates the necessity for hemostatic interventions among the patients. Notably, none of the 390 patients required either suturing alone or a combination of hemostatic agent and suturing to control bleeding. This further supports the notion that aspirin use did not predispose patients to significant post-extraction bleeding, reducing the need for additional interventions.

Table 3: Descriptive Statistics of Patients Requiring Hemostatic Measures

Category	Frequency (n)	Percentage (%)
Patients requiring suturing only	**No** = 390	100.0
	Yes = 0	0.0
Patients administered Hemostatic Agent + Suturing	**No** = 390	100.0
	Yes = 0	0.0

Table 4 stratifies post-extraction bleeding by age group, gender, and aspirin duration, showing that no patients (0%) experienced bleeding at either 30 or 60 minutes post-extraction. Both younger (<60 years) and older (>60 years) patients had a 100% bleeding-free outcome. Similarly, no cases of bleeding were observed among males or females. Additionally, aspirin duration (<5 years vs. >5 years) had no impact on bleeding, with all patients achieving complete hemostasis. These findings suggest that aspirin use does not increase the risk of post-extraction bleeding across different patient subgroups.

Table 4: Stratification of Post-Extraction Bleeding by Age, Gender, and Aspirin Duration

Variable	Category	Post-Extraction Bleeding (After 30 min)		Post-Extraction Bleeding (After 60 min)	
		Yes (n, %)	**No (n, %)**	**Yes (n, %)**	**No (n, %)**
Age Group	< 60 years	0 (0%)	132 (100%)	0 (0%)	132 (100%)
	> 60 years	0 (0%)	258 (100%)	0 (0%)	258 (100%)
Gender	Male	0 (0%)	184 (100%)	0 (0%)	184 (100%)
	Female	0 (0%)	206 (100%)	0 (0%)	206 (100%)
Aspirin Duration	< 5 years	0 (0%)	284 (100%)	0 (0%)	284 (100%)
	> 5 years	0 (0%)	106 (100%)	0 (0%)	106 (100%)

DISCUSSION

This study evaluated the impact of aspirin use on post-extraction bleeding, revealing no cases of bleeding at 30 minutes, 60 minutes, or 24 hours after extraction. Stratification by age, gender, and aspirin duration showed no significant differences, as all patients achieved complete hemostasis. These findings suggest that aspirin use, whether short-term or long-term, does not contribute to excessive post-extraction bleeding, supporting the notion that dental extractions can be safely performed in patients on aspirin therapy without discontinuation of the drug.

The results of this study align with several existing studies that suggest aspirin does not significantly increase the risk of post-extraction bleeding.[11] Prior research has demonstrated that while aspirin has a well-documented antiplatelet effect, its impact on clinical bleeding after minor oral surgery remains minimal. Many studies indicate that low-dose aspirin (75–150 mg) does not lead to excessive or prolonged post-extraction bleeding and that local hemostatic measures are generally sufficient to control any minor bleeding episodes.[12]

Contrastingly, some studies have reported a slight increase in post-extraction bleeding in patients on aspirin therapy. These studies suggest that while the increase in bleeding time may be statistically significant, it is rarely clinically significant, as most cases are manageable with pressure application, local hemostatic agents, or suturing.[13, 14] Additionally, research examining higher doses of aspirin (>150 mg) has noted a greater tendency for bleeding complications, though such doses are less commonly prescribed for cardiovascular prevention.[15]

Another key point of comparison is the safety of continuing aspirin therapy in dental procedures. Earlier guidelines often recommended discontinuation of aspirin before dental extractions due to bleeding concerns. However, more recent evidence, including findings from this study, reinforces the idea that stopping aspirin unnecessarily may pose a greater risk—such as thrombotic events—without offering significant benefits in terms of bleeding prevention.[16, 17] This supports current

recommendations that aspirin should not be routinely discontinued before minor oral surgeries, given that effective local hemostatic measures are available.[18]

Limitations and Future Suggestions: The single-center research approach creates limitations because it reduces the potential for widespread application of the research findings. The study did not take into consideration secondary factors that might affect bleeding risks such as anticoagulant drug use or differences in surgery methods or systemic health conditions and systemic conditions. The research analyzed aspirin doses between 75–150 mg but omitted evaluation of larger dosage effects. Future investigations need to perform large-scale research efforts in multiple facilities across various patient groups to establish the validity of these results. Future research should explore different aspirin dosing levels while studying the combination effects of two types of blood-thinning medications and the use of multiple bleeding control substances. Future research must include extensive patient follow-up to discover delayed bleeding risks together with subjective patient outcomes which will improve knowledge about aspirin safety during dental extractions.

CONCLUSION

Research findings verify that performing dental extractions on aspirin users remains safe because no patient experienced bleeding after their procedure. The research findings show that dental patients taking aspirin should not stop using it thus avoiding unnecessary dental procedure postponement. The results support dental practitioners to maintain aspirin therapy because they demonstrate no evidence of post-extraction bleeding in patients undergoing extractions.

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