ORIGINAL ARTICLE

Does aspirin need to be discontinued before an elective simple tooth extraction

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ABSTRACT

Background and Objective: Aspirin, known less commonly by its generic name, acetylsalicylic acid, increases bleeding time with a consequent risk of post-operative bleeding that places dental clinicians in a state of uncertainty as to whether or not Aspirin intake should be ceased prior to an elective dental extraction. This study was therefore designed to compare the frequency of bleeding among patients of elective simple tooth extraction with or without discontinuation of Aspirin.

Methods: A randomized controlled study was conducted at the Department of Oral and Maxillofacial Surgery, Kahuta Research Laboratories Hospital, Islamabad over the period of 1 year. A total of 324 patients were equally divided into two groups; Group A patients were advised to continue taking Aspirin before extraction, whereas, in Group B, patients were advised to discontinue Aspirin 5 days before tooth extraction. In both groups, a single clinically indicated tooth was extracted under local anesthesia with a standard procedure. The socket site was examined 30 minutes post extraction to assess active bleeding using a validated categorization method. The data was analyzed using statistical software.

Results: It was observed that 157 (48.5%) patients in Group-A and 161 (49.7%) patients in Group-B were found with grade 0 (no bleeding after 30 minutes of extraction) bleeding while 5 (1.5%) patients in Group-A and 1 (0.3%) patient in Group-B were found with grade 1 (presence of active bleeding after 30 minutes of extraction bleeding). This finding was not statistically (p = 0.099).

Conclusion: It is recommended to safely carry out simple extraction without discontinuing or altering the dose of Aspirin to avoid the thrombotic risk; provided the local hemostatic measures are in place.

Keywords: Aspirin, post-extraction bleeding, dental extraction, hemostasis.

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Introduction

Aspirin is one of the universally popular pills for pain relief. Aspirin achieves its analgesic, anti-inflammatory, and anti-pyretic effects by inactivating the enzyme cyclooxygenase, thus suppressing the production of chemicals known as prostaglandins. It also has a potent anti-platelet role, which is generated by blocking Thromboxane A2, and for this purpose is routinely prescribed as a low-dose medication (75–150 mg) for patients with ischemic heart diseases, such as cerebrovascular disease and myocardial infarction.[1] Due to its anti-platelet function, Aspirin increases bleeding time. Consequently, the risk of post-operative bleeding also increases. This fear of uncontrolled bleeding frequently places dental clinicians in a state of dilemma as to whether or not Aspirin intake should be ceased prior to an elective dental extraction.[2]

According to the American College of Chest Physicians guidelines, long-term Aspirin therapy over 81 mg should be suspended for about 7–10 days before a lengthy dental procedure.[3] Though this might seem a compelling enough reason for surgeons to halt the drug before proceeding with a tooth extraction, doing so may have detrimental repercussions. Researchers have highlighted that Aspirin withdrawal increases the likelihood of thromboembolic events, which may prove fatal.[2]

Given the consequences and lack of clarity as to the course of action, this study has been put forth to clinically and scientifically determine the effect of Aspirin has on uncontrolled sequelae bleeding after dental extraction.

There is conflicting data regarding post-extraction bleeding tendency in patients with and without Aspirin.[1,4,5] A significant risk of post-operative bleeding, however, has been reported in patients on dual antiplatelet therapy[5–7], while some studies emphasize caution in continuing Aspirin from 3 to 7 days before the tooth extraction procedure.[8,9]

Although American Dental Association guidelines and many other studies have shown that there is no significant effect of Aspirin on bleeding after dental extraction, if we observe the extraction site after 30 minutes. Hence, they claimed that discontinuing Aspirin before dental extraction was unnecessary.[10] The current study intends to assess the impact of Aspirin medication on the post-operative bleeding after dental extraction in the local population.

Methods

The study was conducted in the Department of Oral & Maxillofacial Surgery, Kahuta Research Laboratories (KRL) Islamabad, Pakistan in a period of 1 year after taking approval from the Institutional Ethical Review Board of KRL Islamabad, Pakistan. A total of 324 patients were equally divided into two groups; 162 patients in each group. The participants were allocated randomly by coin flip method into Group A and Group B by the principal author.

Patients of both genders, 40–65 years of age who had a clinical indication of a simple tooth extraction of both mandibular and maxillary single and multirooted teeth, were included. The exclusion criteria included pregnant females, those having known bleeding disorders, history of chronic debilitating disorders, and those taking antiplatelet or anticoagulant drugs other than Aspirin.

Detailed clinical information regarding age, gender, tooth number, and bleeding after extraction. In Group A, the patients were allowed to continue taking Aspirin before extraction, whereas, in Group B, Aspirin intake was discontinued 5 days before tooth extraction. In both groups, a single tooth that was indicated for simple extraction was extracted under local anesthesia under standard conditions.

Post-operative bleeding was categorized through follow-up after tooth extraction as follows:[1]

Grade 0: Insignificant (the absence of active bleeding or oozing from the extracted socket after 30 minutes of extraction.)

Grade 1: Presence of active bleeding after 30 minutes of extraction.

If there was no bleeding after 30 minutes, the patient was sent home with post-operative instructions and contact information. If, after an initial 30 minutes, there was any bleeding, the patient was re-examined, managed by placing hemostatic pack, and was kept under observation until satisfactory hemostasis was achieved.

Statistical Analysis

Data was entered and analyzed using SPSS version 23.0. Descriptive statistics were calculated for both qualitative and quantitative variables. Quantitative variables like age, bleeding time are presented as mean and SD. Qualitative variables like gender, molar extraction type, and bleeding grade after extraction were presented as frequencies and percentages. The Chi-square test was used to compare the proportion of bleeding grades between two groups. Age, gender, and extracted molars were used for stratification. Post stratification chi-square test was used, and p-value < 0.05 was considered as significant.

Results

The mean age of the patients was 53.16 ± 7.300 years, ranging from 40 to 65 years. There were 88 (27%) and 100 (31%) males while 74 (23%) and 62 (19%) females in Group-A and B, respectively (p = 0.177). The age-wise distribution of

Table 1. *Descriptive statistics and relationship of gender, age groups, and bleeding grades in both groups.*

Variable		Groups				Total		p-value*
		A		B				
Gender	Male	88	27.2%	100	30.9%	188	58.0%	0.177
	Female	74	22.8%	62	19.1%	136	42.0%	
	Total	162	50.0%	162	50.0%	324	100.0%	
Age group	40 to 52 years	78	24.1%	78	24.1%	156	48.1%	1.000
	53 to 65 years	84	25.9%	84	25.9%	168	51.9%	
	Total	162	50.0%	162	50.0%	324	100.0%	
Bleeding score	Grade 0	157	48.5%	161	49.7%	318	98.1%	0.099
	Grade 1	5	1.5%	1	0.3%	6	1.9%	
	Total	162	50.0%	162	50.0%	324	100.0%	

*Chi-square test.

Table 2. *Relationship of gender with bleeding between study group.*

Gender			Bleeding				Total		*p*-value*
			No		Yes				
Male	Group	A	83	44.1%	5	2.7%	88	46.8%	0.016
		B	100	53.2%	0	0.0%	100	53.2%	
	Total		183	97.3%	5	2.7%	188	100.0%	
Female	Group	A	74	54.4%	0	0.0%	74	54.4%	0.273
		B	61	44.9%	1	0.7%	62	45.6%	
	Total		135	99.3%	1	0.7%	136	100.0%	
Total	Group	A	157	48.5%	5	1.5%	162	50.0%	0.099
		B	161	49.7%	1	0.3%	162	50.0%	
	Total		318	98.1%	6	1.9%	324	100.0%	

*Chi-square test.

patients in both groups was statistically not significant (p = 1.000) as shown in Table 1. The grades of bleeding in both groups did not show much variation; 48% and 2% versus 50% and 0.3% patients with grade 0 and grade 1 bleeding were reported in Group-A and B, respectively (p = 0.099).

Based on a total of 324 patients, the gender-wise distribution of bleeding among both groups was statistically significant for male patients (p = 0.016) but not for female patients (p = 0.273) as shown in Table 2.

Further, no statistically significant difference was found among patients who had molar tooth extractions (multirooted teeth) (p = 0.143), and those with non-molar extractions (single-rooted teeth) (p = 0.374).

Discussion

Aspirin, a revolutionary drug; introduced in 1980, having three different effects of anti-inflammatory, antipyretic, and analgesic, at different dosages. It acts as an antiplatelet at low doses of 0.5 to 1.5 mg/kg/day, as analgesic at doses of 5–10mg/kg/day, and as anti-inflammatory at a dosage of 30 mg/kg/day.[11] Current guidelines by the American College of Cardiology and American Heart Association, published in 2019 have recommended aspirin as the drug of choice for primary and secondary prevention of cardiovascular diseases.[12]

Dental extractions are among the most common minor surgical procedures carried out regularly in dental offices. Dentists routinely face patients that are often taking oral aspirin due to varied reasons and face a dilemma of whether stopping these before procedures, keeping in mind the risks of thrombo-embolic events as well.[13]

Platelets play an important role in primary hemostasis, and irreversible inhibition of platelet aggregation by aspirin leading to increased bleeding time. The study by AlAgil et al.[7] noted a change in bleeding time when patients were taking 300 mg of daily aspirin but the values were well within the normal range; inhibiting any requirement for drug cessation before surgery. Similarly, the study by Darawade et al.[14] reported a significant increase in bleeding time between the two groups, one of which was taking aspirin up to 100 mg daily. This raised bleeding time was well within the normal range and was easily managed by local hemostatic measures, and not a single episode of uncontrolled bleeding was reported per or post operatively.[14] The publication by Napeñas et al.[15] assessed preoperative bleeding and clotting time values of patients who had a history of taking aspirin, which were well within normal ranges for patients. Aspirin was not discontinued for a single patient. Excessive bleeding was reported only in a single patient, which was managed as per routine measures.[15]

In the present study, grade 1 bleeding (bleeding after 30 minutes of extraction) was observed in 5 (1.5%) patients in Group-A and 1 (0.3%) patient in Group-B. This finding was not statistically significant (p = 0.099). Increased bleeding (grade 1) was easily managed by placing a hemostatic sponge and suturing the socket over it. The study by Malik and Majeed[8] reported that only 2% of patients had increased bleeding time after 30 minutes of extraction (grade 1 bleeding). This finding was statistically non-significant and is incongruence with the result of the present study as well.[8] A prospective study conducted by Krishnan et al.[16] divided patients into three groups; patients taking aspirin, patients who stopped aspirin pre-operatively, and a control group with no prior aspirin intake. Simple closed extractions were performed, and bleeding was well controlled in all groups of patients by only placing a damp gauze as a pressure pack for a period of 30 minutes same findings as our study. This study concluded that extractions can be carried out without interrupting or alteration of dosage in patients having a history of long-term antiplatelet medication.[16]

Current French guidelines on the preoperative management of antiplatelet therapy, which are based primarily on expert consensus, recommend discontinuing aspirin 3 to 5 days prior to procedures with a high risk of bleeding.[17,18] A study by Lee et al.[19] suggests that platelet function typically returns if aspirin is withheld for more than 96 hours. Therefore, a cessation period of approximately 4 days may be appropriate for complex dental procedures and surgeries.[19]

Contrary to our findings, studies by Schrodi et al.[20] and Pesce et al.[21] reported increased bleeding in patients on aspirin therapy following surgical intervention. However, in both studies, persistent bleeding was largely attributed to factors such as gingival inflammation, periodontitis, and poor oral hygiene rather than aspirin use alone.

These observations highlight that aspirin is not the sole determinant of post-extraction bleeding. Local factors, particularly inflammatory conditions like periodontitis, which lead to increased vascularity and hyperemia, also contribute significantly to postoperative bleeding.[22]

The statistically significance association was found with male patients in both groups (p = 0.016), thus depicting that the post-extraction bleeding is significantly influenced by gender, with male patients exhibiting a higher risk, possibly as a result of the high frequency of smoking, hypertension, or other risk factors in this population. Age and the type of tooth extracted did not show any significant effect on the amount of bleeding after extraction.[23] Thus, discontinuation of Aspirin before or after extraction of teeth may not be advised unless it is clinically indicated.

Limitations of the Study

The study has few limitations. First, the sample size and single centre data limits the generalizability. Further, post-op follow up for any extraction-related complications was not done. Radiological assessment and ruling out other haemodynamic disorders could have augmented the outcome of the study.

Conclusion

Use of Aspirin has no significant effect on the bleeding potential and healing of the patients after the tooth extraction procedure, hence, discontinuation may not be advised unless there are clinical contraindications. Among age, gender, and site of extraction, only gender showed a significant association with the grade of bleeding after routine surgical tooth extraction.

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List of Abbreviations

KRL Kahuta Research Laboratories

Conflict of interest

None to declare.

Grant support and financial disclosure

None to disclose.

Ethical approval

Ethical approval was taken from the Ethical Review Board of Kahuta Research Laboratories Islamabad, Pakistan, vide letter no KRL-HI-ERC/Jun20/10, Dated: 10-06-2020.

Authors' contributions

SN: Conception and design of study, acquisition and interpretation of data, critical intellectual input, analysis of data, drafting of the manuscript.

FA: Critical intellectual input, interpretation of data, drafting of manuscript.

SB, MR, MK: Acquisition of data, critical intellectual input, interpretation, and analysis of data.

ALL AUTHORS: Approval and responsibility of the final version of the manuscript to be published.

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