

Does Aspirin Affect Post Extraction Bleeding?

Hiral Shah^{1*} Sujay Shah² Ameena Ahmed³

¹PG Student, Department of Oral and Maxillofacial Pathology, Karnavati School of Dentistry, Gandhinagar, Gujarat, India.

²Senior Lecturer, Department of Periodontology and Implantology, Karnavati School of Dentistry, Gandhinagar, Gujarat, India.

³Senior Lecturer, Department of Pedodontics and Preventive Dentistry, Geetanjali Dental & Research Institute, Udaipur, Rajasthan, India.

ABSTRACT

Background: Aim: The aim of the study was to evaluate the influence of aspirin on post-extraction bleeding in a clinical setup.

Materials and Methods: Ninety patients aged between 50 and 65 years who were indicated for dental extraction for endodontic reason were selected from the outpatient Department of Oral and Maxillofacial Surgery. The patients were randomly divided into aspirin continuing group (group A) and aspirin discontinuing group (group B). After checking all the vital signs, the extractions were carried out. Bleeding time and clotting time were recorded for evaluation by Chi-square test.

Results: Chi-square test revealed that the bleeding time increased (3.9 ± 0.61) in group A patients who continued with the aspirin therapy and decreased in group B who discontinued aspirin. Similarly, the clotting time increased in group B patients and decreased in group A patients. But in both the groups, bleeding and clotting time remained within normal limits.

Conclusion: Reviewing most of the dental and medical literature, it can be concluded that there is absolutely no need to discontinue antiplatelet therapy for any ambulatory dental procedure, and even if the practitioner wishes to discontinue, it should not be for more than 3 days. Similar finding is also stated in the guidelines of the American Heart Association.

Keywords: Crestal bone loss, dental implants, implant loading, osseointegration, peri-implantitis.

INTRODUCTION

Patients who are on anti-platelet drugs are often advised to stop prior to surgery due to fear of excessive bleeding during the procedure. It is a proven fact that aspirin causes increased risk of intraoperative as well as postoperative bleeding and also increased risk of thromboembolic events such as myocardial infarction and cerebrovascular accidents if the drug is continued¹.

The blood is a fluid connective tissue, and hemostatic mechanism is chiefly responsible for stopping the extravasation of blood in case of injury to blood vessels. Classically, hemostasis mechanism

is characterized by two consecutive phases: primary and secondary. The primary phase primarily involves the vascular and platelet mediated events that help in early arrest of bleeding as a result of platelet plug formation. Secondary hemostasis phase is mediated by complex cascade of clotting factors which help in formation of fibrin clot to ensure definite sealing of ruptured blood vessels. In normal physiological state, perfect balance exists between coexisting interlinked mechanisms like coagulation/anticoagulation and fibrinolysis/antifibrinolysis. Disturbance in the balance in favor of one mechanism results in either bleeding or thrombosis²

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*Correspondence Dr. Hiral Shah.

Department of Oral and Maxillofacial Pathology, Karnavati School of Dentistry, Gandhinagar, Gujarat, India.

Email: Not Disclosed

The pathological basis related to arterial thrombosis involves atherosclerotic vascular disease mediated by platelet thrombi. Thrombin is a principle mediator in this type of thrombosis. Treatment modality against the arterial thrombosis involves drugs with antiplatelet and antithrombin activity³.

The antithrombotic effect of aspirin is mediated by irreversible inhibition of cyclooxygenase activity in platelets. On activation, phospholipase-A₂ acts on the cell membrane to release arachidonic acid. Cyclooxygenase acts on arachidonic acid to produce thromboxane A₂. Thromboxane A₂ is a potent platelet stimulant leading to degranulation of platelet and platelet aggregation. Aspirin inhibits cyclooxygenase enzyme and thus decreases the level of platelet stimulant thromboxane A₂⁴.

The purpose of this study was to investigate the influence of aspirin on post-extraction bleeding.

MATERIALS AND METHODS

This study was conducted at the outpatient Department of Karnavati School of Dentistry. Patients who were on aspirin therapy, aged between 50 and 65 years, and who had to undergo tooth extraction for endodontic reason with no mobility were selected for the study. Patients on warfarin, non-steroidal anti-inflammatory drugs, heparin, steroids, or suffering from blood disorders and diabetes were excluded from the study. Informed consent was obtained from the patients and the ethical committee clearance was also obtained.

Ninty patients including both males and females whose teeth were indicated for extraction were included in the study. Patients were randomly divided into group A and group B of 45 patients each. Group A patients continued to receive aspirin preoperatively, while Group B patients were asked to stop aspirin 7 days prior to extraction after consultation with the physician.

Preoperatively, all the vital signs (blood pressure and pulse) were recorded. Bleeding time (White and Lee technique) and clotting time (Ivy's technique) were calculated. Extractions were carried out only if the above parameters were within normal range. After atraumatic extraction (forceps method) was

performed, the bleeding time was recorded. Analgesics and antibiotics were prescribed as needed for pain and infection control. Chi-square test was used to evaluate the relative frequencies of patients in both groups. Differences of parametric variables were tested with analysis of variance.

RESULTS

	Mean Bleeding Time (Min)	Mean Clotting Time (Min)
Group A	3.9 ± 0.61	5.0 ± 0.72
Group B	2.3 ± 0.27	3.7 ± 0.58
P value	0.002	0.002

Chi-square analytical test were applied. The mean bleeding time was recorded to be 2.3 ± 0.27 of group B (who has stopped taking aspirin seven day prior to surgery) whereas, the bleeding time of group A patients were 3.9 ± 0.61. This difference was statistically significant (P = 0.002) [Table 1]. Although there was significant increase in the bleeding time of group A patients, it should be noted that the bleeding time of both the groups was within normal limits. Similarly, Clotting time of group B patients were 3.7 ± 0.58 min and group A patients was 5.0 ± 0.72 min, which were also within the normal limits (normal range according to Ivy's method: 3-5 min).

DISCUSSION

Historically, aspirin was used as an anti-inflammatory, analgesic, and antipyretic drug for a short period of disease activity. In 1950, Lawrence Craven reported for the first time its long-term use to prevent myocardial infarction⁵. He advocated a lower dose for antiplatelet action. Doses as low as 40 mg/day to 320 mg/day can be used as antiplatelet activity⁶. Inhibition of prostacyclin production can occur if the dose increases above 320 mg/day thereby decreasing the effectiveness of aspirin as anti-platelet agent⁷. However, recent researches have proved that dose of 160mg/day is optimum for adults⁸.

Danger of continuing aspirin post-surgery is that with the alteration of platelet function, longer time period is required to stop bleeding from a surgical site. This is because of alteration in primary haemostatic mechanism. Collet et al. stated that in

patients on aspirin, the average risk of bleeding increases 1.5-fold⁹. At the same time, there is a risk of rebound of thromboembolic vascular events if the aspirin is discontinued. Anderson et al. in his study stated the existence of biological platelet rebound phenomenon on interruption of aspirin therapy. This rebound create prothrombotic state which may lead to fatal thromboembolic events. Approximately 20% of these episodes are fatal and another 40% can lead to permanent disability¹⁰.

Doctors who advocate the stoppage of aspirin have been debating among themselves regarding the time limit to stop aspirin. According various studies, the effect of aspirin on platelets is irreversible which lasts for 7 to 10 days which is the life span of platelets¹¹. Many researchers have different views regarding the time of stoppage of aspirin. Sonksen et al., in their study comprising 52 healthy individuals, reported that it is not recommended to withdraw aspirin for more than 5 days¹². Wahl et al. advocated that aspirin should be discontinued for 3 days only, as after 3 days of interruption of aspirin, sufficient number of newer platelets would be present in the circulation for haemostasis¹³.

On the other side of this controversy there is other school of thought. They question whether to stop aspirin therapy or not? They fear about uncontrolled bleeding and hence encouraged to discontinue aspirin therapy. Hence there are few studies that recommend stoppage of aspirin prior to surgery^{14, 15, 16}. However, if the aspirin therapy is discontinued, there is increased risk of thromboembolic events which can be fatal, but none of these have been reported in dental literature.

Canigral et al. in his study involving surgical extraction in patients on antithrombotic therapy stated that in 92% cases, the bleeding stopped within 10 min with pressure alone. This result was in accordance with the present study². Gaspar et al. advocated that ambulatory oral surgical procedures can be performed in patients without discontinuing the use of aspirin¹⁷.

The present study showed that there was significant increase in the bleeding time in both the groups, but it was not difficult to stop the bleeding in any case and the bleeding time was within the normal range. There was significant increase in the bleeding time but it still remained within the

normal limits regardless of whether the patients continued or discontinued their aspirin therapy.

Adchariyapetch compared the postoperative bleeding in subjects who stopped taking aspirin and those who continued taking aspirin for 7 days prior to extraction. The mean bleeding time in both the groups was in normal range. After the procedure, there was no difficulty in achieving haemostasis. Therefore, they concluded that surgical extraction did not require discontinuation of antiplatelet therapy¹⁸.

Thus, it can be concluded based on dental and medical literature that if a practitioner wishes to discontinue the aspirin therapy, it should not exceed more than 3 days. Moreover, it should not be done without consulting the physician. Risk of stopping antiplatelet therapy and predisposing the patient to thromboembolic events overweighs the minimal risk of bleeding from dental procedures. Although there was increase in bleeding time in the present study, it was not beyond the normal range. Hence, it can be concluded that low dose of aspirin should not be discontinued prior to dental extractions, as it predisposes the patient to unwanted thromboembolic events.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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