OPEN ACCESS
Saudi Journal of Medicine
Abbreviated Key Title: Saudi J Med
ISSN 2518-3389 (Print) |ISSN 2518-3397 (Online)
Scholars Middle East Publishers, Dubai, United Arab Emirates
Journal homepage: https://saudijournals.com/journal/sjm/home

Original Research Article

Evaluation of Post Extraction Bleeding on Aspirin Patient- A Clinical Study

Dr. Ankita Saxena[1*], Dr. Ganapati Anil Kumar[2], Dr. Pranoti Hiralkar[3], Dr. Sushil Bhagwan Mahajan[4], Dr. Shaik Rubeena Tabasum[5], Dr. Pritee Rajkumar Pandey[6]

[1]Consultant oral and maxillofacial surgeon, Gwalior, Madhya Pradesh, India
[2]Senior Lecturer, Dept. of Conservative Dentistry & Endodontics, Sibar Institute of Dental Sciences, Guntur, Andhra Pradesh, India
[3]MDS, Public Health Dentist, Solapur, Maharashtra, India
[4]PG Student, Dept of Orthodontics and Dentofacial Orthopedic, Dr.H.S.R.S.M. Dental College and Hospital Hingoli, Maharashtra, India
[5]Senior Lecturer, Dept of Conservative and Endodontics, Sri Sai College of Dental Surgery Vikarabad, India
[6]PG, OMFS, DJ College of Dental Sciences & Research, Ajit Mahal, Modinagar - Niwari Rd, Modinagar, Uttar Pradesh, India

DOI: 10.36348/sjm.2019.v04i08.004 | **Received:** 10.06.2018 | **Accepted:** 24.06.2018 | **Published:** 16.08.2019

***Corresponding author:** Dr. Ankita Saxena

Abstract

***Backgroud*:** Aspirin is the generic name of Acetylsalicylic acid (ASA). It is an analgesic, antipyretic, anti-inflammatory. It also has an antiplatelet action and therefore this drug is used in the prevention and treatment of thromboembolic diseases. In order to avoid the excessive bleeding and to be on the safer side, dentists have traditionally advised their patients to stop taking aspirin before extraction of teeth although this surgical procedure can be done without cessation of aspirin intake and if the clinician wishes to stop the aspirin therapy, it should not exceed more than 3 days prior to the dental procedure. *Objective:* The purpose of the present study was to assess the time required for hemostasis if the low dose (150 mg once daily) aspirin therapy discontinued 3 days prior to dental extraction. *Methodology:* A cross sectional study was conducted which comprised of 40 subjects who took low dose of aspirin (150 mg) once daily. The blood pressure of all the subjects was recorded preoperatively. The extractions were done atraumatically under local anesthesia using 2% lidocaine with 1:100,000 epinephrine. The postoperative bleeding was controlled by the pressure pack. *Result:* **A**mong 40 patients, the postoperative hemostatic time of 82.5% subjects was less than or equal to 10 minutes while that of 17.5 % was more than 10 minutes. The bleeding was successfully managed by the pressure pack. *Conclusion:* Reviewing most of the dental and medical literatures, it can be concluded that there is absolutely no need to discontinue aspirin therapy for any ambulatory dental procedure, and even if the practitioner wishes to discontinue, it should not be for more than 3 days. This is also stated in the guidelines of the American Heart Association. Therefore, it can be assumed that the dental extraction can be done without long cessation of low dose aspirin and avoiding the life threatening issues.

Keywords: Antiplatelet drugs, aspirin, bleeding time, hemostatic time, tooth extraction.

INTRODUCTION

Post-extraction bleeding (PEB) is a recognized and frequently experienced complication in the dental practice. Post-extraction bleeding (PEB) can be defined as the bleeding that continues beyond 8 to 12 hours after dental extraction. The incidence of post-extraction bleeding commonly varies from 0% to 26%. If the postextraction bleeding is not successfully managed then the complications can vary from uncomplicated soft tissue haematomas to severe blood loss. Local causes of bleeding include bleeding from soft tissue and bone while systemic causes of bleeding include platelet disorders, excessive fibrinolysis or coagulation disorders and inherited or acquired problems (medication induced)[1]. Aspirin, also known as Acetylsalicylic acid (ASA) is a medication used as an analgesic, antipyretic and anti-inflammatory agent. It also an antiplatelet agent which prevents the platelet aggregation and thereby indicated for long term use in the patients who have suffered from stroke, angina or myocardial infarctions and are susceptible to the formation of emboli. Clot formation or thrombogenesis includes 2 main processes: platelet aggregation and coagulation [2]. Platelet aggregation comprises of activated platelets which get attached to the strands of fibrinogen, whereas the coagulation is a complex cascade of enzymatic events which leads to the formation of fibrin strands. The platelets form initial or primary hemostatic plug at the site vascular injury, and they are involved in many pathological processes and

hence an important contributor to arterial thrombosis which leads to ischemic stroke and myocardial infarction. Thereby, antiplatelet agents are widely used in the treatment and prevention of various ischemic cardiovascular and/or cerebrovascular conditions [3]. Aspirin is a known antithrombotic agent and its effect is mediated by irreversible inhibition of enzyme cyclooxygenase activity in platelets. On activation, phospholipase A2 acts on the cell membrane in order to release arachidonic acid. Cyclooxygenase acts on the arachidonic acid to produce thromboxane A2. Thromboxane A2 is a potent platelet stimulant which leads to the degranulation of platelet and platelet aggregation. Aspirin inhibits the cyclooxygenase enzyme and thereby decreases the level of thromboxane A2 (platelet stimulant)[4], therefore increasing the bleeding time. This is an important reason for a medical practitioner to stop aspirin 3-7 days prior to any invasive surgery. The purpose of this study was to investigate the influence of aspirin on post-extraction bleeding. Many antiplatelet agents are known but most commonly used in medical practice is aspirin and clopidogrel. Many clinicians commonly advice their patients who are on antiplatelet therapy to either stop or alter their medications prior to dental surgical procedures due to the fear of excessive and uncontrolled bleeding. The risk of stopping the antiplatelet therapy predispose the patient to the thromboembolic events which overweighed the minimal risk of bleeding from dental procedures which can be controlled by local hemostatic measures as the bleeding after dental surgery is rarely a life threatening situation. This study aims to assess the time for hemostasis if the aspirin was stopped 3 days preoperatively in the patients on aspirin therapy.

METHODS AND MATERIALS

A cross sectional study was conducted with informed written consent from all the patients. 40 patients whose tooth was indicated for extraction were included as the sample. These patients were on aspirin therapy taking dose of 150mg once daily. The patients were asked to stop their aspirin therapy 3 days prior to the day of extraction. Data collection method included medical history and dental history comprised of any complication related to previous extraction of teeth, dental clinical examination, anthropometric measurements and a questionnaire comprised of some questions related to their age, sex, height, weight. The blood pressure of all the subjects was recorded preoperatively. All the vital signs (blood pressure and pulse) were measured preoperatively. Bleeding time and clotting time were calculated. Extractions were carried out only if the above parameters were within normal range. The extractions were done least traumatically (forceps method) as possible under local anaesthesia using 2% lidocaine with 1:100,000 epinephrine. Postoperatively, the bleeding was controlled by applying pressure pack in all the subjects. When the bleeding was stopped, they were discharged with postoperative instructions were given as well as analgesics and antibiotics were prescribed as needed for pain and infection control. Patients were also advised to provide information regarding any further incident of post-operative bleeding with accurate timing. Thereby, patients were discharged after assessing that complete hemostasis has been achieved. Data from each patient was collected and then analyzed regarding the average time of hemostasis on the basis of gender distribution and age groups.

RESULTS

In the present study, out of 40 patients, 21 were male and 19 were female between the age ranges of 40-70 years. The mean time for hemostasis in males (Table 1) was 8.29 min (<10 min) and that in females (Table 2) was 8.32 min (<10 min). The age distribution on the basis of mean hemostatic time is shown in figure 1, which indicate that the maximum time for hemostasis is in the age group 65-70 years (mean hemostasis time is 9.20 min), which is under normal range of clotting time i.e., 3-10 min. Among 40 subjects, the time for hemostasis in 82.5% is equal to or less than 10 minutes, while that of only 17.5 % is more than 10 minutes (Figure 2).

Table-1: Mean hemostatic time in males

Parameter	Value
Mean	8.29
SD	2.69
SEM	0.59
N	21
90% CI	7.27 to 9.30
95% CI	7.06 to 9.51
99% CI	6.62 to 9.95
Minimum	5
5	8
Maximum	13

Table-2: Mean hemostatic time in females

Parameter	Value
Mean	8.32
SD	2.71
SEM	0.62
90% CI	7.24 to 9.39
95% CI	7.01 to 9.62
99% CI	6.53 to 10.10
Minimum	5
Median	8
Maximum	14

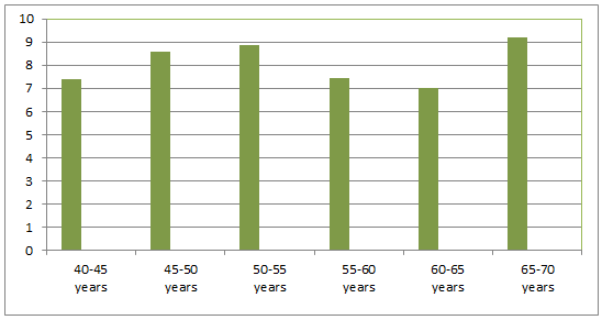

Fig-1: The age distribution on the basis of mean hemostatic time

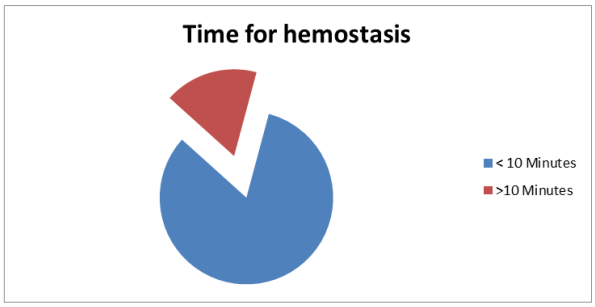

Fig-2: Showing hemostatic time of the population

DISCUSSION

Cardiac patients who are on aspirin therapy may require the extractions for their diseased teeth or teeth with poor prognosis. It is a routine practice among the physicians and surgeons treating the patients on aspirin to stop it prior to the extraction of tooth because of the danger of bleeding complications. This practice is mostly based on the theoretical risk of bleeding and may predispose the patients to adverse thromboembolic events. However, there are some isolated cases in which the excessive bleeding in the patients on aspirin therapy has been reported. It is a proven fact that aspirin can lead to increased risk of intraoperative as well as postoperative bleeding. Also, there is increased risk of thromboembolic events such as myocardial infraction and cerebrovascular accidents if the drug is discontinued [5]. The main etiology of ischemic events in heart, brain and lungs is the thrombotic and thromboembolic occlusion of blood vessels [6]. In case of injury to blood vessel, the hemostatic mechanism is responsible for stopping the extravasation of blood. In fact, the activity of platelets is altered and the required time period to stop the bleeding from a cut surface is increased because there is an alteration in the primary hemostasis mediated by platelet plug formation. There are several dental literatures regarding the increased incidence of bleeding with the use of aspirin therapy.

The studies conducted by Lemkin *et al*. [7] and and Mc Gaul *et al*. [8] in 1970s have documented that there is an increased postoperative bleeding after dental extraction and recommended to discontinue aspirin. Burger *et al*. reviewed 474 studies regarding the impact of low-dose aspirin on the surgical blood loss. They stated that in the patients on aspirin, the average risk of the intraoperative bleeding increases by a factor of 1.5[9] Therefore, traditionally it is recommended to stop the aspirin therapy 7–10 days prior to any invasive surgical procedure [10-14]. Some of the authors recommended stopping aspirin 7 days before the procedure while other authors recommended stopping aspirin for 3 days or less than 3 days preoperatively. The rationale behind such recommendation is that, after interrupting aspirin for 3 days, there is sufficient number of newer platelets in the circulation for effective hemostasis [15]. Various literature reviews reveal that many clinical trials on the dental extraction and the anti-platelet therapy started in 1970 and are still going on. The dilemma still persists among the clinicians regarding the continuation or stoppage of aspirin on the basis of benefit versus risk ratio. Although, the current recommendations and consensus are in the favor of continuing the aspirin therapy during simple surgical procedures like tooth extraction since the incidence of bleeding complication is very less and even if it occurs can be controlled efficiently with local hemostasis measures[16]. Most of the studies in recent years do not recommend reducing or interrupting the dose of anticoagulant, or replacing it with the heparin, prior to the tooth extraction, provided that the therapeutic international normalized ration (INR) levels are maintained and emphasis is given on the application of local hemostatic measures like antifibrinolytic agents [17]. According to Collet *et al*. the average risk of bleeding in patients on aspirin therapy increases 1.5-fold. At the same time, there is also a risk of stopping aspirin prior to surgery, which can lead to a potential risk of rebound phenomenon of the thromboembolic vascular events. On stopping aspirin, the activity of thromboxane A2 increases to a greater extent with decrease in fibrinolytic activity [18].

The existence of biological platelet rebound phenomenon on interrupting the aspirin therapy was shown by Anderson *et al*. This rebound phenomenon could create a prothrombotic state which can lead to fatal thromboembolic events. Approximately 40% of these episodes can lead to a permanent disability while another 20% are fatal [19]. The medical practitioners who advocate the practice of stoppage of aspirin have been debating among themselves regarding the time limit to stop the aspirin therapy before a surgical procedure. According to the literature, the aspirin imparts irreversible effect on the platelets. This effect lasts for the whole life span of platelets i.e., 7-10 days.

Thereby, it was recommended to stop the aspirin therapy 7 days prior to any surgical procedure [20-24]. A study by Sonksen *et al*. comprised of 52 healthy individuals, reported that it is not recommended to withdraw the aspirin for more than 5 days [25].

Moreover, Wahl *et al*. also advocated that the aspirin should be discontinued only for 3 days, since after 3 days of interruption of aspirin therapy, sufficient number of the newer platelets would be present in the

circulation for hemostasis [26, 27]. This result was in accordance with the present study. The recent recommendation from the American Heart Association and American College of Cardiology is either continue the aspirin or clopidogrel therapy for minor oral surgical procedures in patients with coronary artery stents or delay the treatment until prescribed regimen is complicated. In the present study, the average time for hemostasis in males and females are 8.29 min and 8.32 min respectively (Table 1 & 2). Hence, there is no gender preponderance on the basis of the time of hemostasis and the bleeding was controlled successfully in both males and females. The time for hemostasis was more in the subjects in age group of 65-70 years as compared to other age groups (Figure 1), which indicate that there may be comparatively slow replenishment of platelets in elderly people and thus, there is delay in hemostasis. Moreover, the average time for hemostasis was less than 10 minutes in most of the subjects (82.5%) while only in few subjects (17.5%) the time for hemostasis exceeded 10 minutes (Figure 2). Thereby, if the aspirin therapy is stopped 3 days prior to the minor surgical procedures such as dental extraction, then the bleeding can be controlled successfully by simple method of pressure pack. This study shows that stopping the low dose aspirin (150 mg once daily) 3 days (instead of 5- 7 days) prior to dental extraction is sufficient enough to successfully control the postoperative bleeding by pressure pack.

CONCLUSION

The discontinuation of aspirin therapy prior to dental procedures has been a common practice. It is very crucial to balance the risks and the benefits regarding to whether dental treatment should be continued with or without discontinuing the antiplatelet medication. Thereby, it can be concluded based on the various dental and medical literatures as well as on the findings of the present study that if a practitioner wishes to discontinue the aspirin therapy prior to dental procedures, it should not exceed more than 3 days. Moreover, it should not be done without consultation of the physician. The risk of stopping antiplatelet therapy and therby predisposing the patient to the thromboembolic events overweighs the minimal risk of bleeding from dental procedures. In the present study, the hemostatic time of most of the patients (82%) was less than 10 minutes, although, in some patients (18%), the hemostatic time was slightly increased but it was not beyond the normal range. Hence, it can be inferred that there is no need to discontinue low dose of aspirin prior to dental extractions or if the clinician feels the need to discontinue the aspirin therapy, it should be case specific and should not be more than 3 days, as it predisposes the patient to unwanted thromboembolic events.

REFERENCES

1. Sumanth, K. N., Prashanti, E., Aggarwal, H., Kumar, P., Lingappa, A., Muthu, M. S., & Krishanappa, S. K. K. (2016). Interventions for treating post-extraction bleeding. *Cochrane Database of Systematic Reviews*, (6).
2. Becker, D. E. (2013). Antithrombotic drugs: pharmacology and implications for dental practice. *Anesthesia progress*, *60*(2), 72-80.
3. Robless, P., Mikhailidis, D. P., & Stansby, G. (2001). Systematic review of antiplatelet therapy for the prevention of myocardial infarction, stroke or vascular death in patients with peripheral vascular disease. *British Journal of Surgery*, *88*(6), 787-800.
4. Dogné, J. M., Leval, X. D., Benoit, P., Delarge, J., Masereel, B., & David, J. L. (2002). Recent advances in antiplatelet agents. *Current medicinal chemistry*, *9*(5), 577-589.
5. Jafri, S. M., Zarowitz, B., Goldstein, S., & Lesch, M. (1993). The role of antiplatelet therapy in acute coronary syndromes and for secondary prevention following a myocardial infarction. *Progress in cardiovascular diseases*, *36*(1), 75-83.
6. Owens, C. D., & Belkin, M. (2005). Thrombosis and coagulation: operative management of the anticoagulated patient. *Surgical Clinics*, *85*(6), 1179-1189.
7. Lemkin, S. R., Billesdon, J. E., Davee, J. S., Leake, D. L., & Kattlove, H. E. (1974). Aspirin-induced oral bleeding: correction with platelet transfusion: a reminder. *Oral Surgery, Oral Medicine, Oral Pathology*, *37*(4), 498-501.
8. McGaul, T. (1978). Postoperative bleeding caused by aspirin. *Journal of dentistry*, *6*(3), 207-209.
9. Burger, W., Chemnitius, J. M., Kneissl, G. D., & Rücker, G. (2005). Low-dose aspirin for secondary cardiovascular prevention–cardiovascular risks after its perioperative withdrawal versus bleeding risks with its continuation–review and meta-analysis. *Journal of internal medicine*, *257*(5), 399-414.
10. Watson, C. J. E., Deane, A. M., Doyle, P. T., & Bullock, K. N. (1990). Identifiable factors in post-prostatectomy haemorrhage: the role of aspirin. *British journal of urology*, *66*(1), 85-87.
11. Kitchen, L., Erichson, R. B., & Sideropoulos, H. (1982). Effect of drug-induced platelet dysfunction on surgical bleeding. *The American Journal of Surgery*, *143*(2), 215-217.
12. Conti, C. R. (1992). Aspirin and elective surgical procedures.
13. Scher, K. S. (1996). Unplanned reoperation for bleeding. *The American surgeon*, *62*(1), 52-55.
14. Speechley, J. A., & Rugman, F. P. (1992). Some problems with anticoagulants in dental surgery. *Dental update*, *19*(5), 204-206.
15. Ahmed, N., Lakshmi, D. M., & Nazar, N. M. (2015). Aspirin and Dental Extractions: Still A Myth. *Int J Pharm Clin Res*, *7*, 109-12.
16. Verma, G. (2014). Dental extraction can be performed safely in patients on aspirin therapy: a timely reminder. *ISRN dentistry*, *2014*.

17. Jiménez, Y., Poveda, R., Gavaldá, C., Margaix, M., & Sarrión, G. (2008). An update on the management of anticoagulated patients programmed for dental extractions and surgery. *Medicina oral patologia oral y cirugia bucal*, *13*(3), 176.
18. Collet, J. P., & Montalescot, G. (2006). Premature withdrawal and alternative therapies to dual oral antiplatelet therapy. *European heart journal supplements*, *8*(suppl_G), G46-G52.
19. Anderson, C. S., Jamrozik, K. D., Broadhurst, R. J., & Stewart-Wynne, E. G. (1994). Predicting survival for 1 year among different subtypes of stroke. Results from the Perth Community Stroke Study. *Stroke*, *25*(10), 1935-1944.
20. Watson, C. J. E., Deane, A. M., Doyle, P. T., & Bullock, K. N. (1990). Identifiable factors in post-prostatectomy haemorrhage: the role of aspirin. *British journal of urology*, *66*(1), 85-87.
21. Kitchen, L., Erichson, R. B., & Sideropoulos, H. (1982). Effect of drug-induced platelet dysfunction on surgical bleeding. *The American Journal of Surgery*, *143*(2), 215-217.
22. Conti, C. R. (1992). Aspirin and elective surgical procedures.
23. Scher, K. S. (1996). Unplanned reoperation for bleeding. *The American surgeon*, *62*(1), 52-55.
24. Speechley, J. A., & Rugman, F. P. (1992). Some problems with anticoagulants in dental surgery. *Dental update*, *19*(5), 204-206.
25. Sonksen, J. R., Kong, K. L., & Holder, R. (1999). Magnitude and time course of impaired primary haemostasis after stopping chronic low and medium dose aspirin in healthy volunteers. *British journal of anaesthesia*, *82*(3), 360-365.
26. Wahl, M. J. (2000). Myths of dental surgery in patients: receiving anticoagulant therapy. *The Journal of the American Dental Association*, *131*(1), 77-81.
27. Little, J. W., Miller, C. S., Henry, R. G., & McIntosh, B. A. (2002). Antithrombotic agents: implications in dentistry. *Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontology*, *93*(5), 544-551.