RESEARCH PAPER

An Assessment of the Incidence of Prolonged Postoperative Bleeding After Dental Extraction Among Patients on Uninterrupted Low Dose Aspirin Therapy and to Evaluate the Need to Stop Such Medication Prior to Dental Extractions

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Received: 10 August 2015 / Accepted: 18 April 2016 / Published online: 17 June 2016
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Abstract

Purpose To propose that low dose aspirin therapy need not be withdrawn for routine dental extraction procedure.

Aim This study was designed to evaluate the post operative bleeding in patients on low dose aspirin therapy by dividing them into two groups: one with withdrawing and the other without withdrawing the regime before dental extraction.

Materials and Methods This study included 80 patients on low dose aspirin therapy. They were divided into two groups of 40 patients each; Group I (control group) included patients on who were asked to stop the medication 5 days prior to dental extraction; Group II (test group) included patients who were asked not to stop the medication prior to dental extraction. Strict atraumatic extractions were performed by a single surgeon. Data were analyzed using the independent “*t*” test @ 80 % power.

Results The mean pre-operative bleeding time in the control group was 87.75 s and the test group was 95.75 s which was statistically significant ($p < 0.05$). The mean pre-operative clotting time in the control group was 228.63 s and the test group was 246.25 s which was also statistically significant ($p < 0.05$). No patients in either group had any episode of prolonged postoperative bleeding following extraction from the surgical site and no local haemostatic measures had to be used except for one patient in Group II.

Conclusion Authors conclude from this study that dental extraction procedures in patients on low-dose therapy can

be safely carried out without stopping the antiplatelet therapy.

Keywords Low-dose aspirin · Bleeding time · Postoperative bleeding

Introduction

Antiplatelet therapy has been widely used by medical professionals worldwide in the treatment of thromboembolism, myocardial infarction or cerebrovascular accidents. Of the various antiplatelet agents, Aspirin is one of the drugs, which in various doses is commonly used. Lately, low dose aspirin (75 mg) is being used as a prophylactic medication in the general population to prevent any thromboembolic event.

Conventionally, many medical practitioners preferred to stop or alter these medications prior to any surgical procedure considering the risk of bleeding.

In the field of Oral and Maxillofacial surgery, extraction of teeth in patients on oral antiplatelet therapy has been a challenge considering the risk of post operative bleeding. However, various controversies have risen, with regard to balancing the risk of post operative bleeding and the risk of precipitating a thromboembolic event by stopping these medications.

Considering the risk involved, following extraction of teeth in patients on antiplatelet therapy, dental surgeons should seek expert opinion and advice from general physicians and cardiologists for the same.

So far, no standardized approach has been put forward for any oral surgical procedure on patients on antiplatelet therapy. Few recent studies have shown differences in

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approach by maxillofacial surgeons on these patients [4]. These include:

1. Stopping the oral antiplatelet therapy few days prior to dental extraction;
2. Continuation of the antiplatelet therapy and use of local haemostatic agents;
3. Continuation of the antiplatelet therapy and without any use of local haemostatic agents.

Adrekian et al. [1] conducted a randomised control trial on 39 patients and concluded that patients receiving aspirin therapy to prevent blood clot formation may be subject to emboli formation if the treatment is stopped. The results showed that aspirin therapy should be continued throughout oral surgical procedures. Local measures are sufficient to control any bleeding during surgery. Brennan et al. [2] also conducted a study on 36 patients on aspirin, and found and suggested that there is no indication for discontinuing aspirin for individuals requiring a single-tooth extraction, or similarly invasive dental procedures.

Therefore, our authors felt that considering the risk of a thromboembolic event that can be involved in the cessation of the antiplatelet regime which when compared to the post operative bleeding was much higher and post operative bleeding could be managed by local haemostatic measures, if any. Thus, this study was undertaken to propose that low dose aspirin therapy need not be withdrawn for routine dental extraction procedures.

Materials and Methods

This study was approved by the Saveetha Dental College Scientific Review Board and the Institutional Ethical Committee. We have read the Helsinki Declaration and have followed the guidelines in this investigation. The study was a prospective randomized control clinical trial conducted over a period of 12 months (Dec 2010–Nov 2011).

A total of 80 patients on low dose aspirin therapy were included in this study. They were randomly selected and divided into two groups of 40 patients each; Group I (control group) included patients on low dose aspirin therapy who were asked to stop the medication 5 days prior to dental extraction; Group II (test group) included patients on low dose aspirin therapy who were asked not to stop the medication prior to dental extraction.

Any patient who gave a history of bleeding disorder, alcoholism, concomitant anticoagulant therapy, chronic renal disease, chronic liver disease and also any recent thrombolysis done were excluded from the study. Patients on antithrombotic agents like heparin and warfarin were excluded. The patient's blood group, bleeding time and clotting time were estimated prior to dental extraction. The

patients were clearly informed about the possible complications following the extraction procedure with cessation and non-cessation of antiplatelet therapy and an informed consent was obtained.

The extraction procedure was carried out by a single surgeon. All patients received local anaesthetic injection (2 % lignocaine with 1:200,000 adrenaline). Most patients underwent single or two teeth extractions which were strictly atraumatic performed by the same surgeon. Following extraction, the patients were asked to bite on gauze for 30 min (clot retraction time). Evidence of any postoperative bleeding following this period (which was evaluated by a third person) was considered to be prolonged bleeding. All patients were discharged after 1 hour of observation and also ensuring that adequate haemostasis had been achieved at the extraction site.

Clear postoperative instructions were given and the patients were instructed to call or report back if there were any complications of postoperative bleeding. Patients were contacted at 12 and 24 h post operatively to ensure there was no post operative haemorrhage. The independent “*t*” test was used for statistical significance, if any.

Results

A total of 80 patients on low dose aspirin (75 mg) therapy were divided randomly into two groups (control group and test group) of 40 patients each. There were a total of 54 males and 26 females who were similar in age (mean of 59.15 and 59.20 in the control and test group respectively).

The mean pre-operative bleeding time in the control group was 87.75 s and the test group was 95.75 s which was statistically significant ($p < 0.05$). The mean pre-operative clotting time in the control group was 228.63 s and the test group was 246.25 s which was also statistically significant ($p < 0.05$). However, these values were well within the normal range and were not life threatening (Tables 1, 2).

No patients in either group had any episode of prolonged postoperative bleeding following extraction from the surgical site and no local haemostatic measures had to be used except for one patient in Group II, where a horizontal mattress suture was placed following extraction of three adjacent teeth.

Discussion

Aspirin was conventionally used as an analgesic and antipyretic drug. Some of its side effects like gastric irritation and worsening respiratory stress in asthmatics have reduced the use of this drug.

Table 1 Preoperative bleeding time and clotting time

Group	N	Mean	SD	Std. error mean					
BT (secs)									
Control	40	87.75	10.436	1.650					
Test	40	95.75	18.030	2.851					
CT (secs)									
Control	40	228.63	11.821	1.869					
Test	40	246.25	19.174	3.032					
	Levene's test for equality of variances		T test for equality of means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean difference	Std. error difference	95 % Confidence interval of the difference	
								Lower	Upper
Independent samples test									
BT (s)									
Equal variances assumed	7.312	.008	−2.429	78	.017	−8.000	3.294	−14.558	−1.442
Equal variances not assumed			−2.429	62.496	.018	−8.000	3.294	−14.583	−1.417
CT (s)									
Equal variances assumed	6.927	.010	−4.949	78	.000	−17.625	3.561	−24.715	−10.535
Equal variances not assumed			−4.949	64.904	.000	−17.625	3.561	−24.738	−10.512

Table 2 Mean age group

Group	N	Mean	SD	Std. error mean					
Age									
Control	40	59.15	10.967	1.734					
Test	40	59.20	8.483	1.341					
	Levene's test for equality of variances		T test for equality of means						
	F	Sig.	T	df	Sig. (2-tailed)	Mean difference	Std. error difference	95 % Confidence interval of the difference	
								Lower	Upper
Independent samples test									
Age									
Equal variances assumed	4.070	.047	−.023	78	.982	−.050	2.192	−4.414	4.314
Equal variances not assumed			−.023	73.364	.982	−.050	2.192	−4.419	4.319

However, in the recent years low dose-aspirin is being used by a wide population throughout the world for its antiplatelet efficacy. Many physicians and cardiologists prescribe this drug for patients who have had myocardial infarction, stroke, coronary artery bypass graft surgery (CABG). This drug is being used by the general population now as a prophylactic medication for prevention of any cardiac events like myocardial infarction, stroke, etc.

Aspirin therapy has long been associated with an increase in BT and risk of postoperative hemorrhage. For

most elective surgeries, it has typically been recommended that the patient stop taking aspirin 7–10 days before the procedure. This recommendation was based on general surgical studies, which reported an increase in intraoperative and postoperative bleeding in patients taking aspirin [15]. Other studies, mainly related to general and cardiovascular surgery, did not show any significant increase in blood loss or any need for postoperative transfusions [14].

Many dental surgeons and physicians consider aspirin as a threat for dental extraction procedures and hence has

been the practice of stopping the medication 5 days prior to the procedure. This is based on the irreversible effect exerted by aspirin on platelets [13]. Very few studies have been performed to evaluate the effect of low-dose aspirin on post operative bleeding following dental extraction in the Indian population and hence our present study was an initiative for the same.

A meta-analysis of 287 studies, involving 135,000 patients, confirmed the prophylactic effects of aspirin and other platelet drugs after stroke, myocardial infarction and CABG surgeries [10]. Terezhalmay et al. [11] reported that estimation of bleeding time might reflect the extent to which platelet function might be affected by medications such as aspirin. Clotting time test was also suggested as a useful parameter to measure platelet function. Thus, in our study both these parameters were evaluated on the day prior to the procedure. However, the relation between BT test and post surgical bleeding has not been validated yet [12]. Blood group was checked as a guide for later emergency purposes like blood transfusion, if it was necessary.

Little et al. [5] in their study suggested that patients on aspirin did not lead to a bleeding emergency unless the preoperative bleeding time was more than 20 min. However the scientific correlation for considering this as a safe period is not clear. Sonksen et al. [8] reported that aspirin produced a clinically important prolongation of bleeding time (greater than 10 min) in approximately 25 % of individuals. However, results from our study deferred from these findings.

In the present study, the preoperative bleeding time of the control group and test group (87.75 and 95.75 s respectively) and clotting time of the control group and test group (228.63 and 246.25 s respectively) were found to be statistically significant. These values were well within the normal range and were not life threatening.

Valerin et al. [9] found that there were no differences in bleeding outcomes for patients on aspirin versus placebo in healthy individuals and therefore suggested that there is no indication to discontinue the use of aspirin for patients undergoing single tooth extraction. Madan et al. [7] performed a study on 51 consecutive patients without stopping the antiplatelet regime and concluded that minor oral surgical procedures can be carried out safely without stopping low-dose aspirin.

Randomised control trials by Adrekian et al. [1] and Krishnan et al. [4] concluded that there was no post operative bleeding complications following dental extractions in patients on low-dose aspirin therapy in both groups (stopping and not stopping the regime). The present study concurred with these results. However, the use of local haemostatic measures like suturing, gelatine sponge, tranexamic acid mouth rinse were not required in the present study except for one patient where suturing had to be

done because of a wide extraction site following extraction of 3 adjacent teeth.

In the author's experience, a strict atraumatic procedure was followed in this study which involved minimal elevation of the marginal gingival flap and forceps extraction of the tooth. However, the authors believe that multiple tooth extraction (maximum of 3 teeth) adjacent to each other would require a local haemostatic measure like suturing due to the larger surface area of the surgical site [3].

Minor surgical procedures can be safely carried out without altering the antiplatelet regime. Those likely to be carried out in primary care will be classified as minor e.g. simple extraction of up to three teeth, gingival surgery, dental scaling and the surgical removal of teeth [6]. Authors suggest that when more than three teeth need to be extracted, multiple visits may be required. The extractions may be planned to remove two to three teeth at a time, quadrant wise, or a single tooth in separate visits.

Conclusion

With the support of evidence from literature and from the findings of this study, authors conclude that dental extraction procedures in patients on low-dose aspirin therapy can be safely carried out without stopping the antiplatelet therapy. The risk of incidence of increased postoperative bleeding was negligible, also considering the fact that local haemostatic measures might not be necessary if a strict atraumatic extraction procedure is followed as found in this study.

Authors also believe that comparing the risks of a thromboembolic event which can be precipitated by stopping the antiplatelet therapy and postoperative bleeding, the former rates a higher grade of risk which can be life threatening than the latter which can be controlled by local haemostatic measures.

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