

Management of Patients Taking Oral Anticoagulant (Warfarin) or Antiplatelet (Aspirin, Clopidogrel) Therapy in Dental Clinic: Breaking the Myth

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Abstract

Background: It is common to note dental surgeons discontinue oral anticoagulants or antiplatelet drugs for the purpose of dental surgical procedures having the fear of excessive bleeding. Multiple review of literatures and studies have proven no risk of bleeding complications in such patients. Purpose of our study was to evaluate amount of bleeding in patients under oral anticoagulant or antiplatelet therapy when compared to healthy controls who are undergoing variety of oral surgical procedures. **Materials and methods:** Patients taking oral anticoagulant or antiplatelet drugs who's INR (International Normalized Ratio) less than 3.0 are divided in two groups of less than 20 minutes procedures and less than 40 minutes procedures with healthy controls in same manner. Sterile weighed gauze packs of 20gms and 40gms were used respectively in these groups and weighed postoperatively for weight difference. **Results:** No statistical difference in bleeding noted in patients under medication to healthy controls in both the groups. **Conclusion:** Interruptions in oral anticoagulants or antiplatelet drugs must be avoided when patients INR within therapeutic range to avoid embolic consequences.

Keywords: Anticoagulants; Antiplatelets; Dental Surgical Procedures; INR; Bleeding; Complications.

Introduction

Patients under treatment for potential risk of thromboembolism or under treatment for thromboembolic event are commonly encountered in dental office. These patients are often will be consuming blood thinners as a part of their therapy. Dental procedures performed on them may vary from oral prophylaxis to time consuming, invasive surgical extractions. Surgical procedures increases the concerns on risk of potential bleeding complications. Anticoagulant warfarin and antiplatelet agent aspirin and clopidogrel are

widely used and familiar with dental practitioners. These drugs are used in different doses, duration regime or in combinations on different clinical conditions. Anticoagulation therapy has increased life expectancies of thousands of people in last more than 60 years by preventing thromboembolism. Since there is theoretical risk of bleeding many physicians advise interruption in continuous anticoagulant therapy. Even though there is no documented evidence which favors actual bleeding complications in post dental treatment, there is increased risk of thromboembolic events such as cerebrovascular accidents and myocardial infraction if medication is altered or discontinued [1]. Surgical procedures on patients under oral anticoagulants in dental office remained controversial [2,3]. Many authors have recommended discontinuation of such medications several days prior to dental treatment while others strongly advocate on uninterrupted treatment. Our intention was to evaluate the actual bleeding on patients under oral anticoagulant or anti platelet therapy in dental office and on significance of interrupting the therapy.

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Materials and Methods

Two groups were designed in this prospective study. Study was conducted between January 2017 and January 2018. Group I consisted of patients under oral anticoagulant or antiplatelet medication and group II consisted of healthy controls.

Inclusion Criteria

Group I: Adult patients irrespective of age and sex who is taking oral anticoagulant or antiplatelet therapy under going minor oral surgical procedures. Recorded INR of these patients to be less than 3.0 on the day of procedure.

Group II: Adult, medically fit patients seeking minor oral surgical procedures in department of dentistry, selected randomly irrespective of age and sex.

Exclusion Criteria

Group I: Patients with INR above 3.0. Patients with prosthetic valve replacement, cardiac stents, prosthetic joint replacements, artificial cardiac pacemakers are not included in this study group. Patients taking injectable anticoagulants and hospitalized patients for any cardiovascular reasons were also excluded. Any procedures which expected to take more than 40 minutes and deep bony procedures avoided.

Group II: Patients with any kind of systemic diseases were not included in this study.

Both the groups subdivided in to two categories. Group I A and Group II A: All surgical procedures lasted less than 20 minutes. Group I B and Group II B: Surgical procedures lasted between 20 minutes and 40 minutes. Weighed one packet gauze containing 20gms sterile gauze used in both A subcategory of Group I and II, 40 gms sterile gauze used in both B subcategory of Group I and II (Two packets of gauze). At the time of patient leaving the out patient clinic, soiled gauze along with unused gauze till that time weighed in every patient to calculate the weight difference. All the patients are allowed to leave the clinic only after achieving hemostasis. At the end of every 20 minutes in to the procedure new packet of gauze opened and gauze from same pack used when required, when patients are in observation postoperatively.

Patient Management in Group I: All the patients were given appointment only in the morning hours. INR was checked just prior to the procedure

from same institutional laboratory. Amoxicillin in any combinations, Macrolide antibiotics and NSAIDS like Diclofenac, Ibuprofen avoided prior to procedure due to possibility of bleeding risk due to drug interaction with oral anticoagulants. Fitness for procedure was obtained from the cardiologist of the institution, and cardiologist was informed about planned procedure, duration of the procedure and expected blood loss. Informed consent and written consent was obtained after detailing the procedure, risk of bleeding and requirement of hospitalization in case of any emergency. All the procedures done as much atraumatically as possible, local measures (applying pressure, icepack extraorally) were taken as a standard routine. Topical hemostatatic agents (Absorbable Gelatin Sponge) placement, suturing with nonabsorbable suture material was done whenever necessary. At the end of the procedure patient details entered in respective categories based on duration of procedure. Patients were kept under observation and allowed to leave the clinic with post operative instructions, only after hemostasis. Suction apparatus was avoided due to risk of increase in bleeding, possibility of clot dislodgement and errors in calculating blood loss.

Patient Management in group II: Healthy adult patients who are volunteered for this study. At the end of the procedure patients detail was recorded in respective categories based on duration. Steps in using the gauze were similar to group I. All of them allowed to leave only after achieving hemostasis. Suction apparatus was avoided due to risk of increase in bleeding, possibility of clot dislodgement and errors in calculating blood loss.

Institutional ethics committee on human studies has approved this study.

Note: Electronic analytical balance is used for calculating the weight. Shimadzu brand make and ELB 300 model which has minimum of 0.2gm capacity and 0.001gm sensitivity, was used.

Results

This prospective study was conducted between January 2017 and January 2018. Group I consisted of medicated patients and group II consisted of healthy controls. A subcategories included procedures lasted less than 20 min. B subcategories included procedures took 20 min to 40 min of time duration. Group I A had total number of 51 patients where as Group II A had total number of 55 patients. Group I B had total number of 38 patients where as Group II B had total number

Table 1: Group A: Statistics and Independent Samples Test

		Group Statistics				
	Groups	N	Mean	Std. Deviation	Std. Error Mean	
Wtdiffingrams1	Group I A	51	9.5938	1.39532	.19538	
	Group II A	55	9.2551	1.54240	.20798	

		Independent Samples Test								
		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	
Wtdiffingrams1	Equal variances assumed	.248	.620	1.182	104	.240	.33871	.28645	-.22932	.90674
	Equal variances not assumed			1.187	103.940	.238	.33871	.28536	-.22717	.90459

Table 2: Group B: Statistics and Independent Samples Test

		Group Statistics				
	Groups2	N	Mean	Std. Deviation	Std. Error Mean	
Wtdifferenceingrams2	Group I B	38	18.3670	1.48809	.24140	
	Group II B	43	18.2267	1.48919	.22710	

		Independent Samples Test								
		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	
Wtdifferenceingrams2	Equal variances assumed	.061	.805	.423	79	.673	.14028	.33145	-.51945	.80001
	Equal variances not assumed			.423	77.794	.673	.14028	.33143	-.51958	.80014

of 43 patients. Pre operatively Weighed gauze compared with soiled gauze postoperatively for weighed difference and difference is statistically analyzed in both the groups (Table 1 & Table 2).

Independent sample t-test used for statistical analysis. There is no statistical difference noted in weight in both the groups. Hence no difference in bleeding in both the groups which took less than 20 minutes and which lasted between 20 and 40 minutes when compared to healthy controls.

Discussion

Anticoagulant and antiplatelet drugs are the agents that reduce the ability of the blood to form clot or to coagulate. Indication of anticoagulant therapy is in several conditions to treat, prevent or reduce the recurrence risk of thromboembolism. Aspirin and clopidogrel are increasingly used alone or in combination, which work by irreversibly inhibiting platelet aggregation, an effect that lasts for life span of the platelet, typically 7 to 10 days [4]. Unique management challenges posed when patient is on warfarin and when the integrity of the vascular system is compromised.

Patients having increased risk of thromboembolism like atrial fibrillation, prosthetic heart valve or prior pulmonary embolism usually take warfarin therapeutically [5]. Anticoagulant activity and antithrombotic effect are the two functions of Warfarin. Therapeutic doses of warfarin reduce 30 to 50 percent reduction in production of functional vitamin k dependent clotting factors. Reduction in carboxylation secreted by clotting factors leads to 10 to 40 percent reduction in their biological activity [6]. Its important to know that other drugs like NSAIDS, heparin, antimicrobials (Amoxicillin, Metronidazole), selective serotonin reuptake inhibitors (SSRIs) and cardiovascular agents such as diltiazem, propranolol, furosemide, and nifedipine also have antiplateletic activity or least it enhances the potency of oral anticoagulants [7]. These factors leads to millions of patients visiting dentist for minimal to highly invasive procedures under theoretical risk of bleeding complications. This also a concern among dental practitioners planning invasive dental procedures and this often prompts them to stop long-term, low-dose anti-platelet therapy [8]. Multiple authors in the past had suggested interruption in anticoagulant therapy for dental procedures [9,10]. But interestingly studies

have failed to demonstrate excessive bleeding in medicated patients after dental procedure when compared to healthy controls [11,12].

Despite of clear evidence, huge number of practitioners (Dentists and Physicians) still interrupt anticoagulation therapy [13,14]. In a recent study, findings confirmed that many of both medical practitioners and dentists use traditional practice of interrupting oral anticoagulation therapy for dental practice rather than following evidence based practice [15]. On questionnaire survey for German dentists, out of 146 dentists, 77.4% of them performed dental extraction under continued aspirin therapy and only 27.6% of dentist performed extractions for patient under vitamin K antagonist, published in 2016 [16]. Survey published in Journal of Irish dental association showed 23% of dentist always stop aspirin prior to dental extraction where as 67% of them sometimes stop aspirin and only 10% carry out extractions without stopping aspirin [17]. Same survey also states that 92% of respondents carry out extractions on patients taking warfarin but without checking their INR [17]. This findings prompted authors of this study to evaluate the actual bleeding in patients taking antiplatelet and anticoagulant therapy undergoing dental surgical procedures.

In this study INR up to 3.0 was accepted for dental surgical procedures irrespective of duration of the procedure only after obtaining consent from the cardiologist. Key recommendations published in British Dental Journal regarding management of oral anticoagulant therapy patients, states that risk of bleeding in patients undergoing dental extractions with INR between 2.0–4.0 is significantly less [18]. Widely accepted optimal INR range for anticoagulation therapy as 2.0 to 3.0, and 2.5 to 3.5 for patients with mitral valve [19]. Similarly Walid Ahmed Abdullah and Hesham Khalil in 2014 limited INR 3.5 as less risk of bleeding complications on patients undergoing extractions [20]. Range of INR in this study was considered following a recent systematic review in 2015, management of dental extractions receiving warfarin determined that whose INR was in therapeutic range (i.e., 3.0 or less) could continue their regular warfarin regimen prior to the procedure [21]. Most studies have suggested checking INR least 72 hours prior to the procedure where as in our study INR was checked on the day of procedure itself.

While only 1% is the risk of bleeding complications in patients who are not receiving oral anticoagulants, may rise between 4% and

9% for patients under anticoagulants [22,23]. Even though there is slight increased risk of bleeding theoretically, clinically no much difference noted in this study. Local wound care like applying pressure, Suturing, Gelatin foam placement, ice pack application, Topical hemostatic agents are used whenever required across the both the groups. Procedures in study group included Extractions, alveoplasty, implant placement, graft placement, ridge augmentation procedures, flap surgeries, surgical extractions, subgingival scaling and root planning, frenectomy, Cyst enucleation under local anesthesia (Cyst of less than 3cm in size), endodontic surgeries, Crown leghthening procedures etc. Nerve blocks and infiltrations are used across both the groups following described standard techniques. Complications of infiltrations and nerve blocks including inferior alveolar nerve block in patients taking anticoagulants proven to be minimal to nil provided performed in correct technique [24]. In this study in both short procedures which took less than 20 min and longer procedures which took less than 40 min had no statistical difference in bleeding when compared to their respective controls. No patients had hospitalized with bleeding complications or had life threatening consequences, after performing wide range of dental surgical procedures.

Systematic review and meta analysis published in 2009 found patients undergoing single or multiple teeth extraction had no increase in risk of bleeding associated with continuing regular doses of warfarin in comparison with discontinuing or modifying the dose [25]. Another systematic review in 2013, found no clinically significant increased bleeding complications from invasive dental treatments on patients taking either single or dual antiplatelet therapy [26]. American academy of Neurology (2013 statement) recommended that patients taking aspirin or warfarin for stroke prevention and undergoing dental procedures to continue taking their medications [27].

Michael J. Wahl, in recent commentary clarifies that major bleeding after dental surgery should be defined as any bleeding requiring more than local measures for hemostasis [28]. Interestingly there has never been a reported case of fatal bleeding after a dental procedure in an anticoagulated patient as stated by Balevi B in 2010 [29]. None of the subjects required no more than local measures in this study too [29]. On the other hand a review identified at least 22 reported cases of embolic complications

after temporary interruption of warfarin therapy in patients undergoing dental surgery [30]. Wysokinski et al showed that there was a significant incidences of thromboembolic events in patients whose warfarin was interrupted for 4 or 5 days [31]. Patel et al studied embolic incidence within 30 days in 7,082 patients taking warfarin with and without an interruption of therapy of at least 3 days. More than double incidence of embolic events noted in patients who had temporary interruptions in their anticoagulant therapy [32]. Risk of thromboembolic events are less but significant, and may lead to death or permanent disability. It should be weighed against theoretical possibility of bleeding complications following dental procedures which doesn't have evidence in literature.

In patients who are taking antiplatelets or anticoagulants may have additional medical disorders like end stage kidney disorders, liver impairment, any kind of hematologic disorders or under chemotherapy for cancer. This people may have increased bleeding on dental surgical procedures. Patients having INR above 3.0 and INR being checked 72 hours prior to the planned procedure shall be considered for evaluation from the physician. Any modification to medication prior to dental surgery should be done in consultation with and on advice of the patients physician/ cardiologist only [33,34].

Conclusion

This study included most minor surgical procedures performed in dental office under local anesthesia. Patients under oral antiplatelets or anticoagulant therapy were chosen after obtaining consent from cardiologist for evaluating the amount of bleeding occurring in time bound procedural categories, when compared to controls. No statistical difference noted in amount of bleeding in medicated patients when compared to medically fit patients, which is in consensus with evidence available in literature. Hence interruptions in oral antiplatelet or anticoagulant therapy for dental surgical procedures should be avoided when INR of the patient is within the therapeutic range. Physician/cardiologist consultation should be availed when available, and no modification in any form to be done with medication regime of the patient by dental surgeon.

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