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Comparison of Postoperative Bleeding with and without Discontinuing the Antiplatelet Drugs (Aspirin, Clopidogrel) after Tooth Extraction

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Authors' contributions

This work was carried out in collaboration among all authors. Authors IQ and MS designed the study, performed the statistical analysis, Author SS wrote the protocol and wrote the first draft of the manuscript. Authors UB and BAJ managed the analyses of the study. Author ASM managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Background: A significant percentage of people who see a dentist are on antiplatelet treatment, and the rest of them have stopped taking these medications for 3 to 7 days prior to dental surgical surgery to avoid unnecessary bleeding and the possibility of adverse thrombotic cases. This study was conducted to compare postoperative bleeding with and without stopping antiplatelet drugs in tooth extraction.
Materials and Methods: Patients were divided into two groups, Group A consists of extraction of tooth without discontinuation of antiplatelet and Group B consists of extraction of tooth with

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discontinuation of antiplatelet with the consent from treating physician/cardiologist. All patients underwent for extraction under local anesthesia. Postoperatively, the amount of blood lost during the operation was calculated, any oozing or bleeding was looked at the operated spot and occurrence or nonappearance of oozing, as well as active bleeding was measured.

Results: Mean age of group A patients was 55.08 years and mean age of group B was 52.92 years. After 1 hour assessment of bleeding status, active bleeding was 12% in group A and 6% was in group B, findings were non-significant (p=0.271). After 24 hours assessment of bleeding status, there was no bleeding in 42% patients of group A and 58% patients of group B, oozing was in 34% patients of group A and 26% patients of group B, while active bleeding was 24% in group A and 16% was in group B, findings were non-significant (p=0.271). Mean of bleeding (in grams) was higher in Group A as compared to Group B (p=0.041).

Conclusion: There was no significant effect on bleeding during tooth extraction with continuation of anticoagulant therapy

Keywords: Tooth extraction; antiplatelet drug; bleeding.

1. INTRODUCTION

Tooth extraction is a process that is often conducted in dental offices. It has been discovered that the causes for tooth extraction and the pattern of extraction differ by geographical area [1]. Extraction of permanent teeth is carried out for several reasons such as dental caries, periodontal diseases, orthodontic treatment, traumatic injuries, prosthetic indications and tooth impaction [2].

Antiplatelet drugs are used to interfere with platelet function, which is used in cerebrovascular and coronary artery diseases for thromboembolic disorders. Antiplatelet and thiopyridines (e.g., clopidogrel) are commonly used antiplatelet drugs. Antiplatelet increases the bleeding time (BT) by preventing platelet aggregation by irreversibly inhibiting the cyclooxygenase-1 (COX-1) enzyme. Complete inhibition of the COX-1 enzyme and maximal antiplatelet effect occurs with antiplatelet at low doses of 75 mg/day. Low doses of 75–150 mg/day of antiplatelet can be used for long-term heart attack and stroke prevention, and moderate doses of 160–325 mg/day can be used for immediate anticlotting benefit [3]. Antiplatelet dose >320 mg/day may even decrease the effectiveness as an antiplatelet agent due to the inhibition of prostacyclin production [4]. Even at low doses of about 0.5-1 mg/kg per day, antiplatelet continues to impair platelet activity for the platelet's entire lifetime, which is about 10 days [5,6]. Thus antiplatelet works by blocking platelet accumulation and thereby preventing thrombus production in the bloodstream. This reduces the risk of thrombosis and cardiac ischemia [7]. Owing to the risk of excessive postoperative bleeding in patients on antiplatelet therapy, dentists and medical professionals discontinue antiplatelet therapy before surgical procedures.

Stopping this drug, on the other hand, can increase the risk of severe thromboembolism, myocardial infarction, or a cerebrovascular accident [4]. Stopping normal antiplatelet (antiplatelet/aspirin, clopidogrel) will make your condition worse. When compared to others, Collet et al. discovered a greater risk of death or myocardial infarction when antiplatelet therapy was stopped [5]. It has been well known that bleeding complications are common after extraction and gingival surgeries, whereas the association of bleeding episodes in patients on antiplatelet therapy is unclear. A small number of scholars have recognized that antiplatelet treatment in patients with cardiovascular disease does not need to be stopped, and that dental dealings such as simple extractions can be done without risk of unnecessary bleeding before or after the operation. It has been well known that bleeding complications are common after extraction and gingival surgeries, whereas the association of bleeding episodes in patients on antiplatelet therapy is unclear. There is very limited information available regarding dental management of patients on antiplatelet therapy. Hence, the current research was undertaken to weigh up the role of antiplatelet therapy on bleeding after dental extraction.

2. MATERIALS AND METHODS

This is a comparative cross-sectional analysis performed at Liaquat University of Medical and Health Sciences Jamshoro, Hyderabad, using a non-probability comfort sampling approach in the oral and maxillofacial surgery department

commencing December 2019 to November 2020. There were 100 patients equally divided in two groups as below:

Group A: (Extraction without discontinuation of drug) = 50 patients
Group B: (Extraction with discontinuation of drug) = 50 patients

2.1 Inclusion Criteria

- Patient receiving antiplatelet (asprin, clopidogerl) were included in the study.
- Subjects in age range of 40 to 75 years
- Extraction of teeth for any indication.
- Grade 1 hypertensive patients whom have hypertension level 140/90 mmHg.

2.2 Exclusion Criteria

- Patients on anticoagulants like heparin, warfarin sodium.
- Conditions that interact with antiplatelet drugs like steroids treatment or any hormonal therapy
- Subjects having any disorders of bleeding or clotting
- Hepatic and renal dysfunction patients were also excluded.

2.3 Data Collection Method

Entire operations were carried out by the same surgeon; before scheduling a consultation, blood pressure was taken and bleeding time, clotting time, platelet count, and INR were evaluated. Researcher had paid for all investigations. 5-7 days before procedure antiplatelet drugs were stopped in group B. All patients underwent for extraction under local anesthesia. Local haemostatic procedures such as pressure pack and suture application were employed in controlling intra operative bleeding. After sixty minutes, the operated site was tested for any oozing or bleeding, and the amount of blood lost during the operation was determined. Post operatively bleeding was assessed for presence or absence of oozing, and active bleeding. Antibiotics along with Paracetamol 500 mg TID were set as prescription after extraction of offending tooth. The estimation of blood loss during surgery was done by measuring the weight of cotton swab before and after one hour of the procedure; the cotton swab were measured by an electronic weighing scale.

2.4 Surgical Procedure

Plain 2% lignocaine hydrochloride was used as local anesthetic agent in all procedures. Suction was not used during the operation in order to provide a precise estimation of the blood loss. Gauze was used to keep the surgical area free of blood. Gauze was used in the submandibular and parotid duct regions to prevent saliva contamination. Post operatively, the blood soaked gauzes were weighed immediately by Electronic weighing scale. As a result, the measured weight differential between the gauze before and after surgery was directly translated to a volume calculation of blood loss. A 3/0 black braided silk figure of eight suture was inserted at the surgical site, and a pressure pack with sterile gauze was applied for 60 minutes before reassessing for bleeding after 1 hour. Post-extraction directions were briefed in detail and advise to restart the antiplatelets drugs on same day (Group B patients). Patients were called after 24 hours to reassess for any oozing or bleeding.

The data was evaluated using SPSS version 20.0, a statistical software package. Qualitative variables were expressed as absolute frequencies and percentages. Descriptive statistics including patient's age, gender, medical history, and procedure of removal of tooth, intraoperative and postoperative were assessed for presence or absence of bleeding. The data was calculated by chi-square x2-test. The P value of less than 0.05 was considered statistically significant.

3. RESULTS

In this study total 100 patients were studied to compare the impact of anticoagulant therapy in terms of bleeding after tooth extraction. Mean age of group A patients was 55.08 years and mean age of group B was 52.92 years, results were statistically insignificant according to both groups (p=0.240). (Table1).

In study group A 50% were males and 50% were females, while in group B 76% were males and remaining 24% were females, results were statistically significant (p=0.007) (Table 2).

Mean of systolic blood pressure and diastolic blood pressure were significantly high in study group A as compared to study group B, p-values were statistically significant (Table 3).

According to after 1 hour assessment of bleeding status, there was no bleeding in 42% patients of group A and 52% patients of group B, oozing was in 46% patients of group A and 42% patients of group B, while active bleeding was 12% in group A and 6% was in group B, findings were non-significant (p=0.271) (Table 4).

According to after 24 hours assessment of bleeding status, there was no bleeding in 42% patients of group A and 58% patients of group B, oozing was in 34% patients of group A and 26% patients of group B, while active bleeding was 24% in group A and 16^ was in group B, findings were non-significant (p=0.271) (Table 5).

Mean of bleeding (in grams) was higher as 3.31+0.71grams in Group A as compared to the group B as 2.12+0.77 grams, (p=0.001). Also mean of bleeding (in grams) was higher after 24 hours in group A as 2.44+1.15grams as compared to group B which was as 1.89+1.47 grams (p=0.041) (Table 6).

4. DISCUSSION

Patients who take aspirin and clopidogrel following a percutaneous coronary surgery have a high chance of perioperative bleeding, so dentists must decide whether or not to discontinue the medications [8]. In this study mean age of group A patients was 55.08 years and mean age of group B was 52.92 years, results were statistically insignificant according to both groups (p=0.240). Similarly Sadeghi-GhahrodyM et al reported that there were no significant differences in age, sex, underlying diseases, and anterior/posterior teeth between the two group p-values were non-significant [8]. However in this study group A 50% were males and 50% were females, while in group B 76% were males and remaining 24% were females, results were statistically significant (p=0.007). On other hand Varghese K Get al conducted the study to evaluate the bleeding after dental extractions among patients on uninterrupted antiplatelet therapy and they reported that Group A was comprised of 65 males and 30 females, and Group B was comprised of 54 males and 41 females [3]. Sajid Hasan et al have conducted a survey to determine the need to discontinue aspirin treatment prior to dental extraction, reporting that out of 50 patients, 28 were male and 22 were female, and that 40 percent of the patients were in the age group 51-60 years old [9].

In this study after 1 hour assessment of bleeding status, there was no bleeding in 42% patients of group A and 52% patients of group B, oozing was in 46% patients of group A and 42% patients of group B, while active bleeding was 12% in

Table1 . Descriptive statistics of age in both groups

Variable	Study groups	N	Mean	Std. Deviation	p-value
Age	Group A	50	55.0800	8.57343	
	Group B	50	52.9200	9.65706	0.240

Table 2. Gender distribution among both groups

Gender	Study groups		p-value
	Group A	Group B	
Male	25	38	0.007
	50.0%	76.0%	
Female	25	12	
	50.0%	24.0%	
Total	50	50	
	100.0%	100.0%	

Table 3. Descriptive statistics of blood pressure

Blood pressure	Study groups	N	Mean	Std. Deviation	p-value
Systolic	group A	50	116.76	11.311	0.001
	group B	50	126.92	15.584	
Diastolic	group A	50	76.86	7.021	0.015
	group B	50	70.28	13.744	

Table 4. Comparison of bleeding status after 1 hour after extraction

Bleeding status after 1 hour	Study groups		p-value
	Group A	Group B	
No bleeding	21 42.0%	26 52.0%	0.444
Oozing	23 46.0%	21 42.0%	
Active bleeding	6 12.0%	3 6.0%	
Total	50 100.0%	50 100.0%	

Table 5. Comparison of bleeding status after 24 hours after extraction

Bleeding status after 24 hours	Study groups		p-value
	Group A	Group B	
No bleeding	21 42.0%	29 58.0%	0.271
Oozing	17 34.0%	13 26.0%	
Active bleeding	12 24.0%	8 16.0%	
Total	50 100.0%	50 100.0%	

Table. 6 Comparison of bleeding (in grams) after 1 hour and 24 hours after extraction

After extraction	Study groups	N	Mean	Std. Deviation	p-value
After 1 hour	Group A	50	3.31	0.711	0.001.
	Group B	50	2.12	0.774	
After 24 hour	Group A	50	2.44	1.154	0.041
	Group B	50	1.89	1.471	

group A and 6% was in group B, findings were non-significant (p=0.271). Similarly, Varghese K Get al performed a study to assess bleeding during dental extractions in patients on continuous antiplatelet treatment, and found that none of the patients in either group experienced substantial uncontrollable bleeding after extraction. 11 patients (11.57%) in Group A had oozing 1 h after extraction, six receiving aspirin (6.31%) and 5 patients (5.26%) receiving dual therapy [3]. All patients were managed by pressure application. In Group B, 8 patients (8.42%) had oozing after 1 hour, 2 patients receiving aspirin (2.10%), 2 patients on clopidogrel (2.10%) and 4 patients on dual therapy (4.21%).Only six patients (6.3%) in Group A and two patients (2.10%) in Group B had oozing after 24 h, which were also controlled by pressure and required no expert intervention. None of the patients had any signs of bleeding after 48 h. There were no significant findings on the 5th day of evaluation. There was no difference in the amount of bleeding that happened during tooth extraction between patients who resumed antiplatelet therapy and patients who suspended their antiplatelet therapy in a randomised clinical study of 63 patients with coronary artery disease [10]. In a study of 546 patients taking antiplatelet medications, Girotra et al discovered that those taking dual drugs (aspirin and clopidogrel) had a higher bleeding rate and proposed more hemostatic measures [11]. Sajid Hasan et al, on the other hand, confirmed that both groups were within the usual bleeding time span, and that a local hemostatic procedure was necessary to manage bleeding in both groups. There have been no instances of spontaneous intraoperative or postoperative bleeding. In this study after 24 hours assessment of bleeding status, there was no bleeding in 42% patients of group A and 58% patients of group B, oozing was in 34% patients of group A and 26% patients of group B, while active bleeding was 24% in group A and 16% was in group B,

findings were non-significant (p=0.271). Increasing evidence shows that maintaining antiplatelet treatment during mild oral surgery, such as tooth extraction, does not significantly raise the bleeding risk, while the importance of local hemostasis is stressed [12,13]. Park et al on the other hand, found 1.7 percent (1/59) of patients with excessive intraextraction bleeding while on dual antiplatelet treatment, but did not follow up on the patients for subsequent bleeding [14]. For continuing monoclopidogrel therapy, Girotra et al recorded 5.2 percent rapid postoperative bleeding for oral surgery (mostly dental extraction) and 7.9 percent for dual clopidogrel therapies [11]. Despite this, our study's postoperative bleeding rates of 1.6 percent and 3.3 percent under continuing mono- and dual clopidogrel treatment was equal to or even lower than those previously reported. In either case, under continuing antiplatelet treatment, protective precautions for oral osteotomy are recommended. Closing the cut with a collagen sponge and sutures, as well as covering the spot with an acrylic splint, is crucial. Others mentioned the possibility of a timing effect and proposed scheduling the surgery for the beginning of the week and in the morning.[13] Since a large amount bleeding occurs within two days after surgery, a two-day 24-hour hotline can be an important measure for ensuring prompt response in the event of bleeding [15].

In this study it was indicated that antiplatelet Drugs (Aspirin, Clopidogrel) during tooth Extraction can be continued if there is no any alteration in coagulation pattern. This was similar to the study of Hanken H et al where they observed that the minor oral surgery can be done safely when taking clopidogrel or clopidogrel/aspirin as a monoantiplatelet or dual antiplatelet drug [15]. Operations was associated with an elevated risk of bleeding in people taking the medications during the first year after surgery. Dental extraction is one of the most frequent therapies, and despite several trials, there are no specific recommendations, with some studies recommending no medication for the first six months and others recommending therapy continuity [8].

5. CONCLUSION

It was concluded that, there was no significant effect on bleeding during tooth extraction with continuation of anticoagulant therapy. It was observed that there is no need to discontinue the anticoagulant therapy during tooth extraction. However pre-assessment of patients is very important for coagulation analysis and other risk factors.

DISCLAIMER

The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

CONSENT

As per international standard or university standard, patients' written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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