Original Research Paper

University J Dent Scie 2026; Vol. 12, Issue 1

Evaluation of Bleeding Following Dental Extraction in Patients Undergoing Single Or Dual Antiplatelet Therapy – A Prospective Randomized Controlled Study.

Abstract:

Background & Aim: Bleeding complications after dental extraction are a concern for patients on antiplatelet therapy, which prevents clot formation but increases bleeding risk. While discontinuing aspirin before surgery may not be necessary, evidence on managing dual or non-aspirin antiplatelet users is limited. This study evaluates the impact of single and dual antiplatelet drugs on post-extraction bleeding.

Materials & Methods: This prospective randomized study, conducted from January 2019 to January 2023, included 80 patients divided into single and dual antiplatelet therapy groups. All extractions were performed in the mandible to control local hemostatic effects. Blood loss was measured using pre-weighed gauze, with post-operative bleeding assessed every 30 minutes for two hours.

Result: The study found no significant differences between the two groups in gender distribution, bleeding time, platelet count, tooth per unit area, or total blood loss during and after extraction. One-way ANOVA showed no significant variations in post-operative blood loss at different time intervals.

Conclusion: This study suggests that stopping dual antiplatelet therapy before dental extractions may not be necessary.Patients on aspirin, clopidogrel, or ticlopidine for over three months can safely undergo extractions without altering their regimen. Atraumatic techniques are recommended for intra-alveolar extractions.

Key-words: Dual Anti-Platelet Therapy, Bleeding, Tooth Extraction.

Introduction:

Bleeding complications arising after dental extraction can present significant concerns when dealing with patients who are currently undergoing single or dual antiplatelet therapy.[1]

Antiplatelet medications are commonly prescribed to individuals at risk of thrombotic events, such as heart attacks or strokes. These medications play a vital role in preventing blood clot formation by reducing platelet aggregation .While there effectiveness in reducing cardiovascular risk is well documented but they also raise the potential for bleeding, especially during dental procedures involving tissue manipulation in about 17.4%.[2]

Antiplatelet drugs which mainly comprises of acetylsalicylic acid (Aspirin) and a P2Y12 inhibitor (Clopidrogrel, ticlopidine, ticagrelor or prasugrel).

Access this article online

Website:
www.ujds.in

DOI:
https://doi.org/10.21276/ujds.2026.12.1.10

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Received : 23 Dec., 2025, **Published :** 31 March, 2026

How to cite this article: Sarkar, A., Taraphdar, S., Das, P., & Ghosh, S. (2026). Evaluation of Bleeding Following Dental Extraction in Patients Undergoing Single or Dual Antiplatelet Therapy – A Prospective Randomized Controlled Study. UNIVERSITY JOURNAL OF DENTAL SCIENCES, 12(1).

Use of this antiplatelet drugs, which function through distinct mechanisms to inhibit platelet activity, has raised substantial concerns within the field of oral and maxillofacial surgery.[1]

Numerous literatures have indicated that discontinuing aspirin before dentoalveolar surgery may not be necessary. However, it is noteworthy that there is scarcity of published evidence concerning the perioperative dental management of patients taking dual and non-aspirin antiplatelet medications. Therefore, a thorough evaluation of bleeding following dental extraction in patients receiving single or dual antiplatelet therapy is imperative. This subject holds great significance for both dental and medical professionals as it establishes a connection between cardiovascular health and oral care.

Our objective was to assess the impact of both single and dual antiplatelet drugs on postoperative bleeding in patients who underwent tooth extractions.

Materials And Methods:

The prospective randomized controlled clinical single center study in which evaluation of peroperative, immediate and late postoperative bleeding following dental extraction in patients undergoing dual or single antiplatelet therapy was evaluated. The study was conducted from January 2019 to January 2023. All patients gave their written informed consent, and the study received approval from the institutional ethics committee with IRC Approval no - GNIDSR/IEC/19-23/12 dated 10/10/19.

The study involved 80 patients, who were categorized into two groups. Group 1 consisted of patients taking a single antiplatelet drug (Aspirin 75-150mg, Clopidogrel 75mg, or Ticlopidine250mg alone), while Group 2 comprised patients on dual antiplatelet therapy. All patients were instructed to continue their antiplatelet medication as prescribed.

All tooth extractions were specifically conducted in the mandible to eliminate the influence of local hemostatic effects resulting from the infiltration of local anesthesia. Multiple tooth extractions were performed upto 3 units where each unit is equivalent to a single root where anteriors and premolars were considered as one unit and lower molars were considered as two units. To assess intraoperative bleeding accurately, we employed a method involving the placement of two pre-weighed autoclaved surgical gauze pieces on both the extraction site and the contralateral non-extraction site. After the tooth extraction, we measured the difference in weight between the gauze at the extraction site and the gauze at the non-extraction site. This allowed us to obtain a precise measurement of blood loss, excluding saliva. The difference in grams between the working and non-working sides was directly converted into a volume of measurement of blood loss, where 1 gram is equated to 1 millilitre of blood.

Immediate post-operative bleeding was assessed using two pre-weighed, autoclaved surgical gauzes placed buccally and lingually on both sides. This evaluation was conducted every 30 minutes for up to two hours after the extraction.

The state of late postoperative haemostas is was confirmed by clinical evaluation on recalling the patients in post-operative follow-up.

Statistical analysis was done using Microsoft Excel 2019 version.

Result:

In our study, the age distribution was matched among the patients in two groups.

The corrected Chi-square test showed no statistically significant association between gender and the distribution of patients across the two groups. Consequently, the patients in both the groups were matched for their gender.

In mean bleeding time and platelet count (lakh/mm3) of the patients of the two groups one way ANOVA showed no significant difference.

In terms of value of tooth per unit area(X) was matched among the patients of the two groups. (P value-0.227)(TABLE 1)

In per-operative mean total blood loss of the patients of the two groups where one way ANOVA showed there was no significant difference. (P value-0.398)

In the post-operative phase one way ANOVA showed there was no significant difference in mean total blood loss after 30 mins of the patients of the two groups. (P value-0.17)(TABLE 2)

Intergroup pair wise comparison of the mean total blood loss within 30 mins to 1 hour (P value-0.38)(TABLE 3), 1 hour to 1

hour 30mins (P value-0.25)(TABLE 4) and 1 hour 30 mins to 2 hours (P value-0.57)(TABLE 5)also showed no significant difference by one way ANOVA of the patients of the two groups.

No history of late postoperative bleeding was found in patients of the two groups after 24 hours.

Only one patient from the dual drug group came back on the same day of extraction with postoperative bleeding after extraction of one premolar and one molar in mandible. The bleeding was effectively managed by suturing and applying compression on the wound. Not a single patient experienced postoperative bleeding in group 1.

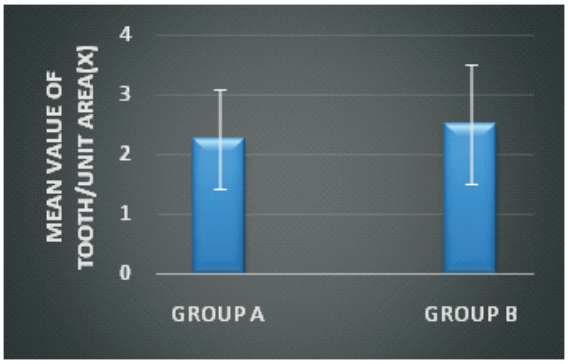
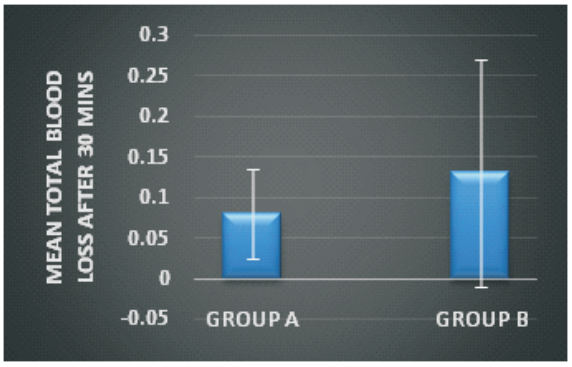


Table - 1



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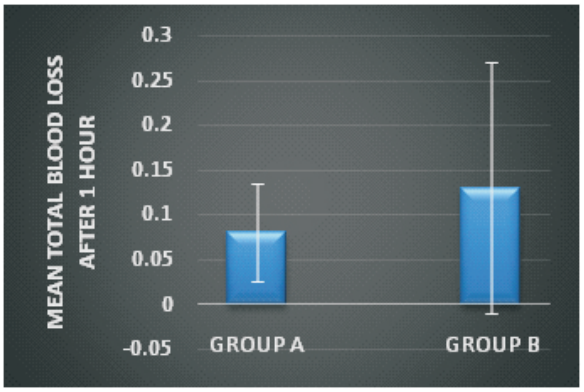

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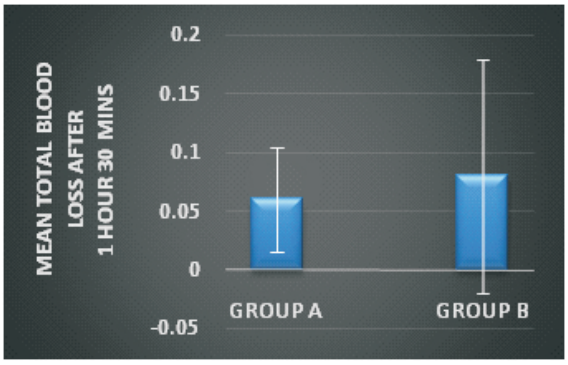

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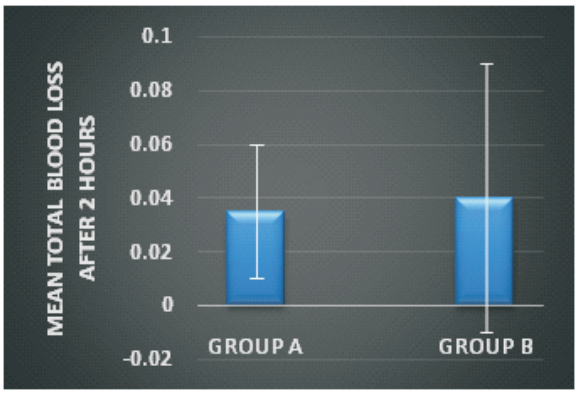

Table - 5

Discussion:

Although there is limited evidence, with a lack of strong clinical data and varying results from the studies reviewed, the literature suggests that patients on dual antiplatelet therapy can be effectively managed using local hemostatic interventions.

Kasjanovova and Balaz in 1986 noted that no age-related differences were observed in the hematological and coagulation parameters that were tested. The age of the study population was in the range from 20 to 80 years of age and since the age distribution is balanced across all four groups in our study, age does not serve as a contributing factor for peri-operative and post-operative outcomes.[3]

Since the gender distribution is matched across the four groups in our study, gender is likely not a contributing factor to peri-operative and post-operative bleeding in this study.

In our study, statistical analysis revealed no significant difference in mean bleeding time and platelet count (lakh/mm^3). Our findings were also supported by several other studies.

In terms of per-operative bleeding a study performed by Carrasco et al concluded that to evaluate the frequency of hemorrhagic complications in patients on dual antiplatelet therapy undergoing dental extractions, it was found that 8.3% of these patients experienced bleeding complications lasting longer than 30 minutes during the extraction procedure.[4]

In our study the statistical analysis showed no significant difference in mean per-operative total blood loss of the patients in two groups.

In terms of postoperative bleeding all systematic reviews have indicated a higher risk of post-operative bleeding following dental surgeries in patients on dual antiplatelet therapy compared to those on single antiplatelet therapy. However, Ockerman et al. notes that, despite the increased bleeding risk, the difference in risk between these groups was only 1%.[1]

According to systematic reviews, the risk of bleeding related complications in patients on dual antiplatelet therapy was similar regardless of whether they had undergone extractions or minor oral surgical procedures.[5]

In our study, statistical analysis similarly showed no significant difference in the mean immediate post-operative total blood loss among the two groups of patients.

Although patients on dual antiplatelet have an increased risk of bleeding related complications after dental extractions, none of the systematic reviews recommended discontinuing dual antiplatelet therapy before treatment.[5,6]

In our study, no cases of postoperative bleeding were observed after 24 hours among patients in the four groups. This finding is consistent with several other studies.

Although increased peri-operative or significant post-operative bleeding is undesirable, neither has been shown to result in fatal or severe adverse outcomes following dental procedures.[7]

Conclusion:

The findings of this study indicate that discontinuing dual antiplatelet therapy before dental extractions may not be necessary. Despite the heightened risk of post-operative bleeding, local hemostatic agents are generally effective in controlling bleeding episodes. If at any point of time it is required then it can be stopped after prior approval from the prescribing physician. We conclude that patients taking aspirin (75–150 mg), clopidogrel (75 mg), Ticlopidine 250mg or both (aspirin 75 mg and clopidogrel 75 mg) for more than three months can safely undergo tooth extraction without modifying their regular antiplatelet regimen or requiring additional medical intervention. In intra-alveolar extractions of mandible, up to three single-rooted teeth or one single-rooted and one multi-rooted tooth can be extracted without modifying the treatment plan. The surgical procedure should be performed atraumatically.

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