



Bleeding frequency of patients taking ticagrelor, aspirin, clopidogrel, and dual antiplatelet therapy after tooth extraction and minor oral surgery

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ABSTRACT

Background. Perioperative bleeding complications of ticagrelor, a newer oral antiplatelet, has not been studied in dentistry. Studies about bleeding status after oral surgical procedures in patients receiving continued antiplatelet therapy are also limited. We investigated the effects of continuing aspirin, clopidogrel, ticagrelor, or dual antiplatelet therapy on the frequency of bleeding events in patients undergoing tooth extractions or minor oral surgery.

Methods. In this retrospective study, patient demographic characteristics, medical history, type of antiplatelet therapy, dental procedures, and perioperative bleeding associated with tooth extraction or other minor oral surgical procedures were obtained from the dental records of 222 patients. Bleeding was classified as normal, mild, moderate, or severe.

Results. One hundred sixty-eight patients (75.7%) had 1 or more teeth extracted, and 54 patients (24.3%) underwent other minor oral surgical procedures. The most common single antiplatelet regimen was aspirin ($n = 123$; 55.4%), followed by clopidogrel ($n = 22$; 9.9%) and ticagrelor ($n = 17$; 7.7%). Sixty patients (27%) received dual antiplatelet therapy. The overall frequency of postoperative bleeding was 4.9% (11 of 222). The frequencies of postoperative bleeding in the aspirin, clopidogrel, ticagrelor, and dual antiplatelet therapy groups were 3.2%, 4.5%, 5.9%, and 8.3%, respectively ($P \geq .5$). None of the patients experienced prolonged bleeding.

Conclusions. Patients taking aspirin, clopidogrel, ticagrelor, and dual antiplatelet therapy experienced acceptable rates of controllable postoperative bleeding after tooth extraction or minor oral surgical procedures.

Practical Implications. In accordance with recommendations from published studies and guidelines, antiplatelet medications, including dual antiplatelet therapy, should not be interrupted for tooth extractions or minor oral surgery.

Key Words. Bleeding; dual antiplatelet therapy; surgery; tooth extraction; aspirin; clopidogrel; ticagrelor.

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Antiplatelet therapy has a proven beneficial effect in the prevention and management of arterial thrombosis. Long-term use of antiplatelet agents for secondary prevention of ischemic events in coronary arteries, cerebrovascular and peripheral artery diseases, after myocardial infarction, and after coronary bypass conditions is increasing. The number of percutaneous coronary interventions is also on the rise, and patients with coronary stents should also take antiplatelet drugs for protection from stent thrombosis.¹

Although they provide ischemic protection, antiplatelet drugs expose patients to a certain degree of bleeding risk. Because of the potential for excessive perioperative bleeding, surgeons often recommend discontinuation of these agents preoperatively. However, withdrawal of antiplatelet drugs can be associated with mortal thrombotic complications. Almost 40% of stent thromboses occur in the perioperative period, and mortality rates of such ischemic events are high.¹ Thus,

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guidelines from various professional societies advise continuing antiplatelet agents perioperatively whenever possible.²⁻⁴

In recent years, an increasing number of patients taking antiplatelet agents undergo dental procedures. Despite the well-known risks of discontinuing antiplatelet therapy prematurely, dentists may fear excessive bleeding, and they frequently consult with cardiologists to interrupt the drugs. However, it has been shown that the long-held belief of preoperative withdrawal of antiplatelet drugs is not supported by clinical evidence and that bleeding in such patients can be managed with local hemostatic measures in dental practice.³⁻⁷

Several researchers investigated the effects of aspirin (ASA), clopidogrel (CLO), and various combinations of different antiplatelet agents on the incidence of bleeding after tooth extractions.⁸⁻¹³ Ticagrelor (TICA) is a newer oral antiplatelet agent, and its perioperative bleeding complications have not been studied in dentistry; there are limited data. Articles studying bleeding status after minor oral surgical procedures in patients receiving continued antiplatelet therapy are also limited in the literature.^{14,15} The aim of this retrospective study was to investigate the effects of continuing single (ASA, CLO, TICA) or dual antiplatelet (ASA plus CLO) therapy on the frequency of perioperative bleeding events in patients undergoing tooth extractions or minor oral surgery.

METHODS

This retrospective observational study was conducted at the Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, Istanbul University, Istanbul, Turkey. Patients ($n = 250$) receiving single or dual antiplatelet therapy (DAPT) who underwent oral surgery or tooth extractions between January 2015 and February 2017 were analyzed. All participants continued to take their medications regularly before dental procedures. The study was approved by the Ethics Committee of Istanbul University (project 2017/31), and all patients signed written informed consent.

Data, including patients' ages, sex, history of medical illness, type of antiplatelet therapy (ASA, CLO, TICA, or ASA plus CLO [DAPT]), dental procedures, bleeding manifestations, and postoperative complications, were collected from the records. Patients with a history of thrombocytopenia, alcoholism, concomitant anticoagulant therapy, liver and kidney dysfunction; patients receiving nonsteroidal anti-inflammatory drugs; and patient records with insufficient data were excluded from the study.

In our clinic, we have been using a 4-staged hemostatic evaluation and management scale that presented bleeding events as normal, mild, moderate, and severe. After the procedure, a gauze pressure pad was applied to the extraction socket or surgical area for 10 minutes. Normal was bleeding that subsided within 10 minutes. Mild was bleeding that subsided within 30 minutes by means of gauze compression. Moderate was bleeding that exceeded 30 minutes and required application of collagen sponge or oxidized cellulose, suturing, cauterization, or compression with a gauze soaked with tranexamic acid (Transamine 10%, 250 milligrams/2.5 milliliters; Actavis). Severe was bleeding that continued more than 12 hours or soft-tissue hematoma formation that required hospital readmission, another operation, or blood transfusion.

After the procedure, patients were examined once again to ensure that the hemorrhage was under control before discharge from the clinic. All patients were given a list of instructions about postoperative care and the telephone number to call a surgeon in case of emergency. Patients undergoing minor oral surgery received 1,000 mg of amoxicillin every 12 hours for 5 days, and 500 mg of paracetamol (acetaminophen) 4 to 6 times a day was recommended to all patients (including patients who had undergone tooth extraction) as an analgesic. All patients were examined and questioned for hemorrhage or other complications, and sutures were removed after checking the wound area on the seventh postoperative day.

Statistical analysis

Sample size was calculated with the use of previously reported perioperative bleeding rates for patients who continued to take antiplatelet agents after dental surgery.⁸⁻¹³ We found that a minimum of 104 patients would be required for the study for a type 1 error of .05 and a power of .99.

All statistical analyses were performed with the use of InStat Version 3.10 (GraphPad Software) and P values less than .05 were considered statistically significant. Quantitative variables were given as mean (standard deviation). Multiple comparisons of parametric data were performed with

ABBREVIATION KEY

ASA:	Aspirin.
CLO:	Clopidogrel.
DAPT:	Dual antiplatelet therapy.
TICA:	Ticagrelor.

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