REVIEW

THE AMERICAN JOURNAL of MEDICINE®

Dental Surgery and Antiplatelet Agents: Bleed or Die

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ABSTRACT

In patients taking antiplatelet medications who are undergoing dental surgery, physicians and dentists must weigh the bleeding risks in continuing antiplatelet medications versus the thrombotic risks in interrupting antiplatelet medications. Bleeding complications requiring more than local measures for hemostasis are rare after dental surgery in patients taking antiplatelet medications. Conversely, the risk for thrombotic complications after interruption of antiplatelet therapy for dental procedures apparently is significant, although small. When a clinician is faced with a decision to continue or interrupt antiplatelet therapy for a dental surgical patient, the decision comes down to "bleed or die." That is, there is a remote chance that continuing antiplatelet therapy will result in a (nonfatal) bleeding problem requiring more than local measures for hemostasis versus a small but significant chance that interrupting antiplatelet therapy will result in a (possibly fatal) thromboembolic complication. The decision is simple: It is time to stop interrupting antiplatelet therapy for dental surgery.
 • *The American Journal of Medicine (2014) 127, 260-267*

KEYWORDS: Antiplatelet agents; Aspirin; Dental; Dental surgery; Stroke

The history of aspirin (acetylsalicylic acid) dates back more than 2000 years ago, when Hippocrates recommended chewing on willow leaves (which contain salicylic acid) during childbirth for analgesia. In 1899, the chemist Felix Hoffman of Bayer AG (Leverkusen, Germany) was the first to isolate pure acetylsalicylic acid, later calling it "Aspirin" for commercial manufacture and sale. Since then, Bayer AG lost or sold its rights to the trademark, and the "wonder drug" aspirin is widely used for its analgesic, antipyretic, anti-inflammatory, and anti-thrombotic effects.

Aspirin's antithrombotic indications include atrial fibrillation, history of angina or myocardial infarction, coronary artery disease prevention, history of coronary bypass surgery, and percutaneous coronary intervention and stent implantation. Newer antiplatelet medications include clopidogrel (Plavix; Bristol-Myers Squibb, New York, NY), ticlopidine (Ticlid; Roche Laboratories, Basel, Switzerland), cilostazol (Pletal; Otsuka America Pharmaceuticals Inc, Rockville, Md), dipyridamole (Persantine; Boehringer Ingelheim Pharmaceuticals, Inc, Ridgefield, Conn), ticagrelor (Brilinta; AstraZeneca, Paddington, London), and prasugrel (Effient; Ube Industries, Ube, Japan). Some of these newer agents are associated with greater antithrombotic efficacy but also higher bleeding risks than aspirin. When dental surgery is contemplated in patients taking 1 or more of these medications, dentists and physicians must weigh the potential bleeding risks in continuing the medications versus the thromboembolic risks in interrupting them before dental surgery.

Dentists frequently recommend aspirin withdrawal before dental surgery, even without consulting the patient's physician.[1] Both physicians and dentists frequently overestimate the bleeding risks of dental surgery in patients continuing antiplatelet medications and underestimate the thrombotic risks of interrupting antiplatelet therapy for dental procedures.[2-5] Dental surgery is unlike other types of surgery: Major vessels are unlikely to be encountered, and the perioperative and postoperative surgical sites are easily accessible to local measures for hemostasis, such as biting on gauze, absorbable gelatin sponges, and sutures. As early as 1987, Salzman[6] stated, "The hemostatic defect induced by aspirin in patients with otherwise normal hemostasis is usually minor…."

DENTAL SURGERY IN PATIENTS TAKING ANTIPLATELET MEDICATIONS

There have been many reports of patients continuing antiplatelet agents while undergoing dental surgery. Of at least

Funding: None.

Conflict of Interest: None.

Authorship: The author is solely responsible for the content of this manuscript.

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0002-9343/$ -see front matter
http://dx.doi.org/10.1016/j.amjmed.2013.11.013

1283 patients taking single or dual antiplatelet agents undergoing at least 2343 dental surgical procedures, including at least 2308 single and multiple, simple, and surgical dental extractions in at least 1334 visits, no more than 35 patients (2.7% of patients and 2.6% of visits) had bleeding complications requiring local measures for hemostasis and only 2 patients (0.2%) required more than local measures for hemostasis (**Table 1**).[7-35] It should be noted that the risks of bleeding may differ on the basis of the antiplatelet agent and the regimen used. Although some of the newer agents and regimens may be associated with higher bleeding risks, none of the patients taking nonaspirin or dual antiplatelet agents had bleeding complications that required more than local hemostatic measures.

CLINICAL SIGNIFICANCE

- In patients taking antiplatelet medications who are undergoing dental surgery, dentists and physicians must weigh the bleeding risks in continuing antiplatelet medications versus the thrombotic risks in interrupting antiplatelet medications.
- Bleeding complications requiring more than local measures for hemostasis are rare after dental surgery.
- The risk for thrombotic complications after interruption of antiplatelet therapy for dental procedures is apparently significant, although small.
- Therefore, antiplatelet medications should not be interrupted for dental surgery.

ANALYSIS OF THE TWO CASES OF POSTOPERATIVE HEMORRHAGE CONTROLLED BY MORE THAN LOCAL MEASURES FOR HEMOSTASIS

It is remarkable that there were only 2 patients (0.2%) taking continuous antiplatelet medications who required more than local measures for hemostasis after dental surgery, but even these 2 cases, 1 from 1974[18] and 1 from 1997,[35] do not support interruption of antiplatelet medications for dental surgery.

In 1974, Lemkin et al[18] reported on a patient taking 12 to 20 daily aspirin tablets (dosage unreported) who had uncontrolled bleeding after undergoing 18 extractions. The history included ethanol abuse, but the patient denied recent alcohol ingestion. Sutures and oxidized cellulose were unsuccessful for hemostasis, and the patient was admitted to the hospital the next day. Hemostasis was achieved after a platelet transfusion. Although the dose is unreported, 12 to 20 daily aspirin tablets were probably more than therapeutic and almost certainly more than the single daily tablet typically prescribed today for antithrombosis.

In 1997, Thomason et al[35] reported on a kidney transplant recipient who underwent a gingivectomy for gingival overgrowth and was taking aspirin 150 mg/day, in addition to cyclosporine, azathioprine, and amlodipine.[35] Hemostasis was achieved with pressure from gauze after the lower anterior gingivectomy, but after the upper anterior gingivectomy, there was excessive hemorrhage uncontrolled with local measures, and the patient was admitted to the hospital for a platelet transfusion, after which hemostasis was achieved. It is not clear that the relatively low dose of aspirin was the cause of the postoperative bleeding.

Although the evidence shows that dental surgery can be accomplished with minimal bleeding risk in patients receiving single or dual antiplatelet medications, some have recommended a 7- to 10-day interruption of antiplatelet therapy for dental extractions.[36]

ANTIPLATELET THERAPY INTERRUPTION FOR DENTAL PROCEDURES

There are various levels of thrombotic risk associated with continuous antiplatelet therapy interruption, depending on the reason for the antithrombotic therapy. For example, there is a relatively low risk of thrombotic complications when single antiplatelet therapy is withdrawn in primary prevention patients versus a relatively high risk when dual antiplatelet therapy is withdrawn in patients after recent percutaneous coronary intervention. Whenever antiplatelet therapy is interrupted, regardless of the reason, there is at least some increased risk of thrombotic complications. In a case-control study of 39,513 patients who had a first-ever prescription of low dose aspirin over a 7-year period, García Rodríguez et al[37] determined that patients who had recently interrupted aspirin were significantly more likely to have a myocardial infarction than patients whose aspirin therapy was continued. “For every 1000 patients, over a period of one year there were about four more cases of non-fatal myocardial infarction among patients who discontinued treatment with low dose aspirin (recent discontinuers) compared with patients who continued treatment.” Garcia Rodríguez et al[38] also showed a 40% increased risk of ischemic stroke or transient ischemic attack after withdrawal of aspirin within 1 to 3 months in patients with cardiovascular disease or cerebrovascular disease.

Biondi-Zoccai et al[39] conducted a meta-analysis of 50,279 patients in 6 studies and concluded that aspirin nonadherence or withdrawal was associated with a 3 times higher risk of a major adverse cardiac event versus continuing aspirin therapy. The authors concluded that the withdrawal of aspirin can have an “ominous prognostic implication” in patients at moderate or high risk for coronary artery disease. Sibon and Orgogozo[40] studied 289 patients with cerebral infarction and found that 13 of these patients had had antiplatelet drug interruption within 1 month before the ischemic stroke. Maulaz et al[41] conducted a case-control study of 309 patients admitted for stroke or transient ischemic attack who had been on