DOES LOW-DOSE ASPIRIN THERAPY COMPLICATE ORAL SURGICAL PROCEDURES?

LEON ARDEKIAN, D.D.S.; RONEN GASPAR, D.M.D.; MICHA PELED, M.D., D.M.D.; BENJAMIN BRENER, M.D.; DOV LAUFER, D.M.D.

ABSTRACT

Background. The fear of uncontrolled bleeding often prompts medical practitioners to stop aspirin intake for seven to 10 days before any surgical procedure. The authors initiated this study to evaluate the effect of aspirin on bleeding in patients undergoing oral surgery.

Methods. The study group consisted of 39 patients who were scheduled to undergo dental extractions. All patients were receiving 100 milligrams of aspirin daily on a regular basis. The authors randomly divided the patients into two groups: those who stopped the aspirin therapy before the procedure and those who continued the aspirin therapy. One hour before the procedures, all patients underwent a bleeding time test. In addition, the amount of bleeding during the procedure was measured.

Results. The mean (± standard deviation) bleeding time was 1.8 ± 0.47 minutes for patients who stopped aspirin therapy one week before the procedure. For patients who continued aspirin therapy, the bleeding time was 3.1 ± 0.65 minutes. The difference was statistically significant (P = .004). However, both groups were within the normal bleeding time range, and in both groups, a local hemostatic method was sufficient to control bleeding. No episodes of uncontrolled intraoperative or postoperative bleeding were noted.

Conclusion. Low-dose aspirin therapy should not be stopped before oral surgery. Local hemostasis is sufficient to control bleeding.

Clinical Implications. Patients receiving aspirin therapy to prevent blood clot formation may be subject to emboli formation if the treatment is stopped. The results of this study show that aspirin therapy should be continued throughout oral surgical procedures. Local measures are sufficient to control any bleeding during surgery.

Because of the risk of uncontrolled intraoperative or postoperative bleeding, patients receiving long-term aspirin therapy have been asked to discontinue use of the drug for seven to 10 days before surgery.[1-3] However, no double-blind controlled studies support this practice, particularly for oral surgery. Because continuous low-dose aspirin regimens have become popular in the last decade for treating cardiovascular and peripheral vascular diseases,[4,5] patients are reluctant to stop their regular therapy before undergoing surgical procedures. Moreover, interruption of aspirin therapy may expose these patients to the risk of developing thromboembolism, myocardial infarction or cerebrovascular accident.[6]

We initiated this study to measure the effect of low-dose aspirin therapy on intraoperative and postoperative bleeding in patients undergoing oral surgery. In addition, we compared the relationship between clinical hemorrhagic complications and the tested bleeding time.

PATIENTS AND METHODS

The study group was composed of 39 patients with

TABLE 1

INDICATIONS FOR RECEIVING LOW-DOSE ASPIRIN THERAPY.

INDICATION	NO. OF PATIENTS	
	Test Group (n = 19)	Control Group (n = 20)
After Myocardial Infarction	7	5
Angina Pectoris	1	3
After Cerebrovascular Accident	4	6
After Coronary Arterial Bypass Graft Surgery	3	3
Deep Vein Thrombosis	3	3
Atrial Fibrillation	1	0

a mean age (± standard deviation) of 62 ± 13.2 years and an age range of 39 to 89 years. The group included 15 women (mean age, 64 ± 13.2 years) and 24 men (mean age, 60 ± 13.1 years) who were scheduled to undergo dental extractions. All patients were receiving 100 milligrams of aspirin per day on a long-term basis as a secondary preventive drug for cardiovascular or peripheral vascular diseases.

We randomly divided the patients into an experimental group (19 patients) and a control group (20 patients). Patients in the experimental group continued to receive aspirin therapy, while patients in the control group stopped aspirin therapy seven days before their extraction and did not resume treatment until the day after the surgical procedure. As shown in Table 1, patients in both groups were similar in regard to the indications for aspirin therapy. Anemic patients (that is, those with hemoglobin counts of less than 100 grams per liter) and patients receiving sodium warfarin therapy or other anticoagulant therapy were excluded from the study. The study was approved by the Institutional Helsinki Committee and informed consent was obtained from all patients.

The patient groups did not differ in the complexity of the operative procedures, and the severity of intraoperative hemorrhage did not differ significantly between the groups.

One of us (B.B.) performed a bleeding time test in the Hematology Outpatient Clinic, Rambam Medical Center, Haifa, Israel, one hour before patients underwent their surgical procedures. The technique, described elsewhere,[7] included making three vertical incisions on the forearm skin with venostasis of 40 millimeters of mercury.

The surgical procedures were divided into three categories:

- simple extractions included removing one tooth without raising a mucoperiosteal flap or without alveoplasty;
- compound procedures included extraction of a few teeth without raising a mucoperiosteal flap and with only minor alveoplasty;
- complex surgical procedures involved raising the mucoperiosteal flap and removing large amounts of bone before performing the extraction.

Before the procedure, all patients received a local anesthetic (3 percent mepivacaine).

Intraoperative bleeding was measured by subtracting the volume of irrigation fluid from the volume of blood accumulated in the suction trap. Blood loss of less than 20 milliliters was considered mild; between 20 and 50 mL, moderate; and more than 50 mL, severe.

We used Pearson's χ^2 test to evaluate the relative frequencies of patients in different groups. Differences of parametric variables were tested with analysis of variance.

RESULTS

The mean (± SD) bleeding time was 1.8 ± 0.47 minutes in patients who discontinued low-dose aspirin therapy one week before oral surgery; by

TABLE 2

PATIENTS WITH SEVERE INTRAOPERATIVE BLEEDING.

PROCEDURE	TEST GROUP (n = 19)*		CONTROL GROUP (n = 20)†	
	No. of Patients	Severe Intraoperative Bleeding No. (%) of Patients	No. of Patients	Severe Intraoperative Bleeding No. (%) of Patients
Simple Extraction	12	1 (8)	9	0 (0)
Compound Procedure	5	1 (20)	7	1 (14)
Complex Surgical Procedure	2	2 (100)	4	1 (25)

* Aspirin therapy continued.
† Aspirin therapy stopped.

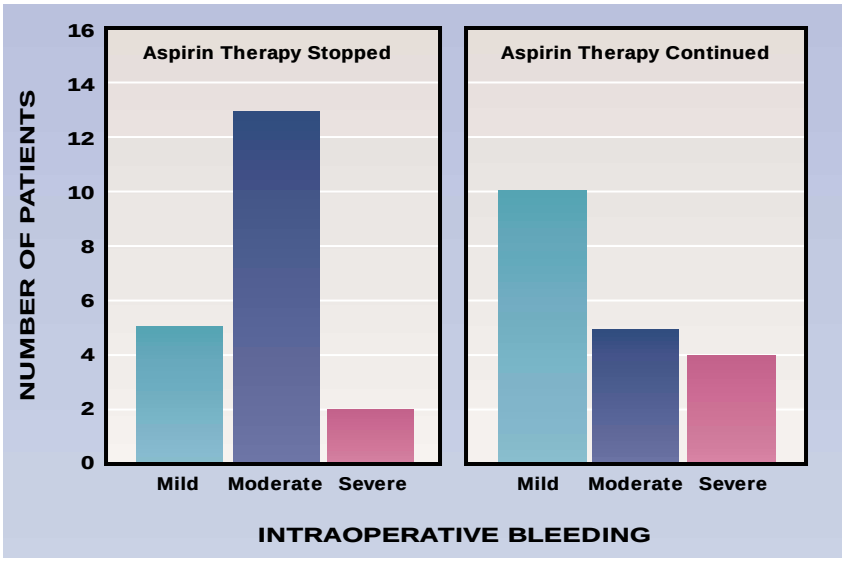

Figure. Frequency and severity of intraoperative bleeding in dental patients.

comparison, patients who continued aspirin therapy throughout the study period had a bleeding time of 3.1 ± 0.65 minutes. This difference is statistically significant ($P = .004$), but both groups of patients were still within the normal bleeding time range: 1 to 4.5 minutes. In both groups of patients, the bleeding emanated from the mucosa and the bone.

Table 2 shows the types of surgical procedures and the occurrence of severe intraoperative bleeding. The patient groups did not differ in the complexity of the operative procedures, and the severity of intraoperative hemorrhage did not differ significantly between the groups. However, the numbers of patients with mild, moderate or severe intraoperative bleeding, as depicted in the figure, differed significantly between the two groups ($P < .05$). In both groups, more intraoperative bleeding was encountered when extractions were complicated.

In 33 (85 percent) of the 39 patients, intraoperative bleeding was controlled with suturing, and local hemostasis was achieved with direct packing with gauze. In four patients from the test group and two from the control group (one patient underwent simple extraction, two patients underwent a compound procedure and three patients underwent complex surgical procedures), 10 percent tranexamic acid, an antifibrolytic agent that stabilizes the blood clot by inhibiting plasmin, was added to the local packing, which stopped the oozing from the extraction site. Application of oxidized cellulose, a potent local hemostatic agent, was not required and transfusions were not necessary for any of the patients. No episodes of uncontrolled

Dr. Ardekian is a senior surgeon, Department of Oral and Maxillofacial Surgery, Rambam Medical Center, Haifa, Israel, and the Rappaport Faculty of Medicine, Technion, Haifa. Address reprint requests to Dr. Ardekian, Rambam Medical Center, Haifa 35254, Israel.

Dr. Peled is the deputy head, Department of Oral and Maxillofacial Surgery, Rambam Medical Center, Haifa, Israel, and the Rappaport Faculty of Medicine, Technion, Haifa.

Dr. Laufer is a professor, Department of Oral and Maxillofacial Surgery, Rambam Medical Center, Haifa, Israel, and the Rappaport Faculty of Medicine, Technion, Haifa.

postoperative bleeding or other complications were reported during the week after surgery.

DISCUSSION

Until the early 1980s, aspirin was used as an anti-inflammatory, analgesic and antipyretic drug for short periods only. The major side effects of aspirin—namely, gastrointestinal irritation and ulcers; tendency to develop gingival, nasal and intestinal hemorrhage; and asthmalike attacks in asthmatic patients—limited administration of the drug to short periods (from two to five days).[8]

Studies conducted since the early 1980s have shown that the antiplatelet effect is elicited at low doses—of about 0.5 to 1.0 mg per kilogram per day—while the analgesic and antipyretic effects occur only at a daily dosage of 5 to 10 mg/kg, and the anti-inflammatory effect is achieved at a dosage of more than 30 mg/kg/day.[9] Thus, low doses of aspirin are sufficient for achieving anticoagulation with reduced side effects. Therefore, within the last decade we have seen a rapid increase in the use of low-dose aspirin as a secondary preventive drug by patients who have cardiovascular and peripheral vascular diseases.[10] The increasing popularity of aspirin, either alone or in combination with other drugs, has presented physicians and dentists with the dilemma of whether to advise patients to discontinue aspirin therapy before surgical procedures are performed.

Controversy exists in the literature regarding this issue. Many studies[11,12] have advocated stopping aspirin therapy seven to 10 days before elective surgery.[1] Conversely, other researchers have suggested that aspirin therapy should be continued regardless of the surgical procedure.[13,14]

Lawrence and colleagues[14] recommended the continuation of aspirin therapy before elective dermatologic surgery if the patient's bleeding time was within normal limits. They found that bleeding time was prolonged in six (37.5 percent) of 16 patients receiving aspirin therapy; however, all of these patients had been receiving high doses of aspirin. The results of our study showed that when patients received a low dose of aspirin (100 mg), their bleeding time remained, without exception, within normal limits.

On the other hand, Scher[2] advocated stopping aspirin therapy before any surgical procedure performed on a nonemergency basis. He found that diffuse postoperative bleeding was associated with preoperative use of aspirin. However, the patients in his study were also receiving a high dose of aspirin.

Thomason and colleagues[15] described a patient receiving low-dose aspirin therapy whose platelet function was completely impaired, and required infusion of platelets to control hemorrhage after gingivectomy. These authors suggested that the rarity of such cases points to a considerable variability in the individual platelet response to the drug.

Our study demonstrated that dental extractions, even the more complex procedures, did not result in uncontrolled intraoperative or postoperative hemorrhage in patients receiving low-dose aspirin therapy on a long-term basis. No radical steps were needed to stop the bleeding in these patients, and in most cases suturing was the only hemostatic tool used. Furthermore, the results of all of the patients' bleeding time tests—the only reliable test for the activity of platelets[7,16]—were within the normal range, regardless of whether patients continued or discontinued aspirin therapy. Thus, it seems that there is no need to stop low-dose aspirin therapy in most patients, perhaps even in patients with anemia. Although we observed no complications in patients in whom aspirin therapy was temporarily stopped, such discontinuation may induce thrombogenesis.

CONCLUSION

In contrast to other studies, which involved high-dose aspirin therapy,[2,14] ours was a prospective study that examined the bleeding tendency of patients

receiving regular low-dose aspirin therapy. In light of our results in this preliminary, limited-size study, we suggest that there is no need to expose patients to the risk of thromboembolism, cerebrovascular accident or myocardial infarction before undergoing dental extractions. Consequently, they should continue to receive their daily dose of 100 mg of aspirin during the preoperative period. ■

At the time this study was conducted, Dr. Gaspar was the chief resident, Department of Oral and Maxillofacial Surgery, Rambam Medical Center, Haifa, Israel. He now is in private practice.

Dr. Brener is an associate professor and director, Thrombosis and Hemostasis Unit, Rambam Medical Center, Haifa, Israel, and the Rappaport Faculty of Medicine, Technion, Haifa.

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