Prospective evaluation of dermatologic surgery complications including patients on multiple antiplatelet and anticoagulant medications

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Background: Few prospective studies have evaluated the safety of dermatologic surgery.

Objective: We sought to determine rates of bleeding, infection, flap and graft necrosis, and dehiscence in outpatient dermatologic surgery, and to examine their relationship to type of repair, anatomic location of repair, antibiotic use, antiplatelet use, or anticoagulant use.

Methods: Patients presenting to University of Massachusetts Medical School Dermatology Clinic for surgery during a 15-month period were prospectively entered. Medications, procedures, and complications were recorded.

Results: Of the 1911 patients, 38% were on one anticoagulant or antiplatelet medication, and 8.0% were on two or more. Risk of hemorrhage was 0.89%. Complex repair (odds ratio [OR] = 5.80), graft repair (OR = 7.58), flap repair (OR = 11.93), and partial repair (OR = 43.13) were more likely to result in bleeding than intermediate repair. Patients on both clopidogrel and warfarin were 40 times more likely to have bleeding complications than all others ($P = .03$). Risk of infection was 1.3%, but was greater than 3% on the genitalia, scalp, back, and leg. Partial flap necrosis occurred in 1.7% of flaps, and partial graft necrosis occurred in 8.6% of grafts. Partial graft necrosis occurred in 20% of grafts on the scalp and 10% of grafts on the nose. All complications resolved without sequelae.

Limitations: The study was limited to one academic dermatology practice.

Conclusion: The rate of complications in dermatologic surgery is low, even when multiple oral anticoagulant and antiplatelet medications are continued, and prophylactic antibiotics are not used. Closure type and use of warfarin or clopidogrel increase bleeding risk. However, these medications should be continued to avoid adverse thrombotic events. (J Am Acad Dermatol 2011;65:576-83.)

Key words: antibiotic prophylaxis; anticoagulant agents; antiplatelet agents; blood thinners; flaps; grafts; surgical complications; surgical infection; wound dehiscence.

The rate of outpatient cutaneous surgery continues to increase.[1] Dermatologists now perform approximately 3.9 million procedures per year, most commonly skin cancer surgery.[2,3] Perceived risks associated with outpatient surgery

Abbreviations used:

MMS:	Mohs micrographic surgery
NSAID:	nonsteroidal anti-inflammatory drug
OR:	odds ratio

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have prompted state medical boards and governments to draft legislation regulating office-based surgical procedures. At least 10 states have placed limits on outpatient surgery.[4-12]

The purpose of our study is to prospectively examine the safety of dermatologic surgery performed in an office-based setting. In 2003, Cook and Perone[5] prospectively examined dermatologic surgical complications in the office setting, and found an overall complication rate of 1.64% in 1343 cases, most of which involved minor difficulties with hemostasis. Our methods differ from this study in 3 important ways. Cook and Perone[5] limited the use of anticoagulant agents (inhibit thrombin formation and fibrin formation, ie, warfarin and heparin) and antiplatelet agents (block platelet activation and aggregation, ie, aspirin, nonsteroidal anti-inflammatory drugs [NSAIDs], clopidogrel, and vitamin E) preoperatively, whereas we did not. They also administered postoperative antibiotics for patients undergoing flap or graft repair, whereas we did not routinely prescribe antibiotics either prophylactically or postoperatively. Finally, patients in their study underwent surgery performed by one fellowship-trained dermatologic surgeon, whereas our study includes surgeries performed by 4 general dermatologists, two fellowship-trained Mohs micrographic surgery (MMS) attendings, and two MMS fellows. These differences allow further generalization of our results to current practice.

CAPSULE SUMMARY

- Concerns over the safety of outpatient cutaneous surgery continue to increase as more patients receiving anticoagulant or antiplatelet medications undergo surgery.
- Few studies have prospectively examined the rates of complications of dermatologic surgery, including hemorrhage, flap or graft necrosis, infection, and dehiscence.
- The risk of complications for patients undergoing cutaneous surgery is extremely low.
- Patients taking both warfarin and clopidogrel have a higher risk of bleeding. However, these medications should be continued to avoid the risk of adverse thrombotic events.

METHODS

Patients enrolled

Institutional review board approval was obtained March 12, 2006, from the Committee for the Protection of Human Subjects in Research at the University of Massachusetts Medical School. All patients presenting to the University of Massachusetts Medical School Dermatology Clinic (academic group practice) from March 15, 2006, to June 15, 2007, were eligible for the study. Patients undergoing MMS or scalpel-based excisional surgery requiring sutures were included. MMS patients were excluded from the study if they had surgical repair by another specialist. Patients undergoing punch biopsies, electrodessication and curettage, shave biopsies, and shave excisions were not included in the study. During the study period, 4 attending general dermatologists, two attending fellowship-trained Mohs surgeons, and two MMS fellows enrolled patients in the study.

Study procedure

Before surgery, the following data were collected on a questionnaire: whether or not the patient was on one or more immunosuppressant medications, whether or not the patient had a pacemaker or defibrillator, and whether or not the patient was on one or more oral anticoagulant or antiplatelet medications, the list of which included aspirin, other NSAIDs, warfarin (Coumadin), clopidogrel (Plavix), and vitamin E. Anatomic site of surgery and type of closure for each case was recorded.

At the time of surgery, presence or absence of a pacemaker/defibrillator event, anesthetic complication, and vasovagal reaction/syncope was recorded. After surgery, all patients were told to contact the MMS fellow directly if they experienced any problems. After surgery, the presence or absence of the following complications were collected by the physician: perioperative hemorrhage (<24 hours from surgery), postoperative hemorrhage (>24 hours after surgery), hematoma formation, infection (confirmed by culture and treated with antibiotics), dehiscence, flap or graft necrosis (if present, corresponding percent necrosis was also recorded), and anatomic alteration (ectropion, eclabion, alar retraction, helical rim distortion, or eyebrow distortion). These events were recorded at the time of occurrence (before suture removal, at suture removal, or after suture removal). Patients who did not return for suture removal were contacted by phone. The physicians performing these patients' suture removals were also contacted by phone. No absorbable epidermal sutures were used during the study duration. All patients enrolled in the study were entered into a database. Follow-up information was obtained by the investigators.