Hemorrhage Associated with Ophthalmic Procedures: Focus on Blepharoplasty

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PURPOSE OF RISK MANAGEMENT RECOMMENDATIONS
OMIC regularly analyzes its claims experience to determine loss prevention measures that our insured ophthalmologists can take to reduce the likelihood of professional liability lawsuits. OMIC policyholders are not required to implement these risk management recommendations. Rather, physicians should use their professional judgment in determining the applicability of a given recommendation to their particular patient and practice situation. These loss prevention documents may refer to clinical care guidelines such as the American Academy of Ophthalmology’s Preferred Practice Patterns, peer-reviewed articles, or to federal or state laws and regulations. However, our risk management recommendations do not constitute the standard of care nor do they provide legal advice. If legal advice is desired or needed, an attorney should be consulted. Information contained here is not intended to be a modification of the terms and conditions of the OMIC professional and limited office premises liability insurance policy. Please refer to the OMIC policy for these terms and conditions.

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Ophthalmologists routinely warn patients that ophthalmic surgery could result in infection, vision loss, and hemorrhage. OMIC claims data indicates that ophthalmologists who do not properly screen patients for bleeding risks and manage hemorrhage when it occurs often face malpractice lawsuits. An OMIC closed case study of hemorrhage following blepharoplasty that resulted in a large settlement is presented to highlight errors in management that led to blindness and a subsequent lawsuit. This case and others from the OMIC files form the basis for the risk management recommendations that follow. Suggestions on how to screen patients who may be at increased risk for hemorrhage during and after ophthalmic procedures, how to monitor for signs and symptoms of hemorrhage, and how to begin to manage an orbit compartment syndrome follow the case presentation. Many other aspects of the prevention and management of hemorrhage deserve attention; the few discussed here have figured most prominently in malpractice cases.
Part 1: Blepharoplasty Case Summary

A middle-aged man presented for functional bilateral upper blepharoplasty. He had no history of bleeding problems, and had recently undergone surgical repair of a hernia without incident. While he reported occasional episodes of elevated blood pressure, he had never been treated for hypertension; his pressure in the office was 140/84. His platelet count was normal; however, a platelet function study routinely ordered by the ambulatory surgery center on the day of surgery was elevated. No abnormal bleeding was noted during the procedure, nor upon admission to the post-anesthesia care unit. There the patient’s blood pressure began to rise, and he was treated with antihypertensive medications. About an hour after the first rise in pressure, the nurse notified the ophthalmologist that the left upper eyelid was bleeding briskly, and couldn’t be closed. The surgeon was operating on another patient, so he instructed the nurse to apply ice and pressure. An hour and a half later when he could leave the operating room, the ophthalmologist examined the patient and noted that the bleeding appeared to have stopped. He felt that orbital bleeding and optic nerve compression needed to be ruled out, however, and ordered a stat CT, which revealed a left-sided hematoma, displaced globe, and stretched optic nerve. The ophthalmologist continued with additional surgery cases and did not review the report until four and a half-hours after the bleeding started; when he then reexamined the patient, the globe was tense and proptosis was noted. He ordered Mannitol and prepared to take the patient to the operating room for a lateral canthotomy to decompress the globe and relieve the pressure. The hospital had trouble assembling a team, so the surgery was not performed for another two hours. The patient ended up NLP and sued, alleging negligent preoperative evaluation of an abnormal clotting study, and negligent management of an orbit compartment syndrome. A hematology review concluded that the patient had no clotting abnormalities. The experts on both sides felt the poor outcome was due to the ophthalmologist’s failure to recognize and emergently treat the orbital compartment syndrome. The case settled for $800,000.¹

Part 2: Assessment of Hemorrhage Risk

PREOPERATIVE ASSESSMENT

The primary purpose of the preoperative assessment is to determine if the chosen procedure and anesthesia are safe and appropriate for the patient, and to help anticipate potential complications related to ophthalmic or medical comorbidities. The assessment is conducted by performing a history and physical examination. During the evaluation, pay particular attention to bleeding disorders, medication history (especially systemic anticoagulants), use of food supplements and vitamins (e.g., ginkgo biloba, high doses of Vitamin E), cerebrovascular disease, history of atrial fibrillation, presence of prosthetic heart valves or cardiac stents, peripheral vascular disease, and hypertension.

¹ This case was featured in OMIC’s audiocourse, “Lessons Learned From Trials and Settlements of 2006.” OMIC policyholders may contact Linda Nakamura at 1.800.562-6642, extension 652, to order a copy at no charge.
**Bleeding history**
Query patients about any personal or family history of easy bleeding or bruising, especially bleeding problems associated with prior surgical and dental procedures. Examine those with a positive history for evidence of ecchymoses, petechiae, and purpura. Consider referring patients with a positive history or exam to their primary care physician for an evaluation. At times, it may be necessary prior to surgery to ask other specialists to evaluate the patient or to provide recommendations on perioperative management.

**Medication history**
Numerous prescription and over-the-counter drugs, as well as vitamins and food and herbal supplements, can affect the patient’s tendency to bleed during surgery. Therefore, ask the patient to provide a complete list of all drugs and supplements for review during the planning stage.

**Anticoagulants: Perioperative Ocular and Systemic Risks**
Ophthalmologists often call OMIC’s Risk Management Hotline to ask whether they should continue or stop anticoagulant therapy, and for appropriate timeframes for discontinuing and restarting these medications. There is no simple answer to these questions, but factors to consider include the reason the patient is taking anticoagulants (i.e., the medical history) and the nature of the procedure being contemplated (e.g., pre-versus post-septal surgery). Some ophthalmologists routinely perform cataract surgery on healthy adults taking anticoagulants for prophylactic reasons without stopping these medications, as long as neither retrobulbar nor peribulbar anesthesia is planned.\(^2\) Many surgeons do discontinue them, however, before procedures with a high risk of hemorrhage, such as eyelid, orbit, and retinal surgery.\(^3\)

Ophthalmologists are used to asking patients if they are taking anticoagulant drugs such as warfarin (Coumadin) and heparin that interrupt the clotting cascade and are prescribed to treat atrial fibrillation, prosthetic heart valves, and deep-vein thrombosis (DVT). Patients are more likely, however, to be on platelet-inhibiting anticoagulants since many of these—aspirin, nonsteroidal anti-inflammatory agents (NSAIDs), vitamin E, ginkgo biloba—are available over-the-counter. Thienopyridine agents such as clopidogrel (Plavix) and ticlopidine (Ticlid) are also platelet inhibitors.

Regardless of the mechanism of action, continued use of these anticoagulant medications during the perioperative period increases the risk for hemorrhage, which can be vision-threatening. This risk must be weighed, however, against “the significant systemic risks of transient ischemic attack (TIA), cerebrovascular accident (CVA), myocardial infarction (MI), recurrent DVT, pulmonary embolus, and failure of coronary


or peripheral bypass grafts." According to the American Academy of Ophthalmology’s *Basic and Clinical Science Course*, “the management of anticoagulation in the perioperative setting must be individualized because the risk of thrombosis and the strength of the indication for anticoagulation vary greatly. As no single regimen satisfies all patient needs, consultation with an internist, family practitioner, or hematologist is advisable.”

This consultation recommendation is echoed in a recent Science Advisory from five professional groups including the American Heart Association and the American College of Surgeons. The Advisory cautioned that stopping antiplatelet therapy in patients with coronary artery stents could result in myocardial infarction or death. Healthcare providers contemplating invasive or surgical procedures are, therefore, advised to consider postponing elective procedures with a significant risk of perioperative or postoperative bleeding until patients have completed an appropriate course of thienopyridine agents (12 months after drug-eluding stent implantation if they are not at high risk of bleeding, and a minimum of 1 month for bare-metal stent implantation). The best course of action is to first contact the patient’s cardiologist to discuss the optimal patient management strategy.

**Anticoagulants: Time Frame for Discontinuing**

Consultation with the physician who prescribed the anticoagulant medication is prudent to assure that it is safe to discontinue it during the perioperative period. The following general information may be of use during the planning phase, but may not be sufficiently detailed to direct treatment decisions.

- **Warfarin (Coumadin)** interrupts the clotting cascade. It is usually discontinued 5 days before elective surgery. The international normalized ratio or INR is used to monitor the dose. Developed to adjust for intra- and interlaboratory variation in results of the prothrombin time (PT), the target therapeutic dose for the INR ranges from 2.0 to 3.5. Some patients at high risk for thromboembolic events cannot afford to be below the therapeutic range of anticoagulation for more than a few hours. They usually need bridge therapy with heparin to reduce the risk.

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• **IV heparin** is usually discontinued approximately 12 hours before surgery. The partial thromboplastin time (PTT) is most commonly used to monitor intravenous heparin therapy.

• **Enoxaparin sodium (Lovenox)** is a low-molecular weight heparin (LMWH) that is administered subcutaneously. It is usually discontinued 12-24 hours prior to surgery. The PTT is not useful for monitoring therapeutic levels of Lovenox, which complicates efforts to determine when it is safe to proceed with surgery. As enoxaparin can cause thrombocytopenia, verify that platelet levels are adequate before surgery. Do not exchange enoxaparin for heparin or other LMWHs. Consultation with the prescribing physician or pharmacist may be necessary.

• **Platelet inhibitors**
  - **Aspirin** irreversibly inhibits platelet function. It is usually stopped 14 days before elective surgery, but some primary care physicians may recommend a shorter time interval, such as 7 days. It usually takes approximately 8 days for platelet function to entirely normalize after aspirin administration, but some function may return earlier. Minor bleeding may occur at platelet counts below 50,000/µL. Abnormal bleeding at higher platelet counts suggests abnormal platelet function. Below 20,000/µL, spontaneous bleeding may occur and be serious.
  - **NSAIDs** are reversible platelet inhibitors; they are usually stopped 24-72 hours before surgery.
  - **Other drugs that affect platelet function**, such as sulfinpyrazone, dipyridamole, tricyclic antidepressants, phenothiazines, furosemide, and steroids, disturb platelet function for only 24-48 hours; they are usually stopped two days before surgery.
  - **Thienopyridine** agents, such as chloroprophyl (Plavix) and ticlopidine (Ticlid), are often prescribed after the placement of coronary artery stents. As

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noted above, a recent Scientific Advisory cautions about the serious adverse effects of prematurely discontinuing this therapy. Ask the cardiologist or prescribing physician for advice on whether it is safe to stop the medication, and when this should be done. If this medication must be discontinued in patients with coronary artery stents, the Scientific Advisory also recommends that aspirin therapy be continued if at all possible in order to mitigate the risk of late stent thrombosis, and that thienopyridine be restarted as soon as possible after surgery. Some ophthalmologists may feel that the ongoing use of aspirin puts the patient at too high a risk of hemorrhage, and not feel comfortable proceeding with surgery. Carefully document the decision-making process, consultations, and patient education.

- **Herbal supplements and vitamins** have varied mechanisms of action and duration of effect. Consult with the prescribing physician or a pharmacist to determine when to stop.

**Anticoagulants: Time Frame for Restarting**

Although recommendations on when to reinitiate anticoagulant therapy can be found in sources such as the *Basic and Clinical Science Course or Physician’s Drug Reference*, it is often hard to know when it is truly safe to reinstate them. Ophthalmologists have anecdotally reported instances of brisk hemorrhage much later than expected once the patient begins to take anticoagulants again. One of the factors to consider is how long it takes for the medication to reach a therapeutic level, and it may be helpful to consult a pharmacist for this information. Instruct patients to carefully monitor for symptoms of hemorrhage once they restart medications, and provide current contact information. If another physician is covering for you, inform him or her of any patients restarting anticoagulant therapy.

**Hypertension**

Hemorrhage is the most significant sight-threatening complication of any eyelid procedure, and uncontrolled hypertension greatly increases this risk. Even in healthy patients, blood pressure may suddenly spike to high levels during surgery. Such spikes would go unnoticed if the pressure were not monitored. Another serious result of uncontrolled hypertension is a cardiac event or stroke. For these reasons, question patients about a history of hypertension, and take their blood pressure during the preoperative assessment. Normal blood pressure is less than 120/80, according to guidelines published in 2003 by the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure. Take the blood pressure twice, with readings 5 minutes apart while sitting in a chair. Confirm elevated readings in the contralateral arm.


The National Guidelines provide diagnostic and treatment recommendations for those whose blood pressure exceeds 120/80; consider referring such patients to their primary care physician for an evaluation. Patients with pressures between 120-139 systolic or 80-89 diastolic are considered to have pre-hypertension, and are advised to adopt healthy lifestyles to decrease their pressure and prevent progression to hypertension. Those with hypertension who cannot be controlled with lifestyle modification alone are treated with medication. The majority of patients require two medications to reach their therapeutic goal, which is defined as <140/90 mm Hg for most patients, and < 130/80 for patients with diabetes or chronic kidney disease.

**Location of the surgery and type of anesthesia sedation**

The condition of the patient, risks of the procedure, and need for sedation and/or anesthesia help determine whether to perform the surgery in the office, ambulatory surgery center (ASC), or hospital, and what type of monitoring the patient will need during the perioperative period. The following information is excerpted from OMIC’s “Office-Based Surgery for Adults.” Please consult it for a more detailed discussion of these issues.19

The American Society of Anesthesiologists (ASA) has a **Physical Status Classification System** that assigns a category after the physician completes a history and physical examination.20 Based upon our claims experience, OMIC recommends that office-based procedures with a risk of serious complications be limited to adult patients with ASA P1 or P2. Treat ASA P3 patients in either an ASC or hospital, depending upon the severity and extent of their medical problems. Consult with anesthesia and primary care providers as needed to determine the safest location for the patient.

- **P1**: Normal, healthy patient
- **P2**: Mild systemic disease
- **P3**: Severe systemic disease
- **P4**: Severe systemic disease that is a constant threat to life
- **P5**: A moribund patient who is not expected to survive without the operation
- **P6**: A declared brain-dead patient whose organs are being removed for donor purposes

The ASA has also defined **levels of sedation/analgesia**.21 To promote patient safety and reduce liability exposure, provide only minimal sedation/anesthesia in an office setting. It is not always possible to predict how a specific patient will respond to sedative and analgesic medications. The ASA notes that patients receiving moderate sedation are at risk for slipping into deep sedation, where the ability to maintain ventilatory

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function may be impaired. Patients may require assistance in maintaining a patent airway, and spontaneous ventilation may be inadequate. Most ophthalmic personnel lack the skill, training, and licensure to monitor and rescue patients receiving moderate sedation. Moreover, office surgical suites are rarely adequately equipped to monitor and rescue these patients.

- **Minimal sedation ("anxiolysis")** is defined as “a drug-induced state during which patients respond normally to verbal commands. Although cognitive function and coordination may be impaired, ventilatory and cardiovascular functions are unaffected.” Examples of minimal sedation for ADULTS includes peripheral nerve blocks, local or topical anesthesia and either 1) less than 50% N₂O or 2) a single, oral sedative or analgesic medication administered in doses appropriate for the unsupervised treatment of insomnia, anxiety, or pain.

- **Moderate ("conscious") sedation** is defined as a “drug-induced depression of consciousness during which patients cannot be easily aroused but respond purposefully to verbal commands, either alone or accompanied by light tactile stimulation.” NOTE: reflex withdrawal from a painful stimulus is NOT considered a purposeful response. No interventions are required to maintain a patient airway, and spontaneous ventilation is adequate. Cardiovascular function is usually maintained.

- **Deep sedation/analgesia** is a drug-induced depression of consciousness during which patients cannot be easily aroused but respond purposefully following repeated or painful stimulation. NOTE: reflex withdrawal from a painful stimulus is NOT considered a purposeful response. The ability to independently maintain ventilatory function may be impaired. Patients may require assistance in maintaining a patent airway, and spontaneous ventilation may be inadequate. Cardiovascular function is usually maintained.

**INFORMED CONSENT**

Patients undergo blepharoplasty and other types of oculoplastic surgery for therapeutic and cosmetic reasons. In both instances, the patient’s appearance may be impacted by the outcome. For this reason, conduct and document careful informed consent discussions that explicitly address the patient’s goals and preferences. Promptly address any unrealistic expectations. Take pre- and postoperative photographs. They are useful in pointing out features that the surgery won’t correct; similarly, as patients adjust to their altered appearance, they can be reminded of features present before surgery.

Discuss and document the risk of a blood clot, cardiopulmonary problems, and stroke if the patient is taking antiplatelet or anticoagulant medications that can be stopped temporarily. Give written instructions on how and when to stop the medications. Review the increased risk of bleeding, on the other hand, if medications will be continued. Take this increased bleeding risk into account when choosing the type of anesthesia, avoiding if possible retro- and peribulbar injections.

Communicate any pertinent medication history and perioperative plan to both the anesthesia provider and the perioperative team. When properly informed, the perioperative team can weigh in if needed on the choice of anesthesia, monitor for signs
of complications, and educate the patient. Address anticoagulant use in the documentation of the informed consent discussion, and in the preoperative orders (i.e., “Patient instructed to stop aspirin two weeks prior to surgery, and NSAIDs and all other antiplatelets 48 hours before surgery. Admitting nurse and CRNA, please verify with patient and document that these medications were stopped as ordered. Please page me if there are any concerns”).

Part 2: Monitoring for Hemorrhage

PREOPERATIVE VERIFICATION

Bleeding risk
Redundancy creates safety nets for patients. Verify personally that the patient has stopped all medications as instructed, and confirm that this important safety check has also been conducted and documented by both the admitting nurse and anesthesia provider. If the patient has not complied with instructions to stop the medications, determine if it is too dangerous to proceed; prioritize patient safety rather than the preferences and convenience of the patient, staff, or facility. If anticoagulants are continued, consider obtaining current coagulation studies. Ask the anesthesia provider to review them with you before anesthesia is administered. Date and initial the lab report, and document any pertinent discussions with the patient or anesthesia provider.

Hypertension
Measure the patient’s blood pressure before administering any anesthesia. Reevaluate the decision to perform the procedure if the preoperative blood pressure is elevated. To eliminate cancellation due to the “white coat syndrome,” allow patients five minutes in a quiet room, then retake the blood pressure. If the blood pressure is > 200 mm Hg systolic or 110 mm Hg diastolic, cancel surgery and send the patient for treatment. Arrange for and document the referral. If the blood pressure is between 160 and 200 mm Hg systolic or 90 and 109 mm Hg diastolic, consider postponing elective surgery. If the surgery is urgent or emergent, or if the patient has traveled a long distance, consider admission to a hospital so that you can stabilize and/or treat the medical problem(s). Once the patient’s condition is optimized to the extent possible, perform the surgery under the direct supervision of a medical team and an anesthesiologist.

PERIOPERATIVE MONITORING
If an anesthesia provider is present, he or she will take responsibility for patient monitoring and follow the recommendations of the ASA. If the procedure is performed in the office, or no anesthesia provider is present, see “Office-based Surgery for Adults” for additional advice on who can monitor the patient and emergency equipment and response. Monitor and document pulse and blood pressure before, during, and after the procedure. Carefully document any care given in response to changes in blood pressure readings or the clinical situation. Patients with a history of hypertension or patients who present with an elevated blood pressure on no therapy may have an exaggerated blood pressure response to any noxious stimuli (i.e., pain with injection, epinephrine in the injection, and pain in surgery due to incomplete or ineffective local

anesthesia). Other painful stimuli such as bladder distention can also produce an abnormal blood pressure response. Sedation will not eliminate this blood pressure response, so find an alternative therapy if increased blood pressure needs to be treated.

Consider using a pulse oximeter to measure oxygen saturation for more complicated procedures or for patients at higher risk (e.g., patients receiving sedation, procedures that require extensive dissection or last longer than 30 minutes). In your postoperative orders, direct the nurse monitoring the patient to check for signs of bleeding and to immediately notify you of increasing bruising or swelling. If signs of bleeding are present, instruct the nurse to consult with you prior to discharging the patient from the post-anesthesia recovery unit.

Use written discharge criteria (e.g., oriented, stable vital signs that have returned to preoperative levels, minimal nausea and/or dizziness, absence of active bleeding or of increasing signs of swelling or bruising, resumption of pre-procedure mobility, etc.) to determine whether it is safe to discharge the patient. Instruct patients and their adult caregiver on the symptoms of bleeding as well as other complications, and provide precise written instructions on what to do if bleeding is suspected by the patient, family, or caregiver, how and when to contact the surgeon, how and when to resume anticoagulant/antiplatelet medications, and the date of the first postoperative visit. Finally, tell the patient and caregiver what to do if bleeding or other sight-threatening complications are noted and you or the physician covering for you can’t be reached.

**Part 3: Management of Hemorrhage**

A vision-threatening hemorrhage may occur despite careful preoperative planning and preparation, excellent technical execution of the surgical procedure, treatment of hypertension prior to, during, or after surgery, and appropriate application of ice to the wound early in the postoperative period. Prompt intervention and appropriate attention to management can prevent unnecessary visual loss in most cases. The key to management is early diagnosis, prompt evaluation by a surgeon capable of treating the emergency, and precise and timely intervention to relieve pressure building within the orbit. In most instances, there is little time between the onset of symptoms and irreversible visual loss. As noted above, educate the patient, family, and healthcare team on how to recognize bleeding, and the importance of contacting you immediately if it occurs rather than waiting for normal business hours.

Ensure that a physician who is very familiar with blepharoplasty complications, especially with recognizing and treating an orbit compartment syndrome caused by post-blepharoplasty hemorrhage, manages the patient; in most cases, as the surgeon who performed the surgery, you will take the call and direct the intervention. Ask only a colleague who has equivalent knowledge and skill to provide coverage for you if you will be out of town during the acute postoperative period. Avoid delegating this responsibility to a colleague who is unfamiliar with, or uncomfortable with, managing orbital bleeding complications.

**INITIAL EVALUATION OF REPORT OF BLEEDING**
In any report of bleeding, ask for and document the following information:

- Time and onset of bleeding/swelling
- Presence or absence of active bleeding from the wound
- Presence or absence of pain
- Vision, with specific instructions as to how the vision is to be checked (non-involved eye occluded)
- Ability or inability to open the lids voluntarily as well as forcefully

Ask your nurse or trained ophthalmic technician who fields calls during office hours to ask these questions, document the responses, and immediately notify you of all reports of bleeding problems. If called by a hospital nurse or ER physician, direct the conversation by asking these questions, and document the responses. Do not rely solely on ER physicians and nurses to evaluate a patient and report findings. In all cases, note the date and time of the call, what particular questions were asked of the patient/caregiver/healthcare team member, and the responses.

WHEN TO EVALUATE THE PATIENT IN PERSON

Once contacted by the patient or a healthcare team member, determine immediately whether to treat the patient by telephone or evaluate the patient in person, and document your decision-making process. Have a low threshold for directing the patient to come in for examination, or for seeing the patient in the post-anesthesia recovery or emergency room. Err on the side of examining the patient, regardless of the hour, if there is any question as to what is going on. If suspicion is high enough to ask the patient to come in, it is sufficiently high for the surgeon to go to the hospital to examine the patient.

Some patients resist the advice of the surgeon to come in for examination. Remain firm and give and document specific advice regarding the need for an in-person examination. Ask to speak to a family member if present, as well as to the patient if contacted by a family member. If the patient or caregiver refuses to come in, explain that the patient may rapidly lose vision, and document the refusal to come in. Document the time the call was received and the decision was made, as well as the advice to come in for examination in the medical record. During office hours, the patient can be seen in the office. After normal business hours, consider meeting the patient in the emergency room where appropriate care can be delivered.

MANAGEMENT OF AN EVOLVING ORBIT COMPARTMENT SYNDROME

An orbit compartment syndrome is a vision-threatening emergency that requires prompt action. If for any reason you are not immediately available to manage the patient (e.g., you are operating on another patient), notify the nurse or ER physician that an ophthalmologist competent at treating orbit compartment syndrome is required, being sure to convey the urgency of the situation. Document this conversation at the earliest opportunity, noting the time of the discussion and pertinent details.

The following recommendations are culled from the reviews of defense and plaintiff expert witnesses who were called upon to evaluate the care provided by OMIC.
policyholders. They are offered as possible responses. It may not be necessary to
initiate all of these actions to stabilize the patient’s condition.

Examine the eye, and note and record the vision, pupillary responses, and ocular
motility before initiating treatment. Look for an afferent pupillary defect (APD), and recall
that asymmetric pupils early after surgery may be due to the effect of residual
epinephrine.

Immediately open the wound at the bedside to relieve pressure. Intravenous (IV)
sedation may be necessary but is usually not needed. Moreover, administration of local
anesthesia adds to swelling and usually does not give sufficient pain relief to justify the
injection. Use the gloved finger or a blunt sterile instrument to remove superficial clots in
the wound. Do not probe deeply as this usually only causes more bleeding. Both upper
and lower eyelid wounds may need to be opened. If the lower eyelid was tightened at
the outer canthus at the time of surgery, release the suture if it can be found. This may
require a small injection of local anesthetic at the outer canthus.

Establish IV access. Order intravenous corticosteroid treatment within minutes of
opening the wound. Decadron in a 6 or 8 mg bolus is sufficient in most adult patients
(even those with diabetes and hypertension). One or two doses are easily tolerated by
all but the most ill patients (ill patients are unlikely to have had elective blepharoplasty
surgery). Avoid intravenous Mannitol as it has no role in managing a patient with an
acute orbit compartment syndrome caused by hemorrhage.

Check the patient’s vital signs and treat hypertension if it exists. Once pressure is
relieved, (pain-induced) hypertension may subside. Sedation may be more useful than
antihypertensive drugs in this situation. Both may be required, however. Refrain from
over-treating hypertension in elderly patients as subsequent hypotension may
compromise cerebral circulation and lead to a stroke.

Re-examine the patient. Monitor orbital compliance, vision, pupillary responses, and
ocular motility to determine if additional measures are necessary. Treat ongoing
hemorrhage. Evacuating a clot and opening the wound may be all that is necessary in
some orbital hemorrhages.

Perform canthotomy at the bedside if the orbit does not soften and vision does not
improve almost immediately following opening of the wound. Local anesthesia and
intravenous sedation may be necessary. Do not wait to get the patient to surgery before
performing this vision-saving procedure at the bedside if the orbital pressure is high and
there has been little or no response to opening the wound. Canthotomy and cantholysis
are the best means for reducing orbital pressure in the hemorrhagic orbit compartment
syndrome. By severing the attachments of the orbital diaphragm at the outer canthus,
the orbit soft tissues can decompress anteriorly, and fresh blood deep in the orbit can
escape. The canthotomy and cantholysis must be generous and include both the
superior and inferior crus of the canthal tendon. These structures may be difficult to
visualize but can be “felt” by the surgeon as the tendons are divided if each crus is grasped with forceps prior to making the cut.

**Re-examine the patient.** Check vision, orbital compliance, pupillary response, ocular motility, and degree of bleeding to determine if the patient needs to be taken to the operating room for additional treatment at this time. The decision will depend upon the patient’s response to therapy up to this point. If more treatment is needed, consider the following additional options.

**Explore the wound in the operating room.** Control bleeding, evacuate clots, perform bony decompression (this is rarely required if a thorough canthotomy and cantholysis have been accomplished at the bedside). Place drains to allow egress of blood from the orbit.

**Consult with an oculoplastic or orbital surgeon.** Do not delay the treatment described above while waiting for consultation unless the vision is stable, there is no afferent pupillary defect, and ocular motility is reasonably good. Oculoplastic or orbital surgeons are generally going to be more helpful in the reconstructive setting than the acute setting. Remember that time is of the essence in treating the post-hemorrhagic orbit compartment syndrome.

**Wait until after the acute management phase to decide whether to obtain imaging studies,** such as CT or MRI. Precious time may be wasted ordering and obtaining the scan. Since the cause of the visual compromise is obvious, imaging is not needed to direct management. Moreover, the location of blood clots and bleeding sites are almost never identified on scans. Imaging following acute management may be useful in rare instances by allowing the surgeon to visualize anatomic relations, drains, etc., and by helping to document the absence of bleeding in the deep orbit, which is almost never the cause of visual loss in blepharoplasty cases.

**Avoid management techniques that have not proved useful.** Anterior chamber paracentesis will not relieve orbital pressure and only increases the risk of visual loss. As noted above, IV Mannitol has no role in managing an orbit compartment syndrome. Monitoring of IOP is not contraindicated, but is rarely useful in guiding therapy. Most importantly, do not base the decision to perform canthotomy or cantholysis or administer steroids on IOP measurements alone. Vision, pupillary response, ocular motility, and orbital compliance (how “tight” is the orbit?) are far more useful clinical parameters to follow during the initial management stage.

**Keep interested parties informed.** Remember to confer with the patient, family, caregivers, and others to inform them of the complication, prognosis, and planned reconstructive interventions. Call upon other members of the medical staff for supportive treatment and management of other medical issues, such as coagulation status, hypertension, and diabetes.
Document dates, times, and events as soon as possible after the acute intervention. Do not wait to dictate the chart. Formulate your planned chart entry and make the chart entry before you leave the treatment facility where care was given. Document care rendered by others, including dates and times of telephone calls you made to others such as consultants, operating room personnel, anesthesia providers, radiologists, etc.

Hemorrhage is a known risk of ophthalmic procedures. By taking the steps discussed in this article, ophthalmologists can protect their patients and reduce the likelihood of a malpractice lawsuit.

OMIC policyholders who have additional questions or concerns about practice changes are invited to call OMIC’s confidential Risk Management Hotline at (800) 562-6642, extension 641.