



EYE INJURIES DURING SURGERY

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The incidents of injury to the eye in patients undergoing a variety of surgical procedures has increased as rapidly as the progress in surgical technology. The use of monitoring equipment, ancillary specialty equipment and products for specialized procedures has placed a greater risk of injury to the unprotected parts of the anesthetized patient. Some authors have reported as much as a 44% increase in corneal abrasion during general anesthesia, and others have reported a range of injuries from 10-30% over a variety of surgical procedures (1), (2), (3), (4), (5), (6), (7).

Specifically, accidental mechanical injuries have been recognized as superficial abrasions of the cornea to frank lacerations with a variety of mild or very serious infections leading to chronic inflammatory change, keratitis, and permanent visual impairment. The hazards to the orbit are common items that are found during any anesthesia and surgical procedure. A common item is the wrist watch with the plastic or expandable metal band, the anesthesiologists' ID card clipped to the vest pocket, multiple pins, papers and other items carried on the front of the shirt have all been known to cause some type of injury on occasion.

Similarly, the process of monitoring requires multiple leads, contacts, wiring, and other devices that are required to cross the patient's upper head and neck area, and these are potential culprits in an orbital injury.

With the increased usage of the laser in certain type of head and neck procedures the potential adverse affects of an accident with this new technology is a hazard and strict safety guidelines for the use of the laser and its maintenance in the operating room should be paramount in prevention control for orbital injuries.

CASE REPORTS

Case #1: A 69 year old Caucasian female underwent a right carotid thromboendarterectomy. The procedure and general anesthesia were routine and uneventful, however, as the drapes were removed the patient's left eye was noted to be erythematous and exhibited periorbital edema. A more thorough examination by the ophthalmologist revealed a superficial corneal abrasion and a periorbital contusion and subcutaneous hemorrhage. The patient had no history of preoperative eye problems. The injury obviously occurred during the procedure.

Case #2: A 33 year old female underwent a vaginal hysterectomy. General anesthesia was uneventful. In the Recovery Room the patient complained of pain in both eyes. Examination revealed superficial abrasions of both cornea. The anesthesiologist stated that he routinely closed both eyes with adhesive paper tape.

Case #3: A 24 year old female underwent an emergency appendectomy without incident. The recovery was uneventful. On the first postop day, the patient had no fever or abdominal complaints but she was irate at the discovery that she had lost the middle one-third of her eyelashes on both upper lids. These were removed with the anesthesiologists's eyelid tape.

DISCUSSION:

These cases illustrate the type of injuries encountered during surgery. The face mask and head strap are probably the most frequent cause of corneal abrasions as is the procedure of endotracheal intubation by the anesthesiologist.

If the mask is large and the straps are allowed to cause pressure on the eye the injury will occur rapidly. Accidental mechanical injuries from hands, fingernails, elbows, wires, wristwatch, pocket items that inadvertently contact the orbital area will cause serious injury. As the surgical procedure progresses, hands or arms of the assistant or the anesthesiologist may cause pressure on the eye. Towels, drapes, instruments, wires and lines may produce needless complications. Prolonged pressure by the heavy instrument or hand may result in temporary or even permanent blindness. In addition, prep solutions or irrigation materials and blood are all responsible for conjunctival irritation if allowed to spill in the eye. If the eyelids are allowed to remain open during the procedure, corneal epithelium will dry rapidly resulting in desquamation of the epithelium. As the lid moves over the dry area, an abrasion is produced. Because of the contour of the

orbit taping on the lids are frequently inefficient; the tape may not stick and the cornea then is in direct contact with the adhesive resulting both in mechanical and chemical injury. Both non-allergenic and cellophane tape have been the cause of allergic contact dermatitis and periorbital edema.

TREATMENT: The treatment of these injuries is usually routine and requires only a few days attention by the physician. A topical anesthetic is used to relieve severe eye pain. A local application of antibiotic and steroid is usually the treatment of choice. The epithelium should be protected during the healing process. More serious injuries should be referred to the ophthalmologist. The most serious problem during the treatment period is that you are dealing with an unhappy patient.

PREVENTION: Eye injuries that occur during surgery may be prevented by a new protective device applied to the face during the pre-anesthetic induction phase. A new product Opti-Gard has been developed to guard against serious eye injuries and minor eye and peri-orbital injuries. The device is a molded, flexible eye guard made of plastic with non-allergenic adhesive made with a cushioned surface for close, contoured facial contact. Clear semi-rigid eye shields protect the eye and lids from abrasion and pressure injury. This device is water-proof, air-tight and packaged sterile. Caustic solutions are prevented from contaminating the eye. The surface of the globe will not dry out in the air-tight chamber. The shield does not interfere with commonly used anesthesia equipment and monitoring devices. Opti-Gard does not come in contact with the eyelid or eyelashes, thereby eliminating hair loss and lid injury. This device appears to be a valuable tool in preventing injuries to the globe and periorbital structures, and has been used successfully for a number of years.

SUMMARY

Injuries to the eye occur during general anesthesia with increasing frequency. Corneal abrasions may lead to serious infection and vision impairment. Minor injuries may be treated with antibiotic and steroid ointment. A new device has been developed to help in the prevention of minor and serious injuries to the eye during surgery.

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