Ocular Manifestations of Domestic Violence: A Case Review

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Domestic violence is a serious and preventable worldwide problem that may be unrecognized by health care providers as the primary cause of ocular trauma. Proper management and counseling in these cases is crucial in limiting adverse effects from injury and preventing future cases of violence. We discuss a case of an adult female who presented to the emergency department following an assault by her husband. The diagnosis and management will be discussed, and a logical model will be provided for treatment using a multidisciplinary and social team approach. Preventive modalities will also be discussed. This case highlights the need for healthcare workers to recognize and advocate for the early recognition and management of ocular manifestations of injury from domestic violence.

Introduction

Domestic violence (also known as domestic abuse, spousal abuse, battering, family violence, and intimate partner violence) is defined as a pattern of abusive behavior by one partner against another in an intimate relationship such as marriage, dating, family or cohabitation.[1] Domestic violence can be divided into different types: sexual, physical, verbal, and psychological. There are many forms of physical abuse that include hitting, kicking, biting, shoving, restraining, slapping, and throwing objects. One in four American families is affected by battering.[2] Domestic violence is primarily a crime affecting women; it is estimated that 1.5 million women are physically abused in the United States each year.[3] Men may also be abused in some cases. However, worldwide, domestic violence is a serious problem with women being four times as likely to be victims of abuse.[4]

The most frequent location of injury for victims of all types of violence is the head and neck region with ocular injuries often being an identifiable manifestation of physical violence.[5] Ocular injuries can range from a small laceration on the eyelid to an orbital fracture and may be the result of a penetrating, perforating, or blunt trauma. The majority of orbital fractures in females result from domestic violence.[6] The injury may result from an acute attack or chronic, continuous battering. In most cases, health care workers are often the first people the victim approaches for help.

In this paper, we discuss the case of a patient that presented to the emergency department after a domestic assault with a closed fist, resulting in injury to the face and eyes.

Case Report

R.H. is a 42-year-old female patient who presented to the ophthalmology clinic upon referral from an outside emergency department. The patient was seen in the emergency department a few hours after her husband struck her in the right eye with a closed fist, sustaining a laceration to her face involving the medial canthus.

The patient complained of mild blurred vision and pain in the right eye and denied concurrent injuries elsewhere. Binocular visual acuity was assessed as 20/20 by Snellen Distance Acuity Chart. She did not receive a full ocular examination or imaging studies while in the emergency department. Patient was given analgesic for her eye pain. Her immunization status was assessed and she was administered intramuscular tetanus, diphtheria, and acellular pertussis toxoid vaccine (Boostrix).

Her wound was cleaned, and a wet-to-dry was applied over the right eye. Because of the circumstances surrounding her trauma, R.H. was given a pamphlet for a women's shelter and referred to the ophthalmology clinic for a complete eye exam. Attempts were made to refer the patient to the police; however, the patient declined to pursue charges.

Her past medical history was unremarkable for any medical problems. She had an allergy to codeine, which caused a rash, itching, and edema. She was not taking any prescription medication, over-the-counter, or herbal medications. Her past ocular history and family history were non-contributory. R.H. lived at home with her husband and two children and was unemployed. She denied any previous domestic violence incidents. She admitted to smoking cigarettes (one pack per week for several years) but denied any alcohol or illicit drug use. Review of systems was positive for right eye pain and redness but negative for diplopia and excessive tearing. Systemic review was negative for easy bruising, heavy menstrual periods and nosebleeds to rule out hypercoagulation disorders.

Image 1: Right eye of patient R.H. with significant ecchymosis and 5 cm laceration. The dilated pupil is secondary to the use of mydriatic drops. The pupil is round and symmetrical demonstrating the absence of anterior globe laceration.

On examination, R.H. was in acute pain. Inspection of her face (see Image 1) revealed a 5 cm laceration extending in a linear fashion along the lateral edge of the nose up to the medial canthus on the right side along the tear trough. The superior edge of the laceration extended to the medial canthus tendon, but the tendon appeared to be intact. There was significant ecchymosis surrounding the right eye but no hypertelorism, lid lash malposition or epiphora. Her best visual acuity was 20/20 without correction in both eyes using the Snellen visual acuity chart at distance. Both pupils were 4 mm in size and were equal, round, and reactive to light and accommodation. There was no asymmetry of the pupils and no afferent pupillary defect (APD) in either eye. Confrontation visual field was full in both eyes. Eye motility was full in the left eye but limited on the right eye when looking upward. She did not report diplopia in any direction of gaze. Intraocular pressure (IOP) by applanation tonometry was 16mmHg in both eyes.

The facial exam is illustrated in Image 1. Slit-lamp examination was significant for inferior conjunctiva injection in the right eye and early nuclear sclerotic cataract in both eyes. There was no corneal abrasion, no anterior chamber hyphema or lenticular displacement. The patient's eyes were dilated with phenylephrine hydrochloride, 2.5% (EyePhrine, Eye Supply, USA) and tropicamide, 1% (Akorn, Inc., USA). Dilated pupils were round and symmetrical demonstrating the absence of anterior segment laceration.

The dilated fundus examination revealed normal vitreous and normal-appearing optic nerves with no retinal hemorrhages, holes, or tears in both eyes. Given the location of the patient's laceration, the inferior punctum was irrigated with passage of fluorescein into the nose using a cannula. The result confirmed that the canalicular system on the right side was intact.

R.H. was taken to a minor procedure room for repair of the laceration. After informed consent, the patient was prepped in the usual sterile fashion for primary surgical repair of the wound. Six mL of 2% lidocaine with epinephrine (Hospira, Inc., USA) was injected around the skin in a superficial manner surrounding the laceration. The wound was explored and cleaned, with no foreign bodies found. The laceration was closed in a layered fashion with six interrupted 6-0 vicryl sutures deep and 13 interrupted 6-0 plain gut sutures to the skin. There were no complications. The patient was prescribed erythromycin ophthalmic ointment (Romycin) to be applied three times a day until follow-up appointment in one week. Because of the possibility of an orbital fracture, R.H. was sent for a computed tomography (CT) scan of the orbit and maxillofacial area with coronal reconstruction. Result is shown in Image 2.

At the one week follow-up, R.H. reported continuing discomfort and tearing in the right eye. She also complained of sleep disturbance and anxiety. On external examination, the incision was clean, dry, intact, and lid position was good. Motility testing revealed diplopia in primary and up gaze. Hertel exophthalmometry revealed 2mm of enophthalmos in the right eye (13 right eye, 15 left eye with a base of 100). Slit-lamp examination was significant for mild conjunctiva injection. The CT results showed a right orbital floor blowout fracture and medial wall fracture without evidence of muscle entrapment (Image 2). The patient was instructed to continue with erythromycin ointment application three times a day to the right eye and to follow up with an oculoplastics specialist for evaluation and possible repair of the orbital fractures.

One week later, the patient met with the oculoplastics specialist. She had severe sinus pain that worsened when she sneezed or coughed. Her initial symptoms and signs were unchanged. In addition, she had numbness in the distribution of the infraorbital nerve. The risks, benefits, and alternatives of orbital floor repair were discussed with the patient, and she elected to proceed. The repair was done one week later with no complications.

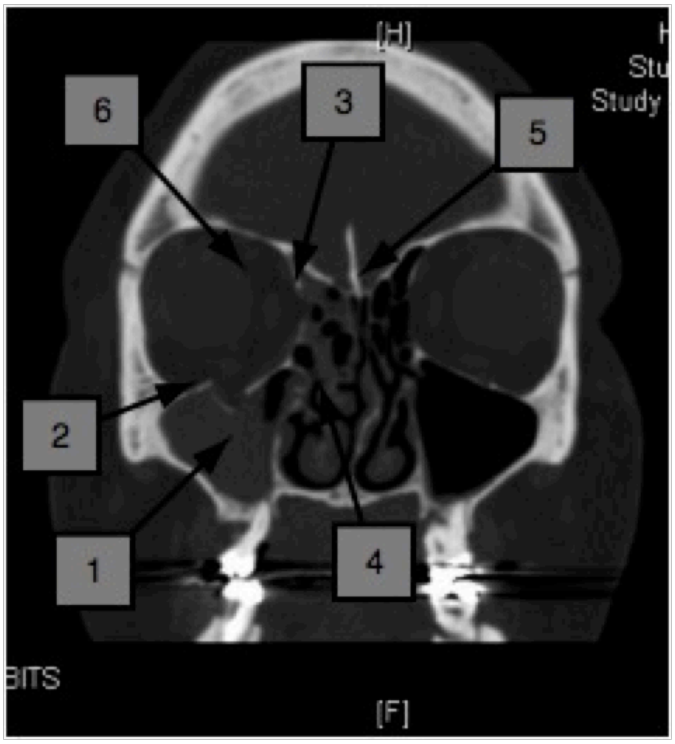


Image 2: CT image of patient R.H. showing: 1) maxillary fluid (blood presumed within the context of trauma); (2) inferior orbital wall fracture; (3) medial orbital wall fracture; (4) ethmoidal air cell fluid (blood); (5) nasal septal deviation; (6) absence of intra orbital free air.

Discussion

Ocular injuries due to domestic violence can include ecchymosis of the eye (black eye), lenticular dislocation, globe rupture, traumatic hyphema, or orbital wall fractures. The treatment depends on the severity and duration of the injury. In the case presented, the patient sustained a laceration from the cheek to the medial canthus and an orbital fracture caused by a domestic assault by the patient's husband.

With any ocular injury due to trauma, an evaluation should be made for the need of emergent surgery, such as in an open globe. When a vision-threatening emergency is ruled out, a full medical history and ocular examination should be conducted by a physician. A medial canthus injury, such as in this case, should be evaluated by an ophthalmologist to rule out a canalicular laceration in order to minimize the incidence of post-traumatic epiphora. The method used to detect a canalicular obstruction varies among practitioners. The preferred method is to inject fluid, such as fluorescein, through the canaliculus in the area of the injury while observing for signs of reflux into the wound, indicating damage to the canalicular system.[7-8] An intact system is confirmed when the irrigant enters the patient's nasopharynx, which is confirmed by the patient reporting a salty taste.

In this case, a CT scan was not ordered in the emergency department. However, it is encouraged to order an immediate CT when patient presents with a blunt trauma to the orbital region.[9] A CT scan can assess for globe injuries, retro-orbital hematomas, and existence of free air in the adjacent soft tissues or orbit. It also provides visualization for a zygomaticomaxillary complex (ZMC) fracture and thus future planning for operations. Indications for surgery include large orbital floor defect (>1 cm^2), early enophthalmos, significant hypoglobus, or persistent diplopia in the primary field of gaze.[10] Studies have shown that orbital fractures should be fixed in a timely manner to avoid permanent diplopia and loss of binocular vision.[11]

Epidemiology of Domestic Violence

Domestic violence is a public health problem that affects over two million men and women in the United States.[12] In the most recent report by the Centers for Disease Control, it was found that 35.6% of women in the United States are raped, assaulted, or stalked by intimate partners at some point during their lives, and approximately 6% experience these events in any given year. Men are also at risk for domestic violence with 28.5% reporting victimization at some time during their lifetime and 5% reporting victimization within the past year. Worldwide, between 15–71% of women report experiencing physical and/or sexual violence by an intimate partner at some point in their lives.[13]

Domestic violence can have physical, economic, social, and psychological impacts. Women affected by sexual and physical abuse are more likely to contract sexually transmitted diseases,[14,15] abuse alcohol and tobacco,[16] and commit suicide.[17] Intimate partner victimization of women increases the risks of injury, gastrointestinal disorders, chronic pain, central nervous symptoms (including fainting and seizures), hypertension, and gynecologic problems.[18] Over eight million workdays are lost as a result of intimate partner violence each year and costs exceed $8.3 billion due to rape, physical assault, stalking, and in the value of lost lives.[19] Many studies show that domestic violence is a cause of homelessness for women and their families.[20-22]

Domestic violence may represent up to 20% of ocular traumas presenting to emergency departments.[23] The most frequent location of injury for victims of all types of violence is the head and neck region, where 93% of fractures involved facial bones.[24] One study found that domestic violence was the cause of injury in 7.3% of adult female orbital fracture patients. However, only 30% of injured females and 20% of males who are rape and physical assault victims receive medical treatment.[25]

History

A thorough history will help in identifying the cause of the ocular damage and detail the circumstances surrounding the injury. The patient may directly say he or she has been a victim of domestic abuse. If not, other clues may lead the physician to suspect domestic abuse, such as reported mechanism inconsistent with injury, vague complaints, and delay in seeking care for injury. It is ideal for the physician to interview the patient in a safe, private environment, especially if the suspected abuser is

present. The physician should ask simple, direct questions to validate patient's concerns and assess their safety (Table 1).[26] It is important to take note of any behavioral clues, such as reluctance to speak in front of the partner, evasiveness, and an overly controlling or protective partner.

Table 1: Statements that can be made by the healthcare provider.[26]

Validation statements
• You are not alone. • There is help available. • You are not to blame. • There are places where you can go.
Assess safety
• Are you afraid to go home? • Do you have a safe place to go? • Do you need access to a refuge? • Are there weapons present? • Do you want police intervention?

With a suspected domestic violence case, it is imperative to document the details of the incident to prepare for any legal action that will be taken. Particular attention should be paid to the eye if a foreign object, such as glass, was involved because it has the potential to perforate the globe. Double vision can be a sign of muscle entrapment after an orbital wall fracture. This is an indication for imaging studies to assess for fractures.

The patient should be asked about any previous domestic violence injuries. The physician should inquire into the patient's ocular history including any previous ocular injuries, ocular surgeries, contact lens use, or history of strabismus/amblyopia. The list of current medications, allergies, family history, social history, and date of last tetanus vaccination will complete the highlights of the patient's medical history. Particular attention should be paid to the social history (i.e., where they live, the number of children, number of partners, alcohol and drug use). Review of systems is important to assess for any other injuries related to domestic violence and to assess for a hypercoagulability disorder. A checklist of important factors for health care workers to consider is shown in Table 2.[27]

Table 2: Checklist for assessing domestic violence cases.[27]

• Perform full history and physical
• Clear documentation of history • Write legibly • Avoid abbreviations • Put patient's words in quotations • Describe patient's demeanor • Record time of day patient is examined
• Take photographs of injuries
• Create "body map" documenting injuries
• Obtain basic labs and hypercoagulation studies
• Contact police depending on state laws
• Contact social worker to assess living situation or other requirements.

Ophthalmic Examination

With any ocular injury due to trauma, initial evaluation should ensure the integrity of the globe. In suspected cases of an open globe, there should be an immediate evaluation by an ophthalmologist. A comprehensive ocular examination may not be possible in the emergency room setting and may have to be done in the operating room. Ocular signs suggestive of a ruptured globe include a pupil that is not round, 360 degrees of hemorrhagic chemosis, and a loss of the normal spherical contour of the cornea or sclera on exam. The eye should be protected with a Fox shield and the patient prepared for the operating room where a thorough exam and repair will be performed under anesthesia.

In the absence of signs suggestive of a ruptured globe, the patient should have a complete eye exam, which includes visual acuity, pupil exam, motility exam, confrontation visual fields, slit lamp exam, tonometry, and a dilated eye exam (Figure 1).[28] Both eyes should be examined thoroughly, even if it is obvious that the other eye is not affected, as intraocular trauma may be present in eyes that lack external evidence of injury.[29,30]

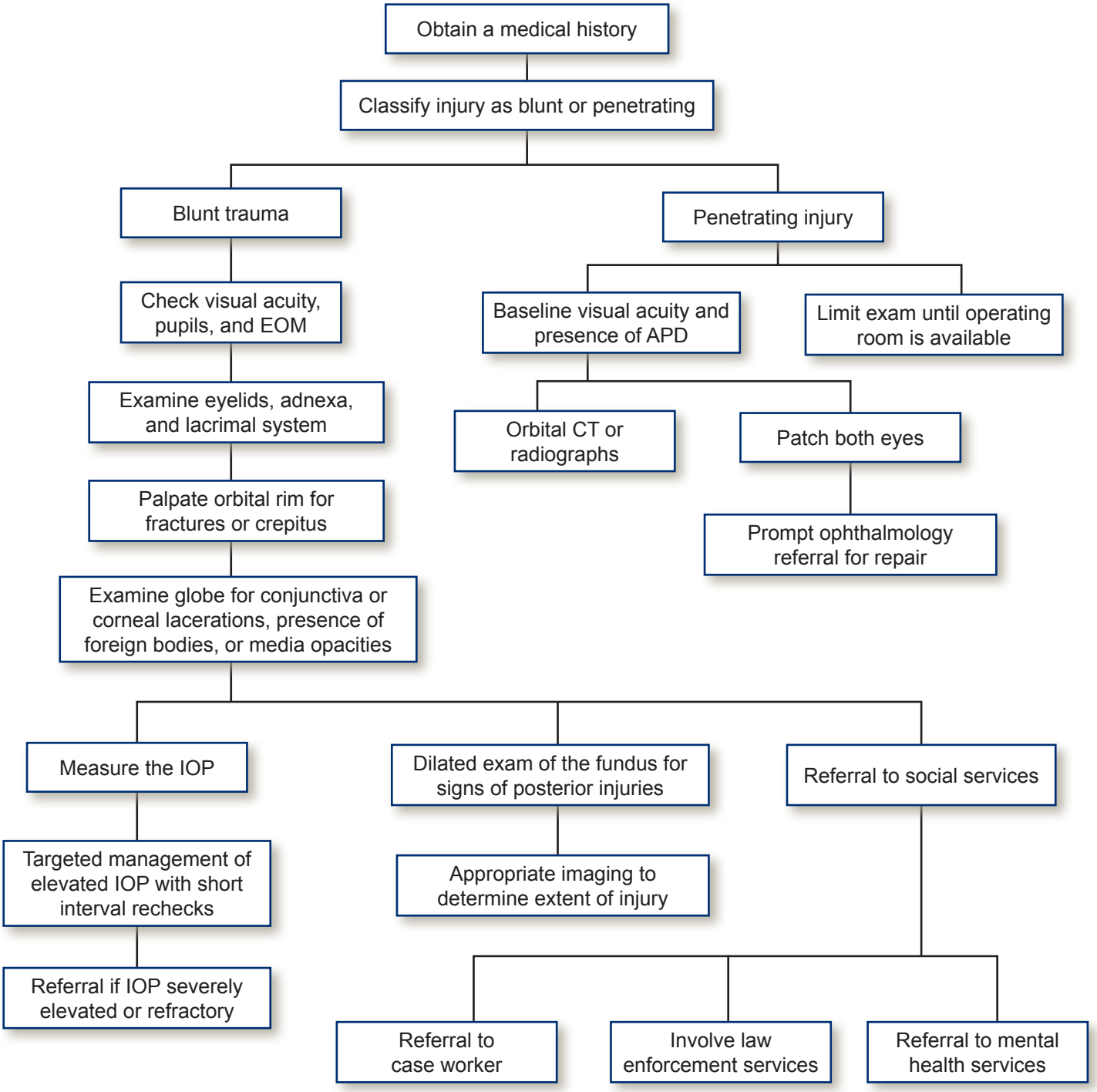
The ocular exam should focus on extraocular motility, as well as the pupil exam and a dilated fundus exam to search for any evidence of optic nerve compression in these cases. The complete absence of elevation suggests the possibility of entrapment; this can be differentiated from a traumatic third nerve palsy by forced duction testing.

In cases of suspected orbital wall fracture, imaging should be ordered to complement a complete eye examination.[31] A CT of the head is not sufficient to rule out facial and orbital fractures; a dedicated scan of the facial bones with coronal reconstruction is warranted, allowing for assessment of the globe and facial bones to assist in diagnosis and surgical planning in cases of fracture. Magnetic resonance imaging may be utilized in selected cases, but it is generally unnecessary and is contraindicated if a metallic foreign body is suspected. In a domestic violence case, it is necessary to document ocular injuries, as well as other parts of the body that are injured due to abuse, with photographs.

Medical and Surgical Management

As stated previously, the most important component of management is to rule out an ocular emergency, such as an open globe. After thorough ocular examination has been made, it is important to know when it is appropriate to consult an ophthalmologist. In general, family medicine and emergency medicine physicians can manage corneal abrasions, some superficial foreign bodies, and small eyelid lacerations not involving the lid margins. Injuries such as deep corneal foreign bodies and any signs of hyphema should be managed by an ophthalmologist in centers where slit lamp examinations can be performed and intraocular pressure can be measured. In addition, open globe injuries, lid lacerations involving the lid margin or canalicular system, orbit fractures, and any potential intraocular foreign body should be referred to an ophthalmologist.[32]

Figure 1: Management Guide for Ocular Trauma Due to Domestic Violence



Social Management

After medical evaluation and management, it is important to address the patient's needs concerning his or her safety. A social worker should be contacted who can provide resources for the domestic violence shelters, social services, legal assistance, and support groups. If the patient has no safe place to go, the physician should contact social services for intervention. Child Protective Services should be consulted for children.[33]

In jurisdictions where reporting of domestic violence is mandated, the legal obligation to report abuse should be discussed with the patient. The laws vary from state to state but generally fall into four categories: states that require reporting of injuries caused by weapons, states that mandate reporting for injuries caused in violation of criminal laws, as a result of violence or through non-accidental means; states that specifically address reporting in domestic violence cases; and states that have no general mandatory reporting laws.[34]

It is important for health care providers to check their state's laws regarding reporting domestic violence. Without appropriate intervention, the violence can become cyclic, resulting in repeat visits to the emergency room and primary care offices. The patient's life may also be threatened if the abuse is not terminated.

Prevention of Domestic Violence Injuries

Although health care professionals need to be prepared to treat ocular injuries related to domestic violence, the goal for domestic violence is prevention. There are numerous professional and health care organizations,[30, 35-367]including the Institute of Medicine,[38] that recommend screening or assessment of patients for partner violence in primary care settings. New guidelines under the Affordable Care Act require insurance coverage to include intimate partner violence screening and counseling as part of eight essential health services for women at no additional cost to the patient.[39] However, physicians may be afraid to ask such questions because of a lack of time, training, and easy access to services that help these patients.[40] Recent evidence encourages shifting the focus away from universal screening to case finding-identifying and providing appropriate clinical and social services to women who show signs of abuse.[41,42] With this evidence, it is imperative to inquire about domestic violence when a suspected patient presents.

Conclusion

Ocular injuries due to domestic violence are a common occurrence worldwide. With the proper medical and surgical care and social management, patients can have successful outcomes both physically and emotionally. Primary prevention modalities, including screening in the primary care setting, may help avoid increasing health costs and injury to patients. Physicians should always consider and recognize that domestic violence may be the cause of the injury for patients presenting with ocular injuries.

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