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What an Eye Sore: Corneal Abrasion

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"The eyes are the windows to the soul" is a common saying but when an eye has sustained a corneal abrasion, the soul feels anything but peaceful. The cornea is the clear layer of tissue that is visible overlying the iris and pupil and meets the sclera, or the white of the eye, just outside the border of the iris. Just as our skin can have abrasions or scratches, so too can the cornea of the eye. The most common causes of these injuries are work-related, with nearly all of these work injuries occurring in workers who weld, grind/buff, drill/hammer, or work in windy or dusty environments. Other risk factors include sports and use of contact lenses, particularly if worn too long or if contacts are worn while sleeping.

Regardless of the cause, patients will typically complain of severe eye pain and have difficulty keeping the eye open because the eye is either sensitive to light or due to the sensation of a foreign body in the eye. While many patients recall a specific incident of something falling in to the eye, some corneal abrasions occur spontaneously.

On the patient's initial evaluation, multiple severe conditions must be ruled out prior to arriving at a diagnosis of a corneal abrasion. The first is penetrating trauma to the eye. In which case, the pupil may be large, irregularly shaped, or non-reactive to light, or blood may be visible collecting in the anterior chamber or the space between the cornea and the iris. Secondly, the provider must rule out corneal ulceration in which a "white spot" or an opacity is noted on the clear cornea. If any of these findings are observed, the patient needs to be evaluated by an ophthalmologist immediately. Eye movements should be evaluated and should not cause pain or any changes in vision. If pain or double vision occurs, the patient should be evaluated promptly by an ophthalmologist.

Once the above conditions are excluded, the diagnosis of corneal abrasion is confirmed by visualizing the defect on the cornea. As a reaction to corneal injury, the conjunctiva may appear injected or red. Depending on the size and location of the abrasion, such as if it is located overlying the pupil, the patient's visual acuity may be affected. Often the patient's discomfort makes the exam intolerable, so anesthetic eye drops are used to numb the patient's eye. This allows for better inspection of the eye and its surrounding structures, including underneath the eyelids. If a foreign body is seen, eye irrigation and/or a cotton-tipped applicator or needle may be used to carefully remove it; however, if the foreign body cannot be removed, the patient should be evaluated by an ophthalmologist on the same day. Since the cornea is clear, seeing a defect would be very difficult without the use of fluorescein dye which pools at the abrasion site allowing visualization. While the abrasion may be readily visible by the naked eye as appearing yellow once the dye is in place, a blue light further aids identification of an abrasion. The magnified view of a slit lamp – which may appear like a torture device to patients – allows for more detailed examination of the eye. If the fluorescein dye is seen to be streaming down the eye, this also indicated penetrating trauma as the fluid in the anterior chamber is leaking through the corneal defect.

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After the diagnosis of corneal abrasion has been confirmed, the patient's tetanus status should be updated if needed, pain controlled, and antibiotic eye drops should be prescribed to prevent the complication of bacterial keratitis or infection of the cornea. Pain control should be managed based on the size of the abrasion. Small abrasions may be treated with over-the-counter non-steroidal anti-inflammatory drugs (eg. Ibuprofen) while large abrasions may need stronger pain management. Also, new research indicates that topical anesthetic drops can be prescribed for pain relief to patients with small abrasions for the first 24 hours. After which, the patient should discontinue the topical anesthetic drops due to risk of overuse. While patching the eye was standard practice in the past, research has shown that patching is of no significant benefit and is therefore no longer recommended. In fact, eye patching is actually contraindicated in patients who have worn contact lenses recently.

The choice of antibiotic medication is determined by whether or not the patient is a contact lens user. In theory, antibiotic eye ointment is preferable to eye drops because it also serves as a lubricant; however, in reality most patients prefer eye drops. Patients should be instructed to discontinue use of contact lenses until the abrasion heals.

Several concerning findings should prompt ophthalmologic evaluation if observed at follow-up. If the abrasion size increases, the patient has a significant drop in vision, the eye drains pus, or if the abrasion has not healed after three-four days, the patient should be referred as these findings suggest a retained foreign body, inadequate healing, and uncontrolled infection. Follow-up should occur daily for patients with large abrasions, abrasions due to contacts, and abrasions associated with decreased vision.

The placement of work restrictions may be necessary if eye pain and sensitivity to light affect the patient's ability to perform tasks requiring keen vision. It is critical to instruct employees to wear protective eye wear and wear it properly at all times to prevent re-injury as the eye is healing and to prevent subsequent injuries to the eyes in the future. The importance of protecting the eyes cannot be overstated, nor can the importance of seeking prompt medical evaluation if any injury occurs to the eyes.

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