

Background

Corneal abrasion and damage to the ocular structures continue to be a significant problem in today's military. While range activities and maintenance on vehicles require safety eyewear, many soldiers still do not wear their protective eyewear.

Case Presentation

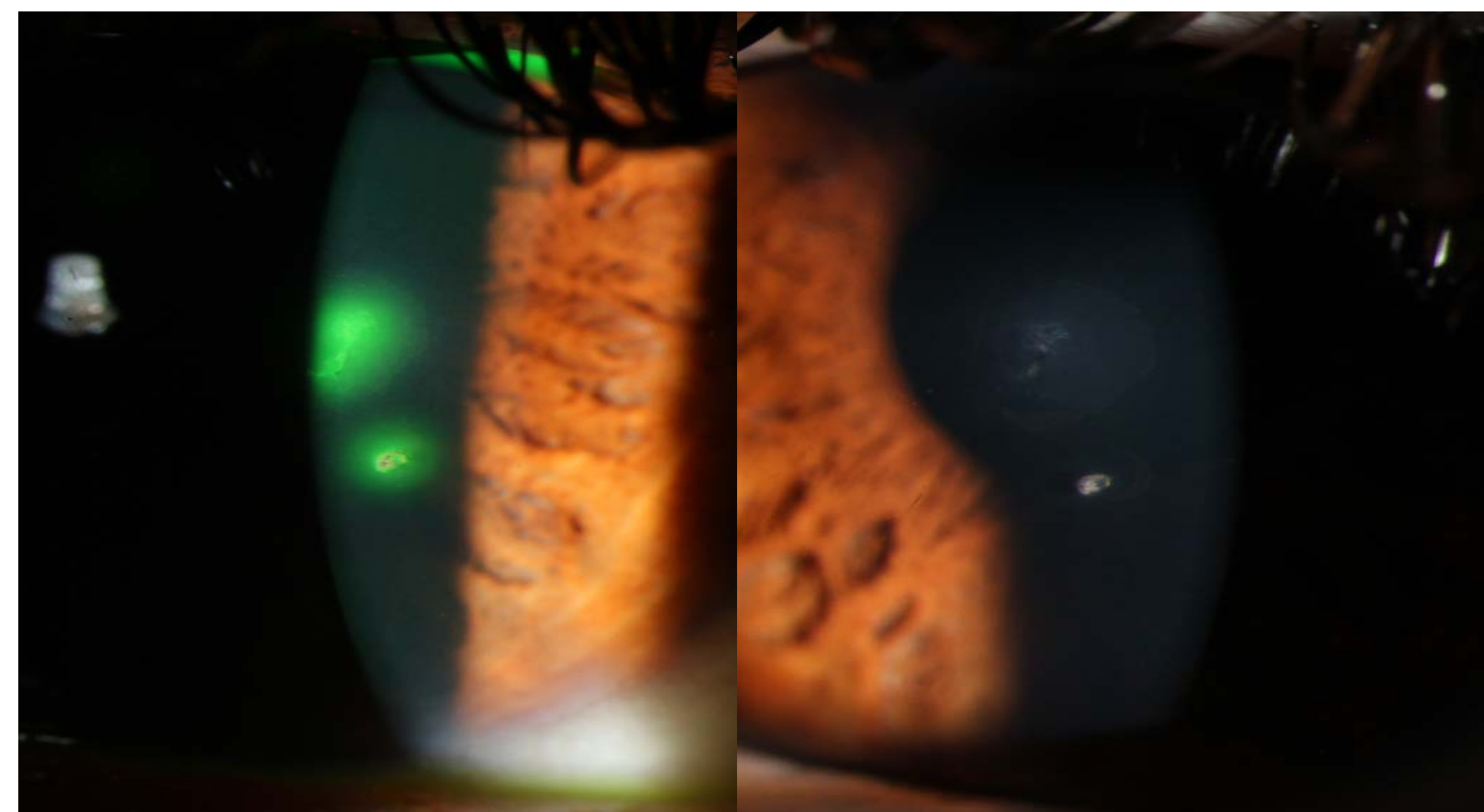
13 July 2016

A 19 year old male presented to Womack Optometry Clinic with ocular pain. While at the firing range, the patient was clearing a jammed rifle. Another person sprayed lubricant into the chamber and the round detonated striking him in the head. Patient was medically evacuated to Emergency Room at Womack Army Medical Center and was prescribed a hydrodone for pain. Patient received staples for the primary trauma, a laceration at the coronal suture. Debris and small foreign bodies down his face to his maxillary area affecting both the eyes and lids were treated by the eye clinic.

Pertinent Findings

Distance vision uncorrected: 20/25 OD, 20/25 OS
NCT: OD 11 mmHg, OS 14 mmHg
Confrontation visual field: Full to finger in both eyes
EOM: Full and smooth
Pupil: PERRL, no afferent pupillary defect in both eyes

Anterior Segment: Patient had multiple impact sites across the lids, cornea and conjunctiva in both eyes. Multiple small impacts were seen on the corneal epithelium, the impacts propagated outward causing a more diffuse damage to the endothelium. There was a subconjunctival hemorrhage in the right inferior conjunctiva as well.



Presentation of right and left cornea, after foreign bodies removed from the left eye.

Treatment: The foreign bodies, along the lids and lashes were removed with a wet cotton tipped applicator. A spud was used to remove foreign bodies on the corneas. Patient was instructed to continue Hydrocodone prescribed by an ER doctor. Vigamox one drop four times a day in both eyes and erythromycin ointment at night was prescribed in office. Patient had already been admitted to the hospital for overnight stay. Patient was followed in two days after being discharged from inpatient.

15 July 2016

Patient returned to clinic for a two day follow-up. Ocular pain was resolved, even though patient still felt foreign body sensation when blinking. The patient was still taking pain medication for the other injuries sustained near the coronal suture. Vigamox and erythromycin ointment were continued as directed.

Pertinent Findings

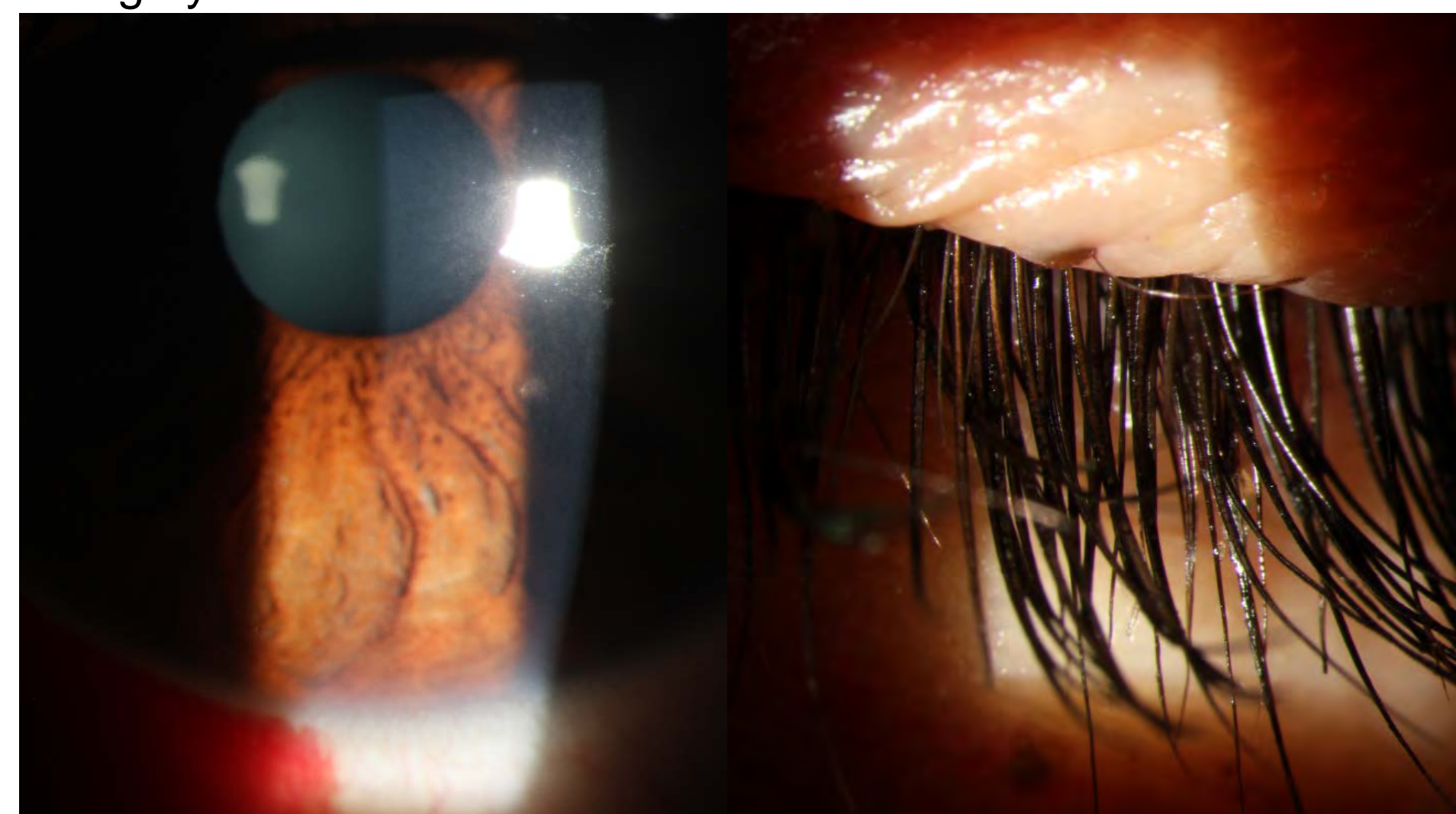
Distance vision uncorrected: 20/25 OD, OS
NCT: OD 8 mmHg, OS 9 mmHg

Anterior segment: Abrasions on the cornea had resolved, but small impacts were still seen on the lids. Subconjunctival hemorrhage remained stable in the right eye.

Treatment: The patient was told to continue with Vigamox one drop four times a day in both eyes and erythromycin ointment at bedtime in both eyes. Patient released from the hospital to return to work avoiding strenuous conditions and to return to eye clinic in one week.

22 July 2016

Patient returned to clinic for a one week follow-up. Patient was feeling better, no pain or any ocular discomfort though still complaining of slightly blurred vision in both eyes. Patient was using eye medication as directed.



July 15 examination cornea and eye lid

Pertinent Findings

Distance vision uncorrected: 20/25 OD, OS
NCT: OD 10 mmHg, OS 13 mmHg
Manifest refraction:
OD: +1.00-0.75x003 20/20
OS: +0.75-0.75x165 20/20

Anterior segment: Both conjunctiva had minimal scars. Corneas were clear. There was still a mild subconjunctival hemorrhage in the right eye.

Posterior segment: Dilated with proparacaine 0.5% OU, tropicamide 1% in OU revealed a normal fundus examination OU.

Treatment: Condition resolved with minimal scars on conjunctiva in both eyes. Patient was instructed to discontinue all eye medications and to return to Optometry Clinic yearly for an annual eye examination.



Day 1

Day 3 follow-up

12 day follow-up

Conclusion and Discussion

This case demonstrates treatment of a patient with multiple abrasions to lids conjunctiva and cornea. Protective eyewear would likely have prevented the ocular injuries; however, would not have prevented the entire trauma. Protocol was not met at the time of the incident. Rifle lubrication is used in the prevention of misfiring. However, can be dangerous when applied to a hot rifle due to combustion. The military shows a higher rate of ocular injury, 10.86 per 1000 in 2015¹ from the general population, 6.98 per 1000 in 2001². This information is likely due to most active duty personnel falling in the age ranges 20-40. One of the many activities required under military service is weapon qualification, which may explain the higher ocular injury rate for this profession. There is a high importance on preventative eye wear not just for the firing range but also for such activities such as night maneuvers, motor pool maintenance, and any other field activity. The incident in ocular injury could be lower if military personal follow and enforce proper procedures.

References

1. Army Public Health Center (Provisional). US Department of Defence Combined Active Duty Eye Injury Summary Calendar Year 2015. 2015. <https://usaphc.amedd.army.mil/whatsnew/Pages/PublicationDetails.aspx?type=Active%20Duty%20Eye%20Injury%20Report%20Summary>
2. McGwin G, Jr, Xie A, Owsley C. Rate of eye injury in the United States. Arch Ophthalmol. 2005; 123:970-6.

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