



VISION CENTER OF EXCELLENCE (VCE)  
WALTER REED NATIONAL MILITARY MEDICAL CENTER  
8901 WISCONSIN AVENUE | BETHESDA, MD 20889-5600

## Podcast 2

### CONCOMITANT CRANIAL AND OCULAR COMBAT INJURIES

#### Introduction.

This series of podcasts is hosted by the Vision Center of Excellence, a joint program of the Department of Defense and Department of Veterans Affairs.

The podcast series provides concise summaries of issues and reports targeted to Department of Defense and Veterans Affairs vision providers overseeing care for our Service members and Veterans.

#### Body.

This podcast summarizes and comments on a 2009 article written by doctors Cho, Bakken, Reynolds, Schlifka and Powers, titled "Concomitant Cranial and Ocular Combat Injuries During Operation Iraqi Freedom", published in the Journal of Trauma, Infection, and Critical Care.

Injuries from improvised explosive devices have been a distinct feature of recent military involvement in Iraq and Afghanistan. The nails, bolts, and metal shards expelled by these weapons leave destruction and injury in their wake. This can be clearly seen in the number of limb amputations and severe head injuries resulting from these conflicts. During their respective deployments in Iraq, the authors of this article noted that treatment of such trauma frequently required the surgical collaboration of various medical specialties. In particular, they observed that facial injuries from high velocity projectiles often involved simultaneous damage to closely adjacent structures, especially the eyes, skull and brain. To further examine and draw conclusions about this correlation, they conducted a retrospective study of ophthalmology and neurosurgery records maintained by the U.S. Army 207th Surgical Team between 2005 and 2006.

The records of 228 patients who required surgery for either cranial or ocular injuries were analyzed. The overlapping group of patients who experienced both cranial and ocular trauma represents 15 percent of the sample. Among the 104 patients with cranial injuries, nearly 33 percent also experienced concurrent ocular trauma. Meanwhile, among the 158 patients with ocular injuries, nearly 22 percent also required cranial surgical intervention. When the cranial injury population is compared to patients with only ocular injuries, it appears a significantly greater proportion of this group experienced multiple ophthalmic injuries and required treatment for orbital compartment syndrome or orbital fractures. The authors claim this finding was not surprising, since cranial injuries are inherently more severe and require additional specialized attention.

Cho and his colleagues note that their report is the first since the Korean conflict to examine the relationship between cranial and ocular injuries incurred during wartime. During the Korean conflict, the incidence of ocular trauma among those with cranial injuries was 11 percent, which is significantly less than the 33 percent reported in this current sample. The authors attribute these results to several factors. One thought is that improvised explosive devices were not a factor in previous conflicts. These weapons, which send out multiple high velocity projectiles, typically create more complicated and expansive injuries than a single projectile, such as a gunshot wound. This seems to be supported by the number of combined-injury patients in this study that underwent **several more** multiple ophthalmic surgeries than the group with only ocular injuries. The authors also note that the injury survival rate during modern combat operations has significantly improved

## PODCAST

### Concomitant Cranial and Ocular Injuries

as a result of enhanced body armor and protection, better health care delivery in theater, and improved medical transport and evacuation.

This study raises several important points applicable to future trauma response planning. This era of modern warfare and technical advances produces both greater injuries and more survivors. With this in mind, careful examination of the eye is essential in all injuries involving the face, head and neck, since these types of trauma commonly accompany or cause severe eye injury. The authors also recommend the continuation and expansion of the U.S. Army's current doctrine of deploying ophthalmologists and neurosurgeons as part of an integrated surgical team. This should be inclusive of maxillofacial surgeons and otolaryngologists, who altogether can provide the best and most efficient approach to combat casualty care. Finally, appropriate and consistent use of approved protective eyewear and facial protection must continue to be emphasized. The association of head, neck and eye wounds in combat has long been recognized and is routinely forgotten. When it comes to combat safety, protective measures are better than response measures, and can significantly decrease combat-related ocular and facial injuries.

#### Conclusion.

This production was brought to you by the Vision Center of Excellence. Our mission is to lead and advocate for programs and initiatives to improve vision health, optimize readiness and enhance quality of life for Service members and Veterans. Working with TRICARE, the Military Health System, other Centers of Excellence and the Veterans Health Administration, the Vision Center of Excellence works to enhance collaboration between Department of Defense and Department of Veterans Affairs vision care providers, provide guidance for clinical practice and facilitate patient-centered support. For more information, visit us online at [vce.health.mil](http://vce.health.mil) or on Facebook.

#### 1. POINT OF CONTACT.

Molly Keilty  
S&A Workstream Lead

240-388-1029  
[keilty\\_marymargaret@bah.com](mailto:keilty_marymargaret@bah.com)

#### 2. APPROVED BY.

Dr. Mazzoli and Ms. Jo Ann Egan  
Education, Training, Simulation and Readiness & Clinical Care Integration Directorates

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### APPENDIX

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#### A: Phonetic Guide.

Phonetic Guide		
1	Bakken	BAA-ken
2	Schlifka	Sh-leeff-kaa
3	Ophthalmology	Off-tal-mah-lo-jee
4	Ophthalmic	Off-thael-mic
5	Concomitant	Con-cah-mitent
6	Otolaryngologists	Auto-lair-in-gaw-lo-jists
7	Maxillofacial	Mak-,si-(,)lō-'fā-shəl