

Ocular Trauma

FAST FACTS

ocular trauma

a leading cause of vision loss in children

2–3/1,000

rate of ED-treated eye injuries for children < 19 years of age

8.85–15.2/100K

incidence of serious ocular trauma for kids < 20 years of age

Ocular trauma is any injury that occurs to the eye, orbit or the periorbital structures. Evaluation depends on location, mechanism and timing of the injury and whether there is an injury to one or both eyes.

ASSESSMENT

Conduct standard history and physical exam (HPE), focusing both on involved eye/eyes. Ensure patient's overall health given the trauma and mechanism of injury. Determine if injury is chemical (requiring immediate irrigation), penetrating (requiring assessment for retained foreign body, which dictates type of imaging needed and if surgical removal is necessary), or if trauma resulted from a motor vehicle accident (requiring neurologic evaluation first) or from blunt trauma. Examine pupils for defects/irregularities and periocular structures for signs of trauma. Assess vision, motility, conjunctiva, cornea, and anterior chamber for abrasion, leaks, pupil reflexes, and obvious bleeding.

HISTORY RED FLAGS

- Decreased vision/vision loss
- Visible bleeding from eye, eyeball or periocular structures
- Observed hemorrhage inside eyeball
- Inability to open eye (often a pain response, cannot be sole factor for clinical decision)
- Pupil changes—altered shape, blown, afferent defect
- Displaced iris tissue or other uveal tissue outside the eye
- New onset strabismus
- Limited extraocular muscle motility with oculocardiac reflex
- Presence of obvious bony step-offs confirming fracture
- Corneal laceration or abrasion
- Displaced lens
- Absence of red reflex
- Laceration involving eyelid margin*, or lacrimal system, or violation of the orbit with prolapsed periocular fat
- Orbital or intraocular foreign body needs ophthalmic removal
- Corneal foreign body (not easily removed)
- Open globe/obvious break in eyewall structure
- Elevated intraocular pressure**
- Evidence of orbital hemorrhage with concern for orbital compartment syndrome
- Nausea/vomiting
- Concern for retinal detachment—acute loss of vision, VF defect, new floaters (usually too many to count)

*defined on back; **defined on back

MANAGEMENT/TREATMENT

Remove any foreign bodies from the cornea and conjunctiva only (when possible) and provide topical antibiotics for any resulting epithelial defects. Watch any subconjunctival hemorrhage not accompanying other ocular trauma for resolution. Irrigate any chemical exposure immediately until pH is normalized.

WHEN TO REFER

When any of the above Red Flags are present, refer patients with ocular trauma to Cincinnati Children's Emergency for pediatric ophthalmology consultation.

If you have clinical questions about a patient with ocular trauma, contact a Pediatric Ophthalmologist via Physician Priority Link at 513-636-7997 or 1-888-987-7997.

For non-urgent questions, email ophthalmology@cchmc.org.

If you would like additional copies of this tool, or would like more information, please contact the Physician Outreach and Engagement team at Cincinnati Children's.

Ocular Trauma

Inclusion Criteria

Isolated injury to the eyes, periocular tissues or orbit.

Patient Presents

Standard Workup

History of Present Illness

- Obtain accurate history
- Inquire if injury was witnessed

Family History

Physical Exam

- Obtain accurate, age-appropriate vision
- Normal pupil exam
- Normal extra-ocular motility
- Superficial periocular injury able to heal by secondary intention
- No NaFL staining
- No vision threatening superficial conjunctival changes
- Limited subconjunctival hemorrhage

HPE RED FLAGS

- Affects both eyes
- Decreased vision/vision loss
- Inability to see the eyes/ Inability to open eye (often a pain response, cannot be sole factor for clinical decision)
- Visible bleeding from eye, eyeball or periocular structures/ Observed hemorrhage inside eyeball
- Pupil changes—altered shape, blown, afferent defect
- Displaced iris tissue or other uveal tissue outside the eye
- Foreign body cannot be easily removed/is embedded
- Corneal laceration or abrasion
- Displaced lens
- Absence of red reflex
- Open globe injury/obvious break in eyewall structure
- Orbital fracture/ Presence of obvious bony step-offs confirming fracture
- Laceration involving eyelid margin*, or lacrimal system, or violation of the orbit with prolapsed periocular fat
- Elevated intraocular pressure**
- Uncontrolled nausea and emesis
- New onset strabismus
- Tense orbit/ Evidence of orbital hemorrhage with concern for orbital compartment syndrome***
- Multiple layers of the eye affected ****
- Mechanism of injury
 - Projectile
 - Penetrating/perforating (especially with concern for a retained foreign body)
 - Chemical
 - +/- Blunt if meets above criteria • Projectile source of trauma/MVC
- Injury is not out of proportion to reported history
- Monocular patient/patient with known amblyopia in the unaffected eye
- Other associated systemic injuries that were not apparent previously
- Limited extraocular muscle motility with oculocardiac reflex
- Orbital or intraocular foreign body needs ophthalmic removal
- Concern for retinal detachment—acute loss of vision,
- VF defect, new floaters (usually too many to count)

Refer to Cincinnati Children's Emergency Department for Ophthalmology consult
OR
Call Physician Priority Link same day to refer to Cincinnati Children's Ophthalmology.

* Eyelid margin is the junction of the conjunctiva and the skin, where the eyelashes are located.

** Clinical findings of IOP: nausea, emesis, eye pain, decreased vision. Digital palpation of the eye comparing it to the other eye can be helpful.

*** Tense orbit—mechanism of injury will suggest an orbital process such as a hemorrhage. Clinically see proptosis, eyelid swelling, conjunctival chemosis, can have limitation of extraocular motility +/- APD, can lead to progressive vision loss. Tense orbit is a sign of an orbital compartment syndrome.

**** Multiple layers of the eye affected such as eyelid, +conjunctiva, +cornea, etc.

For urgent issues, or to speak with the specialist on call 24/7, call the Physician Priority Link at 1-888-987-7997.