

Emergency

Care and Transportation of the Sick and Injured



Section 5: Trauma

25: Eye Injuries

Cognitive Objectives (1 of 2)

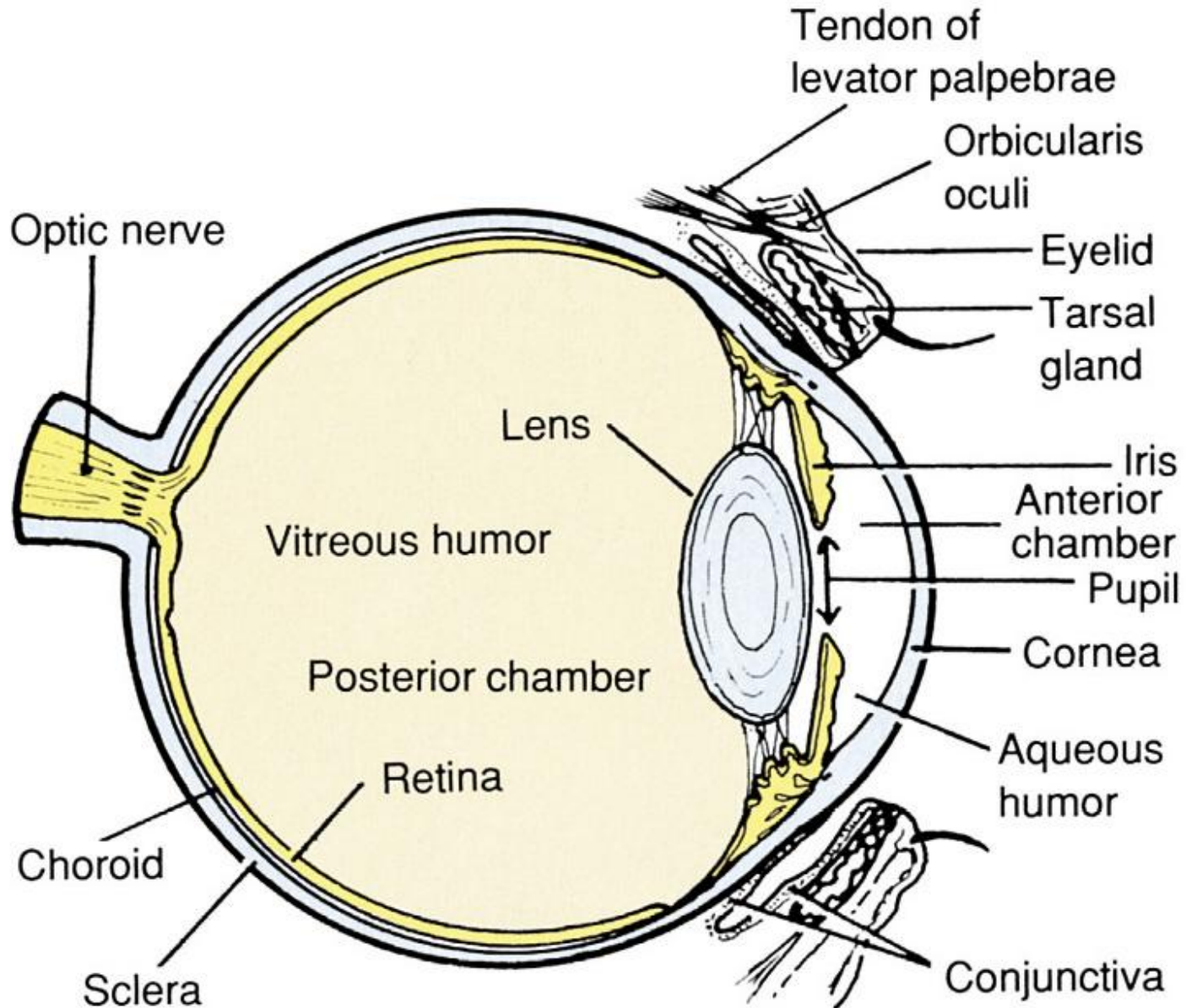
1. List the main anatomical features of the eye.
2. Describe the principal functions of the eye.
3. Describe the signs and symptoms of eye injuries.
4. List the steps to assess eye injuries.
5. Describe the steps for managing foreign objects in the eye.
6. Describe the steps for managing puncture wounds to the eye.

Cognitive Objectives (2 of 2)

7. Describe how to manage burns to the eye.
 8. Describe how to remove contact lenses from the eye.
 9. Recognize abnormalities of the eyes that may indicate underlying head injury.
 10. Recognize and manage a patient with an artificial eye.
- There are no affective objectives for this chapter.

Psychomotor Objectives

11. Demonstrate the use of irrigation to flush out foreign bodies lying on the surface of the eye.
 12. Demonstrate the care of the patient with chemical burns to the eye.
 13. Demonstrate the steps in the emergency care of the patient with lacerations of the eyelids.
- All of the objectives in this chapter are noncurriculum objectives.



Eye Injuries

- Can produce severe complications
- Examine pupil for shape and reaction.



Appearance of Eye

- In a normal, uninjured eye, the entire circle of the iris should be visible.
- Pupils should be round, equal in size, react equally when exposed to light.
- Both eyes should move in same direction when following a finger.
- Always note patient's signs and symptoms including severity and duration.

You are the Provider

- You and your EMT-B partner are dispatched for an injured person at Frank's Auto Repair.
- You discover a patient with a large metal fragment in his right eye.
- Bystanders tell you that he was working with a piece of machinery that exploded in his face.

You are the Provider

(continued)

- You take BSI precautions and ask the patient what happened.
- He tells you that the machine “blew apart” and he felt something hit his right eye.
- He did not fall, never lost consciousness, and is alert and oriented.

You are the Provider

(continued)

- What precautions would you take on this scene?
- What was the mechanism of injury?

Scene Size-up

- Observe for hazards.
- Request additional help early.

You are the Provider

(continued)

- Your patient has a patent airway and is breathing.
- You observe moderate bleeding from his right eye.
- You perform a rapid assessment and determine the only injury present is a large metal fragment in the sclera of the right eye.

You are the Provider

(continued)

- What are some considerations for your initial assessment of this patient?
- At what point in the assessment would you control bleeding?
- How would you control the bleeding to the right eye?

Initial Assessment

- Eye injuries can cause permanent disability.
- Can create great anxiety
- Approach patient calmly.

Airway and Breathing

- Consider immobilization.
- Eye injuries can affect airway.
- Check for clear, symmetric breath sounds.
- Provide high-flow oxygen.
- Palpate chest for DCAP-BTLS.

Circulation

- Quickly assess pulse rate and quality.
- Control bleeding.
- Do not put pressure on eye.
- Wounds around eye bleed freely.
- Are not usually life threatening
- Usually easy to control

Transport Decision

- Eye injuries are serious.
- Transport quickly and safely.
- Surgery/restoration of circulation to eye may need to be achieved in 30 minutes.
- Do not delay transport.

You are the Provider

(continued)

- The patient is an A on the AVPU scale.
- No noted airway abnormalities. Breathing is normal.
- DCAP-BTLS is unremarkable.
- Pulse and skin are unremarkable.
- You scan the body for bleeding and note bleeding at the right eye. You control bleeding by placing a sterile moist dressing gently on the eye.
- You decide patient is medium transport due to eye injury.

You are the Provider

(continued)

- You take a SAMPLE history and learn that the patient wears contact lenses.
- You observe that the left eye is uninjured; the pupil is round and reactive to light, and the contact lens is in place.

You are the Provider

(continued)

- Would you remove the contact lenses?
- How would you treat this patient?
- Do you bandage one or both eyes?
- How would you deal with the emotional well-being of the patient during treatment and transportation?

Focused History and Physical Exam

- Rapid physical exam
 - In bleeding cases, do not focus just on bleeding.
 - Quickly assess entire patient from head to toe.

Focused History and Physical Exam

- Focused physical exam
 - Begin with eyes and face.
 - Assess eyes for equal gaze.
 - Check pupil shape and response to light.
 - Assess globe for bleeding.
 - If eye is swollen shut, do not attempt to open.



Baseline Vital Signs/SAMPLE History

- **Baseline vital signs**
 - Monitor for shock.
- **SAMPLE history**
 - Perform as usual; obtain from responsive patient or family/bystanders.

Interventions

- **Provide complete spinal immobilization.**
- **Be cautious in bandaging.**

You are the Provider

(continued)

- You leave both contact lenses in place.
- You place a cup over the dressing and bandage both eyes to minimize movement of the object.
- Patient is likely to be upset that both eyes are covered.
- Explain everything that you are doing and keep reassuring patient.

Detailed Physical Exam

- Perform if patient is stable and time allows.

Ongoing Assessment

- With serious injuries, make sure bandage covers both eyes and is not putting pressure on eyeball.
- Communication and documentation
 - Inform hospital in case eye specialists are available.
 - Document the patient's vision or changes in vision.

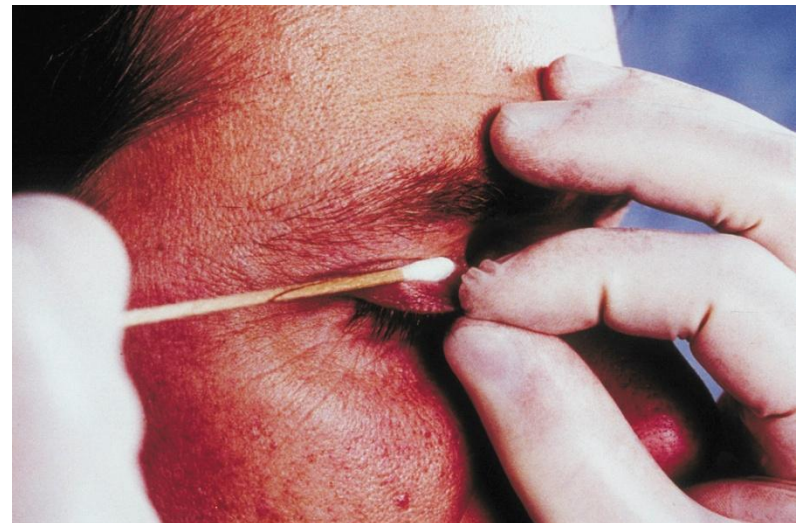
Foreign Objects in the Eye

- For small foreign objects lying on the surface of the eye, irrigate with saline.
- Flush from the nose outward.



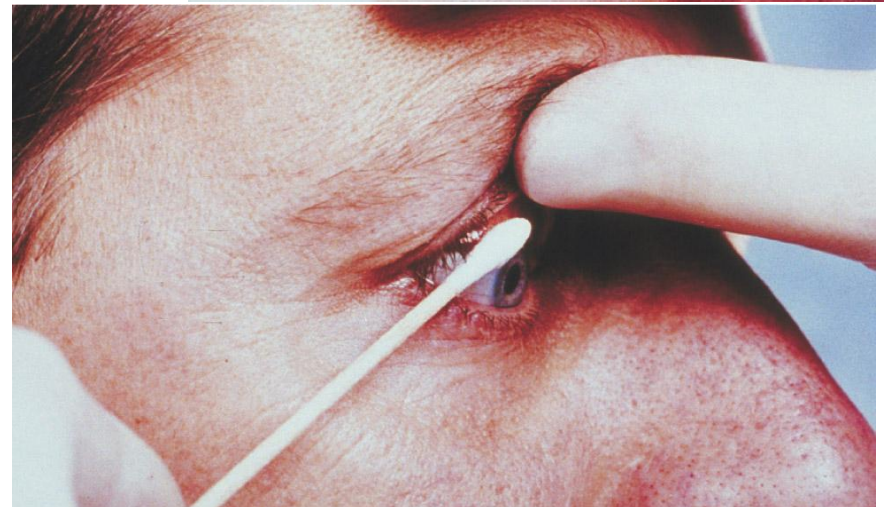
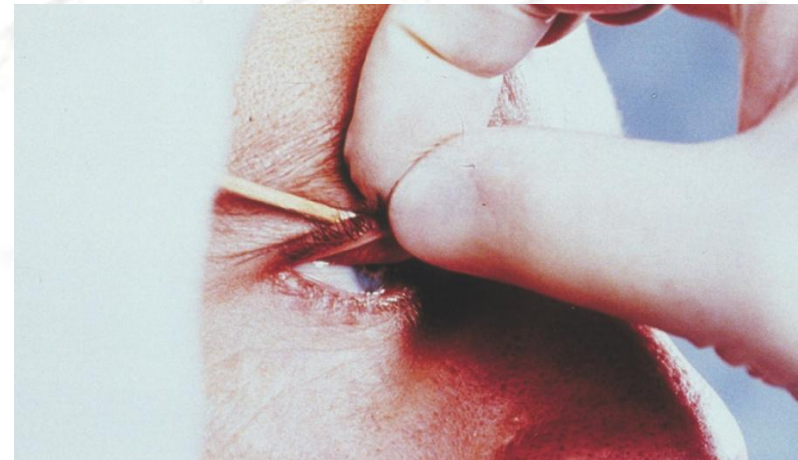
Removing a Foreign Object from Under the Eyelid (1 of 2)

- Never attempt to remove an object on the cornea.
- Have the patient look down.
- Place a cotton-tipped applicator on the outer surface of the upper lid.



Removing a Foreign Object from Under the Eyelid (2 of 2)

- Pull the lid upward and forward.
- Gently remove the foreign object from the eyelid with a moistened, sterile applicator.



Foreign Objects Impaled in the Eye (1 of 2)

- If there is an object impaled in the eye, do not remove it.
- Immobilize the object in place.
- Prepare a doughnut ring by wrapping a 2" piece of gauze around your fingers and thumb.
- Remove the gauze from your hand and wrap remainder of gauze around ring.



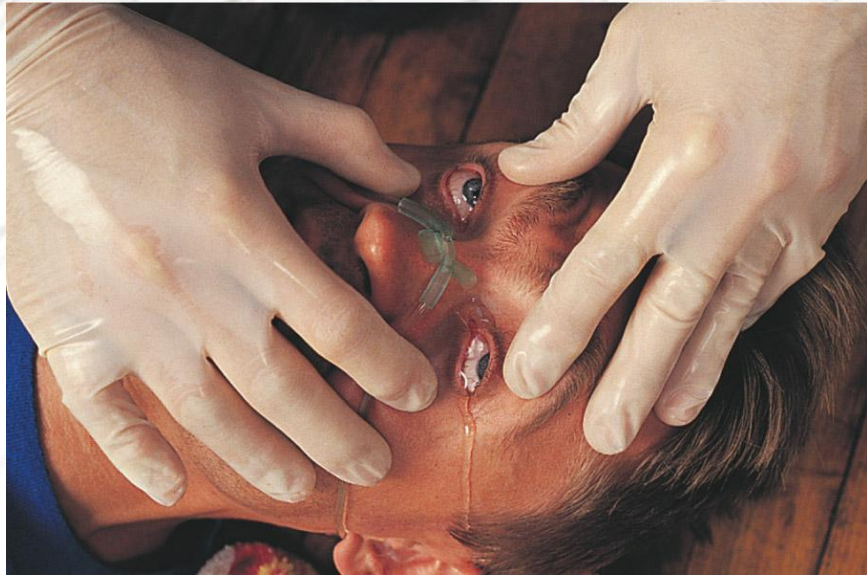
Foreign Objects Impaled in the Eye (2 of 2)

- Carefully place the ring over the eye and impaled object, without bumping the object.
- Stabilize the object with roller gauze.
- Cover the injured and uninjured eye.



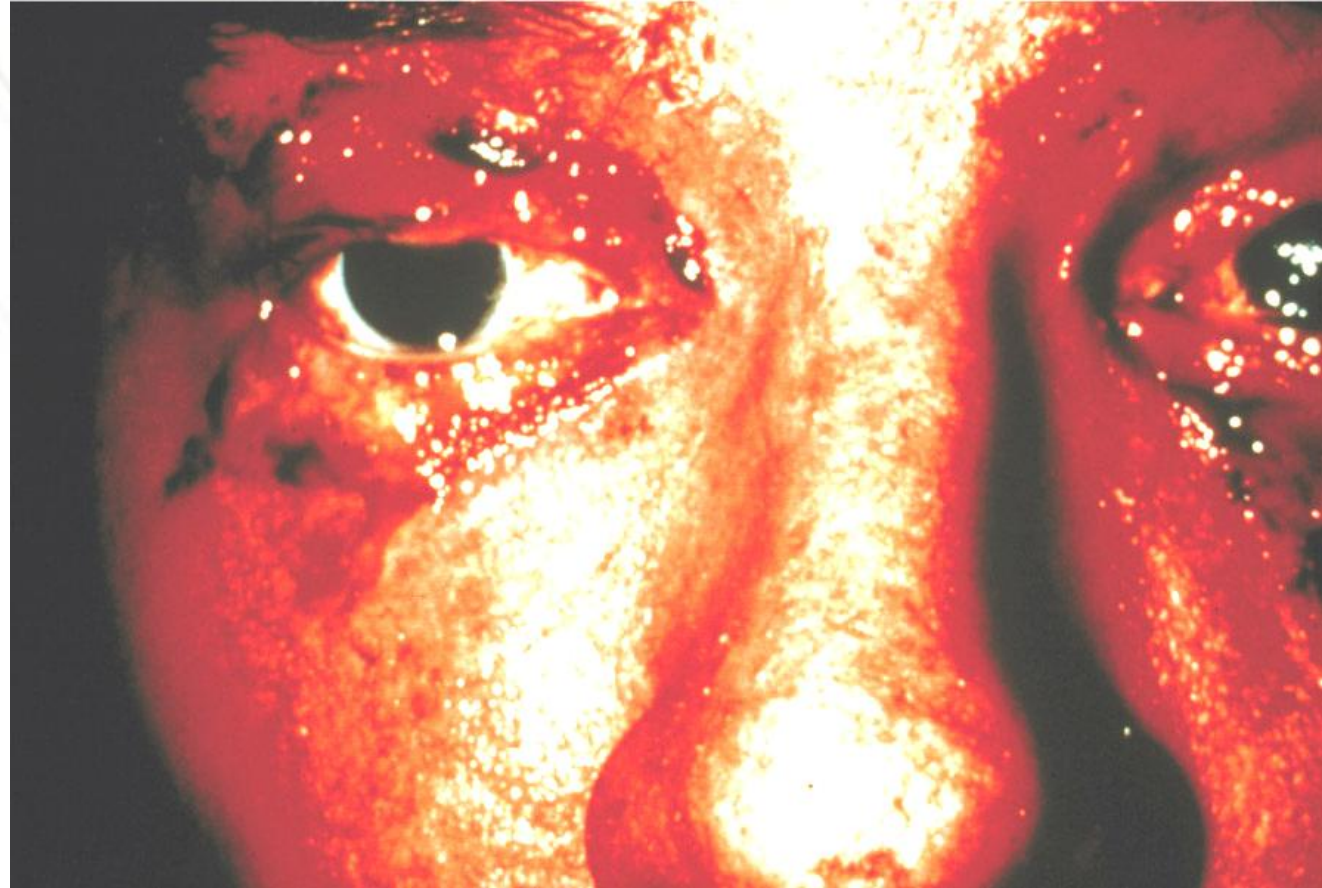
Chemical Burns

- Chemicals, heat, and light rays can burn the eye.
- For chemicals, flush eye with saline solution or clean water.
- You may have to force eye open to get enough irrigation to eye.
- With an alkali or strong acid burn, irrigate eye for about 20 minutes.
- Bandage eye with dry dressing.



Thermal Burns

- For thermal burns, cover both eyes with a moist, sterile dressing.
- Transport patient to a burn center.



Light Burns

- Infrared rays, eclipse light, direct sunlight, and laser burns can damage the eye.
- Cover each eye with a sterile pad and eye shield.
- Transport the patient in a supine position.

Lacerations

- Lacerations to the eyes require very careful repair.
- Never exert pressure on or manipulate the eye.
- If part of the eyeball is exposed, apply a moist, sterile dressing.
- Cover the injured eye with a protective metal eye shield.

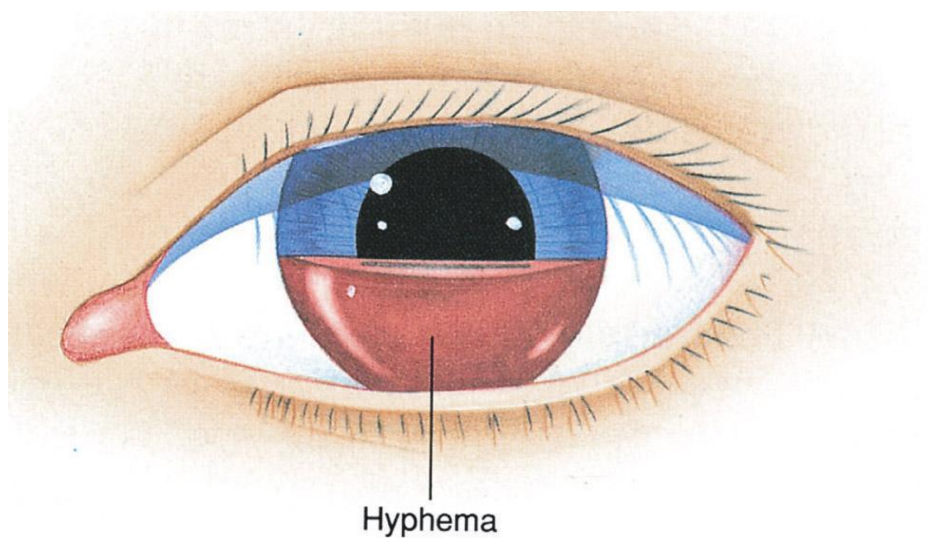


Blunt Trauma

- Blunt trauma can cause a number of serious injuries.
 - A fracture of the orbit (blowout fracture)
 - Retinal detachment
- May range from a black eye to a severely damaged globe



- Bleeding in the anterior chamber of the eye
- May seriously impair vision



Blowout Fracture

- May occur from blunt trauma caused by a fracture of the orbit
- Bone fragments may entrap muscles that control eye movement, causing double vision.



Retinal Detachment

- Often seen in sports injuries
- Produces flashing lights, specks, or floaters in field of vision
- Needs prompt medical attention

Eye Injuries Following a Head Injury

- One pupil larger than the other
- Eyes not moving together or pointing in different directions
- Failure of the eyes to follow equally
 - Bleeding under the conjunctiva
 - Protrusion or bulging of one eye

Pupil Size and Head Injury

- Variation in pupil size may indicate a head injury.

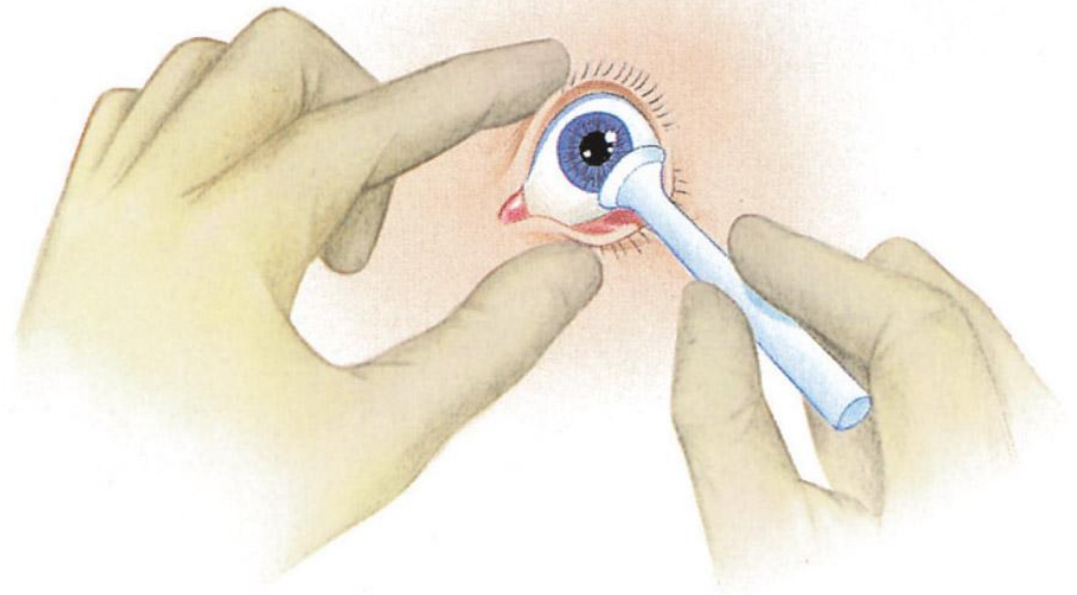


Contact Lenses and Artificial Eyes

- Contact lenses should be kept in the eyes unless there is a chemical burn.
- Do not attempt to remove a lens from an injured eye.
- Notify the hospital if the patient has contact lenses.
- If there is no function in an eye, ask if the patient has an artificial eye.

Contact Lens Removal (1 of 2)

- If absolutely necessary, remove a hard contact lens with a small suction cup, moistening the end with saline.



Contact Lens Removal (2 of 2)

- To remove a soft contact lens:
 - Place two drops of normal saline in eye.
 - Gently pinch it between your gloved thumb and index finger.
 - Lift it off surface of eye.

