

# Visual Potential Decades After Trauma

BY GUY KLEINMANN, MD; RICHARD S. KOPLIN, MD;  
AND MICHAEL E. SNYDER, MD

## CASE PRESENTATION

A 51-year-old man presents for a routine examination. He states that his right eye has been blind since he suffered a blunt trauma at the age of 6. An examination reveals a visual acuity of hand motions in his right eye and 20/20 in his left eye. There is no afferent pupillary defect. A right exotropia of about 20 prism diopters is present.

Figure 1 shows the anterior segment of the patient's right eye after dilation. A small corneal scar, posterior synechiae, and lenticular changes are evident. There is no retinal view. A B-scan reveals no gross abnormalities of the posterior segment. His left eye is within normal limits.

Upon further questioning, the patient states that the vision in his right eye has improved during the past decade from barely light perception to shadows to large figures. When asked if he desires surgical visual rehabilitation for his right eye, he asks for your professional opinion on his visual potential. How would you manage this case?



**Figure 1.** The anterior segment appearance (dilated pupil) of a cataractous lens 45 years after blunt trauma. The patient reports that his vision has improved slightly during the past decade.

## GUY KLEINMANN, MD

Amblyopia is likely, because the trauma occurred during the patient's early childhood. Even with successful surgeries (he will need at least two procedures, including the strabismus surgery), the vision in his right eye will be compromised in comparison to that of his uninjured left eye. Further, it is unknown whether the patient will benefit from the surgery. Most important is to hold a comprehensive discussion with the patient that takes into account his needs, desires, and expectations while making sure that he understands the potential risks and complications. Setting realistic expectations is crucial. One must remember that this 51-year-old patient came for a routine examination, with no complaints.

Figure 1 suggests that the lens has dissolved in the center, leaving a central membrane consisting of the anterior and posterior capsules. This gradual change would explain the improvement in the patient's visual acuity. It could be challenging to separate the anterior capsule from the posterior capsule, and an anterior vitrectomy would likely be required. The status of the zonules requires careful evaluation, because dehiscence of the zonular fiber is not uncommon after trauma and could complicate surgery. The remaining ring of the crystalline lens is probably calcified and hard, in which case removing it without damaging the capsular bag could be challenging. The surgeon should perform an endothelial cell count preoperatively.

Depending on the status of the capsule, the surgeon should be prepared with different options for fixating the IOL. If enough capsular support exists, the preferred alternative would be the fixation of a three-piece IOL, with or without optic capture, in the ciliary sulcus. Otherwise, the surgeon will have to use another technique such as iris or scleral fixation or an ACIOL.

Another possibility is performing a small Nd:YAG laser capsulotomy and then fitting the patient with a contact lens.

## RICHARD S. KOPLIN, MD

This 51-year-old man may have an early childhood ocular trauma syndrome. To determine whether this is

likely would require performing bilateral A-scan biometry for comparison.

It is not uncommon after an injury of the type described herein—when some element of retinal function is preserved—for a significant monocular axial myopia to develop in the injured eye. If this is the case, in spite of attempts at repair, the patient’s vision will likely be compromised to a large degree. This possibility may make intervention undesirable.

The improvement in vision described by the patient is likely a byproduct of the continued resorption/crenation of the damaged lens, which has allowed greater transmission of light and is a siren song best ignored.

This patient’s long-standing visual deprivation likely will result in a deep amblyopia in his injured eye. Axial myopia-induced changes would be expected, perhaps suggesting a significant anisometropia and possible myopic degeneration. Significant axial disparity may also exist. What advantages does intervention hold for this man who has adapted to his monocular condition over many years? Probably few.

If the axial disparity does not exist, however, and the patient is orthophoric and fully understands the risks—both surgical and optical (visual confusion, diplopia)—then a lensectomy and vitrectomy with a sutured implant would be my choice.

**MICHAEL E. SNYDER, MD**

This is a most interesting case. Figure 1 seems to conflict with the reported blunt nature of the injury. It appears that there may be a small, healed, perforating corneal scar just below and to the left of the visual axis in the figure, under which is an apparent perforation of the iris near its margin. The underlying cataract seems to be membranous in nature—in other words, mostly resorbed material with near apposition of the anterior and posterior capsules. With an injury at age 6, the patient’s degree of amblyopia is not likely profound, and he probably has some potential for reasonably good central vision. Although he may be able to fuse information from his two eyes once the central vision of his right eye is reestablished, this is not a certainty, and the possibility of double vision must be discussed with him.

From a technical perspective, the case could be managed as follows. The surgeon could perform a posterior synechiolysis and create an incision in the anterior capsule (under the protection of an ophthalmic viscosurgical device), just anterior to where it courses over the residual white Soemmering ring material. Next, he or she would viscodissect the likely calcified peripheral lenticular material into the anterior chamber, where it could be emulsified. Although in-the-bag implantation

of an IOL might be possible (unlikely), in most cases like this, the anterior and posterior capsules are fused. In such situations, I will create a 4.5- to 5-mm opening in the fused capsules with a continuous peel, microscissors, or a vitrector device. I protect the hyaloid face with a dispersive ophthalmic viscosurgical device. Then, I place a three-piece IOL in the sulcus and capture the optic through both the anterior and posterior capsular openings.

Whether or not it is appropriate or wise to follow this course depends on the patient’s needs and desires and his fellow eye’s risk factors for future sight-threatening disease. ■

*Section Editor Bonnie A. Henderson, MD, is a partner in Ophthalmic Consultants of Boston and an assistant clinical professor at Harvard Medical School. Thomas A. Oetting, MS, MD, is a clinical professor at the University of Iowa in Iowa City. Tal Raviv, MD, is an attending cornea and refractive surgeon at the New York Eye and Ear Infirmary and an assistant professor of ophthalmology at New York Medical College in Valhalla. Dr. Raviv may be reached at (212) 448-1005; tal.raviv@nylasereye.com.*

*Guy Kleinmann, MD, is director of the Cataract Service in the Ophthalmology Department of Kaplan Medical Center in Rehovot, Israel. Dr. Kleinmann may be reached at guy.kleinmann@hsc.utah.edu.*

*Richard S. Koplins, MD, is director of the Cataract Section at the New York Eye and Ear Infirmary in New York. Dr. Koplins may be reached at koplinsr@gmail.com.*

*Michael E. Snyder, MD, is in private practice at the Cincinnati Eye Institute and is a voluntary assistant professor of ophthalmology at the University of Cincinnati. Dr. Snyder may be reached at (513) 984-5133; msnyder@cincinnatieye.com.*



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