2.15  Injury Involving the Entire Globe
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2.15.1  Introduction

Open globe injuries\(^1\) may cause substantial damage to the eye, making the situation akin to that of a polytraumatized person: the condition of one pathology influences the condition and treatment of another (Fig. 2.2.14). The most serious of the potential scenarios is when the retina requires major surgery urgently but the cornea has become opaque and interferes with visibility. Such an injury represents one of the most challenging indications for the ocular traumatologist, and the number of viable options is limited.

2.15.2  Evaluation

The cornea is so badly damaged that even the color of the iris may be impossible to determine at the slit lamp (Fig. 2.2.14). The condition of the cornea may be due to the presence of multiple wounds with excessive edema and/or blood staining. The lens, if present at all (Fig. 2.12.2), is rarely clear. The vitreous hemorrhage is usually very severe, and the retina is often incarcerated in the wound. Early retinal detachment and the development of PVR are frequent complications. The visual acuity is typically in the NLP to HM range. The treatment should not be based on whether the visual acuity is NLP or greater (see Chap. 1.8).

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\(^1\) Occasionally, a contusion can also inflict such damage.
The outcome of the injury is primarily determined by the condition of the postequatorial retina. The main question is to what extent the traumatized cornea interferes with posterior segment surgery. The following management options are available:

- **No surgery.** Abandoning the eye is equal to a death sentence: spontaneous improvement is unreasonable to expect. Early phthisis is likely.
- **Delayed surgery.** Vitrectomy is performed only when the cornea’s interference with visibility is sufficiently reduced. Unfortunately, this is usually very late, and the prognosis of the injury is extremely poor.
- **Timely but limited surgery.** Vitrectomy is performed within the first 2 weeks, but it is not carried to completeness because the condition of the cornea does not permit it. The prognosis is very poor.
- **Incremental surgeries.** Posterior segment surgery is done in several surgical sessions. Even though performed early, each vitrectomy is incomplete, depending on the condition of the cornea. The disadvantages far outweigh the benefits; the prognosis is very poor.
- **Endoscopy-assisted vitrectomy.** The endoscopic approach has the advantage of bypassing the corneal interference (see Chap. 2.20). It also makes corneal transplantation potentially avoidable. Endoscopy-assisted vitrectomy has its own, significant technical difficulties, mainly that is performed without stereoscopy and surgery is not bimanual, and it requires considerable experience. Another factor to consider is the inability to postoperatively inspect the retina until the media opacity clears. Nevertheless, EAV is a viable option and should be high on the surgeon’s consideration list. In summary, the main advantage of the endoscope over the TKP is that the patient is spared the risks associated with PK if the corneal opacity is temporary.