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Case report

Remarkable visual recovery after severe open globe injury

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ABSTRACT

Purpose: To describe a case of remarkable visual recovery after severe open globe injury.
Observations: We present a case of a 70-year-old man with an open globe injury with no light perception vision before and after primary repair of his ruptured globe and before secondary vitreoretinal surgery to repair a total retinal detachment with a 360° giant retinal tear and retinal incarceration in a posterior scleral wound who proceeded to recover vision to the 20/60 pinhole to 20/50 level.
Conclusions and importance: Poor presenting acuity is a known risk factor for poor visual outcome after open globe injury. We hypothesize this remarkable visual recovery could be attributable to the presence of a massive choroidal hemorrhage and limited intraocular hemorrhage elsewhere. In rare cases, vision can improve from the no light perception level after secondary vitreoretinal surgery.

1. Introduction

No light perception (NLP) vision after open globe injury (OGI) is a known predictor of poor visual outcome[1]. We present a case of OGI with NLP vision on presentation, after primary open globe repair, and before secondary pars plana vitrectomy (PPV) to repair a total retinal detachment (RD) with 360° giant retinal tear and retinal incarceration in a posterior scleral wound with remarkable visual recovery. To our knowledge, this is the best visual acuity outcome recorded in a case of OGI with NLP vision before both primary repair and secondary PPV.

2. Case report

A 70-year-old man presented after a syncopal event and blunt trauma to his left eye. On presentation, his visual acuity was 20/40 OD and NLP OS with a left afferent pupillary defect (APD). An orbital CT scan demonstrated an irregular globe contour with a large hemorrhagic choroidal detachment (Fig. 1A). He underwent primary repair of a 17 mm zone 3 scleral rupture within 24 hours of his injury. On postoperative day 1 (POD1) his vision remained NLP. B scan ultrasonography confirmed the presence of a large hemorrhagic choroidal detachment (Fig. 1B). The media were clear, allowing visualization of peripheral retinal structures that were displaced anteriorly against the crystalline lens by the choroidal detachment (Fig. 1C). On POD4 his vision improved to light perception (LP), but on POD10, the vision had returned to NLP. Eleven days after the open globe repair, he underwent external drainage of hemorrhagic choroidals and repair of a total funnel RD that was incarcerated in the posterior scleral wound (Fig. 2A). One day after vitrectomy, his vision was LP, and improved to 20/60 with pinhole to 20/50 four months postoperatively (Fig. 2B). His vision progressively declined to 20/100 at postoperative month six due to a macular epiretinal membrane. After silicone oil removal, PPV, and epiretinal membrane peeling his vision returned to 20/60 with correction. His exam is stable one year after the injury.

The patient provided written consent for publication of personal identifying information including medical record details and photographs.

3. Discussion

The current paradigm for management of OGI consists of primary repair within 24 hours, then secondary PPV approximately 1–2 weeks later if there is posterior segment pathology and visual acuity is LP or better. If the vision is NLP, enucleation is considered to decrease the risk of sympathetic ophthalmia.

There is limited literature discussing the role of secondary PPV in cases with NLP vision after OGI. Three of the largest case series of OGI with NLP vision on presentation either selected patients that improved to LP or better or did not specify visual acuity prior to secondary PPV[2–4]. The remarkable recovery of vision to the 20/60

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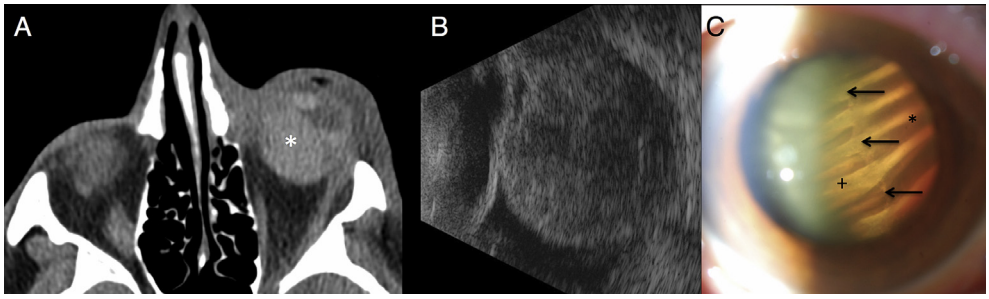

Fig. 1. A: Orbital computed tomography scan taken on presentation demonstrates a markedly irregular globe contour with a large hemorrhagic choroidal detachment (*) in the left eye. **B:** B scan ultrasonography demonstrating a large hemorrhagic choroidal detachment one day after open globe repair. **C:** Pars plana (+), ora serrata (arrows), and peripheral retina (*) visible behind the crystalline lens due to anterior displacement by the choroidal detachment one day after open globe repair.

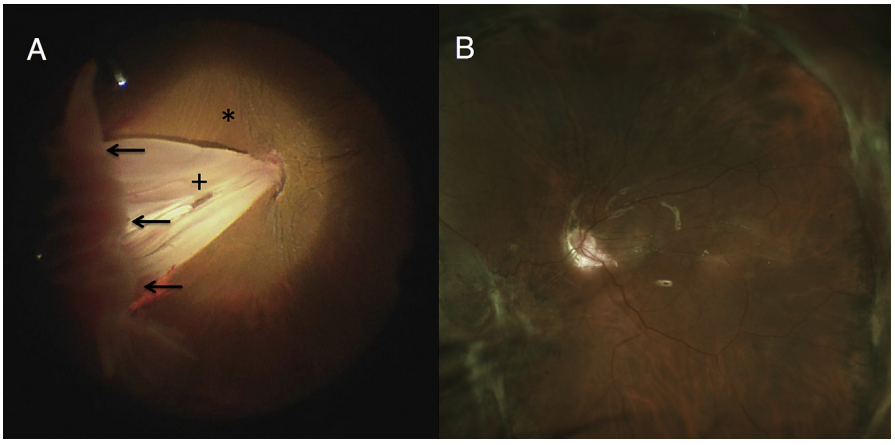

Fig. 2. A: Intraoperative view during vitrectomy of total funnel retinal detachment with 360° giant retinal tear and retinal incarceration in the posterior scleral wound eleven days after open globe repair. Bare retinal pigment epithelium (*), underside of funnel retinal detachment (+), and posterior incarceration site (arrows). **B**: Retina attached at post-operative month 4 after vitrectomy, drainage of choroidal hemorrhage, excision of incarcerated retina, and retinal reattachment using silicone oil. Visual acuity 20/60 pinhole 20/50.

pinhole to 20/50 level described above is, to our knowledge, the best vision achieved after NLP vision was documented both on presentation and prior to secondary PPV.

Our patient had multiple factors associated with a poor visual prognosis after OGI including poor presenting acuity, APD, rupture injury, zone 3 wound, and RD[1,3,5]. We hypothesize that, despite these factors, our patient recovered good vision due to the presence of a massive choroidal hemorrhage, which has been associated with very poor vision or even NLP vision that can subsequently improve, and paucity of intraocular hemorrhage elsewhere[6–8]. Vitreous hemorrhage contributes to the pathogenesis of proliferative vitreoretinopathy in traumatized eyes and subretinal hemorrhage is directly toxic to the retina[9,10]. The absence of vitreous and subretinal hemorrhage in our patient was atypical given the severity of injury, but likely contributed to his favorable visual outcome.

4. Conclusions

While NLP vision after OGI remains a poor prognostic indicator and eyes that are NLP after primary globe closure are typically not candidates for further intervention, vision can improve after secondary PPV in cases such as this with massive choroidal hemorrhage.

Disclosures

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