



Loss of Vision from a Football

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Introduction:

A 12-year-old boy presents with severe blur, moderate floaters in his right eye for four days after being hit with a football in the eye. Past medical history, medications, family history and review of systems was otherwise negative.

Exam:

Best corrected visual acuity was 20/200 in the right eye and 20/20 in the left eye. Intraocular pressure was within normal limits. No relative afferent pupillary defect was noted. Visual field to confrontation and extraocular motility was full in both eyes. Anterior segment examination was unremarkable.

Dilated fundus exam and spectral domain optical coherence tomography (SD-OCT) revealed a full thickness macular hole in the right eye as seen in Figure 1. Peripheral examination of the right eye showed patchy intraretinal hemorrhages inferotemporally. No retinal breaks or dialysis was noted with scleral depression. Fundus examination of the left eye was normal.

Management:

The patient was diagnosed to have a traumatic macular hole. Options for treatment include conventional macular hole surgery with vitrectomy, internal limiting membrane peel and gas-fluid exchange versus

observation with the hope for spontaneous closure. After extensive discussion with the patient and mother, the decision was made to follow the patient conservatively in three weeks.

At his 3-week follow-up, the patient reported his vision was slowly improving. His best corrected visual acuity in the right eye was 20/80. The dilated fundus exam was notable for closure of the hole with foveal retinal pigment epithelium changes. SD-OCT confirms closure of the hole with ellipsoid zone and RPE irregularities in Figure 2.

Discussion:

Historically, there has been success with both observation and vitrectomy with regard to hole closure. The largest review of surgical outcomes for traumatic macular holes reviewed 25 repairs over nine different centers.¹ One of the co-authors was our very own, M. Gilbert Grand. There have been many small case series and reports regarding spontaneous closure as well.²

The retina service at Massachusetts Eye and Ear

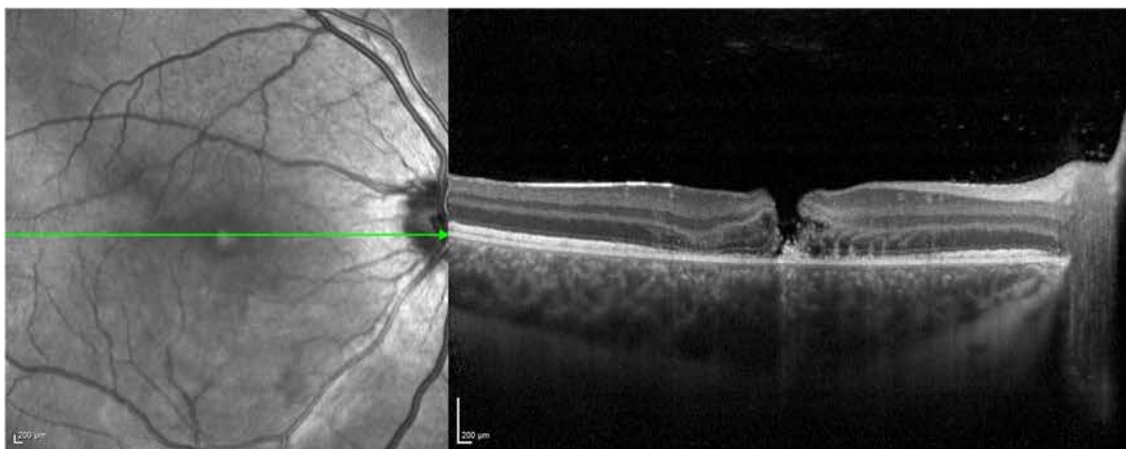


Figure 1. Spectral domain optical coherence tomography (SD-OCT) reveals a full thickness macular hole with commotio in the right eye on presentation.

published the largest long-term follow-up case series of consecutive traumatic macular holes at a single center in 2015. They noted that of 28 patients, 11 (39.3%) closed spontaneously within six weeks with a trend toward smaller holes closing spontaneously. Surgical intervention was less successful with hole closure when elected after three months.²

Treatment recommendations in children also seem to differ as Gao et al report patients of ≤ 24 years of age with MH sizes of ≤ 0.2 disc diameter were more likely to achieve spontaneous hole closure.³ Given advances in imaging, Chen and colleagues examined the prediction of spontaneous closure of traumatic macular hole based on OCT and observed that the absence of intraretinal cysts was associated with a higher rate of spontaneous closure.⁴

Given our experience and the literature, retina specialists should take the age of the patient, lens status, size of the macular hole, presence of edema, and duration of the macular hole in to consideration when deciding between observation versus vitrectomy.

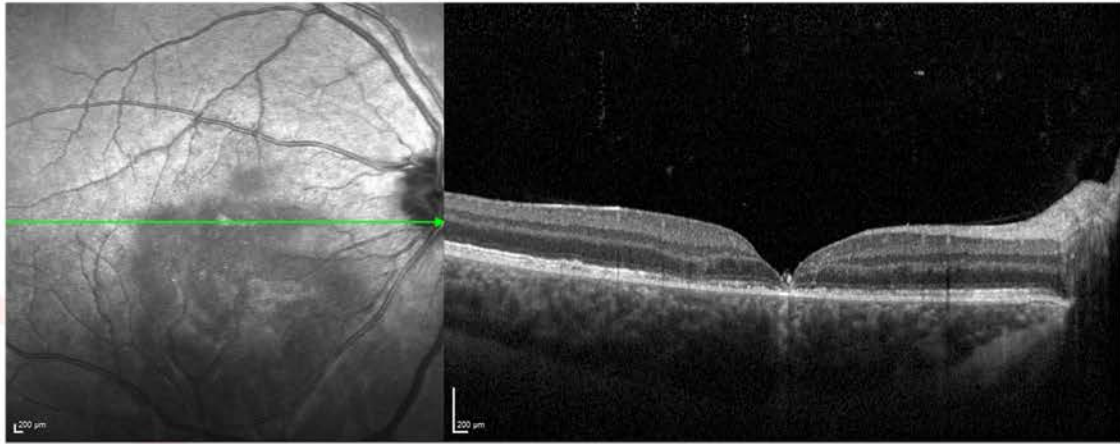


Figure 2. Spectral domain optical coherence tomography (SD-OCT) confirms closure of the hole with ellipsoid zone and RPE irregularities at 3-week follow-up.

References:

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3. Gao M, Liu K, Lin Q, and Liu H. Management modalities for traumatic macular hole: a systematic review and single-arm meta-analysis. *Curr Eye Res* 2017;42:287-296.
4. Chen H, Chen W, Zheng K, et al. Prediction of spontaneous closure of traumatic macular hole with spectral domain optical coherence tomography. *Sci Rep* 2015;5:12343.

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