• Letter to the Editor •

Resolution of siderotic glaucoma correlated with decreased pigmentation in the anterior chamber angle after removal of a retained ferrous foreign body

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Dear Sir,

I am Dr. Zhe Xu, from the Eye Center, Second Affiliated Hospital, School of Medicine, Zhejiang University, Hangzhou, China. We write to present a case of resolution of siderotic glaucoma after removal of a retained ferrous foreign body. This study has been performed in accordance with the Declaration of Helsinki and was approved by the Ethics Committee of the Second Affiliated Hospital, School of Medicine, Zhejiang University. Written informed consent for publication of photographs was obtained from the patient.

A retained iron-containing intraocular foreign body (IOFB) can cause the deposition of iron molecules in ocular tissues, and siderosis bulbi will ensure if the IOFB is not removed. The clinical findings of siderosis bulbi include iris heterochromia, pupillary mydriasis, cataract formation, secondary glaucoma, and retinal pigmentary degeneration[1-3]. Secondary glaucoma is one of the most serious complications of ocular siderosis. We describe a case of secondary glaucoma caused by a retained ferrous IOFB. The intraocular hypertension resolved after the removal of the retained ferrous IOFB without glaucoma surgery, which was correlated with a decrease in anterior chamber angle pigmentation.

A 43-year-old healthy male presented with eye pain and blurred vision in his right eye for 7d. The patient had suffered a penetrating trauma to his right eye while hammering metal 6mo earlier and had been treated with topical antibiotics. The visual acuity was hand motion in the patient's right eye and 20/20 in the patient's left eye. The intraocular pressure (IOP) was 57 mm Hg in his right eye and 15 mm Hg in his left eye. A slit-lamp examination of the patient's right eye revealed conjunctival congestion, corneal edema, a normal anterior chamber depth, and a dilated pupil. The fundus was not visible. B-scan ultrasonography showed a highly echogenic mass localized in the inferior retina (Figure 1A). The ocular examination of the patient's left eye was unremarkable.

After treatment with topical and systemic glaucoma medications for 3d, the IOP in the patient's right eye dropped to 30 mm Hg. A slit-lamp examination revealed a paracentral corneal linear scar, a traumatic iris root defect at the 5 o'clock position, and posterior subcapsular rosette opacity. No inflammation in the anterior chamber was found (Figure 1B). Gonioscopy revealed rusty brown pigmentation throughout the anterior chamber angle in the patient's right eye (Figure 1C) but not in his left eye. A fundus examination revealed retinal pigment degeneration, an oval retinal and choroidal atrophy with fibrotic tissue, and a marked cup/disc asymmetry of 0.45 in his right eye (Figure 1D) and 0.2 in his left eye.

A retained metallic IOFB was removed by pars plana vitrectomy. The IOP in the patient's right eye fluctuated between 22 and 28 mm Hg in the first month following the surgery, and the patient was treated with 2% carteolol eye drops, administered twice daily. Two months after the surgery, the IOP was 17 mm Hg in the absence of the application of 2% carteolol eye drops. The best corrected visual acuity was 20/32. A slit-lamp examination revealed mild aggravation of

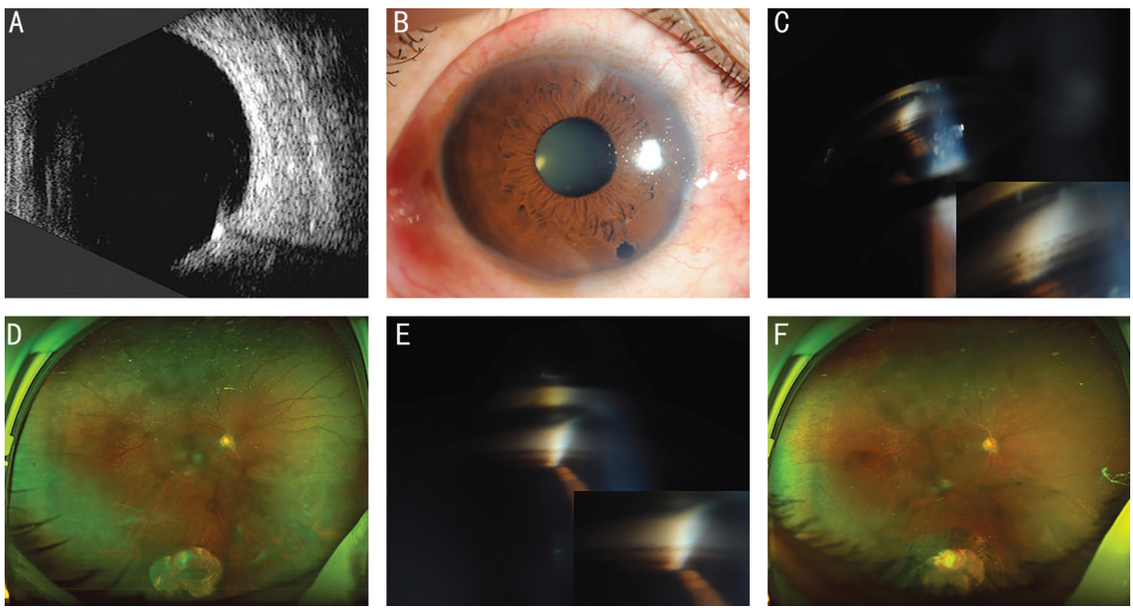

Figure 1 The findings of B-scan ultrasonograph, anterior segment image, gonioscopy, and fundus of the patient's right eye before and after the removal of a retained foreign body by pars plana vitrectomy A: B-scan ultrasonography showed a highly echogenic mass localized in the retina; B: The image of the anterior segment showed a paracentral corneal linear scar and a traumatic iris root defect; C: Gonioscopy showed rusty brown pigmentation throughout the anterior chamber angle before surgery; D: The fundus examination revealed an oval retinal and choroidal atrophy with fibrotic tissue; E: Two months after surgery, gonioscopy revealed a decrease in the rusty brown pigmentation throughout the anterior chamber angle; F: A fundus examination 2mo after the surgery revealed an oval retinal and choroidal atrophy with surrounding laser scars.

the posterior subcapsular opacity, and gonioscopy revealed a decrease in brown pigmentation (Figure 1E). A fundus examination revealed an oval retinal and choroidal atrophy with surrounding laser scars (Figure 1F). At the last 12-month follow-up, the patient's visual acuity was 20/40, with normal IOP.

A retained iron-containing IOFB can cause siderosis bulbi due to the deposition of iron molecules in ocular tissues, including the lens epithelium, ciliary body epithelium, and sensory retinal layers[1]. Siderotic glaucoma is common in patients with a retained ferrous IOFB[4]. The pathogenesis of siderotic glaucoma includes a physical obstruction of the trabecular meshwork with metallic particles, trabecular fibrosclerosis, and ciliary body changes[2-5]. Glaucoma surgery, such as a trabeculectomy, is required to control the IOP in such cases.

In the current case, the patient developed a complicated cataract, secondary glaucoma, and retinal pigmentary degeneration due to the presence of a retained ferrous IOFB for 6mo. To prevent further damage, the retained IOFB was removed by pars plana vitrectomy. Following the removal of the IOFB, the rusty brown pigmentation in the anterior chamber angle decreased, and the IOP returned to normal.

In summary, we described a case of spontaneous resolution of intraocular hypertension after the removal of a retained ferrous IOFB without glaucoma surgery, which was correlated with decreased pigmentation in the anterior chamber angle. The early removal of a retained ferrous IOFB may prevent permanent anterior chamber angle dysfunction, thereby avoiding glaucoma surgery.

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