Iris Retraction Syndrome After Clear Cornea Phacoemulsification

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Citation

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Abstract

Iris retraction syndrome (IRS), a potential sign of retinal detachment, is a clinical phenomenon noted in both non-surgical and post-surgical settings. The mechanism of IRS remains unclear and has been attributed to decreased aqueous humor formation and increased fluid clearance through retinal pigment epithelium (RPE) pump action. If IRS is present, prompt pupillary dilation and a thorough exam of the peripheral retina is indicated.

INTRODUCTION

Iris retraction syndrome (IRS) is a clinical phenomenon noted in both non-surgical and post-surgical settings[1,2,3,4]. IRS may present with angle closure glaucoma secondary to pupillary block in the post-operative period[2]. Alternatively, post-operative hypotony may be present with marked bowing of the iris and iris apposition to the lens[2]. The mechanism of IRS remains unclear and has been attributed to decreased aqueous humor formation and increased fluid clearance through retinal pigment epithelium (RPE) pump action[1]. Such aqueous imbalance would create a pressure gradient with antero-posterior movement of the lens-iris diaphragm. We describe a case of IRS after clear cornea phacoemulsification presenting in the first post-operative week and review published literature.

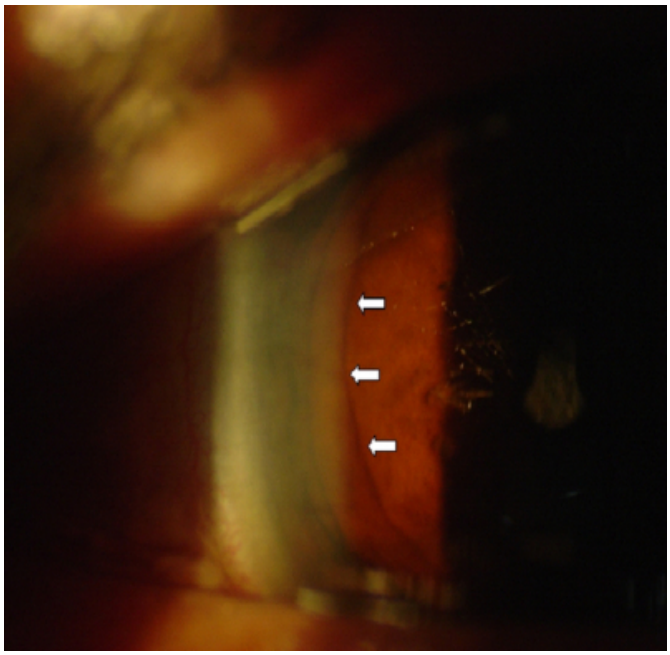
CASE REPORT

A 65 year old male presented with complaint of “fuzzy vision” in his left eye for one week. He reported having had cataract surgery one week earlier. He experienced a slow decrease in central vision over four days and denied flashes, floaters or veils across his vision. Previous ocular history was otherwise unremarkable.

Snellen acuity was 20/80 OD and 20/200 OS without correction and no improvement with pinhole. Examination revealed a well-sealed temporal clear corneal incision with one interrupted 10-0 nylon suture in place. The anterior segment exam was significant for trace cell. There was a peculiar configuration to the iris suggestive of iris retraction (figure 1). The pupillary margin was adherent to an MA60 (Alcon, Fort Worth Texas) lens implant with posterior synechiae formation. The iris periphery appeared bowed back with a marked increase in anterior chamber depth. The posterior chamber intraocular lens was in the ciliary sulcus. The anterior segment exam in the right eye was significant for +3 nuclear sclerotic cataract. Intraocular pressure was 12mm Hg on the right and 5mm Hg on the left.

Figure 1

Figure 1: Iris retraction with posterior bowing in the periphery (white arrows). There is marked deepening of the anterior chamber with apposition of the iris to the lens.



Dilation of the left eye revealed an inferotemporal retinal detachment with three holes abutting the ora serata and a horseshoe tear at 9 o'clock. Pars plana vitrectomy with SF6 gas was performed on the following day, after which the iris configuration appeared normal. Vision returned to 20/40 in the left eye six weeks post-operatively.

DISCUSSION

Iris retraction syndrome is a rare phenomenon occurring in eyes manifesting occult retinal detachments and serous retinal detachments[1,2,3,4]. Most early case reports described IRS in the absence of intraocular surgery. Cases of iris retraction following intraocular surgery have been reported and had similar presentations to our case[2]. Patients can present with pupillary seclusion and high intraocular pressure following surgery. Alternating iris bombe and iris retraction has also been reported and might shed light on the mechanism of this phenomenon. The unusual occurrence of fluctuating intraocular pressure and persistent uveitis has been proposed to be due to an occult retinal detachment, the balance of aqueous suppressants that may be given postoperatively and the RPE pump.

Campbell described this proposed mechanism in a report of nine cases in 1984[1]. He suggested that the resulting hypotony seen after intraocular surgery was likely due to the RPE pump draining subretinal fluid at a greater rate than the ciliary body was able to produce it. The addition or removal of aqueous suppressants was intermittently able to produce an iris bombe or iris retraction configuration.

Greenfield et al reported two cases of iris retraction syndrome, one of which presented as late as 6 months after surgery[2]. The first case involved a patient who presented after uncomplicated extracapsular cataract extraction. She complained of flashes and floaters two days prior to presentation and was noted to have a retinal detachment involving the macula. She developed a firm eye during cryopexy the following day and a scleral buckling procedure was abandoned. Two days later, the patient had pupillary seclusion with marked iris retraction, eventually resolving after peripheral iridectomy and posterior synechialysis with scleral buckling procedure. The second patient was noted to have a deep anterior chamber in a post pars plana vitrectomized eye. IOP was 5mm Hg and the patient had no visual complaints from a baseline of count fingers vision. Iris retraction was noted with a deep chamber, open angle to gonioscopy, no blood in the angle and pupillary seclusion. Dilated exam revealed an inferior retinal detachment.

Geyer and colleagues described a case of IRS in a patient with serous retinal detachment[4]. B scan and clinical examination revealed a serous retinal detachment in the presence of exudative age related macular degeneration with no signs of retinal breaks or tears. The posterior bowing of the iris resolved with dilation and remained in normal anatomical position despite the persistence of the serous retinal detachment. They believed this contradicted the proposed mechanism by Campbell that aqueous production-drainage imbalance leads to the iris retraction. They proposed the mechanism was hypotony leading to a net retrograde flow through the episcleral vessels in to the anterior chamber in the presence of pupillary seclusion.

Our case supports the theory that the pathophysiology of IRS centers on the creation of pupillary block with the iris adhering to the lens. Relieving the pupillary block equalizes the pressure anterior and posterior to the iris. It is debatable whether the pressure gradient is occurring due to aqueous hyposecretion by the ciliary body and pumping action of the RPE as proposed by Campbell et al.[1] In our case, we did not see blood in the angle to support the idea of retrograde flow through the episcleral vessels and in to the anterior chamber as proposed by Geyer and colleagues[4].

CONCLUSIONS

As our case illustrates, IRS may be an early sign of retinal detachment after incisional intraocular surgery. In our patient, IRS was a presenting sign that prompted dilation and discovery of the detachment. While signs of iris retraction may appear to be innocuous at first, persistent post-operative uveitis and fluctuating intraocular pressure along with the distinctive iris configuration should suggest the possibility of an undiagnosed retinal detachment and the need for a dilated exam. IRS may be an early sign of retinal tears or detachment after clear cornea phacoemulsification. If it is present, prompt pupillary dilation and a thorough exam of the peripheral retina is indicated.

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