Pupillary Block Associated With Posterior Chamber Lenses

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ABSTRACT

Two patients developed pupillary block glaucoma after extracapsular cataract extraction with implantation of a posterior chamber lens but without peripheral iridectomies. The intraocular pressure of each eye was successfully controlled with laser iridotomy. No long-term medication was necessary to control their intraocular pressures.

Pupillary block glaucoma is recognized as a complication of cataract surgery in which the formation of peripheral anterior synchiae can cause chronic angle closure glaucoma. Pupillary block glaucoma decreases dramatically with the introduction of peripheral iridectomy in conjunction with the cataract extraction. More recently, pupillary block glaucoma has been reported as a complication of cataract surgery in conjunction with intraocular lens implantation. In review of the literature, the predominant type of lens used when this complication occurred were anterior chamber and iris supported lenses. We present two cases of pupillary block glaucoma in conjunction with extracapsular cataract extraction with the use of a posterior chamber style lens.

CASE REPORTS

CASE 1: A 44-year-old female underwent extracapsular cataract extraction with the use of a posterior chamber Shearing type lens. A peripheral iridectomy was not performed during surgery. The first two postoperative days were uneventful. On the third day the patient presented with complaints of pain and decreased vision in the operated eye. On examination vision was count fingers and the intraocular pressure was 58 millimeters of mercury by applanation tonometry. Slit lamp examination revealed a cloudy cornea secondary to microcystic edema and stromal swelling. The pupil measured 5 millimeters and was non-reactive. The anterior chamber was deep centrally, but extremely shallow in the periphery. Due to poor visualization, examination of the anterior chamber was difficult, but some flare and cells were noted. Gonioscopy was difficult because of the cloudy cornea, but no definite angle structures could be visualized. The diagnosis of acute angle closure glaucoma secondary to pupillary block was made. The patient was treated with 500 milliliters of 15% Osmotrol given over a two-hour period and Pilocarpine 4% every hour for four applications and then one drop every four hours. The patient was continued on the routine postoperative medications of a topical antibiotic and a topical steroid four times a day. Within six hours, the intraocular pressure had decreased to 20 millimeters of mercury. Slit lamp examination the next day demonstrated the cornea had cleared significantly. Vitreous could be seen protruding into the anterior chamber through the superior aspect of the pupil. The portion of the posterior capsule seen in the pupillary area was intact. The anterior chamber remained deep centrally and was much deeper in the periphery. Gonioscopy revealed the angle to be 360 degrees. An argon laser iridotomy was performed nasally in the mid-periphery. Over the next three weeks the patient’s corrected visual acuity improved to 20/20 and the intraocular pressure has remained in the normal range without any antiglaucomatous medications.

CASE 2: A 72-year-old male underwent an extracapsular cataract extraction with implantation of a posterior chamber lens without a peripheral iridectomy. Forty-eight hours postoperative the patient presented with severe pain and decreased vision in the operated eye. Examination revealed the vision to be count fingers.
with an intraocular pressure of 60 millimeters of mercury by applanation tonometry. Slit lamp examination demonstrated a cloudy cornea secondary to microcystic edema and stromal swelling. The pupil was 4 millimeters and non-reactive. The anterior chamber was deep centrally, but definitely shallow in the periphery. There was a small amount of cortex in the anterior chamber inferiorly and 3+ flare and cells were present. Gonioscopy was very difficult, but the angle appeared closed. The diagnosis of acute angle closure glaucoma secondary to pupillary block was made. The patient was treated with 500 milliliters of Osmotol given over a two-hour period, topical Pilocarpine 4% given every four hours and Timolol maleate 0.5% given over 12 hours. After four hours of unsuccessful therapy, a retrobulbar block of three milliliters of Xylocaine was given. The patient was continued on his routine postoperative medications of a topical steroid and a topical antibiotic four times a day. Within 24 hours the intraocular pressure was normalized. After the cornea cleared, the posterior capsule appeared to be intact centrally, but vitreous was presenting through the pupil inferiorly into the anterior chamber. An argon laser iridotomy was performed nasally in the mid-periphery. The peripheral anterior chamber was noted to deepen following the iridotomy. The remainder of the postoperative course was uneventful and the patient's corrected acuity improved to 20/25 and the patient has required no medication to maintain the intraocular pressure in the normal range.

DISCUSSION

These two cases of pupillary block had several features in common: both had extracapsular cataract extractions with implantation of a posterior chamber type lens without peripheral iridectomies; both presented in the early postoperative period, (two to three days) with symptoms of pain and decreased vision and signs of corneal edema and markedly elevated intraocular pressure; both had undetected rupture of the peripheral posterior capsule or an area of zonular disruption; both had normal central anterior chamber depth and shallow peripheral anterior chamber depth; and both cases responded to medical therapy and argon laser iridotomy.

Pupillary block in aphakic eyes results from relative or absolute blockage of the pupillary or iridectomy aperture at their posterior surface by the vitreous face or by the posterior capsule. This leads to entrapment of the aqueous humor in the posterior chamber, iris bombae, and subsequent closure of the anterior chamber angle.2,4,10 Although reported, the occurrence of pupillary block with a posterior chamber lens without iridectomy seems to be less than pupillary block with iris plane or anterior chamber lenses.10 In these two cases, two factors precipitated the development of pupillary block. The pupillary opening was partially occluded by the posterior chamber intraocular lens and the vitreous which protruded into the anterior chamber. In both cases the intraocular pressure was normalized with hyperosmotic agents, topical myotics, and topical beta blockers. This medical approach decreased the intraocular pressure, cleared the cornea, and allowed argon laser iridiotomies to be performed. The iridiotomies circumvented the mechanism of pupillary block and have prevented recurrence of this complication.

These cases present us with a question: Should routine iridectomies be performed at the time of cataract surgery with implantation of a posterior chamber intraocular lens? To answer this question consideration must be given to the potential complications of the routine iridectomy versus the possibility and complications of the development of pupillary block.

In our hands, surgical iridotomies performed during cataract surgery have been a benign procedure with only a rare self-limited hemorrhage presenting as a transient complication. We feel it is mandatory to perform an iridectomy if a defect in the posterior capsule or zonules is noted during the operative procedure. Unfortunately, as illustrated in these cases, this defect is not always identified at the time of surgery. Case reports are now available of pupillary block occurring late postoperatively in patients with posterior chamber intraocular lenses who have had posterior capsulotomies performed with the YAG laser.11 These attacks would probably be preventable if there was an iridotomy performed with the Neodymium-YAG laser concurrently with the performance of the capsulotomy.

REFERENCES