Case Report

Accidental intralenticular sustained-release dexamethasone (Ozurdex) implantation: A case report

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ABSTRACT

Intravitreal implantation of Ozurdex (Allergan Inc., Irvine, CA, USA), a sustained-release dexamethasone implant, is a common practice in ophthalmology. Inadvertent intralenticular implantation of Ozurdex is a very rare complication. Herein, we report a case of accidental intralenticular Ozurdex implantation. During the intravitreal procedure, the patient moved his head vigorously which resulted in the said complication. He was followed up periodically with monitoring of intraocular pressure (IOP), best-corrected visual acuity, lens status, fundus, and macular edema status. He developed a posterior subcapsular cataract after about 5 months of the procedure. The cataract was removed around 6 months follow-up by phacoemulsification with anterior vitrectomy and implantation of a 3-piece posterior chamber intraocular lens in the ciliary sulcus. Macular edema had resolved by 3 months of Ozurdex implantation and the patient did not require a second intravitreal dose. He was well at 3 months follow up after cataract surgery.

Key words: Intralenticular implantation, Intravitreal, Ozurdex, Posterior subcapsular cataract

Ozurdex (Allergan Inc., Irvine, CA, USA) is a biodegradable, sustained-release dexamethasone implant. It is injected intravitreally to treat macular edema caused by diabetic retinopathy, retinal vein occlusion, and uveitis. It is 6 mm in length, 0.46 mm in diameter, and is injected by a 22G needle delivery system. Common complications of Ozurdex injection are raised intraocular pressure (IOP), cataract formation, subconjunctival hemorrhage, and retinal detachment [1]. However accidental intralenticular injection of Ozurdex implant, a rare complication has also been reported in the literature. Some studies advocate expectant management [2-5] while others suggest immediate removal of the cataract [6-8] after inadvertent intralenticular Ozurdex implantation. The longest time period of 18 months for expectant management was reported by Clemente-Tomás *et al*. [5]. Therapeutic effects of intralenticular Ozurdex are also noted to be variable.

Herein, we report a case of inadvertent intralenticular implantation of Ozurdex which resulted in resolution of macular edema, and subsequently, the implant was removed during phacoemulsification due to posterior subcapsular cataract formation. The rationale of presenting this case is to emphasize the fact that no fixed protocol can be made for handling such complications.

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CASE REPORT

A 45-year-old male presented with complaints of painless blurring of vision in the left eye with floaters for the past 4 months. There was no redness, photophobia or eye trauma in the past. He was non-diabetic, non-hypertensive, and did not have any history of pets at home.

On examination, he was of average built and nutrition with blood pressure 136/80 mmHg, pulse 76/min, regular, normal volume, and afebrile. No peripheral lymphadenopathy was noted. He had the best-corrected visual acuity (BCVA) of 6/24 in the left eye and 6/6 in the right eye. IOPs in the right and left eyes were 16 mmHg and 14 mmHg, respectively, at the time of the first presentation. The anterior segment findings were within normal limits in both eyes. Dilated examination revealed Grade I nuclear sclerosis, Grade 2+ vitreous cells with a trace amount of vitreous haze, and a few small snowballs opacities in the inferior peripheral vitreous in the left eye. Both eye fundi were within normal limits except the left eye foveal reflex was dull with macular thickening on slit-lamp biomicroscopy. The retinal vasculature and periphery were within normal limits. Spectral-domain optical coherence tomography of macula revealed cystoid macular edema in the left eye (Fig. 1).

Systemic workup consisted of complete blood count, peripheral blood smear analysis, blood biochemistry, erythrocyte

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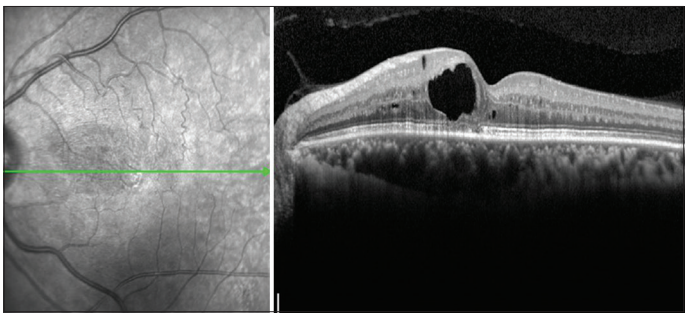

Figure 1: Optical coherence tomography image showing macular edema before Ozurdex injection

sedimentation rate, C-reactive protein, serum angiotensin-converting enzyme, Mantoux test for tuberculosis, and serology for detecting treponema which were within normal limits. Enzyme-linked immunosorbent assay for HIV, HCV, and HbsAg was negative. Magnetic resonance imaging of the brain and orbit was normal excluding any demyelinating disease. Chest X-ray was normal. The patient was diagnosed with non-infectious (idiopathic) intermediate uveitis with cystoid macular edema in his left eye and was advised intravitreal sustained-release dexamethasone (Ozurdex, Allergan, Irvine, CA, USA) implantation.

He was taken up for left eye intravitreal Ozurdex implantation. At the time of injection, he moved his head vigorously and it resulted in a large subconjunctival hemorrhage. After the procedure, the implant was seen stuck in the papillary area without any movement of the implant with the movement of the eye. A suspicion of inadvertent intralenticular implantation of Ozurdex was confirmed on slit-lamp examination with a dilated pupil of the left eye the next day (Fig. 2).

The patient was explained about the situation and followed up at regular intervals. His IOP, BCVA, lens status, fundus examination, and macular edema status were closely monitored. Macular edema in the left eye resolved within 3 months of Ozurdex implantation (Fig. 3). Central macular thickness reduced from 371 μm to 246 μm.

At around 5 months, there was a small area of posterior subcapsular cataract formation. The BCVA which had improved in previous visits also dropped to 6/24 in the left eye at about 6 months follow-up due to the cataract progression necessitating a cataract surgery in the left eye. IOP was within normal limits, with the left eye 19 mmHg and the right eye 16 mmHg, and macular edema had already resolved.

He was planned for cataract surgery with removal of the implant. A 2.8 mm clear corneal tunnel was made along with a paracentesis incision. Trypan blue dye (0.06%)-assisted capsulorhexis of about 5.5 mm diameter was made with a 26G bent cystitome. Hydrodissection procedure was avoided for fear of a pre-existing posterior capsular defect. The cataract was soft and phacoemulsification was performed with low machine parameters. A stable anterior chamber was maintained throughout the procedure. The Ozurdex implant was found to be brittle and was easily removed during phacoemulsification. Posterior capsular dehiscence was noted and anterior vitrectomy

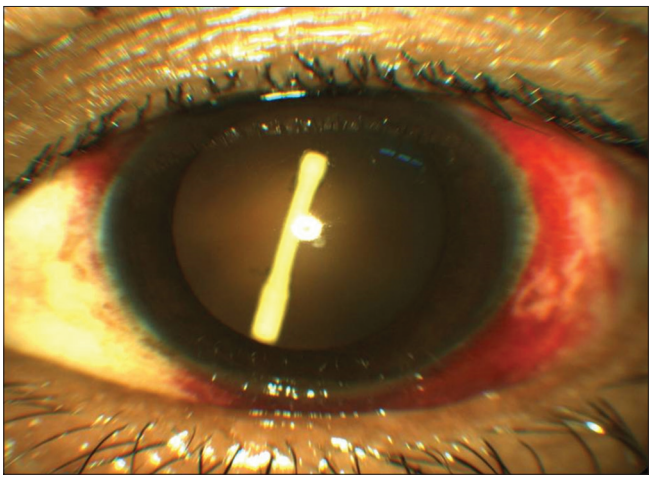

Figure 2: Dilated left eye on the 1st day follow-up after intravitreal Ozurdex, showing intralenticular Ozurdex implantation

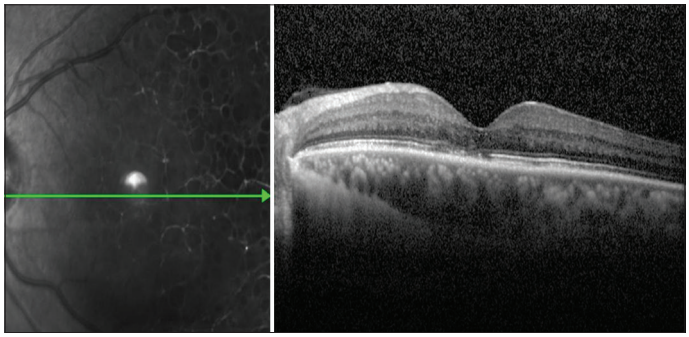

Figure 3: Optical coherence tomography image at around 3 months follow-up after the Ozurdex administration showing resolution of the macular edema

was performed with implantation of a 3-piece posterior chamber monofocal, hydrophobic, foldable intraocular lens (IOL) in the ciliary sulcus with optic capture. As the resolution of macular edema had occurred, no further intravitreal injection was given. The patient gained a vision of 6/6 in the left eye on a 1-month follow-up with normal IOP. He was well at the 3-month follow-up.

DISCUSSION

Injuries to the lens during intravitreal injections were found to be 0.009% in a multicentric case series study [9]. Due to the larger (22 gauge) needle used and the speed (0.8 m/s in vitreous) [10], by which the pellet is introduced into the vitreous cavity, Ozurdex implantation is different from routine intravitreal injections. Improper technique, inexperienced hands, and movement of patient's head during intravitreal implantation can all lead to inadvertent injection of Ozurdex implant into the lens or lens injury.

The time of onset of cataract varies in different reports in the literature. Accelerated development of cataract has been reported in some studies [7,8], while in some others, increased IOP [11] or both these complications together [2,12] requiring early intervention. Babu *et al*. [6] reported the lens becoming cataractous and intumescent within 10 days of inadvertent intralenticular Ozurdex injection. The cataract was removed along

with repositioning the same Ozurdex implant into the vitreous cavity. However, Clemente-Tomás *et al*. [5] and Poornachandra *et al*. [3] have reported no early progression of cataract after intralenticular Ozurdex implantation. The development of cataract may take as long as 10–12 months after injection [2,3,13]. Some authors [2,3,5,14,15] have found resolution of the macular edema with an intralenticular implant. Coca-Robinot *et al*. [12] and Baskan *et al*. [4] found no significant macular edema improvement.

In our case, there was no progression of cataract and IOP was normal during the entire follow-up. The probable cause for non-progression of cataract might be that the Ozurdex inside the lens behaved like a sterile foreign body and did not cause any cataract formation or the site of Ozurdex entry might have been through the equator of lens preserving posterior capsule. Initially, the vitreous may have plugged the opening of the capsule, thus preventing the progression of cataract. Our case was similar to Sekeroglu *et al*. [14] where the therapeutic effect of intralenticular Ozurdex was noted for as long as 6 months. Later, the cataract progressed and so required surgical intervention. In our patient, macular edema resolved with no recurrence in the presence of the intralenticular Ozurdex. The probable explanation is that the part of the implant in contact with the vitreous may have released small quantities of the drug sufficient enough to reduce macular edema.

Early surgical intervention was deferred in our case as there were no immediate complications such as cataract formation, raised IOP, non-resolution of macular edema, or non-visualization of the fundus. Delaying of the cataract surgery and removal of the implant until the resolution of macular edema can prevent unnecessary intravitreal reinjections. Furthermore, fibrosis of the posterior capsule defect can enable an uneventful cataract surgery and sometimes even within the bag IOL implantation [16].

CONCLUSION

Intravitreal Ozurdex implantation in phakic patients should be done with extreme caution. Once such a complication is encountered, the management should be individualized depending on the findings and side effects encountered like IOP elevation and cataract progression. Therapeutic effects also vary with the position of the implant in the lens. The need for proper patient counseling, close follow-up, and judicious intervention is emphasized in such cases.

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