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Case Report

Uneventful Anterior Migration of Intravitreal Ozurdex Implant in a Patient with Iris-Sutured Intraocular Lens and Descemet Stripping Automated Endothelial Keratoplasty

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Keywords

Anterior chamber migration · Intravitreal Ozurdex implant · Iris-sutured intraocular lens · Descemet stripping automated endothelial keratoplasty

Abstract

Purpose: We report here the case of a patient with anterior segment migration of intravitreal dexamethasone implant as well as its management and outcome. **Methods:** The patient had the following sequence of events: complicated cataract surgery, iris-sutured intraocular lens implant, followed by cystoid macular edema treated with intravitreal Avastin, retinal vein occlusion treated with intravitreal dexamethasone implant, corneal decompensation treated with Descemet stripping automated endothelial keratoplasty (DSAEK), and finally recurrence of macular edema treated with repeated intravitreal dexamethasone implant. **Results:** Dexamethasone implant had completely dissolved from the eye 12 weeks after insertion without any complication. **Conclusion:** A conservative approach with regular monitoring in the situa-

tion of a quiet anterior segment without any corneal decompensation can provide enough time for the implant to dissolve without causing any complication to the involved eye, avoiding any additional surgical intervention, as presented in this case report. Despite the fact that the implant was left for natural dissolution, there were no adverse effects related to the graft or the eye.

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Introduction

Dexamethasone intravitreal implant (Ozurdex, Allergan Inc., Irvine, CA, USA) has been approved as a treatment option for macular edema secondary to retinal vein occlusion, non-infectious uveitis affecting the posterior segment, and diabetic macular edema (DME) [1–3]. The Ozurdex implant is a biodegradable sustained-release device containing 0.7 mg dexamethasone in a solid polymer drug delivery system. In 2014, it was licensed for use in DME, and since then, retina specialists started to use it more frequently in DME cases not responding to anti-VEGF treatment and for DME cases with vitrectomized eyes [4]. These implants can sometimes migrate into the anterior chamber, causing vision-threatening complications that may involve permanent corneal decompensation [5–7]. This was initially reported in aphakic eyes where the authors speculated that aphakia was the main risk factor for anterior chamber migration [6].

Rarely, anterior chamber migration of the implant can also happen in vitrectomized eyes with compromised posterior capsule integrity [5]. It can potentially cause persistent corneal edema and ocular hypertension, therefore requiring intervention. The few cases already published have suggested first attempting positional maneuvers to reposition the implant, its surgical reinsertion or complete removal.

Case Report

A 74-year-old man, known for pseudoexfoliation, corneal guttata changes, and an epiretinal membrane, was treated with vitrectomy and membrane peel in August 2016. Later on, the patient underwent a complicated cataract surgery with an iris-sutured intraocular lens (IOL) in October 2016, followed by a first intravitreal injection of Avastin for cystoid macular edema in December 2016 and a second intravitreal injection of Avastin 4 weeks later. In February 2017, the patient was referred again with corneal edema and superior temporal branch retinal vein occlusion with macular edema. Visual acuity in the affected eye was recorded as counting fingers, and the intraocular pressure was 20 mm Hg on Goldmann applanation tonometry.

The patient underwent a Descemet stripping automated endothelial keratoplasty (DSAEK), and 2 months later, corneal transparency was achieved. Due to persistent macular edema, an additional intravitreal Ozurdex implant was administered 3 months after DSAEK in the same eye. Two weeks after insertion, the intravitreal Ozurdex implant became visible in the pupillary area, positioning itself between the iris and the IOL's optic and protruding in the anterior chamber without any corneal touch. The visual acuity was recorded as 3/10, the corneal graft was clear without any corneal edema. The intraocular pressure was recorded as 18 mm Hg on Goldmann applanation tonometry. A decision was made to keep the patient under close observation as there was no corneal touch and no clinically significant corneal edema as seen in [Figure 1](#).

Four weeks later, signs of implant dissolution were seen (Fig. 2). Eight weeks later, the implant had completely dissolved (Fig. 3), the corneal graft remained clear, and there was no abnormal increase in intraocular pressure. At the last clinical visit, visual acuity improved to 5/10 (best corrected distance visual acuity). Recurrence of macular edema was noticed again, and a course of intravitreal Eylea treatment was planned.

Discussion

Khurana et al. [7] reported the largest series of patients with Ozurdex implant with anterior chamber migration and reviewed the risk factors, clinical complications, and management options. The authors described 15 patients with 18 episodes of anterior chamber migration of the Ozurdex implant. History of vitrectomy and either an absent or defective lens capsule were the commonest risk factors.

Patients with previous vitrectomy, aphakia, zonular dehiscence, and large peripheral iridotomy may have an increased risk of implant migration into the anterior chamber and should be closely monitored for possibility of implant migration [8]. Similarly to our case, there have been case reports with prior uncomplicated dexamethasone implant injections with the same lens and capsule status [7].

Corneal edema is the most serious complication of Ozurdex implant migration in the anterior chamber, and it has been reported in 89% of patients at presentation [7]. Furthermore, the corneal edema may not resolve spontaneously despite implant removal in 71% of cases, and 43% may need corneal graft [7].

Endothelial decompensation is either due to chemical toxicity from any component of the Ozurdex implant (dexamethasone, lactic acid, or glycolic acid) or to endothelial touch, where the direct mechanical trauma from a rigid object is responsible for corneal edema. Specular microscopy has demonstrated loss of corneal endothelial cells with the anterior chamber implant migration [9]. High doses of dexamethasone can be cytotoxic and can induce apoptosis and necrosis of corneal endothelial cells [10].

Corneal edema occurs in cases with early migration (within less than 3 weeks) and requires urgent intervention [7]. With late migration (occurring after 3 weeks), the implant may have already degraded enough to cause minimal corneal toxicity (hence there are less chances of corneal edema) and can be observed closely [6, 7, 9, 11].

Management options include observation, supine positioning, YAG fragmentation and surgical removal involving either forceps, aspiration of implant's fragments, or repositioning into the posterior chamber. Pupil constriction with pilocarpine is indicated primarily in high-risk patients or following repositioning in order to minimize the risk of repeat anterior chamber implant migration, but recurrence of anterior migration can still happen [6].

A slit-lamp procedure where the implant is repositioned posteriorly using a needle is an option as well, but the implant may come back into the anterior chamber [12]. The implant can be friable and so can be a challenge to remove in one piece, thus it can be aspirated with a vitrectomy cutter [7]. Investigators have proposed a technique of scleral fixation of the Ozurdex implant in the vitreous cavity with a 10-0 polypropylene suture in high-risk patients [13].

In our case, there was no corneal edema at presentation or subsequently, and the DSAEK graft remained clear. Intraocular pressure remained within normal limits. Considering the risks of surgical intervention, including endophthalmitis, damage to the IOL, or failure of the corneal graft, we decided that close observation was the best management option.

Anterior migration of Ozurdex implant can happen in vitrectomized eyes and in eyes with zonular dehiscence or compromised posterior capsule. Management of this situation is crucial, and the diagnosis may be delayed due to the increased follow-up intervals allowed by these injections. Additionally, the frailty of the implant itself makes surgical treatment difficult. Eyes with anterior segment surgery, such as corneal grafting, are at higher risk of graft rejection or corneal decompensation. However, a conservative approach with regular monitoring in the situation of a quiet anterior segment without any corneal decompensation can provide enough time for the implant to dissolve without causing any complication to the involved eye, avoiding any additional surgical intervention, as presented in this case report.

Statement of Ethics

The patient was appropriately informed and consented to the use of anonymized clinical data for publication purposes, and ethical approval was granted by the institute's review board.

Disclosure Statement

The authors report no conflicts of interest related to this work.

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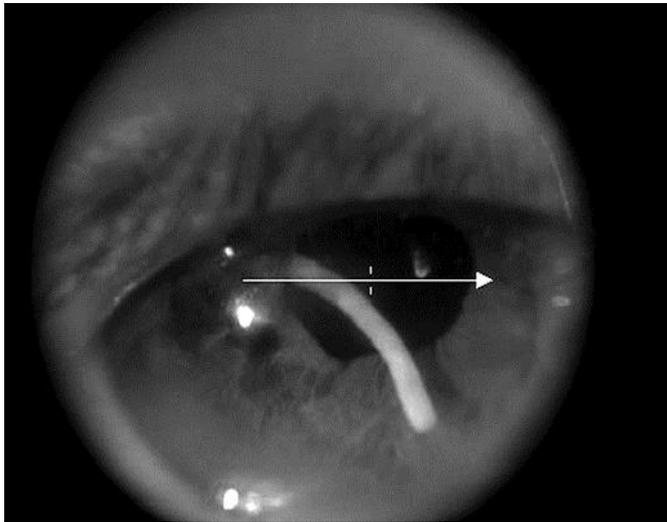


Fig. 1. Photo of the anterior segment showing the dislocated Ozurdex implant in the pupil at week 4.

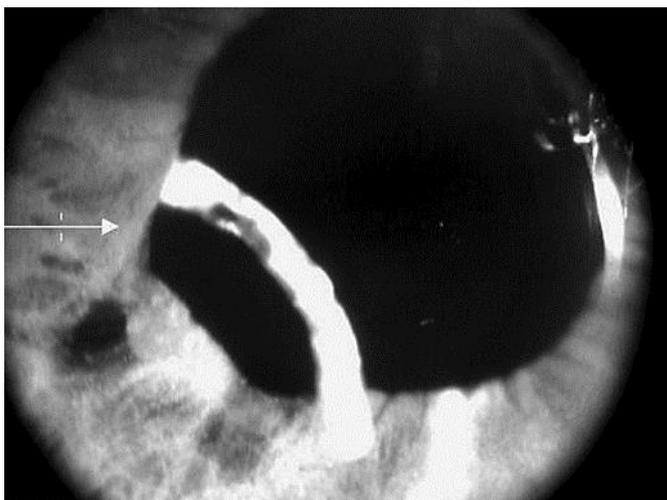


Fig. 2. Photo of the anterior segment showing the dissolving Ozurdex implant in the pupil at week 8.

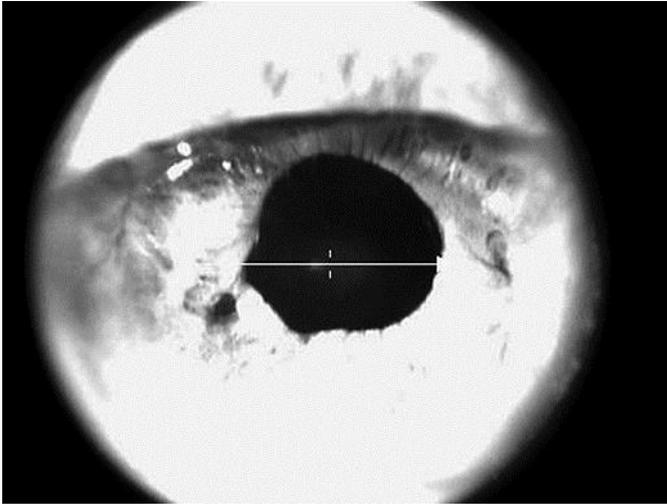


Fig. 3. Photo of the anterior segment showing that the Ozurdex implant was dissolved at week 12.