Case Series: Migration of Dexamethasone Intravitreal Implant to The Anterior Chamber

Olgu Serisi: Deksametazon İntravitreal İmplantının Ön Kamaraya Migrasyonu

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ABSTRACT

Purpose: To report four cases with migration of Ozurdex implant (Allergan Inc., Irvine, CA, USA) into the anterior chamber and to describe their clinical features.

Methods: Clinical charts of four cases were evaluated for indications for injection, type of surgical intervention and clinical findings (best-corrected visual acuity, anterior segment examination especially for corneal edema, optical coherence tomography findings and intraocular pressure.

Results: All patients had a lens capsule defect and a history of vitrectomy. The indications for Ozurdex(®) were cystoid macular edema (CME) (two eyes) and pseudophakic macular edema (two eyes). Their migration time changes from one day to four weeks. The implants were eventually removed from the AC in three of these cases. One of them, whose implant was migrated to the AC three times, still has diffuse corneal edema.

Conclusion: Removal or repositioning of the Ozurdex implant into the vitreous should be performed immediately because of the risk of endothelial decompensation. Posterior capsule rupture and weak zonules may trigger migration risk of the Ozurdex.

Key words: Complications, intravitreal injection, Ozurdex.

ÖZ

Amaç: Ozurdex(®) (Allergan Inc., Irvine, CA, USA) implantının ön kamaraya migrasyonu gerçekleşmiş dört olguyu bildirmek ve ön kamaraya migrasyonu kolaylaştıran özellikleri ve faktörleri tanımlamaktır.

Yöntem: Hasta dosyaları retrospektif olarak taranarak, ön kamaraya Ozurdex(®) migrasyonu olan 4 olgu saptandı. Hastaların; demografik özellikleri, Ozurdex(®) öncesi geçirilen cerrahi işlem, enjeksiyon endikasyonları, enjeksiyon öncesi ve sonrası en iyi düzeltilmiş görme keskinliği (BCVA) ve göz içi basınçları (IOP) kaydedildi. Sonuçlar: Bütün hastalar; komplike katarakt cerrahisi geçirmişti ve arka kapsül intakt değildi. Ozurdex(®) endikasyonları; kistoid makula ödemi (2 göz) ve psödofakik makula ödemi (2 göz) idi. Migrasyon süresi 1 gün ile 4 hafta arasında değişmektedir. İmplant; 3 olguda ön kamaradan çıkarıldı.

Sonuç: Endotelyal dekompansasyon nedeniyle Ozurdex(®) implantının çıkarılması veya vitreusa yeniden repozisyonu sağlanmalıdır. Arka kapsül rüptürü ve zayıf zonule sahip olgularda Ozurdex implantının migrasyonuna sebep olabilir..

Anahtar kelimeler: Komplikasyonlar, intravitreal enjeksiyon, Ozurdex(®).

INTRODUCTION

The Ozurdex (Allergan Inc., Irvine, CA, USA) implant has a biodegradable material combined with dexamethasone (0.7 mg). This small implant's size is 0.46 mm in diameter and 6 mm in length. This implant continuously releases dexamethasone and dissolves in the vitreous cavity. Ozurdex can be used for the treatment of macular edema (ME) secondary to retinal vein occlusion and ME secondary to posterior uveitis and Irvine- Gass syndrome.[1, 2]

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CASE PRESENTATIONS

Case-1

A 62-year-old-woman with history of a complicated cataract surgery had been implanted an iris-claw-lens after 6 months. ME did not respond to topical and systemic postoperative treatment with diclofenac and carbonic anhydrase inhibitors for 1 month. After obtaining informed consent, an uneventful intravitreal Ozurdex(®) was injected because of pseudophakic ME with a BCVA of 6/24. The IOP was 14 mmHg. BCVA developed (6/12) within the first week of injection. BCVA decreased to counting fingers at 1 meter at first postoperative 1 month. The IOP was 15 mmHg. Slit-lamp examination showed diffuse corneal edema and anterior migration of implant (Figure 1a). The implant was pushed back into to the vitreous cavity with forceps immediately at the operating room (Figure 1b). Her visual acuity stabilized at 6/24. The recurrence of anterior migration was not observed again.

Case-2

A 54-year-old-woman who was diagnosed with pseudophakic ME, had received intravitreal Ozurdex, six months after a scleral-fixated intraocular lens implantation. Past medical history revealed pars plana vitrectomy (PPV) secondary to vitreous hemorrhage and a cataract surgery with aphakia and Ando implant two years ago. The patient attended emergently at first month following the implantation of Ozurdex. BCVA decreased to hand movement from 6/30. The IOP did not increase (preoperative IOP: 15 mmHg, after the migration of implant to the AC: 16 mmHg). On presentation the implant was within the anterior chamber with endothelial touch resulting diffuse corneal edema (Figure 2a). The implant was pushed to the vitreous cavity, through iridectomy at the operating room. After two days, the implant was again in the AC and surgically removed with forceps. Final visual acuity was hand motion at 30 centimeter (Figure 2b).

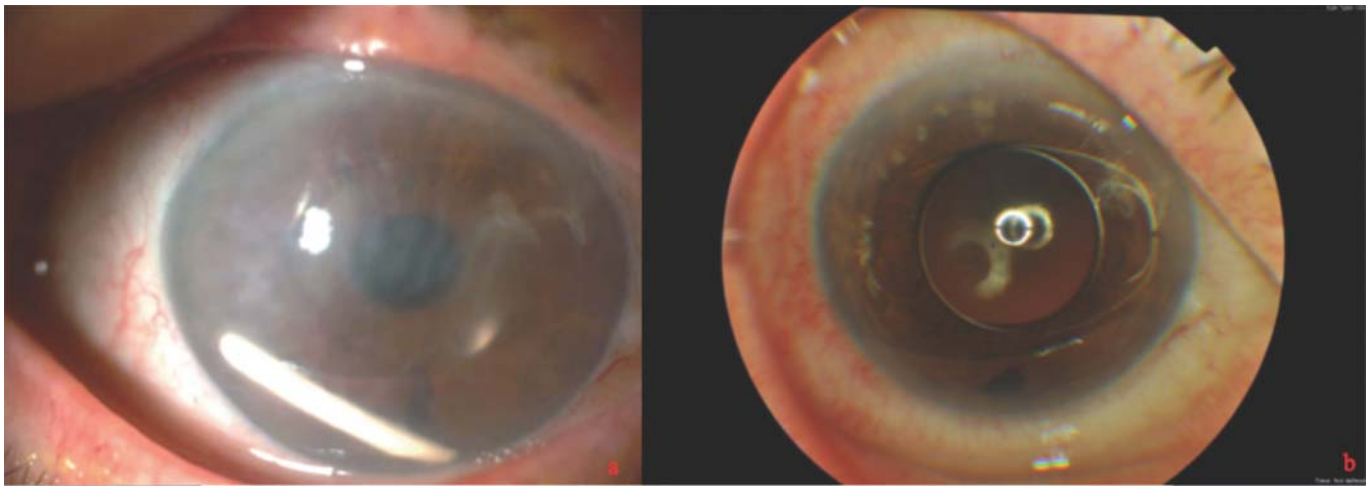

Figure 1: *a) Anterior segment photography showing migration of the Ozurdex implant into the AC, corneal edema, keratic stria b) clear cornea after repositioning of Ozurdex implant*

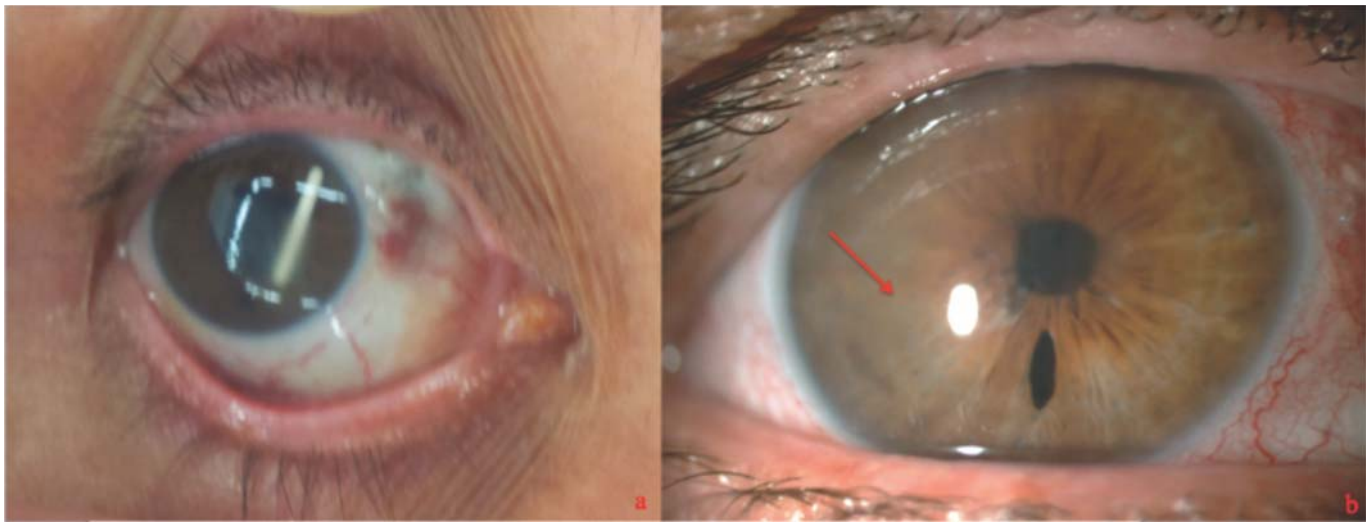

Figure 2: *a) Anterior segment examination showing the Ozurdex implant in the anterior chamber b) showing persistent corneal edema despite surgical removal of the of the implant*

Case-3

A 58 year-old female who was diagnosed with epiretinal membrane underwent surgery for epiretinal membrane peeling and SF6 gas injection. Intravitreal Ozurdex(®) was injected because of CME after 5 months. Her past ocular history revealed PPV due to vitreus hemorrhage, implantation of a scleral-fixated intraocular lens 8 years ago. Pre-implant BCVA was 6/120 and IOP was 18 mmHg. One day later, the implant was in the AC (Figure 3a). After pupillary dilatation, the implant was repositioned to the vitreous cavity. One week later, BCVA decreased to counting fingers at 1 meter and implant was in the AC again. The IOP did not change (18 mmHg). The implant was removed from the AC immediately because of diffuse corneal edema (Figure 3b). Two months later, corneal edema resolved and visual acuity increased to 6/120.

Case-4

A 36 year-old male with a BCVA of 6/15 had Ozurdex implantation due to persistent macular edema. His past ocular history revealed scleral-fixated lens implantation due to complicated cataract surgery after which an uneventful intraocular Uveitis-Glaucoma-Hyphema developed and treated with vitrectomy and Ahmed Valve implantation. Pre-implant BCVA was 6/30 and IOP was 16 mmHg. One week later, the patient admitted to hospital because of visual loss. Slit-lamp examination showed migration of the implant into the AC and corneal edema (Figure 4a). The IOP was 11 mmHg. The implant was directed to vitreous cavity with eye movements at supine position and his corneal edema resolved in 3 weeks (Figure 4b). His visual acuity increased to 6/9.5 at the last examination without recurrence of migration into the anterior chamber after 8 months follow-up.

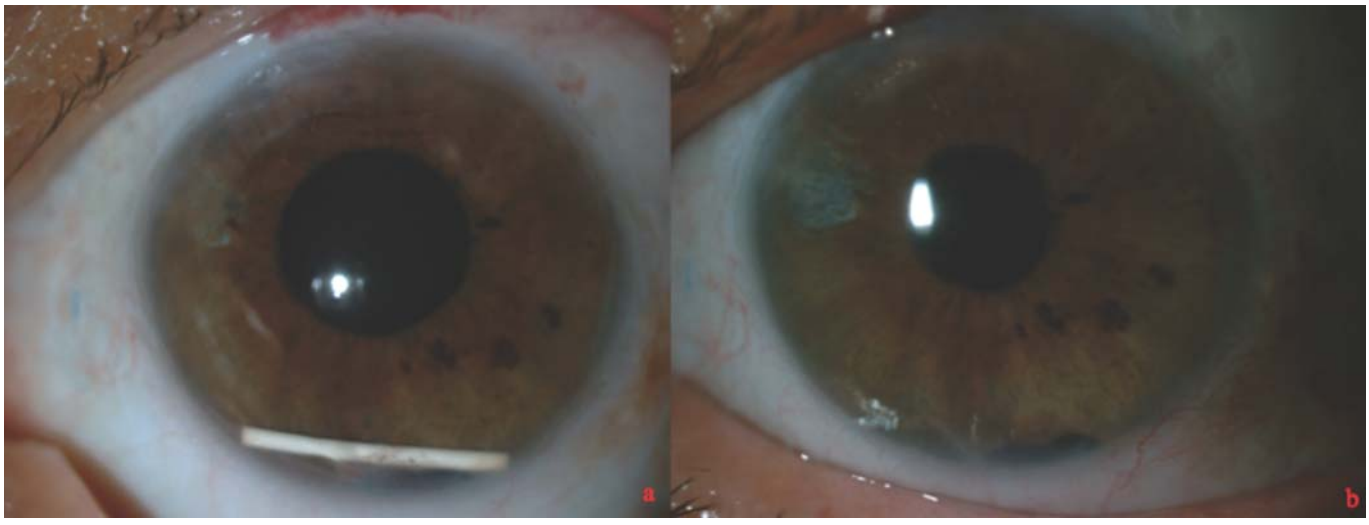

Figure 3: *a) Anterior segment examination showing migration of the Ozurdex implant into the AC*
b) Minimal corneal edema was continuing two months after the surgery

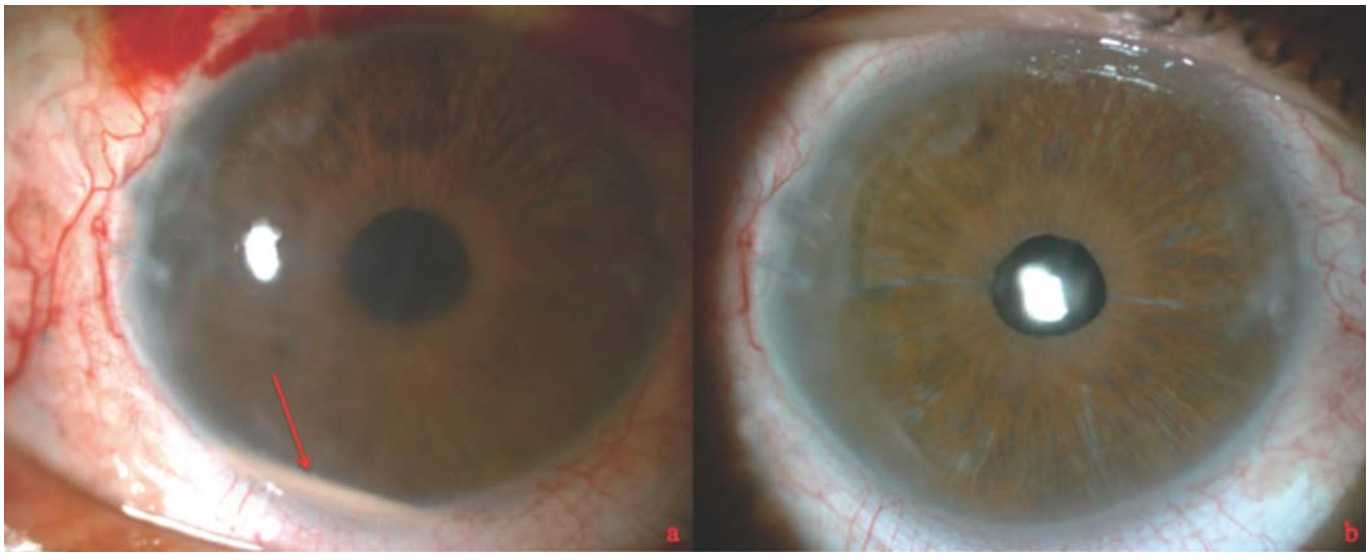

Figure 4: a) Anterior segment examination showing migration of the Ozurdex implant into the AC
b) Corneal edema resolved after the implant was directed to vitreous cavity with eye movement

CONCLUSION

The AC migration of Ozurdex implant has been reported previously. Bansal R et al[3] reported three cases with post-lensectomy-vitrectomy, aphakia and the implant migrated into the AC within one week (two eyes) and 5 weeks (one eye) after injection. One of the implants was removed from the AC and two of them were pushed to vitreous cavity. Corneal edema developed in two patients. Pardo-López D et al[4] reported one case with iris-claw lens and the implant was in the AC after three weeks. They removed the implant due to corneal edema after 48 hours. Corneal edema did not resolve, and corneal transplantation was finally performed. Vela JI et al[5] described one case of migration of Ozurdex(®) for a patient with iris-claw lens implantation without corneal decompensation three weeks after the injection and they pushed the implant to vitreous cavity. Malclés E et al[6] also reported three patients (two with iris-claw-lens and one with posterior chamber IOL and zonule rupture) and they removed the implant or relocated it to the vitreous cavity. Laplace O et al[7] described a patient with migration of implant with scleral-fixated IOL one month later. They also removed the implant due to corneal edema. Kocak N et al[8] reported one case with anterior migration of implant that mislocated just behind the IOL in an intact capsular bag and they followed up closely for signs of anterior segment pathology. Khurana RN et al[9] reported that 15 patients had 18 episodes of migration of the implant into the AC. Six patients who were aphakic, 4 patients with ACIOL, 2 patients with a scleral-fixated PCIOL, 2 patients with a PCIOL and 1 patient with an iris-fixated PCIOL were reported regarding lens status. They concluded that it might be the combination of a lens capsule defect and a history of vitrectomy that make anterior migration of the implant more probable. Surgical and nonsurgical methods for management of cases with anterior migration of implant were described in literature. Observation can be a method if corneal edema is not detected like one case with anterior migration of implant.[8,10] Nonsurgical management of migrated implant into the AC with supine positioning after pharmacologic pupillary dilatation may allow the implant to be redirected to the vitreous cavity.[11,12] If there is a direct contact with endothelium, the implant should be removed surgically as soon as possible.[4, 13-15] We summarized clinical findings and outcomes of our patients (Table 1).

All these patients have some common features, disruption of posterior capsule and zonule rupture (Table 2). These features may facilitate the migration of implant to the AC. The Ozurdex® implant's biomechanical features, flexibility and size changes with time. Their migration time changes from one day to 2 months. The migration time can be dependent on the size of posterior capsule rupture and the size of the Ozurdex® implant. These factors may also affect the migration time of implant into the AC.

According to the package insert, The Ozurdex is contraindicated in aphakic patients and anterior chamber IOL with rupture of the posterior lens capsule in 2012. The Ozurdex was implanted before 2012 in our case series. The results of our case series recommends that the combination of any lens capsule defect, whether aphakic or pseudophakic, and a history of vitrectomy can make the migration of implant more likely. Despite the contraindication of dexamethasone intravitreal implantation in aphakic patients and in patients without an intact posterior capsule, the Ozurdex is the only choice approved by the US Food and Drug Administration in patients with persistant ME.

Repositioning of the Ozurdex® to the posterior segment can be a preferable method in selected cases but it should be implemented before corneal decompensation. Mechanical trauma from a rigid object or chemical toxicity to corneal endothelium can cause corneal decompensation. If there is a corneal edema, it should be removed as soon as possible to prevent corneal decompensation.

Table 1: *Characteristics and outcome of intravitreal Ozurdex implant in patients with migration of implant into the anterior chamber (AC)*

Case	Age	Sex	Pre-implant BCVA	Pre-implant IOP (mmHg)	Indication for Ozurdex implant	Interval between implantation and migration into AC	Adverse effects of migrated implant	BCVA after migration to AC	IOP (mmHg) after migration to AC
1	62	F	6/24	14	Pseudophakic macular edema	1 month	Corneal edema	Counting finger	15
2	54	F	6/30	15	Pseudophakic macular edema	1 month	Corneal edema	Hand movement	16
3	58	F	6/120	18	CME	1 day	Corneal edema	Counting finger	18
4	36	M	6/30	16	CME	1 week	Corneal edema	Counting finger	11

Table 2: *Clinical features of patients with migration of implant into the anterior chamber in literature*

Author	Presence of lens capsule	Lens status	Migration time	Management strategies	Surgical removal technique	Presence of corneal edema at presentation	Resolution of corneal edema at 3 months
Bansal R et al.	No	Aphakia	2 eyes: 1 week 1 eye: 5 weeks	Supine positioning	N/A	2 eyes: Yes 1 eye: No	1 eye: Yes 1 eye: No
Pardo-Lopez D et al.	No	ACIOL	1 eye: 3 weeks	Surgery	Undefined	Yes	No
Malclés E et al	No/Yes	ACIOL/PCIOL		Prone positioning+Surgery		Yes	
Vela JI et al.	No	ACIOL	1 eye: 3 weeks	Surgery	Needle	No	No
Stelton CR et al	No	PCIOL	-	Surgery	Vitreoretinal instrumentation	Yes	No
Kocak N et al.	Yes	PCIOL	5 weeks	Close follow-up	N/A	No	N/A
Khurana RN et al.	Yes/No	Aphakia/ACIOL/ PCIOL	5-44 days	Follow-up/supine positioning/Surgery/ Yag Laser fragmentation	Forceps/ Aspiration		
Kishore SA et al.	No	PCIOL	2 months	Supine positioning	N/A	No	N/A
Laplace O et al.	No	Scleral-fixated IOL	4 weeks	Surgery	Required aspiration	Yes	Yes
Karabas L et al.	No	1 eye: ACIOL 3 eyes: Scleral-fixated IOL	2 eyes: 4 weeks 1 ye: 1 day 1 eye: 1 week	Surgery+ Supine positioning	Forceps	Yes	3 eyes: Yes 1 eye: No

NA= Not applicable

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