

# BMJ Case Reports

## Removal of a Migrated Dexamethasone Implant (Ozurdex®) from the Anterior Chamber Using an Intravenous Cannula

Journal:	<i>BMJ Case Reports</i>
Manuscript ID	bcr-2020-240504.R1
Manuscript Type:	Case report
Date Submitted by the Author:	n/a
Complete List of Authors:	Ku, Jae Yee; University of Liverpool, Department of Eye and Vision Science; Manchester Royal Eye Hospital Mercieca, Karl; Universitäts-Augenklinik Bonn; Manchester Royal Eye Hospital, Manchester University NHS Foundation Trust Yau, Kenneth; Manchester Royal Eye Hospital
Keywords:	Eye < Drugs and medicines, Anterior chamber < Ophthalmology, Macula < Ophthalmology, Retina < Ophthalmology, Surgery

SCHOLARONE™  
Manuscripts

# BMJ Case Reports

## TITLE OF CASE

---

Removal of a Migrated Dexamethasone Implant (Ozurdex®) from the Anterior Chamber Using an Intravenous Cannula

## SUMMARY

---

Ozurdex® is a dexamethasone intravitreal implant used for the treatment of macular oedema. A rare but serious complication is the migration of the implant into the anterior chamber (AC) in eyes with absent or incomplete posterior capsules which may lead to corneal decompensation. We report the case of a 75-year-old lady who presented with a one-day history of decreased vision in her left eye. She had a history of complicated cataract surgery and had received multiple Ozurdex® implants for post-operative cystoid macular oedema in the same eye. She had significant left corneal decompensation and a mobile Ozurdex® implant in the AC. We report a simple but novel surgical technique for removing an Ozurdex® implant from the AC using an intravenous cannula (Venflon®). This technique can also be applied to removing a fluocinolone acetonide (Iluvien®) implant in similar situations.

## BACKGROUND

---

Ozurdex® is an intravitreal dexamethasone implant that has been approved by the National Institute for Health and Care Excellence (NICE) for the treatment of macular oedema due to diabetes, retinal vein occlusion and non-infectious uveitis.[1,2,3] As the clinical indications of Ozurdex® have expanded, its usage has increased as well as reports of its potential adverse effects. [4] A rare but serious complication is migration of the implant into the anterior chamber (AC) in eyes with absent or incomplete posterior capsules which may ultimately lead to corneal decompensation. Early removal of the implant from the AC has been advocated to minimise the risk of this serious complication.[5] Surgical removal can be challenging as the implant is friable and its manipulation can result in implant dissolution and fragmentation resulting in incomplete removal.[5] In this case study, we report a novel surgical technique for removing an Ozurdex® implant from the AC using an intravenous cannula (Venflon®).

## CASE PRESENTATION

---

A 75-year-old lady presented to the emergency eye clinic with decreased vision in her left eye since waking up the previous morning. She had a history of bilateral cataract surgery and multifocal intraocular lens (IOL) implantation performed privately eight years previously. The left IOL had subsequently opacified requiring explantation and replacement with an Artisan® IOL four years later. This resulted in post-operative astigmatism that was treated with arcuate keratotomies combined with corneal suturing. She then developed post-operative cystoid macular oedema and received four Ozurdex® implants in the same eye to date. Her last Ozurdex® implantation was 30 days prior to her presentation.

At presentation, her unaided visual acuity was 0.1 logMAR and hand movements in the right and left eye, respectively. On examination, there was significant left corneal decompensation with stromal oedema and a mobile Ozurdex® implant in the AC. There was also a central and stable Artisan® IOL with a surgical peripheral iridectomy at 12 o'clock, arcuate keratotomy scars and corneal sutures (figure 1). Her intraocular pressures were 12mmHg in the right eye and 8mmHg in the left eye. Ultrasound pachymetry revealed a central corneal thickness of 525µm and 872µm in the right and left eye respectively. The fundal view of the left eye was limited by the corneal oedema, but an optical coherence tomography (OCT) showed no evidence of macular oedema. Examination of the right eye was unremarkable. The patient was commenced on sodium chloride 5% eye drops four-times daily and pilocarpine 2% eye drops twice daily. She was also advised to lie on her back as much as possible to keep the Ozurdex® away from the cornea. She was taken to the operating theatre the following day after her COVID-19 swab result was negative.

## TREATMENT

---

During her surgery, a two-step supero-temporal corneal incision was made opposite to the implant and widened with a 1.8mm keratome. Viscoelastic (Healon®) was injected into the AC and used to manoeuvre the Ozurdex® lengthwise with one end facing the incision (figure 2A). A 16G intravenous cannula was introduced through the corneal incision and advanced to envelop the Ozurdex® along its entire length (figures 2B and 2C; video 1). The cannula was then removed from the AC with the implant contained within

it (figure 2D). The cannula was not modified in any way, nor was it attached to anything at the other end to provide aspiration. The AC was then washed out with a Simcoe cannula, and the corneal incision hydrated with balanced salt solution and closed with a single 10.0 Vicryl suture. Subconjunctival dexamethasone and intracameral cefuroxime were administered.

---

## OUTCOME AND FOLLOW-UP

---

Postoperatively, the patient was prescribed topical prednisolone 1% six-times daily and chloramphenicol four-times daily. She was also given acetazolamide modified-release capsules 250mg twice daily for two days to prevent an intraocular pressure spike. She was last seen by her private ophthalmologist one-month postoperatively. The postoperative vision in her left eye remained hand movements, and she was referred to a corneal subspecialist for consideration of a corneal graft.

---

## DISCUSSION

---

Various methods of managing Ozurdex® implant migration into the AC have been described. Conservative management such as observation or positioning the patient so that the implant can fall back into the vitreous cavity has been suggested but recurrent migration can occur.[5] Surgical removal is therefore preferred to reduce the risk of corneal decompensation.

Several surgical techniques have been described: The no-touch viscoelastic technique utilises viscoelastic to manoeuvre and expel the implant through a corneal wound; however, this requires a larger corneal incision and the implant may still fragment during surgical manipulation.[6] Another technique uses an IOL injector cartridge to remove the implant rather than an intravenous cannula.[7] However, an IOL injector cartridge may not be as readily accessible compared to an intravenous cannula, and the technique may require a larger corneal wound. In another case report, a 19G needle connected to a syringe was used to aspirate the implant. [8] However, the flexible plastic 16G cannula used in this case report is more easily manoeuvred and bent to envelop the Ozurdex and our technique does not require a syringe for aspiration,

reducing further manipulation. In addition, the 16G cannula also has a blunt end, which minimises the risk of inadvertent injuries compared to the 19G needle.

In conclusion, a simple but novel surgical technique to remove an Ozurdex® implant from the AC has been described using an unmodified 16G intravenous cannula which is cheap, efficient and widely available. This technique can also be applied to removing a fluocinolone acetonide (Iluvien®) implant in similar situations.[9]

---

## LEARNING POINTS/TAKE HOME MESSAGES

---

- The migration of Ozurdex® implants into the anterior chamber is a rare but serious complication
- Early surgical removal of Ozurdex® implants from the anterior chamber is advocated to minimise the risk of corneal decompensation
- Ozurdex® implants can be easily removed from the anterior chamber by using an intravenous cannula
- This technique can be applied to removing fluocinolone acetonide (Iluvien®) implants in similar situations

---

## REFERENCES

---

1. National Institute for Health and Care Excellence. Dexamethasone intravitreal implant for the treatment of macular oedema secondary to retinal vein occlusion, NICE Technology appraisal guidance TA229, <https://www.nice.org.uk/Guidance/TA229> (2011, accessed 31 October 2020).
2. National Institute for Health and Care Excellence. Dexamethasone intravitreal implant for treating diabetic macular oedema, NICE Technology appraisal guidance TA349, <https://www.nice.org.uk/guidance/TA349> (2015, accessed 31 October 2020).
3. National Institute for Health and Care Excellence. Dexamethasone intravitreal implant for treating non-infectious uveitis, NICE Technology appraisal guidance TA460, <https://www.nice.org.uk/guidance/ta460> (2017, accessed 31 October 2020).

4. Bonfiglio V, Reibaldi M, Fallico M, et al. Widening use of dexamethasone implant for the treatment of macular oedema. *Drug Des Devel Ther* 2017;11:2359-72.
5. Khurana RN, Appa SN, McCannel CA, et al. Dexamethasone implant anterior chamber migration: risk factors, complications, and management strategies. *Ophthalmology* 2014;121:67-71.
6. Rahimy E and Khurana RN. Anterior segment migration of dexamethasone implant: risk factors, complications, and management. *Curr Opin Ophthalmol* 2017;28:246-51.
7. Ruiz-Casas D, Gros-Otero J and Casado A. Dexamethasone implant removal from anterior chamber: surgical technique. *Retinal Cases Brief Rep* 2016;10:313-5.
8. Stewart JM. Modified no-touch technique for removal of a dexamethasone implant that has migrated to the anterior chamber. *Ocular immunology & inflammation* 2020; 28:238-9.
9. Papastavrou VT, Zambarakji H, Dooley I, et al. Observation: Fluocinolone acetonide (Iluvien) implant migration into the anterior chamber. *Retin Cases Brief Rep* 2017;11:44-6.

## FIGURE/VIDEO CAPTIONS

---

Figure 1 Left eye of patient pre-operatively showing Ozurdex<sup>®</sup> lying horizontally in the anterior chamber with corneal oedema and Descemet's membrane folds. Previous superior peripheral iridectomy, Artisan<sup>®</sup> intraocular lens, arcuate keratotomies and corneal sutures were also seen.

Figure 2 Removal of Ozurdex<sup>®</sup> implant from the anterior chamber (AC) from the surgeon's perspective. Viscoelastic (Healon<sup>®</sup>) was injected in the AC and used to manoeuvre the Ozurdex<sup>®</sup> lengthwise with one end facing the corneal incision made with a 1.8mm keratome (figure 2A). A 16G intravenous cannula was introduced through the corneal incision and advanced to envelop the Ozurdex<sup>®</sup> along its entire length (figures 2B and 2C). The intravenous cannula was then retracted from the AC with the Ozurdex<sup>®</sup> implant within it (figure 2D).

Video 1 Removal of Ozurdex<sup>®</sup> implant from the anterior chamber (AC) from the surgeon's perspective. A supero-temporal corneal incision was made with a 1.8mm keratome. Viscoelastic (Healon<sup>®</sup>) was injected in the AC to manoeuvre the Ozurdex<sup>®</sup> lengthwise with one end facing the incision. A pair of forceps was

---

used to gently lift the superior flap of the corneal incision while introducing the 16G cannula into the AC.

The cannula was advanced to envelop the Ozurdex® implant along its entire length and retracted with the Ozurdex implant contained within it. The AC was then washed out with a Simcoe cannula, and the corneal incision hydrated with balanced salt solution. Please see main text for full description of surgery.

## PATIENT'S PERSPECTIVE

---

The whole team who looked after me were extremely friendly, efficient and very professional. I would like to thank them.

## INTELLECTUAL PROPERTY RIGHTS ASSIGNMENT OR LICENCE STATEMENT

---

I, **Jae Yee Ku**, the Author has the right to grant and does grant on behalf of all authors, an exclusive licence and/or a non-exclusive licence for contributions from authors who are: i) UK Crown employees; ii) where BMJ has agreed a CC-BY licence shall apply, and/or iii) in accordance with the relevant stated licence terms for US Federal Government Employees acting in the course of their employment, on a worldwide basis to the BMJ Publishing Group Ltd ("BMJ") and its licensees, to permit this Work (as defined in the below licence), if accepted, to be published in BMJ Case Reports and any other BMJ products and to exploit all rights, as set out in our licence [author licence](#).

**Date: 19/11/20**

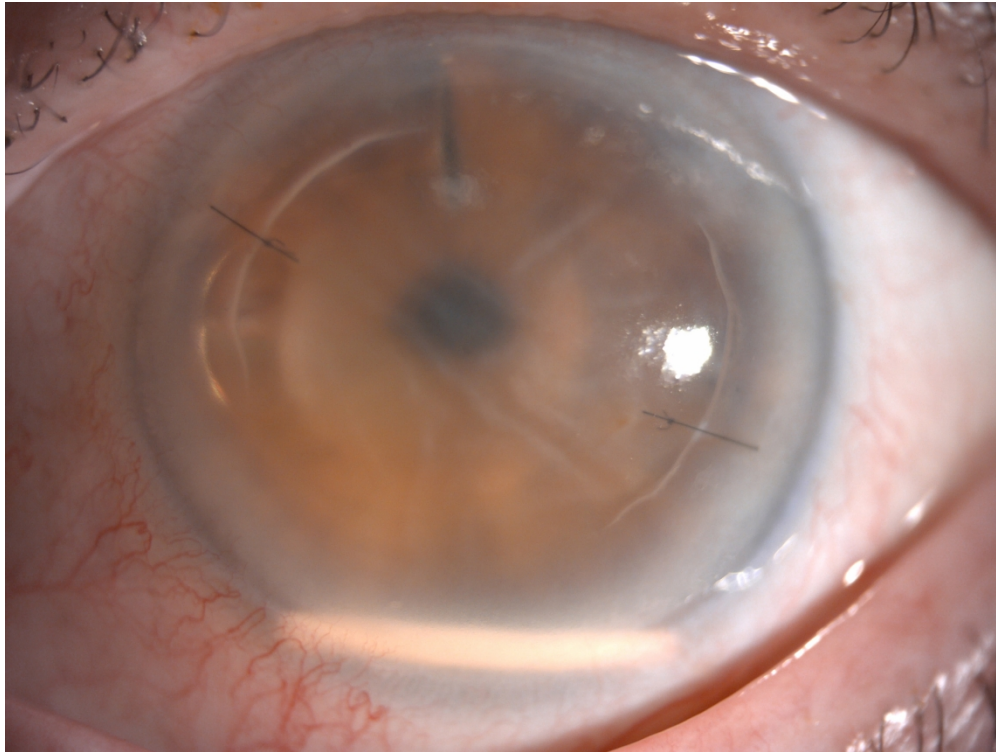


Figure 1 Left eye of patient pre-operatively showing Ozurdex® lying horizontally in the anterior chamber with corneal oedema and Descemet's membrane folds. Previous superior peripheral iridectomy, Artisan® intraocular lens, arcuate keratotomies and corneal sutures were also seen.

218x163mm (300 x 300 DPI)



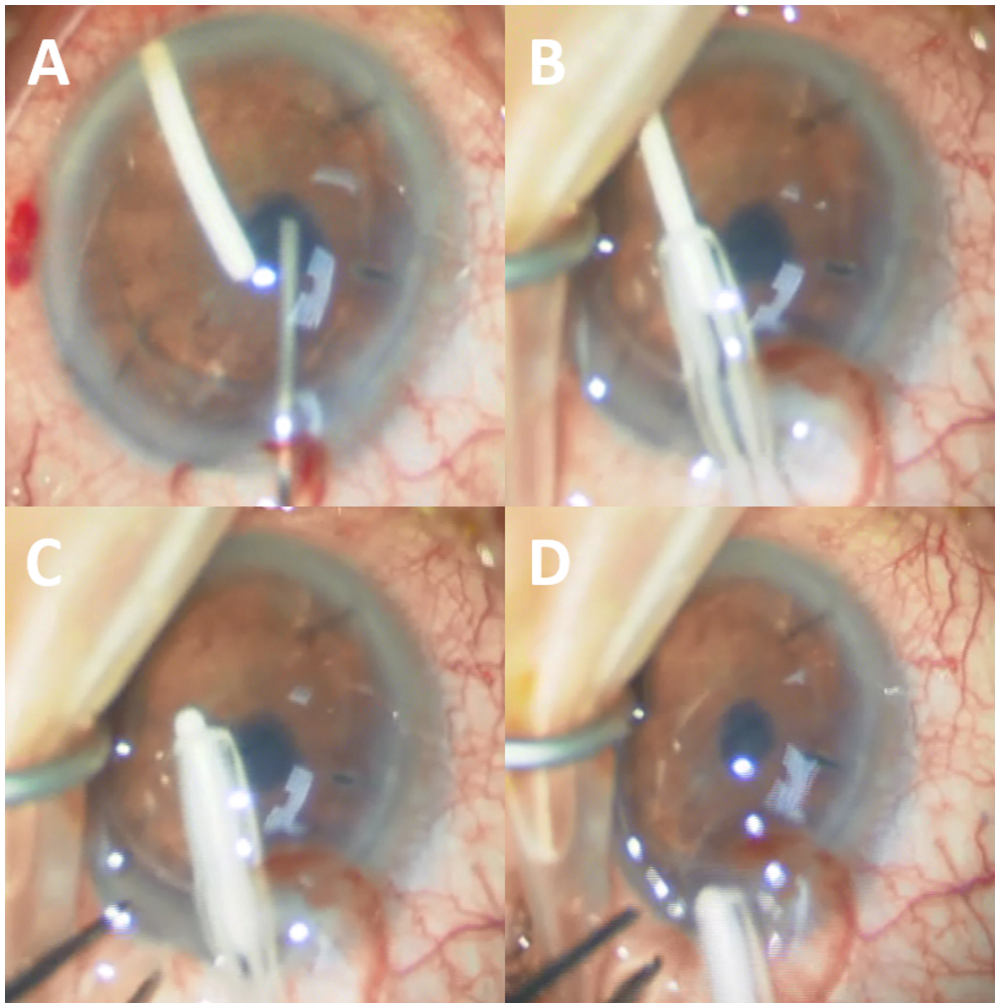


Figure 2 Removal of Ozurdex® implant from the anterior chamber (AC) from the surgeon's perspective. Viscoelastic (Healon®) was injected in the AC and used to manoeuvre the Ozurdex® lengthwise with one end facing the corneal incision made with a 1.8mm keratome (figure 2A). A 16G intravenous cannula was introduced through the corneal incision and advanced to envelop the Ozurdex® along its entire length (figures 2B and 2C). The intravenous cannula was then retracted from the AC with the Ozurdex® implant within it (figure 2D).

94x94mm (300 x 300 DPI)