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Utilizing perioperative patient positioning to correct intraocular lens implant subluxation

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ABSTRACT

Purpose: to describe how preoperative and intraoperative positioning techniques can be used to manage subluxed intraocular lenses (IOL) whilst saving patients from pars plana vitrectomy.
Observations: An 88-year-old man with a complex past medical history including mild cognitive decline from early Alzheimer's dementia and pertinent ocular history of pseudoexfoliation syndrome and previous cataract surgery with IOL presented with decreased vision secondary to an inferiorly subluxed IOL/bag complex. The IOL was not visible in the operating room when he was supine but was visible in clinic the next day after he had slept in the prone position the night before. The patient was returned to the operating room the next day and a fixation suture was used to capture the IOL while he was upright. The IOL was then fixated to the sclera in standard position.
Conclusions and Importance: Both pre and intraoperative positioning techniques can help anterior segment surgeons fixate subluxed IOLs that otherwise seem inaccessible from an anterior approach and thus avoiding the inherent risks associated with vitrectomy.

1. Introduction

Intraocular lens (IOL) subluxation after cataract surgery occurs at an approximate rate of 0.7% 20 years after surgery.[1] Although they are fairly uncommon, they can lead to reduced vision, patient dissatisfaction, and devastating complications such as uveitis-glaucoma-hyphema syndrome or rhegmatogenous retinal detachment. Therefore, it is very important to identify IOL subluxation early. If the lens has dislocated completely into the vitreous, then a pars plana vitrectomy is needed to retrieve the IOL prior to IOL fixation or exchange. However, if the lens is partially dislocated into the vitreous, then a variety of options are available for IOL fixation from an anterior approach. IOL fixation or exchange via an anterior approach frequently avoids the need for vitrectomy in this subset of patients (see Fig. 1).

Upright positioning of a patient for intraocular surgery has mostly been described for circumstances when patients are unable to lie down due to other medical conditions.[2,3] It has also been utilized at the end of a case to optimize IOL centration after IOL subluxation.[4] To our knowledge, however, securing an IOL at the beginning of a case with the patient in the upright position to avoid complete dislocation when they are supine has not yet been described. We therefore present a patient who had an inferior lens subluxation that became a complete dislocation with supine positioning. The next day in clinic, the lens returned to an inferior subluxed position. We stabilized the IOL by placing a safety suture through the capsular bag while the patient was in the upright position and then completed the IOL fixation with the patient in the supine position.

2. Case report

An 88-year-old man with a complex past medical history including mild cognitive decline from early Alzheimer's dementia and a past ocular history of bilateral LASIK, Fuch's dystrophy, bilateral posterior vitreous detachment (PVD), pseudoexfoliation syndrome and bilateral uncomplicated cataract extraction with IOL implantation presented with decreased vision in the right eye.

On exam, his visual acuity was count fingers at 4 feet OD and 20/30 in the left eye (OS). Intraocular pressures were 8 OD and 10 OS. Pupils were equally round and reactive with no relative afferent pupillary defect. He was orthophoric in primary gaze with full extraocular motility and visual fields were full to confrontation with finger counting. Slit lamp exam revealed an inferiorly subluxed single piece acrylic

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posterior chamber IOL in the capsular bag OD and with significant pseudophakodonesis. Posterior segment exam demonstrated PVD in both eyes and no retinal breaks or detachments in the periphery. The plan was to proceed with scleral fixation of the dislocated IOL the following day.

On the day of surgery, the patient was kept in the supine position before being brought into the operating room. Visualization through the operating microscope demonstrated that the IOL had completely subluxed from view through the pupil. Scleral depression was performed for 360° but failed to elevate the IOL toward the anterior segment. The patient was also examined in the upright position with a slit lamp, but the IOL remained completely subluxed. It appeared that overnight the last few zonules supporting the IOL had dissolved resulting in a complete dislocation into the vitreous. The surgery was aborted, and plans were made to refer the patient to a retinal specialist for pars plana vitrectomy and IOL retrieval.

The following day in the clinic, slit lamp examination revealed that the IOL had returned to its previous inferiorly subluxed position and once again looked fixable from an anterior approach. Upon further questioning, the patient reported that he slept in the prone position and had remained in the upright position since surgery the previous day. The patient was offered the option to attempt IOL fixation with an anterior approach the following day. The patient was instructed to sleep face down the night before surgery and otherwise remain upright. The day of surgery, the patient was brought into the operating room via wheelchair so he could remain upright. The operating microscope was tilted to a 45-degree angle and the surgeon operated while standing. After a sterile prep of the eye, an eyelid speculum was placed, and the patient was positioned at the operating microscope. A safety suture of 10–0 Prolene suture on a CTC-6L needle was passed through the cornea and then through the capsular bag to prevent the IOL from dislocating into the vitreous when he was placed in the supine position. The patient was then placed in the supine position and the IOL was fixated to the sclera with CV-8 Gore-Tex sutures. There was no need for pars plana vitrectomy.

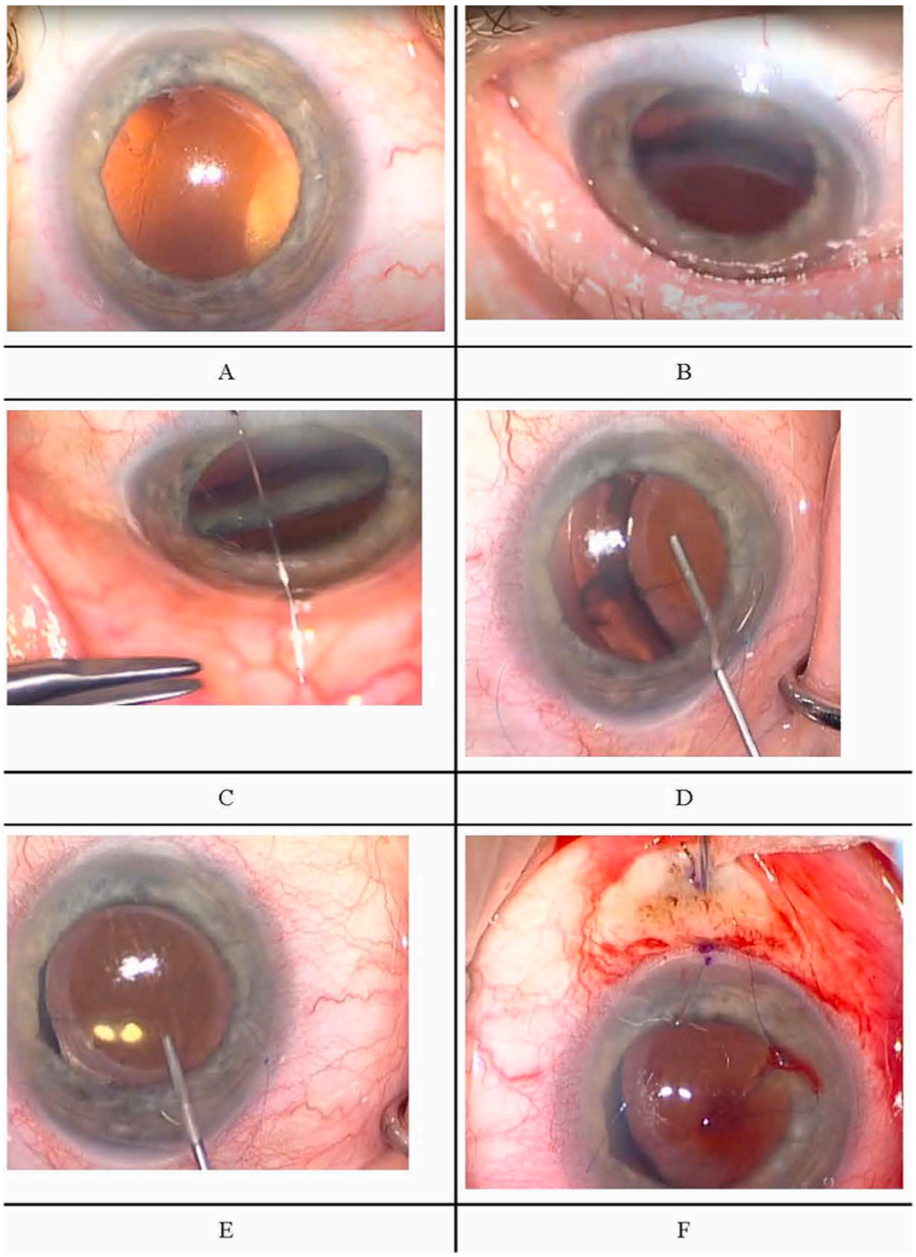

Fig. 1. This is a composite figure of the events that led to successful IOL repositioning. Image A: Initial day of surgery when the subluxed lens disappeared posteriorly (Patient supine). Image B: The next day in the clinic when the lens was visible (Patient prone). Image C: Patient was placed at the operating microscope and a safety prolene suture was passed through the cornea and then through the capsular bag to stabilize the IOL (Patient prone). Image D: Lens was shifted from the periphery (Patient supine). Image E: Lens was centered (Patient supine). Image F: IOL getting fixated to the sclera (Patient supine).

3. Discussion

We present a unique case of a patient that had an IOL subluxation where the lens could be seen in an upright position one day but was completely subluxed the next. After overnight face down positioning, the IOL returned to an anterior, partially dislocated position. A safety suture was placed while the patient was in the upright position to temporarily prevent the IOL from subluxing into the vitreous cavity. After placement of the safety suture, the patient was placed in the supine position to fixate the IOL to the sclera. The mechanism of subluxation in our patient was zonular damage from pseudoexfoliation syndrome. Initially, the IOL was partially subluxed. However, after supine positioning, the IOL completely dislocated into the vitreous. After overnight prone positioning, the IOL returned to an inferiorly dislocated position just behind the pupil. We were able to fixate this IOL by an anterior approach by having the patient sleep in the prone position the night before surgery and then remain in the upright position. In order to stabilize the IOL in the anterior segment, we operated on the patient first in the upright position by passing a safety suture through the capsular bag. With the IOL secured in the anterior segment by the safety suture, we subsequently placed the patient in the supine position to fixate the IOL to the sclera. We believe that a key part of this case was the serendipitous recognition that overnight prone positioning followed by upright positioning brought the IOL bag complex from a completely dislocated position to a position that was amenable to an anterior approach. In this case, fixation by an anterior approach avoided the risks inherent to a pars plana vitrectomy. Therefore, overnight prone positioning followed by strict upright positioning should be considered in patients who have a complete subluxation of an in the bag IOL into the vitreous when access to a vitreoretinal/posterior approach is absent and/or limited. If the in the bag IOL moves to a position amenable to fixation from an anterior approach, then pars plana vitrectomy could be avoided. Of course, this approach only works in certain situations as seen in this patient and comes with its own set of challenges. The surgeon needs to be able to operate while the patient is upright for part of the procedure which might cause difficulties to an inexperienced surgeon. In addition, an attempt with this method does not guarantee success within one setting. Furthermore, it would not allow full visualization of the posterior segment for uncovering other concurring vitreoretinal pathology like a pars plana vitrectomy would. If these challenges cause the surgeon discomfort and uncertainty, then the current standard-of-care via a posterior approach should be utilized.

4. Conclusions

Both pre and intraoperative positioning techniques can help anterior segment surgeons fixate subluxed IOLs that may otherwise appear inaccessible from an anterior approach and thus avoiding the inherent risks associated with vitrectomy.

Patient consent

Consent to publish the case report was not obtained. This report does not contain any personal information that could lead to the identification of the patient.

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Authorship

All authors attest that they meet the current ICMJE criteria for Authorship.

Declaration of competing interest

The authors declare that there are no conflicts of interest, either financially or personally, regarding the publication of this paper.

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