

# The Nucleus Drops

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## CASE PRESENTATION

An 80-year-old patient has a small best-dilated pupil and is on an  $\alpha$ -blocker for benign prostatic hyperplasia. Phacoemulsification for a disabling cataract is complicated. The initial steps of the procedure go well, and the anterior capsular tear is round and continuous. Hydrodissection also seems to go well, but the lens prolapses forward a bit and then snaps back. With the surgeon's first attempt at chopping, the nucleus falls back into the vitreous cavity (Figure 1).

The cataract surgeon is not comfortable with posterior-segment techniques such as posterior levitation and will refer the patient to a vitreoretinal surgeon for definitive care. What should his or her next steps be? Should he or she leave the Malyugin Ring (MicroSurgical Technology, Redmond, WA) in place to allow an examination and improve the vitreoretinal specialist's visualization during the posterior segment surgery?



Figure 1. The nucleus drops at the start of phacoemulsification.

### JOHN KITCHENS, MD

The less I have to do in the anterior segment, the better, from my perspective. I do not mind going up and around the IOL to remove vitreous (from the wound or anterior chamber) or dealing with cortical remnants in the bag or around the IOL. Having an IOL in place is great, but no IOL implanted is better than my having to fish one out of the back of the eye.

The availability of numerous wide-angle viewing systems allows me to see well through a fairly small pupil (4 mm or larger is usually okay). Iris hooks are my preference, if needed, because I am comfortable with them and I do not have to make a large incision to get them in or out (ie, no problems with iris prolapse).

### ANDREAS K. LAUER, MD

The cataract surgeon's heart and thoughts need not sink along with the lens. Instead, seeking a graceful conclusion to the surgery without creating additional complications is essential. If residual cortical material is present, he or she can use the anterior vitrector to remove it along with anteriorly prolapsed vitreous. An intact continuous curvilinear anterior capsular opening is the blessing in this case,

**"An intact continuous curvilinear anterior capsular opening is the blessing in this case."**

—Andreas K. Lauer, MD

because a three-piece foldable acrylic IOL can be inserted with its haptics in the sulcus. If possible, I would suggest trapping the optic in the anterior capsular opening. Prior to inserting the IOL, I would recommend injecting a dispersive viscoelastic at and immediately behind the capsular opening to compartmentalize the vitreous posteriorly and facilitate the IOL's insertion. The surgeon should remove the Malyugin Ring and suture the phaco wound closed. If present, vitreous wicks at the wounds should be swept and released.

Periocular dexamethasone and oral acetazolamide should be administered to mitigate the patient's overnight discomfort, ocular inflammation, and problems related to the IOP. When intracameral triamcinolone is

used to assist in vitreous cleanup, the remaining steroid can be anti-inflammatory.

A few points from the retinal perspective follow. In general, patients are happier if they know that their IOL has been implanted, even if they subsequently require a lensectomy. Second, a quiet eye with a clear cornea facilitates the retinal surgeon's management of a dropped lens, so mitigating inflammation and elevations of IOP is important. Third, a three-piece foldable acrylic IOL is the preferred choice in cases such as this one, because this type of lens requires minimal enlargement of the phaco wound. The placement of an IOL with a silicone optic will result in a highly undesirable situation if future retinal surgery becomes necessary. Finally, leaving the Malyugin Ring in place will not benefit the patient, because the phaco wound will be reopened unnecessarily. Current wide-angle visualization systems for retinal surgery accommodate smaller pupils than earlier technology.

#### **ELLIOTT H. SOHN, MD**

A large nuclear fragment, such as in this case, may necessitate early surgery, depending on the IOP and the amount of inflammation and corneal edema. Wide-angle viewing systems coupled with careful scleral depression usually allow an adequate view through a relatively miotic pupil. If the pupil is still too small, I typically use iris hooks.

My experience with the Malyugin Ring is limited, and I am not sure how well the eye tolerates the device in the short and long term. Because most retinal surgeons probably also have limited experience with this ring, I would recommend removing it and suturing the corneal wound. If a corneal suture were not placed at the time of clear corneal cataract surgery, I would place one before starting the pars plana vitrectomy and lensectomy. The implantation of an IOL (probably in the sulcus or anterior chamber in this instance) would be up to the anterior segment surgeon and would not significantly change my approach to the lensectomy.

An anterior vitrectomy is useful to eliminate vitreous to the corneal wound that can serve as a wick for endophthalmitis and increase the risk of vitreoretinal traction as well as retinal tears and detachment.

#### **JOHNNY TANG, MD**

My advice at this point would be to pause and reassess the situation. Posterior levitation maneuvers performed via anterior segment approaches are challenging and could easily make a bad situation worse.

Anterior vitrectomy with removal of any prolapsed vitreous is important. If visualization of the vitreous is difficult, then the instillation of agents such as preservative-free triamcinolone might aid vitreous cleanup. After

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*—Jonathan D. Walker, MD*

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removing the vitreous material, the surgeon could attempt cortical cleanup of the anterior segment.

I would advise placing an IOL only if there is appropriate support in the capsular bag, sulcus, or anterior chamber. If such support is in doubt, I would rather the patient be left aphakic for the time being than have to deal with a dislocated IOL and crystalline lens material during the retinal surgery.

I would not recommend leaving the Malyugin Ring in the eye for a number of reasons. Its presence might exacerbate postoperative inflammation, lead to hyphema, or cause additional corneal damage. Moreover, with several wide-field imaging systems at the vitreoretinal specialist's disposal, the role of pupillary dilators is becoming more limited. I have been able to successfully manage numerous cases of intraoperative floppy iris syndrome that required retinal procedures without the use of pupillary dilators.

I would want the surgeon to suture the cataract wound and initiate his or her standard postoperative medical regimen in several hours.

#### **JONATHAN D. WALKER, MD**

I think the standard advice applies here: clean up the vitreous, place an implant if possible, and suture the wound. I would hesitate to leave the Malyugin Ring in place, because it might stimulate inflammation and contribute to mechanical damage of the endothelium. Plus, for visualization, I prefer to be able to "titrate" the pupil with hooks. This approach may increase the risk of iris trauma, but hooks can give great exposure. If the retinal specialist is not familiar with the Malyugin Ring, there may be unnecessary trauma, as he or she tries to get the device out of the eye. My only experience with the ring comes from watching videos, which I doubt would suffice.

As a side note, at one of the places where I trained, there was a doctor at an outlying location who dropped a lens and became so upset that he passed out and had to be taken to the ED. The patient had to be transported by ambulance to our facility to have the surgery completed. As a retinal specialist, I find this to be a great anecdote to tell patients who are miffed because they have had this complication; it turns their operating surgeon into a hero for closing the eye and referring them. ■

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