

## Point/Counterpoint:

# What to Do When Phaco

Keep the incision small.

**BY DAVID A. GOLDMAN, MD**



During phacoemulsification, if the posterior capsule tore and nuclear material remained, I would first inject a dispersive viscoelastic to stabilize the anterior chamber and prevent vitreous prolapse. My options would then be as follows. I could enlarge the original corneal incision or create a scleral tunnel incision and convert to an extracapsular cataract extraction (ECCE). Alternatively, I could continue phacoemulsification using modified settings. I favor the second approach.

## ENLARGING THE INCISION

The majority of cataract surgeons today perform phacoemulsification under topical anesthesia. Continuing topical anesthesia and enlarging the corneal wound to remove the nuclear fragments could induce significant astigmatism and dry eye as well as increase regular and possibly irregular astigmatism. Furthermore, manipulation of the iris or the IOL's insertion might cause the patient discomfort that would lead to eyelid squeezing, which, with a larger wound, might result in devastating complications.

## CONVERTING TO AN ECCE

Creating a scleral tunnel incision for the conversion to an ECCE technique would require blocking the eye while the patient was on the table. Although a retrobulbar block can be performed after capsular rupture, the posterior pressure exerted for the block on this now unicameral eye could be a setup for vitreous prolapse or, worse, a suprachoroidal hemorrhage. There are risks even in cases where the patient's eye has been blocked preoperatively. Because the posterior capsule has been compromised, any manipulation to express lenticular material might result in vitreous prolapse. A vitrectomy should be performed in a closed system; attempting a vitrectomy via an extracapsular wound would be ineffective and unsafe. Although the enlarged incision could temporarily be closed and a second incision made for a vitrectomy, three large incisions would then have been created, which would have cut multiple corneal nerves and raised the risk of a postoperatively neurotrophic cornea. Folding and inserting an IOL into this eye might cause further vitreous loss, which would necessitate challenging maneuvers to

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clear the anterior chamber at the end of the case.

The integrity of large extracapsular incisions, even if "completely healed," is never perfect. As the baby boomers age, more people will trip and fall, which will translate into a higher incidence of traumatic rupture of these wounds with destructive outcomes. Finally, the majority of US residency programs today do not provide sufficient training for graduating ophthalmologists to feel comfortable with the ECCE technique.

## KEEPING THE INCISION SMALL

If I keep the incision small, I can often safely remove the cataractous material with a careful technique and use of a viscoelastic. Should vitreous prolapse, I can perform an anterior vitrectomy. Staining the vitreous with triamcinolone helps to ensure complete cleanup.

I can employ a posterior-assisted levitation (PAL) technique if nuclear material descends posteriorly. Several studies have demonstrated the PAL approach's safety.<sup>1-3</sup> If cataractous material descends too posteriorly or the surgeon is uncomfortable with PAL techniques, he or she can allow the cataract to fall and ask a retinal colleague to recover it later. The retinal specialist will likely also prefer to operate on an eye with smaller wounds than one with a large extracapsular incision. Today's retinal surgeons are experts at removing retained nuclear material. If a vitrectomy is performed relatively quickly, there should not be any negative consequences, particularly if the patient is appropriately managed pharmacologically with steroids, nonsteroidal anti-inflammatory drugs, and antibiotics.

As for the IOL's insertion, I believe that keeping the incision small allows for safer implantation. Three-piece lenses

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# emulsification Goes Bad

Convert to extracapsular cataract extraction.

BY ANU P. GUPTA, MD, AND RICHARD E. BRAUNSTEIN, MD



The decision to convert to an extracapsular cataract extraction (ECCE) often comes at a stressful and challenging moment in the OR. Numerous situations make

switching to an ECCE a superior alternative to the attempted continuation of phacoemulsification in the eye.

One of the most important aspects of the preoperative evaluation of cataract patients is the assessment and identification of risk factors that may increase surgical difficulty and the likelihood of conversion. Several intraoperative factors can also prompt the switch to an ECCE, however, especially by a novice surgeon. Optimal preoperative preparation and the prompt recognition of complications can permit a timely and safe transition with excellent visual results. If there is a consideration of converting the case to an ECCE, it is generally preferable to start with a peribulbar block.

## PREOPERATIVE FACTORS

Preoperative risk factors to consider when evaluating each cataract patient include, but are not limited to, zonular laxity (ie, a history of trauma, pseudoexfoliation, phacodonesis, Marfan's syndrome), grade 3 to 4 nuclear sclerosis, a small pupil, and an underlying predisposition to corneal decompensation (ie, Fuchs' dystrophy, posterior polymorphous dystrophy) (Figure 1). Each ophthalmologist may approach these circumstances differently. Experienced cataract surgeons may be comfortable planning the phacoemulsification of more complex cataracts using advanced techniques such as sutured capsular support. Alternatively, beginning surgeons and many experienced ophthalmologists may prefer a planned ECCE to ensure the safe removal of the crystalline lens and implantation of the IOL.<sup>1</sup>

## INTRAOPERATIVE FACTORS

Appropriate preoperative counseling of the patient should include the possible need to convert to an ECCE procedure if clinical conditions make it a reasonable

alternative. Sometimes, the surgeon simply cannot preoperatively predict the need for this change.

An intraoperative change to ECCE should be considered when phacoemulsification is proving unsuccessful. Whether the lens is falling posteriorly due to inadequate zonular support, or the remaining lens nucleus is rock hard in the presence of an unstable posterior capsular tear, it is sometimes more prudent to convert than to continue with phacoemulsification. This is most true when the risks of the latter outweigh those of conversion. Indications to consider the change include mechanical failure of the phaco handpiece or machine, ineffective phacoemulsification due to excessive lenticular density, a



Figure 1. Preoperatively, this eye has a Morgagnian cataract, posterior synechiae, and phacodonesis.

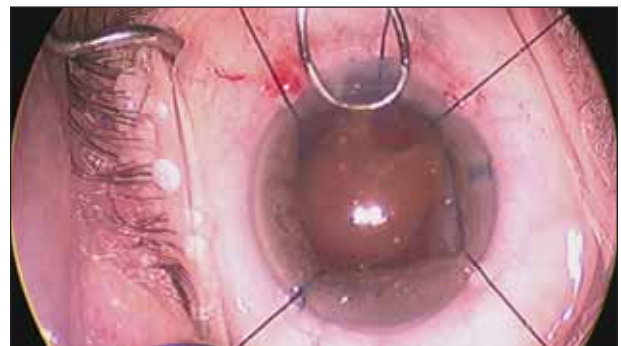


Figure 2. The surgeon delivers the lens using a lens loop after attempted phacoemulsification of a brunescient cataract with 6 clock hours of zonular dehiscence and vitreous presentation through the dehiscence.

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are available in injector systems that now require no enlargement of the cataract incision. For example, the iSert PC-60AD (Hoya Surgical Optics, Inc., Chino Hills, CA) is capable of injecting a lens through a 2.4-mm incision. The Monarch B cartridge/injector can inject the MA60AC or MA50BM lenses (products from Alcon Laboratories, Inc., Fort Worth, TX) through a 2.75-mm incision. Bausch + Lomb's (Rochester, NY) LI6AO series is capable of planar injection, very simple for sulcus delivery, via a 2.75-mm incision.

## CONCLUSION

I distinctly remember the first patient whose capsule I broke as an attending surgeon on a cataract procedure. Nuclear material descended posteriorly, and vitreous prolapsed anteriorly. I performed a triamcinolone-assisted anterior vitrectomy and placed a three-piece lens in the

sulcus. I explained everything to the patient postoperatively, and the following week, he underwent a pars plana vitrectomy. To this day, his UCVA remains 20/20. If capsular rupture occurred in my own eye, I would much prefer that cataract surgery continue via a small incision than that the surgeon convert to an ECCE. ■

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dense nuclear cataract with a low endothelial cell count, zonular laxity or dialysis, poor visualization, and a capsular tear that has gone posteriorly<sup>2</sup> (Figure 2). For example, in an eye with endothelial instability, a posterior capsular tear, and a dense nucleus, the surgeon will likely be unable to continue phacoemulsification without a significant risk of corneal decompensation and/or loss of a nuclear fragment into the vitreous. Hard nuclei can lead to prolonged phaco times and corneal decompensation. A tightly constructed incision with an extended phaco time can result in a corneal thermal burn. Surgeons with less clinical experience may be wise to convert to an ECCE early, whereas more experienced surgeons may be able to manage a difficult situation.

Dada et al<sup>3</sup> performed a retrospective review of 540 eyes undergoing clear corneal phacoemulsification by an experienced surgeon in India. They found a 3.7% rate of conversion to ECCE (20 cases). The reasons for conversion were pupillary miosis (six cases), posterior capsular rupture (five cases), prolonged phaco time (four cases), posterior extension of the capsulorhexis (two cases), corneal thermal burn (one case), subluxation of the lens (one case), and malfunctioning of the phaco handpiece (one case). Mean endothelial cellular loss was 14.8% in patients undergoing conversion to an ECCE. Ninety percent (18 cases) achieved a visual acuity of 20/40 or better at 6 weeks.

## CONCLUSION

Although ECCE patients have a lengthier recovery time and the larger incision is associated with a greater degree

of astigmatism, a skilled surgeon can minimize these disadvantages by means of a streamlined approach to ECCE and appropriate management of astigmatism postoperatively. No matter how experienced the surgeon may be, however, it is important that he or she know how and when to switch to an ECCE—before any complications may arise.

Ultimately, the decision to convert to an ECCE can occur at any time during the pre- or intraoperative period. The surgeon must determine how a case can most safely be carried out based on his or her surgical experience and ability. In situations of zonular instability, dense nuclear lenses, and unstable posterior capsular tears, changing to an ECCE is an appropriate alternative to continuing phacoemulsification. ■

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