

Phacovitrectomy for the Retina Surgeon

A combined procedure offers benefits for patients, surgeons, and the health care system.

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Traditionally, in the United States, retinal surgeons do not perform combined phacoemulsification and vitrectomy, also known as phacovitrectomy. Phacoemulsification is the most commonly performed surgery during ophthalmology residency; upon starting their vitreoretinal fellowships, fellows experience a sharp decline in performing phacoemulsification to the detriment of their skillset in cataract management.

Commonly, a patient with a visually significant cataract who needs a nonemergent vitrectomy, such as an epiretinal membrane peel, is referred to an anterior segment surgeon for phacoemulsification a few days or weeks before the vitrectomy. If a surgeon performs an emergent vitrectomy (eg, for a macula-on retina detachment), he or she may elect to perform a pars plana lensectomy, after which an intraocular lens (IOL) is placed in the sulcus rather than the capsular bag several weeks or even months later. Similarly, even if a patient does not have a visually significant cataract prior to vitrectomy, clinical experience and studies have shown that the cataract will invariably progress to visual significance requiring surgery and, thus, another trip to the OR.¹⁻⁴ These variables ultimately commit the patient to undergo multiple surgeries on different days, which is an inconvenience to the patient and a waste of health care funds.

Over the past few years, techniques and technologies for both cataract and vitrectomy surgery have evolved tremendously, resulting in improved outcomes and shorter operating times. Cataract surgery is typically performed via a clear corneal incision with size ranging from 1.5 to 2.8 mm. Similarly, pars plana vitrectomy has been performed safely using progressively smaller instrumentation including 23, 25, and 27 gauges.^{2,5}

Given the improved safety, speed, and recovery time seen with these surgeries, it is evident that, when done appropriately, combining the 2 procedures is in the best interests of the patient. In this article, we highlight

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some of the indications, techniques, and pros and cons of phacovitrectomy when performed by the retina surgeon.

INDICATIONS

Patients with visually significant cataracts undergoing vitrectomy are candidates for phacovitrectomy. Even patients with mild degrees of lenticular change are suitable for this procedure, as this will negate the need for cataract surgery at a later date and provide excellent posterior pole visualization for the surgeon.

A relative contraindication is a retina surgeon who is inexperienced in phacoemulsification, as prolonged phacoemulsification can lead to corneal edema and poor visualization of the retina during vitrectomy. However, with current machines, techniques, and viscoelastic devices, phacoemulsification with IOL implantation can be safely performed in 10 to 15 minutes without corneal decompensation.

ADVANTAGES OF PHACOVITRECTOMY

Benefits to the patient include the following:

- The patient avoids 2 trips to the OR and has a faster overall postoperative recovery course compared with undergoing 2 separate procedures at different dates;
- The patient saves money, as copayments are avoided for the second procedure;

- The patient saves time, as he or she does not need to make appointments to see an anterior segment surgeon for the cataract procedure;
- Those without health insurance or who otherwise pay out of pocket greatly benefit from the combined procedure; and
- Visual rehabilitation is faster.

Benefits to the retina surgeon include the following:

- Thorough and safe shaving of the vitreous base is possible without fear of lenticular touch.
- A better view of the retina is afforded for delicate maneuvers such as internal limiting membrane peeling and for detection of small retinal breaks.
- There is less concern for posterior capsular rupture or lens drop, as there is the ability to address such issues immediately when they occur.
- Phacoemulsification is easier in a nonvitrectomized eye because: (1) after vitrectomy, cataracts tend to be harder; (2) the anterior chamber tends to fluctuate during phacoemulsification in a vitrectomized eye due to the absence of vitreous support, possibly leading to posterior capsule rents and dropped nuclear fragments. For these reasons anterior segment surgeons are not keen to operate on vitrectomized eyes.
- There are no scheduling mishaps causing the retina surgeon to have to wait for the cataract surgeon to begin the case.
- Most insurance companies reimburse 100% for the retina procedure and 50% for the phacoemulsification, which can be an increased source of revenue for the retina surgeon.
- The patient is happy with the retina surgeon's results, rather than allowing the cataract surgeon to become the hero when he or she does the phacoemulsification at a later date.
- Many ophthalmic manufacturers offer combined packs for phacovitrectomy at almost the same rates as individual phaco packs.

The US health care system also stands to benefit in terms of cost savings of millions of dollars if more phacovitrectomies are performed by the retina surgeon.³

DISADVANTAGES OF PHACOVITRECTOMY

Despite the advantages listed above, several potential disadvantages must be considered. The retina surgeon may fear a loss of referrals from anterior segment colleagues; in our experience, however, it has been quite the opposite. As noted above, cataract surgeons like to avoid doing phacoemulsification in vitrectomized eyes due

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to the higher risk of complications, and they are happy to let us take care of their patients' cataracts during the vitrectomy procedure. Referrals stop, however, when the retina surgeon starts doing primary cataract surgeries.

Another potential disadvantage is that the retina surgeon must be experienced with phacoemulsification. There is also a slightly higher chance of anterior segment inflammation when phacovitrectomy is performed in eyes with diabetic tractional retinal detachment. In such cases, we prescribe steroid drops every 2 hours for the first week, rather than the usual 4 times daily.

SURGICAL PREPARATION AND TECHNIQUES

Phacovitrectomy does require some considerations that may be out of the norm for most retina specialists. The following example scenarios may provide an idea of how we approach these concerns.

Preoperatively, IOL power calculation must be done. In our experience, biometry with the IOLMaster (Carl Zeiss Meditec) has given consistent results. The only time we do not insert an IOL is if the patient has a macula-off retinal detachment, as the calculations may be inaccurate. In such cases we perform phacoemulsification without IOL implantation; Current Procedural Terminology (CPT) code 66940 (extracapsular removal of lens material) has an average Medicare reimbursement of \$800. After the retina is attached, we send the patient to the referring anterior segment colleague for secondary IOL implantation in the bag. If the patient was not referred, we implant the IOL ourselves in a secondary procedure after performing the IOL measurements and calculations. The average Medicare reimbursement for CPT code 66985 (secondary implant not associated with removal of cataract) is \$700.

We check preoperatively for the presence of small pupils or posterior synechiae so that we can be ready to use iris hooks if necessary during surgery. The red reflex is assessed, especially in vitreous hemorrhages, as use of

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trypan blue dye may be desirable if the reflex is poor. Use of trypan blue or iris hooks allows coding at a higher level. CPT code 66982 for complex cataract surgery has an average Medicare reimbursement of \$900, compared with the average Medicare reimbursement of \$700 for the standard phacoemulsification code of 66984.

We inform the patient that, due to the retinal pathology, multifocal IOLs are probably not indicated. A monofocal accommodating IOL may be a better choice if the patient desires intermediate and near vision independent of spectacles.

Intraoperatively, most of the basic surgical steps for phacoemulsification and vitrectomy procedures are similar, except for the following:

We insert all 3 ports before starting the phacoemulsification. This is done because, if the ports are inserted after phacoemulsification, there is a slightly higher risk of the main cataract incision gaping due to the pressure applied for port insertion.

We make sure to insert the superior ports closer to the horizontal meridian so that they do not get in the way of the phaco handpiece and chopper. For example, if the surgeon is operating on a right eye and sitting at the patient's head, the infusion port is inserted inferotemporally; after it is visualized in proper position, the infusion is turned on. Then the 2 superior ports are placed in the usual manner transconjunctivally at the 2:30- and 9:30-o'clock positions. We prefer to use valved trocar systems; however, plugs can be used when valved trocar systems are not available.

The infusion is then turned off so that it can be connected to the phaco handpiece. The phacoemulsification portion of the procedure is started with the side-port incision at 2-o'clock and the main incision at the 10-o'clock position.

We have a low threshold for using trypan blue dye if there is a doubt regarding the red reflex, especially with vitreous hemorrhages. If we anticipate the use of gas at the end of the vitrectomy, we make the capsulorrhexis slightly smaller than usual to prevent anterior subluxation of the IOL in the postoperative period. This is a

rare occurrence. In the few postoperative IOL subluxations we have encountered, we have managed to put them back in position at the slit lamp with a 30-gauge needle.

For very dense cataracts, we use an ample amount of a dispersive viscoelastic material to coat the endothelium prior to phacoemulsification.

After the IOL is inserted into the bag and the viscoelastic is removed, the wounds are hydrated and there is no need for sutures. Most tunneled corneal incisions less than 2.8 mm in width will seal well with hydration alone. If the wound stability is in doubt, a single 10-0 nylon suture is used for the main incision. The vitrectomy is then started in a standard approach after turning the infusion on.

CONCLUSION

Many of our international ophthalmology colleagues have adopted phacovitrectomy as the standard surgical approach for patients with cataract and retinal pathology. With the current health care changes in the United States, we foresee a time when insurance companies will prefer retina surgeons who can manage both cataract and retina issues due to the potential for increased benefits to patients and the health care system. For these reasons, it behooves the young retina fellowship trainee to avoid losing the phacoemulsification skills learned during residency. Additionally, vitreoretinal fellowship training programs should encourage more phacovitrectomy procedures given the multitude of benefits outlined above. ■

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