

Combined Phaco-vitrectomy: Factors Influencing Functional Outcomes

In the absence of prospective trials, outcomes appear to be mostly surgeon-dependent.

BY ANSELM KAMPIK, MD

Combined phacoemulsification-vitrectomy (phaco-vitrectomy) is a useful procedure in patients with a range of vitreoretinal disorders concomitant with visually significant cataract. The combined, or simultaneous, procedure can be used as an alternative to sequential lens and vitreous surgeries. A number of phaco-vitrectomy surgical techniques have been described, including combinations employing conventional 20-gauge vitrectomy and transconjunctival sutureless vitrectomy (TSV). This article describes potential benefits and drawbacks of the combined approach and considers its functional outcomes.

UNANSWERED QUESTIONS

In the early years of phaco-vitrectomy, aphakia was the goal, especially in patients with severe proliferative vitreoretinopathy, proliferative diabetic retinopathy, and similar pathologies; the crystalline lens was removed and no intraocular lens (IOL) was implanted. Today, this has changed completely, and the refractive outcome of surgery is a major consideration. Historical concerns in phaco-vitrectomy included increased risks of opacification of the posterior capsule, elevated intraocular pressure (IOP), chronic epithelial defects, vitreous hemorrhage, retinal detachment, and iris capture by the IOL.¹

A thorough literature search reveals, however, that none of these concerns is substantiated by prospective clinical studies. Rather, the individual surgeon's experi-

ence appears to be the main determinant in the outcomes of phaco-vitrectomy. In addition, the factors that determine functional outcome are not well defined in the literature.

In the absence of evidence, therefore, we have certain accepted beliefs regarding phaco-vitrectomy. For example, we believe today that combined vitrectomy and cataract surgery delivers good results. We believe that vitrectomy and cataract surgery combined in one procedure—equally well as a two-step procedure—is safe and effective. Again, these beliefs are not supported by any published clinical trials.

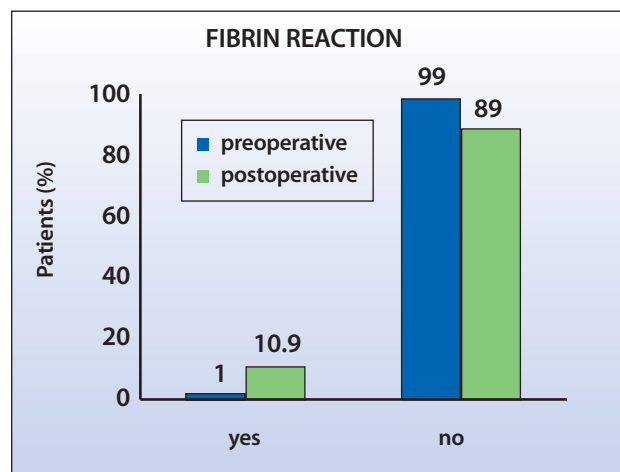


Figure 1. Fibrin reaction does not suggest an increased risk of inflammation postoperatively with a combined procedure.

The absence of evidence also raises certain questions. Is sequential surgery advantageous to minimize the postoperative anterior chamber inflammatory response to cataract surgery? Do eyes operated on with small, clear corneal incisions and foldable IOLs experience less postoperative inflammation and posterior capsular opacification? No studies in the literature address these questions.

Other questions currently not addressed in the literature include the following:

- Which type of cataract surgical technique is most suitable for which vitreo-retinal pathology and which vitrectomy technique?
- Which patients should undergo simultaneous procedures at what level of cataract formation? For example, should cataract be addressed prophylactically (ie, by clear lens removal) in eyes with macular holes or in primary retinal detachment repair, as is done by some surgeons?
- Is sequential surgery superior to simultaneous surgery?
- Can factors influencing the functional outcome be identified?

CURRENT SURGICAL OPTIONS

In an attempt to answer some of these questions, let us examine current options for performing combined phaco-vitrectomy.

Surgical techniques for the cataract component of combined lens-vitreous surgery include non-phaco lens removal techniques, traditional coaxial phacoemulsification, and in more recent years ultrasmall-incision techniques that are known by a number of names including microphaco and microincision cataract surgery (MICS), both bimanual and coaxial. For many years I have preferred a long scleral tunnel incision, in some cases used with a non-phaco technique. The long tunnel allows tight closure at the end of cataract surgery, facilitating extensive scleral indentation as needed during the vitrectomy component of the procedure. Conventional coaxial phacoemulsification is probably the standard today for a combined procedure, with increasing use of smaller-incision MICS techniques. In bimanual surgery in particular, the cataract incisions are small and tight enough that thorough indentation can subsequently be performed in the TSV portion of the procedure.

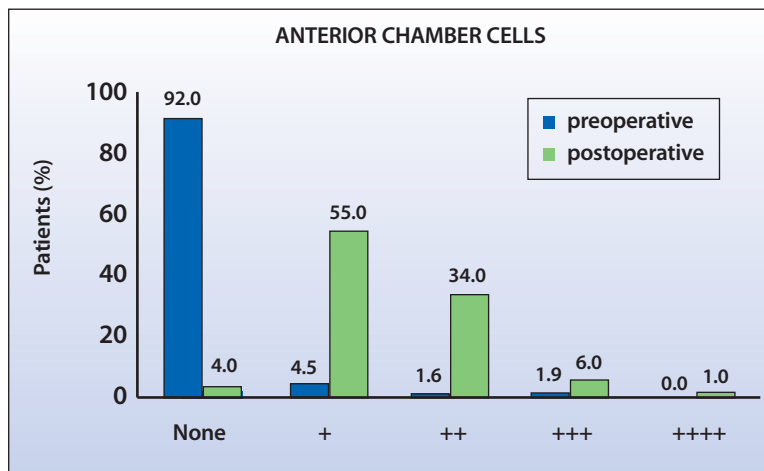


Figure 2. Anterior chamber cells flare measurements also does not suggest an increased risk of inflammation after a combined procedure.

With these options currently available, what are the indications for combined surgery? Without question, phaco-vitrectomy is indicated in patients in whom cataract interferes with the surgeon's visualization of the retina. The question to which we do not have an answer is whether phaco-vitrectomy should be performed in patients in whom lens opacification is at an earlier stage but cataract formation is expected. In these cases, is phaco-vitrectomy necessary, useful, or dangerous? What is the current evidence for functional outcome in these cases?

CLINICAL EXPERIENCE

An extensive literature search reveals that no prospective studies provide evidence of functional outcomes of phaco-vitrectomy. There are, however, papers reporting good clinical experience, indicating success with combined procedures. The results described in these papers suggest that functional outcomes of phaco-vitrectomy are largely surgeon-dependent.

In a retrospective analysis,² five surgeons at our institution reviewed 513 consecutive cases in which vitreo-retinal surgery was performed for a variety of posterior segment pathologies. When concomitant cataracts were present, they were treated in the same session. Postoperative anterior chamber irritation was assessed by parameters including anterior chamber cells, Tyndall effect, fibrin, IOP, and synechiae formation. Various influencing factors were compared to the measurement parameters in univariate analysis.

Some influencing factors and various measurement parameters were statistically significantly correlated in univariate analysis. This was not, however, the case for any of the factors in multivariate analysis. In com-

bined surgery, irrespective of diagnosis, there was no greater fibrin reaction than would be expected, and no greater inflammatory reaction in the anterior chamber (Figures 1 and 2). No measured parameter correlated with increased risk of postoperative inflammation or increased risk of poor outcome in combined surgery.

We concluded that performance of combined cataract and vitrectomy surgery according to our protocol did not entail any single parameter that indicated a risk for increased postoperative irritation of the anterior chamber.

CONCLUSIONS

What can be said about current choices for phaco-vitrectomy? Clinical experience is currently the best guide to its use; cataract and vitrectomy surgery should be combined when indicated.

Phaco-vitrectomy is especially useful when a TSV approach is used for the posterior-segment surgical component. The cataract surgical technique should be chosen depending on the vitrectomy technique. If TSV is to be performed, some type of MICS technique may be the best choice. Other cataract surgery techniques may be employed depending upon the experience of the surgeon, especially in cases with very complex vitreoretinal pathology or in which 20-gauge vitrectomy is used.

Current clinical experience suggests that, with the use of modern cataract surgical technique and technology, combined phaco-vitrectomy is safe and effective in the hands of a trained posterior-segment surgeon. There is no essential contraindication against combined surgery. The functional outcome is dependent upon the experience of the surgeon and the nature of the vitreoretinal pathology. With regard to refractive outcome, a slight myopic shift may be anticipated with the use of a combined procedure. ■

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