

# Staged Versus Combined Procedures in Eyes With Cataract and Fuchs Dystrophy

BY ALAN N. CARLSON, MD; ERIC D. DONNENFELD, MD; MARK S. GOROVY, MD; MICHAEL D. STRAIKO, MD; AND MARK A. TERRY, MD

A 54-year-old white woman presents with nuclear sclerosis, but she also has Fuchs dystrophy and early posterior collagenous layer formation. How do you decide between performing a cataract procedure protecting the corneal endothelium versus combining the procedure with Descemet stripping automated endothelial keratoplasty (DSAEK) to address the Fuchs dystrophy?

## ALAN N. CARLSON, MD

Clearly, the decision to perform a DSAEK triple procedure rather than proceed initially with a cataract/IOL-only approach requires each patient to be evaluated individually. A poorly compliant or institutionalized patient will likely tolerate some corneal edema, and the decision to improve vision with a cataract-only approach may be better. However, whenever possible and appropriate, my preference is to combine this procedure into a single, controlled triple procedure. Patients referred for DSAEK after cataract surgery may not have the IOL power adjusted in anticipation of a donor tissue-induced hyperopic shift (+1.20 D in my practice). I also prefer an intact capsule. Additionally, it is important to make sure that patients do not have a silicone plate-designed IOL and an open capsule, which can result in posterior dislocation of the IOL.

Pachymetry measurements by themselves have limited value, as a measurement of 610  $\mu\text{m}$  is less ominous for a patient whose baseline is 590  $\mu\text{m}$  versus one whose baseline measurement has increased from 490 to 570  $\mu\text{m}$  due to Fuchs dystrophy. Similarly, specular microscopy offers documentation but adds little clinical value to a meticulous slit-lamp examination when it comes to surgical decision making.

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— Alan N. Carlson, MD

A decrease in vision after sleeping or napping results from reduced evaporation and endothelial dysfunction from anoxic stress due to eyelid closure. Patients experiencing these symptoms will also frequently observe that the recovery of vision on humid days is slower. Examining these patients early in the morning often shows subtle microcystic epithelial edema, which is best seen using indirect retroillumination. These patients may experience a temporary improvement using hypertonic saline solution; however, noting this reduction in vision after sleeping and on humid days signals that corneal transplantation or DSAEK is imminent. Fortunately, patients at risk of corneal decompensation can safely undergo a triple procedure combining DSAEK with cataract surgery. Information on my current technique for this procedure is available at <http://www.alancarlsonmd.com/dr-carlson-i-am-afraid-of-eye-surgery-i-only-have-one-eye>.

## ERIC D. DONNENFELD, MD

Many factors can help a clinician decide, with the patient's input, the best course of action. The first is to correlate the level of vision with the type and extent

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— *Eric D. Donnenfeld, MD*

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of cataract. If the patient has 20/80 vision but a cataract that accounts for only 20/40 vision, then in the absence of other pathology, the Fuchs dystrophy is likely to be visually significant and warrants treatment with a DSAEK triple procedure. Similarly, if Descemet membrane has a beaten-metal appearance, it is likely affecting the patient’s quality of vision. If there were any diurnal variation in the patient’s vision, I would attribute this to the Fuchs dystrophy. If corneal thickness is elevated on pachymetry, this indicates visually significant Fuchs dystrophy. Most patients with significant Fuchs dystrophy do not have a measurable endothelial cell count, but if it is possible to obtain one, the information is helpful. In a 54-year-old patient, the condition is likely to get worse with time, and I would have a lower threshold for combining DSAEK with cataract surgery. There is extensive evidence that demonstrates that, even in the absence of a significant reduction in Snellen visual acuity, Fuchs dystrophy reduces contrast sensitivity and causes glare. Therefore, it is likely that the patient’s best visual potential will be realized with a DSAEK triple procedure.

#### **MARK S. GOROVY, MD**

This is an easy decision for me, as I almost always prefer to stage my cataract procedures approximately 1 month prior to DSAEK. Exceptions are logistical in nature, such as a referred foreign patient who is unable to make multiple trips for the two separate procedures. There are many reasons why I prefer sequential versus combined procedures for patients with Fuchs dystrophy and a cataract. The most obvious one is to protect the patient who is happy enough after phacoemulsification to defer DSAEK surgery, as has happened in two cases during the past 2 months in my practice. In my opinion, what is not debatable are the details of phacoemulsification in a patient destined for DSAEK. Certainly, if there is a clinical chance DSAEK can be deferred, copious viscoelastic and posterior chamber phacoemulsification will best preserve the compromised endothelium. I highly recommend a target of -1.50 D with a spherical PCIOL. Implantation in the bag is preferable, but when the capsule is compromised, a sulcus-fixated PCIOL or a sclera-sutured PCIOL

is mandatory over an ACIOL. I do not recommend any presbyopia-correcting IOLs for these eyes, and I discourage the use of toric IOLs unless the corneal astigmatism is clearly greater than 2.00 D.

Separating the two procedures has many operative advantages for my technique, which avoids the use of viscoelastics except in the donor fold. Other benefits include less vitreous pressure and a more stable PCIOL in the bag. Moreover, there is no need for pupillary manipulations such as mydriasis for phacoemulsification, then miosis for donor insertion, and lastly, redilatation for bubble management. I perform both DSAEK and phacoemulsification under topical anesthesia and utilize the same temporal corneal incision. I am convinced of the safety of the staged procedures, and I feel that the DSAEK portion is safer when done as a standalone procedure with a quiet, stable anterior chamber and PCIOL. In my opinion, combining the two procedures can also provide excellent outcomes and potentially a faster recovery by 1 month, especially for surgeons whose operative techniques differ from mine and who use viscoelastics routinely in the anterior chamber.

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“In my referral practice, I have witnessed the pitfalls of combining procedures, such as IOL subluxation and pupillary block.”

— *Mark S. Gorovoy, MD*

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In my referral practice, I have witnessed the pitfalls of combining procedures, such as IOL subluxation and pupillary block. Avoiding viscoelastics is also of value in terms of dislocations and, even more importantly, reducing the incidence of interface haze associated with retained interface viscoelastic. I cannot dispute that a combined procedure saves the insurers money (assuming that there is no increased complication rate), but my priority is the patient, not them. Lastly, the argument that the risk of the rare complication of endophthalmitis is doubled by two trips to the OR versus one is not clinically valid, because two quick procedures do not double the incidence of infection over one much longer procedure. Stated another way, the time in and out of the eye counts, and the incidence of endophthalmitis is so low that it should not be a factor over more common surgical logistics such as the IOL’s stability.

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**MICHAEL D. STRAIKO, MD,  
AND MARK A. TERRY, MD**

It would be important to consider the nature of the patient's visual complaints and the features of the slit-lamp examination. Morning blur that improves throughout the day indicates significant endothelial dysfunction. However, general decreased acuity, loss of contrast, and symptoms of glare may result either from cataract or from significant changes in guttate and thickening of Descemet membrane. On clinical examination, findings of stromal edema or pachymetry values greater than 600 µm would sway us toward a combined procedure for that patient, as would stromal edema, Descemet folds, or a relatively mild-appearing cataract with significant corneal changes. If the lenticular changes are mild enough, a phakic DSAEK may be performed, but this approach is most successful in patients under the age of 50 who still have significant accommodation. Research shows that patients over the age of 50 are much more likely to develop a cataract after a phakic DSAEK than those under the age of 50.<sup>1</sup> Research from our group reveals that the triple procedure is as safe and effective as staged surgery and typically more convenient for the patient. Our published data clearly indicate that there is no increase in complication rates and no decrease in visual outcomes with combined surgery when the cataract portion of the surgery is performed with a cohesive viscoelastic agent. If a surgeon does elect to address the cataract alone, but the patient may require DSAEK in the future, it is wise to avoid using a multifocal IOL and to target approximately 1.00 D of myopia to account for the hyperopic shift that will occur following DSAEK surgery.<sup>2</sup> ■

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