

# CLE, RLE, AND DLS

The crystalline lens is not always crystal-clear.

BY ASIM R. PIRACHA, MD



The term *clear lens extraction* (CLE) has long been used to describe the process of surgically replacing a patient's crystalline lens with an IOL for refractive correction. This phrasing, however, is misrepresentative and misleading. Today, more patients aged 45 to 65 are presenting for refractive surgery because they are having difficulty seeing at distance, due to congenital ametropia, and at near, due to progressive presbyopia. Upon examination, what we find is that their crystalline lenses are not crystal-clear.

This fact prompted me to switch exclusively from using the term *clear lens extraction* to using *refractive lens exchange* (RLE) instead. I have also begun to place growing emphasis on the clinical entity known as *dysfunctional lens syndrome* (DLS). This term characterizes a spectrum of changes that occur ubiquitously with age and that include presbyopia, lens opacification, decreased retinal image quality, and increased higher-order aberrations.<sup>1</sup>

This article discusses my rationale for addressing DLS in my practice, presents insights into my surgical decision-making process, and offers pearls for educating patients about their conditions and treatment options.

## A BRIEF HISTORY

I have been performing RLE since I finished training in 2000. At that time, we referred to the procedure as *presbyopic lens exchange*, or *prelex*. Prelex involved the use of the Array multifocal lens (no longer available), a first-generation refractive multifocal IOL. Surgeons preferred to perform prelex in hyperopic presbyopes, as the risks of side effects, such as severe glare and halos, and patient dissatisfaction were too high to comfortably perform it in myopes.

Many patients aged 45 to 65 seek surgery to fix a decreased quality of vision. Patients may present with 20/25 BCVA, perhaps 20/30 with glare testing, and with mild cataracts that do not yet meet insurance-based criteria for surgery. Until recently, we lacked a good explanation for this. We had to explain to patients that they had *early cataract* or *incipient cataract* but not a *true cataract* by insurance standards. Patients would come back every year asking, "Do I have a cataract yet?" It was tricky to explain, and patients became frustrated with us.

A solution to this challenge came with the introduction of the concept of DLS, which was popularized by Daniel S. Durrie, MD, and George O. Waring IV, MD.<sup>1</sup> I

have found this concept to be highly valuable in communicating with patients about the changes occurring in their eyes.

## VISUAL QUALITY

Advanced diagnostic technologies such as the HD Analyzer (Visiometrics) and iTrace (Tracey Technologies) are fundamental components of DLS evaluation and treatment. These devices enable surgeons to look at visual quality, going beyond visual acuity and the opacity of the lens as seen at the slit-lamp examination. In doing so, we are better able to assess the performance of the lens and can, in turn, explain to and show patients what and how they are seeing.

I have had the iTrace for a few years now. This device quickly measures the entire optical pathway and produces a dysfunctional lens index (DLI). It objectively grades lens opacity and separates visual aberrations due to the cornea from those attributed to the lens. The DLI scale ranges from 0 to 10, with 10 being a crystal-clear lens without aberrations and anything less than 5 typically a visually significant cataract.

The iTrace has helped me explain the DLI to patients who have previously undergone refractive surgery and determine whether a corneal or lens-based enhancement would be best for them. For example, say a LASIK patient wants an enhancement because he or she has -0.50 D or -0.75 D of residual sphere. Using the iTrace, I may see that the patient has 20/20 vision but that his or her DLI score is low. In this scenario, I would inform the patient that an enhancement will not treat the underlying issue, which is his or her natural lens.



## AT A GLANCE

- Clear lens extraction is a misleading term, as many patients who present for refractive surgery do not have crystal-clear crystalline lenses.
- Advanced diagnostic technologies enable surgeons to look not only at visual acuity but also visual quality.
- All patients undergoing RLE should also be LASIK candidates in case enhancement is needed.

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The iTrace is also valuable in RK patients who have significant visual aberrations. These patients sometimes come in saying that they have cataracts and their vision is diminishing. The iTrace may reveal, however, that there are few aberrations in the natural lens and, thus, all the aberrations are in the cornea. I can then explain to these patients that cataract surgery will not help them see better, as the corneal issues will remain aberrated, and I recommend we address their corneal issues and refractive error instead. It is important for patients to understand that, if I do cataract surgery, they will still have problems with their vision because of corneal aberrations.

### STAGES OF DLS



**Stage 1.** Stage 1 DLS patients typically present in their early 40s. They are losing the ability to accommodate but have relatively clear lenses with few internal aberrations, as determined by the HD Analyzer or iTrace.

For hyperopic presbyopes with DLS, I prefer to do RLE over

LASIK. These patients have accommodation issues and become more hyperopic as their accommodative tone relaxes. With LASIK, they would need monovision to see near and far, but they may not tolerate this. Thus, in these cases, I opt for bilateral RLE. My lenses of choice are the Symphony IOL (ZXR00/ZXT00; Johnson & Johnson Vision) or a low-add Tecnis multifocal IOL (ZKB00; Johnson & Johnson Vision). Because multifocal IOLs are

now also available in toric designs, we can treat almost any refractive error with one procedure.

If the patient is myopic, I will do bilateral LASIK with a Kamra inlay (AcuFocus) or blended vision LASIK. I do not perform RLE in stage 1 DLS patients who are myopic. Not only is there more risk for night vision disturbances, but also myopes have a higher risk of retinal detachment, especially at a young age.



**Stage 2.** Stage 2 DLS patients typically present in their 50s and 60s with internal aberrations and early lenticular changes that affect their ability to read up close, and they require reading glasses or bifocals. In stage 2 DLS, the lens is becoming cloudier and discolored,

and glare and halo are starting to occur. Patients know that their quality of vision has degraded.

For patients with stage 2 DLS, I explain that we could do LASIK but that they will continue to have decreased quality of vision that will progressively get worse over time, and LASIK is only a short-term solution. If I can show them that they have decreased quality of vision with the iTrace or the HD Analyzer, then they are more likely to understand that the better option is RLE.

In the past, I would be cautious with implanting a multifocal IOL in a myope; however, with the current technology, I feel more comfortable because the quality of vision is much better than with first-generation multifocal IOLs.

I still give patients the option of blended vision with LASIK. I would not implant a Kamra inlay in a patient with stage 2 DLS because there are already some lenticular changes, and the Kamra is not as successful in patients with early lens changes. Bilateral LASIK for distance vision with reading glasses is also a good option.



**Stage 3.** Stage 3 DLS represents an insurance-defined cataract that meets the criteria for cataract surgery. In my practice, these patients have access to myriad treatment options, including laser-assisted cataract surgery and a range of IOLs.

### RLE VS LASER VISION CORRECTION

I tell patients that RLE does four things that laser vision correction does not do: (1) It provides distance vision in both eyes; (2) it provides near vision in both eyes, so binocular near and far vision; (3) it is permanent, so the patient's

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vision will not keep changing over time and he or she will not experience progressive presbyopia; and (4) the patient will never get cataracts.

That is, in a single sentence, the patient will have binocular distance and near vision that is permanent and will not need future cataract surgery. Whereas laser vision correction will provide shorter-term benefits, the lens will keep changing and the patient will experience continued refractive changes and decreased quality of vision over time. This seems like common sense to us, but it resonates well with patients.

I ensure that all patients undergoing RLE are also good laser vision correction candidates. The health of the ocular surface must be excellent. They should not have dry eye, topographic problems such as ectasia or irregular astigmatism, anterior or epithelial basement membrane dystrophy, or Salzmann nodular degeneration. If they have any of these problems, I will not perform RLE because I know I cannot predictably or safely perform a laser refractive enhancement postoperatively if needed.

IOL calculations are not perfect. Some patients are happy with  $\pm 0.50$  D residual refraction, and some are unhappy at  $\pm 0.25$  D. You can get an idea of this preoperatively, but you cannot fully predict that. It is important that patients understand this preoperatively. They will be disappointed and frustrated if they learn it postoperatively, after their expectations are already high and they have already made a sizable investment in the hope of functioning well without glasses or contacts.

## CONCLUSION

RLE is an excellent option for patients with DLS who have hyperopic presbyopia or stage 2 to 3 myopic presbyopia. Using diagnostic testing to show patients how their lenses are affecting their quality of vision helps them understand the issue and choose RLE over laser vision correction. I prefer LASIK with blended vision or with a corneal inlay for myopic presbyopes with stage 1 DLS.

RLE should be offered only to patients who are also laser vision candidates, so that they can be undergo laser enhancement if there is residual refractive error that affects their vision.

Remember, it helps to explain the four main benefits of RLE for DLS so that patients understand how RLE differs from laser vision correction and that it will provide them with better functional vision in the long term. ■

1. Waring GO IV. Diagnosis and treatment of dysfunctional lens syndrome. *CRST Europe*. March 2013.

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