

# ADVANCED IOL SELECTION IN PATIENTS WITH OCULAR SURFACE DISEASE AND EARLY GLAUCOMA

Balancing surface optimization, contrast sensitivity, and the long-term risk of disease progression through careful counseling.



BY CRISTOS IFANTIDES, MD, MBA



When I am considering advanced technology IOLs (ATIOLs) for eyes with comorbid disease, ocular surface disease (OSD) is often the most straightforward variable to address. OSD is modifiable in many cases, and the early postoperative period preserves a meaningful contingency plan: IOL exchange.

## OCULAR SURFACE DISEASE

If a motivated patient with OSD can improve the health of the ocular surface, resolve higher-order aberrations, and maintain a regimen, I am comfortable considering an ATIOL, provided topography is reasonably regular. Patients' tolerance of optical trade-offs varies widely; the key is identifying who understands that reality preoperatively.

My calculus changes with progressive diseases such as glaucoma and age-related macular degeneration whose impact on visual acuity is irreversible. This makes lens selection more consequential. With OSD, if patients have reasonable expectations and understand that we are, in a sense, testing a refractive option, an early IOL exchange is practical if their quality of vision falls short. Exchanging an IOL years later is a very different proposition.

### Let Predrop Topography Lead

For patients with OSD, my decision-making is driven less by the slit-lamp examination and more by objective corneal imaging, particularly topography. I

correlate the examination findings (including fluorescein staining and signs of irregular astigmatism) with the maps, but there is an important limitation: by the time I evaluate the eye, the ocular surface has often been altered. The pupil is dilated, topical anesthetic may be present, and punctate staining may reflect reduced blinking during testing rather than baseline disease.

For that reason, I rely heavily on predrop data. Before anything goes in the eye, what do the Placido rings look like? Is the pattern regular? What is the topography showing? What higher-order aberrations are present? I use the OPD-Scan III (Nidek), but the principle is the same: I trust undisturbed surface measurements.

### Optimize, Then Remeasure

I start with fundamentals and escalate based on OSD severity. For patients already instilling artificial tears, I may add a short course of topical steroids or initiate longer-term antiinflammatory therapy such as cyclosporine or lifitegrast (Xiidra, Bausch + Lomb). Then, I repeat measurements usually in 2 weeks instead of waiting months. I wait longer (4–6 weeks) if the ocular surface appears to be more compromised.

That interval does double duty. It allows surface improvement and measurement stabilization, and it functions as a compliance test. If a patient is inconsistent about treatment before surgery, I am cautious about offering ATIOLs. If they will not maintain the regimen in the short term,

postoperative dissatisfaction becomes predictable and preventable.

### Address Lid Disease Early

I evaluate patients for lid disease and treat it proactively. Even when *Demodex* is not obvious, I often recommend tea tree oil lid scrubs. Collarettes strongly suggest *Demodex*, but their absence does not exclude it. Many patients have inflammatory lid disease that contributes to an unstable tear film without classic signs.

When patients return 2 to 4 weeks later, I repeat topography and IOL calculations. I want alignment between biometry and corneal data, and I want evidence that the surface is trending in the right direction. If the maps stabilize and the patient demonstrates follow-through, I am comfortable proceeding with ATIOLs, particularly when an early exchange remains a realistic option if postoperative quality of vision does not meet expectations.

### Lens Selection in OSD

In patients with OSD, I am selective about IOLs. In my experience, extended depth of focus (EDOF) lenses have been the most problematic in this group. Some of the patients least satisfied with EDOF IOLs have had underlying OSD, even if it appeared to be reasonably well controlled preoperatively.

For that reason, I tend to avoid EDOF technology when the health of the ocular surface is a meaningful variable. Instead, my go-to has been a diffractive multifocal

lens, specifically the Clareon PanOptix Pro (Alcon). In motivated patients with OSD whose ocular surface has been optimized and whose measurements are stable, I have seen consistently good outcomes with this approach.

For me, the goal is not to chase an ideal optical profile on paper but to choose a technology that has proven more forgiving in the setting of real-world surface variability.

### Counseling

When counseling patients, I rely heavily on visuals, particularly the Placido disk image, because it quickly clarifies how the ocular surface affects premium optics. I show patients the Placido rings and explain that this reflection comes off the tear film—essentially a glassy coating on the front of the eye.

If the pattern is irregular, I ask patients to picture the glassy, smooth surface of a lake and the crisp, detailed reflections on it. Then, I ask them to imagine throwing in a pebble and watching ripples form, scattering the reflections and blurring the image. I explain that a similar thing happens with an unstable tear film; breaks and irregularity scatter incoming light, and visual quality fluctuates.

Most patients understand the lake analogy immediately. It reframes dry eye treatment from an optional add-on to a prerequisite for optical quality, especially when they desire ATIOLs.

### GLAUCOMA

#### Contrast Sensitivity Is the Limiter

With glaucoma, my threshold for implanting an ATIOL is driven by, among other things, contrast sensitivity. Glaucoma patients are already prone to difficulty in dim lighting conditions, so I generally avoid ATIOLs for patients with significant optic nerve damage. Even mild visual field defects make me cautious. Visual field testing does not always reflect real-world vision, and contrast sensitivity is not routinely measured in a reliable, automated way. The risk of ATIOL implantation is inadvertently compounding an existing problem with contrast sensitivity.

### Who Is a Candidate?

I may consider an ATIOL for a patient with well-controlled, stable, mild glaucoma—someone who has demonstrated no disease progression for a year or longer and whose drug regimen appears sustainable. In that context, I can accept mild structural findings (for example, subtle ganglion cell layer changes) if the patient's contrast sensitivity has not been noticeably affected and my concern about glaucomatous progression is low.

In this situation, decision-making begins to resemble my approach to OSD: the patient is reliable, is willing to return for follow-up, and does not have severe pathology. If they receive the lens and later report problems with nighttime vision or dissatisfaction with their outcome, an early IOL exchange remains an option.

The dividing line is disease progression. If I have significant concern that a patient's glaucoma is likely to progress, I will not implant an ATIOL.

### Age Matters

Age adds another layer to the progression calculus. I am increasingly cautious with younger patients because their eyes have more years to change. The long runway matters. The same principle applies across comorbidities, whether it is macular degeneration, anterior basement membrane dystrophy, or other age-related disease processes: the longer the timeline, the more opportunity for the visual system, and the patient's tolerance, to change.

I tend to hesitate less with older patients because I have a clearer sense of their lifespan and the window in which they can benefit from IOL technology.

### The Intersection With OSD

With patients who have both glaucoma and OSD, their medication burden becomes a major part of the candidacy conversation. Topical therapy can have a negative impact on the ocular surface stability on which ATIOL optics depend.

I tend to reduce the number of topical IOP-lowering drops in a patient's drug regimen as much as possible in the years leading up to surgery—often by performing selective laser trabeculoplasty or placing a

sustained-release option such as a bimatoprost implant (Durysta, AbbVie). Having an interventional glaucoma mindset has let me improve the ocular surface of many patients, leading to better biometry down the road.

### Why I Pair MIGS With ATIOLs

Most of my glaucoma patients undergo MIGS at the same time as cataract surgery. For this population, I frame MIGS as an adjunct that can support two goals—better glaucoma control and a reduced medication burden—which can improve the health of the ocular surface. In my experience, patients require fewer IOP-lowering medications after MIGS.

### THE LONG-TERM PROBLEM

Ocular disease can emerge after cataract surgery. Age-related conditions—particularly macular degeneration, glaucoma, and OSD—will develop in a subset of patients who currently appear healthy.

If some patients will eventually develop progressive ocular disease, does that mean no one should receive ATIOLs? My answer is no. Car accidents happen every year, yet driving is not broadly limited to prevent injury. Instead, the solution is to make the environment as safe as possible.

In cataract surgery, that safer environment is better diagnostic capability and better prediction. Stronger tools are needed to identify risk earlier than is possible today. Ideally, next-generation imaging and predictive models will help flag patients who are susceptible to dry eye, glaucoma, macular degeneration, diabetic retinopathy, and epiretinal membrane formation years before it becomes clinically obvious. That kind of risk stratification would support more confident, individualized lens recommendations. ■

### CRISTOS IFANTIDES, MD, MBA

- Private practice, Tyson Eye, Cape Coral, Florida
- Adjunct Assistant Professor, Sue Anschutz-Rodgers Eye Center, University of Colorado, Aurora, Colorado
- Member, CRST Editorial Advisory Board
- cristosmd@gmail.com; X @GatorCristos; Instagram @cristosifantides
- Financial disclosure: AbbVie, Alcon, Bausch + Lomb, EyeCool Therapeutics, Johnson & Johnson Vision, Tarsus Pharmaceuticals